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ENVIRONMENTAL RESOURCES MANAGEMENT

OPERABLE UNIT I
CLOSURE REPORT
VOLUME I

Harmon Railroad Yard
Croton-On-Hudson, New York

July 1999; Revised May 2000

Prepared By:

ENVIRONMENTAL RESOURCES MANAGEMENT
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And

METRO-NORTH COMMUTER RAILROAD
420 Lexington Avenue
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ERM ®

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1.0 *INTRODUCTION*

This document, the draft Operable Unit I (OU-I) Closure Report, has been prepared by Metro-North Commuter Railroad Company (Metro-North) and Environmental Resources Management (ERM) to document implementation of the New York State Department of Environmental Conservation (NYSDEC) approved remedy for OU-I of the Harmon Railroad Yard Wastewater Treatment Area (Site No. 3-60-010). As such, this OU-I Closure Report fulfills the post-remedial requirements of Paragraph V.C.4. of the Stipulation of Discontinuance between NYSDEC and Metro-North, dated 5 August 1994 and the September 1992 NYSDEC Record of Decision (ROD) for the Harmon Railroad Yard Wastewater Treatment Area pertaining to OU-I. A copy of the ROD is provided as Appendix A.

The purpose of this report is to:

- summarize the work completed for the OU-I remedy;
- provide the documentation needed by Metro-North to demonstrate compliance with Paragraph V.C.4. of the Stipulation of Discontinuance between NYSDEC and Metro-North, dated 5 August 1994 pertaining to submittal of the as-built drawings, engineering report and certification; and
- provide the documentation needed by Metro-North to request reimbursement for the funds expended for remediation of the OU-I site through the New York State Environmental Quality Bond Act, EQBA.

1.1 *SITE LOCATION AND DESCRIPTION*

The Harmon Railroad Yard (i.e., "Yard") is located in the Village of Croton-on-Hudson, New York, and is bounded by Route 9 on the east and Croton Point Park to the west (Figure 1-1). The Yard is approximately 100 acres in size, and has been an active rail yard for over 100 years.

The Yard is currently being addressed under two NYSDEC programs. They are: (1) the Inactive Hazardous Waste Disposal Site Remedial Program; and (2) the Spills Program for petroleum releases. The Wastewater Treatment Area at Harmon Railroad Yard, which was placed on the New York State Inactive Hazardous Waste Disposal Site Registry in 1985 (Site No. 3-60-010), was governed under the former program while the remainder of the Yard was removed from that list and is now being addressed under the Spills Program.

The September 1992 NYSDEC ROD divided the remediation of the Harmon Railroad Yard Wastewater Treatment Area into two operable units, OU-I and OU-II. OU-I constituted the remediation of:

- the wastewater treatment plant lagoon and pond system (the "lagoon");
- surface soils located adjacent to the lagoon; and
- contaminated components of the Old Wastewater Treatment Plant (the "Old Plant").

The OU-I remedial action was substantially complete on 3 May 1996. Metro-North and the NYSDEC held a public ceremony on September 9, 1996 to commemorate the completion of the project. This report documents implementation of the NYSDEC approved OU-I remedy.

The OU-II components, as identified in the 1992 OU-I ROD, included the investigation and, if needed, the remediation of the following environmental media:

- non-aqueous phase liquid (NAPL) located around the former wastewater treatment plant lagoon;
- ground water located in the vicinity of the former wastewater treatment plant lagoon;
- soil located along the former wastewater discharge line; and

- sediment in Croton Bay near the outfall area for the former and the currently active wastewater and storm water discharge lines.

Based on the results of the OU-II Remedial Investigation (RI) and Feasibility Study (FS), NAPL was determined to be the only OU-II environmental media requiring remedial action. This decision was documented in the NYSDEC ROD for OU-II, dated 27 March 1998. In accordance with the OU-II ROD, design of the OU-II NAPL remediation systems is currently underway. No further discussion is provided in this document regarding OU-II.

1.2 *Components of the Selected OU-I Remedy*

The components of the OU-I remedy were:

- excavation of Zone A soil surrounding the lagoon;
- installation of permanent sheeting around the lagoon perimeter;
- water removal from the lagoon;
- removal of sludge from the lagoon;
- transport and off-site incineration of all excavated sludge;
- transport and off-site disposal of Zone A soil containing PCBs at concentrations greater than 10 ppm but less than 50 ppm (i.e., Zone A1 soil); and
- placement of a lower backfill layer, consisting of 3.5 feet of clean backfill, over the soil remaining at the bottom of the lagoon after the sludge has been removed;
- installation of a high density polyethylene (HDPE) geomembrane liner over the lower backfill layer;
- placement of a middle backfill layer, consisting of a one foot layer of clean fill overlain by a 12-inch layer of Zone A soil having PCB concentrations up to 10 ppm (i.e., Zone A2 soil) overlain by a two to five foot thick layer of clean backfill, over the HDPE liner;
- installation of an HDPE geomembrane cap over the middle backfill layer;
- installation of a geocomposite drainage net over the HDPE geomembrane cap;

- placement of a top backfill layer, consisting of a one foot thick sand drainage layer and one foot of clean backfill, over the drainage net;
- installation of a reinforcement geotextile, 6 inches below the 6.5-inch thick asphalt cover at the final surface;
- installation of a riprap-lined drainage channel along the northern edge of the asphalt cover;
- installation of a system of manholes and pipes to carry water from the drainage channel to the existing Metro-North storm water sewer system; and
- decontamination and demolition of the Old Wastewater Treatment Plant.

Section 2.0 discusses certain changes made by the NYSDEC to the remedy selected in the OU-I ROD during the design of the final remedy for OU-I.

1.3 *Listing of Contract Documents*

Design and construction of the OU-I remedial components was conducted in two phases: (1) decontamination, decommissioning and demolition of the Old Plant; and (2) remediation of the lagoon and surface soils located next to the lagoon.

Construction of the OU-I remedial components were conducted in accordance with the following documents:

Lagoon and Surface Soil Remediation and Old Plant Decontamination, Decommissioning and Demolition

1) *Preliminary Design Report, Harmon Railroad Yard Wastewater Treatment Area, Operable Unit I, Croton-on-Hudson, New York,* 8 November 1993;
2) *Proposed Remedial Approach, Harmon Railroad Yard Wastewater Treatment Area, Operable Unit I, Croton-on-Hudson, New York,* 8 March 1994.

Old Plant Decontamination, Decommissioning and Demolition

3) *Sampling and Decommissioning Plan for the Old Wastewater Treatment Plan,* dated 11 August 1993

4) *Decommissioning and Demolition Plan for the Old Wastewater Treatment Plant,* dated February 25, 1994.

Lagoon and Surface Soil Remediation

5) Final Design documents, including:
   - Contract Drawings, dated July 1994
   - Contract Specifications, dated July 1994
   - Field Sampling and Analysis Plan, dated 13 July 1994
   - Construction Schedule
   - Bidding Package dated July 1994
   - Health and Safety Plan, dated July 1994
   - Effectiveness Monitoring Plan, dated 13 July 1994
   - Contingency Plan, dated 29 August 1994
   - Community Participation Plan, dated 15 July 1994
   - Community Air Monitoring Plan, dated 19 July 1994

6) Bid Phase Addenda
   - Responses to Questions by the Bidders on the Bid Documents, prepared by Metro-North and ERM, dated September 1994

7) the following Contractor work plans and other major submittals:
   - Health, Safety and Control Plan
   - Quality Control (QC) Plan
   - Work Plan/Layout Plan
   - Decontamination Plan
   - Temporary Tank Plan
   - Pumping Plan
   - Solidification Plan
   - Technical Advisories/Field Directives prepared by Metro-North and Hill

8) the following Change Orders issued to Ogden Remediation Services Co. Inc. (i.e., the Site Work Contractor):
   - Change Order No. 1, dated 10 November 1995;
   - Change Order No. 2, dated 22 March 1996; and

- Change Order No. 3, dated 3 May 1996.

The Final Design documents noted above were approved by NYSDEC on 19 October 1994. The as-built versions of the design drawings are provided as Volume II to this document. A list of these drawings is provided in Table 1-1. In addition, the surveyor's drawings of the OU-I remedy are also provided in Volume II. A listing of these drawings is provided in Table 1-2.

2.0 SITE BACKGROUND AND OU-I REGULATORY HISTORY

In 1980, polychlorinated biphenyls (PCBs) were discovered in the effluent discharge from the Old Plant. The source of PCBs in the Old Plant was the final rinsing of empty transformers conducted in the Harmon Shop maintenance areas by Conrail, a predecessor railroad. The rinseate from this activity contained residual PCBs that were conveyed to the equalization lagoon. Since the treatment process was not capable of removing PCBs, residual PCBs were found in the Old Plant, its appurtenances, the lagoon and the pond. Once the source of the problem was discovered, the rinsing operation at the maintenance area was discontinued and the contaminated areas of the Harmon Shop, the conveyance pipelines and the wet well were cleaned by Paul M. Mallon Company under the supervision of NYSDEC leaving portions of the Old Plant and the equalization lagoon and pond remained contaminated with PCBs. At that time, Conrail contracted with O.H. Materials Co., (OHM) of Findlay, Ohio to furnish, install and operate activated carbon filters to ensure that subsequent discharges of wastewater from the Old Plant did not contain PCBs.

In 1985, Metro-North constructed the New Treatment Plant at the Site. The New Treatment Plant processed influent wastewater streams from the wet well that are received from the maintenance areas of the Yard until Metro-North's connection to the Westchester County owned Ossinning Sewage Treatment Plant in July 1999. Now the wet well and the equalization tanks are the only new wastewater treatment plant components online. These influent wastewater streams do not contain PCBs from the lagoon or the Old Plant. The New Treatment Plant effluent discharges to Croton Bay.

The NYSDEC first placed the Yard on the state registry (the "Registry") of Inactive Hazardous Waste Disposal Sites in 1985. At that time, the Yard was classified as a 2a site, a temporary classification assigned to sites with inadequate and/or insufficient data for inclusion in any other classification. In December 1988, at the request of Metro-North, the NYSDEC split the yard into two separate sites. The Old Plant and lagoon (i.e., the wastewater treatment area) were designated as one site and reclassified as a Class 2 site

The remainder of the Yard was investigated separately by the NYSDEC in 1988. A Hazard Ranking System (HRS) score was prepared for the NYSDEC for this portion of the Yard in 1989. The HRS score indicated that this portion of the Yard did not pose a significant threat to human health or the environment. As a result of this score and the fact that hazardous wastes were not found in environmental media in this portion of the Yard, the NYSDEC removed this portion of Harmon Yard from the Registry in October 1992. This portion of the Yard (i.e., not including the wastewater treatment area) is being investigated and remediated by Metro-North under the direction of the NYSDEC as a petroleum site.

Simultaneously, a Site Operations Plan was prepared and submitted to the NYSDEC in 1988 for the NYSDEC Class 2 site, i.e., the Harmon Yard Wastewater Treatment Area (Site No. 3-60-010). Based on the information collected for the Site Operations Plan, a Remedial Investigation (RI) and Feasiblity Study (FS) were subsequently conducted. The RI was completed in September 1989 and the FS was completed in February 1992. The Record of Decision (ROD) for the Harmon Railroad Yard Wastewater Treatment Area was signed on 30 September 1992. As discussed above, the 1992 NYSDEC ROD divided the remediation of the Harmon Railroad Yard Wastewater Treatment Area into two operable units, OU-I and OU-II. The 1992 NSYDEC ROD required:

- excavation and off-site incineration of lagoon and pond sludge as a TSCA waste;
- excavation of Zone A soils containing PCBs at concentrations in excess of 0.5 mg/kg;
- excavation of Zone B1, B2 and C soil containing PCBs at concentrations in excess of 10 mg/kg;
- excavation, if necessary, of Zone B1, B2 and C soil containing other constituents in excess of cleanup levels;
- on-site placement of soil containing PCBs at concentrations less than 10 ppm PCBs in the excavated lagoon;
- off-site disposal of soil containing PCBs at concentrations in excess of 10 mg/kg; and
- decontamination, demolition and decommissioning of the Old Plant.

The relative locations of Zone A, B1, B2 and C soil are presented in Figure 2-1. As shown in this figure, Zone A soil was defined as the top two feet of soil surrounding the lagoon containing PCBs at concentrations in excess of 0.5 mg/kg. Zone B1 soil was defined as the unsaturated soil beneath the Zone A soil. Zone B2 soil was defined as the unsaturated soil beneath the sludge and Zone C soil was defined as the saturated soil beneath the Zone B2 soil.

Following issuance of the 1992 OU-I ROD, the *Remedial Design/ Remedial Action Work Plan,* 23 June 1993 was prepared. This document recommended that a Pre-Design Test Boring Program (PTBP) be implemented to determine the extent of Zone B1, B2 and C soil requiring remediation (i.e., exceeding the OU-I ROD cleanup levels for PCBs, VOCs, SVOCs and metals). The PTBP was conducted in July 1993.

Following performance of the PTBP, the *Preliminary Design Report,* 8 November 1993 was prepared. This document, which contained the preliminary soil sampling results from the PTBP, recommended additional pre-design soil testing and remediation of the Zone B1, B2 and C soils to the prescribed OU-I ROD cleanup levels.

Following preparation of the *Preliminary Design Report* and discussions with the NYSDEC, the *Proposed Remedial Approach, Former Lagoon Area*, 8 March 1994 (PRA) was prepared. As discussed in that document, none of the soil samples collected from the Zone B1, B2 and C soils during the PTBP contained PCBs at concentrations in excess of 10 mg/kg. As such, NYSDEC eliminated remediation of these materials from the OU-I remedy. Remediation of the Zone B2 and Zone C soil, which underlie the lagoon and contain petroleum related chemicals, were transferred from the Division of Inactive Hazardous Waste Disposal to the Bureau of Spill Prevention and Response. Zone B1 soil, which underlies the Zone A soil, was eliminated from future remedial action.

The OU-I Remedial Design (i.e., design drawings and specifications) was therefore prepared assuming excavation of only the Zone A soil and lagoon sludge. As discussed below, decontamination, decommissioning and demolition of the Old Plant was conducted separately from the remediation of the lagoon.

Although not included as part of the OU-I remedy, the OU-I Remedial Design documents also included installation of an air sparge/soil vapor extraction system should remediation of the petroleum constituents in the Zone B2 and C soil be needed. The need to operate the air sparge/soil vapor extraction system is currently being evaluated by the NYSDEC Bureau of Spill Prevention and Response.

Based on this regulatory determination and the decision to include the air sparge/soil vapor extraction system for the Zone B2 and C soil in the Remedial Design, the Remedial Design documents included components governed under two different NYSDEC regulatory programs. The Remedial Design components, as identified in Section 1.2, are provided below along with their regulatory program.

Remedy Component	NYSDEC Regulatory Program
1. Sludge Incineration	Division of Hazardous Waste Remediation
2. PCB Soil Disposal	Division of Hazardous Waste Remediation
3. Liner	Division of Hazardous Waste Remediation
4. Zone A Soil Removal and Relocation	Division of Hazardous Waste Remediation
5. Backfill	Division of Hazardous Waste Remediation
6. Cover	Division of Hazardous Waste Remediation
7. Grouted Sheeting	Division of Hazardous Waste Remediation
8. Ground Water and NAPL Recovery Wells	Bureau of Spill Prevention and Response
9. Piezometers	Bureau of Spill Prevention and Response
10. Air Sparging and Vacuum Extraction System	Bureau of Spill Prevention and Response

Implementation of the OU-I remedy was divided into two (2) contracts: Site Work and Off-Site TSCA Incineration of the TSCA waste. Disposal of waste materials that did not require disposal at a TSCA incinerator was addressed under the Site Work Contract.

In July 1994, two (2) bid packages (i.e., Site Work and Off-Site TSCA Incineration) were issued for implementation of the OU-I remedy. Competitive bids for the Site Work were received and Ogden Remediation Service Corporation (ORSC) was selected as the successful bidder. Competitive bids for the Off-Site TSCA Incineration work were received and Chemical Waste Management (CWM) was selected as the successful bidder. In addition, a Request for Proposal was also issued for construction oversight of the OU-I remedy. Proposals were received for this work and Hill International (Hill) was selected as the successful construction manager.

The Site Work Contract start date was 19 December 1994. Preparatory work was conducted in the winter of 1994/1995 and groundwork began in late February/early March. Substantial completion was achieved in late April/early May 1996. Metro-North and the NYSDEC held a public ceremony on September 9, 1996 to commemorate the completion of the project.

Before the ROD for OU-I was issued, Metro-North implemented an Interim Remedial Measure (IRM) at the site to recover floating non-aqueous phase liquids (NAPL) in areas around the lagoon. This IRM system, which consisted of NAPL-only recovery systems in three (3) wells, was operated intermittently from January 1991 through May 1992. During this time, approximately 473 gallons of NAPL were recovered. Operation of this temporary system was discontinued in order to proceed with the construction of the OU-I remedy. Remediation of the remaining NAPL surrounding the lagoon will be addressed under the OU-II remedy.

Samples of various components of the Old Plant were collected in 1993 and 1994. The results demonstrated that the concentrations of PCBs in the Old Plant did not exceed NYSDEC cleanup levels. Consequently, decontamination of the Old Plant was not required. Metro-North plans for this area required that most of the Old Plant be decommissioned and demolished. Metro-North personnel performed this work in the summer of 1994 in accordance with a plan submitted to the NYSDEC in February 1994. Additional discussion regarding the sampling, decommissioning and demolition activities for the Old Plant is provided in Section 4.1 of this document.

3.0 *PERFORMANCE STANDARDS AND CONSTRUCTION QUALITY CONTROL FOR LAGOON REMEDIATION*

The following section contains the performance standards and/or construction quality controls employed during the implementation of the OU-I remedial action for remediation of lagoon sludge and surrounding surface soils. These OU-I remedial components included:

- lagoon sludge removal and disposal;
- Zone A soil removal and disposal;
- wastewater discharges, including lagoon surface water;
- worker health and safety;
- community air monitoring;
- construction;
- rail transportation; and
- removal of Old Plant demolition debris.

The Remedial Design contract documents separated the above OU-I remedial work into two contracts. One contract addressed all of the Site work identified above and the other contract addressed only off-site incineration of the excavated solidified sludge.

As discussed further in Section 4.1, decommissioning and demolition of the Old Plant was conducted by Metro-North personnel prior to implementation of the OU-I remedy for lagoon remediation. This work was conducted in accordance with the following NYSDEC-approved plans:

- *Sampling and Decommissioning Plan for the Old Wastewater Treatment Plan*, dated 11 August 1993; and
- *Decommissioning and Demolition Plan for the Old Wastewater Treatment Plant*, dated February 25, 1994.

With the exception of disposal of some PCB-contaminated materials, decommissioning and demolition of the Old Plant was not included in the Site Work or Incineration contracts noted above. An independent contract was not needed for this work since the work was conducted by Metro-North personnel.

3.1 *SLUDGE REMOVAL AND DISPOSAL*

The OU-I ROD required removal of all lagoon sludge and off-site incineration of this material. The U.S. Environmental Protection Agency (USEPA) Toxic Substances Control Act (TSCA) Compliance Program Policy No. 6-PCB-4, *Disposal Methods For PCBs in Sludge,* required that PCB industrial sludges or slurries generated by processing liquid PCBs be disposed of in the same manner as required for the original liquid PCBs. The policy also states that industrial sludges or slurries containing PCBs in concentrations over 500 parts per million (ppm) must be incinerated regardless of their physical state. Since PCBs were detected in lagoon sludge at concentrations over 500 ppm, compliance with this TSCA policy required that all sludge be removed from the lagoon and incinerated. This USEPA TSCA policy was in effect at the time the OU-I remedy was designed and implemented.

The horizontal limits of sludge excavation, as defined in Contract Drawing C-6, were visually determined in the field and surveyed in October 1993. As part of the remedial action, vertical sheeting was to be installed along the horizontal limits of excavation to facilitate sludge removal from this area. The location of the sheeting was provided in Contract Drawing C-6 and the vertical extent of sheeting was provided in Contract Drawing C-8.

The estimated vertical extent of excavation, as defined in Contract Drawing C-8, was preliminarily based upon the sludge depth information collected during the 1989 RI and the 1993 PTBP. The in-situ raw sludge volume was estimated to be approximately 4,200 cubic yards in the Remedial Design documents based on the RI and PTBP sludge depth data. However, as documented in Section 2205 of the Specification, the final extent of vertical sludge removal was to be made during excavation activities based upon visual observations. This determination was not to be based upon sampling results since compliance with the USEPA TSCA policy discussed above and with the OU-I ROD required that all sludge be removed for off-site disposal.

Sludge removed from the lagoon was to be transported and disposed of off-site. All removed lagoon sludge was required to be regulated and disposed of as a TSCA regulated liquid waste, because:

- the sludge contained PCBs from a source having greater than 500 ppm PCBs;
- the sludge was considered to be a liquid waste; and
- the PCB regulations in effect at the time of the OU-I remedy classified the lagoon sludge according to the PCB content of its contaminant source.

Thus, all sludge was required to be incinerated at an off-site TSCA-permitted incinerator regardless of its PCB concentration. As discussed above, USEPA TSCA policy in effect at that time required that industrial sludges or slurries containing PCBs in concentrations greater than 500 ppm, such as the sludge in the Harmon Yard wastewater equalization lagoon, be incinerated. A Proposed Remedial Action Plan for OU-I issued by the NYSDEC prior to the ROD included on-site incineration of this material. In response to strong community opposition, the NYSDEC issued the final ROD for OU-I that required the off-site incineration of lagoon sludge.

The transportation requirements for the sludge are discussed in Section 3.7. Prior to off-site transport, the free liquids in the sludge were to be stabilized with the addition of a solidification agent. The specifications for the solidification agent and its rates of use were contained in Specification Section 02205. As discussed in Part 3.05(A)(2) of this specification, 10 to 15% solidification agent was required to be added to the raw sludge to remove free liquids. It was therefore estimated that approximately 420 tons of corncobs would be stabilize the free liquids in the 4,200 tons of raw excavated sludge. The addition of the corncobs would therefore increase the sludge weight to 4,620 tons.

3.2 *SOIL REMOVAL AND DISPOSAL*

As discussed in Section 2.0, the OU-I remedial objective for soil was limited to removal of Zone A soil containing PCBs at concentrations in excess of 0.5 mg/kg. Based upon this definition, the vertical extent of Zone A soil was limited to the upper two feet of soil.

In accordance with the OU-I ROD, the disposal requirements for the Zone A soil were:

- off-site disposal of soil containing PCBs at concentrations greater than 10 mg/kg, but less than 50 mg/kg (i.e., Zone A1 soil) as a non-hazardous waste; and
- on-site placement of soil containing PCBs at concentrations up to 10 mg/kg (i.e., Zone A2 soil) below the cap to be constructed over the lagoon.

The USEPA considered the specific source of the PCBs in Zone A soil to be unknown and concluded that this material should be disposed of in accordance with the PCB concentration as found in this material. As a result, the disposal of Zone A soil that contained PCBs in concentrations below 50 ppm was not to be regulated by TSCA.

In June 1994, soil sampling was conducted to refine the horizontal limits of Zone A1 and A2 soil. Using this information, the extent and volume of Zone A1 and A2 soil requiring removal during the remedial action was identified. This extent, which is provided in the drawing included in the 1 November 1994 letter, was included in Contract Drawing C-6, dated 6 July 1994, and Section 02200 of the Design Specification. The original Contract volumes are provided below.
Three additional Zone A delineation sampling rounds were subsequently conducted in September, November of 1994 and March 1995. The results from these rounds were used to refine the Zone A1 and A2 limits of excavation provided in the Contract Documents.

All the Zone A sampling results were validated and submitted to NYSDEC as they were collected. The following table provides a summary of the samples collected and the dates of the letters in which these results were transmitted to the NYSDEC. Copies of these letters, which include the validated data and delineation figures, are provided in Appendix B.

Sampling Date	Sample Nos.	Letter Report to NYSDEC
June 1994	ZA1-1 to ZA1-4; ZA2-1 to ZA2-19	1 November 1994
September 1994	ZA2-7-5 & ZA2-11-5	22 November 1994
November 1994	ZA2-7-10, ZA2-7-15, ZA2-7-20 & ZA2-7-25	27 February 1995
March 1995	ZA2-7-PL & sludge bed samples SBD-A to SBD-E	17 April 1997

Based upon these sampling results, the extent of Zone A1 and A2 soil requiring excavation was increased. The final horizontal extent of Zone A1 and A2 soil requiring removal was provided to NYSDEC in a letter from ERM dated 17 April 1995 (see Appendix B). This delineation, which was approved by NYSDEC and incorporated into the Contractor's remedial requirements, is provided below and depicted in Figure 3-1.

Type of Soil	Original Design Estimate	Changes Following Additional Delineation	Final Design Estimate
Zone A1	320 cy	0 cy	320 cy
Zone A2	2,020 cy	312 cy	2,332 cy

As such, a total of 2,652 cubic yards of Zone A soil were to be removed. As discussed in Section 4.2.4.2, the distribution of Zone A1 and A2 soil was later revised based upon disposal characterization results. This revision did not affect the total amount of Zone A soil removed (i.e., 2,652 cy).

3.3 *WASTEWATER DISCHARGES*

As part of the OU-I Remedial Design, surface water located within the pond and lagoon was to be removed, stored and sampled. The sampling results were then to be submitted to the Oversight Engineer who would compare the results to the State Pollution Discharge Elimination System (SPDES) permit limits for Metro-North's sanitary sewer outfall (i.e., Outfall 001). The Oversight Engineer would then specify whether the water was required to be either: (1) discharged to the sanitary sewer without treatment; (2) discharged to the sanitary sewer with treatment; or (3) transported off-site for disposal.

The permit limits in effect at the time of the OU-I remedy construction for Outfall 001 were as follows:

Parameter	Outfall 001 SPDES Permit Limit
Total Suspended Solids	45 mg/l
Oil & Grease	15 mg/l
Settleable Solids	0.1 ml/l
PH	6 to 9
Benzene	6 μg/l
Cadmium	3.7 μg/l
Copper	60 μg/l
Lead	8.6 μg/l
Nickel	7.1 μg/l
Zinc	80 μg/l
Magnesium	35 μg/l
2-methylnaphthalene	50 μg/l
Total PCBs	0.3 μg/l or non-detect

In addition, Specification Section 02220 required that all other remedial action wastewater (e.g., decontamination water, well development water) be temporarily stored on-site by the Contractor and tested. The Oversight Engineer would then determine the disposition of these waters.

3.4 *WORKER HEALTH AND SAFETY*

The health and safety requirements for construction of the OU-I remedy were identified in:

- Specification Section 01517, Health and Safety Plan and Requirements; and
- Health and Safety Plan included in the Final Remedial Design.

These remedial design documents required:

- establishment of an Exclusion Zone (EZ), Contaminant Reduction Zone (CRZ) and Support Zone (SZ);
- performance of full-time air monitoring and health and safety supervision by the Oversight Engineer;
- personnel monitoring for VOCs, such as tetrachloroethylene (PCE), toluene, xylene and ethylbenzene in the breathing zone of the workers in the Exclusion Zone during all earthwork involving existing Site soils or sludge;
- real time air monitoring for VOCs during site work;
- colorimetric detector tube measurements for PCE should the total VOC direct reading exceed 12 ppm;
- colorimetric detector tube measurements for toluene, xylene and ethylbenzene should the total VOC direct reading exceed 50 ppm;
- real time air monitoring for respirable dust with action levels of 2.5 mg/m^3 and 25 mg/m^3;
- real time air monitoring for hydrogen sulfide;
- Hazardous Waste Operations and Emergency Response (HAZWOPER) training, chemical specific training, Site-specific training, as deemed appropriate by the SSO and medical monitoring for all Site personnel involved with the construction activities;
- completion of Exhibits 1 through 3 located at the end of this HASP by the Contractor prior to mobilization;
- establishment and enforcement of sign-in procedures to ensure that only authorized personnel participate in the construction activities;
- maintenance of sign in/sign out sheets at each contamination reduction zone; and
- maintenance of a daily list of Site workers in the event of Site evacuation.

3.5 *COMMUNITY AIR MONITORING*

The Remedial Design included a Community Air Monitoring Plan (CAMP) to be implemented during construction of the OU-I remedy. The CAMP required:

- establishment of an exclusion zone around the perimeter of the Site;

- establishment of four stationary air monitoring locations immediately outside the exclusion zone;
- collection of air samples and analysis for PCBs, VOCs and respirable dust at the four stationary locations prior to and during remediation;
- real time air monitoring adjacent to the exclusion zone and at the four stationary locations prior to and during remediation;
- collection of meteorological information prior to and during remediation;
- comparison of the real-time air monitoring results and the stationary air sampling results to action levels; and
- performance of corrective actions should these action levels be exceeded.

Prior to remediation, baseline atmospheric conditions were to be established. This was to entail three days of air sampling, real time air monitoring and collection of meteorological information.

During remediation, the schedule for air sampling, real time air monitoring and collection of meteorological data was to be governed by the remedial activities taking place. The CAMP schedule for these activities is presented below:

Activity	Stationary Air Sampling	Real Time Air Monitoring
Installation of the Rail Spur	None	continuous respirable dust monitoring at two upwind and two downwind locations
Sludge Removal	first week of sludge removal	continuously during the first week and scheduled thereafter
Liner Placement	first week of liner placement	continuously during the first week and scheduled thereafter
Removal of Zone A Soil	first week of soil removal	continuously during the first week and scheduled thereafter
Relocation of Zone A soil to the Remediated Lagoon area	first week of soil relocation	continuously during the first week and scheduled thereafter

The scheduled real time events were to be conducted four times per 8-hour workday. In general, two events were to be conducted in the morning and two in the afternoon. The specific times were to be determined based upon the following conditions:

- worker H&S monitoring indicates elevated concentrations of VOCs;
- alarms on the stationary air monitors are activated;
- unusual odors;
- temporary change in activities that should be monitored; or
- wind velocities greater than 24 mph.

The meteorological data was to be collected continuously and recorded twice daily, once in the morning and once in the afternoon. The SSO was then responsible to determine whether additional sampling or air monitoring was needed.

The real time air monitoring and stationary air sampling results were then to be compared to the action levels presented the CAMP. These action levels are presented in Tables 2-1 and 2-2, respectively. If the stationary air sampling or real time air monitoring results exceeded their action levels, response actions were to be taken. The required response actions are also presented in Tables 2-2 and 2-3 of the CAMP.

3.6 CONSTRUCTION

The specifications for construction components of the OU-I remedy were provided in the Contract Specifications and Contract Drawings. Specific information regarding the location of the specifications for the OU-I remedial components follows.

Environmental Protection

The environmental protection requirements for the Remedial Action were provided in Specification Section 01535. In addition, the requirements for soil erosion and sediment control during remedial activities were provided on Contract Drawing C-4.

Fill Materials

The following types of fill materials were specified in the Remedial Design: bank run gravel, graduated sized gravel for the cap cover, pea gravel and rip rap. Specification Section 02225 contained the requirements for these materials and their locations were provided in Contract Drawing C-13. As a condition of Specification Section 02225, the Contractor was required to submit certification from the suppliers, prior to delivery of fill materials to the Site, stating that all fill materials met the requirements of the specification and were clean and free of contaminants.

Sheeting

Sheeting was to be installed around the lagoon to enable excavation of the sludge within the lagoon. As previously discussed, the location of the sheeting was provided in Contract Drawings C-6 and C-8. The design parameters for the sheeting and the sheeting sealant were provided in Specifications Section 02210. Using these parameters, the Contractor was required to design the required sheeting. The Contractor was then required to submit the sheeting design deliverables, specified in Part 1.03 of Specifications Section 02210, to the Oversight Engineer.

Geosynthetics and Geomembranes

As discussed above, the remedy included installation of:

- a 40-mil HDPE geomembrane liner
- a 40-mil HDPE geomembrane cap; and
- a geocomposite drainage net.

Each of these synthetic layers were to be placed over the entire surface of the excavated lagoon. The vertical locations of these synthetic layers were identified in Contract Drawing C-13 The installation requirements for the geosynthetics and high density geomembranes, including provisions for testing, were identified in Specification Sections 02275 and 02277, respectively.

Restoration

The final grading and drainage plan was included in Contract Drawing C-12. This drawing provided the restoration details for the areas surrounding the lagoon. The specification for the seeding, topsoil and soil supplements were provided in Specification Section 02480 and the specification for pavement was provided in Specification Section 02513.

Air Sparge/Soil Vapor Extraction System

The layout of the air sparging wells and piping, ground water recovery wells and piezometer wells was provided in Contract Drawing No. C-9. The layout of the soil vapor extraction wells was provided in Contract Drawing No. C-10. Well details were provided in Contract Drawing C-14. The specifications for the piping were provided in Specification Sections 15072 and 15175. The specification for the concrete vaults, manholes and castings were provided in Specification 02601.

Storm Water Controls

The Final Grading and Drainage Plan was provided in Contract Drawing No. C-12 and storm water manhole details were provided in Contract Drawing No. C-17. The specification for the concrete vaults, manholes and castings were provided in Specification 02601. The specifications for the piping were provided in Specification Sections 15072 and 15175.

3.7 *RAIL TRANSPORTATION OF SOLIDIFIED SLUDGE*

Based upon community concerns and economic considerations, rail transport of the solidified lagoon sludge to the Chemical Waste Management Facility located in Port Arthur, Texas was selected. The Contractor was provided with a rail siding adjacent to the lagoon, which was constructed to connect the work area to the Metro-North Harmon Yard tracks. From the Yard, rail cars could be switched by Metro-North to a separate location for pick-up by Conrail freight trains. The specifications for rail transportation of the excavated sludge were identified in Specification Section 2850.

3.8 *REMOVAL OF OLD PLANT DEMOLITION DEBRIS*

The majority of the Old Plant was decommissioned and demolished by Metro-North personnel prior to remediation of the lagoon sludge and surrounding soils. Additional Old Plant structures were later identified for removal. Demolition and removal of the cofferdam and old piping in the lagoon, the Lagoon Transfer Pump Station and the remaining structures from the sludge drying beds, that were not removed by Metro-North forces, were removed as part of the implementation of the OU-I Remedial Design. The requirements for the demolition and removal of these Old Wastewater Treatment Plant components were provided in Specification Section 02050.

3.9 *SAMPLING AND DATA VALIDATION REQUIREMENTS*

Data validation requirements for the OU-I project were defined in the ERM's Field Sampling and Analytical Plan, dated 13 July 1994, and the Community Air Monitoring Plan (CAMP), dated 19 July 1994. Both ERM's

FSAP and CAMP were included as part of the NYSDEC-approved Final Design.

The FSAP identified the sampling requirements for the OU-I Remedial Action. According to the FSAP, the following sampling was to be conducted:

- sludge disposal facility acceptance sampling – excavation confirmation sampling required was not required since limits of sludge excavation based upon visual determination and documented through surveying;
- sludge container sampling after use, if required by container supplier;
- Zone A confirmatory sampling by the Consultant;
- Zone A container sampling after use, if required by container supplier;
- air monitoring in accordance with the CAMP;
- lagoon surface water sampling;
- decontamination washwater sampling; and
- disposal characterization of the waste materials (i.e., demolition debris, Zone A1 soil and miscellaneous debris) by the Contractor.

The above sampling is discussed in detail in the Hill's *Summary Report on Field Sampling and Analytical Programs* (SR-FSAP) provided as Appendix C of this report. ERM's Field Sampling and Analytical Plan also included the analytical Quality Assurance/Quality Control (QA/QC) procedures for the above samples and noted which samples required data validation. According to the FSAP, data validation **was not** required for:

- disposal facility acceptance sampling;
- waste characterization sampling;
- post-container use sampling; or
- water sampling.

Data validation was required for the Zone A confirmatory sampling conducted by the Consultant. As discussed in Section 3.2, the data validation results for the Zone A confirmatory samples are included in Appendix B.

The data validation indicated in the CAMP requires the evaluation of the air sampling data using the results of the quality control (QA/QC) samples collected. Pursuant to this requirement, all sampling/analytical events included QA/QC blanks. All analytical work was performed by Clayton Environmental Consultants, in their American Industrial Hygiene Association (AIHA) accredited laboratories. During the project, the laboratory results for the QA/QC blanks were evaluated by the Site Safety Officer relative to the laboratory results for the corresponding air sample media. All data that was recorded was blank corrected, as necessary. In addition, each analytical report included a QA/QC checklist. These checklists were evaluated in the field by the Site Safety Officer before final entry of the recorded data. The Hill Corporate Health and Safety Director (a Certified Industrial Hygienist) also provided periodic field inspections of the sampling processes (including field sampling equipment calibrations) and reviewed the CAMP analytical QA/QC data to ensure compliance with the NIOSH methodologies used. In addition, a formal site audit of the whole process was performed by the Hill International Corporate Health and Safety Director on August 10, 1995. This audit showed compliance with NIOSH and AIHA methodologies.

4.0 *CONTRUCTION ACTIVITIES*

As discussed above, the OU-I remedy included:

- Old Plant Decommissioning and Demolition; and
- Former Wastewater Equalization Lagoon Remediation, which includes the former lagoon and its associated pond.

The following sections document the construction activities conducted for the above OU-I remedial components.

4.1 *OLD WASTEWATER TREATMENT PLANT DECOMMISSIONING AND DEMOLITION*

4.1.1 *Pre-Demolition Sampling*

Prior to decommissioning and demolition, sampling of the Old Plant treatment units and structures was conducted. This sampling was conducted in two rounds: during the OU-I 1989 RI and in 1993, prior to decommissioning and demolition activities. The 1993 sampling was conducted in accordance with the *"Sampling and Decommissioning Plan for the Old Wastewater Treatment Plant"*, dated 11 August 1993. Sampling was conducted in the following areas:

- lagoon transfer pump station;
- coagulation and settling tanks;
- sludge drawoff building;
- sand filter building;
- carbon filter building; and
- sludge drying beds.

A variety of samples were collected from these structures and analyzed for PCBs and TCLP parameters. They included: concrete and wood chip samples, concrete core samples, carbon samples, soil samples and wipe samples. The sampling results from these areas were presented in the NYSDEC-approved *Decommissioning and Demolition Plan for the Old Wastewater Treatment Plant*, February 1994.

The concentrations of PCBs in all materials to be demolished and removed from the site: (1) ranged from non-detectable to 2.5 mg/kg in the destructive samples; and (2) were non-detectable in the wipe samples. Based on communication with the USEPA and NYSDEC, it was agreed that the Old Plant components were not subject to the TSCA Anti-Dilution Policy and therefore could be disposed of based upon their actual PCB concentrations.

All pre-demolition samples indicated that PCBs were not present in concentrations above the TSCA threshold level of 50 mg/kg. Therefore, decontaminating this material prior to off-site disposal was not required.

4.1.2 *Decommissioning and Demolition*

Although the Old Plant was not contaminated above acceptable levels, the equipment within the plant was decommissioned for operational reasons. Following training by ERM and EnviroClean, decommissioning and demolition of the Old Plant was conducted by Metro-North personnel in accordance with the NYSDEC-approved *Decommissioning and Demolition Plan for the Old Wastewater Treatment Plant*, dated February 1994 (DDP). This entailed:

- inspection for asbestos containing materials prior to any demolition activities;

- demolition of the lagoon transfer pump station and removal of equipment within the building;
- demolition of the wood superstructure overlying the coagulation and setting tanks and removal of equipment within the building;
- filling in the equipment pit located within the sludge drawoff building;
- demolition of the Sand Filter Building and removal of its contents; and
- demolition of the Carbon Filter Building and removal of the equipment located within this building with the exception of the carbon vessels.

Demolition work was conducted in the summer of 1994. All of the demolition debris that had been previously sampled was transported for off-site disposal as construction and demolition debris in accordance with RCRA Subtitle D disposal requirements.

During demolition, materials that had not been previously sampled were removed from the Old Plant. Rather than sampling these items to determine their PCB content, they were conservatively assumed to be PCB contaminated wastes. Additional detail regarding these materials is provided in the following section.

Following demolition, the only remaining components of the Old Plant were the Carbon Filter Building soil floor and the carbon vessels. The soil floor contained PCBs at concentrations below the OU-I surface soil cleanup level of 0.5 mg/kg and the carbon vessel samples contained non-detectable PCB concentrations. As such, both the vessels and the soil floor remained in place.

4.1.3 *Transportation and Off-Site Disposal*

Based on correspondence with US EPA and NYSDEC, it was determined that the Old Plant components were not subject to the TSCA Anti-Dilution

Policy and therefore could be disposed of based upon their actual PCB concentrations. Since PCBs were not present in concentrations above the TSCA threshold level of 50 ppm in the materials that comprised the Old Plant, this material was not subject to the TSCA disposal requirements. Similarly, none of the Old Plant components contained constituents in concentrations exceeding the TCLP regulatory limit or exhibited other RCRA hazardous waste characteristics. That is, the Old Plant materials were not a RCRA hazardous waste and were not subject to the RCRA hazardous waste disposal requirements. As such, all materials that were demolished and removed from the site as part of the Old Plant demolition were disposed of as construction and demolition (C&D) debris in accordance with RCRA Subtitle D waste disposal requirements. Approximately 30 dumpsters or roll-offs of debris were transported off-site for disposal.

In addition to those materials previously sampled, additional demolition debris was generated from Old Plant areas not previously sampled. These materials were conservatively assumed to be PCB contaminated wastes and were disposed of off-site accordingly. These PCB contaminated materials included:

- two, 55-gallon drums (estimated to be 880 lbs.) of spent bag filters and plumbing fixtures transported to the CWM Chemical Services, Inc., Model City facility for disposal; and
- 535 cubic yards of Old Plant demolition debris and expendables associated with the processing of sludge transported to the Envirosafe Services of Idaho, Inc. (ESII) facility in Idaho for disposal. Full documentation of shipments is located in Metro-North's files. An example of this documentation is presented in Appendix D. A summary of the manifests for this material is provided in Appendix D.

In addition, leachate stored in an underground storage tank in the former sludge drying beds was removed on 24 April 1995 and disposed of by AET, a Metro-North contractor, as a RCRA hazardous waste.

4.2 *REMEDIATION OF THE LAGOON AREA*

The Contract start date for the Site Work was 19 December 1994. Preparatory work was conducted during the winter of 1994/1995 and groundwork began in late February/early March 1995. Construction of the OU-I remedy was substantially complete on 3 May 1996, the contract end date. Other than Metro-North, the primary participants in the OU-I remedy were:

- Design Engineer: ERM
- Oversight Engineer: Hill International, Inc.
- Site Work Contractor: Ogden Remediation Services Corporation (ORSC)
- Off-Site Lagoon Sludge Disposal Contractor: Chemical Waste Management (CWM)
- NYSDEC Construction Oversight: Tom Lee, Dan Evans and Robert Kniezek
- NYSDEC Design Oversight: Jeff McCullough and Chittibabu Vasudevan

All activities were conducted under the oversight of Hill International (Hill) and NYSDEC construction oversight personnel.

4.2.1 *Site Preparation and Security*

Prior to construction, clearing and grubbing was conducted at the site in accordance with Specification Section 02110 and security measures were implemented at the site.

As part of site preparation, a rail spur was installed by Metro-North connecting the lagoon area to the main rail lines within Harmon Yard and to the Metro-North Hudson Line tracks. This work was conducted to enable the continuous transport of lagoon sludge via rail, from the Yard to the off-site TSCA and RCRA-permitted incinerator in Port Arthur, Texas.

4.2.2 *Sheeting*

As previously discussed, sheeting was to be installed around the perimeter of the lagoon, as noted in the Contract Drawings, to enable excavation of the sludge within the lagoon. Prior to sludge removal, sheeting was installed around the perimeter of the lagoon in accordance with the Design documents. As-built information for the sheeting is provided in Volume II, As-Built Drawings C-5, C-6 and C-7. Surveying data to support the preparation of the as-builts is provided in the Surveyor Drawings (see Volume II).

4.2.3 *Water Removal and Treatment*

4.2.3.1 *Lagoon Contents*

As discussed in Section 3.3, surface water located within the pond and lagoon was to be removed, stored and tested. The Oversight Engineer would then determine the need for treatment, as well as the disposal location based on the surface water sampling results.

In late May 1995, lagoon surface water was pumped to the pond located immediately adjacent to the lagoon. This intermediate storage was needed to proceed with the excavation of the lagoon sludge in a timely manner since delivery of the temporary water storage system had been delayed. Through the duration of the project, a total of approximately 127,400 gallons of lagoon/pond surface water was pumped into the temporary storage tanks for analysis, and treatment if necessary. Prior to transfer, baseline water samples were collected from the lagoon by Hill and analyzed for the Harmon Yard SPDES Outfall 001 permit parameters identified in Section 3.3.

The baseline samples results are presented in Table 3-2 of Hill's *Summary Report on Field Sampling and Analysis Programs* (SR-FSAP) provided as Appendix C of this report. As shown in this table, the untreated lagoon surface water exceeded the Outfall 001 permit limits for the 5 of the 13 parameters tested: total suspended solids, total PCBs, lead, zinc and magnesium. Consequently, Hill required that ORSC treat the lagoon surface water prior to its discharge to the Harmon Yard sanitary sewer outfall.

A temporary treatment system, consisting of filtration and carbon adsorption units was mobilized to the site. A total of 127,400 gallons of lagoon surface water was then treated in seven batches. Batch volumes ranged from 4,000 to 30,200 gallons. A summary of the individual batch volumes is presented in Table 3-3 of Hill's SR-FSAP (Appendix C).

Following treatment, each batch was sampled and then discharged to one of the two Metro-North WWTP Equalization Tanks for temporary storage. All water treated in this manner was accumulated in the Equalization Tanks until the end of the project, when the entire volume was discharged at one time. This WWTP Equalization Tank also accepts stormwater from the Yard. Once treatment was completed, the used bag filters were placed into a 55-gallon drum and disposed of as PCB contaminated waste at the CWM Chemical Services Model City, New York facility.

Table 3-3 of Hill's SR-FSAP (Appendix C), presents the post-treatment sampling results for each of the seven batches and Table 3-4 presents the post-treatment sampling results for the 127,400 gallons of the treated water that was collected in the WWTP equalization tank. Although an early composite sample, which represented the water quality to be discharged to the sewer, exceeded the permit limits for lead and magnesium, a subsequent sample of the 398,950 gallons of water in the equalization tanks after a period of normal operation of those tanks met the SPDES Outfall 001 permit limits. The treated lagoon water was subsequently deemed acceptable by Metro-North and the NYSDEC and was discharged to the Harmon Yard sanitary sewer Outfall 001.

In conclusion, the lagoon water met the performance standards prior to discharge to the sanitary sewer outfall in accordance with the design requirements and NYSDEC SPDES limits for Harmon Yard Outfall 001.

4.2.3.2 *Construction Dewatering Fluids*

The majority of the sludge which was removed from the lagoon in accordance with Specification Section 02205 was located above the water table but contained a relatively high moisture content. The limited amount of sludge that had been located below the water table was first moved to an area of the lagoon above the water table to remove some of the water content. All sludge removed from the lagoon was mixed with a solidification agent in accordance with Specification Section 022205, Parts 2.03 and 3.05. The solidification agent specified and used was a modified ground corncob reagent. The solidified mixture of sludge and solidification agent was then transferred to storage containers, which were then loaded onto rail cars for transport to an off-site incinerator. As a result, water entrained in the sludge removed from the lagoon was solidified with the sludge and incinerated at the TSCA and RCRA-permitted incineration facility in Port Arthur, Texas. Therefore, construction dewatering fluids, per se, were not generated during the sludge removal and loading activities.

4.2.3.3 *Decontamination Fluids*

In accordance with Specification Section 01715, wastewater generated during decontamination of construction equipment and tools was stored. Since a temporary water treatment system had been mobilized to the site for the lagoon surface water, the decontamination fluids were processed through the temporary water treatment system. Following treatment to meet the SPDES Outfall 001 permit limits, they were discharged to Outfall 001.

4.2.4 ***Excavation***

4.2.4.1 *Sludge*

In accordance with the Remedial Design, sludge was excavated from the lagoon horizontally to the sheeting and vertically based on visual determination by the Oversight Engineer. As previously discussed, the vertical extent of sludge was thought to be limited to the bottom-of-sludge contour surface shown on the Contract Drawings, for a total of 4,200 cubic yards (measured in-situ) based on the 1989 RI and the 1993 PTBP data.

During excavation, sludge was encountered in selected areas at depths significantly below the RI and PTBP bottom-of-sludge contour surface. These exceptionally deep sludge areas were referred to as sludge pockets. Figure 4-1 presents the locations of these sludge pockets superimposed onto the bottom-of-sludge contours derived based on the RI and PTBP data. The distance between the RI and PTBP sampling locations was limited (i.e., generally less than 40 feet between sampling locations) and the overall number of sludge depth measurements taken was considerable. Nevertheless, physical constraints (i.e., standing water, and unstable sludge surface) limited the ability to collect sludge depth information in certain locations. In addition, several of the sludge pockets were located in areas between the sample boring locations. The areas where sludge was found at depths greater than that indicated by the RI and PTBP data were located in these relatively limited inaccessible areas where sludge depths had not been measured. Excavation of these sludge pockets resulted in the removal of an additional 1,788 cubic yards (in-situ) of sludge.

As-built information for the sludge removal is provided in As-Built Drawings C-6, C-7 and C-8 (see Volume II). Surveying data to support the preparation of the as-builts is provided in the Surveyor Drawings (see Volume II). As discussed further in Section 4.2.9.1, in total, approximately 5,988 cubic yards of sludge was removed from the lagoon.

4.2.4.2 *Zone A*

As discussed in Section 3.2, additional delineation sampling was conducted after the Remedial Design was finalized to revise the extent of Zone A1 and A2 soil requiring removal. The revised extent of Zone A1 and A2 soil, identified in Figure 3-1, was provided to ORSC after mobilization. The revised volumes of Zone A1 and A2 soil were estimated to be 320 and 2,332 cubic yards, respectively.

As discussed in Section 4.2.9.3, prior to soil excavation ten grab samples were collected throughout Zone A1 soil, and analyzed for PCBs to confirm disposal requirements. Concentrations of PCBs in the disposal samples ranged from 0.6 to 13.2 ppm. Based on these results, the limits of Zone A1 and A2 soil excavation were refined to increase the limits of Zone A2 soil, and decrease the limits of Zone A1 soil accordingly. This revision to the Zone A1 and A2 limits was transmitted to NYSDEC in a 19 April 1995 letter. A copy of this letter is provided in Appendix E. Based on this final revision to the Zone A soil excavation limits, 108 cy of soil previously identified as Zone A1 soil were reclassified as Zone A2 soil. As a result, 212 cy of Zone A1 soil and 2,440 cy of Zone A2 soil were to be excavated. These design modifications were transmitted to Hill International and ORSC via Technical Advisory No. 3 (TA-3).

As-built information for the Zone A soil is provided in As-Built Drawings C-6 and C-8 (Volume II). Surveying data to support the preparation of the as-builts are provided in the Surveyor Drawings (Volume II). According to Hill's *Summary Report on the Disposition of Project Generated Waste*, dated 8 May 1996 (DPGW), 212 cubic yards of Zone A1 soil and 2,440 cubic yards of Zone A2 soil were excavated.

The Zone A2 soil was placed in the lined lagoon area, beneath the cap. Off-site transport and disposal of the Zone A1 soil is discussed in Section 4.2.9.

4.2.5 *Backfill Layers and Liner Systems*

In accordance with the Remedial Design and Technical Advisory No. 7, following removal of the lagoon sludge, the bottom of the lagoon was stabilized using stabilizing fabric and crushed stone (see Surveyor Drawing S-1, Volume II). The remaining native soil in the lagoon was regraded with the addition of some bank run gravel and compacted to form a stable, level surface within the steel sheeting area. A plan view showing the regraded lagoon bottom is provided in Surveyor Drawing S-2, Volume II.

A HDPE geomembrane liner was then installed over the lower backfill layer. The liner was then covered with a middle backfill layer, consisting of a one foot layer of clean fill overlain by an approximately 12-inch layer of Zone A2 soil, overlain by a two to five foot thick layer of uncontaminated backfill. As-built information for this work is provided in As-Built Drawings C-13, Volume II. Surveying data to support the preparation of the as-builts are provided in the Surveyor Drawings, Volume II.

4.2.6 *Ground Water Wells, Sparge and Venting Systems*

In accordance with the Remedial Design, piezometers and ground water recovery wells were installed within the remediated lagoon area. In addition to the wells, delivery piping for an air sparge/soil vapor extraction system, was installed within the remediated lagoon area. The piezometer wells and ground water recovery wells extend to the finished grade surface. The air sparging wells were installed in soil below the ground water table. The vacuum extraction system consisted of horizontal perforated pipes and connecting pipes. These pipes were installed in the gravel layer beneath the lower HDPE geomembrane liner discussed in Section 4.2.5. Pipes were installed from each air sparge well and vacuum extraction perforated pipe, to a central location at the perimeter of the remediated lagoon area. These pipes stub up through the final asphalt surface, and were capped. As-built information for the wells, sparge and vent systems and vaults is provided in As-Built Drawings C-9, C-10, C-14 and C-16 (Volume II). Surveying data to support the preparation of the as-builts are provided in the Surveyor Drawings (Volume II). These components were installed for potential future use, as requested by NYSDEC, should future remedial efforts be necessary to address the presence of petroleum constituents in soil and groundwater beneath the lagoon area.

4.2.7 *Cover*

In accordance with the Remedial Design, the middle backfill layer was overlain with an impermeable cover. This impermeable cover was comprised of an HDPE geomembrane cap, overlain by a geosynthetic drainage net and a drainage/barrier protection fill layer. Specifically, an HDPE geomembrane cap overlain by a geocomposite drainage net was installed over the middle backfill layer (see Section 4.2.5). A top backfill layer, consisting of a one foot thick sand drainage layer and one foot of clean backfill, was then installed over the drainage net. As-built information for the cover is provided in As-Built Drawing C-13 (Volume II). Surveying data to support the preparation of the as-builts are provided in the Surveyor Drawing S-7 (Volume II). In accordance with the Remedial Design, the HDPE geomembrane cap was field tested.

4.2.8 *Storm Water Controls*

In accordance with the Remedial Design, a riprap-lined drainage channel was installed along the northern edge of the asphalt cover. This channel collects surface water runoff from the paved lagoon. Water collected in this channel is then transported through a system of manholes and pipes to the existing Harmon Yard storm sewer system. As-built information for the storm water controls is provided in As-Built Drawing C-17 (Volume II). Surveying data to support the preparation of the as-builts are provided in the Surveyor Drawing S-9 (Volume II). Harmon Yard storm water is discharged to Croton Bay in accordance with the Harmon Yard SPDES Outfall No. 2 permit.

4.2.9 *Transportation and Off-Site Disposal*

The information contained in this section is based upon Hill's DPGW report (see Appendix F) and discussions between ERM and Hill. During remediation of the lagoon, two types of waste streams were generated for off-site disposal. They were:

TSCA Wastes

Lagoon Sludge

Lagoon Surface Water Treatment System Residuals

Spent Personal Protective Equipment from Sludge Handling Operations

Non-Hazardous Wastes

PCB Contaminated Soils (Zone A1 and A2)

Clearing, Grubbing, Construction and Demolition Debris

Spent Personal Protective Equipment

Spent Activated Carbon

Well Development Water, Equipment Decontamination Wash Water and Carbon Vessel Flushing Water

4.2.9.1 *TSCA Wastes*

Lagoon Sludge

As discussed in Section 4.2.4.1, 5,988 in-situ cubic yards of raw (unsolidified) sludge were removed from the lagoon. In comparison, the ex-situ raw sludge volume was 6,269 cubic yards. This 4.7% expansion following excavation is reasonable. The tonnage of ex-situ raw sludge removed from the lagoon was 8,013 tons. This translates to an ex-situ raw sludge density of approximately 1.28 tons per cubic yard.

In order to address the disposal facility's requirements, and ensure that the sludge was safe for transport from the site, the excavated sludge was solidified using a solidification agent (i.e., corncobs). Section

02205(3.05)(A)(2) of the Specifications required that 10 to 15 percent by weight of the solidification agent be added to the raw sludge. Approximately 1,009 tons of corncobs were added to the 8,013 tons of sludge. The resulting corncob to raw sludge weight ratio, 12.6%, was within the range provided in the design. In addition, another 237 tons of corncobs were placed loose in the transport rolloffs for contingency purposes. The final tonnage of the sludge/corncob mixture transported off-site for disposal was 9,259 tons (i.e., 8,013 + 1009 + 237 tons).

During the period May 1995 through November 1995, the 9,259 tons of solidified sludge were loaded into 454 intermodal roll off containers. (Intermodal containers, as used for this project, are capable of being transported on rail flatcars, and also on highway truck chassis.) The capacity of each container was 25 cubic yards. The containers were then loaded onto rail flatcars and transported via rail to the RCRA and TSCA-permitted Chemical Waste Management (CWM) facility located in Port Arthur, Texas for incineration.

As discussed in Section 4.1, the sludge quantity estimated in the bid documents for excavation and off-site disposal was 4,620 tons including corncobs. The ex-situ quantity of excavated sludge including corncobs (i.e., 9,259 tons) was greater than the original estimate. Change Order No. 1 was issued to ORSC in November 1995 to address these quantity changes and to facilitate completion of the remedial action. Change Order No. 1 estimated that the total solidified sludge quantity would be 9,338 tons. This estimate was corrected to the actual solidified sludge total, 9,259 tons in Change Order No. 3. Copies of these change orders, which are discussed in detail in Section 4.3 of this report, are presented in Appendix G. 9,259 tons, represents the total amount of sludge certified as destroyed by CMW, as per their CWM's invoicing.

Full documentation of shipments is located in Metro-North's files. An example of this documentation is presented in Appendix D. For purposes of this Closure Report, a summary of the solidified sludge shipment has been tabulated using Hill's manifest log. This tabulation, which is provided in Appendix D, contains the manifest number and the weight received at the disposal facility. Sludge volumes presented in the Appendix D sludge table are presented in 1,000 pound units and rounded to the nearest 100 pounds. Consequently, the total sludge volume provided in Appendix D, 9,242 tons, is slightly less than the sludge volume received by the disposal facility, i.e., 9,259 tons.

Lagoon Surface Water Storage Tank Residuals

During treatment of the lagoon surface water, settleable solids accumulated in the temporary treatment system primary storage tank. According to Hill's DPGW, approximately 5,000 gallons of this residual waste were removed from the tank and transported to the CWM facility located in Port Arthur, Texas for incineration as a PCB contaminated waste. This was an estimated amount based on the maximum size of the tanker truck used. The actual amount generated, as documented in the manifest (see Appendix D), was 13,846 kilograms.

Spent Personal Protective Equipment from Sludge Handling Operations

Personal Protective Equipment (PPE) generated during sludge handling operations was transported along with the solidified sludge to the CWM facility located in Port Arthur, Texas for incineration as a PCB contaminated waste. This material was disposed of with the sludge. As such, the manifests for the sludge include these materials.

4.2.9.2 *Non-Hazardous Wastes*

PCB Contaminated Soils (Zone A1 and A2)

As discussed above, 212 cubic yards of Zone A1 soils were removed from around the lagoon. Prior to disposal of the Zone A1 soil, ten grab samples were collected throughout the Zone A1 soil and analyzed for PCBs. Concentrations of PCBs in the disposal samples ranged from 0.6 to 13.2 ppm. The sample results were then transmitted to the NYSDEC and the proposed waste disposal facility, Browning Ferris Industries' (BFI) Niagara Recycling Inc. facility located in Niagara Falls, New York. This facility is a non-hazardous solid waste landfill. Approval to land dispose the Zone A1 soil at the proposed facility was granted by NYSDEC and BFI. All 212 cubic yards of Zone A1 soil, weighing 318 tons, were subsequently transported to the BFI Niagara Recycling Inc. facility located in Niagara Falls, New York for land disposal. Approximately 232 tons of clearing and grubbing materials were also disposed of along with the Zone A1 soil. Thus, the total amount of material disposed of at the BFI Niagara Recycling Inc. facility was 550 tons. A summary of manifests for the Zone A1 soil and the clearing and grubbing materials is provided in Appendix D. This summary includes the manifest number and the weight received at the disposal facility.

In addition to the ten soil samples, a composite soil sample was originally obtained from the Zone A1 soil by ORSC and analyzed for PCBs. This composite sample exhibited a PCB concentration of 63 ppm. Based on the previous sampling results, this sample result was considered to be erroneous and the more comprehensive sampling discussed above was used to determine disposal requirements.

Additional discussion regarding disposal sampling and disposition approvals are contained in Hill's SR-FSAP report (Appendix C).

As discussed in Section 4.2.4.2, the Zone A2 soil was placed between the lagoon liner and lagoon cap. In accordance with the Performance Standards discussed in Section 3.0, none of the Zone A2 soil contained PCBs in concentrations exceeding 10 ppm, the NYSDEC maximum allowable concentration for soil placed beneath the cap.

Clearing and Grubbing and C&D Debris

Debris removed from Zone A soil areas during clearing and grubbing operations was also segregated and disposed of as non-hazardous wastes. A total of 232 tons of debris from these areas were combined with the Zone A1 soils and transported to the BFI Niagara Recycling Inc. facility located in Niagara Falls, New York for disposal as non-hazardous, non-TSCA regulated waste. These materials were disposed of off-site along with the Zone A1 soil. A summary of the manifests for the Zone A1 soil and clearing and grubbing materials is provided in Appendix D. This summary includes the manifest number and the weight received at the disposal facility.

In addition, according to Hill's DPGW report (Appendix F), 520 cubic yards of assorted C&D debris, including clearing and grubbing materials from the uncontaminated areas, were disposed of from March 1995 through March 1996. Following preparation of Hill's report, an additional 30 cubic yards of C&D debris was disposed of off-site.

Spent Activated Carbon

As discussed above, the temporary water treatment system used to treat the lagoon surface water contained carbon adsorption vessels. The spent activated carbon contained in these carbon vessels therefore required disposition. Prior to disposal, grab samples were collected from each of the three carbon adsorption vessels used to treat lagoon and pond surface water (see Section 4.2.3.1) and analyzed for TCLP parameters, PCBs and flash point.

According to Hill's SR-FSAP report (Appendix C), none of the TCLP parameters were present at concentrations above their TCLP limits, PCBs were not detected, and the flash point was acceptable(i.e, higher than the RCRA threshold for ignitable hazardous waste). As such, the spent carbon was not subject to RCRA hazardous waste or TSCA disposal requirements. The carbon was then removed from the carbon adsorption vessels, loaded into a roll-off and transported to the CWM Inc. Model City Landfill, located in Model City, New York for land disposal as a non-hazardous waste.

<u>Well Development, Equipment Decontamination & Carbon Flushing Water</u>

During the remedial action , the following quantities of construction wastewater were generated:

- 200 gallons of well development water generated during installation of the air sparge wells and piezometers;
- 400 gallons of wastewater generated during the flushing of the spent activated carbon vessels used in the temporary lagoon and pond surface water treatment system; and
- 100 gallons of decontamination water, generated during decontamination of the construction equipment and temporary lagoon and pond surface water treatment tank (Note: other decontamination water was processed through the temporary water treatment plant prior to its decontamination).

This water was discharged to the Metro-North's on-site wastewater treatment plant (referred to in Section 2.0 as the New Treatment Plant) for treatment and discharge. All three streams were individually tested for PCBs and found to have non-detectable concentrations of PCBs prior to discharge to the Metro-North treatment plant.

Spent Personal Protective Equipment

PPE generated during the above activities (i.e., non-hazardous waste handling and disposal) were disposed of along with the corresponding waste.

4.2.10 *Worker Health and Safety*

Real time air monitoring was conducted during the Site work for respirable particulates, VOCs, explosive gases, carbon monoxide and hydrogen sulfide. This information was recorded in the daily log by the Site Safety Officer (SSO). When elevated readings of VOCs were observed, draeger tubes for PCE, toluene, xylene and ethylbenzene were used to obtain direct readings. (SR-FSAP; May 1996)

Level 'C' action levels were exceeded on three occasions during sludge handling; however, there was no need to upgrade protection since the workers in the Exclusion Zone and downwind were already in Level 'C' clothing.

Personal air sampling for PCBs and VOCs was conducted during excavation and handling of the soil and sludge containing PCBs. This was accomplished by fitting select personnel with an air sampling pump for the duration of the activity. Personal action levels were never exceeded. A summary of the personal air sampling analytical results and their corresponding action levels is presented in Appendix 5 of to Hill's SR-FSAP (Appendix C).

4.2.11 *Site Equipment Decontamination*

According to Hill's SR-FSAP report (Appendix C), all equipment, tools and containers previously in contact with sludge were decontaminated in accordance with the Contract Specifications and the subsequent revision to the PCB decontamination standard. In order to be consistent with the PCB decontamination standard of 10 $mg/100\ cm^2$ provided in 40CFR761.125(c)(4), the PCB decontamination standard for equipment, tools and containers was increased from 1 $mg/100\ cm^2$ to 10 $mg/100\ cm^2$. The decontamination results are provided in Section 7.0 of the SR-FSAP (Appendix C).

4.2.12 *Community Air Monitoring*

Real time air monitoring and stationary air sampling was conducted at the perimeter of the Site in accordance with the *Community Air Monitoring Plan* (ERM; 19 July 1994). The *Community Air Monitoring Plan* (CAMP) was developed by Metro-North with considerable input and support from the Harmon Rail Yard PCB Lagoon Citizen's Monitoring Committee, a local community environmental group formed to monitor remedial activities at the Site.

Stationary air sampling was conducted prior to and during construction related activities related to the remedy. Eight -hour air samples were collected on a daily basis for respirable dust, PCBs and VOCs. During stationary air monitoring, the action levels were never exceeded. A summary of the stationary community air sampling results and the corresponding action levels is presented in Appendix 6 of the SR-FSAP (Appendix C). The action levels presented in Appendix 6 of the SR-FSAP represent the difference between the upwind and downwind readings.

Real time air monitoring for dust and VOCs was conducted four times daily at four pre-determined upwind and downwind locations immediately outside the perimeter fence until installation of the cap was completed. Readings were collected at 5, 10, 15 and 20 feet above grade. (SR-FSAP; May 1996) Members of the Harmon Rail Yard PCB Lagoon Citizen's Monitoring Committee periodically visited the Site during construction and reviewed the results of the real time and stationary air sampling. Their review of the data, reported during the 1998 public meeting for the Harmon Yard Operable Unit II Site, confirmed that neither real time air monitoring nor stationary air sampling data exceeded the action levels defined in the CAMP.

4.3 *CHANGE ORDERS*

During the project, change orders were executed for the Remedial Contractor's Contract and the Disposal Facility's Contract. The cost implications of the change orders are discussed in Section 7.0.

Three change orders were issued to the Remedial Contractor, ORSC and one change order was issued to the Disposal Facility. These change orders, which are discussed below, addressed changes to the Remedial Design that were found to be necessary during implementation of the remedial action. The largest and most profound changes were associated with the unanticipated additional sludge volumes excavated and sent off-site for disposal. Detailed correspondence was transmitted to NYSDEC regarding these three change orders.

<u>ORSC Change Order No. 1</u>

This Change Order addressed increases in the unit quantities resulting from the increase in the volume of sludge requiring excavation for the following items: excavation/solidification; bulk loading of roll offs; roll off leasing; and roll off transport to the TSDF.

As part of the Remedial Design, the volume of sludge present within the lagoon and pond was determined using the sludge thickness measurements collected during the RI and Pre-Design Test Boring program along with the survey of the horizontal limits of the lagoon and pond. Using this information, an in-situ raw sludge volume of 4,200 cubic yards (cy) was estimated. The sludge quantity was then estimated to be 4,620 tons using a sludge density of 1 ton/cubic yard and a 10% weight increase for the addition of the solidification agent (i.e., 4,200 cy x 1 ton/cy x 1.1).

Based on a number of factors, the actual amount of sludge removed from the site totaled 9,259 tons. {Note: Change Order No. 1 originally estimated the final sludge amount to be 9,338 tons. This volume was later revised to reflect the actual final volume of solidified sludge, i.e., 9,259 tons.}

Upon review, four factors were determined to have resulted in the increase in the sludge quantity from the design estimate:

- the presence of additional sludge requiring excavation in deep pockets;
- the need for additional corncobs for the additional sludge removed;
- a higher sludge density than estimated in the Remedial Design; and
- the need for additional corncobs for the denser sludge.

These items and their impact on the final ex-situ sludge quantities are discussed below.

During the Remedial Action, sludge pockets requiring excavation were encountered. Sludge excavation of these pockets was therefore conducted. In total, it has been estimated that an additional 1,788 cys of sludge was excavated from the sludge pockets, increasing the total in-situ sludge volume from 4,200 cys to 5,988 cys. The volume of the sludge pockets was estimated using the final and design elevations and the pocket areas.

When the sludge was removed from the lagoon, it expanded or fluffed up. This expansion resulted in an increase in the ex-situ sludge volume from the in-situ volume. An expansion of approximately 4.7% was observed. As a result, the in-situ sludge volume (i.e., 5,988 cy) increased to an ex-situ sludge volume of approximately 6,269 cy.

The RI/FS and bidding documents assumed a sludge density of 1 ton/cy. The actual ex-situ sludge density actually higher, approximately 1.28 tons/cy. Based on the actual ex-situ density, the ex-situ sludge volume of 6,269 cy translated to an ex-situ sludge quantity of 8,013 tons.

The sludge quantity was further increased by the addition of corncobs. This material was added, in accordance with the OU-I bid documents to reduce the moisture content of the sludge. In total, 1,246 tons of corncobs were added to the excavated sludge. This corresponded to a weight ratio of corncobs to sludge of 12.6%. This ratio was within the design criteria of 10 to 15%. The addition of the corncobs increased the sludge volume to 9,259 tons.

<u>ORSC Change Order No. 2</u>

This Change Order provided a time extension to extend the Contract completion date through May 3, 1996. A copy of this Change Order is provided in Appendix G.

ORSC Change Order No. 3

This Change Order included a final reconciliation of all quantities estimated in the original Contract, and other work tasks that were not included in the original Contract. Some quantities increased and some quantities decreased. As noted above, the final sludge quantities were reconciled in this Change Order. Items adjusted through this Change Order included: contract delays, additional roll-off rental time , storage and treatment of lagoon surface water, revisions to the installed elevation of the storm sewer and implementation of revised sludge loading procedures. A more detailed description of this change order is provided in an internal Metro-North memo from M. L. Mehta to J.V. Buckley, dated 3 May 1996 (see Appendix G).

Three Change Orders and a Final Change Order were executed for the Disposal Facility's Contract. Change Order Nos. 1 and 2 addressed increases in the disposal quantities. Change Order No. 3 provided a no cost, time extension for the contract. A Final Change Order was then executed at the end of the contract to reconcile the disposal quantities.

4.4 *COMMUNITY PARTICIPATION*

Community participation efforts by NYSDEC and Metro-North began in February 1992 and ended in September 1996 when a ceremony was held at the Site to mark the final closure of the Harmon Yard lagoon and the completion of the Harmon Yard OU-I project. These efforts began with a proposal for on-site incineration of lagoon sludge containing PCBs. This proposal faced strong opposition from the community. The NYSDEC and Metro-North responded with a number of meetings, availability sessions and other efforts to include the public in the final decision. These efforts were instrumental in developing an alternate remedy that included the off-site incineration of lagoon sludge containing PCBs. This remedy was acceptable to the community, NYSDEC, and Metro-North.

As part of the project, Metro-North prepared a *Citizen's Participation Plan* dated 15 July 1994 that defined the citizen participation efforts for the implementation of the remedy selected by the NYSDEC for the Harmon Yard OU-I project. The *Citizen's Participation Plan* also defined the citizen participation efforts for the RI/FS and Record of Decision phases of the Harmon Yard OU-II project. With respect to the OU-I citizen participation efforts, Metro-North also worked very closely with a group of individuals appointed by the Village of Croton-on-Hudson and the Village of Ossining. The group was known as the "Harmon Rail Yard PCB Lagoon Citizen's Monitoring Committee" or the "Ad Hoc Committee on the Metro-North PCB Lagoon" (i.e., the "Committee").

The community participation efforts expended by the NYSDEC and Metro-North for this project were thorough. The level of effort was appropriate based on the strong public opposition to the initial on-site incineration proposal and the subsequent attention the project received. The NYSDEC and Metro-North were able to form a strong working relationship with the Committee and with other members of the community. These efforts were instrumental in changing the public opposition expressed during the early stages of the OU-I project to the following statement of support made by Daria Gregg, a member of the Committee, during the 25 February 1999 public meeting for the OU-II Proposed Remedial Action Plan (see OU-II ROD Responsiveness Summary, page 2):

> *"Metro-North was open to the citizen's group and the group was successful in assuring that their needs and concerns were met. Metro-North did a very good job working with the citizens, responding to their concerns and doing some*

extra things that they were not required to do. Metro-North and New York State Department of Environmental Conservation (NYSDEC) are to be commended on a very good job."

The working relationship that the NYSDEC and Metro-North developed with the community was successful in resolving a number of issues raised by the community during the course of the project. A chronology of the citizen participation efforts undertaken by the NYSDEC and Metro-North for the project and the participation of the community is provided on Table 4-1. The following is a summary of the key issues raised by the community and the manner in which they were resolved.

<u>Traffic</u> Access to Harmon Yard by vehicle at the time of the OU-I remedy was severely limited. The old Croton Avenue Bridge, which has since been replaced, could not support the trucks that would be needed to transport the soil and sludge from the lagoon. The only alternate was through the adjacent Half Moon Bay condominium. Use of this route would have interfered with emergency and other traffic to the Half Moon Bay condominium and the residents opposed the movement of trucks through their neighborhood. In response, Metro-North investigated the feasibility of transporting waste materials from the OU-I remedy, primarily sludge, by rail. This approach was incorporated in the final design and used as the transportation method during construction.

<u>Air Monitoring</u> The numerous concerns raised by the community to monitor the air leaving the Site for the presence of Site-related chemicals were addressed with a comprehensive *Community Air Monitoring Plan*, or CAMP (ERM; 19 July 1994) that included real-time air monitoring and confirmatory laboratory analysis of air samples. Dust levels and organic vapor concentrations were monitoring several times each day using real-time air monitoring instruments. Air samples collected at the perimeter of

the Site were analyzed in an off-site laboratory for PCBs and petroleum-related organic compounds. An innovative design using 20 foot high PVC poles and plastic tubing allowed the Site Safety Officer to quickly collect real-time air monitoring readings at heights of 10 feet, 15 feet and 20 feet above the ground surface from a position at the base of the pole. Air sampling and monitoring points at the perimeter of the Site were located to address specific receptors in response to requests from the Committee.

The Committee approved this plan and monitored its implementation. The Committee concluded at the end of the project that its review of the data demonstrated that the action levels defined in the CAMP for all air quality parameters had never been exceeded.

<u>Coordination with Croton Point Landfill Remediation</u> The Croton Point Landfill is a closed municipal solid waste landfill adjacent to Harmon Yard. The landfill is a U.S. Environmental Protection Agency (USEPA) superfund site that was scheduled for remediation at the time the OU-I remedy was completing the planning stages. The community was concerned that the truck traffic that would result if both projects were undertaken simultaneously would pose unnecessary hazards. NYSDEC and Metro-North coordinated to schedule the projects separately, to the extent possible. The use of rail cars to remove OU-I sludge, discussed above, also alleviated the concerns from the community regarding traffic.

<u>Independent Construction Oversight</u> The Committee was concerned that decisions regarding the need for corrective actions to respond to deteriorating air quality would be made by the contractor, who would have a financial incentive to avoid implementing these corrective actions. Metro-North structured the work in such a manner that the construction oversight consultant reporting to Metro-North would make decisions regarding the need for corrective actions. Metro-North entered into a

separate contract with Hill International, Inc. to provide these independent construction oversight services. The Committee was satisfied that there were no financial or other incentives that would cause Hill International to unnecessarily delay the implementation of corrective action measures, if needed. Metro-North's consultant, Hill International, developed a good working relationship with the Committee and assisted them in their survey of the Site work and their review of the air monitoring data.

<u>Wastewater Discharges</u> The Committee was concerned that wastewater from the lagoon (i.e., standing water in the lagoon prior to remediation and decontamination wash waters) would not be properly treated before discharge from the OU-I Site to the Hudson River. Metro-North responded by agreeing to treat all wastewater discharged from the OU-I Site to the Hudson River to the concentration limits defined in the NYSDEC State Pollution Discharge Elimination System (SPDES) permit for the Harmon Yard wastewater treatment plant. The Committee agreed to this approach.

Finally, the NYSDEC and Metro-North transmitted copies of all key project documents to the following repositories:

Croton-on-Hudson
Village Hall
Van Wyck Street
Croton-on-Hudson, NY 10520
Attention: Richard Herbek

Croton Free Library
171 Cleveland Drive
Croton-on-Hudson, NY 10520
Attention: Chief Librarian

Ossining Library
53 Croton Avenue

Ossining, NY 10562
Attention: Chief Librarian

New York State Department of Environmental Conservation
Region Three
21 South Putt Corners Road
New Paltz, NY 12561
Attention: Erin O'Dell-Keller

New York State Department of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7010
Attention: Jefrey McCullough

Copies of key project documents were made available to the community at these repositories.

5.0 *FINAL INSPECTION AND CERTIFICATION*

A pre-final inspection was conducted on 26 April 1996 with a final inspection on 3 May 1996. In attendance at this meeting were representatives from Hill, Metro-North, ERM, NYSDEC, and ORSC. Prior to this meeting, potential punch list items were identified. The punch list noting deficient items was then finalized during the pre-final inspection.

Punch list items included:

- submittal of record drawings and warranty information;
- grouting and repairing existing wells;
- fence repairs;
- removal of excess materials, dumpsters, temporary trailer, utilities; and
- repairing bare seeded areas and topsoil.

Based on the pre-inspection findings and resolution of the punch list items, the contract work was determined to be substantially complete by Metro-North. A final inspection was conducted on 3 May 1996. Hill and NYSDEC were present at this final inspection. Although all of the punch list items were not addressed by the time of the final inspection, a follow-up inspection was not deemed to be necessary. The remaining punch list items were completed that day. Signatures from all required Metro-North personnel certifying substantial completion of work were received by 8 May 1996.

Construction Certification is provided on the following page.

All waste manifests and certificates of destruction were submitted to NYSDEC during the Remedial Action.

METRO-NORTH RAILROAD COMPANY
HARMON YARD OPERABLE UNIT I
CROTON-ON-HUDSON, NEW YORK
CONSTRUCTION CERTIFICATION

Hill International, Inc, a wholly owned subsidiary of Hill International, Inc., certifies that:

- Hill International, Inc. under Contract 9189, "Construction Supervision and Inspection" was onsite full-time to inspect the implementation of the Harmon Yard Operable Unit I construction remedy, performed by the remediation contractor Ogden Remediation Services, Inc.
- During April 2000, Hill Environmental reviewed Volumes I and II of the Operable Unit I Closure Report (the Closure Report).
- During April 2000, Hill Environmental reviewed the project files developed during 1995 through 1996 to evaluate if the Closure Report represents the as-built conditions of the selected remedy.
- Based on Hill International's oversight of the implementation of the remedy and Hill Environmental's current review of the project files, the implementation of the construction remedy was (a) performed by Ogden Remediation Services, Inc., as described in the Closure Report and (b) the constructed remedy was in accordance with Contract Documents, with the exception of variations or non-compliances that are described in the Closure Report.

Signature: Jose A. [signature]

Jose A. Diaz, P.E.
Project Manager
Hill Environmental, Inc.

New York State Professional Engineer License No. 59093

Date: December 22, 2000

6.0 *OPERATION AND MAINTENANCE*

As discussed in this document, the OU-I remedy entailed demolition of the Old Plant and excavation of the former wastewater treatment plant lagoon. There were no OU-I remedy components requiring operation. Maintenance of the following features is however needed for the successful implementation of the Remedial Program:

- Asphalt cover over the geocomposite cap;
- Vegetated slopes around the asphalt cover;
- Drainage channel; and
- Perimeter fencing.

Maintenance of these features is discussed in the Operable Unit I Operations & Maintenance (O&M) Plan, Harmon Railroad Yard, Croton-On-Hudson, New York, dated 7 July 1999, prepared by ERM and approved by NYSDEC.

Installation of the air sparge/SVE system was not part of the OU-I remedy since this system was installed to address soil and ground water beneath the lagoon. As such, operation and maintenance of the air sparge/SVE system is not addressed in the OU-I O&M Plan.

7.0 *SUMMARY OF COSTS*

A summary of the original cost estimates, change orders and final remedial costs is provided in Table 7-1. As shown in this table the ORSC and CWM contract costs changed considerably during implementation of the remedy. The majority of the increase in their contract prices was related to excavation and off-site disposal of the additional lagoon sludge found in the deep sludge pockets.

TABLES

Table 1-1

OU-I Contract Drawings and As-Builts
Harmon Railroad Yard, Operable Unit I
Metro-North, Croton-on-Hudson, New York

DRAWING NAME	NO.	DATE
As-Built Construction Drawings (1)		
Title Page		5/3/96
Existing Plan Harmon Railroad	C-1	5/3/96
Existing Site Plan, Survey and Erosion Control	C-2	5/3/96
Clearing and Grubbing, New Fencing	C-2A	5/3/96
Existing Utility Information	C-3	5/3/96
Soil Erosion and Sedimentation – Notes and Details	C-4	5/3/96
Existing Lagoon Cross-Sections	C-5	5/3/96
Horizontal Extent of Lagoon Sludge and Contaminated Soil	C-6	5/3/96
Existing Profile at Sludge Perimeter and Sheeting Details	C-7	5/3/96
Vertical Extent of Lagoon Sludge and Contaminated Perimeter Soil Excavations	C-8	5/3/96
Layout of Air Sparging Wells and Piping, Ground Water Recovery Wells and Piezometer Wells	C-9	5/3/96
Layout of Soil Venting Piping	C-10	5/3/96
Rough Grading Plan for Geomembrane Cap	C-11	5/3/96
Final Grading and Drainage Plan	C-12	5/3/96
Final Lagoon Profiles	C-13	5/3/96
Well Details	C-14	5/3/96
Miscellaneous Civil Details	C-15	5/3/96
Total Fluids Recovery Details	C-16	5/3/96
Storm Sewer Manhole Details	C-17	5/3/96

(1) ERM prepared all Contract Drawings. ERM's Contract Drawings were then utilized by ORSC as base maps for the Record Drawings. All As-Built Notations were made by ORSC.

Table 1-2

OU-I Surveyor Drawings of Constructed Conditions
Harmon Railroad Yard, Operable Unit I
Metro-North, Croton-on-Hudson, New York

DRAWING NAME	NO.	DATE
Surveyor Drawings (as provided by ORSC)		
Plan View Shooting Top of Stabilized Lagoon Bottom	S-1	10/11/95
Plan View Showing Top of Bank-Run Gravel @ +/- 8.5 MSL	S-2	10/11/95
Plan View Showing Top of Bank-Run Gravel @ +/- 10.0 MSL	S-3	10/17/95
Plan View Showing Top of Bank-Run Gravel @ +/- 12.0 MSL	S-4	10/19/95
Plan View Showing Top of Bank-Run Gravel @ +/- 13.0 MSL	S-5	10/24/95
Plan View Showing Top of A2 Soil @ +/- 14.0 MSL	S-6	11/10/95
Plan View Showing Bank Run Gravel Over A2 Soil	S-7	11/20/95
Plan View Showing Winter Shutdown – 12/95	S-8	1/10/96
As-Built – Final Grading & Drainage of the Harmon Lagoon Remediation	S-9	4/29/96
As-Staked Condition and Monitoring Wells and Borings	S-10	3/30/95
As-Staked Condition and Monitoring Wells and Borings	S-11	4/7/95

TABLE 2-1

REAL TIME AIR MONITORING ACTION LEVELS

SUBSTANCE	ACTION LEVEL[1]	REQUIRED RESPONSE
Respirable Particulate	150 ug/m^3 (downwind) 100 ug/m^3 (differential)	If downwind stationary air monitoring results are greater than 150 ug/m^3, upwind respirable particulate levels will be measured immediately. If downwind real time monitoring readings are 100 ug/m^3 higher than the upwind concentrations, upwind and downwind real time monitoring for respirable particulate will be repeated immediately. If this second round of downwind real time monitoring readings continues to be 100 ug/m^3 higher than the upwind concentrations, stationary air monitoring will be extended (or re-instituted) for an additional two days, remediation work will be temporarily halted and the corrective actions discussed in Section 3.0 will be implemented. Refer to Section 2.4.1.
VOCs[2]	5 ppm (differential)	If this VOC level is exceeded, real time monitoring for VOCs will be repeated immediately. If these downwind real time monitoring readings continue to be more than 5 ppm higher than upwind concentrations, stationary air monitoring will be extended (or re-instituted) for an additional two days, remediation work will be temporarily halted and the corrective actions discussed in Section 3.0 will be implemented. Refer to Section 2.4.2.
PCBs	1.0 ug/m^3	Real time PCB limits will be measured as a function of respirable particulate. See note (3), below.

Notes:

Units:

ug/m^3 - micrograms per cubic meter

ppm - parts per million

1. If real time air monitoring action levels are exceeded and corrective actions are implemented, the event, including corrective actions, will be noted in the Community Air Monitoring log book and the on-site NYSDEC representative will be notified. Downwind and upwind concentrations will be calculated as the arithmetic average of the real time monitoring equipment readings from recorded downwind and upwind of the Site. The downwind and upwind locations will be identified based on the prevailing wind direction as measured by the meteorological monitoring (e.g., wind sock, fluorescent orange ribbons, etc.) performed during the period the real time monitoring reading was recorded.
2. The real time air monitoring action level for VOCs (see Table 2-3) is established as 5 ppm, measured as the difference between downwind and upwind concentrations. This level was established based on a recommendation provided by the NYSDOH in their 4 May 1993 comment letter to the NYSDEC regarding the RD/RA Work Plan.
3. The real time PCB action level of 1.0 ug/m^3 will be measured by real time monitoring of respirable particulate. Section 2.4.3 describes the assumptions and calculations used to determine that PCB concentrations will not exceed 1.0 ug/m^3 if differential respirable particulate levels do not exceed 1,000 ug/m^3. This is based on a worst case assumption that the concentration of PCBs in respirable particulate will be equal to the highest concentration of PCBs detected in Site soil or sludge of 950 ppm. As a result, maintaining (i.e., does not exceed) the real time differential action level for respirable particulate of 100 ug/m^3 defined above will limit the potential concentration of PCBs in air to 10 % or less of the 1.0 ug/m^3 PCB action level.

TABLE 2-2

STATIONARY AIR MONITORING ACTION LEVELS

PARAMETER	ACTION LEVEL[1]	RESPONSE
Respirable Particulate[2]	150 ug/m^3	If downwind stationary air monitoring results are greater than 150 ug/m^3, upwind respirable particulate levels will be measured immediately. If, as defined in Table 2-3, two rounds of downwind real time monitoring readings exceed upwind readings by more than 100 ug/m^3, stationary air monitoring will be extended (or re-instituted) for an additional two days, remediation work will be temporarily halted and the corrective actions discussed in Section 3.0 will be implemented. Refer to Section 2.4.1.
VOCs Toluene[3] Xylene[3] Ethylbenzene[3] Tetrachloroethylene[3]	 89,000 ug/m^3 100,000 ug/m^3 100,000 ug/m^3 81,000 ug/m^3	If the average downwind concentration of any of the four VOCs exceed the stationary air monitoring action level, stationary and intensive real time air monitoring will be extended (or re-instituted) for an additional two days, remediation work will be temporarily halted and the corrective actions discussed in Section 3.0 will be implemented. Refer to Section 2.4.2.
PCBs[4]	1.0 ug/m^3	If the average downwind PCB concentration exceeds 1.0 ug/m^3, stationary and intensive real time air monitoring will be extended (or re-instituted) for an additional two days, remediation work will be temporarily halted and the corrective actions discussed in Section 3.0 will be implemented. Refer to Section 2.4.3.

Notes:

Units:

ug/m^3 - micrograms per cubic meter

ppm - parts per million

1. Action levels are based on potential exposures for an average eight hour day. If stationary air monitoring action levels are exceeded and corrective actions are implemented, the event, including corrective actions, will be noted in the Community Air Monitoring log book and the on-site NYSDEC representative will be notified. Downwind and upwind concentrations will be calculated as the arithmetic average of the analytical results from stationary air monitoring samples collected from equipment located downwind and upwind of the Site. The downwind and upwind locations will be identified based on the prevailing wind direction as measured by the meteorological monitoring performed on the day the sample was collected.
2. NYSDEC Technical and Administrative Guidance Memorandum (TAGM; HWR-89-4031) dated 10/27/93 regarding "Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites" identified a primary standard (USEPA ambient air quality standard) for respirable particulate of 150 ug/m^3 over a 24 hour averaging time. For this Community Air Monitoring Plan an averaging time of eight hours has been selected. Since a shorter averaging time is being used, an action level of 150 ug/m^3 for respirable particulates is conservative. See Section 2.4.1.
3. These are the NYSDEC Short term Guideline Concentrations (SGCs) for toluene, xylene, ethylbenzene and tetrachloroethylene. SGCs are defined in the 1991 Draft NYSDEC Air Guide-1 (Guidelines for the Control of Toxic Ambient Air Contaminants).
4. This is the action level for PCBs recommended by the NYSDOH in its comment letter of 4 May 1993 to the NYSDEC regarding the RD/RA Work Plan. The NYSDOH 4 May 1993 comment letter was transmitted to Metro-North with NYSDEC comment letter on the RD/RA Work Plan of 3 June 1993.

Chronology Of NYSDEC and Metro-North Community Participation Efforts
Harmon Railroad Yard, Operable Unit I
Metro-North, Croton-on-Hudson, New York

Date	*Description of NYSDEC and Metro-North Community Participation Efforts*	*Type*
2/27/92	A public meeting was held at the Village of Croton-on-Hudson Municipal Building to present the NYSDEC *Proposed Remedial Action Plan* (i.e., the "PRAP") to the public and to solicit comments. At this time, the NYSDEC recommended that soil and sludge containing PCBs be incinerated on-site. The community voiced strong opposition to this proposal during the meeting and in subsequent comments submitted to the agency. Approximately 100 people attended this meeting.	public meeting
4/23/92	The League of Women Voters sponsored a public forum on the OU-I remedy recommended by the NYSDEC (i.e., on-site incineration). The community again expressed strong opposition to the proposed on-site incineration remedy. Approximately 500 people attended this meeting.	public forum
5/6/92	The NYSDEC sponsored an availability session at the Croton Municipal Building to make documents available to the community and to provide an opportunity for members of the community to speak directly with NYSDEC and Metro-North staff. Approximately 200 people attended these availability sessions.	public availability session
6/30/92	The NYSDEC distributed a letter to the residents of Croton and Ossining announcing the agency's decision to select off-site incineration of sludge and soil containing PCBs to be removed from the Site. The letter is from Bruce Bentley, Citizen's Participation Section, NYSDEC Division of Hazardous Waste Remediation.	letter
9/17/92	The NYSDEC issued a Record of Decision (ROD) for the OU-I Site that selects off-site incineration of PCB soil and sludge.	Record of Decision
10/19/92	The NYSDEC distributed a Notice of Availability to the community announcing the OU-I ROD that was signed on 9/17/92.	notice
1/14/93	A Committee formed by the Village of Croton Mayor from residents of the surrounding communities met with representatives of Metro-North and their consultant, ERM-Northeast, to discuss the OU-I project. The purpose of the meetings was to discuss the key issues that were identified in a November 1992 letter from a another citizen group, StopIt. The key issues addresses were: • The need to develop a reasonably accurate estimate of the quantity of material to be removed and the duration of the project. • The need for air monitoring to protect the community was discussed. • The manner in which wastewater would be handled and the need to cover waste material during transportation was discussed. • The need to continue to prevent access to the Site was discussed. Most of these issues were responded to using preliminary design information that was being developed at that time. In conclusion, the Committee sought a more comprehensive approach to air monitoring.	citizen's group meeting

Chronology Of NYSDEC and Metro-North Community Participation Efforts
Harmon Railroad Yard, Operable Unit I
Metro-North, Croton-on-Hudson, New York

Date	*Description of NYSDEC and Metro-North Community Participation Efforts*	*Type*
1/29/93	Metro-North conducted a site tour for members of the Committee. The key features of the Site, including the former wastewater equalization lagoon and the old wastewater treatment plant, were surveyed.	site tour
3/11/93	The NYSDEC, Metro-North and Metro-North's consultant, ERM-Northeast, met with the Committee to explain the contents of the Pre-Design Test Boring Work Plan and other project issues. Key issues discussed at that time included the air monitoring program the Committee had requested and the possibility of transporting soil and sludge off-site by rail to avoid the traffic, dust and other potential difficulties associated with transportation by truck.	citizen's group meeting
5/26/93	The Committee expressed its appreciation to NYSDEC and Metro-North, and issued a press release acknowledging the assistance of NYSDEC and Metro-North and requesting a comprehensive air monitoring plan.	press release
7/13/93	Metro-North distributed a copy of the draft OU-I Site *Remedial Design and Remedial Action Work Plan* to the Committee for their review and comment.	document distribution for review
8/93	Metro-North and ERM-Northeast met with the committee to discuss the information that was to be presented at a 9 September 1993 public meeting. Responses to questions raised by the Committee at the August 1993 meeting were incorporated into the presentation for the 9/9/93 public meeting. In a letter dated 1 September 1993 that summarized the meeting, the Committee repeated its request for a comprehensive air monitoring plan. Issues related to wastewater disposal and independent oversight during construction were also raised.	citizen's group meeting
9/9/93	The NYSDEC and Metro-North presided at a public meeting held at the Croton Municipal Building. Metro-North's consultant, ERM-Northeast, presented an overview of the *Remedial Design and Remedial Action Work Plan*, explained the plan to decommission the old wastewater treatment plant at Harmon Yard and described the approach to be used in the community air monitoring plan for the OU-I project.	public meeting
2/10/94	Metro-North and ERM-Northeast met with the Committee to discuss the contents of the draft *Community Air Monitoring Plan* (CAMP) proposed for use at the Site during construction. The results of the Pre-Design Test Boring program, the schedule for the OU-II remedial investigation and feasibility study and the OU-I design schedule were also discussed.	citizen's group meeting
2/11/94	Metro-North distributed a copy of the *Supplemental Risk Assessment* for the OU-I Site to the Committee.	document distribution for review

Chronology Of NYSDEC and Metro-North Community Participation Efforts
Harmon Railroad Yard, Operable Unit I
Metro-North, Croton-on-Hudson, New York

Date	*Description of NYSDEC and Metro-North Community Participation Efforts*	*Type*
2/23/94	The Committee (Mr. J. Miller) reported to the Village of Croton-on-Hudson on its progress in monitoring the OU-I project. The Committee reported at that time that it had conditionally approved the CAMP proposed by Metro-North.	citizen's group report and approval
6/13/94	A letter from a representative of the Half Moon Bay homeowners association (D. Cohen) expressed concerns related to the construction health and safety standards to be implemented in the OU-I construction documents. Metro-North responded to these concerns in a letter dated 6 July 1994.	response to public comment
7/6/94	Metro-North and ERM-Northeast met with the Committee to discuss the OU-I CAMP, the remedial design for OU-I and the status of the OU-II remedial investigation and feasibility study. A table listing the issues related to the CAMP that had been raised by the Committee and the resolution of these issues was distributed to the Committee.	citizen's group meeting
7/19/94	The NYSDEC and Metro-North presided at a public meeting held at the Croton Municipal Building. Metro-North's consultant, ERM-Northeast, presented an overview of the Pre-Design Test Boring Program results, the remedial design for OU-I, the CAMP and the status of the OU-II RI/FS. A fact sheet prepared by Metro-North was distributed by the NYSDEC prior to the meeting.	public meeting
2/22/95	Correspondence from the Committee (D. Gregg) identified members of the Committee (i.e., H. Kelly, J. Miller and D. Salzberg) to monitor the progress of the OU-I work, including periodic site visits to review the air monitoring and other data. The letter also reported that the Committee had agreed to participate in a Rutgers University study on citizen participation and reaction to superfund cleanups in their communities.	letter
6/2/95	A newspaper article quoted a member of the Committee reporting on the status of the project, which was in the construction phase at that time, as follows: *"It moved from a confrontational situation to a real cooperative effort," said Ossining resident Hank Kelly, one of the community monitors. "They're doing all the things they said they would do," he added, referring to the cleanup workers. (Gannett Suburban Newspapers, Friday, 2 June 1995, page 3A)*	newspaper article
7/13/95	A procedure was established for members of the Committee (i.e., H. Kelly, J. Miller and D. Salzberg) to visit the site (i.e., from outside the exclusion zone) during construction and to review construction and monitoring procedures and data. Correspondence from H. Kelly on 7/13/95 acknowledged that based on his review of the air monitoring data, action levels defined in the CAMP had not been exceeded.	letter

Chronology Of NYSDEC and Metro-North Community Participation Efforts
Harmon Railroad Yard, Operable Unit I
Metro-North, Croton-on-Hudson, New York

Date	*Description of NYSDEC and Metro-North Community Participation Efforts*	*Type*
8/3/95	A meeting was held with Metro-North and its consultants, Hill International and ERM-Northeast, to review the air monitoring data with a representative of the Committee (H. Kelly). Mr. Kelly concluded that he would report to the committee that the CAMP was being implemented according to all agreements.	letter
11/21/95	Metro-North and ERM-Northeast met with the Committee to discuss the status of the OU-I project. At that time, the OU-I project was essentially complete and the only remaining work was to pave the surface of the remediated lagoon area. The Committee reported that their review of the air monitoring data demonstrated that the action levels defined in the CAMP had not been exceeded throughout the course of the project. The status of the OU-II project and potential remedies were also discussed.	citizen's group meeting

LIST OF ACRONYMS:

CAMP -	The *Community Air Monitoring Plan* for the OU-I Site. (ERM; 19 July 1994)
Committee -	"Harmon Rail Yard PCB Lagoon Citizen's Monitoring Committee" or the "Ad Hoc Committee on the Metro-North PCB Lagoon" *(Members are residents of the surrounding area appointed by the Village of Ossining and the Village of Croton-on-Hudson.)*
ERM-Northeast -	Environmental Resources Management Northeast *(environmental design consultant for Metro-North)*
Metro-North -	Metro-North Commuter Railroad
NYSDEC -	New York State Department of Environmental Conservation
PRAP -	the *Proposed Remedial Action Plan* for the OU-I Site
OU-I -	The Harmon Railroad Yard Operable Unit I Site
OU-II -	The Harmon Railroad Yard Operable Unit II Site
ROD -	The Record of Decision for the OU-I Site (9/92) or for the OU-II Site (3/98)

Table 7-1

Summary of OU-I Remedial Costs
Metro-North Railroad Company
Harmon Yard, Croton-on-Hudson, New York

OU-I Work Component	Final Cost	Notes
Remedial Design (ERM)	$1,080,391	
Construction Oversight (Hill)	$883,831	
Construction (ORSC)	$6,359,001	(1)
TSCA Waste Disposal (CWM)	$9,922,786	(2)
Metro-North Force Account	$1,137,205	(3)
Legal Fees	$274,951	
Total Remedial Cost	$19,658,165	

Notes:

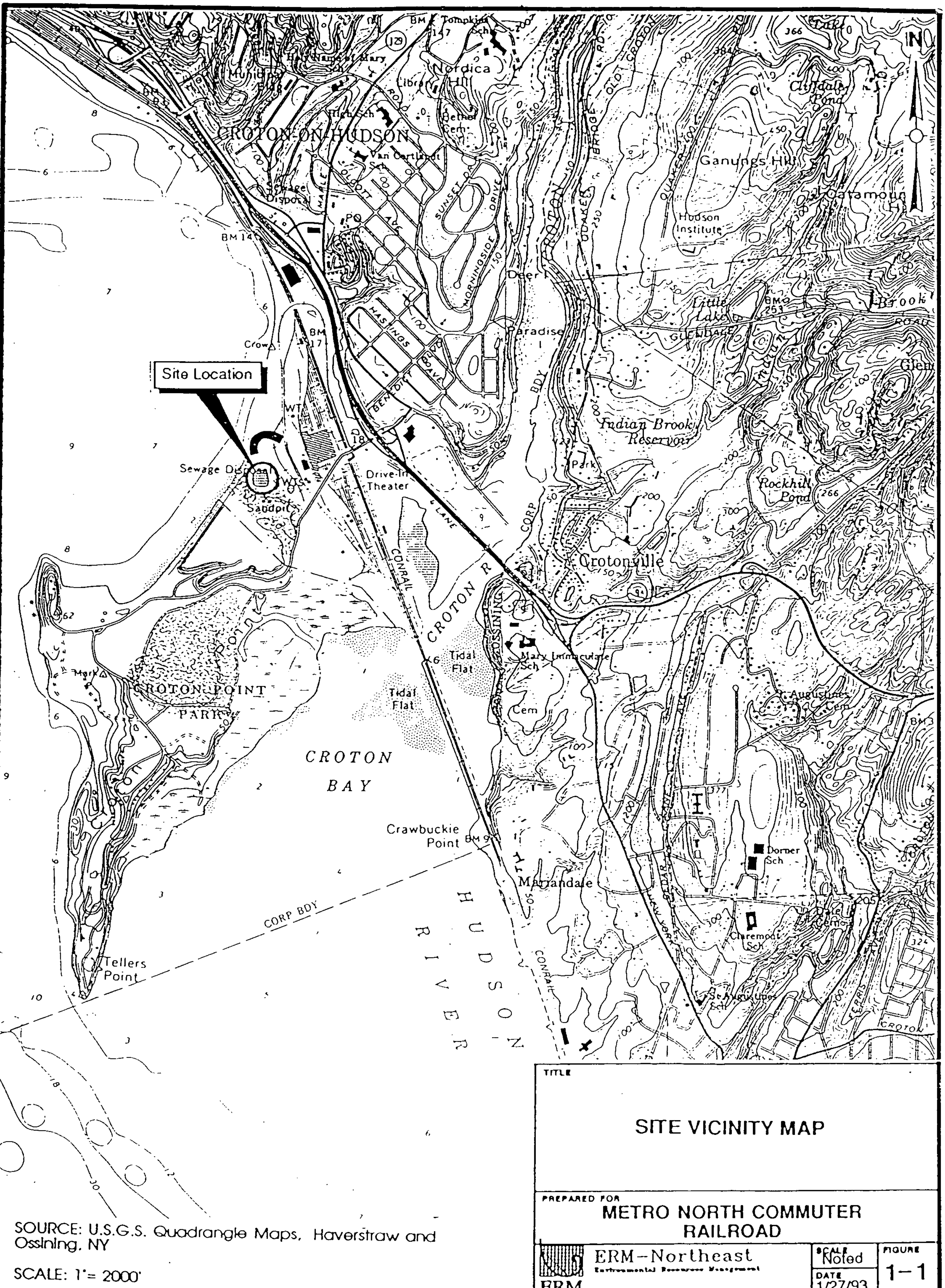
(1) Final Cost includes ORSC's original bid cost ($3,971,129) plus $2,387,873 in change orders. (See below for change order details).

(2) Final Cost includes CWM's original bid cost ($4,833,400) plus $5,089,386 in change orders. This change order addressed incineration of the additional solidified sludge.

(3) Final Cost includes: sampling the old wastewater treatment plant, track construction, flagging and train work crew, WWTP demolition and overtime, project management.

ORSC Change Orders	Change Order Cost
No. 1	$1,425,015
No. 2	$0
No. 3	$962,858
Total	$2,387,873

FIGURES



SOURCE: U.S.G.S. Quadrangle Maps, Haverstraw and Ossining, NY

SCALE: 1" = 2000'

TITLE

SITE VICINITY MAP

PREPARED FOR

METRO NORTH COMMUTER RAILROAD

ERM-Northeast
Environmental Resources Management

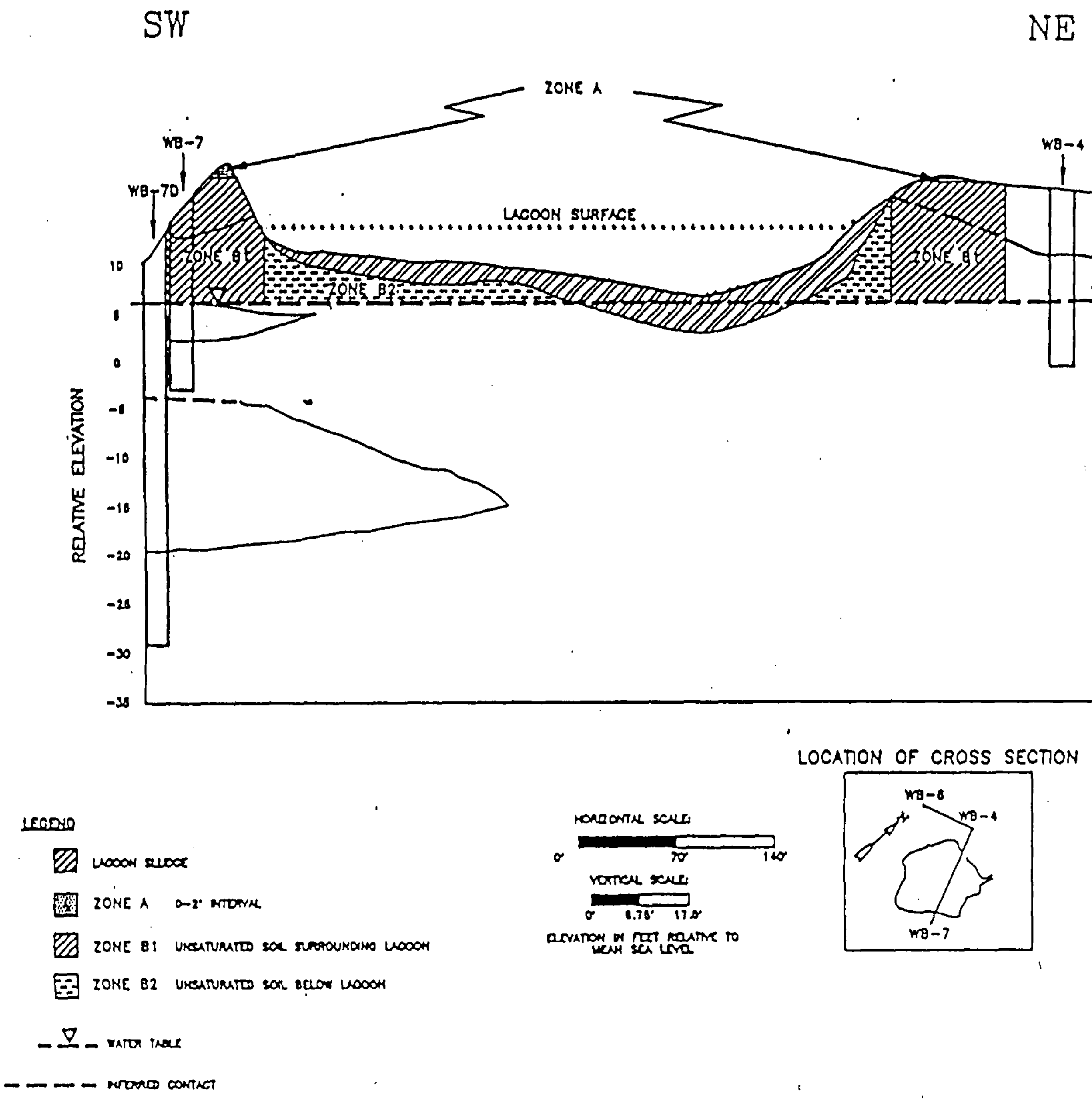
ERM

SCALE Noted

DATE 1/27/93

FIGURE 1-1

187114



TITLE

CROSS-SECTION OF SOIL ZONES
SURROUNDING THE LAGOON
HARMON YARD OPERABLE UNIT I

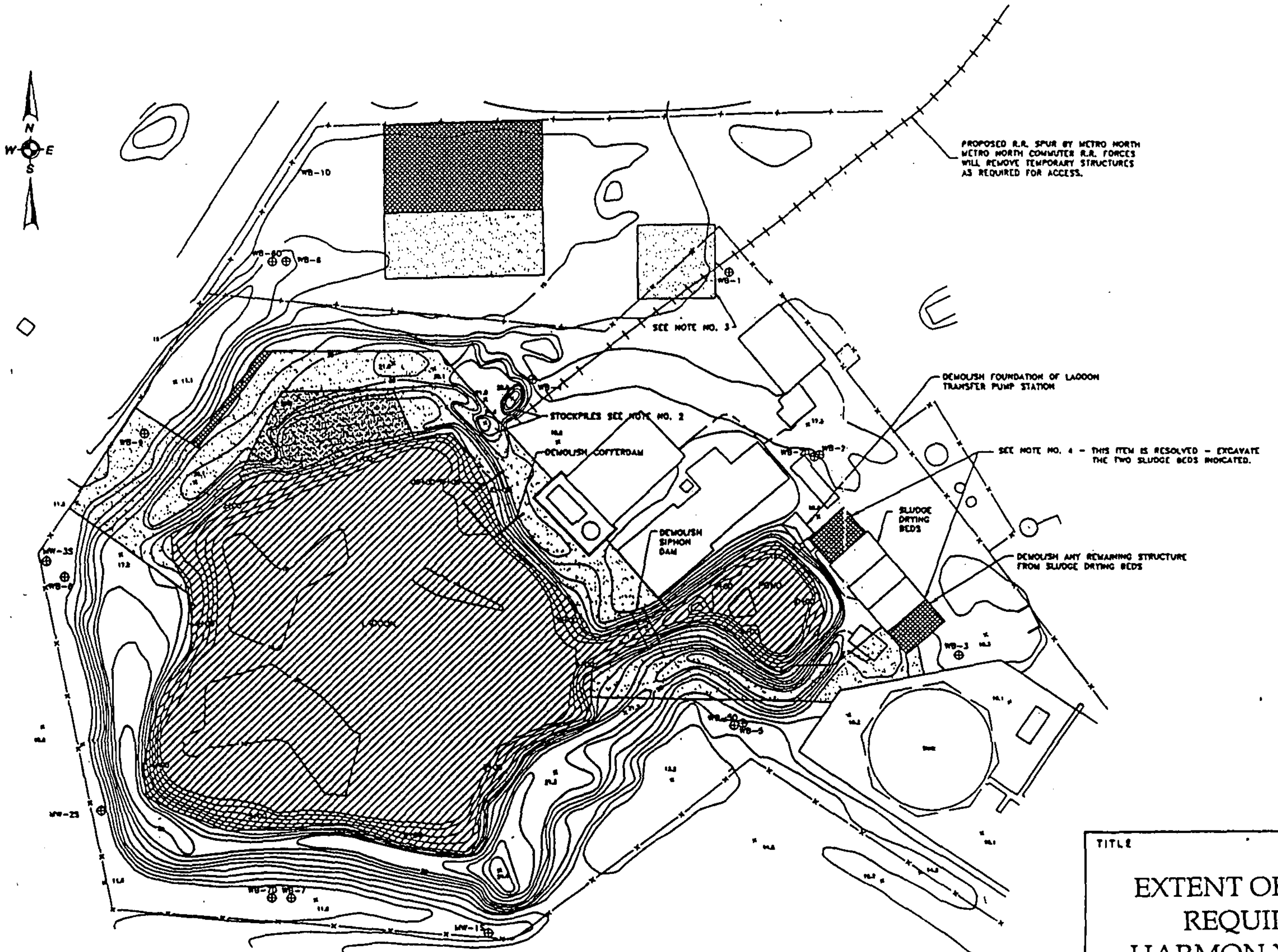
PREPARED FOR

METRO-NORTH RAILROAD COMPANY

ERM–Northeast
Environmental Resources Management

ERM

SCALE	FIGURE
DATE	2-1



NOTES:

1. THIS DRAWING REPRESENTS THE EXTENT OF HORIZONTAL EXCAVATION OF SOILS OUTSIDE THE LAGOON & SLUDGE WITHIN THE LAGOON. THE DEPTH OF EXCAVATION IS SHOWN ON DRAWING C-8.
2. CONTRACTOR SHALL REMOVE THE TWO STOCKPILES SHOWN, AND PLACE STOCKPILED SOIL IN REMEDIATED LAGOON ABOVE LINER, WITH ZONE A2 SOIL. EXCAVATE TO 2 FEET BELOW BOTTOM OF THE STOCKPILE WHICH IS LOCATED WITHIN ZONE A2.
3. THIS SOIL WHICH REQUIRES EXCAVATION, HAS BEEN PREVIOUSLY EXCAVATED BY RAILROAD AND STOCKPILED ON SITE. CONTRACTOR SHALL PLACE STOCKPILED SOIL IN REMEDIATED LAGOON ABOVE LINER, WITH ZONE A2 SOIL.
4. SOIL BENEATH THE SLUDGE DRYING BEDS MAY REQUIRE REMEDIATION, BASED ON TESTING BY ENGINEER. ENGINEER MAY DIRECT CONTRACTOR TO EXCAVATE SOILS IN THIS AREA AND EITHER PLACE SOILS IN REMEDIATED LAGOON ABOVE LINER, OR DISPOSE OFF-SITE.
5. PERMANENT SHEETING SHALL BE PLACED AT CONSTRUCTION BASELINE AROUND ENTIRE PERIMETER OF LAGOON AND POND, AS AS SHOWN HERE AND ON DRAWINGS C-7 AND C-8.
6. PRIOR TO PLACING SHEETING, PERFORM DEMOLITION WORK OF PERIMETER STRUCTURES DESCRIBED IN SECTION 02050 OF THE SPECIFICATIONS AND SHOWN ON THIS DRAWING.
7. EXISTING PROFILE ALONG CONSTRUCTION BASELINE IS SHOWN ON DRAWING C-7.

LEGEND

SLUDGE SHALL BE REMOVED TO DEPTHS AS SHOWN ON DRAWING C-8.

ZONE A1 SOIL
SOILS SHALL BE EXCAVATED TO A DEPTH OF 2' FROM EXISTING GRADE AND DISPOSED OFF-SITE. DO NOT PLACE ROAD THROUGH THIS AREA PRIOR TO REMOVAL OF CONTAMINATED SOIL.

ZONE A2 SOIL
SOILS SHALL BE EXCAVATED TO A DEPTH OF 2' FROM EXISTING GRADE. MATERIAL SHALL BE STOCKPILED AS NECESSARY, AND PLACED IN LAGOON AFTER LINER IS INSTALLED.

ADDITIONAL SOIL EXCAVATION TO A DEPTH OF 2 FEET, IDENTIFIED FOLLOWING AWARD OF CONTRACT

TITLE

EXTENT OF ZONE A1 AND A2 SOIL
REQUIRING REMEDIATION
HARMON YARD OPERABLE UNIT I

PREPARED FOR

METRO-NORTH RAILROAD COMPANY

ERM-Northeast
Environmental Resources Management
ERM

SCALE	FIGURE
DATE	3-1

Appendix A
OU-I Record of Decision

Department of Environmental Conservation

Division of Hazardous Waste Remediation

Harmon Railroad Yard Wastewater Treatment Area

Westchester County, New York
Site Number 3-60-010

New York State Superfund Record of Decision

September 1992

New York State Recycles
Printed on Recycled Paper

New York State Department of Environmental Conservation
MARIO M. CUOMO, Governor   THOMAS C. JORLING, Commissioner

15 (12-75)

New York State Department of Environmental Conservation

MEMORANDUM

TO: Michael J. O'Toole, Jr., Director, Division of Hazardous Waste Remediation
FROM: Chittibabu Vasudevan, Chief, Eastern Projects Section, BERA, DHWR
SUBJECT: Record of Decision, Harmon Railroad Yard Lagoon Site, Site I.D. 360010
DATE: SEP 25 1992

Attached for your files is a final bound copy of the Record of Decision for the Harmon Railroad Yard Lagoon Site dated September 1992.

Attachment
cc - w/att.: A. DeBarbieri
C. Goddard
S. Ervolina
A. McCarthy, WPFU
A. Carlson, DOH
R. Pergadia, Region 3
A. Klauss, Region 3
E. O'Dell, Region 3 (5)
J. Kelleher
J. Colquhoun
J. Harrington
B. Seeley
T. Gibbons
J. McCullough
R. Davies
J. Kowalchyk
K. Timko, Metro-North (2)
E. Hendricks, WCHD

RECEIVED
SEP 28 1992
METRO NORTH
LEGAL DEPT.

TABLE OF CONTENTS

APPENDICES

DECLARATION FOR THE RECORD OF DECISION

Site Name and Location

Harmon Railroad Yard - Wastewater Treatment Area
Village of Croton-on-Hudson
New York 10519
Site Code: 360010
Funding Source: Environmental Quality Bond Act (1986), Title 3

Statement of Purpose

This document describes the remedial alternatives considered for the hazardous waste disposal site at the Harmon Railroad Yard, Site Code 360010, and identifies the New York State Department of Environmental Conservation's (NYSDEC) selected remedy. The selected remedy conforms to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). Exhibit A identifies the documents that form the Administrative Record for the site, which is a basis for the Record of Decision.

Assessment of the Site

Past and potential future releases of hazardous substances from this site pose a threat to public health, welfare, and the environment and need to be remedied.

Statement of Basis

The decision is based upon the Administrative Record for the site and the comments from the public. A copy of the Record is available for public review and/or copying at the following locations:

NYSDEC
Division of Hazardous Waste Remediation
50 Wolf Road
Albany, NY 12233-7010

NYSDEC, Region 3
21 South Putt Corners Road
New Paltz, NY 12561

Village of Croton-on-Hudson
Municipal Building
Van Wyck Street
Croton-on-Hudson, NY 10520

Description of Remedy

The selected remedy consists of the following:

- -Incineration of the PCB contaminated lagoon sludge at an off-site TSCA-permitted stationary incinerator.

- -Disposal of PCB contaminated soil greater than 10 mg/kg at an off-site TSCA-permitted chemical waste landfill.

- -Placement of a clay liner over the remediated lagoon area to ensure at least two feet separation between high groundwater and backfill soil.

- -Excavate and then place and consolidate low level PCB contaminated surficial soil (less than 10 mg/kg) in the remedied lagoon area.

- -Placement of a clay cover over the low level PCB contaminated surficial soil that was placed in the remediated lagoon area.

- -Enhancement of the existing free-product recovery system.

- -Decontamination, demolition, and proper disposal of the Old Wastewater Treatment Plant for those components of the Old Wastewater Treatment Plant that have been found to be contaminated. (In conjunction with the remediation, Metro-North will be decommissioning the remainder of the Old Wastewater Treatment Plant.)

This remedy will also include an investigation into possible impacts of past releases from the Old Wastewater Treatment Plant and the lagoon on the groundwater, and surface water, and sediment of the Hudson River. If after investigation, it is deemed appropriate, a Feasibility Study will be conducted, another ROD will be issued, and the necessary remedial actions outlined in the ROD will be implemented.

Declaration

The selected remedy is protective of human health and the environment, and complies with Federal and New York State Standards, Criteria and Guidance (SCGs) which include both those of the State and the United States to the extent that they are more stringent than those of the State (Also referred to as ARARs). The remedy uses solutions acceptable to the local community and elected officials.

September 17th, 1992
Date

Ann Hill DeBarbieri
Ann Hill DeBarbieri
Deputy Commissioner
Office of Environmental Remediation

RECORD OF DECISION

Harmon Railroad Yard (Lagoon), Croton-on-Hudson, Westchester County - Site I.D.# 360010

I. SITE LOCATION AND DESCRIPTION

The Harmon Railroad Yard, in Croton-on-Hudson, Westchester County, is an approximately 100 acre maintenance and repair yard owned by Penn Central Corporation of Cincinnati, Ohio and/or its subsidiaries, and presently leased by the Metropolitan Transportation Authority. The facility has been operated since 1983 by Metro-North Commuter Railroad (M-N). The Yard was previously operated by Consolidated Rail Corporation (Conrail). The Yard is located on the northwestern edge of the Croton Point peninsula at latitude 41°12 30" and longitude 73°52 30" as can be seen on the NY Haverstraw quadrangle of the USGS map (Figure 1). The Yard is bounded by the Croton Point Landfill on the south and the Hudson River is approximately 400 feet to the northwest. Historical sand hills of up to 60 feet in height have been levelled by sand mining to make way for the railroad operation. The equalization lagoon and old wastewater treatment plant, hereafter referred to as the "site", occupies 7.5 acres of the maintenance yard and includes the 1.3 acre equalization lagoon/pond, the old wastewater treatment plant, and associated appurtenances (Figure 2).

II. SITE HISTORY

In 1980, PCBs were discovered in the effluent discharge from the old treatment plant. The source of PCBs was identified as one of the maintenance areas where transformers were serviced by Conrail, which operated the yard from 1976 to 1982 and perhaps Penn Central. This activity caused the release of fluids containing PCBs which were conveyed to the equalization lagoon. Since the treatment process was not capable of removing PCBs, the old treatment plant, its appurtenances, the lagoon, and the pond became contaminated with PCBs. In 1984 the conveyance pipelines were cleaned. Only portions of the old treatment plant and the equalization lagoon and pond remain contaminated with PCBs. In addition, Conrail set up a sand and carbon filtration unit in 1980 to ensure that subsequent discharges from the old wastewater treatment plant would be free of any PCBs.

In 1985, the DEC placed the Harmon Railroad Yard on the State Registry of Inactive Hazardous Waste Disposal Sites because of the presence of PCBs in the lagoon and pond sediments. Of particular concern to NYSDEC was the proximity of the site to the Hudson River. An evaluation by the DEC of the information contained in Fred C. Hart Associates' May 1988 Site Operations Plan, and subsequent addenda (1 through 4), led to the determination that the treatment area is a potential threat to the environment and public health, and deserves focused attention. The rest of the yard was placed on the registry as a separate site and is the subject of a separate state funded preliminary investigation.

III. SUMMARY OF REMEDIAL AND FLOATING PRODUCT FIELD INVESTIGATIONS

In November 1989, Fred C. Hart Associates, Inc. completed a Remedial Investigation of the site, and the principal findings are summarized below:

The site was characterized during a Remedial Investigation (RI) conducted by Fred C. Hart Associates, Inc. in the summer of 1989. The wastewater equalization lagoon and pond (hereafter referred to as the lagoon) at the site were estimated to contain approximately 3,757 tons of sludge. It is believed that approximately 214 tons of this sludge contains Polychlorinated Biphenyl (PCB) concentrations in excess of 500 ppm; 1,153 tons of this sludge contains PCB concentrations between 50 and 500 ppm; and the majority of the sludge, 2,390 tons, contains PCB concentrations below 50 ppm. During the Feasibility Study (FS), it was determined that approximately 8,850 tons of soil around the perimeter of and below the lagoon will require remedy. This includes approximately 3,750 tons of surface soil to the depth of two feet around the perimeter of the lagoon which contains PCB concentrations in excess of the Metro-North's proposed and NYSDEC's approved cleanup level of 0.5 mg/kg and 5,100 tons of subsurface perimeter soil with PCB concentrations in excess of 10 mg/kg. The additional 5,100 tons of soil is situated below the lagoon sludge and could possibly exceed the NYSDEC specified PCB cleanup level of 10 mg/kg for subsurface (below 2 feet) soils. However, soils below the sludge were not sampled during the RI. This unlined lagoon poses the potential risk of release into the surrounding soil, groundwater and potentially into the Hudson River, which is 400 feet to the northwest of the site.

In addition to PCBs, during the RI it was determined that volatile organic compounds, semi-volatile organics and metals (inorganics) in the sludge exceeded calculated cleanup levels (see Section VII). The volatile organics include toluene, xylene and ethylbenzene. Semi-volatile organics include fluorene, dibenzofuran, naphthalene, phenanthrene and 1,2-dichlorobenzene. Metals include aluminum, barium, cadmium, copper, iron, lead, manganese and zinc. All of the compounds found in the sludge are traceable to historic operations in and around the Harmon rail yard.

During the RI it was determined that metals and one (1) semi-volatile compound in the site surface soils exceeded calculated cleanup levels. The majority of the metals detected in the site soils fell within typical ranges for natural soils although slightly elevated concentrations were detected for cadmium, copper and magnesium. The semi-volatile organic compound 2-methylnapthalene was detected at 1.4 mg/kg in one soil sample.

The Old Wastewater Treatment Plant (hereafter referred to as Site Facilities) includes oil skimmer tanks, the sand filter and activated carbon building, concrete coagulation and settling tanks, the pump transfer station, and outdoor sludge drying beds. Quantifiable levels (0.25 mg/kg) of PCBs were detected only at the sludge drying beds. Slightly elevated levels of organic and inorganic compounds were detected in some of the other site facilities. The Endangerment Assessment indicated the site facilities, with the exception of the sludge drying beds, do not pose unacceptable risk levels. The sludge drying beds could potentially present an unacceptable risk to on-site railroad employees or other persons gaining access to the Site.

Nine monitoring wells were also installed around the lagoon during the RI/FS and floating product was found in three of those wells located both upgradient and downgradient of the lagoon. A two-foot thick layer of floating product has accumulated in one of the wells. The floating product from all three (3) wells was tested for PCBs and a concentration of 104 mg/kg PCBs was detected in one well. The other two wells contained no detectable levels of PCBs. The floating product in these two (2) wells appears to be diesel fuel, based on analytical results. Two additional wells were installed after submittal of the RI to NYSDEC. One of these wells indicated product in excess of two feet in thickness.

IV. INTERIM REMEDIAL ACTION COMPLETED TO DATE

In February 1991, the recovery of free floating product from three of the monitoring wells was commenced. A suction pump has been installed in each of the wells, and the removal operation is automatically controlled by means of a sensor probe that shuts off the pump when the product drops below a certain level. About 210 gallons of free product have been recovered to date. The high viscosity of the product and physical property of the soil prevents a faster recovery rate. Additional data will be collected during the removal of the contaminated sludge and soil to evaluate possible improvements to the existing interim collection system.

V. ENFORCEMENT STATUS

Metro-North is under an administrative order to remedy the lagoon in accordance with Article 27, Title 13 of the NYS Environmental Conservation Law. While M-N is contesting this order, it accepts responsibility, as the current operator, for performing site remedial actions.

VI. GOALS FOR THE REMEDIAL ACTION

- To eliminate the potential for releases of contaminants from the lagoon into the surrounding soil, groundwater and the Hudson River.
- To eliminate risk of direct contact with and ingestion of the PCB contaminated soil and sludge by personnel having access to the site.
- To decontaminate portions of the old treatment plant, demolish it, and dispose of the debris.
- To recover floating product if it is encountered during remedial action.
- To comply with Federal and New York State Standards, Criteria and Guidance (SCGs, also referred to as ARARs) which include both those of the State and the United States to the extent that they are more stringent than those of the State.

- To investigate if there exists residual contamination in the groundwater, surface water, and the Hudson River sediment because of past releases from the lagoon; if it is deemed appropriate, a feasibility study will be conducted, another ROD will be issued, and the necessary remedial actions outlined in the ROD will be implemented.

VII. SUMMARY OF RISKS AND SITE CLEANUP LEVELS

The site has been divided into zones which correspond to the pathways by which the lagoon and surrounding soils might impact the public health or the environment. Separate and distinct indicator chemicals and cleanup levels have been developed for each of these zones.

Sludge: The United States Environmental Protection Agency (USEPA) has determined that all of the sludge must be treated as having PCB concentrations in excess of 500 mg/kg as the result of prohibition against dilution in TSCA. Segregation of sludge by PCB concentration or location is therefore not appropriate for purposes of the site remedial actions.

Soil: For purposes of characterizing the potentially affected soil areas and to determine cleanup levels, the soils were separated into the following zones:

Zone A: Zone A soils are those soils, within the top 2 feet of the surface, surrounding the lagoon with concentrations of PCBs in excess of the NYSDEC approved cleanup level of 0.5 mg/kg.

Zone B1: Zone B1 soils are defined as the unsaturated soils beneath Zone A extending down to the groundwater table.

Zone B2: Zone B2 soils are defined as the unsaturated soils beneath the lagoon sludge.

Zone C: Zone C soils are defined as the saturated soils below Zone B2 soils.

The following cleanup levels were established for these soil zones:

1) Zone A - NYSDEC has approved a surface soil cleanup level of 0.5 mg/kg PCBs to protect the public health and the environment. The following indicator chemicals and cleanup levels are established for Zone A soil:

Magnesium	6,000 mg/kg
2-Methylnapthalene	1,849 mg/kg

2) Zones B1, B2, & C - NYSDEC has selected a cleanup level of 10 mg/kg PCBs for the Zone B1, B2, and C soils.

For organic compounds detected during the RI, the cleanup levels were determined using the U.S. EPA developed SESOIL computer model. This model computes the maximum concentration of specific compounds at which the leachate from the soil does not cause concentrations of these chemicals in groundwater to exceed the State groundwater standards. Soil cleanup levels for organic compounds of interest are listed below:

Volatile Organics (mg/kg)		Semi-Volatile Organics (mg/kg)	
Ethylbenzene	0.04	Napthalene	0.41
Benzene	0.02	1,2-Dichlorobenzene	0.51
Toluene	0.03	Fluorene	1.64
Xylenes	0.03	Phenanthrene	3.06
Trichloroethene	0.02	Fluoranthene	8.20
Chlorobenzene	0.02	Dibenzofuran	2.14
Dichloroethylene	0.02	2-Methylnapthalene	1.85
Chloroform	0.16		
Tetrachloroethene	0.05		
Acetone	0.12		

The soil cleanup levels for inorganics (metals) are based on the maximum values reported in the literature for natural occurrence of these compounds in soil. The following inorganic cleanup levels (mg/kg) for soil medium are established:

Barium	300
Cadmium	11
Chromium	greater than 10 or local background level
Copper	700
Lead	greater than 32 or local background level
Magnesium	6,000
Manganese	3,000
Mercury	0.3

Based on the data collected during the RI, PCBs, 2-methylnapthalene and magnesium will be chosen as the indicator parameters for Zone B1.

Site Facilities - The site facilities which will be subject to remedial actions are the lagoon, pond and sludge drying beds which are part of the old wastewater treatment plant. The current operator, M-N, also intends on discontinuing the use of the coagulation and settling tank building and sand filter, and so will demolish them for operational reasons.

These structures, which are components of the Old Wastewater Treatment Plant, are constructed of concrete, wood and metal and will be subject to analysis, cleaning to 10 ug/100 cm^2 of PCBs as measured by the standard wipe test, demolition, and decommissioning as part of the remedial action.

Floating Product - The floating product was detected in three groundwater monitoring wells during the RI. There is a risk for release of this product to the Hudson River. NYSDEC's goal is to collect all free product for off-site treatment. If floating product is encountered during remedial actions, it will be collected and properly disposed. The feasibility of installing a more efficient product recovery system in the lagoon area will be investigated during the remedial actions.

VIII. SUMMARY OF ALTERNATIVES

The information presented in the RI and the EA was used to conduct the FS. The FS identifies and evaluates remedial action alternatives to determine the most appropriate way to address chemicals of concern at the site. In accordance with the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) for the selection of Remedial Actions at Inactive Hazardous Waste Sites (HWR-90-4030, Revised May 15, 1990) each alternative was evaluated for the following seven (7) criteria:

- compliance with federal regulations and New York State Standards, Criteria and Guidance (SCGs) (also referred to as ARARs);
- protection of human health and the environment;
- short-term effectiveness;
- long-term effectiveness and permanence;

- reduction of toxicity, mobility and volume;
- implementability; and
- cost.

Community assessment by the public and local towns and agencies other than Metro-North, is evaluated in this Record of Decision (ROD).

The FS evaluated in detail seven (7) alternatives for addressing the site. The Roman numerals assigned to the alternatives in the following discussion match those cited in the FS report prepared by McLaren/Hart. Detailed descriptions of the remedial alternatives can be found in the McLaren/Hart report available at the public review locations.

ALTERNATIVE I: ON-SITE INCINERATION, STABILIZATION AND ON-SITE DISPOSAL

Alternative I consists of on-site incineratio of sludge and soils exceeding 10 mg/kg of PCBs; stabilization/fixation of incineration residue (if necessary); placement of incineration residue in the remedied lagoon; stabilization/fixation (if necessary) and placement of Zone A soils, greater than 0.5 but less than 10 mg/kg of PCBs, in the remedied lagoon; installing a soil cover over the remedied lagoon; and decommissioning of site facilities. The total cost for this alternative is approximately $10,128,400.

ALTERNATIVE II: ON-SITE INCINERATION AND OFF-SITE DISPOSAL

Alternative II consists of on-site incineration of sludge; off-site disposal of incineration residue and soils exceeding 10 mg/kg of PCBs at a TSCA or RCRA permitted facility; stabilization/fixation (if necessary) and placement of Zone A soils, which exceed the PCB surface soil cleanup level of 0.5 mg/kg, in the remedied lagoon; installing a soil cover over the remedied lagoon; and decommissioning of site facilities. The total cost for this alternative is approximately $10,752,100.

ALTERNATIVE III: BIOREMEDIATION, STABILIZATION AND ON-SITE DISPOSAL

Alternative III consists of on-site bioremediation of sludge and soils exceeding cleanup levels; stabilization/fixation of the bioremediated material; placement of this bioremediated material back into the lagoon; stabilization/fixation (if necessary) and placement of Zone A soils, which exceed the PCB surface soil cleanup level of 0.5 mg/kg, in the remedied lagoon; installing a soil cover over the remedied lagoon; and decommissioning of site facilities. The total cost for this alternative is approximately $9,874,400.

ALTERNATIVE IV: BIOREMEDIATION AND OFF-SITE DISPOSAL

Alternative IV consists of bioremediation of sludge; off-site disposal of remedied sludge and soils at a TSCA or RCRA permitted facility; stabilization/ fixation (if necessary) and placement of Zone A soils, which exceed the PCB surface soil cleanup level of 0.5 mg/kg, in the remedied lagoon; installing a soil cover over the remedial lagoon; and decommissioning of site facilities. The total cost for this alternative is $11,276,200.

ALTERNATIVE V: OFF-SITE DISPOSAL

Alternative V consists of off-site disposal of sludge at a TSCA approved incinerator; off-site disposal of soils exceeding cleanup levels of 10 mg/kg of PCBs at a TSCA or RCRA permitted facility; stabilization/fixation (if necessary) of Zone A soil which exceeds the PCB surface soil cleanup level of 0.5 mg/kg or does not comply with LDR treatment standards, and placement in the remedied lagoon with a minimum of two feet of separation from the high groundwater table surface; installing a soil cover over the remedied lagoon; and decommissioning of site facilities. The total cost for this alternative is $14,686,400.

ALTERNATIVE VI: THERMAL VOLATILIZATION, STABILIZATION AND ON-SITE DISPOSAL

Alternative VI consists of thermal desorption of volatile, semi-volatile and PCB compounds from sludge; off-site disposal of desorbed materials at a TSCA permitted incinerator; on-site disposal of remedied sludge sediment; off-site disposal of soil exceeding 10 mg/kg of PCBs at a TSCA permitted landfill; stabilization/fixation (if necessary) and placement of Zone A soils, which exceed the PCB surface soil cleanup level of 0.5 mg/kg of PCBs, in the remedied lagoon; installing a soil cover over the remedied lagoon; and decommissioning of site facilities. The total cost for this alternative is $9,555,500.

ALTERNATIVE VII: NO ACTION

Alternative VII would entail allowing the PCB contaminated material to remain in place. This does not comply with established ARARs, and does not protect the public health or the environment.

IX. COMPARISON OF ALTERNATIVES

A comparison of how the alternatives address the seven (7) evaluation criteria was performed in the FS. This comparison is summarized below. Community assessment is also addressed below. The "no action" alternative (Alternative VII) was not compared since it does not comply with ARARs and does not adequately protect human health and the environment.

1. Compliance with NYS SCGs (ARARs)

The six alternatives (no action alternative excluded) considered for selection as a preferred remedial action alternative were found to comply with NYS SCGs except those related to TSCA as indicated below. The technologies used to develop the alternatives each have the ability to remedy soil and sludge to levels that are protective of groundwater as defined through the SESOIL model and NYS groundwater standards. In addition, the alternatives contained components, such as a cover and relocation and containment of Zone A and Zone B1 (if necessary) soil, that prevent direct contact with, and inhalation and ingestion of site surface soil. Placement and covering of these soils will be performed in compliance with NYSDEC and USEPA regulations. The technologies included in these alternatives have been used successfully at other sites although questions exist with respect to the effectiveness of the three alternatives involving bioremediation and thermal volatilization. Moreover, USEPA has not approved any of the on-site PCB remedial technologies (other than on-site incineration for soils) as methods equivalent to incineration. Therefore, in order to comply with TSCA, extensive permitting, demonstration, and testing would be required prior to implementing bioremediation (Alternatives III and IV) and thermal volatilization (Alternative VII), and to a lesser degree, on-site incineration (Alternatives I & II). The NYSDEC has not permitted any on-site incinerator to date, but the permitting process may be waived if the technically substantive requirements are met by site and media specific demonstrations.

2. Overall Protection of Public Health and the Environment

The alternatives evaluated would eliminate the potential contact threat for sludge by treatment or off-site disposal.

The alternatives would also through incineration, bioremediation, thermal volatilization and/or off-site disposal, reduce the concentrations of Site chemicals to levels, based on the SESOIL Model, which would not cause NYS groundwater standards to be violated. As a result, the remedied sludge and soils would not pose an unacceptable risk to public health or groundwater and the potential for releases would be eliminated. These alternatives would also eliminate potential risks to groundwater from inorganic constituents by either: (1) stabilization/fixation of sludge and soils (if needed) for alternatives where ultimate disposal of treated sludge and soil is on-site; or (2) disposal of sludge and soil off-sites, for alternatives where ultimate disposal of sludge and soils is in an off-site TSCA incinerator or permitted waste landfill.

These alternatives would also remedy surface soils containing PCBs in excess of the NYSDEC approved site-specific cleanup level of 0.5 mg/kg for PCBs in surface soil, thus eliminating the potential risks to site workers, or others gaining site access, due to direct contact with, and/or ingestion, or inhalation of, surface soil containing PCBs in excess of 0.5 mg/kg. These alternatives would also eliminate the potential risks to groundwater and to site workers (i.e., direct contact with, ingestion or inhalation of surface soil containing PCBs) from organic compounds and inorganic constituents in Zone A and Zone B1 soil by either off-site disposal or on-site disposal. On-site disposal would consist of stabilization (if required), relocation to the remedied lagoon area, and containment utilizing a soil cover of at least two (2) feet. A minimum of two feet separation between the high groundwater surface and the relocated soil would be maintained.

3. Short-Term Effectiveness

There are limited short-term risks associated with the remedial alternatives. Short-term risks can be controlled by standard institutional or engineering controls. Short-term effects could be caused by: air emissions during sludge removal; surface runoff from sludge or soil stockpiles; exposure of personnel working on remedial actions to site contaminants; air emissions from on-site remedial actions; and transportation of site sludge and soils off-site. These risks would be minimized by: covering sludge with water or geomembrane liners; erosion controls; personnel health and safety measures; and air pollution control devices. However, concerns exist with regard to the short-term effectiveness of on-site remedial alternatives, in light of the proximity of the site to an elementary school, public recreational areas, residential buildings, and a commuter railroad station.

4. Long-Term Effectiveness and Permanence

Based upon available information, it seems clear that four of the six alternatives would remedy site soil and sludge in accordance with: (1) soil cleanup limits for PCBs and organic compounds that are protective of groundwater; (2) site-specific NYSDEC PCB limits for surface soil; and (3) background concentrations of inorganic constituents, as reported in the literature, in surface soil. The remedied site, then, would pose no potential risks to public health or the environment. The remedies are permanent; that is, the long-term effectiveness of each of the six alternatives is not dependent on future actions. Of the alternatives evaluated, incineration, the primary technology in Alternatives I, II and V, provides the most proven and effective permanent destruction of organic contaminants present at the Site. There would be no residual risk and future controls would be limited to monitoring groundwater to assure NYS standards are not exceeded. Certain questions exist with respect to the effectiveness and implementability of two alternatives involving bioremediation. Bioremediation (Alternatives III and IV) is an emerging technology that has been utilized successfully to remedy contaminated soil, sludge and liquids. However, effectiveness is very site and compound specific, and would have to be evaluated through extensive bench and pilot scale testing. This testing would have to prove that bioremediation is capable of reducing PCBs to 2 ppm, in accordance with TSCA performance criteria, or such other variance that the USEPA may approve in the context of a completed treatability study or a risk assessment. The time to actually bioremediate site sludge and soils may also be extensive due to limitations in biological processes. Similar issues arise with thermal volatilization while that technology has a good track record, it has not been approved by the USEPA under TSCA and extensive testing would be needed to demonstrate that it could consistently achieve the 2 ppm level required.

5. Reduction of Toxicity, Mobility and Volume

The six remedial alternatives would provide significant reductions of toxicity, mobility and volume of organic compounds in sludge and soils by incineration, bioremediation, thermal volatilization and/or off-site containment in a TSCA or RCRA approved landfill. Of the alternatives evaluated, incineration, the primary technology in Alternatives I, II, and V provides the most significant toxicity and volume reduction for organic contaminants present at the Site. The toxicity and mobility of inorganic compounds in sludge and soil would be significantly reduced through stabilization/fixation (if required) and containment on-site or off-site.

6. Implementability

The six alternatives are implementable at varying degrees. On-site and off-site incineration, the primary technology in Alternatives I, II, and V, and its associated air pollution controls have a proven history of performance for soil. USEPA TSCA has approved several on-site incinerators for PCB disposal. However, compared to other alternatives, incinerators are complicated processes to mobilize and operate.

As noted previously, certain questions exist with respect to the effectiveness and implementability of bioremediation. Bioremediation (Alternatives III and IV) is an emerging technology that has been utilized successfully to remedy contaminated soil, sludge and liquids. However, effectiveness is very site and compound specific. The effectiveness on site sludge and soils would have to be evaluated through extensive bench and pilot scale testing. This testing would have to prove that bioremediation is capable of reducing PCBs to 2 ppm, in accordance with TSCA performance criteria or such other variance that the EPA may grant in the context of a completed treatability study or a risk assessment. The time to actually bioremediate site sludge and soils may also be extensive due to limitations in biological processes. Public response to bioremediation is uncertain.

Off-Site Disposal, (Alternatives II, IV, and V) of soils is not a complicated measure to implement. There are no technical factors that could interfere with implementation of this alternative. This alternative also does not require extensive permit approvals and could therefore be implemented relatively quickly. The method when applied to untreated waste, however, does not meet the strict definition of permanent remedy.

Thermal Volatilization (Alternative VI) treatment processes and associated air pollution controls also have a proven history of performance. The operation is not as complicated as on-site incineration. However, USEPA has not accepted any of the commercially available thermal volatilization systems as equivalent to incineration in accordance with TSCA. Therefore, extensive bench and pilot demonstration tests would be necessary to prove the system could consistently achieve TSCA's 2 ppm performance criteria, or such other variance that the EPA may grant in the context of a completed treatability study or a risk assessment.

-. Cost

The cost for each alternative was listed in the previous section.

8. Community Assessment

The series of public meetings that was held to present the DEC's Proposed Remedial Action Plan (PRAP) drew considerable comments from the public. More than 100 people attended the February 27, 1992 Public Information Meeting; about 500 people participated at the April 23, 1992 Public Forum sponsored by the League of Women Voters; more than 200 local citizens and elected officials participated in the May 6, 1992 Public Availability Session. The public and the elected officials were overwhelmingly opposed to on-site incineration. There was some support for conducting further study on innovative technologies other than incineration. The opposition stemmed primarily from the fact that residences, an elementary school, public recreational areas and a commuter railroad station are in close proximity to the site.

X. SELECTED REMEDIAL ACTION

The DEC has selected Alternative V, the off-site incineration and off-site land disposal option. Remediation of the lagoon, pond and contaminated components of the wastewater treatment plant has been identified as Operable Unit 1.

Completion of Operable Unit 2: The Operable Unit 2 will include investigation into possible impacts of past releases from the Old Wastewater Treatment Plant and the lagoon on the groundwater, surface water, and Hudson River sediment contamination. If after investigation, it is deemed appropriate, a Feasibility Study will be conducted, another ROD will be issued with respect to Operable Unit 2, and the necessary remedial actions outlined in the ROD will be implemented.

XI. RATIONALE FOR SELECTION

From a scientific and technical perspective, incineration of PCB wastes with the use of the best available pollution control equipment is the most effective technique. On-site incineration would have been an appropriate, cost-effective technical solution to the problem. On-site incineration of PCB contaminated soil and sludge has been used effectively at a number of sites across the country, but not necessarily in a setting such as Croton.

In seeking to identify the best alternative, the Department balanced all the factors and gave serious consideration to the overwhelming opposition and concerns expressed by citizens of Croton, residents of Halfmoon Bay Condominium, the children at St. Augustine's school and to the pleas from elected officials. Off-site incineration and off-site land disposal alternative is selected for the following reasons:

- It is the quickest effective solution to the problem of removing 2,500 tons of PCB-laden sludge from the lagoon and preventing migration of PCBs from the lagoon into the environment. It is routinely used by generators of hazardous waste in compliance with RCRA and TSCA.

- It allows Metro-North and DEC to begin promptly the investigation of possible off-site impacts from the lagoon. Carrying out the necessary site-specific health risk assessment and responding to public concerns in an atmosphere of widespread public opposition would delay remediation and draw limited resources from the primary objective -- cleaning up the entire PCB problem at Harmon Yard and other sites in the State -- including the suspected contamination of groundwater which discharges to the Hudson River.

Pursuant to CERCLA, as amended, and DEC's Technical and Administrative Guidance Memorandum (TAGM) for the Selection of Remedial Actions at Inactive Hazardous Waste Sites, DEC must select remedies that: are protective of human health and the environment; attain ARARs and SCGs; are cost effective; utilize permanent solutions and alternate treatment technologies to the extent practicable; reduces mobility, toxicity, or volume of waste by treatment; are implementable; achieve short-term and long-term effectiveness and have public acceptance. The following sections describe how the selected remedy compares to these criteria.

<u>Protectiveness</u>

The selected remedy provides significant protection of human health and the environment by effectively mitigating the source of contamination. The principal threats at the Site are contact with contaminated material and impacts to the surrounding environment, groundwater and the Hudson River. The contact hazard will be eliminated by removing all the sludge from the lagoon. Furthermore, contact with surface soils above 0.5 mg/kg PCBs will be eliminated by relocating these soils to the remedied lagoon area and covering them with at least two (2) feet of soil. Contact with potentially contaminated equipment will be eliminated by decommissioning the site facilities. Those threats to the surrounding environment consists mainly of a threat to groundwater, and the possibility of further soil contamination due to the lagoon overfilling during heavy rain events and the possibility of contamination migration to the Hudson River. These threats will be eliminated by: (i) removing contaminant sources and filling the lagoon to grade with clean soil; (ii) removing the source material (sludge and soils) with contaminant concentrations that could cause groundwater to be affected; and (iii) recovering floating products to the extent practical to further eliminate the potential threat to groundwater.

Alternative V consists of off-site incineration of sludge and off-site land disposal of contaminated soil. TSCA permitting process and oversight of the operations of PCB incinerators and chemical waste landfills are designed to provide protection to public health and the environment. These disposal options are routinely exercised by generators of hazardous waste in compliance with the Resource Conservation and Recovery Act (RCRA).

<u>Compliance with New York State SCGs (ARARs)</u>

SCGs, also referred to as ARARs, relate to those Federal and State laws, regulations and policies considered in evaluating remedial alternatives can be classified as: action specific, chemical specific and location specific.

Action specific SCGs/ARARs pertain to meeting the requirements for the enactment of the remedial action. The appropriate requirements of the Toxic Substances Control Act (TSCA), the Resource Conservation and Recovery Act (RCRA) and New York hazardous waste regulations will be followed during the remedial action. All staging and testing areas constructed on-site will comply with the current TSCA (40 CFR 761.65), RCRA (40 CFR Part 264.14, 40 CFR Part 264.17, 40 CFR Part 264.31, 40 CFR Part 264.33, 40 CFR Part 264.114, 40 CFR Part 264.193, et. al.), and New York hazardous waste standards.

Chemical specific SCGs/ARARs refers to cleanup levels for media of concern. DEC has established specific cleanup levels for Site soils. The selected remedy will comply with the surface soil cleanup levels by excavating, stabilizing (if necessary) and covering Zone A soils with at least 2 feet of soil. A minimum of two feet of cover between the high groundwater surface and the relocated soil will be maintained. The recommended remedy will comply with subsurface soil cleanup levels by excavation and off-site disposal of soils exceeding these levels.

Location specific SCGs/ARARs pertain to the potential impacts of the remedial actions on specific land classifications. The Site is not in a floodplain or within 100 feet of a mapped wetland. Furthermore, based on the NYS Wild, Scenic and Recreational River System Act (March 1985), the Site is not adjacent to a wild, scenic or recreational portion of the Hudson River. The Site does lie within the Hudson Riverfront section of the coastal zone boundary as designated by the New York State Department of State (NYSDOS). The selected remedy is consistent with the policy of the New York State Department of State's Coastal Zone Management Program. While parts of Croton Point have been mapped as areas of archeological significance, the proposed remedial work will be conducted in areas which have been disturbed by excavation and construction during at least the past fifty years. Based on this information, there are no location-specific SCGs/ARARs designated for remedial actions at the Site.

Cost Effectiveness

Alternatives I, II, III, IV, and VI would offer considerable cost savings over Alternative V. However, Alternatives III, IV and VI have not yet been proven consistently effective and acceptable USEPA under TSCA. Therefore, extensive treatability studies and demonstrations would be required before remediation could begin. In addition, the public was overwhelmingly opposed to on-site remedial alternatives in light of the proximity of residences, an elementary school, public recreational areas and a commuter railroad station to the site. Carrying out the necessary site-specific health risk assessment to determine short-term and long-term effectiveness of on-site remedial alternatives in an atmosphere of widespread public opposition would result in an unacceptable delay in remediation and draw limited resources from the primary objective of cleaning up the PCB problem at Harmon Yard and other sites in the State. For these reasons, it is determined that the final cost of on-site remedial alternatives would approach the cost of Alternative V and hence, Alternative V is determined to be cost-effective.

<u>Utilization of Permanent Solutions and Alternative Treatment Technologies to Reduce Toxicity, Mobility and Volume</u>

The incineration of the sludge will permanently reduce the toxicity of sludge by breaking down PCB and other hazardous organic waste into less toxic substances.

<u>Implementability</u>

Alternative V is the most implementable of the alternatives evaluated. This remedy utilizes well proven off-site treatment and disposal methods for sludge and soils. Implementing this alterative can be accomplished relatively quickly. The local community has expressed strong support for this option, and is overwhelmingly opposed to on-site incineration and the remaining options that require on-site treatment and/or disposal. On-site alternatives other than incineration are not TSCA approved and therefore, extensive treatability studies and demonstrations would be necessary to prove that the system could consistently achieve TSCA's 2 ppm performance criteria or such other variance that USEPA may grant in the context of a completed demonstration or a risk assessment.

<u>Short-Term and Long-Term Effectiveness</u>

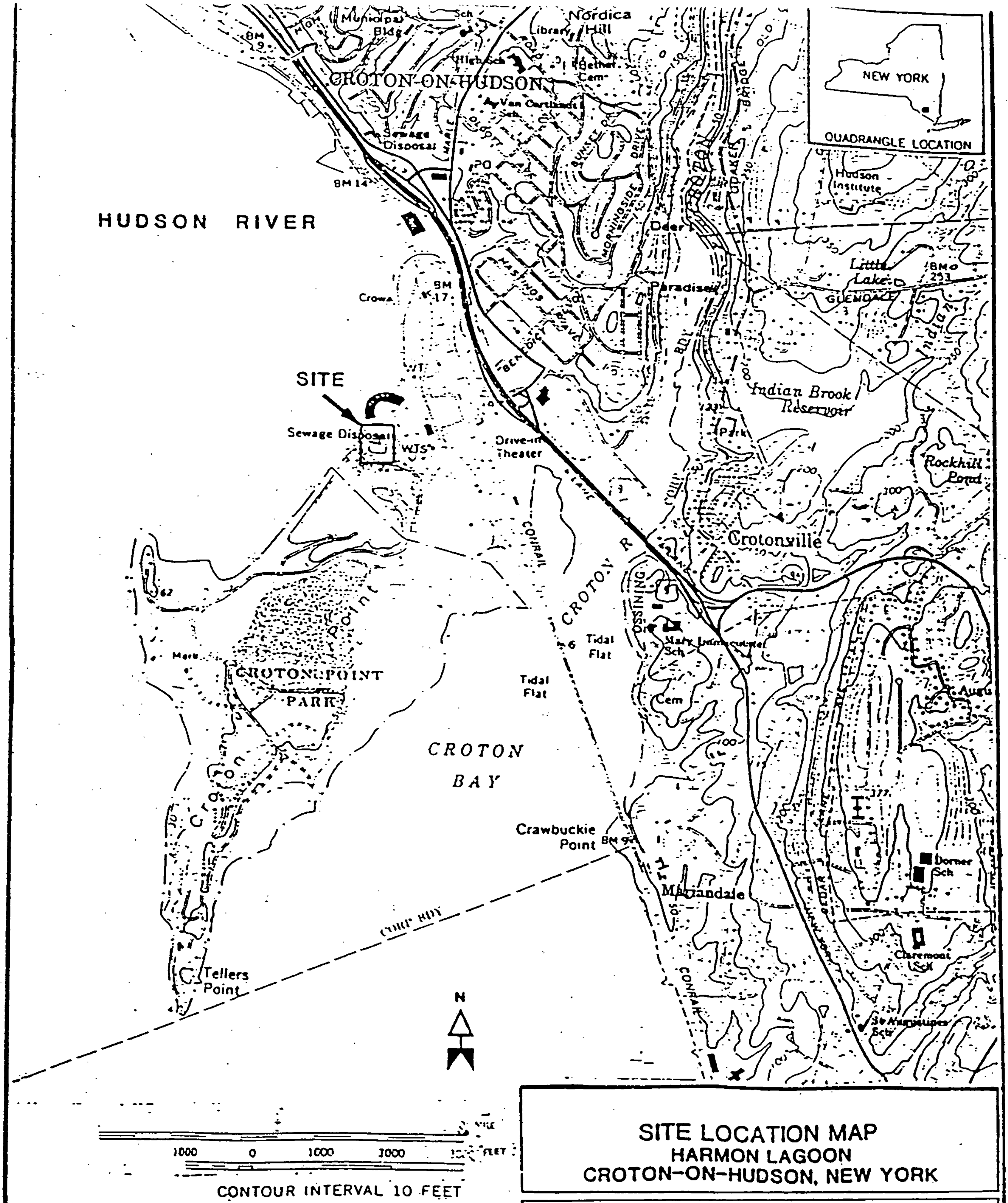
The selected remedy achieves the best short-term effectiveness for the Site. The remedy can achieve cleanup goals quicker than the other alternatives, and with comparably little impact to the local community health and the environment. Long-term effectiveness is not a consideration because the remedy calls for off-site disposal of waste.

XII. POST CLOSURE MONITORING

After the removal of the sludge and soil, the existing groundwater monitoring wells will be sampled periodically to evaluate groundwater quality after closure of the lagoon. Monitoring reports will be submitted by Metro-North to NYSDEC.

APPENDIX A

LIST OF FIGURES

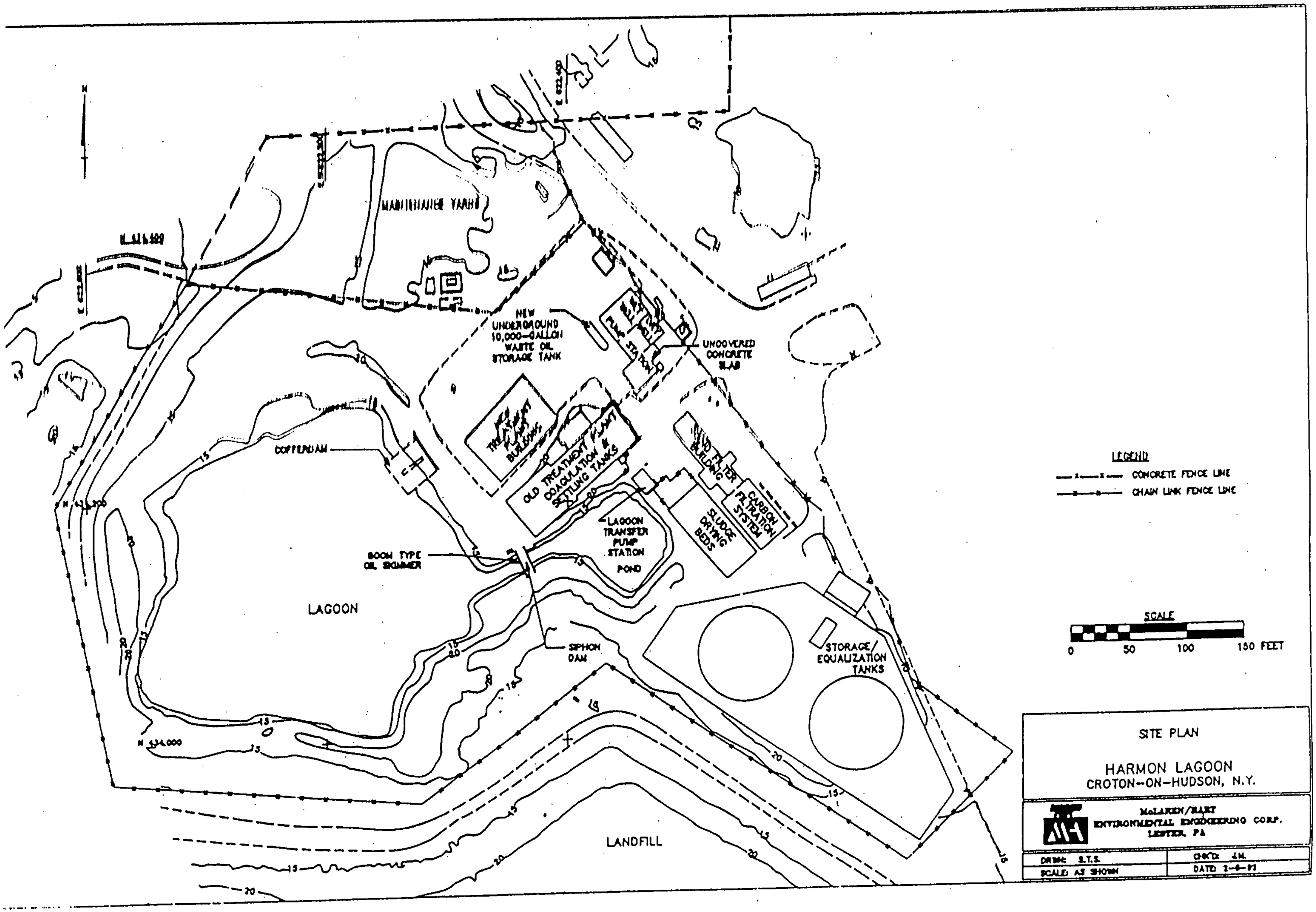


SITE LOCATION MAP
HARMON LAGOON
CROTON-ON-HUDSON, NEW YORK

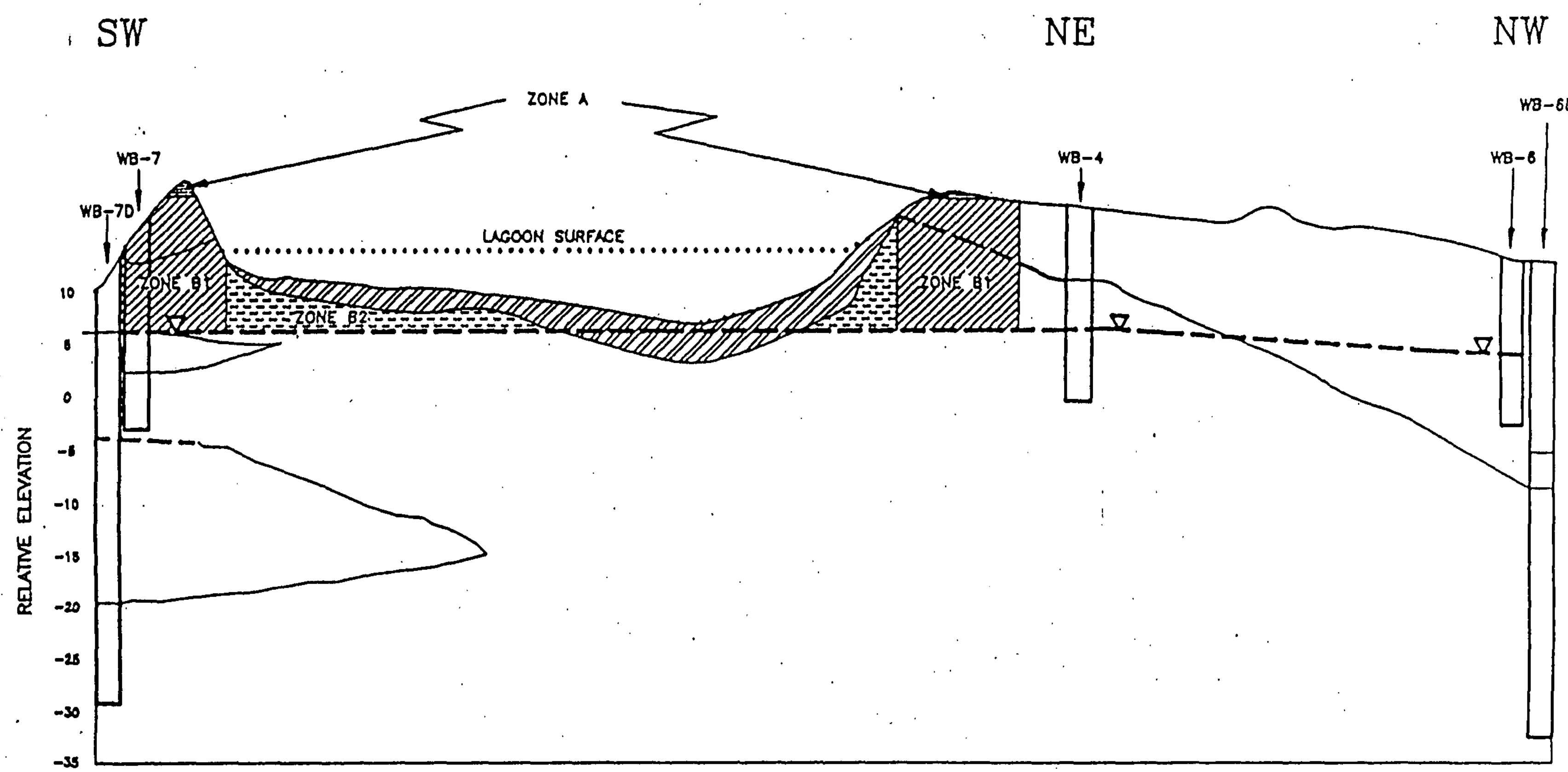
McLAREN/HART
ENVIRONMENTAL ENGINEERING CORP
LESTER, PA

SOURCE:

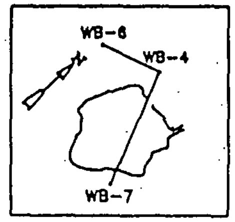
USGS Topographic Quadrangles 7.5 Minute Series
-Haverstraw 1967, Photorevised 1979
-Ossining 1967, Photorevised 1979



MAINTENANCE YARD
NEW UNDERGROUND 10,000-GALLON WASTE OIL STORAGE TANK
UNCOVERED CONCRETE SLAB
PUMP STATION
COFFERDAM
OLD TREATMENT PLANT COAGULATION & SETTLING TANKS
LAGOON TRANSFER PUMP STATION
POND
SLUDGE DRYING BEDS
CARBON FILTRATION SYSTEM
BOOM TYPE OIL SKIMMER
LAGOON
SIPHON DAM
STORAGE/ EQUALIZATION TANKS
LANDFILL
LEGEND
CONCRETE FENCE LINE
CHAIN LINK FENCE LINE
SCALE
0 50 100 150 FEET
SITE PLAN
HARMON LAGOON
CROTON-ON-HUDSON, N.Y.
McLAREN/HART
ENVIRONMENTAL ENGINEERING CORP.
LESTER, PA
DR'BN: S.T.S.
CHK'D: J.M.
SCALE: AS SHOWN



LOCATION OF CROSS SECTION



LEGEND

- LAGOON SLUDGE
- ZONE A 0-2' INTERVAL
- ZONE B1 UNSATURATED SOIL SURROUNDING LAGOON
- ZONE B2 UNSATURATED SOIL BELOW LAGOON
- WATER TABLE
- INFERRED CONTACT

HORIZONTAL SCALE: 0' 70' 140'

VERTICAL SCALE: 0' 8.75' 17.5'

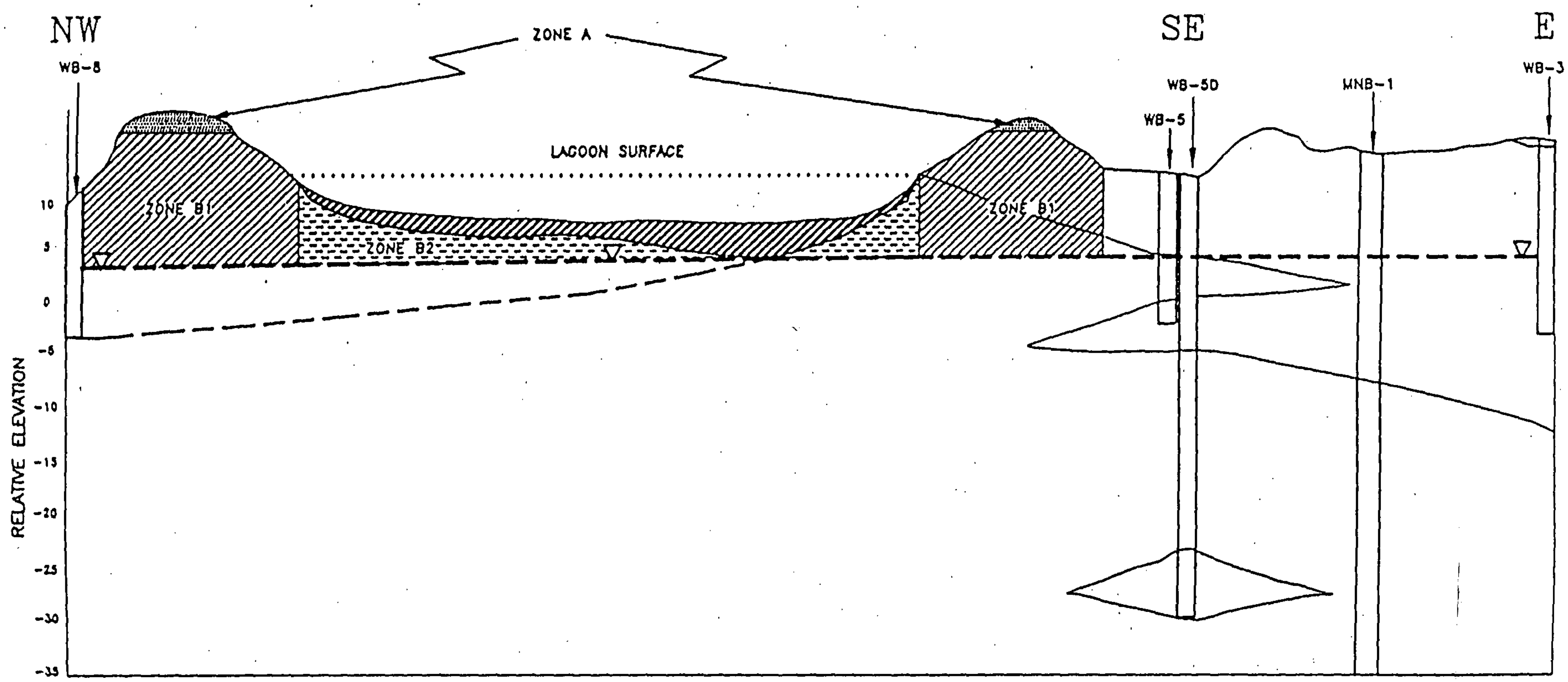
ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL

N-S PROPOSED LIMITS OF UNSATURATED SOIL IN ZONES B1 AND B2

HARMON LAGOON

CROTON-ON-HUDSON, NEW YORK

McLAREN/HART
ENVIRONMENTAL ENGINEERING CORP.
LESTER, PA



LEGEND

- LAGOON SLUDGE
- ZONE A 0-2' INTERVAL
- ZONE B1 UNSATURATED SOIL SURROUNDING LAGOON
- ZONE B2 UNSATURATED SOIL BELOW LAGOON
- WATER TABLE
- INFERRED CONTACT

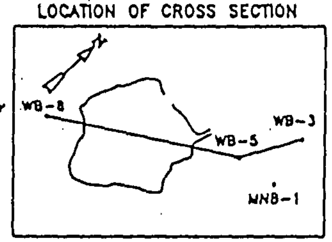
APPROXIMATE SCALE

HORIZONTAL SCALE: 0' 70' 140'

VERTICAL SCALE: 0' 8.75' 17.5'

ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL

LOCATION OF CROSS SECTION

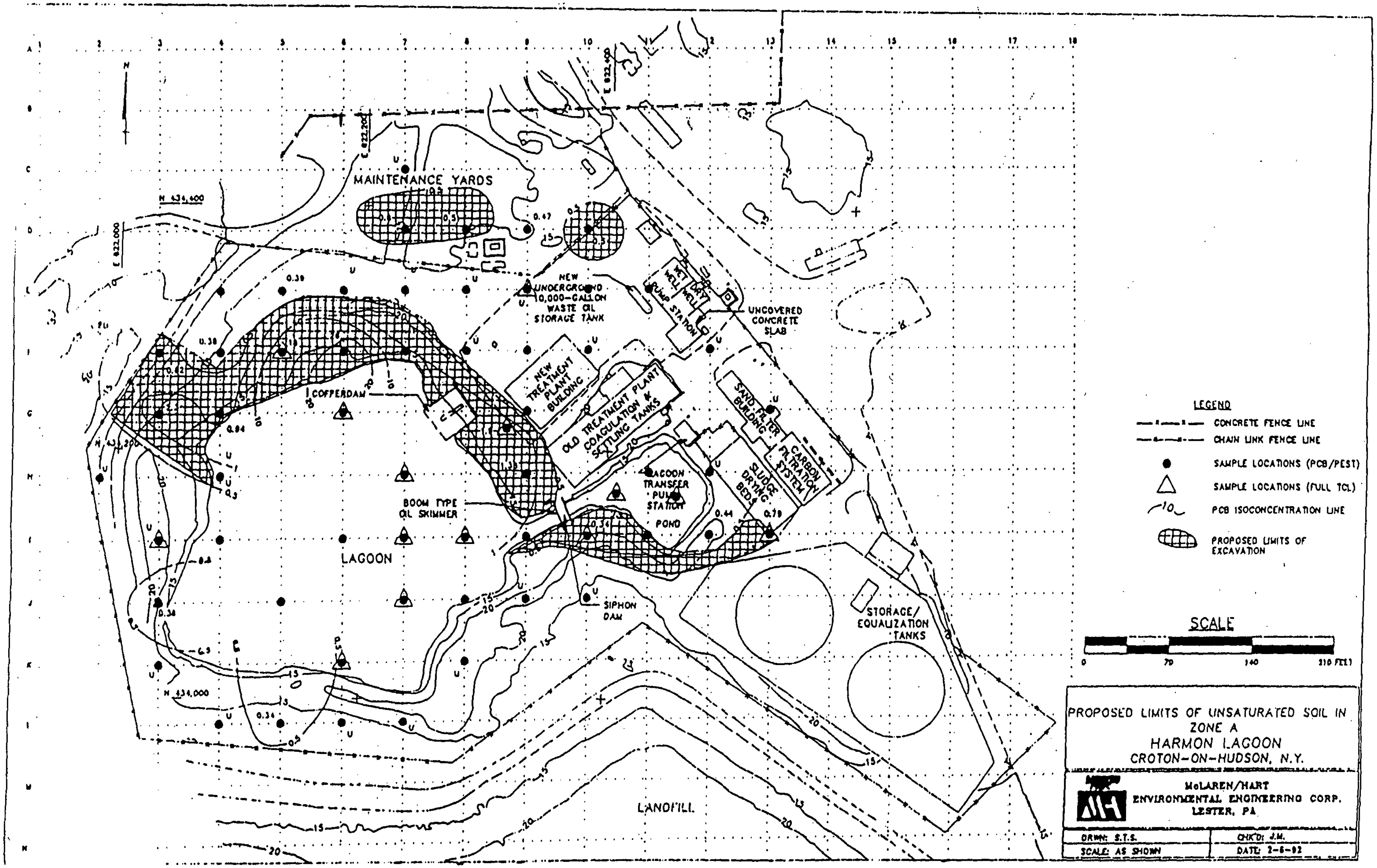


E-W PROPOSED LIMITS OF UNSATURATED SOIL IN ZONES B1 AND B2

HARMON LAGOON

CROTON-ON-HUDSON, NEW YORK

McLAREN/HART
ENVIRONMENTAL ENGINEERING CORP.
LESTER, PA



MAINTENANCE YARDS
NEW UNDERGROUND 10,000-GALLON WASTE OIL STORAGE TANK
WET WELL
DRY WELL
PUMP STATION
UNCOVERED CONCRETE SLAB
NEW TREATMENT PLANT BUILDING
OLD TREATMENT PLANT COAGULATION & SETTLING TANKS
SAND FILTER BUILDING
CARBON FILTRATION SYSTEM
SLUDGE DRYING BEDS
LAGOON TRANSFER PUMP STATION
POND
COFFERDAM
BOOM TYPE OIL SKIMMER
LAGOON
SIPHON DAM
STORAGE/ EQUALIZATION TANKS
LANDFILL
N 434,600
N 434,200
N 434,000
E 822,000
E 822,200
E 822,400
LEGEND
CONCRETE FENCE LINE
CHAIN LINK FENCE LINE
SAMPLE LOCATIONS (PCB/PEST)
SAMPLE LOCATIONS (FULL TCL)
PCB ISOCONCENTRATION LINE
PROPOSED LIMITS OF EXCAVATION
SCALE
0
70
140
210 FEET
PROPOSED LIMITS OF UNSATURATED SOIL IN ZONE A
HARMON LAGOON
CROTON-ON-HUDSON, N.Y.
McLAREN/HART
ENVIRONMENTAL ENGINEERING CORP.
LESTER, PA
DRWN: S.T.S.
CHK'D: J.M.
SCALE: AS SHOWN
DATE: 2-6-92

APPENDIX B

RESPONSIVENESS SUMMARY

New York State Department of Environmental Conservation
Region 3
21 South Putt Corners Road
New Paltz, NY 12561-1696
914-255-5453

RESPONSIVENESS SUMMARY

For Comments on the Harmon Railroad Yard Wastewater Lagoon Inactive Hazardous Waste Disposal Site (360010)

INTRODUCTION:

The New York State Department of Environmental Conservation (DEC) and the New York State Department of Health (DOH) held a public meeting for the Harmon Railroad Yard Wastewater Lagoon Inactive Hazardous Waste Disposal Site (ID#360010) on February 27, 1992 at the Village of Croton Municipal Building. The following representatives of DEC, DOH and the Westchester County Department of Health conducted the meeting:

Ramanand Pergadia -	Project Manager, Hazardous Waste Remediation, DEC, Region 3
Erin O'Dell -	Citizen Participation Specialist, DEC Region 3
G. Anders Carlson -	Environmental Exposure Investigation, DOH
Mark Van Valkenburg -	Project Manager, Environmental Exposure Investigation, DOH
Elizabeth Hendricks-	Westchester County Department of Health

More than 100 citizens and elected officials attended this meeting.

PURPOSE OF THE MEETING:

The purpose of the meeting was to report to the public and receive comments on the results of a Remedial Investigation/ Feasibility Study (RI/FS) and DEC's Proposed Remedial Action Plan (PRAP) for the Harmon Railroad Yard Wastewater Lagoon site. The public meeting was held during a 30-day public comment period on the PRAP. The remedial alternative selected in the PRAP included on-site incineration of the PCB contaminated lagoon sludge and soils exceeding cleanup levels (Alternative I).

PUBLIC RESPONSE:

The public response to the PRAP during the meeting was strongly negative. Questions were raised concerning health and environmental impacts, technical feasibility and cost of the proposed remediation plan. After stating that adequate public notice was not given concerning the meeting, the public, including the Westchester County League of Women's Voters (LWV), requested another public meeting and an extension of the 30-day comment period.

The public opposition to the PRAP continued after the public meeting. DEC and DOH received numerous letters from the public requesting the consideration of different remedial alternatives. The letters also requested an additional public meeting and an extension of the 30-day comment period.

ADDITIONAL PUBLIC INVOLVEMENT:

In response to the requests made at the meeting and in subsequent letters, DEC extended the public comment period by 60 days. During the comment period, DEC and DOH received hundreds of letters, telephone calls and petition signatures protesting the remedial action selected in the PRAP. DEC and DOH attended two additional public information meetings -- a forum sponsored by the LWV and an availability session sponsored by DEC and DOH.

The forum, held on April 23, 1992 at the Ossining High School, included a debate on the PRAP with the following participants:

Ralph Manna	- Regional Director, DEC, Region 3
Dr. John Hawley	- Research Director, DOH
David Lipsky	- Independent Toxicologist, Dynamac Corp.
Seth Davis	- Attorney, Croton Ad-Hoc Committee
Bridget Barclay	- Hudson River Clearwater Sloop

After the debate, the public was given an opportunity to voice their concerns and questions. Questions were asked regarding the health and environmental impacts of the proposed alternative. More than 500 people attended the forum.

The availability session, held at the Croton Municipal Building on May 6, 1992, provided an opportunity for the public to ask questions of DEC and DOH technical staff in an informal, one-on-one setting. Approximately 200 people attended the availability session.

DEC/DOH RESPONSE TO PUBLIC COMMENTS:

DEC, in consultation with DOH, selects a proposed remedial action by balancing various evaluation criteria such as protection of human health and the environment, compliance with State standards and criteria set for the site, cost effectiveness, state and community assessment and technological feasibility. Based on the comments and concerns expressed by the public, serious consideration was given to whether Alternative I (on-site incineration) provided the best balance of selection criteria.

On June 30, 1992, DEC Commissioner Thomas C. Jorling announced his decision to excavate the contaminated sludge and soil for off-site incineration and land burial. While Commissioner Jorling noted that "on-site incineration would have been an appropriate technical solution," the removal of the contaminated sludge and soil was selected because:

- It is the quickest effective solution to the problem of removing 2,500 tons of PCB-laden sludge and preventing migration of PCBs from the lagoon into the environment.

- It allows Metro-North and DEC to promptly begin investigating possible off-site impacts from the lagoon. Conducting the necessary site-specific health risk assessment for on-site incineration and responding to public concerns in an atmosphere of widespread public opposition could delay remediation and draw limited staff resources from their primary responsibilities -- cleaning up the entire PCB problem at the Harmon Yard site and other sites in the State -- including the suspected contamination of groundwater which discharges to the Hudson River.

QUESTIONS AND RESPONSES:

During the 90 day comment period and the various public meetings, DEC and DOH received hundreds of comments and questions from concerned area citizens, residents of Half Moon Bay Condominiums, the students at St. Augustine's school and many community leaders and elected representatives. The majority of the questions and comments focused on the technology of mobile incineration and the impacts of this technology on human health and the environment. Attachment 1 summarizes the major issues that were raised by the public concerning mobile incineration technology. If on-site incineration was selected, a site-specific health risk assessment and a trial burn would have been conducted that would answer these questions. However, with the decision to excavate and remove the sludge and soil off-site, this summary will not address these issues.

In addition to questions about mobile incineration technology and its impacts, the following issues were raised during the comment period:

Issue: A health risk assessment should be performed on all remedial alternatives. The alternative with the minimum impact should be selected as the final remedial action. The final remedial action should not be selected without further investigation.

Response: Additional investigations, such as detailed health risk assessments for each alternative, would not be necessary since the selected remedy is adequately protective of public health and the environment.

Issue: The PCB contamination at the lagoon should be handled on-site rather than passing the problem (and Incineration) to another community. On-site solutions such as bioremediation should be thoroughly explored.

Response: The United States Environmental Protection Agency (EPA) mandates that disposal options for PCB contamination greater than 500 parts per million (ppm) are limited to incineration or an alternative treatment method that achieves a standard of performance equal to incineration. DEC considered using an alternative technology such as bioremediation but determined that long and costly "treatability studies" would be necessary to prove that these technologies would perform as well as incineration. In addition, there would be no guarantee that the technologies would be viable for the site. These studies could cause substantial delays in the remediation of the site.

Issue: Hudson River Clearwater Sloop advocated placing the contaminated sludge and soil in an above-ground containment structure until adequate technology for PCB remediation was developed. Was this alternative considered?

Response: Given the EPA mandate governing PCB disposal options (as noted above), it is unlikely that the EPA would approve "temporary" storage of PCB-contaminated wastes on-site. Furthermore, it would cost several million dollars to design, construct and maintain the "temporary" storage facility. This cost would be in addition to the several million dollars necessary to ultimately dispose of and/or treat the wastes.

ATTACHMENT 1:
ISSUES IDENTIFIED DURING PUBLIC COMMENT PERIOD
HARMON RAILROAD YARD WASTE WATER LAGOON SITE (#360010)

HEALTH

- There is a large population in a relatively small geographic location (Croton and Ossining). Any adverse health impacts from the incinerator could affect a large number of people, including nearby school children and residents of the Half-Moon Bay Condominiums.

- There were no health studies conducted at the site prior to the selection of a remedial alternative.

- The combined health effects from the incinerator, Charles Point, Peekskill and Ossining sewage treatment plants, Haverstraw power plant, Indian Point nuclear power plant, Sprout Brook ash pit and Croton Landfill needs to be addressed.

- A health risk assessment conducted after the selection of a remedial alternative implies a commitment to that alternative; the alternative will not be abandoned regardless of the results of the risk assessment.

- A risk assessment may not be able to predict the long and short-term effects of unidentified incineration by-products.

- There should be a study to compare the impacts from the site and the incinerator to determine which will have the greatest health impact.

INCINERATION TECHNOLOGY

- Mobile incineration technology is unproven. It has not been used in New York State and Croton was chosen as the "guinea pig" testing ground.

- The effect of incineration on the metals in the sludge and soil needs to be determined.

- Daily operation of the incinerator will have an unknown impact on such things as noise and dust levels in the area.

ATTACHMENT 1 CONT'D:
ISSUES IDENTIFIED DURING PUBLIC COMMENT PERIOD
HARMON RAILROAD YARD WASTE WATER LAGOON SITE (#360010)

- The performance standard set for an incinerator is an ideal, not a reality. There is a large margin for error in the calculations used to demonstrate an incinerator's efficiency. This does not account for fugitive emissions, toxics remaining in the soil, etc.

- The breakdown products of the incineration and their toxicity have not been determined.

- The operation of this incinerator should be compared to other sites where this technology is being used.

- DEC did not provide any information on the specific mobile incinerator that is to be used at the site. There should be specific information known about the incinerator before this alternative is chosen.

- What actions will be taken in case of emergencies/failures such as those that occurred at the incinerator in Goose Bay, Canada.

<u>OTHER ISSUES</u>

- The incinerator will lower property values

- The incinerator may become permanent and be used to burn PCB contamination from other sites in New York. Assurances must be provided that DEC will not bring wastes from other areas to burn at the Croton incinerator.

- The use of an incinerator is not consistent with the local waterfront revitalization plan for Croton.

HARMON RAILROAD YARD
WASTEWATER EQUALIZATION LAGOON
AND
OLD TREATMENT PLANT (I.D. #360010)
CROTON-ON-HUDSON, WESTCHESTER COUNTY

Summary of Major Comments and Responses

C: Does NYSDEC plan to bring hazardous waste from other facilities or hazardous waste sites for incinerating at the Harmon Railroad Yard site?

R: No. Waste material from other sites or facilities will not be destroyed by on-site incineration. Should on-site incineration remain as the remedial action, only PCB sludges and PCB soil in and around the Metro-North lagoon site (I.D. 360010) will be destroyed by the on-site incinerator.

C: How could NYSDEC select on-site incineration without knowing that the public health risk will be "acceptable"? What will NYSDEC do if the risk assessment is not within "acceptable" limits? What will NYSDEC do if the trial burn results do not meet the TSCA permit requirements or substantive requirements of the NYSDEC's air and RCRA permits?

R: NYS has proposed to implement the on-site incineration remedy with the understanding that it will meet all air emission and health exposure requirements. In order to assure that is the case, Metro-North will be required to perform a full health risk assessment should on-site incineration remains as the remedy. The draft work plan and scope of the risk assessment will be presented to the public seeking their input before it is started. The final risk assessment will also be presented to the public for their review and comment. If the risk assessment outcome is not acceptable to NYSDOH and NYSDEC, on-site incineration will not be utilized to remediate the site. To be acceptable the risk assessment must show that on-site incineration would meet all health exposure requirements. As indicated in earlier meetings, a trial burn will be performed and the results will be analyzed and shared with the public. If NYSDEC/NYSDOH feel that on-site incineration is no longer viable, it will be terminated and another alternative will be implemented.

C: Will this incinerator be running 24 hours a day? How much noise will there be and what kind of smells will be produced? What happens to the water that is used in this cleaning process? How much PCB dust will be airborne when the material is lifted into the incinerator and removed from it?

R: This kind of incineration is efficient running 24 hours a day, though it can be operated for shorter periods of time. If a shorter daily operating period is used, whether for technical or other reasons, it would be less efficient and the overall remedial process will take longer. Noise levels from most mobile incineration units should not be noticeable beyond a distance of 400 feet when the unit is operating, but the noise level in the immediate vicinity of the incineration unit will require ear protection for on-site personnel. Water used in the cleanup process, whether from the incinerator or other site-related activities, will be treated in Metro-North's wastewater treatment plant which is specially designed to treat PCBs. All wastewater treatment and discharge is controlled and monitored under an existing permit from the NYSDEC. Among other sources, contaminated water will come from general operation of the incinerator and dewatering sludge and soil prior to incineration. A Comprehensive Worker and Community Health and Safety Plan will be developed and will include requirements for controlling dust during all aspects of the project. We do not know now if there is anything in the sludge that would cause offensive odors during incineration. This is a concern that would be evaluated during design and required test burns.

C: The health effects of around 340 lbs. of lead being emitted at this incineration site is unacceptable. Lead and cadmium are non-volatile elements and will settle and remain in the community for many years.

R: The "estimate" that 340 lbs. of lead will be emitted from the incinerator during remediation is too high. This was based on controlling 90% of the metals emissions. In actuality, the air pollution control equipment will exceed 90% collection efficiency for metals. Among others, any incinerator used at this site will have to meet the requirements of the U.S. Environmental Protection Agency's Resource Conservation and Recovery Act (RCRA). RCRA requires that a risk assessment must also be conducted for all metals, including lead and cadmium emissions. NYSDEC and NYSDOH staff will work closely with the public on all aspects of remediation including designing locations and methods/frequency of air monitoring, and any contingency plan necessary to assure the public health is protected during the remediation of the lagoon.

C: Even if you can convince us that the incineration is safe, who is going to monitor?

R: A consultant approved by the State, and who specializes in air quality modeling and monitoring will be hired to design and oversee the operation of all monitoring activities. Continuous and periodic monitoring of several air quality parameters such as combustion control parameters, carbon monoxide, metals, hydrocarbons, hydrogen chloride and PCBs will be conducted. All air quality monitoring will be carried out under NYSDEC's oversight.

C: Incineration does not treat heavy metals and vast amounts of lead and other poisonous metals would remain as molten material to be buried on-site. This site does not qualify as a garbage landfill, yet NYSDEC is going to use it for toxics, without a liner, and within 100 feet of the Hudson River.

R: It is true that most of the metals would be retained in the incinerated ash residue, in fact that would be a goal of the emission controls. In order to make the metals unavailable for leaching into the environment, the residue will be stabilized, using a proven and widely used technology before replacing it in the remediated lagoon. The stabilized residue will be tested using State or Federal toxicity leaching tests. If the residue fails any of the tests for the toxic metals, it will be disposed in an off-site landfill: Only non-hazardous material will be disposed in the remediated lagoon. The stabilized residue will be placed back into the remediated lagoon on top of a clay liner at least two feet thick. These measures will protect the groundwater and prevent leaching of metals.

C: Loss of power, loss of induced draft, excessive built-up pressure in the combustion chamber and high temperatures in the quench chamber are possible upset conditions. Although these conditions may not occur frequently, there is a concern that any emissions that are unexpectedly released could harm both remediation personnel and residents in the vicinity.

R: Yes, though improbable, it is possible for upset conditions to occur. Stack emissions from the worst of these upset conditions will be taken into account in performing the human health risk assessment and air quality modelling. Appropriate contingency plans will be developed and put in place prior to the mobilization of the incineration unit. The incinerator will also be required to have controls that will automatically shut it down if there is an upset.

C: Who will have the authority to halt the process if the environmental emissions exceed standards, and the process is determined to be hazardous to neighboring communities?

R: Prior to the mobilization of the incineration unit, "trigger" levels or monitoring criteria operating conditions and emissions of metals, PCBs and other constituents will be established. The on-site health and safety officer and the engineering consultant hired to oversee the operation of the incinerator will have the authority to shut down the operation. After the shut down, the whole incineration system will be checked and tested before it is re-started. If the incineration unit fails to meet the established performance and regulatory standards, the Division of Hazardous Waste Remediation will re-evaluate the continued use of that incineration unit.

C: There are no provisions reported in the Feasibility Study to address the necessary further study of existing or suspected contamination attributable to the lagoon facility beyond the Metro-North property limits. Groundwater contaminants at this facility have not been tested below a depth of 40 or 50 feet. Addressing this information need would likely warrant consideration of additional groundwater investigation and other types of cleanup measures.

R: The Proposed Remedial Action Plan for the Harmon Yard Lagoon presented at the February 27, 1992 public meeting discussed a remedy to remove a major source of PCB contamination, thereby greatly reducing the public health and environmental threat. By no means was this meant to be the final remedy. Shortly, a detailed Remedial Investigation will be conducted by Metro-North to assess any impacts to the groundwater, Hudson River surface water and sediments and any off-site contamination. Once the detailed work plan is drafted, we will share that information with the public and solicit public input. We welcome your comments and suggestions.

C: The NYSDEC representative at the February 27th hearing also mentioned "in passing" that a separate State-funded investigation is in its "advanced stages" on other parts of the Metro-North site. It sounded very much like a "different agency" investigation, with no coordination between the Lagoon Study and this "other" process.

If multiple types of contamination exist on the same site and if these other problems also require remediation and if pooling the data and remediation process could expedite the cleanup...why does it sound like you people are not talking to each other? Or am I incorrect in what I thought I heard?

R: Metro-North is a large facility with challenging environmental problems involving several Divisions within the Department. Recently the Department has initiated a multi-media approach in an effort to coordinate all ongoing and future remedial actions at the site. This will assure better enforcement of Metro-North's environmental activities.

C: State agencies, including MTA, which directly undertake actions in the coastal area are required to conduct activities in a manner which is consistent with the coastal area policies of any approved local water front revitalization program. Has NYSDEC reviewed their activities for consistency with the coastal area policies?

R: The regulations promulgated pursuant to the Article 19 NYCRR, Part 600 provide that only those state agency actions which are classified as Type I or "unlisted" pursuant to the State Environmental Quality Review Act (SEQRA) are subject to consistency review. However, administrative enforcement actions, such as those involving the remediation of the inactive hazardous waste site at Croton lagoon, are considered to be "exempt" actions under SEQRA (6 NYCRR 617.2(q)) and are therefore not reviewable for consistency. Both NYSDEC and MTA are covered by this exemption. In addition, the proposed remedial action greatly reduces the existing environmental/public health threat, which would enhance the coastal area.

C: The cost of all property in the area is bound to fall.

R: The proposed remedy is short term and expected to take only 6 to 12 months for completion. Once the remedy is completed, it will eliminate or greatly reduce hazardous materials from the site. The remediation will ultimately improve the environmental and public health aspects of the community.

APPENDIX C

LISTING OF DOCUMENTS IN THE ADMINISTRATIVE RECORD

EXHIBIT A

ADMINISTRATIVE DOCUMENTS AND COMMUNITY ROLE IN THE SELECTION PROCESS

The following primary administrative documents are part of the Administrative Record.

- "Remedial Investigation Report, Harmon Lagoon, Croton-on-Hudson, New York," prepared by Fred C. Hart Associates, Inc.; November 27, 1989 and Addenda.

- "Feasibility Study, Harmon Lagoon, Croton-on-Hudson, New York," prepared by McLaren/Hart Environmental Engineering Corporation; November 1990.

- "Feasibility Study, Harmon Lagoon, Croton-on-Hudson, New York." prepared by McLaren/Hart Environmental Engineering Corporation; Revised, February 1992.

- "Endangerment Assessment, Harmon Lagoon, Croton-on-Hudson, New York," prepared by Fred C. Hart Associates, Inc.; December 28, 1989.

- "Site Operations Plan, Harmon Lagoon, Croton-on-Hudson, New York," prepared by Fred C. Hart Associates, Inc.; May 1988 with Addenda 1 through 4.

- "Product Investigation Report, Harmony Lagoon, Croton-on-Hudson, New York," prepared by Fred C. Hart Associates, Inc.; November 20, 1990.

Appendix B
Zone A Soil Confirmatory Sampling - Validated Analytical Results

ERM-Northeast

175 Froehlich Farm Blvd.
Woodbury, NY 11797
(516) 921-4300
(516) 921-5679 (Fax)

17 April 1995

Chittibabu Vasudevan, Ph.D., P.E.
Chief, Eastern Projects Section
Bureau of Hazardous Waste Remediation
New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233

ERM

Christopher K. Bennett, P.E.
Deputy Director, Facilities Engineering
Metro-North Railroad Company
347 Madison Avenue
New York, New York 10017

Re: Harmon Railroad Yard Wastewater Treatment Area (OU-1)
Zone A Soil Confirmatory Sampling - Final Round
Validated Analytical Results

Dear Sirs:

The purpose of this letter is to present the results of the final round of Zone A soil confirmatory sampling, which were recently validated by ERM-Northeast (ERM), and to present the final extent and volumes of Zone A soil which require remediation.

INTRODUCTION

In accordance with the NYSDEC-approved Field Sampling and Analysis Plan (FSAP) (ERM; 13 July 1994), three previous rounds of Zone A confirmatory soil samples were collected by ERM in June 1994, September 1994 and November 1994. The results of these three rounds of sampling were summarized in 1 November 1994, 22 November 1994, and 27 February 1995 letters, respectively, from ERM to Metro-North and NYSDEC.

Based on the validated results of the first three rounds of sampling, ERM collected six additional confirmatory samples on 10 March 1995. All samples were analyzed using CLP protocols and deliverables. ERM received the CLP-deliverable data packages in April 1995 and has completed the task of validating the analytical results.

ERM

The validated analytical results are summarized below, and the sample designations and locations for all sampling rounds are shown on Figure 1. The data validation report and the validated laboratory Form 1 reports are attached to this letter.

The full CLP deliverable data packages for all sampling rounds are on file with ERM, and are available upon request.

ZONE A2 SOIL ANALYTICAL RESULTS

The term "Zone A2 soil" as used in the construction contract, refers to Zone A soil which contains PCB concentrations greater than 0.5 mg/kg but less than 10 mg/kg. This soil must be excavated and placed below the cap to be constructed over the lagoon.

ERM collected six original samples, and one duplicate sample, for a total of seven Zone A2 soil samples. Five samples (samples SDB-A, SDB-B, SDB-C, SDB-D, and SDB-E) were composite samples collected from each of the five sludge drying beds. Each composite sample was formed by collecting four grab samples within each respective drying bed. Sample ZA2-7-PL was collected at the precast property fence at the north boundary of the laydown area north of the lagoon area, as shown on Figure 1.

The validated analytical results from the final round of sampling revealed that three samples (ZA2-7-PL, SDB-A and SDB-E) exceeded the Zone A PCB cleanup level of 0.5 mg/kg.

IMPACTS TO REMEDIATION

Analytical results revealed that excavation in the laydown area must extend to the precast fence. In addition, two of the sludge drying beds (the northernmost and southernmost beds) must also be excavated. All Zone A excavation will extend to a depth of two feet below grade.

FINAL QUANTITIES

The original contract quantity of 2,020 cubic yards for Zone A2 soil excavation included excavation of the entire sludge drying beds. Based on the final limits of excavation, there will be a decrease in 140 cubic yards

ERM

from the sludge drying beds, and an increase in 452 cubic yards from the two other additional areas requiring remediation as shown on Figure 1. The total net increase in Zone A2 soil is therefore 312 cubic yards, increasing the total quantity from 2,020 cubic yards to 2,332 cubic yards. Therefore, Bid Item 02200.B must be increased from 2,020 cubic yards to 2,332 cubic yards. This increase represents a 15.5 percent increase in the volume of Zone A2 soil requiring excavation.

The volume of Zone A1 soil was unchanged as a result of the confirmatory sampling efforts, remaining at 320 cubic yards.

If you have any questions regarding the Zone A soil sampling results, or have any other questions, please contact either of us at (516) 921-4300.

Very truly yours,

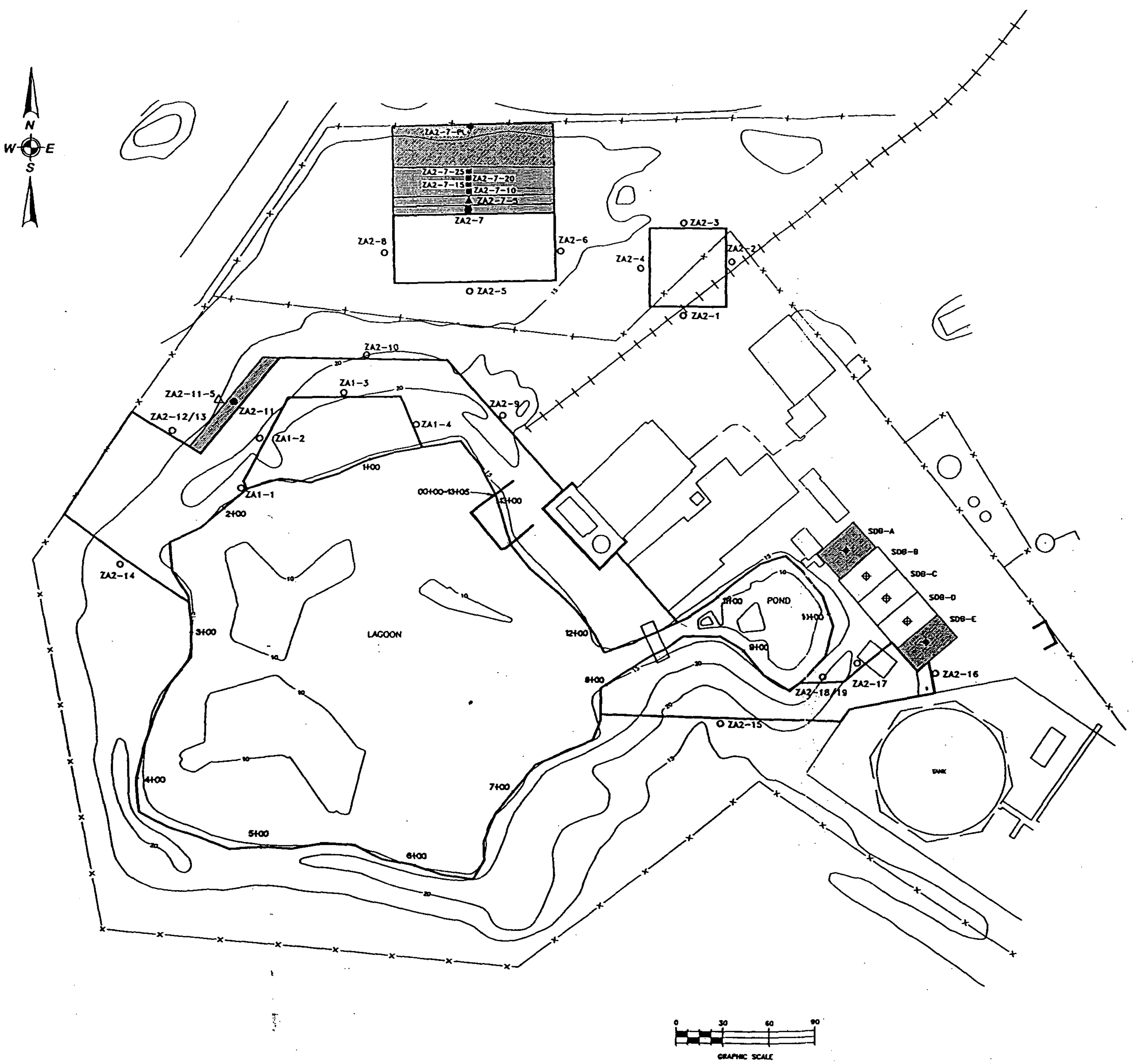
Robert Rivera
Senior Project Engineer

Scott Ranger/rr

Scott W. Ranger
Senior Project Manager

enclosure

cc: D. Evans (NYSDEC)
M. Mehta (MNRC)
J. Iannone (ERM)



LEGEND

- FIRST ROUND CONFIRMATORY SOIL SAMPLE WITH PCB CONCENTRATION BELOW CLEANUP/ ACTION LEVEL
- FIRST ROUND CONFIRMATORY SOIL SAMPLE WITH PCB CONCENTRATION GREATER THAN CLEANUP/ACTION LEVEL
- SECOND ROUND CONFIRMATORY SOIL SAMPLE WITH PCB CONCENTRATION BELOW CLEANUP/ ACTION LEVEL
- SECOND ROUND CONFIRMATORY SOIL SAMPLE WITH PCB CONCENTRATION GREATER THAN CLEANUP/ACTION LEVEL
- THIRD ROUND CONFIRMATORY SOIL SAMPLE WITH PCB CONCENTRATION GREATER THAN CLEANUP/ACTION LEVEL
- FINAL ROUND CONFIRMATORY SOIL SAMPLE WITH PCB CONCENTRATION GREATER THAN CLEANUP/ACTION LEVEL
- FINAL ROUND CONFIRMATORY SOIL SAMPLE WITH PCB CONCENTRATION BELOW CLEANUP/ ACTION LEVEL
- INCREASE IN EXCAVATION AREA DUE TO CONFIRMATORY SOIL SAMPLE RESULT HIGHER THAN CLEANUP LEVEL.
- ZONE A BOUNDARIES

METRO-NORTH RAILROAD COMPANY

HARMON RAILROAD YARD WASTEWATER TREATMENT AREA REMEDIATION

ERM-Northeast
Environmental Resources Management
ERM

ZONE A
CONFIRMATORY SOIL SAMPLE LOCATIONS
AND DESIGNATIONS

C.M.F./M.M. | APRIL 17, 1995 | GRAPHIC | 680.002.8 | SOILRESL

1

DATA VALIDATION REVIEW
ADDITIONAL SOIL SAMPLING
METRO NORTH RAILROAD COMPANY
ERM-NORTHEAST PROJECT NUMBER 680.002.8
E³I PROJECT NO. 950855

ERM

Deliverables:

The above referenced Sample Data Summary Package and Sample Data Package contains all required deliverables as stipulated under the 1991 New York State Analytical Services Protocols (ASP) Superfund Category for Polychlorinated Biphenyls (PCBs), analyzed by modified method 91-3. The data have been validated according to the protocols and QC requirements of the ASP, the USEPA Laboratory Analysis Functional Guidelines, the USEPA Region 2 CLP Data Review SOP, and the reviewer's professional judgement.

This validation report pertains to the following samples:

Samples	QC Samples
ZA27PL	Dup (Field duplicate of SDBC)
SDBA	SDBA MS/MSD
SDBB	
SDBC	
SDBD	
SDBE	

ORGANICS

The following items/criteria were reviewed:

- Quantitation/detection limits
- Holding times
- Initial and continuing calibration data
- PCB standards summary and data
- Method blanks
- Surrogate recoveries, summary and data
- MS/MSD/MSB recoveries, summary and data
- Data system printouts
- GC chromatograms

- Qualitative and quantitative compound identification
- Case narrative and deliverables compliance

The items listed above were in compliance with NYSDEC ASP protocols and USEPA QC requirements with exceptions discussed in the text below. The data have been validated according to the procedures outlined above and qualified accordingly.

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POLYCHLORINATED BIPHENYLS (PCBs)

- Soil samples were only analyzed for PCBs; therefore, pesticide related QC criteria and standard analyses results were not used to assess sample PCB results.

- The following samples exhibited surrogate recoveries outside the advisory QC limit of 60-150%, on either of the two GC columns. For the purpose of evaluating sample data, since only PCBs and not pesticides were analyzed for, only the surrogate recovery results from decachlorobiphenyl (DCB) are listed and used to qualify the results. Based on these results, for samples which indicated surrogate DCB recovery greater than the specification on both columns, positive results are considered estimated flagged "J". For samples which indicated surrogate DCB less than the limit on both columns, positive results are flagged "J" and non-detects are flagged "UJ". No qualification of data was performed when the surrogate was outside the limit on only one column. A = acceptable surrogate recovery.

Sample	DCB (DB608)	DCB (RTX1701)
SDBD	58%	41%
SDBE	45%	31%

- The PCB matrix spike/matrix spike duplicate analysis for sample SDBA MS/MSD indicated the percent recoveries for AR1254 at -1368% and -1498%, respectively. Significantly outside the advisory QC limit of 29-131%. This was due to the high concentration of AR1254 in sample SDBA. Since no action is taken on the MS/MSD data alone to qualify the entire data package, and the elevated recoveries was due to actual sample levels, no qualification of results is warranted.

- PCBs analytical sequence beginning on 2/25/95 on the DB608 column, calibration verification analyzed on 3/15/95 for AR1254 indicated relative percent difference between initial and continuing CF at 19.1%, outside the QC limit of ≤ 15%. Therefore, in samples associated with this calibration verification, AR1254 is considered estimated with positive results flagged "J" and non-detects "UJ".

- The following table lists samples, detected analytes and calculated concentrations percent difference (%D) between the DB_608 and the RTX-1701 columns greater than the 25% QC limit. The lower of the two concentrations are reported and flagged with a "P" by the laboratory. These positive values are considered estimated and flagged "J".

ERM

Sample	Analytes	%D Between DB-608 and RTX-1701 Columns
SDBD	AR1254	26.5%
SDBC	AR1254	33.3%

- Sample ZA27PL was analyzed at a 1:4 dilution due to the high concentration of target compounds.

Package Summary:

All data are valid and usable with qualifications as noted in this review.

Signed: Joseph Camanzo

Joseph Camanzo, Environmental Chemist

Dated: 3/29/95

1 G

PCB ANALYSIS DATA SHEET

Client Sample ID: ZA27PL

Lab Name: E3I Case No.: 6800028
Lab Code: E3I SDG No.: SDBA

Matrix: Soil Lab Sample ID: 950855-1
Extraction: Sonc. Lab File ID: F24C536

% Moisture: 17 Date Received: 03/11/95
Decanted: N Date Extracted: 03/14/95
Date Analyzed: 03/18/95

Sample Size: 30.0 g
Extract Volume: 10.0 mL Dilution Factor: 4.0
Injection Volume: 1.0 uL pH: 6

GPC Cleanup: N Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	160	U
11104-28-2	Aroclor-1221	320	U
11141-16-5	Aroclor-1232	160	U
53469-21-9	Aroclor-1242	160	U
12672-29-6	Aroclor-1248	160	U
11097-69-1	Aroclor-1254	1600	
11096-82-5	Aroclor-1260	160	U

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID

DUP

Lab Name: E3I   Case No.: 6800028
Lab Code: E3I   SDG No.: SDBA

Matrix: Soil   Lab Sample ID: 950855-7
Extraction: Sonc.   Lab File ID: F24C492

% Moisture: 15   Date Received: 03/11/95
Decanted: N   Date Extracted: 03/14/95
Date Analyzed: 03/15/95

Sample Size: 30.0 g
Extract Volume: 10.0 mL   Dilution Factor: 1.0
Injection Volume: 1.0 uL   pH: 5.5

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	39	U
11104-28-2	Aroclor-1221	78	U
11141-16-5	Aroclor-1232	39	U
53469-21-9	Aroclor-1242	39	U
12672-29-6	Aroclor-1248	39	U
11097-69-1	Aroclor-1254	210	J
11096-82-5	Aroclor-1260	39	U

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

JL
3/23/95

1 G

PCB ANALYSIS DATA SHEET

Client Sample ID

SDBA

Lab Name: E3I Case No.: 6800028
Lab Code: E3I SDG No.: SDBA

Matrix: Soil Lab Sample ID: 950855-2
Extraction: Sonc. Lab File ID: F24C592

% Moisture: 15 Date Received: 03/11/95
Decanted: N Date Extracted: 03/14/95
Date Analyzed: 03/19/95

Sample Size: 30.0 g
Extract Volume: 10.0 mL Dilution Factor: 8.0
Injection Volume: 1.0 uL pH: 5.5

GPC Cleanup: N Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	310	U
11104-28-2	Aroclor-1221	630	U
11141-16-5	Aroclor-1232	310	U
53469-21-9	Aroclor-1242	310	U
12672-29-6	Aroclor-1248	310	U
11097-69-1	Aroclor-1254	2300	
11096-82-5	Aroclor-1260	310	U

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID: SDBB

Lab Name: E3I   Case No.: 6800028
Lab Code: E3I   SDG No.: SDBA

Matrix: Soil   Lab Sample ID: 950855-3
Extraction: Sonc.   Lab File ID: F24C488

% Moisture: 9   Date Received: 03/11/95
Decanted: N   Date Extracted: 03/14/95
Date Analyzed: 03/15/95

Sample Size: 30.0 g
Extract Volume: 10.0 mL   Dilution Factor: 1.0
Injection Volume: 1.0 uL   pH: 5.5

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	37	U
11104-28-2	Aroclor-1221	73	U
11141-16-5	Aroclor-1232	37	U
53469-21-9	Aroclor-1242	37	U
12672-29-6	Aroclor-1248	37	U
11097-69-1	Aroclor-1254	340	P J
11096-82-5	Aroclor-1260	37	U

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

JC
3/28/95

1 G

PCB ANALYSIS DATA SHEET

Client Sample ID: SDBC

Lab Name: E3I　　Case No.: 6800028
Lab Code: E3I　　SDG No.: SDBA

Matrix: Soil　　Lab Sample ID: 950855-4
Extraction: Sonc.　　Lab File ID: F24C489

% Moisture: 15　　Date Received: 03/11/95
Decanted: N　　Date Extracted: 03/14/95
Date Analyzed: 03/15/95

Sample Size: 30.0 g
Extract Volume: 10.0 mL　　Dilution Factor: 1.0
Injection Volume: 1.0 uL　　pH: 6

GPC Cleanup: N　　Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	39	U
11104-28-2	Aroclor-1221	78	U
11141-16-5	Aroclor-1232	39	U
53469-21-9	Aroclor-1242	39	U
12672-29-6	Aroclor-1248	39	U
11097-69-1	Aroclor-1254	210	P J
11096-82-5	Aroclor-1260	39	U

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

jc 3/23/95

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID: SDBD

Lab Name: E3I Case No.: 6800028
Lab Code: E3I SDG No.: SDBA

Matrix: Soil Lab Sample ID: 950855-5
Extraction: Sonc. Lab File ID: F24C490

% Moisture: 32 Date Received: 03/11/95
Decanted: N Date Extracted: 03/14/95
Date Analyzed: 03/15/95

Sample Size: 30.0 g
Extract Volume: 10.0 mL Dilution Factor: 1.0
Injection Volume: 1.0 uL pH: 6

GPC Cleanup: N Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	49	U J
11104-28-2	Aroclor-1221	98	U
11141-16-5	Aroclor-1232	49	U
53469-21-9	Aroclor-1242	49	U
12672-29-6	Aroclor-1248	49	U
11097-69-1	Aroclor-1254	430	J
11096-82-5	Aroclor-1260	49	U J

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

JC
3/28/95

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID

SDBE

Lab Name: E3I Case No.: 6800028
Lab Code: E3I SDG No.: SDBA

Matrix: Soil Lab Sample ID: 950855-6
Extraction: Sonc. Lab File ID: F24C491

% Moisture: 65 Date Received: 03/11/95
Decanted: N Date Extracted: 03/14/95
Date Analyzed: 03/15/95

Sample Size: 30.0 g
Extract Volume: 10.0 mL Dilution Factor: 1.0
Injection Volume: 1.0 uL pH: 7

GPC Cleanup: N Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	95	U J
11104-28-2	Aroclor-1221	190	U
11141-16-5	Aroclor-1232	95	U
53469-21-9	Aroclor-1242	95	U
12672-29-6	Aroclor-1248	95	U
11097-69-1	Aroclor-1254	870	J
11096-82-5	Aroclor-1260	95	U J

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

JK
3/23/95

ERM-Northeast

175 Froehlich Farm Blvd.
Woodbury, NY 11797
(516) 921-4300
(516) 921-5679 (Fax)

27 February 1995

ERM

Chittibabu Vasudevan, Ph.D., P.E.
Chief, Eastern Projects Section
Bureau of Hazardous Waste Remediation
New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233

Christopher K. Bennett, P.E.
Deputy Director, Facilities Engineering
Metro-North Railroad Company
347 Madison Avenue
New York, New York 10017

Re: Harmon Railroad Yard Wastewater Treatment Area (OU-1)
Zone A Soil Confirmatory Sampling - Third Round
Validated Analytical Results

Dear Sirs:

The purpose of this letter is to present the results of the third round of Zone A soil confirmatory sampling, which were recently validated by ERM-Northeast (ERM), and to present ERM's proposed approach for final delineation of the Zone A soils at the site.

INTRODUCTION

In accordance with the NYSDEC-approved Field Sampling and Analysis Plan (FSAP) (ERM; 13 July 1994), two previous rounds of Zone A confirmatory soil samples were collected by ERM in June 1994 and in September 1994. The results of these first two rounds of sampling were summarized in the 1 November 1994 and in 22 November 1994 letters from ERM to Metro-North and NYSDEC.

Based on the validated results of the first two rounds of sampling, ERM collected four additional confirmatory samples on 30 November 1994 along the Zone A2 soil face which had not yet been delineated at that time, as well as the required QA/QC samples. This soil face is the northern face of the larger, separate excavation located in the laydown area north of the lagoon.

All samples were analyzed using CLP protocols and deliverables. ERM received the CLP-deliverable data packages in January 1994 and has completed the task of validating the analytical results.

ERM

The validated analytical results are summarized below, and the sample designations and locations for all sampling rounds are shown on Figure 1.

The laboratory Form 1 reports and the data validation report are attached to this letter. The full CLP deliverable data package will be included in the future submittal of these data results to NYSDEC.

ZONE A2 SOIL ANALYTICAL RESULTS

The term "Zone A2 soil" as used in the construction contract, refers to Zone A soil which contains PCB concentrations greater than 0.5 mg/kg but less than 10 mg/kg. This soil must be excavated and placed below the cap to be constructed over the lagoon.

ERM collected four original samples, and one duplicate sample, for a total of five Zone A2 soil samples. The four samples (samples ZA2-7-10, ZA2-7-15, ZA2-7-20, and ZA2-7-25) were collected every five feet from the Zone A2 soil boundary which had been extended based on the analytical results of previous sampling, which indicated that soils exceeded the established cleanup level of 0.5 mg/kg, as shown on Figure 1.

The validated analytical results from the third round of sampling revealed that all four samples exceeded the PCB cleanup level of 0.5 mg/kg. In accordance with the NYSDEC-approved final design, the Zone A soil boundary face must therefore be extended an additional five feet from sample ZA2-7-25, and further confirmatory samples collected at this boundary.

IMPACTS TO REMEDIATION

By extending the Zone A2 soil boundary face at sample ZA2-7-25 by five feet, as shown on Figure 1, this face must therefore be extended 30 feet beyond the boundary established in the Contract Documents. The third round sample results will increase the volume of soil requiring excavation by 150 in-place cubic yards. The initial estimated volume of Zone A2 soil, as stated in the construction contract, was 2020 cubic yards.

ERM

The total volume of additional soil requiring excavation, based on the results of the first three rounds of sampling, is 254 cubic yards, as described in more detail in the table below.

Sampling Round	Additional Excavation Volume	Contaminated Samples Which Caused the Increase in Volume
1	66.5	ZA2-7, ZA2-11
2	37.5	ZA2-7-5
3	150	ZA2-7-10, ZA2-7-15, ZA2-7-20, ZA2-7-25

Therefore, at this time, a total of 2,274 cubic yards will require excavation.

The increase in volume from 2,020 cubic yards to 2,274 cubic yards is a 12.6 percent increase in the in-place soil volume which requires excavation.

ERM PROPOSED APPROACH FOR FINAL DELINEATION

Due to the imminent mobilization of Ogden Environmental Services to perform the Harmon Lagoon Remediation, ERM recognizes the necessity to expedite the final delineation of Zone A2 soils.

It is ERM's understanding that Metro-North intends to extend the line of excavation to the property line, eliminating the need for additional confirmatory sampling since sampling or remediation work is not envisioned for surface soil on adjacent property. Please indicate whether this approach is acceptable. This approach would result in an additional 187.5 cubic yards of soil requiring excavation, for a project total of 2,461 cubic yards.

ERM assumes that any additional soil excavated from this area will be considered Zone A2 soil (i.e., will contain PCBs in concentrations below 10 mg/kg). Additional excavation would increase the unit quantities of payment items 02200.B (Excavate/Place Zone A2 Soil) and 02225.A (Provide/Place Bank Run Gravel) in Ogden's site work contract. Ogden's unit prices for these items are $10.20 per cubic yard and $17.25 per cubic yard, respectively. Therefore, every additional cubic yard of soil which is excavated would cost Metro-North $27.45.

ERM

The unit quantities of payment items 02200.B and 02225.A by 187.5 cubic yards each, resulting in a total cost increase of $5,146.88 for the last section of Zone A2 soil which is not delineated at this time.

SUMMARY

Once the final delineation approach described above is approved by NYSDEC, and the extent of Zone A soils has been finalized, ERM will forward to NYSDEC and Metro-North revised Drawings for construction which will show the approved final extent of Zone A2 soils.

ERM has also forwarded under separate cover to Hill International, survey information necessary to locate the original contract boundaries for Zone A soils.

If you have any questions regarding the Zone A soil sampling results, please contact either of us at (516) 921-4300.

Very truly yours,

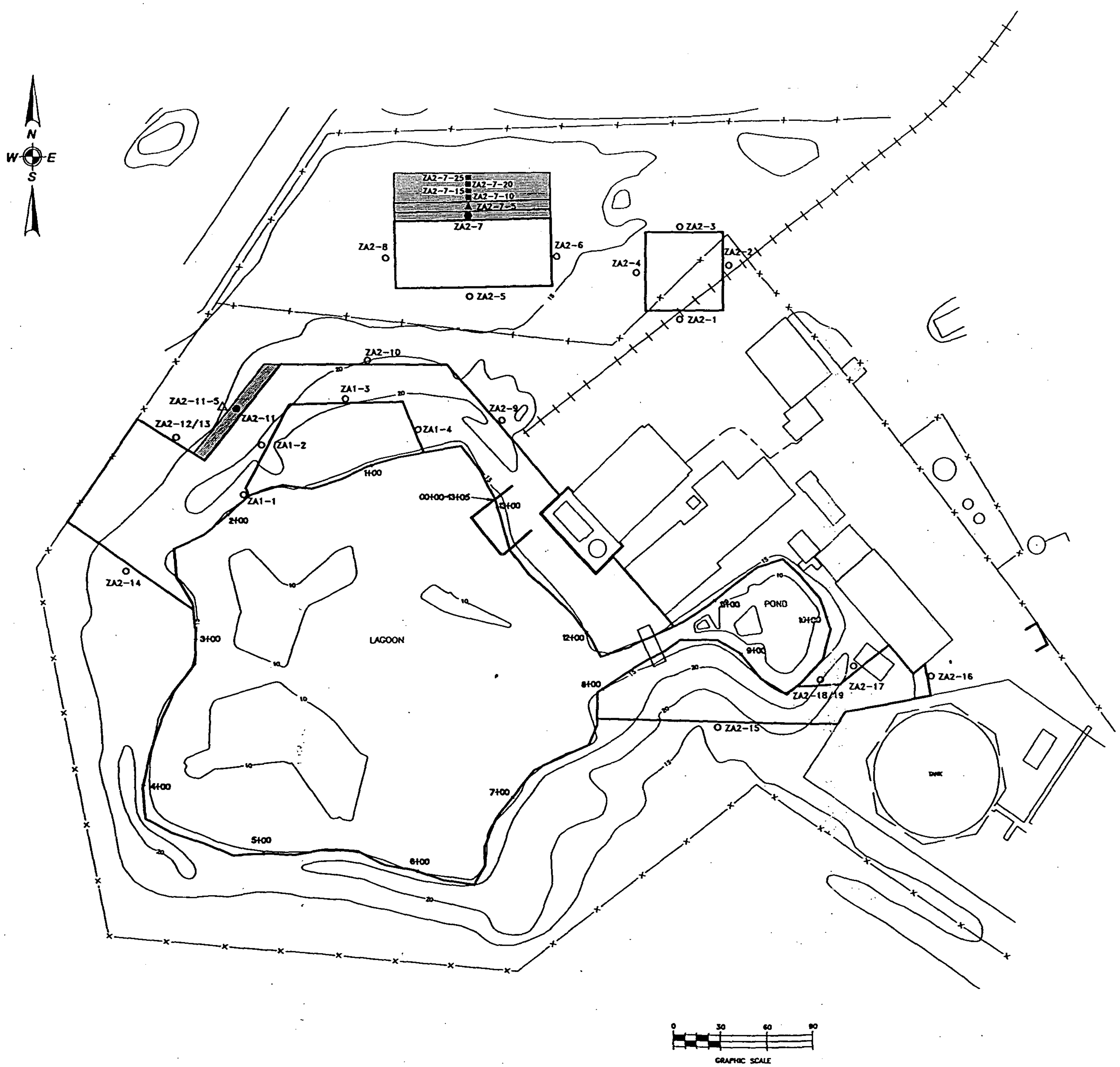
Robert Rivera
Senior Project Engineer

Scott Ranger/DL

Scott W. Ranger
Senior Project Manager

enclosure

cc: D. Evans (NYSDEC)
M. Mehta (MNRC)
J. Iannone (ERM)



LEGEND

- ○ FIRST ROUND CONFIRMATORY SOIL SAMPLE WITH PCB CONCENTRATION BELOW CLEANUP/ ACTION LEVEL
- ● FIRST ROUND CONFIRMATORY SOIL SAMPLE WITH PCB CONCENTRATION GREATER THAN CLEANUP/ACTION LEVEL
- △ SECOND ROUND CONFIRMATORY SOIL SAMPLE WITH PCB CONCENTRATION BELOW CLEANUP/ ACTION LEVEL
- ▲ SECOND ROUND CONFIRMATORY SOIL SAMPLE WITH PCB CONCENTRATION GREATER THAN CLEANUP/ACTION LEVEL
- ■ THIRD ROUND CONFIRMATORY SOIL SAMPLE WITH PCB CONCENTRATION GREATER THAN CLEANUP/ACTION LEVEL
- INCREASE IN EXCAVATION AREA DUE TO CONFIRMATORY SOIL SAMPLE RESULT HIGHER THAN CLEANUP LEVEL
- ZONE A BOUNDARIES

METRO-NORTH RAILROAD COMPANY

HARMON RAILROAD YARD WASTEWATER TREATMENT AREA REMEDIATION

ERM-Northeast
Environmental Resources Management
ERM

ZONE A
CONFIRMATORY SOIL SAMPLE LOCATIONS
AND DESIGNATIONS

E.M.F./S.P.

FEB. 7, 1995

1

DATA VALIDATION REVIEW
ADDITIONAL SOIL SAMPLING
METRO NORTH COMMUTER RAILROAD
ERM-NORTHEAST PROJECT NUMBER 680.002.8
E³I PROJECT NO. 950410

Deliverables:

The above referenced Sample Data Summary Package and Sample Data Package contains all required deliverables as stipulated under the 1991 New York State Analytical Services Protocols (ASP) Superfund Category for Polychlorinated Biphenyls (PCBs), analyzed by modified method 91-3. The data have been validated according to the protocols and QC requirements of the ASP, the USEPA Laboratory Analysis Functional Guidelines, the USEPA Region 2 CLP Data Review SOP, and the reviewer's professional judgement.

This validation report pertains to the following samples:

Samples	QC Samples
ZA2710	ZA2710 MS/MSD
ZA2715	Dup-A (Field duplicate of ZA2715)
ZA2720	
ZA2725	

ORGANICS

The following items/criteria were reviewed:

- Quantitation/detection limits
- Holding times
- Initial and continuing calibration data
- PCB standards summary and data
- Method and Field blanks
- Surrogate recoveries, summary and data
- MS/MSD/MSB recoveries, summary and data
- Data system printouts
- Chromatograms and mass spectra
- Qualitative and quantitative compound identification
- Case narrative and deliverables compliance

The items listed above were in compliance with NYSDEC ASP protocols and USEPA QC requirements with exceptions discussed in the text below. The data have been validated according to the procedures outlined above and qualified accordingly.

POLYCHLORINATED BIPHENYLS (PCBs)

- Soil samples were only analyzed for PCBs, therefore pesticide related QC criteria and standard analyses results were not used to assess sample PCB results.

- The following samples exhibited surrogate recoveries outside the advisory QC limit of 60-150%, on either of the two GC columns. For the purpose of evaluating sample data, since only PCBs and not pesticides were analyzed for, only the surrogate recovery results from decachlorobiphenyl (DCB) are listed and used to qualify the results. Based on these results, for samples which indicated surrogate DCB recovery greater than the specification on both columns, positive results are considered estimated flagged "J". For samples which indicated surrogate DCB less than the limit on both columns, positive results are flagged "J" and non-detects are flagged "UJ". No qualification of data was performed when the surrogate was outside the limit on only one column. A = acceptable surrogate recovery.

Sample	DCB (DB608)	DCB (RTX1701)
ZA2720 DL	200%	205%
ZA2725 DL	155%	195%
Dup-A DL	200%	A

- The PCB matrix spike/matrix spike duplicate analysis for sample ZA2710 MS/MSD indicated the percent recovery for AR1254 in the matrix spike was 738% and the matrix spike duplicate was 1968%, outside the advisory QC limit of 29-131%. Additionally, the relative percent difference between MS and MSD recoveries was 91%, outside the advisory QC limit of 50%. These high recoveries are due to high concentration of AR1254 in this sample. Since no action is taken on the MS/MSD data alone to qualify the entire data package, only the unspiked sample ZA2710 will be qualified. For sample ZA2710, only positive PCB results (potential high bias) are considered estimated and flagged "J".

- The following sample was analyzed at an initial dilution due to the high concentration of target compounds: ZA2725 (2x), thereby elevating the detection limits accordingly. Samples ZA2710, ZA2715, ZA2720, ZA2725, and Dup-A indicated target compound concentrations exceeding the calibration linear range in the initial analysis and therefore, were reanalyzed at the following dilution: ZA2710 DL (5x), ZA2715 DL (50x), ZA2720 DL (10x), ZA2725 DL (20x), and Dup-A DL (50x). For the dilution analyses, only the concentration of these analytes are reported.

- PCBs analytical sequence beginning 12/2/94 and 1/6/95 on the DB-608 column and/or the RTX-1701 column exhibited RPD values during the sequence, for verification calibration standard compound AT1254 > the 15% QA limit. Therefore, in associated samples, positive AR1254 results are considered estimated flagged "J" and non-detects flagged "UJ".

ERM

Package Summary:

All data are valid and usable with qualifications as noted in this review.

Signed: Joseph Camanzo
Joseph Camanzo, Environmental Chemist

Dated: 2/13/95

1 G

PCB ANALYSIS DATA SHEET

Client Sample ID

ZA2710

Lab Name: E3I   Case No.: 680.002.8

Lab Code: E3I   SDG No.: ZA2710

Matrix: Soil   Lab Sample ID: 950410-1

Extraction: Sonication   Lab File ID: D02C082

% Moisture: 18   Date Received: 12/01/94

Decanted: Date Extracted: 12/02/94

Date Analyzed: 12/06/94

Sample Size: 30.0 g

Extract Volume: 10.0 mL   Dilution Factor: 1.0

Injection Volume: 1.0 uL   pH: 5

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	41	U
11104-28-2	Aroclor-1221	81	U
11141-16-5	Aroclor-1232	41	U
53469-21-9	Aroclor-1242	41	U
12672-29-6	Aroclor-1248	41	U
11097-69-1	Aroclor-1254	1600	E J
11096-82-5	Aroclor-1260	41	U

(Q) - Qualifiers:

use result from ZA2710 DL analysis

JC 2/9/95

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID

ZA2710 DL

Lab Name: E3I Case No.: 680.002.8
Lab Code: E3I SDG No.: ZA2710

Matrix: Soil Lab Sample ID: 950410-1DL
Extraction: Sonication Lab File ID: D02C082

% Moisture: 18 Date Received: 12/01/94
Decanted: Date Extracted: 12/02/94
Date Analyzed: 12/07/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL Dilution Factor: 5.0
Injection Volume: 1.0 uL pH: 5

GPC Cleanup: N Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	200	U
11104-28-2	Aroclor-1221	410	U
11141-16-5	Aroclor-1232	200	U
53469-21-9	Aroclor-1242	200	U
12672-29-6	Aroclor-1248	200	U
11097-69-1	Aroclor-1254	2200	J
11096-82-5	Aroclor-1260	200	U

use only this result from this analysis

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

JR 2/9/95

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID

ZA2715

Name: E3I Case No.: 680.002.8
Code: E3I SDG No.: ZA2710

rix: Soil Lab Sample ID: 950410-2
action: Sonication Lab File ID: D02C085

oisture: 21 Date Received: 12/01/94
anted: Date Extracted: 12/02/94
Date Analyzed: 12/07/94

ple Size: 30.0 g
act Volume: 10.0 mL Dilution Factor: 1.0
tion Volume: 1.0 uL pH: 6

Cleanup: N Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	42	U
11104-28-2	Aroclor-1221	84	U
11141-16-5	Aroclor-1232	42	U
53469-21-9	Aroclor-1242	42	U
12672-29-6	Aroclor-1248	42	U
11097-69-1	Aroclor-1254	5900	E
11096-82-5	Aroclor-1260	42	U

use result
from ZA2715DL

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.
E: Exceeds calibration range.

JR
2/9/95

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID

ZA2715 DL

Lab Name: E3I
Lab Code: E3I

Case No.: 680.002.8
SDG No.: ZA2710

Matrix: Soil
Extraction: Sonication

Lab Sample ID: 950410-2DL
Lab File ID: D02C196

% Moisture: 21
Decanted:

Date Received: 12/01/94
Date Extracted: 12/02/94
Date Analyzed: 12/12/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL
Injection Volume: 1.0 uL

Dilution Factor: 50.0
pH: 6

GPC Cleanup: N

Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	2100	U
11104-28-2	Aroclor-1221	4200	U
11141-16-5	Aroclor-1232	2100	U
53469-21-9	Aroclor-1242	2100	U
12672-29-6	Aroclor-1248	2100	U
11097-69-1	Aroclor-1254	7400	J
11096-82-5	Aroclor-1260	2100	U

use only this value from this analysis

2/1/95

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID: ZA2720

Lab Name:	E3I	Case No.:	680.002.8
Lab Code:	E3I	SDG No.:	ZA2710

Matrix:	Soil	Lab Sample ID:	950410-3
Extraction:	Sonication	Lab File ID:	D02C086
% Moisture:	7	Date Received:	12/01/94
Decanted:		Date Extracted:	12/02/94
		Date Analyzed:	12/07/94
Sample Size:	30.0 g		
Extract Volume:	10.0 mL	Dilution Factor:	1.0
Injection Volume:	1.0 uL	pH:	5
GPC Cleanup:	N	Sulfur Cleanup:	Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	72	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	1200	E
11096-82-5	Aroclor-1260	36	U

use result from ZA2720 DL

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

JR 2/9/95

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID

ZA2720 DL

Lab Name: E3I   Case No.: 680.002.8
Lab Code: E3I   SDG No.: ZA2710

Matrix: Soil   Lab Sample ID: 950410-3DL
Extraction: Sonication   Lab File ID: J09C063

% Moisture: 7   Date Received: 12/01/94
Decanted: N   Date Extracted: 12/02/94
Date Analyzed: 01/11/95

Sample Size: 30.0 g
Extract Volume: 10.0 mL   Dilution Factor: 10.0
Injection Volume: 1.0 uL   pH: 5

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	360	U
11104-28-2	Aroclor-1221	720	U
11141-16-5	Aroclor-1232	360	U
53469-21-9	Aroclor-1242	360	U
12672-29-6	Aroclor-1248	360	U
11097-69-1	Aroclor-1254	2200	J
11096-82-5	Aroclor-1260	360	U

use only this value from this analysis

JL 2/9/95

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID: ZA2725

Lab Name: E3I
Lab Code: E3I
Case No.: 680.002.8
SDG No.: ZA2710

Matrix: Soil
Extraction: Sonication
Lab Sample ID: 950410-4
Lab File ID: D02C202

% Moisture: 18
Decanted:
Date Received: 12/01/94
Date Extracted: 12/02/94
Date Analyzed: 12/13/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL
Injection Volume: 1.0 uL
Dilution Factor: 2.0
pH: 6

GPC Cleanup: N
Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	81	U
11104-28-2	Aroclor-1221	160	U
11141-16-5	Aroclor-1232	81	U
53469-21-9	Aroclor-1242	81	U
12672-29-6	Aroclor-1248	81	U
11097-69-1	Aroclor-1254	3500	E J
11096-82-5	Aroclor-1260	81	U

use result from ZA2725DL

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.
E: Exceeds calibration range.

R
4/9/95

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID

ZA2725 DL

Lab Name: E3I Case No.: 680.002.8
Lab Code: E3I SDG No.: ZA2710

Matrix: Soil
Extraction: Sonication

Lab Sample ID: 950410-4DL
Lab File ID: J09C064

% Moisture: 18
Decanted: N

Date Received: 12/01/94
Date Extracted: 12/02/94
Date Analyzed: 01/11/95

Sample Size: 30.0 g
Extract Volume: 10.0 mL
Injection Volume: 1.0 uL

Dilution Factor: 20.0
pH: 6

GPC Cleanup: N
Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	810	U
11104-28-2	Aroclor-1221	1600	U
11141-16-5	Aroclor-1232	810	U
53469-21-9	Aroclor-1242	810	U
12672-29-6	Aroclor-1248	810	U
11097-69-1	Aroclor-1254	4400	J
11096-82-5	Aroclor-1260	810	U

use only this value from this analysis

JL
2/9/95

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.
E: Exceeds calibration range.

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID

DUP A

Lab Name: E3I Case No.: 680.002.8
Lab Code: E3I SDG No.: ZA2710

Matrix: Soil Lab Sample ID: 950410-5
Extraction: Sonication Lab File ID: D02C297

% Moisture: 19 Date Received: 12/01/94
Decanted: Date Extracted: 12/02/94
Date Analyzed: 12/19/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL Dilution Factor: 1.0
Injection Volume: 1.0 uL pH: 6

GPC Cleanup: N Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	41	U
11104-28-2	Aroclor-1221	82	U
11141-16-5	Aroclor-1232	41	U
53469-21-9	Aroclor-1242	41	U
12672-29-6	Aroclor-1248	41	U
11097-69-1	Aroclor-1254	5000	E J
11096-82-5	Aroclor-1260	41	U

use value from
Dup-A DL

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

JC
4/9/95

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID

DUP A DL

Name: E3I Case No.: 680.002.8
Code: E3I SDG No.: ZA2710

rix: Soil Lab Sample ID: 950410-5DL
action: Sonication Lab File ID: J09C065

BM 1/20/95

oisture: 18 Date Received: 12/01/94
anted: Date Extracted: 12/02/94
Date Analyzed: 01/11/95

ple Size: 30.0 g
act Volume: 10.0 mL Dilution Factor: 50.0
tion Volume: 1.0 uL pH: 6

Cleanup: N Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	2000	U
11104-28-2	Aroclor-1221	4100	U
11141-16-5	Aroclor-1232	2000	U
53469-21-9	Aroclor-1242	2000	U
12672-29-6	Aroclor-1248	2000	U
11097-69-1	Aroclor-1254	8300	J
11096-82-5	Aroclor-1260	2000	U

use only this value from this analysis

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

2/2/95

FORM I PCB

ERM-Northeast

175 Froehlich Farm Blvd.
Woodbury, NY 11797
(516) 921-4300
(516) 921-5679 (Fax)

ERM

26 July 1994

Chittibabu Vasudevan , Ph.D., P.E.
Chief, Eastern Projects Section
Bureau of Hazardous Waste Remediation
New York State Department of Environmental Conservation
50 Wolf Road
Albany, NY 12233

Christopher K. Bennett, P.E.
Deputy Director, Facilities Engineering
Metro-North Railroad Company
347 Madison Avenue
New York, NY 10017

Re: Harmon Railroad Yard Lagoon Remediation
Zone A Soil Confirmatory Sampling-Impact on Rail Spur Installation

Dear Chris and Vasu:

ERM-Northeast (ERM) recently collected Zone A confirmatory soil samples, in accordance with the NYSDEC-approved Field Sampling and Analysis Plan (FSAP) (ERM; 13 July 1994). In accordance with the FSAP, all samples will be analyzed using CLP protocols and deliverables, followed by validation by ERM. It is anticipated that this process will not be completed by the middle of August, 1994.

As shown on the attached Drawing 1, one of the proposed Zone A soil excavations could potentially impact the lagoon rail spur if the boundaries of this excavation is extended. The rail spur also runs directly through another excavation.

During previous conversations, Metro-North has indicated its intent to begin rail spur installation in July, 1994, and to excavate Zone A soil where necessary and stockpile the soil until site work commences.

In order to assist Metro-North in coordinating these tasks, ERM requested the laboratory to perform quick turnaround on three of the confirmatory samples (ZA2-1, ZA2-2, and ZA2-9, as shown on Drawing 1) in order to determine whether the excavations must be extended. All three samples were analyzed for PCBs and found to either contain no detectable concentrations of PCBs,

ERM

or to contain concentrations of PCBs well below the site cleanup level of 0.5 mg/kg. Refer to the attached laboratory reporting sheets.

ERM has obtained only the Form 1 laboratory reports to date, since the CLP deliverable packages take significantly longer for the laboratory to prepare (the CLP deliverables will be obtained for these samples in the near future).

ERM's data validation staff has evaluated the Form 1 reports, and even without the CLP deliverables, is certain that these sample results will ultimately not exceed the cleanup level of 0.5 mg/kg PCBs. According to our validation staff, reviewing the actual CLP deliverables and performing data validation may result in some of the qualifiers being changed (e.g. from actual to J, or J to U). However, since the laboratory used a dilution factor of 1.0 (the samples were not diluted), there could not be a significant enough increase in detected concentrations for the samples to exceed the cleanup level.

Therefore, the three Zone A soil boundaries shown on Drawing 1 can be considered final for the purposes of coordinating the lagoon rail spur installation.

If any excavation and stockpiling of soil will be performed prior to the site work contract, this work must be performed in accordance with Sections 01050, 01080, 01517, 01520, 01715, and 02200 of the final design technical specifications. Stockpiling must also be performed in accordance with the soil erosion controls shown on Drawing C-4 of the final design.

Since the scope of soil remediation in the old sludge drying beds still must be determined by sampling during the site work contract, ERM recommends that any excavated soil be stockpiled in the old sludge drying beds following demolition of that superstructure.

ERM

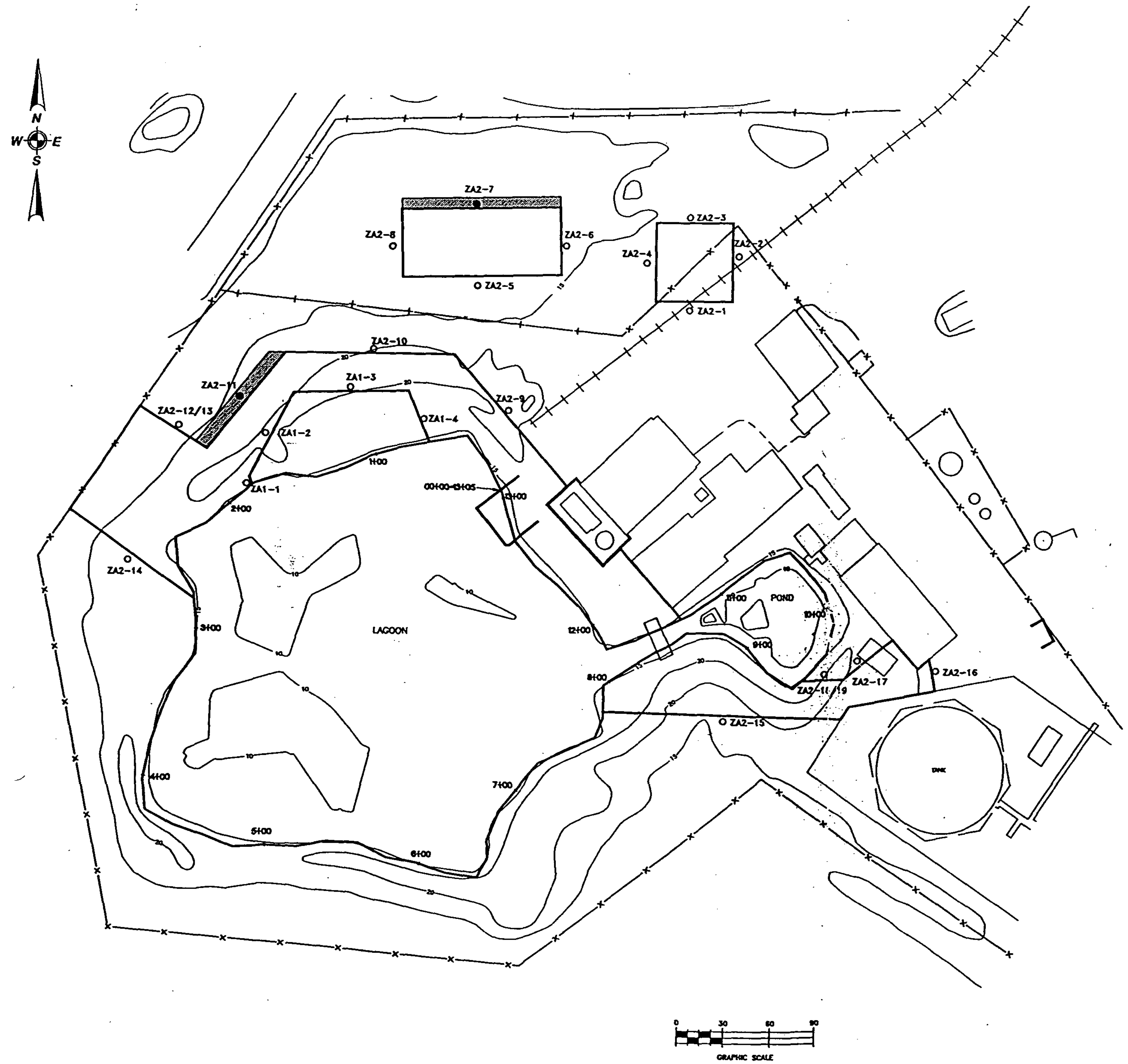
If you have any questions regarding these issues, please contact me at (516) 921-4300.

Very truly yours,

Robert Rivera
Senior Project Engineer

enclosure

cc: M. Mehta (MNRC)
J. Iannone (ERM)



LEGEND

○ CONFIRMATORY SOIL SAMPLE WITH PCB CONCENTRATION BELOW CLEANUP/ ACTION LEVEL

● CONFIRMATORY SOIL SAMPLE WITH PCB CONCENTRATION GREATER THAN CLEANUP/ACTION LEVEL

INCREASE IN EXCAVATION AREA DUE TO CONFIRMATORY SOIL SAMPLE RESULT HIGHER THAN CLEANUP LEVEL

ZONE A BOUNDARIES

METRO-NORTH RAILROAD COMPANY

HARMON RAILROAD YARD WASTEWATER TREATMENT AREA REMEDIATION

ERM-Northeast
Environmental Resources Management

ZONE A
CONFIRMATORY SOIL SAMPLE LOCATIONS
AND DESIGNATIONS

1

E.M.F./S.P. | SEPT. 14, 1994
GRAPHIC | 680.002.8 | SOILRESL

DATA VALIDATION REVIEW
SOIL SAMPLE ANALYSES
METRO NORTH COMMUTER RAILROAD
ERM-NORTHEAST PROJECT NUMBER 680.002.8
E^3I PROJECT NO. 941427

ERM

Deliverables:

The above referenced Sample Data Summary Package and Sample Data Package contains all required deliverables as stipulated under the 1991 New York State Analytical Services Protocols (ASP) Superfund Category for Polychlorinated Biphenyls (PCBs), analyzed by modified method 91-3. The data have been validated according to the protocols and QC requirements of the ASP, the USEPA Laboratory Analysis Functional Guidelines, the USEPA Region 2 CLP Data Review SOP, and the reviewer's professional judgement.

This validation report pertains to the following samples:

Samples		QC Samples
ZA21	ZA212	ZA29 MS/MSD
ZA22	ZA213	Field Blank (FB)
ZA23	ZA214	
ZA24	ZA215	
ZA25	ZA216	
ZA26	ZA217	
ZA27	ZA218	
ZA28	ZA219	
ZA29	ZA11	
ZA210	ZA12	
ZA211	ZA13	
ZA14		

ORGANICS

The following items/criteria were reviewed:

- Quantitation/detection limits
- Holding times
- Initial and continuing calibration data

- PCB standards summary and data
- Method and Field blanks
- Surrogate recoveries, summary and data
- MS/MSD/MSB recoveries, summary and data
- Data system printouts
- Chromatograms and mass spectra
- Qualitative and quantitative compound identification
- Case narrative and deliverables compliance

ERM

The items listed above were in compliance with NYSDEC ASP protocols and USEPA QC requirements with exceptions discussed in the text below. The data have been validated according to the procedures outlined above and qualified accordingly.

POLYCHLORINATED BIPHENYLS (PCBs)

- Soil samples were only analyzed for PCBs, therefore pesticide related QC criteria and standard analyses results were not used to assess sample PCB results.

- The following samples exhibited surrogate recoveries outside the advisory QC limit of 60-150%, on either of the two GC columns. For the purpose of evaluating sample data, since only PCBs and not pesticides were analyzed for, only the surrogate recovery results from decachlorobiphenyl (DCB) are listed and used to qualify the results. Based on these results, for samples which indicated surrogate DCB recovery greater than the specification on both columns, positive results are considered estimated flagged "J". For samples which indicated surrogate DCB less than the limit on both columns, positive results are flagged "J" and non-detects are flagged "UJ". No qualification of data was performed when the surrogate was outside the limit on only one column. A = acceptable surrogate recovery.

Sample	DCB (DB608)	DCB (RTX1701)
ZA21	59%	52%
ZA27	A	47%
ZA28	197%	192%
ZA29	45%	46%
ZA29MSD	197%	182%
ZA211	159%	A
ZA212	156%	155%
ZA213	203%	175%
ZA13	A	52%

- The PCB matrix spike/matrix spike duplicate analysis for sample ZA29 MS/MSD indicated the percent recovery for AR1254 is the matrix spike duplicate was 174%, outside the advisory QC limit of 29-131%. Additionally, the relative percent difference between MS and MSD recoveries was 91%, outside the advisory QC limit of 50%. Since no action is taken on the MS/MSD data alone to qualify the entire data package, only the unspiked sample ZA29 will be qualified. For sample ZA29, only positive PCB results (potential high bias) are considered estimated and flagged "J".

ERM

- The following samples were analyzed at an initial dilution due to the high concentration of target compounds: ZA27 (2x), ZA211 (2x), ZA13 (3x), ZA14 (3x), thereby elevating the detection limits accordingly. Samples ZA11 and ZA12 indicated target compound concentrations exceeding the calibration linear range in the initial analysis and therefore, were reanalyzed at the following dilution: ZA11 DL (20x), ZA12 DL (20x). For the two dilution analyses, only the concentration of these analytes are reported.

- The presence of PCBs, Aroclor-1254 and Aroclor-1260 in samples ZA11 and ZA12 were confirmed by GC/MS.

- The following table lists samples, detected analytes and calculated concentrations percent difference (%D) between the DB-608 and the RTX-1701 columns greater than the 25% QC limit. The lower of the two concentrations are reported and flagged with a "P" by the laboratory. These positive values are considered estimated and flagged "J".

Sample	Analytes	%D between DB-608 and RTX-1701 columns
ZA21	AR1254	109.5%
ZA23	AR1254	378.3%
ZA24	AR1254	154.2%
ZA25	AR1254	257.1%
ZA26	AR1254	289.8%
ZA28	AR1254	270.0%
ZA29	AR1254	84.3%
	AR1260	25.5%

ZA210	AR1254	246.2%
	AR1260	43.8%
ZA211	AR1254	44.4%
ZA212	AR1254	370.0%
ZA213	AR1254	383.3%
ZA214	AR1254	181.8%
	AR1260	59.1%
ZA217	AR1254	246.9%
ZA219	AR1254	73.3%
ZA11	AR1254	453.3%
	AR1260	146.7%
ZA11 DL	AR1254	61.4%
	AR1260	47.8%
ZA12	AR1254	433.3%
	AR1260	100.0%
ZA12 DL	AR1254	39.5%
	AR1260	36.8%
ZA13	AR1254	110.5%
	AR1260	37.5%
ZA29 MSD	AR1254	316.7%
	AR1260	281.8%

ERM

Package Summary:

All data are valid and usable with qualifications as noted in this review:

Signed: Joseph Camanzo
Joseph Camanzo, Environmental Chemist

Dated: 8/31/94

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID

ZA11

Lab Name: E3I   Case No.: 680.002.8
Lab Code: E3I   SDG No.: ZA11

Matrix: Soil   Lab Sample ID: 941427-20
Extraction: Sonication   Lab File ID: 701C055

% Moisture: 25   Date Received: 06/16/94
Decanted: N   Date Extracted: 06/17/94
Date Analyzed: 07/03/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL   Dilution Factor: 1.0
Injection Volume: 1.0 uL   pH: 6.8

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	44	U
11104-28-2	Aroclor-1221	89	U
11141-16-5	Aroclor-1232	44	U
53469-21-9	Aroclor-1242	44	U
12672-29-6	Aroclor-1248	44	U
11097-69-1	Aroclor-1254	1500	EP
11096-82-5	Aroclor-1260	1500	EP

use results from dilution analysis (20x) ZA11 DL

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.
E: Concentration exceeds calibration range

JL
8/29/94

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID: ZA11 DL

Lab Name: E3I   Case No.: 680.002.8
Lab Code: E3I   SDG No.: ZA11

Matrix: Soil   Lab Sample ID: 941427-20DL
Extraction: Sonication   Lab File ID: 721C040

% Moisture: 25   Date Received: 06/16/94
Decanted: Date Extracted: 06/17/94
Date Analyzed: 07/22/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL   Dilution Factor: 20.0
Injection Volume: 1.0 uL   pH: 6.8

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	890	U
11104-28-2	Aroclor-1221	1800	U
11141-16-5	Aroclor-1232	890	U
53469-21-9	Aroclor-1242	890	U
12672-29-6	Aroclor-1248	890	U
11097-69-1	Aroclor-1254	4400	J P
11096-82-5	Aroclor-1260	2300	J P

use only these results
K
8/29/94

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID

ZA12

Lab Name: E3I
Lab Code: E3I
Case No.: 680.002.8
SDG No.: ZA11

Matrix: Soil
Extraction: Sonication
Lab Sample ID: 941427-21
Lab File ID: 701C056

% Moisture: 10
Decanted: N
Date Received: 06/16/94
Date Extracted: 06/17/94
Date Analyzed: 07/03/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL
Injection Volume: 1.0 uL
Dilution Factor: 1.0
pH: 7.3

GPC Cleanup: N
Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	37	U
11104-28-2	Aroclor-1221	74	U
11141-16-5	Aroclor-1232	37	U
53469-21-9	Aroclor-1242	37	U
12672-29-6	Aroclor-1248	37	U
11097-69-1	Aroclor-1254	1500	EP
11096-82-5	Aroclor-1260	1200	EP

use results from dilution analysis (20x) ZA12 DL

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.
E: Concentration exceeds calibration range.

JC
8/29/94

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID

ZA12 DL

Lab Name: E3I   Case No.: 680.002.8
Lab Code: E3I   SDG No.: ZA11

Matrix: Soil   Lab Sample ID: 941427-21DL
Extraction: Sonication   Lab File ID: 721C041

% Moisture: 10   Date Received: 06/16/94
Decanted: Date Extracted: 06/17/94
Date Analyzed: 07/22/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL   Dilution Factor: 20.0
Injection Volume: 1.0 uL   pH: 7.3

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	740	U
11104-28-2	Aroclor-1221	1500	U
11141-16-5	Aroclor-1232	740	U
53469-21-9	Aroclor-1242	740	U
12672-29-6	Aroclor-1248	740	U
11097-69-1	Aroclor-1254	3800	J P
11096-82-5	Aroclor-1260	1900	J P

use only these result.
JC
8/29/94

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

1 G

PCB ANALYSIS DATA SHEET

Client Sample ID: ZA13

Lab Name: E3I Case No.: 680.002.8
Lab Code: E3I SDG No.: ZA11

Matrix: Soil Lab Sample ID: 941427-22
Extraction: Sonication Lab File ID: 721C078

% Moisture: 8 Date Received: 06/16/94
Decanted: Date Extracted: 06/17/94
Date Analyzed: 07/23/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL Dilution Factor: 3.0
Injection Volume: 1.0 uL pH: 7.0

GPC Cleanup: N Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	110	U
11104-28-2	Aroclor-1221	220	U
11141-16-5	Aroclor-1232	110	U
53469-21-9	Aroclor-1242	110	U
12672-29-6	Aroclor-1248	110	U
11097-69-1	Aroclor-1254	380	J P
11096-82-5	Aroclor-1260	560	J P

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

JC
8/24/94

1 G

PCB ANALYSIS DATA SHEET

Client Sample ID

ZA14

Lab Name:	E3I	Case No.:	680.002.8
Lab Code:	E3I	SDG No.:	ZA11

Matrix:	Soil	Lab Sample ID:	941427-23
Extraction:	Sonication	Lab File ID:	721C123
% Moisture:	25	Date Received:	06/16/94
Decanted:		Date Extracted:	06/17/94
		Date Analyzed:	07/26/94
Sample Size:	30.0 g		
Extract Volume:	10.0 mL	Dilution Factor:	3.0
Injection Volume:	1.0 uL	pH:	6.6
GPC Cleanup:	N	Sulfur Cleanup:	Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	110	U
11104-28-2	Aroclor-1221	220	U
11141-16-5	Aroclor-1232	110	U
53469-21-9	Aroclor-1242	110	U
12672-29-6	Aroclor-1248	110	U
11097-69-1	Aroclor-1254	1100	
11096-82-5	Aroclor-1260	570	

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

1 G

PCB ANALYSIS DATA SHEET

Client Sample ID

ZA21

Lab Name: E3I Case No.: 680.002.8

Lab Code: E3I SDG No.: ZA11

Matrix: Soil Lab Sample ID: 941427-1

Extraction: Sonication Lab File ID: 701C111

% Moisture: 5 Date Received: 06/16/94

Decanted: N Date Extracted: 06/17/94

Date Analyzed: 07/06/94

Sample Size: 30.0 g

Extract Volume: 10.0 mL Dilution Factor: 1.0

Injection Volume: 1.0 uL pH: 8.8

GPC Cleanup: N Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	35	U J
11104-28-2	Aroclor-1221	70	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	21	JP
11096-82-5	Aroclor-1260	11	J

(Q) - Qualifiers:

JC
8/29/94

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID

ZA22

Lab Name: E3I   Case No.: 680.002.8
Lab Code: E3I   SDG No.: ZA11

Matrix: Soil   Lab Sample ID: 941427-2
Extraction: Sonication   Lab File ID: 701C112

% Moisture: 5   Date Received: 06/16/94
Decanted: N   Date Extracted: 06/17/94
Date Analyzed: 07/06/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL   Dilution Factor: 1.0
Injection Volume: 1.0 uL   pH: 8.5

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	70	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	35	U
11096-82-5	Aroclor-1260	35	U

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

1 G

PCB ANALYSIS DATA SHEET

Client Sample ID: ZA23

Lab Name: E3I   Case No.: 680.002.8
Lab Code: E3I   SDG No.: ZA11

Matrix: Soil   Lab Sample ID: 941427-3
Extraction: Sonication   Lab File ID: 701C123

% Moisture: 8   Date Received: 06/16/94
Decanted: N   Date Extracted: 06/17/94
Date Analyzed: 07/07/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL   Dilution Factor: 1.0
Injection Volume: 1.0 uL   pH: 8.8

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	72	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	46	J P
11096-82-5	Aroclor-1260	36	U

(Q) - Qualifiers:

jc
8/29/94

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

1 G

PCB ANALYSIS DATA SHEET

Client Sample ID

ZA24

Lab Name: E3I   Case No.: 680.002.8

Lab Code: E3I   SDG No.: ZA11

Matrix: Soil   Lab Sample ID: 941427-4

Extraction: Sonication   Lab File ID: 701C124

% Moisture: 5   Date Received: 06/16/94

Decanted: N   Date Extracted: 06/17/94

Date Analyzed: 07/07/94

Sample Size: 30.0 g

Extract Volume: 10.0 mL   Dilution Factor: 1.0

Injection Volume: 1.0 uL   pH: 8.6

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	70	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	24	JP
11096-82-5	Aroclor-1260	35	U

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID
ZA25

Lab Name: E3I   Case No.: 680.002.8
Lab Code: E3I   SDG No.: ZA11

Matrix: Soil   Lab Sample ID: 941427-5
Extraction: Sonication   Lab File ID: 701C125

% Moisture: 15   Date Received: 06/16/94
Decanted: N   Date Extracted: 06/17/94
Date Analyzed: 07/07/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL   Dilution Factor: 1.0
Injection Volume: 1.0 uL   pH: 8.6

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	39	U
11104-28-2	Aroclor-1221	78	U
11141-16-5	Aroclor-1232	39	U
53469-21-9	Aroclor-1242	39	U
12672-29-6	Aroclor-1248	39	U
11097-69-1	Aroclor-1254	140	J P
11096-82-5	Aroclor-1260	39	U

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

JC
8/29/94

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID: ZA26

Lab Name: E3I   Case No.: 680.002.8
Lab Code: E3I   SDG No.: ZA11

Matrix: Soil   Lab Sample ID: 941427-6
Extraction: Sonication   Lab File ID: 701C126

% Moisture: 16   Date Received: 06/16/94
Decanted: N   Date Extracted: 06/17/94
Date Analyzed: 07/07/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL   Dilution Factor: 1.0
Injection Volume: 1.0 uL   pH: 8.1

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	40	U
11104-28-2	Aroclor-1221	79	U
11141-16-5	Aroclor-1232	40	U
53469-21-9	Aroclor-1242	40	U
12672-29-6	Aroclor-1248	40	U
11097-69-1	Aroclor-1254	59	J P
11096-82-5	Aroclor-1260	40	U

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

JR 8/29/94

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID

ZA27

Lab Name: E3I
Case No.: 680.002.8
Lab Code: E3I
SDG No.: ZA11

Matrix: Soil
Extraction: Sonication

Lab Sample ID: 941427-7
Lab File ID: 721C120

% Moisture: 13
Decanted:

Date Received: 06/16/94
Date Extracted: 06/17/94
Date Analyzed: 07/26/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL
Injection Volume: 1.0 uL

Dilution Factor: 2.0
pH: 8.1

GPC Cleanup: N
Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	77	U
11104-28-2	Aroclor-1221	150	U
11141-16-5	Aroclor-1232	77	U
53469-21-9	Aroclor-1242	77	U
12672-29-6	Aroclor-1248	77	U
11097-69-1	Aroclor-1254	350	
11096-82-5	Aroclor-1260	320	

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID

ZA28

Lab Name: E3I   Case No.: 680.002.8
Lab Code: E3I   SDG No.: ZA11

Matrix: Soil   Lab Sample ID: 941427-8
Extraction: Sonication   Lab File ID: 701C128

% Moisture: 16   Date Received: 06/16/94
Decanted: N   Date Extracted: 06/17/94
Date Analyzed: 07/07/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL   Dilution Factor: 1.0
Injection Volume: 1.0 uL   pH: 7.5

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	40	U
11104-28-2	Aroclor-1221	79	U
11141-16-5	Aroclor-1232	40	U
53469-21-9	Aroclor-1242	40	U
12672-29-6	Aroclor-1248	40	U
11097-69-1	Aroclor-1254	100	J P
11096-82-5	Aroclor-1260	220	J

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

jc
8/29/94

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID: ZA29

Lab Name: E3I   Case No.: 680.002.8
Lab Code: E3I   SDG No.: ZA11

Matrix: Soil   Lab Sample ID: 941427-9
Extraction: Sonication   Lab File ID: 701C129

% Moisture: 16   Date Received: 06/16/94
Decanted: N   Date Extracted: 06/17/94
Date Analyzed: 07/07/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL   Dilution Factor: 1.0
Injection Volume: 1.0 uL   pH: 8.2

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	40	U J
11104-28-2	Aroclor-1221	79	U
11141-16-5	Aroclor-1232	40	U
53469-21-9	Aroclor-1242	40	U
12672-29-6	Aroclor-1248	40	U
11097-69-1	Aroclor-1254	51	J P
11096-82-5	Aroclor-1260	47	J P

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

JK
8/29/94

1 G

PCB ANALYSIS DATA SHEET

Client Sample ID

ZA210

Lab Name: E3I Case No.: 680.002.8
Lab Code: E3I SDG No.: ZA11

Matrix: Soil Lab Sample ID: 941427-10
Extraction: Sonication Lab File ID: 701C141

% Moisture: 17 Date Received: 06/16/94
Decanted: N Date Extracted: 06/17/94
Date Analyzed: 07/07/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL Dilution Factor: 1.0
Injection Volume: 1.0 uL pH: 6.6

GPC Cleanup: N Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	40	U
11104-28-2	Aroclor-1221	80	U
11141-16-5	Aroclor-1232	40	U
53469-21-9	Aroclor-1242	40	U
12672-29-6	Aroclor-1248	40	U
11097-69-1	Aroclor-1254	52	J P
11096-82-5	Aroclor-1260	64	J P

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

JC
8/29/94

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID: ZA211

Lab Name: E3I   Case No.: 680.002.8
Lab Code: E3I   SDG No.: ZA11

Matrix: Soil   Lab Sample ID: 941427-11
Extraction: Sonication   Lab File ID: 721C121

% Moisture: 35   Date Received: 06/16/94
Decanted: Date Extracted: 06/17/94
Date Analyzed: 07/26/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL   Dilution Factor: 2.0
Injection Volume: 1.0 uL   pH: 7.2

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	100	U
11104-28-2	Aroclor-1221	200	U
11141-16-5	Aroclor-1232	100	U
53469-21-9	Aroclor-1242	100	U
12672-29-6	Aroclor-1248	100	U
11097-69-1	Aroclor-1254	540	J P
11096-82-5	Aroclor-1260	750	

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

JR 8/29/94

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID

ZA212

Lab Name: E3I   Case No.: 680.002.8
Lab Code: E3I   SDG No.: ZA11

Matrix: Soil   Lab Sample ID: 941427-12
Extraction: Sonication   Lab File ID: 701C143

% Moisture: 24   Date Received: 06/16/94
Decanted: N   Date Extracted: 06/17/94
Date Analyzed: 07/07/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL   Dilution Factor: 1.0
Injection Volume: 1.0 uL   pH: 7.4

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	44	U
11104-28-2	Aroclor-1221	88	U
11141-16-5	Aroclor-1232	44	U
53469-21-9	Aroclor-1242	44	U
12672-29-6	Aroclor-1248	44	U
11097-69-1	Aroclor-1254	100	J P
11096-82-5	Aroclor-1260	44	U

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

JC
8/29/94

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID: ZA213

Lab Name: E3I
Lab Code: E3I
Case No.: 680.002.8
SDG No.: ZA11

Matrix: Soil
Extraction: Sonication
Lab Sample ID: 941427-13
Lab File ID: 701C294

% Moisture: 24
Decanted: N
Date Received: 06/16/94
Date Extracted: 06/17/94
Date Analyzed: 07/14/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL
Injection Volume: 1.0 uL
Dilution Factor: 1.0
pH: 7.5

GPC Cleanup: N
Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	44	U
11104-28-2	Aroclor-1221	88	U
11141-16-5	Aroclor-1232	44	U
53469-21-9	Aroclor-1242	44	U
12672-29-6	Aroclor-1248	44	U
11097-69-1	Aroclor-1254	120	J P
11096-82-5	Aroclor-1260	44	U

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

JK
8/29/94

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID
ZA214

Lab Name: E3I   Case No.: 680.002.8
Lab Code: E3I   SDG No.: ZA11

Matrix: Soil   Lab Sample ID: 941427-14
Extraction: Sonication   Lab File ID: 701C045

% Moisture: 13   Date Received: 06/16/94
Decanted: N   Date Extracted: 06/17/94
Date Analyzed: 07/03/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL   Dilution Factor: 1.0
Injection Volume: 1.0 uL   pH: 6.6

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	38	U
11104-28-2	Aroclor-1221	77	U
11141-16-5	Aroclor-1232	38	U
53469-21-9	Aroclor-1242	38	U
12672-29-6	Aroclor-1248	38	U
11097-69-1	Aroclor-1254	110	J P
11096-82-5	Aroclor-1260	88	J P

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

R 8/29/94

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID

ZA215

Lab Name: E3I   Case No.: 680.002.8
Lab Code: E3I   SDG No.: ZA11

Matrix: Soil   Lab Sample ID: 941427-15
Extraction: Sonication   Lab File ID: 701C046

% Moisture: 7   Date Received: 06/16/94
Decanted: N   Date Extracted: 06/17/94
Date Analyzed: 07/03/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL   Dilution Factor: 1.0
Injection Volume: 1.0 uL   pH: 6.9

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	72	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	36	U

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

1 G

PCB ANALYSIS DATA SHEET

Client Sample ID

ZA216

Lab Name: E3I Case No.: 680.002.8
Lab Code: E3I SDG No.: ZA11

Matrix: Soil Lab Sample ID: 941427-16
Extraction: Sonication Lab File ID: 701C047

% Moisture: 23 Date Received: 06/16/94
Decanted: N Date Extracted: 06/17/94
Date Analyzed: 07/03/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL Dilution Factor: 1.0
Injection Volume: 1.0 uL pH: 7.7

GPC Cleanup: N Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	43	U
11104-28-2	Aroclor-1221	87	U
11141-16-5	Aroclor-1232	43	U
53469-21-9	Aroclor-1242	43	U
12672-29-6	Aroclor-1248	43	U
11097-69-1	Aroclor-1254	43	U
11096-82-5	Aroclor-1260	43	U

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID: ZA217

Lab Name: E3I   Case No.: 680.002.8
Lab Code: E3I   SDG No.: ZA11

Matrix: Soil   Lab Sample ID: 941427-17
Extraction: Sonication   Lab File ID: 701C048

% Moisture: 8   Date Received: 06/16/94
Decanted: N   Date Extracted: 06/17/94
Date Analyzed: 07/03/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL   Dilution Factor: 1.0
Injection Volume: 1.0 uL   pH: 8.1

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	72	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	49	J P
11096-82-5	Aroclor-1260	170	

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

JL
8/29/94

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID

ZA218

Lab Name: E3I Case No.: 680.002.8
Lab Code: E3I SDG No.: ZA11

Matrix: Soil Lab Sample ID: 941427-18
Extraction: Sonication Lab File ID: 701C049

% Moisture: 10 Date Received: 06/16/94
Decanted: N Date Extracted: 06/17/94
Date Analyzed: 07/03/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL Dilution Factor: 1.0
Injection Volume: 1.0 uL pH: 7.6

GPC Cleanup: N Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	37	U
11104-28-2	Aroclor-1221	74	U
11141-16-5	Aroclor-1232	37	U
53469-21-9	Aroclor-1242	37	U
12672-29-6	Aroclor-1248	37	U
11097-69-1	Aroclor-1254	53	
11096-82-5	Aroclor-1260	81	

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID

ZA219

Lab Name: E3I Case No.: 680.002.8
Lab Code: E3I SDG No.: ZA11

Matrix: Soil Lab Sample ID: 941427-19
Extraction: Sonication Lab File ID: 701C050

% Moisture: 13 Date Received: 06/16/94
Decanted: N Date Extracted: 06/17/94
Date Analyzed: 07/03/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL Dilution Factor: 1.0
Injection Volume: 1.0 uL pH: 7.9

GPC Cleanup: N Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	38	U
11104-28-2	Aroclor-1221	77	U
11141-16-5	Aroclor-1232	38	U
53469-21-9	Aroclor-1242	38	U
12672-29-6	Aroclor-1248	38	U
11097-69-1	Aroclor-1254	30	JP
11096-82-5	Aroclor-1260	99	

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

1 G

PCB ANALYSIS DATA SHEET

Client Sample ID

FB

Lab Name: E3I Case No.: 680.002.8

Lab Code: E3I SDG No.: ZA11

Matrix: WATER Lab Sample ID: 941427-24

Extraction: SEP F. Lab File ID: 701C059

% Moisture: NA Date Received: 06/16/94

Decanted: N Date Extracted: 06/21/94

Date Analyzed: 07/03/94

Sample Size: 1000 mL

Extract Volume: 10.0 mL Dilution Factor: 1.0

Injection Volume: 1.0 uL pH: 7.4

GPC Cleanup: N Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/L)	Q
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

MLM- 360010

ERM-Northeast

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(516) 921-4300
(516) 921-5679 (Fax)

3-360010-0055

22 November 1994

ERM

Chittibabu Vasudevan, Ph.D., P.E.
Chief, Eastern Projects Section
Bureau of Hazardous Waste Remediation
New York State Department of Environmental Conservation
50 Wolf Road
Albany, NY 12233

Christopher K. Bennett, P.E.
Deputy Director, Facilities Engineering
Metro-North Railroad Company
347 Madison Avenue
New York, NY 10017

Re: Harmon Railroad Yard Wastewater Treatment Area (OU-1)
Zone A Soil Confirmatory Sampling - Second Round
Validated Analytical Results

Dear Sirs:

The purpose of this letter is to present the results of the second round of Zone A soil confirmatory sampling, which was recently performed by ERM-Northeast (ERM), and to present ERM's proposed approach for final delineation of the Zone A soils at the site.

INTRODUCTION

In accordance with the NYSDEC-approved Field Sampling and Analysis Plan (FSAP) (ERM; 13 July 1994), ERM collected Zone A confirmatory soil samples in June 1994 (i.e., the "first round"). The results of this first round of sampling were summarized in a 1 November 1994 letter from ERM to Metro-North and NYSDEC (attached).

Based on the validated results of the first round of sampling, ERM collected two confirmatory samples following the site walk on 19 September 1994, along the two Zone A2 soil faces which had not yet been delineated at that time, as well as the required QA/QC samples.

ERM

All samples were analyzed using CLP protocols and deliverables. ERM received the CLP-deliverable data packages in October 1994 and has completed the task of validating the analytical results.

The validated analytical results are summarized below, and the sample designations and locations for both sampling rounds are shown on Figure 1.

The laboratory Form 1 reports and the data validation report are attached to this letter. The full CLP deliverable data package will be included in the future submittal of these data results to NYSDEC.

ZONE A2 SOIL ANALYTICAL RESULTS

The term "Zone A2 soil" as used in the construction contract, refers to Zone A soil which contains PCB concentrations greater than 0.5 mg/kg but less than 10 mg/kg. This soil must be excavated and placed below the cap to be constructed over the lagoon.

ERM collected two original samples, and one duplicate sample, for a total of three Zone A2 soil samples. The two samples (samples ZA2-7-5 and ZA2-11-5) were collected at the Zone A2 soil boundaries which had been extended five (5) feet, where first round sample analytical results exceeded the established cleanup level of 0.5 mg/kg, as shown on Figure 1.

The validated analytical results revealed that one of the two samples (ZA2-11-5) contained concentrations of PCBs at an estimated value of 0.28 mg/kg, which is less than the Zone A2 soil cleanup level of 0.5 mg/kg. Therefore, this extended boundary face of Zone A2 soil, as shown on Figure 1, is final and does not have to be extended further.

The second sample (ZA2-7-5) exceeded the PCB cleanup level of 0.5 mg/kg, and contained estimated concentrations of 0.68 mg/kg PCBs. In accordance with the NYSDEC-approved final design, the Zone A soil boundary face where this sample was collected must be extended an additional five feet, and further confirmatory samples collected at this boundary.

ERM

IMPACTS TO REMEDIATION

By extending the Zone A2 soil boundary face at sample ZA2-7-5 by five feet, as shown on Figure 1, an additional 38 in-place cubic yards of Zone A2 soil will require excavation during construction. The initial estimated volume of Zone A2 soil, as stated in the construction contract, was 2020 cubic yards. The total volume of additional soil requiring excavation, based on the results of the first two rounds of sampling, is 104 cubic yards. Therefore, at this time, a total of 2,124 cubic yards will require excavation.

The increase in volume from 2020 cubic yards to 2124 cubic yards is a 5.1 percent increase in the in-place soil volume which requires excavation.

ERM PROPOSED APPROACH FOR FINAL DELINEATION

ERM recommends that additional confirmatory sampling at the ZA2-11 boundary be conducted as necessary, in order to finalize the delineation of Zone A soils prior to the commencement of the site work contract. This will prevent construction delays due to long turnaround times required for CLP-deliverable sample analyses and data validation.

ERM proposes to collect four additional soil samples at five-foot intervals, send all four samples to a CLP laboratory, but only request analysis for the first sample at this time. The remaining three samples will be archived, for future analysis within CLP holding times, should the sample(s) exceed the cleanup level for PCBs of 0.5 mg/kg. These samples will be collected while other yard work is being conducted by ERM. Although this additional sampling is not included in ERM's current scope of work for the confirmatory sampling task (Task 8) (refer to ERM's Request for Change Order No. 2 dated 19 March 1994), ERM will attempt to perform this work and the associated validation work within the existing task budget.

Once the extent of Zone A soils has been finalized, ERM proposes to forward to NYSDEC and Metro-North revised Drawings for construction which will show the approved final extent of Zone A2 soils.

If you have any questions regarding the Zone A soil sampling results or ERM's proposed approach, please contact either of us at (516) 921-4300.

ERM

Very truly yours,

Robert Rivera
Senior Project Engineer

Scott W. Ranger/RSK

Scott W. Ranger
Senior Project Manager

enclosure

cc: D. Evans (NYSDEC)
M. Mehta (MNRC)
J. Iannone (ERM)

DATA VALIDATION REVIEW
SOIL SAMPLE ANALYSES
METRO NORTH COMMUTER RAILROAD
ERM-NORTHEAST PROJECT NUMBER 680.002.8
E^{3}I PROJECT NO. 941984

ERM

Deliverables:

The above referenced Sample Data Summary Package and Sample Data Package contains all required deliverables as stipulated under the 1991 New York State Analytical Services Protocols (ASP) Superfund Category for Polychlorinated Biphenyls (PCBs), analyzed by modified method 91-3. The data have been validated according to the protocols and QC requirements of the ASP, the USEPA Laboratory Analysis Functional Guidelines, the USEPA Region 2 CLP Data Review SOP, and the reviewer's professional judgement.

This validation report pertains to the following samples:

Samples	QC Samples
ZA275	ZA2205 (Field dup. of ZA275)
ZA2115	ZA2205 MS/MSD

ORGANICS

The following items/criteria were reviewed:

- Quantitation/detection limits
- Holding times
- Initial and continuing calibration data
- PCB standards summary and data
- Method and Field blanks
- Surrogate recoveries, summary and data
- MS/MSD/MSB recoveries, summary and data
- Data system printouts
- Sample chromatograms
- Qualitative and quantitative compound identification
- Case narrative and deliverables compliance

The items listed above were in compliance with NYSDEC ASP protocols and USEPA QC requirements with exceptions discussed in the text below. The data have been validated according to the procedures outlined above and qualified accordingly.

POLYCHLORINATED BIPHENYLS (PCBs)

- Soil samples were only analyzed for PCBs, therefore pesticide related QC criteria and standard analyses results were not used to assess sample PCB results.

- The PCB matrix spike/matrix spike duplicate analysis for sample ZA2205 MS/MSD indicated the percent recovery for AR1254 in the matrix spike duplicate was 28%, outside the advisory QC limit of 29-131%. Additionally, the relative percent difference between MS and MSD recoveries was 120%, outside the advisory QC limit of 50%. Since no action is taken on the MS/MSD data alone to qualify the entire data package, only the unspiked sample ZA2205 will be qualified. For sample ZA2205, AR1254 results are considered estimated with positive results flagged "J", and non-detects flagged "UJ".

- Sample ZA2205 indicated AR1260 concentration exceeding the calibration linear range in the initial analysis; therefore it was reanalyzed at a 2x dilution. Only the AR1260 concentration is reported from the dilution analysis.

- The following table lists samples, detected analytes and calculated concentrations percent difference (%D) between the DB-608 and the RTX-1701 columns greater than the 25% QC limit. The lower of the two concentrations are reported and flagged with a "P" by the laboratory. These positive values are considered estimated and flagged "J".

Sample	Analytes	%D between DB-608 and RTX-1701 columns
ZA275	AR1260	47.1%
ZA2115	AR1260	66.7%
ZA2205	AR1254	72.4%
	AR1260	41.9%

ERM

ZA2205DL	AR1254	133.3%
ZA2205MS	AR1254	84.8%
	AR1260	47.8%
ZA2205MSD	AR1254	90.0%
	AR1260	47.8%

ERM

Package Summary:

All data are valid and usable with qualifications as noted in this review:

Signed: Joseph Camanzo

Joseph Camanzo, Environmental Chemist

Dated: 10/27/94

1 G

PCB ANALYSIS DATA SHEET

Client Sample ID: ZA275

Lab Name:	E3I	Case No.:	METRO NORTH
Lab Code:	E3I	SDG No.:	ZA2115
Matrix:	Soil	Lab Sample ID:	941984-1
Extraction:	Sonication	Lab File ID:	923C529
% Moisture:	9	Date Received:	09/21/94
Decanted:		Date Extracted:	09/21/94
		Date Analyzed:	10/14/94
Sample Size:	30.0 g		
Extract Volume:	10.0 mL	Dilution Factor:	1.0
Injection Volume:	1.0 uL	pH:	6
GPC Cleanup:	N	Sulfur Cleanup:	Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	37	U
11104-28-2	Aroclor-1221	73	U
11141-16-5	Aroclor-1232	37	U
53469-21-9	Aroclor-1242	37	U
12672-29-6	Aroclor-1248	37	U
11097-69-1	Aroclor-1254	340	
11096-82-5	Aroclor-1260	340	J P

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

JL 10/27/94

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID: ZA2115

Lab Name: E3I   Case No.: METRO NORTH
Lab Code: E3I   SDG No.: ZA2115

Matrix: Soil   Lab Sample ID: 941984-2
Extraction: Sonication   Lab File ID: 923C530

% Moisture: 12   Date Received: 09/21/94
Decanted: Date Extracted: 09/21/94
Date Analyzed: 10/14/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL   Dilution Factor: 1.0
Injection Volume: 1.0 uL   pH: 6

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	38	U
11104-28-2	Aroclor-1221	76	U
11141-16-5	Aroclor-1232	38	U
53469-21-9	Aroclor-1242	38	U
12672-29-6	Aroclor-1248	38	U
11097-69-1	Aroclor-1254	160	
11096-82-5	Aroclor-1260	120	P

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID

ZA2205

Lab Name: E3I   Case No.: METRO NORTH
Lab Code: E3I   SDG No.: ZA2115

Matrix: Soil   Lab Sample ID: 941984-3
Extraction: Sonication   Lab File ID: 923C531

% Moisture: 7   Date Received: 09/21/94
Decanted: Date Extracted: 09/21/94
Date Analyzed: 10/14/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL   Dilution Factor: 1.0
Injection Volume: 1.0 uL   pH: 5

GPC Cleanup: N   Sulfur Cleanup: Y

CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	72	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	290	J P
11096-82-5	Aroclor-1260	430	EP

use result fro dilution analysi. ZA2205 DL

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

jc 10/27

1 G
PCB ANALYSIS DATA SHEET

Client Sample ID: ZA2205 DL

Lab Name: E3I
Lab Code: E3I

Case No.: METRO NORTH
SDG No.: ZA2115

Matrix: Soil
Extraction: Sonication

Lab Sample ID: 941984-3DL
Lab File ID: O18C057

% Moisture: 7
Decanted:

Date Received: 09/21/94
Date Extracted: 09/21/94
Date Analyzed: 10/19/94

Sample Size: 30.0 g
Extract Volume: 10.0 mL
Injection Volume: 1.0 uL

Dilution Factor: 2.0
pH: 5

GPC Cleanup: N

Sulfur Cleanup: Y

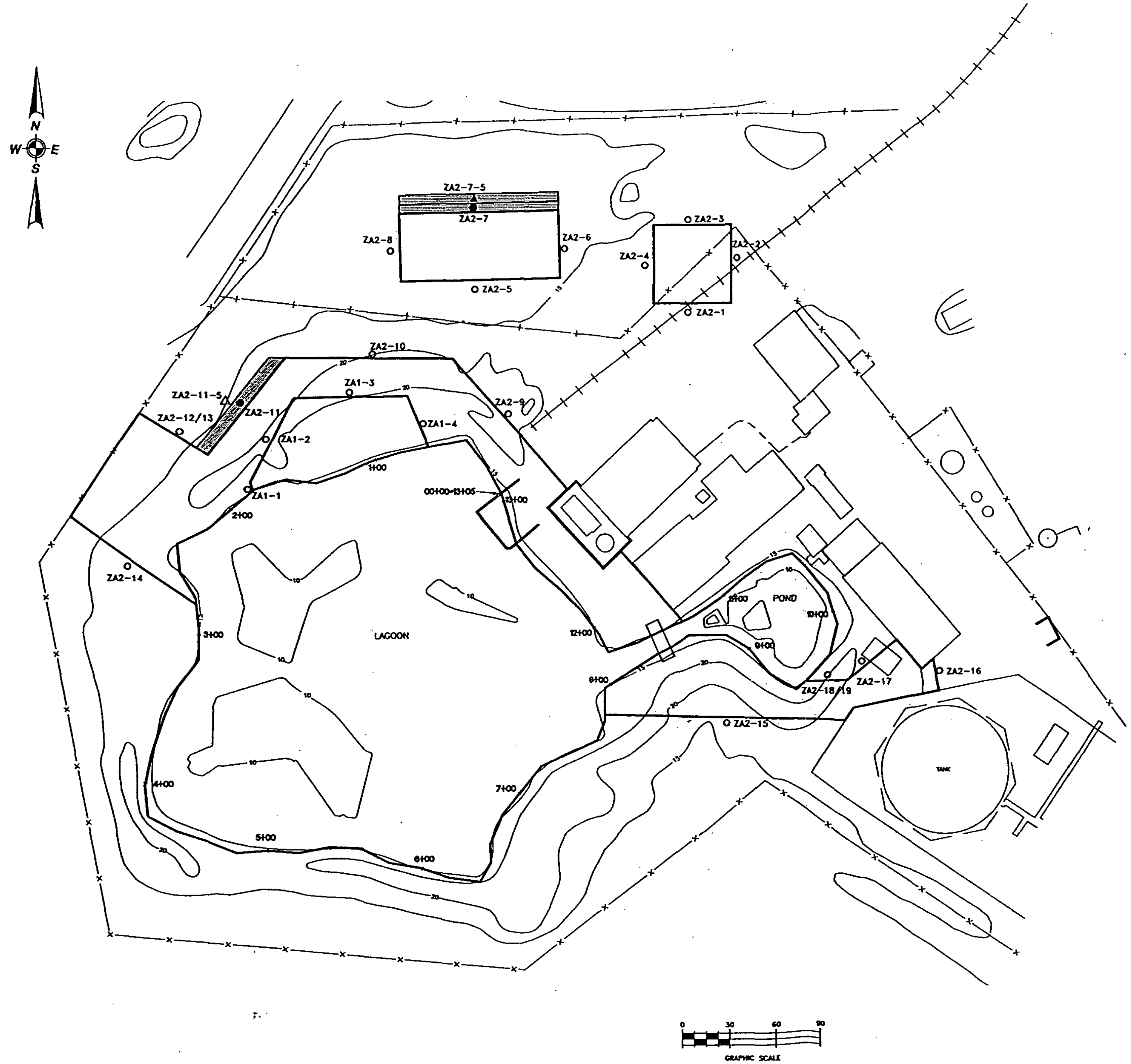
CAS No.	Compound	Concentration Units: (UG/KG)	Q
12674-11-2	Aroclor-1016	67	U
11104-28-2	Aroclor-1221	130	U
11141-16-5	Aroclor-1232	67	U
53469-21-9	Aroclor-1242	67	U
12672-29-6	Aroclor-1248	67	U
11097-69-1	Aroclor-1254	180	P
11096-82-5	Aroclor-1260	550	

use only this value from dilution analysis

(Q) - Qualifiers:

U: Analyzed for but not detected.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
P: %D for concentrations between two GC columns is >25%.
C: Confirmed by GC/MS.

JC 10/27/94



LEGEND

- ○ FIRST ROUND CONFIRMATORY SOIL SAMPLE WITH PCB CONCENTRATION BELOW CLEANUP/ ACTION LEVEL
- ● FIRST ROUND CONFIRMATORY SOIL SAMPLE WITH PCB CONCENTRATION GREATER THAN CLEANUP/ACTION LEVEL
- △ SECOND ROUND CONFIRMATORY SOIL SAMPLE WITH PCB CONCENTRATION BELOW CLEANUP/ ACTION LEVEL
- ▲ SECOND ROUND CONFIRMATORY SOIL SAMPLE WITH PCB CONCENTRATION GREATER THAN CLEANUP/ACTION LEVEL
- INCREASE IN EXCAVATION AREA DUE TO CONFIRMATORY SOIL SAMPLE RESULT HIGHER THAN CLEANUP LEVEL
- ZONE A BOUNDARIES

METRO-NORTH RAILROAD COMPANY

HARMON RAILROAD YARD WASTEWATER TREATMENT AREA REMEDIATION

ERM-Northeast
Environmental Resources Management
ERM

ZONE A
CONFIRMATORY SOIL SAMPLE LOCATIONS
AND DESIGNATIONS

E.M.F./M.M. | NOV. 16, 1994 | GRAPHIC | 680.002.8 | SOILRESL | 1

MLM

ERM-Northeast

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3-360010-0054

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CONSTRUCTION MANAGEMENT
& FACILITIES ENGINEERING

ERM

1 November 1994

Chittibabu Vasudevan, Ph.D., P.E.
Chief, Eastern Projects Section
Bureau of Hazardous Waste Remediation
New York State Department of Environmental Conservation
50 Wolf Road
Albany, NY 12233

Christopher K. Bennett, P.E.
Deputy Director, Facilities Engineering
Metro-North Railroad Company
347 Madison Avenue
New York, NY 10017

Re: Harmon Railroad Yard Wastewater Treatment Area (OU-1)
Zone A Soil Confirmatory Sampling - Validated Analytical Results

Dear Sirs:

The purpose of this letter is to present the results of the Zone A soil confirmatory sampling program, which was recently performed by ERM-Northeast (ERM), and to present ERM's proposed approach for incorporating these results into the site work contract for the Harmon Lagoon Remediation.

INTRODUCTION

In accordance with the NYSDEC-approved Field Sampling and Analysis Plan (FSAP) (ERM; 13 July 1994), ERM collected Zone A confirmatory soil samples in June 1994.

All samples were analyzed using CLP protocols and deliverables. ERM received the CLP-deliverable data packages in August 1994 and has completed the task of validating the analytical results.

The validated analytical results are summarized in Table 1, and the sample designations and locations are shown on Figure 1. Two of the samples collected during the sampling program contained concentrations of PCBs which exceeded the established cleanup level for Zone A soils.

ERM

The laboratory Form 1 reports and the data validation report are attached to this letter. The full CLP deliverable data package will be included in the future submittal of these data results to NYSDEC.

Please refer also to the 26 July 1994 letter from ERM to Metro-North and NYSDEC (attached), which discussed the impacts of Zone A soil sampling on the rail spur installation.

ZONE A1 SOIL ANALYTICAL RESULTS

The term "Zone A1 soil" as used in the construction contract, refers to Zone A soil which contains PCB concentrations greater than 10 mg/kg. This soil must be excavated and disposed of off-site.

ERM collected four confirmatory samples at the proposed Zone A1 soil boundary as shown on Figure 1 (the steel sheeting will form the remaining boundary). One sample was collected at each face of the Zone A1 soil boundary.

The validated analytical results of these four samples revealed estimated PCB concentrations ranging from 0.94 mg/kg to 6.7 mg/kg, which are all less than the Zone A1 soil off-site disposal "action level" of 10 mg/kg. Therefore, the proposed initial Zone A1 soil boundary, shown on Figure 1 and in the construction contract, has been completely delineated and is considered final.

The final in-place volume of Zone A1 soil, which requires off-site disposal, is therefore 320 cubic yards, as stated in the construction contract.

ZONE A2 SOIL ANALYTICAL RESULTS

The term "Zone A2 soil" as used in the construction contract, refers to Zone A soil which contains PCB concentrations greater than 0.5 mg/kg but less than 10 mg/kg. This soil must be excavated and placed below the cap to be constructed over the lagoon.

ERM collected 17 original samples, and 2 duplicate samples, for a total of 19 Zone A2 soil samples. The 17 samples were collected at the proposed Zone A2 soil boundaries, as shown on Figure 1. One sample was collected at each face of the Zone A2 soil boundary (the steel sheeting will form the remaining boundary for the Zone A2 soil areas adjacent to the lagoon).

The validated analytical results revealed that 15 of the 17 samples contained concentrations of PCBs less than the Zone A2 soil cleanup level of 0.5 mg/kg. The concentrations of PCBs in these 15 samples ranged from non-detect to an estimated value of 0.337 mg/kg. Therefore, 15 of the 17 proposed boundary faces of Zone A2 soil as shown in the contract documents are final and do not have to be extended.

Two samples, ZA2-7 and ZA2-11, exceeded the PCB cleanup level of 0.5 mg/kg, and contained respectively, 0.67 mg/kg PCBs and 1.29 mg/kg PCBs. In accordance with the NYSDEC-approved final design, the Zone A boundary faces where these samples were collected must be extended five feet and additional confirmatory samples collected along these two faces.

IMPACTS TO REMEDIATION

By extending the two Zone A2 soil boundary faces by five feet, as shown on Figure 1, an additional 66 in-place cubic yards of Zone A2 soil will require excavation during construction. The initial estimated volume of Zone A2 soil, as stated in the construction contract, was 2020 cubic yards. Therefore, at this time, a total of 2,086 cubic yards will require excavation.

The increase in volume from 2020 cubic yards to 2086 cubic yards is a 3.3 percent increase in the in-place soil volume which requires excavation.

ERM PROPOSED APPROACH FOR FINAL DELINEATION

ERM collected two confirmatory samples following the site walk on 19 September 1994, along the two Zone A2 soil faces which have not yet been delineated. ERM received the raw analytical results on 27 October 1994, and will be performing the data validation on these analytical results within the next two weeks. The results of this second round of sampling will be forwarded to Metro-North and NYSDEC promptly following data validation.

ERM recommends that any additional confirmatory sampling be conducted as necessary, in order to finalize the delineation of Zone A soils, prior to the commencement of the site work contract. This will prevent construction delays due to long turnaround times required for CLP-deliverable sample analyses and data validation.

ERM will collect any additional samples in a cost-effective manner, by obtaining the samples while other yard work is being conducted by ERM at the Site. Although this additional sampling is not included in ERM's current scope of work for the confirmatory sampling task (Task 8) (refer to ERM's Request for Change Order No. 2 dated 19 March 1994).

ERM will attempt to perform this work and the associated validation work within the existing task budget.

Once the extent of Zone A soils has been finalized, ERM proposes to forward to NYSDEC and Metro-North revised Drawings for construction which will show the approved final extent of Zone A2 soils.

If you have any questions regarding the Zone A soil sampling results or ERM's proposed approach, including coordination of the rail spur installation, please contact me at (516) 921-4300.

Very truly yours,

Robert Rivera
Senior Project Engineer

Scott Ranger/DL

Scott W. Ranger
Senior Project Manager

enclosure

cc: D. Evans (NYSDEC)
M. Mehta (MNRC)
J. Iannone (ERM)

TABLE 1
PCB ANALYTICAL DATA SUMMARY
ZONE A SOIL CONFIRMATORY SAMPLES

ZONE A1 RESULTS - (10 mg/kg action level for off-site disposal)			
	SAMPLE DESIGNATION	ANALYTICAL RESULT (mg/kg)	DATA QUALIFIER
	ZA1-1	6.7	J
	ZA1-2	5.7	J
	ZA1-3	0.94	J
	ZA1-4	1.67	
ZONE A2 RESULTS - (0.5 mg/kg cleanup level)			
	SAMPLE DESIGNATION	ANALYTICAL RESULT (mg/kg)	DATA QUALIFIER
	ZA2-1	0.242	J
	ZA2-2	Non-detect	
	ZA2-3	0.046	J
	ZA2-4	0.024	J
	ZA2-5	0.140	J
	ZA2-6	0.059	J
	ZA2-7	0.670	
	ZA2-8	0.320	J
	ZA2-9	0.337	J
	ZA2-10	0.116	J
	ZA2-11	1.290	J
	ZA2-12	0.100	J
	ZA2-13	0.120	J,*
	ZA2-14	0.198	J
	ZA2-15	Non-detect	
	ZA2-16	Non-detect	
	ZA2-17	0.219	J
	ZA2-18	0.134	
	ZA2-19	0.129	**

J = Estimated value below quantitation limit
* = Duplicate sample of ZA2-12
** = Duplicate sample of ZA2-18
= Analytical result above PCB cleanup level

Appendix C
Summary Report on Field Sampling and Analytical Programs, May 1996, prepared by Hill International

HILL

Metro North Raiload
HARMON LAGOON REMEDIATION

SUMMARY REPORT ON FIELD SAMPLING AND ANALYSIS PROGRAM

May 8, 1996

Hill International, Inc.
One Levitt Parkway
Willingboro, NJ 08046

HARMON LAGOON REMEDIATION
SUMMARY REPORT ON FIELD SAMPLING AND ANALYSIS PROGRAM

TABLE OF CONTENTS

HARMON LAGOON REMEDIATION

SUMMARY REPORT ON FIELD SAMPLING AND ANALYSIS PROGRAM

1.0 INTRODUCTION

The Harmon Lagoon was a wastewater storage facility component of the Old Wastewater Treatment Plant located at Metro-North's Croton Harmon railroad maintenance and repair facility. In 1980, the lagoon was found to be contaminated with polychlorinated biphenyl's (PCBs).

The method of remediation was specified by the New York State Department of Environmental Conservation (NYSDEC) in its Record of Decision (ROD) in September 1992. The remedial actions included the following:

- Removal and off-site treatment of the PCB-containing sludge;

- Removal and on-site treatment of standing water in the lagoon;

- Excavation of contaminated soil and on-site and off-site disposal depending on the PCB concentrations.

In the final remedial design a Field Sampling and Analysis Plan was included. This plan is intended to measure the effectiveness of the selected remedy. It covers the following:

- Lagoon surface water;
- Air (on-site and off-site);
- Zone A soil delineation;
- Zone A1 soils disposal;
- Disposal of spent activated carbon;
- Leaking sludge hauling containers;
- Decontamination of site equipment; and
- Decontamination of sludge hauling containers.

The execution of the Field Sampling and Analysis Plan was overseen by the Construction Manager, Hill International, Inc. The distribution of sampling and analytical responsibilities were as follows:

Hill International, Inc.	Lagoon Surface Water, Air Monitoring, Leaking Liquid From Sludge Hauling Containers
ERM-Northeast	Zone A Soil Delineation
Ogden Remediation Services Corp.	A1 Soil Disposal, Decontamination of Site Equipment
Chemical Waste Management	Decontamination of Sludge Hauling Containers
Metro-North Railroad	Disposal of Spent Activated Carbon, Decontamination Wash Waters, and Well Development Waters

2.0 SAMPLING AND ANALYTICAL METHODOLOGY

2.1 Sampling Procedure

Samples were collected, contained and stored according to the USEPA "Guidelines Establishing Test Procedures for Analysis of Pollutants" (40CFR Part 136).

2.2 Laboratory Protocols and Methodology

With two exceptions, the laboratories which conducted all analytical work were certified by the NYSDOH under the Environmental Laboratory Analytical Program (ELAP) and approved by the NYSDEC.

All analyses were reported in the New York State's Analytical Services Protocol (ASP) Category B deliverable data packages.

Treated and untreated lagoon water samples were analyzed in accordance with standard 40 CFR 136 methodologies.

Chemical Waste Management's Laboratory, which is located in Texas, is not an NYSDOH ELAP laboratory. However, based on extensive review of their established protocols on PCB wipe sampling (Method CWM 86-33) and for PCB analysis (USEPA Method 8081), they were given approval to conduct post-use PCB Wipe-Testing of the sludge containers at the Texas laboratory. As an additional means of quality control, five (5) percent of all roll-off boxes were PCB Wipe-Tested in duplicate at CWM's Texas laboratory, and at CWM's laboratory in Model City, NY which is a NYSDOH ELAP laboratory.

Air sampling was performed in accordance with NIOSH methodologies. Analysis of air samples were performed by an American Industrial Hygiene Association (AIHA) accredited laboratory using NIOSH methods 0600, 5503, 1500, 1501, and 1003.

2.3 Quality Assurance/Quality Control

The Quality Assurance/Quality Control (QA/QC) program developed for this project was intended to ensure the accuracy of all analytical results obtained by the Construction Manager. Details of this QA/QC program are provided in the Field Sampling and Analytical Plan. The QA/QC program includes laboratory protocols, proper decontamination measures for the sampling equipment, the collection and analysis of QA/QC samples and proper site and laboratory documentation.

2.4 Documentation

The comprehensive analytical reports are too voluminous to be appended here, therefore, these reports are being held in dedicated project files. In this report they will be referred to by their respective file numbers. Other reports are in the custody of Metro-North and ERM-Northeast, and will be referenced accordingly. A listing of these files is presented in Appendix 1.

3.0 LAGOON SURFACE WATER SAMPLING AND ANALYSIS

3.1 Background

Surface water from the lagoon and pond had to be removed prior to the excavation of the sludge. Discharge of this water to Metro-North's sanitary sewer outfall was dependent on whether or not it satisfied MNR's State Pollutant Discharge Elimination System (SPDES) permit No. NY-0006866. Hence, the need for testing and treatment.

3.2 Objectives

3.2.1 Pre-Treatment

Prior to treatment of the lagoon surface water, sampling and analysis was conducted to establish baseline characteristics which, along with discharge limits set during the remedial design, was used to design the water treatment plant.

3.2.2 Post Treatment

Seven batches of wastewater comprising 127,400 gallons were treated. Sampling and analysis was carried out to determine if the treatment was successful in reducing the level of contamination to the limit set by the project objectives.

3.3 Analytical Parameters

The analytical parameters were based on the contamination reduction goals set by the project remediation design. These parameters are as follows:

- Total Suspended Solids
- Oil and Grease
- Settleable Solids
- pH
- Total PCBs (Aroclor 1254 & 1260)
- Benzene
- Cadmium
- Copper
- Lead
- Nickel
- Zinc
- Magnesium
- 2-Methylnapthalene

At the request of the Treatment System Design Engineer, ERM-Northeast, dissolved metals was added to the list of analytical parameters for Batch 6.

3.4 Sampling and Analytical Methodology

3.4.1 Lagoon Water Sampling and Analysis

Prior to the treatment of the lagoon surface water, baseline grab samples were taken by Hill International using a long handle dipper. Upon completion of each batch of treated lagoon surface water, grab samples were also taken by Hill International using a disposable siphon made from tygon tubing.

Analysis of the lagoon water samples were conducted by IEA of Whippany, New Jersey.

3.4.2 Decontamination

The sampling equipment used at the site were a long handle dipper which was provided and decontaminated by the IEA representative prior to site use. In addition to the dipper, new tygon tubing was used to siphon samples.

3.4.3 Sample Containers

Sample container sizes, material, and color are given in Table 3-1. All bottles were certified clean by the laboratory and delivered in a sealed cooler.

3.4.4 Field and Trip Blanks

Field blanks were collected during each sampling event to evaluate the possibility of sampling contamination due to improper cleaning of sampling equipment. Field blanks comprised the water collected during rinsing of the decontaminated sampling equipment with laboratory supplied de-ionized water. During each sampling event, field blanks were collected for PCB, 2-methylnapthalene, benzene, and total metals analyses.

A trip blank for benzene analysis was collected during each sampling event to evaluate the possibility of sampling contamination due to improper handling and storage during transport to and from the site.

TABLE 3-1: SAMPLE CONTAINER DESCRIPTION

Analytical Parameter	Matrix	Container Material	Container Size	No. of Containers
Benzene	Aqueous	Glass (C)	40 ml	2
PCB	Aqueous	Glass (A)	1 l	2
2 - Methylnapthalene	Aqueous	Glass (A)	1 l	2
Oil & Grease	Aqueous	Glass (C)	1 l	2
Settleable Solids	Aqueous	Plastic	1 l	1
pH	Aqueous	Plastic	100 ml	1
Metal, Cd, Cu, Pb, Ni, Zn, Mg	Aqueous	Plastic	500 ml	1
Total Suspended Solids	Aqueous	Plastic	500 ml	1

(C) - Clear (A) - Amber

3.4.5 Duplicate Samples

During each event a duplicate sample was collected for PCB analysis only.

3.4.6 Matrix Spike/Matrix Spike Duplicate Samples

During each event matrix spike and matrix spike duplicate samples were collected for PCB analysis only.

3.4.7 Sample Preservation

Immediately after all sampling events, samples were placed in insulated coolers and maintained at approximately 4°C. The laboratory provided temperature blanks in each cooler to ensure that 4°C was maintained. Upon delivery at the laboratory, samples were placed in a refrigerator and maintained at 4°C until analyzed.

Chemical preservatives were used in some samples. Benzene was preserved with hydrochloric acid, metals with nitric acid, and oils and grease with sulfuric acid.

Holding times were adhered to because the Laboratory was obligated to a 72-hour turn-around-time.

TABLE 3-2: LAGOON SURFACE WATER PRE-TREATMENT ANALYTICAL RESULTS

Sampling Date: 6/9/95

Parameter	Sampling I.D.	Project Limit	Pre-Treatment Results
Total Suspended Solids	MNR-TSS-1	45 mg/l	107 mg/l
Oil & Grease	MNR-OG-1	15 mg/l	3.8 mg/l
Settleable Solids	MNR-SS-1	0.1 ml/l	<0.1 ml/l
pH	MNR-PH-1	6-9 (Range)	7.59
Total PCBs[1]	MNR-PCB-1	.3 µg/l (nd)	0.61 µg/l
Benzene	MNR-B-1	6 µg/l	Non-detected
Cadmium	MNR-CU-1	3.7 µg/l	0.24 µg/l
Copper	MNR-CU-1	60 µg/l	17.6 µg/l
Lead	MNR-CU-1	8.6 µg/l	13.1 µg/l
Nickel	MNR-CU-1	7.1 µg/l	1.0 µg/l
Zinc	MNR-CU-1	80 µg/l	97.7 µg/l
Magnesium	MNR-CU-1	35 mg/l	54.1 mg/l
2-Methylnaphthalene	MNR-M-1	50 mg/l	Non-detected

3.5 Analytical Results

The analysis of the pre-treatment lagoon surface water showed elevated levels of PCBs, metals, and total suspended solids. Based on prior studies this was not unexpected. Table 3-2 shows the summary results. Detailed analytical results can be found in project file M306-01-01/9179-3.5.9.1.

In Table 3-3 the analysis of post-treatment lagoon water show that, except for, Batch 7, magnesium exceeded the limit of 35 mg/l. Lead exceeded its limits in Batches 1,2,& 4 (13.1 ug/l vs. 8.6 ug/l) as did Zinc in Batch 4 (197 µg/l vs. 80 µg/l) and Total Suspended Solids (TSS) in Batch 6 (74 mg/l vs. 45 mg/l). The exceedance of TSS may have been attributed to the sudden bloom of insect larvae and algae in the uncovered storage tank.

In Batch 5 the concentrations of Oils and Grease and Benzene were 160 mg/l and 12 µg/l respectively both exceeding their respective project limits of 15 mg/l and 6 µg/l. Laboratory error was suspected for the latter exceedance. Unbeknownst to the laboratory, these parameters were re-tested under different sample id's (MNR-B-R and MNR-OG-R) and were found to be non-detect and 5.8 mg/l respectively, significantly lower than the discharge limits. A detailed laboratory report on the re-test can be found in project file M306-01-01/9179-3.5.9.1.

The concentrations of pollutants in Batch 7 were all unusually low and below the project discharge limits because of collection of rain water from a significant rainstorm preceding sampling.

The analysis for dissolved metals done on Batch 6 was intended to determine whether or not filtration alone would reduce lead and magnesium concentrations to levels below the project limit. The results showed an overall reduction in the concentration of metal. Lead concentration was reduced to 1.6 µg/l, lower than the project limit of 8.6 µg/l. The reduction in the concentration of magnesium was still not enough (65.6 mg/l vs. 35.0 mg/l) to take it to or below the project limit. More details can be found in project file M306-01-01/9179-3.5.9.1.

TABLE 3-3: LAGOON SURFACE WATER ANALYTICAL RESULTS

Parameter	Limit	Batch 1	Batch 2	Batch 3	Batch 4	Batch 5	Batch 6	Batch 7
Total Suspended Solids	45 mg/l	24 mg/l	1b mg/l	38 mg/l	40 mg/l	30 mg/l*	74 mg/l	3.0 mg/l
Oil & Grease	15 mg/l	< 5.6 mg/l	<5.6 mg/l	<5.5 mg/l	<5.6 mg/l	5.8 mg/l	<5.9 mg/l	<5.7 mg/l
Settleable Solids	0.1 ml/l	< 0.1 ml/l	<0.1 ml/l	<0.1 ml/l	<0.1 ml/l	<0.1 ml/l	<0.1 ml/l	<0.1 ml/l
pH	6-9 (Range)	8.9	8.46	7.6	7.66	7.74	7.89	8.74
Total PCBs[1]	.3 ug/l (nd)	0.18 ug/l	Non-detected	0.24 ug/l	Non-detected	Non-detected	Non-detected	Non-detected
Benzene	6 ug/l	Non-detected	Non-detected	Non-detected	Non-detected	Non-detected	Non-detected	Non-detected
Cadmium	2.7 ug/l	0.245 ug/l	0.24 ug/l	<0.24 ug/l	<0.245 ug/l	0.24 ug/l	0.24 ug/l	0.24 ug/l
Copper	60 ug/l	<25 ug/l	14.7 ug/l	9.91 ug/l	4.99 ug/l	3.7 ug/l	0.95 ug/l	2.8 ug/l
Lead	8.6 ug/l	39.9 ug/l	10.2 ug/l	6.57 ug/l	18.3 ug/l	1.6 ug/l	1.6 ug/l	1.6 ug/l
Nickel	7.1 ug/l	3.19 ug/l	3.2 ug/l	<1.04 ug/l	<1.04 ug/l	1.6 ug/l	0.57 ug/l	1.0 ug/l
Zinc	80 ug/l	23.7 ug/l	23.7 ug/l	48.7 ug/l	197 ug/l	13.4 ug/l	4.0 ug/l	3.7 ug/l
Magnesium	35 mg/l	54.9 mg/l	55.8 mg/l	112 mg/l	104 mg/l	84.9 mg/l	66.3 mg/l	30.0 mg/l
2-Methylnaphthalene	50 mg/l	Non-detected	Non-detected	Non-detected	Non-detected	Non-detected	Non-detected	Non-detected
Volume Treated (gal.)		**26,700**	**15,500**	**27,300**	**19,000**	**30,200**	**4,700**	**4,000**
Sampling Date		**8/2/95**	**8/4/95**	**8/10/95**	**8/14/95**	**8/31/95**	**9/28/95**	**10/3095**

* Re-test Results

3.6 Further Confirmatory Testing

All the treated lagoon surface water, i.e. Batches 1 to 7, were quarantined in the empty MNR North Equalization Tank until a secondary treatment process was designed to reduce the excessive levels of lead and magnesium. Consolidating the seven batches of treated lagoon surface water resulted in acceptable levels of TSS and Zinc (30.79 mg/l and 51.37 mg/l), both of which had exceeded the project limit on one occasion. The computed composited pollutants concentrations are shown in Table 3-4.

TABLE 3-4: LAGOON SURFACE WATER POST-TREATMENT COMPOSITE CONCENTRATIONS

Parameter	SPDES Limit	Treated Lagoon Water (127,400 gal)	Treated Lagoon Water & Stormwater (398,950 gal)
Total Suspended Solids	45 mg/l	30.79 mg/l	9.69 mg/l
Oil & Grease	15 mg/l	5.68 mg/l	1.79 mg/l
Settleable Solids	0.1 ml/l	0.10 ml/l	0.03 ml/l
pH	6-9 (Range)	8.06	7.33
Total PCBs1	.3 *g/l (nd)	0.09 *g/l	0.03 *g/l
Benzene	6 *g/l	not detected	not detected
Cadmium	3.7 *g/l	0.24 *g/l	0.07 *g/l
Copper	60 *g/l	10.96 *g/l	3.44 *g/l
Lead	8.6 *g/l	14.30 *g/l	4.50 *g/l
Nickel	7.1 *g/l	1.87 *g/l	0.59 *g/l
Zinc	80 *g/l	51.37 *g/l	16.17 *g/l
Magnesium	35 mg/l	81.43 mg/l	25.62 mg/l
2-Methylnaphthalene	50 *g/l	not detected	not detected

4.0 ZONE A SOILS - DELINEATION

4.1 Background

Some of the soil on the site was contaminated with PCB's ranging from greater or equal to 0.5 mg/kg to less than 50 mg/kg. Soil having PCB concentrations greater than or equal to 10 mg/kg but less than 50 mg/kg was designated Zone A1, while soil having PCB concentrations greater than or equal to 0.5 mg/kg but less than 10 mg/kg was designated Zone A2.

4.2 Objectives

Since different methods of remediation were to be employed for the two categories of soils, sampling and analysis were necessary to achieve delineation at the site.

4.3 Sampling and Analytical Methodology

4.3.1 Zone A Soil Sampling and Analysis

Using stainless steel trowels, one composite soil sample was taken from each of the five sludge drying beds by Eric Arnesen of ERM on March 10, 1995. Each composite sample was formed by collecting four grab samples within each bed. Analysis of the samples were carried out by E3I Laboratory of Somerville, Massachusetts.

4.3.2 Decontamination

Each soil sample was taken by a new separate stainless steel trowel which did not require decontamination.

4.3.3 Sample Containers

Glass sample bottles were provided and certified clean by the laboratory.

4.3.4 Duplicate Samples

One duplicate sample for PCB analysis was taken during this event.

4.3.5 Sample Preservation

Immediately after all sampling events, samples were placed in insulated coolers and maintained at approximately 4°C. Upon delivery at the laboratory, samples were placed in a refrigerator and maintained at 4°C until analyzed.

4.4 Analytical Results

Analytical results are presented in ERM Memorandum to MNR dated April 17, 1995. Three samples (ZA2-7-PL, SDB-A, and SDB-E) exceeded the Zone A PCB surface clean-up level of 0.5 mg/l. A COPY OF THE 4/17/95 LETTER IS PROVIDED IN APPENDIX B.

The detailed analytical reports are on file at ERM-Northeast, Woodbury, New York.

5.0 A1 SOIL - DISPOSAL

5.1 Background

Zone A1 soils which contain PCBs at concentrations less than 50 mg/kg and greater than 10 mg/kg were remediated through off-site disposal at a RCRA-permitted non-hazardous facility.

5.2 Objective

The purpose of sampling and analyzing the A1 soil was to assure the disposal facility that the soil satisfied its criteria for acceptance.

5.3 Analytical Parameters

The parameters required by the selected disposal facility to determine waste classification and disposal method were Full TCLP, PCB, and Flash Point.

5.4 Sampling and Analytical Methodology

5.4.1 A1 Soil Sampling and Analysis

Discrete soil samples were taken by Rick Lorfing of ORSC from several locations in the stockpile by stainless steel trowels and composited into one sample.

Laboratory Resources of Teterboro, New Jersey conducted the analysis of the A1 soils.

5.4.2 Decontamination

Soil samples were taken by new stainless steel trowels which did not require decontamination.

5.4.3 Sample Containers

Glass sample bottles were provided and certified clean by the laboratory.

5.4.4 Field and Trip Blanks

The Disposal Facility selected by the Contractor did not require field and trip blanks for this sampling event.

5.4.5 Sample Preservation

Immediately after all sampling events, samples were placed in insulated coolers and maintained at approximately 4°C. Upon delivery at the laboratory, samples were placed in a refrigerator and maintained at 4°C until analyzed.

5.5 Analytical Results

Sampling conducted by ORSC on 3/21/95 detected a PCB concentration of 63ppm. Due to the apparent conflict with the results obtained during the RI and RD phases of the project (PCB concentrations were expected to be below 50 ppm). Metro North initiated a second round of sampling consisting of ten (10) individual samples randomly dispersed throughout the 'A1' Soil zone. PCB concentrations in the ten (10) individual samples ranged from 0.6 to 13.2 ppm. The results of this round of testing were forwarded to the NYSDEC on April 19, 1995 in MNR correspondence MNE-0004. Analytical reports can be found in File # M306-01-01/1979-3.5.7.1. ~~.~~ w/form
A COPY OF THE 4/19/95 LETTER IS PROVIDED IN APPENDIX D.
The disposal facility, BFI Waste Systems and the NYSDEC reviewed the results and agreed that the waste was suitable for landfilling (see Appendix 2).

6.0 DISPOSAL OF SPENT ACTIVATED CARBON

6.1 Background

A wastewater treatment plant consisting primarily of filtration and activated carbon adsorption units was used to treat the lagoon surface water. At the conclusion of water treatment, the spent activated carbon had to be removed from its vessel and disposed of at an approved facility.

6.2 Objective

Owing to the concentration of PCBs and metals in the lagoon surface water that was treated, it was necessary to analyze the spent carbon to determine the appropriate method of disposal.

6.3 Analytical Parameters

The parameters required by the selected disposal facility to determine waste classification and disposal method were Full TCLP, PCB, and Flash Point.

6.4 Sampling and Analytical Methodology

6.4.1 Spent Activated Carbon Sampling and Analysis

One grab sample was taken from each of the three activated carbon vessels by Henry Flavin of American Environmental Technologies, Inc. (AET) using stainless steel trowels. AET is a sub-contractor to Waste Technology Systems hired by Metro-North Railroad to dispose of the spent activated carbon. Analysis of the samples was done by York Analytical Laboratories, Connecticut.

6.4.2 Decontamination

Spent activated carbon samples were taken by stainless steel trowels which were decontaminated prior to use.

6.4.3 Sample Containers

Glass sample bottles were certified clean by the supplier.

6.4.4 Field and Trip Blanks

The Disposal Facility selected by MNR did not require field and trip blanks for this sampling event.

6.4.5 Sample Preservation

Immediately after all sampling events, samples were placed in insulated coolers and maintained at approximately 4°C. Upon delivery at the laboratory, samples were placed in a refrigerator and maintained at 4°C until analyzed.

6.5 Analytical Results

PCB's were below the detection limit. The Flash Point of the spent activated carbon soils was >160°F. And, neither volatiles nor semi-volatiles nor metals were detected during the Full TCLP analysis.

The comprehensive analytical report is on file at Metro North Railroad's Department of Environmental Protection and Safety.

The disposal facility, BFI Waste Systems and the NYSDEC reviewed the results and agreed that the waste was suitable for landfilling.

7.0 SITE EQUIPMENT DECONTAMINATION

7.1 Background

Section 01715 "Decontamination Plan and Requirement" Parts 3.02, 3.03, and 3.04 of the Specification for the Harmon Lagoon Remediation require that all equipment, containers, and tools in contact with sludge be decontaminated prior to departure from the site.

7.2 Objectives

To verify that all equipment, tools and containers previously in contact with the sludge was decontaminated, the Contractor was required to wipe test all of the foregoing equipment.

7.3 Sampling and Analytical Methodology

7.3.1 Wipe Sampling

Samples were obtained by placing a 10 cm x 10 cm square template over the selected area and wiping it thoroughly with a piece of hexane impregnated cotton swab saturated with hexane.

Wipe samples were taken by the Contractor's engineers and witnessed by Hill International.

Equipment wipe sampled were as follows:

- Two Tracked Hydraulic Excavators;
- One Bulldozer;
- One Tracked Front-End Loader;
- Vacuum Tanker;
- Water Treatment Plant Components; and
- Lagoon Surface Water Pumps.

Sludge hauling containers (roll-offs) which were contaminated during loading were also wipe sampled. Wipe samples were also taken of those roll-offs which were unloaded following the stop-work order of June 23,1995 and found to be damaged or defective requiring their return to the supplier, Transmodal Corporation.

Wipe samples were taken of part of the dike and floor of Metro-North's equalization tank containment area decontaminated following a spill (with no release to the environment) of untreated lagoon surface water on August 18, 1995.

7.3.2 Sample Analysis

American Environmental Network laboratories of Cherry Hill, New Jersey and of Columbia, Maryland were responsible for testing the wipe samples for PCBs.

7.3.3 Sample Container

The container used to collect and store the wipe sample was an amber glass 40 ml septum bottle.

7.4 Analytical Results

The results of all the wipe tests conducted by ORSC are presented in Table 7-1. They indicate that decontamination was successfully carried out in accordance with contract specifications and subsequent revision in which the clean-up level was raised from 1mg/100cm^2 to 10 mg/100cm^2. Refer to Files 9179-3.3.3 (HIO-0271) and 9179-3.14.2-01715 Decon Plan for the background related to this revision. This change to a cleanup level of 10 ug PCBs/100 cm^2 is consistent with 40CFR 761.125(c)(4).

Table 7-1 EQUIPMENT PCB WIPE TEST RESULTS

Sample Number	Date Sampled	Desc. or Numb. Cont., Car, Equip.	Final Lab Results
1	5/23/95	95294	null
2	5/26/95	94272	null
1A	6/1/95	95294	null
2A	6/1/95	94272	null
3	6/1/95	94296	null
1B	6/6/95	95294	non-detect
2B	6/6/95	94272	non-detect
3A	6/6/95	94296	non-detect
4	6/5/95	94244	non-detect
5	6/5/95	94245	non-detect
6	6/5/95	94230	non-detect
7	6/5/95	95154	non-detect
9	6/28/95	TTWX 991576	Fail
10	6/28/95	TTWX 983472	non-detect
9A	6/30/95	TTWX 991576	non-detect
11	7/8/95	94204	non-detect
12	7/8/95	95318	non-detect
13	7/8/95	94244	non-detect
14	7/8/95	93094	non-detect
15	7/8/95	95267	non-detect
16	7/8/95	95306	non-detect
17	7/11/95	94226	non-detect
18	7/11/95	94180	non-detect
19	7/11/95	94297	non-detect
20	7/13/95	94248	non-detect
21	7/13/95	95319	non-detect
22	7/19/95	95315	non-detect
23	7/19/95	94060	non-detect
24	7/19/95	95262	non-detect
25	7/19/95	95316	non-detect
26	7/19/95	95159	non-detect
27	7/19/95	94223	non-detect
28	7/20/95	95157	non-detect
29	7/20/95	94232	non-detect
30	7/20/95	94269	non-detect
31	7/20/95	94246	non-detect
32	7/20/95	95294	non-detect
33	7/20/95	94081	non-detect
34	7/20/95	94229	non-detect
35	7/21/95	95297	non-detect
36	7/21/95	94178	non-detect
37	7/21/95	94054	non-detect
38	7/21/95	94161	non-detect
39	7/21/95	94238	non-detect
40	7/21/95	94165	non-detect
41	7/21/95	95314	non-detect
42	7/21/95	94295	non-detect
43	7/27/95	95312	non-detect
44	7/27/95	94272	non-detect
45	7/27/95	95271	non-detect
46	7/27/95	95310	non-detect
47	7/27/95	95308	non-detect
48	8/1/95	95261	non-detect
49	8/1/95	95285	non-detect
50	8/1/95	95259	non-detect
51	8/1/95	94066	non-detect
52	8/1/95	94243	non-detect
53	8/1/95	95309	non-detect
54	8/1/95	95301	non-detect
55	8/7/95	95264	non-detect
56	8/14/95	955 Loader (Cab)	non-detect
57	8/14/95	955 Loader (Bucket)	non-detect
58	8/14/95	955 Loader (Track)	non-detect
59	8/15/95	330 Excavator (Bucket)	non-detect
60	8/15/95	330 Excavator (Track)	non-detect
61	8/15/95	330 Excavator (Cab)	non-detect
62	8/15/95	3" Dia. Sub. Pump	non-detect
63	8/15/95	4" Dia. Sub. Pump	non-detect
64	8/21/95	MNR Dike Wall	non-detect
65	8/21/95	MNR Dike Floor	non-detect
66	8/21/95	4" Dia. Hose	non-detect
67	8/21/95	4" Dia. Hose	non-detect
68	8/21/95	4" Dia. Hose	non-detect
69	8/21/95	4" Dia. Hose	non-detect
70	8/21/95	4" Dia. Hose	non-detect
71	9/1/95	D5H LGP Dozer (Track)	non-detect
72	9/1/95	D5H LGP Dozer (Blade)	non-detect
73	9/1/95	D5H LGP Dozer (Cab)	non-detect
74	9/11/95	330 Excavator (Track)	non-detect
75	9/11/95	331 Excavator (Bucket)	non-detect
76	9/11/95	332 Excavator (Cab)	non-detect
77	9/27/95	94039 (Floor)	non-detect
78	9/27/95	94039 (Side)	non-detect
79	9/27/95	95324 (Floor)	non-detect
80	9/27/95	95324 (Side)	non-detect
81	10/11/95	330 Excavator (Bucket)	non-detect
82	10/11/95	330 Excavator (Track)	non-detect
83	10/11/95	330 Excavator (Cab)	non-detect
84	10/11/95	D4H Dozer (Blade)	non-detect
85	10/11/95	D4H Dozer (Track)	non-detect
86	10/11/95	D4H Dozer (Cab)	non-detect
87	11/22/95	Bed of Truck	non-detect
88	11/27/95	Cannister (by flow meter)	non-detect
89	11/27/95	Cannister (middle)	non-detect
90	11/27/95	Cannister (by bag filter)	non-detect
91	11/27/95	Bag Filter 1 of 4	non-detect
92	11/27/95	Bag Filter 2 of 4	non-detect
93	11/27/95	Bag Filter 3 of 4	non-detect

Notes:

non-detect: No PCBs were detected above the practical quantitation limit (PQL). For the container samples the PQL was generally 0.64 μg/100cm². The PQL for the equipment decontamination samples ranged from 0.45 to 3.4μg/100cm². The PQL for samples 1 to 3 was 1.3μg/100cm².

null: The sample results were non-detect (1.3μg/100cm²). However, because the detection limit was above the clean-up criteria in affect at the time (1μg/100cm²), the samples were retested. A lower detection limit could not be achieved during the second and third testing. The subsequent sample results were, therefore, listed as 'non-detect'. The clean-up limit was subsequently increased to 10 μg/100cm² in accordance with 40CFR 761.125 (c)(4).

Fail: Sample exceeded the limit in affect at that time (i.e. 1 μg/100cm²). With regard to sample 9, collected on 6/28/95, Arochlor 1254 was detected at 1.2 μg/100cm²: all other arochlors were non-detect (0.64Uμg/100cm²). The are was recleaned and retested on 6/30/99 (Sample 9A); all arochlors were non-detect (0.64U μg/100cm²).

8.0 SLUDGE CONTAINERS POST-USE DECONTAMINATION

Verification that no levels of PCBs above 10 mg/100 cm^2 remained after sludge containers (roll-offs) had been unloaded was the responsibility of Chemical Waste Management (CWM), the incineration facility. Please refer to Specification for the Incineration of Harmon Lagoon Sludge. Part 1 Sections 1.01 paragraph A.4, 1.04 paragraph D, and 1.08 provide a detailed scope of work as it relates to sampling and testing of roll-offs by CWM.

The approved CWM procedures for PCB wipe-test analysis and interpretation of results can located in Project File #M306-01-01/9179-3.5.12.

Validation of the wipe-test results was the responsibility of ERM Northeast and these reports are on file at their Woodbury office.

9.0 AIR MONITORING

9.1 Background

During construction the site had the potential to generate amounts of PCB contaminated dust and VOCs.

Airborne dust was used as a surrogate indicator of potential risk to PCB exposure because of the known level of PCB contamination of soil on site. Airways and skin are potential pathways to contamination of humans.

9.2 Objective

Air monitoring was conducted to evaluate the risk of exposure to the site workers and neighboring communities from PCBs and volatile organic compounds resulting from the excavation and handling of the PCB contaminated soil and sludge. The measured concentration of PCBs, VOCs, and meteorological conditions dictated the level of protection for site workers, and other prescribed corrective action for the neighboring community, pursuant to the Health and Safety Plan (specification 01517) and the Community Air Monitoring Plan (specification 01520).

9.3 Analytical Parameters

Air monitoring samples were analyzed for PCBs (Aroclor 1254 & 1260), tetrachloroethylene, toluene, xylene, ethylbenzene and respirable dust. Twice daily ambient temperature, wind speed and direction, relative humidity, atmospheric pressure, and precipitation were measured and recorded.

9.4 Sampling and Analytical Methodology

9.4.1 Exclusion Zone Air Monitoring

Real time air monitoring for respirable particulates, VOCs, explosive gases, carbon monoxide, and hydrogen sulfide was conducted during site work. This provided direct readings in the field. Real time air monitoring was performed using a respirable particulate monitor, a photoionization detector (PID) and a four-gas combustible gas indicator (CGI). During elevated reading of VOCs, draeger tubes for tetrachloroethylene, toluene, xylene, and ethylbenzene were used to obtain a direct reading.

Personal air samplings was conducted only during the excavation and handling of PCB soils and sludge. Selected employees (based on greatest potential for exposure) were each fitted with a sampling pump for the duration of his exposure. The pumps collected air samples from the breathing zone of the site workers. One pump was calibrated for respirable particulates only and the other for PCB and VOCs.

The project's Health and Safety Plan (HASP) provides comprehensive details of the air monitoring activities.

9.4.2 Community Air Sampling

Real time air monitoring for dust and VOCs was conducted four times daily at four pre-determined upwind and downwind locations (see Figure 9-1) immediately outside the perimeter fence until the cap was completed. Readings were taken at 5, 10, 15, and 20 feet above grade. For this activity, a respirable particulate meter and photo-ionization detector (PID) were used.

Stationary sampling of air migrating off-site was carried out prior to and during construction activities related to remediation of the site. Sampling pumps for respirable dust, PCB, and VOCs were installed at the designated monitoring stations for at least an 8-hour period daily. One pump was calibrated only for respirable dust and the other for PCB and VOCs.

The project's Community Air Monitoring Program (CAMP) provides comprehensive details of the air monitoring activities.

9.4.3 Sample Media

Air samples for each parameter were collected on a separate medium using different air flow rates. Each sample medium was changed once a day except for some occasions, where at the discretion of the Site Safety Officer, there were no changes of the media. SEE APPENDIX 8 FOR A DESCRIPTION WHEN MEDIA WAS NOT CHANGED. GW/ERM

Appendix 4 provides details of the media, methods of collection, and methods of analysis.

9.4.4 Field Blanks

Field blanks were prepared for PCB and VOC analyses.

9.4.5 Sample Identification

Air samples from one or more individuals are identified by the prefix SET-1, SET-2, SET-3, etc. The parameters are identified as follows:

A - Particulate
B - Volatile Organic Compounds (Toluene, Xylene, Ethylbenzene, and Perchloroethylene)
C - Polychlorinated Biphenyls (PCB)

Air samples from each of the four CAMP stations are identified by the prefix LOC-1, LOC -2, LOC -3, LOC-4. The parameters are identified as above.

9.4.6 Analysis of Air Samples

The samples were analyzed within 48 hours by Clayton Laboratories of Edison, New Jersey and Novi, Michigan both AIHA approved laboratories.

9.5 Analytical Results

9.5.1 Personal Air

Real time air monitoring on site was reported in the daily log of the hazardous material (hazmat) inspector, Derek Braithwaite and the Site Safety Officer, Alex Zdzralka.

During personal monitoring action levels neither attained nor exceeded the action levels for the prescribed level of protection. A summary of the personal air sample analytical results and the corresponding action levels are presented in

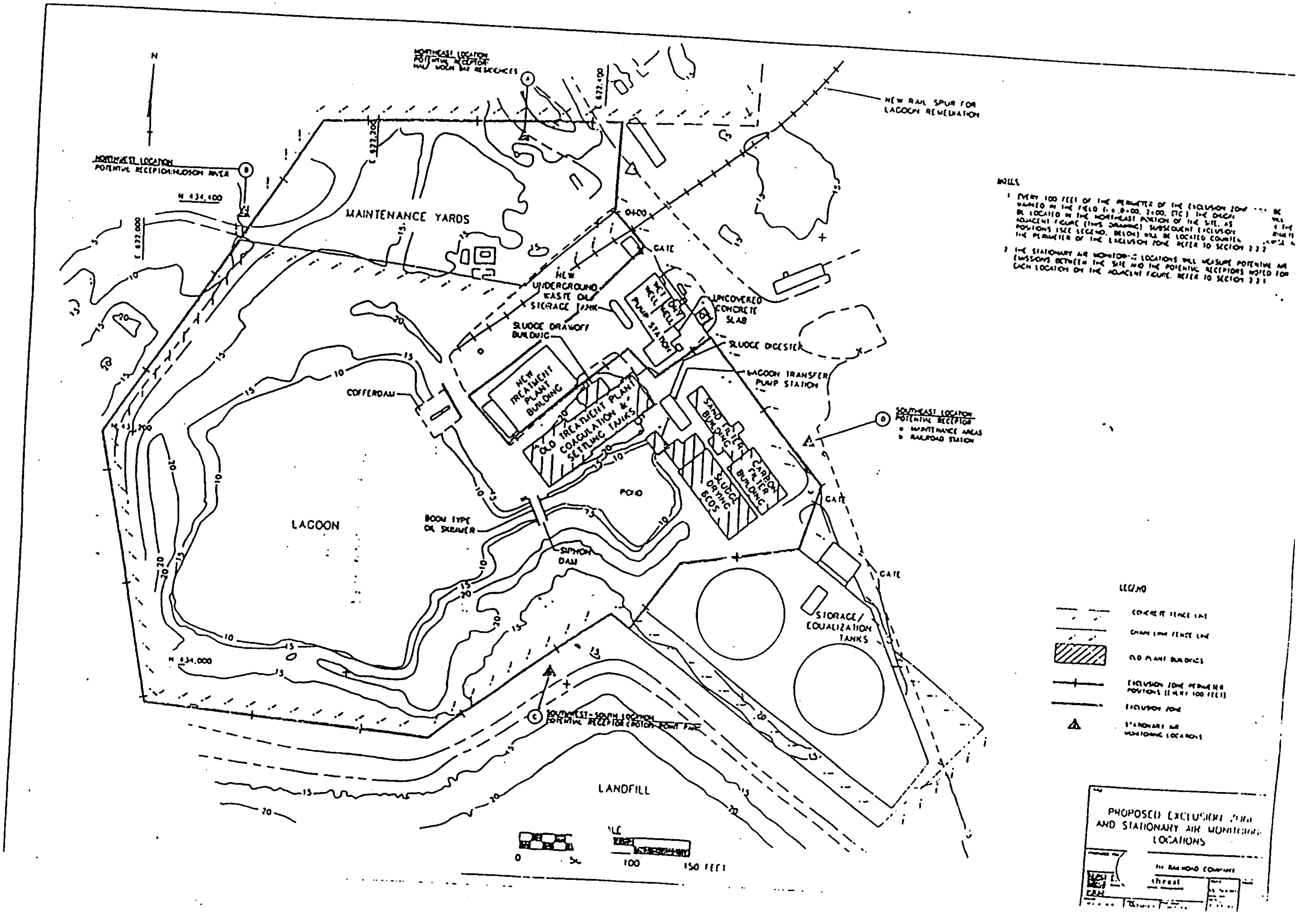
fw Appendix ~~6~~.5 Further analytical details can be found in File #M306-01-01/9179-3.5.5.

Level 'C' VOC action levels were attained and exceeded on only three occasions during sludge handling. Since the workers in the exclusion zone and down wind areas were already in Level 'C' there was no need to test for the project specific VOCs.

9.5.2 Community Air

The records of the real time air monitoring are too lengthy to be presented here. These records are stored in Project File M306-01-01/1979-3.5.5.2. The corresponding daily meteorological records are also stored in this file.

During stationary monitoring the action levels were neither attained nor exceeded. A summary of the community stationary air sample analytical results and the corresponding action levels are presented in Appendix 7. The action levels shown in Appendix 7 represent the difference between downwind and upwind readings.



MAINTENANCE YARDS
NEW UNDERGROUND WASTE OIL STORAGE TANK
SLUDGE DRAWOFF BUILDING
NEW TREATMENT PLANT BUILDING
OLD TREATMENT PLANT COAGULATION & SETTLING TANKS
UNCOVERED CONCRETE SLAB
SLUDGE DIGESTER
LAGOON TRANSFER PUMP STATION
SAND FILTER BUILDING
CARBON FILTER BUILDING
SLUDGE DRYING BEDS
POND
COFFERDAM
LAGOON
BOOM TYPE OIL SKIMMER
SIPHON DAM
GATE
STORAGE/ EQUALIZATION TANKS
LANDFILL
NEW RAIL SPUR FOR LAGOON REMEDIATION
SOUTHEAST LOCATION POTENTIAL RECEPTOR
MAINTENANCE AREAS
RAILROAD STATION
LEGEND
0 50 100 150 FEET
PROPOSED EXCLUSION ZONE AND STATIONARY AIR MONITORING LOCATIONS

26

Figure 9-1

10.0 LEAKING ROLL-OFFS

10.1 Background

During the month of June 1995, a number of roll-offs loaded with solidified sludge and staged on site awaiting transport were found to be leaking a petroleum-like liquid. A stop-work order was issued by the Construction Manager on June 23, 1995 to allow for a solution to the leaks to be found. Work resumed on July 5, 1995 using additional preventive measures to resolve the leaking.

10.2 Objective

Leaking liquids were sampled and analyzed to quantify and assess potential hazards and reporting requirements.

10.3 Sampling and Analytical Methodology

10.3.1 Sampling and Analysis of Leaking Liquid

Samples of the liquid that leaked from the roll-offs were taken from accumulations inside three representative roll-offs on site (NTNU 94238, 95277 and 95314) by Derek Braithwaite of Hill International using a peristaltic pump.

Analysis of the leaking liquid was conducted by IEA of Whippany, New Jersey.

10.3.2 Decontamination

Decontamination of the sampling equipment was unnecessary because dedicated tygon tubing was used for each sample taken.

10.3.3 Sample Containers

One liter amber glass bottles were used for the PCB samples, and one liter clear glass bottles were used for the Petroleum Hydrocarbon samples. All bottles were certified clean by the laboratory and delivered in a sealed cooler.

10.3.4 Field Blanks

Field blanks were collected during each sampling event to evaluate the possibility of sampling contamination due to improper handling. Field blanks comprised the water collected during rinsing of the decontaminated sampling equipment with laboratory supplied de-ionized water. During the sampling event, field blanks were collected for PCB and Total Petroleum Hydrocarbons analyses.

10.3.5 Sample Preservation

Immediately after all sampling events, samples were placed in insulated coolers and maintained at approximately 4°C. The laboratory provided temperature blanks in each cooler to ensure that 4°C is maintained. Upon delivery at the laboratory, samples were placed in a refrigerator and maintained at 4°C until analyzed.

Holding times were adhered to because the Laboratory was obligated to a 72-hour turn-around-time.

10.4 Analytical Results

The analytical results are tabulated in Table 10-1 following.

TABLE 10-1 ANALYSIS OF LEAKING LIQUID

Sample I.D.	Date of Sampling	PCB (µg/kg)	TPH (mg/l)	Container I.D.
94238	6/30/95	100,000	970,000	NTNU 94238
95277	6/30/95	280,000	780,000	NTNU 95277
95314	6/30/95	220,000	790,000	NTNU 95314

10.5 Assessment of Analytical Results

The TPH results of 720,000 - 970,000 mg/l confirmed that the liquid was largely petroleum. PCB levels of 100,000 - 280,000 µg/kg was not unexpected given the levels of PCBs previously reported in the sludge and the solubility of PCB in petroleum. Due to the wide range in PCB concentrations, each leaking roll-off was considered to be a separate incident. Based on the maximum observed quantity of fluid leaked (approximately 1 gal/roll-off) none of the roll-off leaks exceeded mandated reportable quantities.

Complete details of the analysis are in Project File (M306-01-01/1979-3.5.9.1)

Offsite handling of roll-off boxes, including leak assessment, containment and reporting was addressed by the contractor (ORSC). A copy of applicable reports are provided in Appendix 7.

smw/rpts-jad/fsap2

APPENDIX 1

LIST OF REFERENCED PROJECT FILES

M306-01-01/9179-3.5.5.3	CAMP Analytical Results
M306-01-01/9179-3.5.5.2	CAMP Field Data
M306-01-01/9179-3.5.7.1	TSDF Records - RCRA Profile-Analytical
M306-01-01/9179-3.5.9.1	Lagoon Surface Water - Analytical Results
M306-01-01/9179-3.5.12	CWM PCB Wipe Test
M306-01-01/9179-3.14.2-01715	Decon-Wipe Test Results
M306-01-01/9179-3.5.5	Personal Monitoring Results

APPENDIX 2

New York State Department of Environmental Conservation
270 Michigan Avenue, Buffalo, New York 14203-2999
(716) 851-7220

EARTH DAY 25 1995 ENVIRONMENTAL PARTNERS

Michael D. Zagata
Commissioner

RECEIVED JUL 21 1995

July 13, 1995

Mr. David Hanson
BFI Waste Systems
P.O. Box 344 LPO
Niagara Falls, New York 14304-0344

Dear Mr. Hanson:

METRO-NORTH RIAL
CROTON-ON-HUDSON, NY
APPLICATION #2480

The Department has reviewed the above referenced applications for Treatment or Disposal of An Industrial Waste Stream (Form 47-19-7). Based on the data provided, these materials are acceptable for disposal at the BFI Niagara Recycling Landfill.

In the event that significant changes in the information presented on an application occurs, you shall immediately notify this Department in writing. Such changes shall include, but are not limited to changes in: process, facility name or address, waste composition and/or hauler.

Enclosed is a copy of the approved application. If you have any questions, please contact this office at 716/851-7220.

Very truly yours,

Yavuz Erk

Yavuz Erk, P.E.
Environmental Engineer II

YE:lej

Enclosure

BFI Approval Group
Browning-Ferris Industries

WASTE APPROVAL FORM

Date	:	07/13/95
BFI Location	:	Niagara Recycling
BFI Initiator	:	Hanson, Dave
Generator	:	Metro North Railroad
Generator Location	:	Croton-on-Hudson, NY
WCD Number	:	AB54563
BFI Number	:	233715

#2480

WASTE DESCRIPTION: Soil , PCB/s

SAFETY PRECAUTIONS: Avoid Skin and Eye Contact.

RECOMMENDED MANAGEMENT: Direct Burial

Facility... Niagara Recycling

COMMENTS:

Approved for one time only disposal. This BFI Waste Code Number is only valid for soils from "Zone A" as identified in the EPA letters with PCB concentrations of less than 50 ppm.

The following items were received by the Corporate Waste Approval Group:
a. PCB Contaminated Materials Questionnaire dated March 21, 1995.
b. Letters from the EPA dated February 14, 1992 and February 2, 1993.
c. Letters from the generator dated March 20, April 19, May 8, and June 26, 1995.
d. Site Background
e. Analytical data from Laboratory Resources, Inc. and York Analytical Laboratories, Inc.
d. Site Map

The above is a recommendation of BFI Corporate Waste Approval Group. It must be understood that management of the waste for treatment and/or disposal at the designated facility must be in compliance with the facility's permit and applicable federal, state, and local regulations. The waste approval is based upon a review of the information provided by the generator and is contingent upon the receipt at the treatment and/or disposal facility of a waste material essentially equivalent in chemical composition and physical properties to that as defined above.

This waste stream has been assigned BFI Waste Code: NY/132/960713/233715

Corporate Waste Approval Group

Diana L. Hanna Henk

Diana L. Hanna Henk
Senior Technical Representative

APPENDIX 3

NOT USED

APPENDIX 4

TABLE 2-1

STATIONARY AIR MONITORING
SAMPLING METHODOLOGIES, SAMPLING MEDIA
AND
ANALYTICAL PROCEDURES AND PARAMETERS

Substance: Respirable Particulate

NIOSH Method: #0600
Sampling Media: 37 mm PVC matched weight filters with 10 mm cyclone
Maximum Flow Rate and Volume: 1.7 liters/minute & 800 liters
Number of Samples per Monitoring Station per Day: One Sample(1)
Analytical Procedures: Gravimetric
Analytical Parameter: Respirable Particulate

Substance: Polychlorinated Biphenyls (PCBs)

NIOSH Method: #5503
Sampling Media: 13 mm glass fiber filter plus florisil tube
Maximum Flow Rate and Volume: 0.2 liters/minute and 50 liters
Number of Samples per Monitoring Station per Day: Two Samples(1)
Analytical Procedures: Gas Chromatography
Analytical Parameter: PCBs

Substance: Volatile Organic Compounds (VOCs)

NIOSH Methods: #1500, 1501 and 1003
Sampling Media: Charcoal Tube
Maximum Flow Rate and Volume: 0.15 liters/minute and 40 liters(2)
Number of Samples per Monitoring Station per Day: Two Samples(1)(2)
Analytical Procedures: Gas Chromatography
Analytical Parameters: toluene, xylene, ethylbenzene and tetrachloroethylene

Note:

1. There will be four stationary air monitoring sites. As a result, a total of four respirable particulate, eight PCB and eight VOC stationary air monitoring samples will be collected for each day of stationary air monitoring sampling.

2. NIOSH requires charcoal tubes to be changed every hour to ensure that the sorbent tube does not become overloaded. It is not anticipated that overloading will occur, therefore, only two samples will be collected per eight hour day. If overloading is found, eight samples will be collected daily (i.e., approximately one sample per hour) from each stationary area air monitoring site.

APPENDIX 5

PERSONAL STATIONARY AIR MONITORING TEST RESULTS

SAMPLE ID	SAMPLING DATE	PCB (µg/m3)	ETHYL-BENZENE (ppm)	PERCHLORO-ETHYLENE (µg/m3)	TOLUENE (ppm)	XYLENE (ppm)	PARTICULATE (µg/m3)
Action Level		*250*	*50*	*52,000*	*50*	*50*	*2,500*
SET-1 SB1-92	07/17/95		<0.01	<900	<0.01	<0.02	
SET-2 SB1-94	07/17/95		<0.01	<800	<0.01	<0.02	
SET-1 SC1-93	07/17/95	<0.5					
SET-2 SC1-95	07/17/95	<0.3					
SET-1 SA1-82	06/26/95						<200
SET-2 SA1-87	06/26/95						<200
SET-1 SB1-83	06/26/95		0.009	700	<0.01	0.03	
SET-2 SB1-88	06/26/95		<0.009	700	<0.01	<0.02	
SET-1 SC1-85	06/26/95	<4.0					
SET-2 SC1-90	06/26/95	<4.0					
SET-1 SA1-72	06/21/95						<100
SET-2 SA1-77	06/21/95						<100
SET-1 SB1-73	06/21/95		<0.01	<100	<0.01	0.03	
SET-1 SB2-74	06/21/95		<0.02	<100	<0.02	<0.03	
SET-2 SB1-78	06/21/95		<0.01	200	<0.01	0.065	
SET-2 SB2-79	06/21/95		<0.02	<100	<0.02	<0.03	
SET-1 SC1-75	06/21/95	<6.0					
SET-2 SC1-76	06/21/95	<8.0					
SET-1 SC1-80	06/21/95	<6.0					
SET-2 SC1-80	06/21/95	<8.0					
SET-1 SA1-66	06/15/95						<70
SET-2 SA1-71	06/15/95						280
SET-1 SA1-56	06/06/95						NULL
SET-2 SA1-61	06/06/95						NULL
SET-1 SB1-57	06/06/95		<0.03	<300	<0.04	<0.03	
SET-2 SB1-62	06/06/95		<0.03	<300	<0.04	<0.03	
SET-1 SC1-59	06/06/95	<0.2					
SET-2 SC1-64	06/06/95	<0.2					
SET-1 SA1-46	06/05/95						160

PERSONAL STATIONARY AIR MONITORING TEST RESULTS

SAMPLE ID	SAMPLING DATE	PCB (µg/m3)	ETHYL- BENZENE (ppm)	PERCHLORO- ETHYLENE (µg/m3)	TOLUENE (ppm)	XYLENE (ppm)	PARTICULATE (µg/m3)
Action Level		*250*	*50*	*52,000*	*50*	*50*	*2,500*
SET-2 SA1-51	06/05/95						100
SET-1 SB1-47	06/05/95		<0.05	<400	<0.05	<0.05	
SET-1 SB2-48	06/05/95		<0.2	<2000	<0.2	<0.2	
SET-2 SB1-52	06/05/95		<0.05	<500	<0.06	<0.05	
SET-2 SB2-53	06/05/95		<0.1	<1000	<0.1	<0.1	
SET-1 SC1-49	06/05/95	<0.3					
SET-2 SC1-50	06/05/95	<1.0					
SET-1 SC1-54	06/05/95	<0.4					
SET-2 SC1-55	06/05/95	<0.8					
SET-1 SA1-36	06/02/95						<60
SET-2 SA1-41	06/02/95						<60
SET-1 SB1-37	06/02/95		<0.06	<600	<0.07	<0.06	
SET-1 SB2-38	06/02/95		<0.05	<500	<0.06	<0.05	
SET-2 SB1-42	06/02/95		<0.06	<600	<0.07	<0.06	
SET-2 SB2-43	06/02/95		<0.05	<500	<0.06	<0.05	
SET-1 SC1-39	06/02/95		<0.4				
SET-2 SC1-40	06/02/95		<0.4				
SET-1 SC1-44	06/02/95		<0.4				
SET-2 SC1-45	06/02/95		<0.4				
SET-1 SA1-26	06/01/95						<200
SET-2 SA1-31	06/01/95						<100
SET-1 SB1-27	06/01/95		<0.08	<700	<0.09	<0.08	
SET-2 SB1-32	06/01/95		<06	<600	<0.07	<0.06	
SET-1 SC1-29	06/01/95	<0.6					
SET-2 SC1-34	06/01/95	<0.4					
SET-1 SA1-16	05/31/95						<80
SET-2 SA1-21	05/31/95						<70
SET-1 SB1-17	05/31/95		<0.05	<500	<0.06	<0.05	
SET-1 SB2-18	05/31/95		<0.1	<100	<0.2	<0.01	

PERSONAL STATIONARY AIR MONITORING TEST RESULTS

SAMPLE ID	SAMPLING DATE	PCB (µg/m3)	ETHYL-BENZENE (ppm)	PERCHLORO-ETHYLENE (µg/m3)	TOLUENE (ppm)	XYLENE (ppm)	PARTICULATE (µg/m3)
Action Level		*250*	*50*	*52,000*	*50*	*50*	*2,500*
SET-2 SB1-22	05/31/95		<0.06	<600	<0.07	<0.06	
SET-2 SB2-23	05/31/95		<0.09	<800	<0.1	<0.09	
SET-1 SC1-19	05/31/95	<0.4					
SET-2 SC1-20	05/31/95	<0.1					
SET-1 SC1-24	05/31/95	<0.4					
SET-2 SC1-25	05/31/95	<0.6					
SET-1 SA1-10	04/17/95						<50
SET-2 SA1-13	04/17/95		<0.05	<500	<0.06	<0.05	<50
SET-1 SB1-11	04/17/95		<0.05	<500	<0.06	<0.05	
SET-2 SB1-14	04/17/95						
SET-1 SC1-12	04/17/95	<0.7					
SET-2 SC1-15	04/17/95	<0.7					

APPENDIX 6

COMMUNITY STATIONARY AIR MONITORING TEST RESULTS

SAMPLE ID	SAMPLING DATE	PCB (μg/m3)	ETHYL-BENZENE (ppm)	PERCHLORO-ETHYLENE (μg/m3)	TOLUENE (ppm)	XYLENE (ppm)	PARTICULATE (μg/m3)
Action Level (Downwind-Upwind)		*1.0*	*25*	*81,000*	*25*	*25*	*150*
LOC-1 SA1-416	10/20/95						140
LOC-2 SA1-421	10/20/95						<70
LOC-3 SA1-426	10/20/95						70
LOC-4 SA1-431	10/20/95						<70
LOC-1 SB1-417	10/20/95		<0.06	<0.1	<0.06	<0.1	
LOC-1 SB2-418	10/20/95		<0.06	<0.1	<0.06	<0.1	
LOC-2 SB1-422	10/20/95		<0.07	<0.1	<0.07	<0.1	
LOC-2 SB2-423	10/20/95		<0.06	<0.1	<0.06	<0.1	
LOC-3 SB1-427	10/20/95		<0.07	<0.1	<0.07	<0.1	
LOC-3 SB2-428	10/20/95		<0.06	<0.1	<0.06	<0.1	
LOC-4 SB1-432	10/20/95		<0.06	<0.1	<0.06	<0.1	
LOC-4 SB2-433	10/20/95		<0.06	<0.1	<0.06	<0.1	
LOC-1 SC1-419	10/20/95	<7					
LOC-1 SC2-420	10/20/95	<7					
LOC-2 SC1-424	10/20/95	<8					
LOC-2 SC2-425	10/20/95	<7					
LOC-3 SC1-429	10/20/95	<7					
LOC-3 SC2-430	10/20/95	<7					
LOC-4 SC1-434	10/20/95	<7					
LOC-4 SC2-435	10/20/95	<7					
LOC-1 SA1-396	10/19/95						<70
LOC-2 SA1-401	10/19/95						<80
LOC-3 SA1-406	10/19/95						<70
LOC-4 SA1-411	10/19/95						<70
LOC-1 SB1-397	10/19/95		<0.06	<0.1	<0.06	<0.1	
LOC-1 SB2-398	10/19/95		<0.07	<0.1	<0.07	<0.1	
LOC-2 SB1-402	10/19/95		<0.06	<0.1	<0.06	<0.1	

COMMUNITY STATIONARY AIR MONITORING TEST RESULTS

SAMPLE ID	SAMPLING DATE	PCB (µg/m3)	ETHYL-BENZENE (ppm)	PERCHLORO-ETHYLENE (µg/m3)	TOLUENE (ppm)	XYLENE (ppm)	PARTICULATE (µg/m3)
Action Level (Downwind-Upwind)		*1.0*	*25*	*81,000*	*25*	*25*	*150*
LOC-2 SC1-384	09/15/95	<6					
LOC-2 SC2-385	09/15/95	<8					
LOC-3 SC1-389	09/15/95	<6					
LOC-3 SC2-390	09/15/95	<8					
LOC-4 SC1-394	09/15/95	<6					
LOC-4 SC2-395	09/15/95	<8					
LOC-1 SA1-360	06/15/95						<60
LOC-2 SA1-365	06/15/95						<60
LOC-3 SA1-370	06/15/95						<60
LOC-4 SA1-375	06/15/95						<60
LOC-1 SA1-340	06/06/95						No Data
LOC-2 SA1-345	06/06/95						No Data
LOC-3 SA1-350	06/06/95						No Data
LOC-4 SA1-355	06/06/95						No Data
LOC-1 SB1-341	06/06/95		<0.2	<0.5	<0.2	<0.2	
LOC-1 SB2-342	06/06/95		<0.2	<0.5	<0.2	<0.2	
LOC-2 SB1-346	06/06/95		<0.3	<0.6	<0.3	<0.3	
LOC-2 SB2-347	06/06/95		<0.3	<0.6	<0.3	<0.3	
LOC-3 SB1-351	06/06/95		<0.2	<0.5	<0.2	<0.2	
LOC-3 SB2-352	06/06/95		<0.2	<0.5	<0.2	<0.2	
LOC-4 SB1-356	06/06/95		<0.3	<0.6	<0.3	<0.3	
LOC-4 SB2-357	06/06/95		<0.2	<0.5	<0.2	<0.2	
LOC-1 SC1-343	06/06/95	<0.2					
LOC-2 SC1-348	06/06/95	<0.2					
LOC-3 SC1-353	06/06/95	<0.2					
LOC-4 SC1-358	06/06/95	<0.2					
LOC-1 SA1-320	06/05/95						<70

COMMUNITY STATIONARY AIR MONITORING TEST RESULTS

SAMPLE ID	SAMPLING DATE	PCB (µg/m3)	ETHYL-BENZENE (ppm)	PERCHLORO-ETHYLENE (µg/m3)	TOLUENE (ppm)	XYLENE (ppm)	PARTICULATE (µg/m3)
Action Level (Downwind-Upwind)		*1.0*	*25*	*81,000*	*25*	*25*	*150*
LOC-2 SA1-325	06/05/95						80
LOC-3 SA1-330	06/05/95						<70
LOC-4 SA1-335	06/05/95						<70
LOC-1 SB1-321	06/05/95		<0.2	<0.5	<0.2	<0.2	
LOC-1 SB2-322	06/05/95		<0.3	<0.7	<0.3	<0.3	
LOC-2 SB1-326	06/05/95		<0.2	<0.5	<0.2	<0.2	
LOC-2 SB2-327	06/05/95		<0.3	<0.7	<0.3	<0.3	
LOC-3 SB1-331	06/05/95		<0.3	<0.6	<0.3	<0.3	
LOC-3 SB2-332	06/05/95		<0.3	<0.7	<0.3	<0.3	
LOC-4 SB1-336	06/05/95		<0.2	<0.6	<0.2	<0.2	
LOC-4 SB2-337	06/05/95		<0.3	<0.7	<0.3	<0.3	
LOC-1 SC1-323	06/05/95	<0.4					
LOC-1 SC2-324	06/05/95	<0.5					
LOC-2 SC1-328	06/05/95	<0.4					
LOC-2 SC2-329	06/05/95	<0.5					
LOC-3 SC1-333	06/05/95	<0.4					
LOC-2 SC2-334	06/05/95	<0.5					
LOC-4 SC1-338	06/05/95	<0.4					
LOC-4 SC2-339	06/05/95	<0.5					
LOC-1 SA1-300	06/02/95						<90
LOC-2 SA1-305	06/02/95						<90
LOC-3 SA1-310	06/02/95						<100
LOC-4 SA1-315	06/02/95						<90
LOC-1 SB1-301	06/02/95		<0.3	<0.6	<0.3	<0.3	
LOC-1 SB2-302	06/02/95		<0.7	<2	<0.7	<0.7	
LOC-2 SB1-306	06/02/95		<0.2	<0.5	<0.2	<0.2	
LOC-2 SB2-307	06/02/95		<0.7	<2	<0.7	<0.7	

COMMUNITY STATIONARY AIR MONITORING TEST RESULTS

SAMPLE ID	SAMPLING DATE	PCB (µg/m3)	ETHYL-BENZENE (ppm)	PERCHLORO-ETHYLENE (µg/m3)	TOLUENE (ppm)	XYLENE (ppm)	PARTICULATE (µg/m3)
Action Level (Downwind-Upwind)		*1.0*	*25*	*81,000*	*25*	*25*	*150*
LOC-3 SB1-311	06/02/95		<0.2	<0.5	<0.2	<0.2	
LOC-3 SB2-312	06/02/95		<1	<2	<1	<1	
LOC-4 SB1-316	06/02/95		<0.2	<0.5	<0.2	<0.2	
LOC-4 SB2-317	06/02/95		<0.9	<2	<0.9	<0.9	
LOC-1 SC1-303	06/02/95	<0.4					
LOC-1 SC2-304	06/02/95	<1					
LOC-2 SC1-308	06/02/95	<0.4					
LOC-2 SC2-309	06/02/95	<1					
LOC-3 SC1-313	06/02/95	<0.4					
LOC-3 SC2-314	06/02/95	<2					
LOC-4 SC1-318	06/02/95	<0.4					
LOC-4 SC2-319	06/02/95	<1					
LOC-1 SA1-280	06/01/95						<60
LOC-2 SA1-285	06/01/95						<70
LOC-3 SA1-290	06/01/95						<60
LOC-4 SA1-295	06/01/95						<60
LOC-1 SB1-281	06/01/95		<0.2	<0.5	<0.2	<0.2	
LOC-1 SB2-282	06/01/95		<0.2	<0.5	<0.2	<0.2	
LOC-2 SB1-286	06/01/95		<0.2	<0.5	<0.2	<0.2	
LOC-2 SB2-287	06/01/95		<0.2	<0.5	<0.2	<0.2	
LOC-3 SB1-291	06/01/95		<0.2	<0.5	<0.2	<0.2	
LOC-3 SB2-292	06/01/95		<0.2	<0.5	<0.2	<0.2	
LOC-4 SB1-296	06/01/95		<0.2	<0.5	<0.2	<0.2	
LOC-4 SB2-297	06/01/95		<0.2	<0.5	<0.2	<0.2	
LOC-1 SC1-283	06/01/95	<0.4					
LOC-1 SC2-284	06/01/95	<0.4					
LOC-2 SC1-288	06/01/95	<0.4					

COMMUNITY STATIONARY AIR MONITORING TEST RESULTS

SAMPLE ID	SAMPLING DATE	PCB (µg/m3)	ETHYL-BENZENE (ppm)	PERCHLORO-ETHYLENE (µg/m3)	TOLUENE (ppm)	XYLENE (ppm)	PARTICULATE (µg/m3)
Action Level (Downwind-Upwind)		*1.0*	*25*	*81,000*	*25*	*25*	*150*
LOC-2 SC2-289	06/01/95	<0.4					
LOC-3 SC1-293	06/01/95	<0.4					
LOC-3 SC2-294	06/01/95	<0.4					
LOC-4 SC1-298	06/01/95	<0.4					
LOC-4 SC2-299	06/01/95	<0.4					
LOC-1 SA1-260	05/31/95						<60
LOC-2 SA1-265	05/31/95						<60
LOC-3 SA1-270	05/31/95						<60
LOC-4 SA1-275	05/31/95						<60
LOC-1 SB1-261	05/31/95		<0.2	<0.5	<0.2	<0.2	
LOC-1 SB2-262	05/31/95		<0.2	<0.5	<0.2	<0.2	
LOC-2 SB1-266	05/31/95		<0.2	<0.5	<0.2	<0.2	
LOC-2 SB2-267	05/31/95		<0.2	<0.5	<0.2	<0.2	
LOC-3 SB1-271	05/31/95		<0.2	<0.6	<0.2	<0.2	
LOC-3 SB2-272	05/31/95		<0.2	<0.5	<0.2	<0.2	
LOC-4 SB1-276	05/31/95		<0.2	<0.5	<0.2	<0.2	
LOC-4 SB2-277	05/31/95		<0.2	<0.5	<0.2	<0.2	
LOC-1 SC1-263	05/31/95	<0.4					
LOC-1 SC2-264	05/31/95	<0.4					
LOC-2 SC1-268	05/31/95	<0.4					
LOC-2 SC2-269	05/31/95	<0.4					
LOC-3 SC1-273	05/31/95	<0.4					
LOC-3 SC2-274	05/31/95	<0.4					
LOC-4 SC1-278	05/31/95	<0.4					
LOC-4 SC2-279	05/31/95	<0.4					
LOC-1 SA1-220	04/17/95						<60
LOC-2 SA1-225	04/17/95						<60

COMMUNITY STATIONARY AIR MONITORING TEST RESULTS

SAMPLE ID	SAMPLING DATE	PCB (µg/m3)	ETHYL-BENZENE (ppm)	PERCHLORO-ETHYLENE (µg/m3)	TOLUENE (ppm)	XYLENE (ppm)	PARTICULATE (µg/m3)
Action Level (Downwind-Upwind)		*1.0*	*25*	*81,000*	*25*	*25*	*150*
LOC-3 SA1-230	04/17/95						<60
LOC-4 SA1-235	04/17/95						<60
LOC-1 SB1-221	04/17/95		<0.3	<0.6	<0.3	<0.3	
LOC-1 SB2-222	04/17/95		<0.2	<0.5	<0.2	<0.2	
LOC-2 SB1-226	04/17/95		<0.2	<0.5	<0.2	<0.2	
LOC-2 SB2-227	04/17/95		<0.2	<0.5	<0.2	<0.2	
LOC-3 SB1-231	04/17/95		<0.3	<0.6	<0.3	<0.3	
LOC-3 SB2-232	04/17/95		<0.3	<0.5	<0.2	<0.3	
LOC-4 SB1-236	04/17/95		<0.2	<0.6	<0.3	<0.3	
LOC-4 SB2-237	04/17/95		<0.3	<0.5	<0.2	<0.2	
LOC-1 SC1-223	04/17/95	<0.8					
LOC-1 SC2-224	04/17/95	<0.7					
LOC-2 SC1-228	04/17/95	<0.8					
LOC-2 SC2-229	04/17/95	<0.8					
LOC-3 SC1-233	04/17/95	,0.8					
LOC-3 SC2-234	04/17/95	<0.7					
LOC-4 SC1-238	04/17/95	<0.8					
LOC-4 SC2-239	04/17/95	<0.7					
LOC-1 SA1-180	04/11/95						<60
LOC-2 SA1-185	04/11/95						<60
LOC-3 SA1-190	04/11/95						<60
LOC-4 SA1-195	04/11/95						<60
LOC-1 SB1-181	04/11/95		<0.2	<0.5	<0.2	<0.2	
LOC-1 SB2-182	04/11/95		<0.3	<0.6	<0.3	<0.3	
LOC-2 SB1-186	04/11/95		<0.2	<0.5	<0.2	<0.2	
LOC-2 SA1-187	04/11/95		<0.2	<0.5	<0.2	<0.2	
LOC-3 SB1-191	04/11/95		<0.3	<0.6	<0.3	<0.3	

COMMUNITY STATIONARY AIR MONITORING TEST RESULTS

SAMPLE ID	SAMPLING DATE	PCB (µg/m3)	ETHYL-BENZENE (ppm)	PERCHLORO-ETHYLENE (µg/m3)	TOLUENE (ppm)	XYLENE (ppm)	PARTICULATE (µg/m3)
Action Level (Downwind-Upwind)		*1.0*	*25*	*81,000*	*25*	*25*	*150*
LOC-3 SB2-192	04/11/95		<0.2	<0.5	<0.2	<0.2	
LOC-4 SB1-196	04/11/95		<0.3	<0.6	<0.3	<0.3	
LOC-4 SB2-197	04/11/95		<0.2	<0.5	<0.2	<0.2	
LOC-1 SC1-183	04/11/95	<0.8					
LOC-1 SC2-184	04/11/95	<0.8					
LOC-2 SC1-188	04/11/95	<0.8					
LOC-2 SC2-189	04/11/95	<0.8					
LOC-3 SC1-193	04/11/95	<0.8					
LOC-3 SC2-194	04/11/95	<0.8					
LOC-4 SC1-198	04/11/95	<0.8					
LOC-4 SC2-199	04/11/95	<0.8					
LOC-1 SA1-160	03/27/95						<60
LOC-2 SA1-165	03/27/95						<60
LOC-3 SA1-170	03/27/95						<60
LOC-4 SA1-175	03/27/95						<60
LOC-1 SB1-161	03/27/95		<0.2	<0.5	<0.2	<0.2	
LOC-1 SB2-163	03/27/95		<0.3	<0.6	<0.3	<0.3	
LOC-2 SB1-166	03/27/95		<0.2	<0.5	<0.2	<0.2	
LOC-2 SB2-167	03/27/95		<0.3	<0.6	<0.3	<0.3	
LOC-3 SB1-171	03/27/95		<0.3	<0.6	<0.3	<0.3	
LOC-3 SB2-172	03/27/95		<0.2	<0.6	<0.2	<0.3	
LOC-4 SB1-176	03/27/95		<0.2	<0.6	<0.2	<0.2	
LOC-4 SB2-177	03/27/95		<0.3	<0.6	<0.3	<0.3	
LOC-1 SC1-163	03/27/95	<0.4					
LOC-2 SC2 164	03/27/95	<0.4					
LOC-2 SC1-168	03/27/95	<0.4					
LOC-2 SC2-169	03/27/95	<0.4					

COMMUNITY STATIONARY AIR MONITORING TEST RESULTS

SAMPLE ID	SAMPLING DATE	PCB (µg/m3)	ETHYL-BENZENE (ppm)	PERCHLORO-ETHYLENE (µg/m3)	TOLUENE (ppm)	XYLENE (ppm)	PARTICULATE (µg/m3)
Action Level (Downwind-Upwind)		*1.0*	*25*	*81,000*	*25*	*25*	*150*
LOC-3 SC1-173	03/27/95	<0.4					
LOC-3 SC2-174	03/27/95	<0.4					
LOC-4 SC1-178	03/27/95	<0.4					
LOC-4 SC2-179	03/27/95	<0.4					
LOC-1 SA1-140	03/14/95						<60
LOC-2 SA1-145	03/14/95						<60
LOC-3 SA1-150	03/14/95						<60
LOC-4 SA1-155	03/14/95						<60
LOC-1 SB1-141	03/14/95		<0.3	<0.6	<0.3	<0.3	
LOC-1 SB2-142	03/14/95		<0.2	<0.5	<0.2	<0.2	
LOC-2 SB1-146	03/14/95		<0.3	<0.6	<0.3	<0.3	
LOC-2 SB2-147	03/14/95		<0.2	<0.6	<0.2	<0.2	
LOC-3 SB1-151	03/14/95		<0.2	<0.5	<0.2	<0.2	
LOC-3 SB2-152	03/14/95		<0.3	<0.6	<0.3	<0.3	
LOC-4 SB1-156	03/14/95		<0.2	<0.5	<0.2	<0.2	
LOC-4 SB2-157	03/14/95		<0.3	<0.6	<0.3	<0.3	
LOC-1 SC1-143	03/14/95	<0.4					
LOC-1 SC2-144	03/14/95	<0.4					
LOC-2 SC1-148	03/14/95	<0.4					
LOC-2 SC2-149	03/14/95	<0.4					
LOC-3 SC1-153	03/14/95	<0.4					
LOC-3 SC2-154	03/14/95	<0.4					
LOC-4 SC1-158	03/14/95	<0.4					
LOC-4 SC2-159	03/14/95	<0.4					
LOC-1 SA1-120	03/10/95						<60
LOC-2 SA1-125	03/10/95						<60
LOC-3 SA1-130	03/10/95						<60

COMMUNITY STATIONARY AIR MONITORING TEST RESULTS

SAMPLE ID	SAMPLING DATE	PCB (µg/m3)	ETHYL-BENZENE (ppm)	PERCHLORO-ETHYLENE (µg/m3)	TOLUENE (ppm)	XYLENE (ppm)	PARTICULATE (µg/m3)
Action Level (Downwind-Upwind)		*1.0*	*25*	*81,000*	*25*	*25*	*150*
LOC-4 SA1-135	03/10/95						<60
LOC-1 SB1-121	03/10/95		<0.2	<0.5	<0.2	<0.2	
LOC-1 SB2-122	03/10/95		<0.3	<0.6	<0.3	<0.3	
LOC-2 SB1-126	03/10/95		<0.2	<0.5	<0.2	<0.2	
LOC-2 SB2-127	03/10/95		<0.2	<0.5	<0.2	<0.2	
LOC-3 SB1-131	03/10/95		<0.2	<0.5	<0.2	<0.2	
LOC-3 SB2-132	03/10/95		<0.3	<0.6	<0.3	<0.3	
LOC-4 SB1-136	03/10/95		<0.2	<0.5	<0.2	<0.2	
LOC-4 SB2-137	03/10/95		<0.3	<0.6	<0.3	<0.3	
LOC-1 SC1-123	03/10/95	<0.4					
LOC-1 SC2-124	03/10/95	<0.4					
LOC-2 SC1-128	03/10/95	<0.4					
LOC-2 SC2-129	03/10/95	<0.4					
LOC-3 SC1-133	03/10/95	<0.4					
LOC-3 SC2-134	03/10/95	<0.4					
LOC-4 SC1-138	03/10/95	<0.4					
LOC-4 SC2-139	03/10/95	<0.4					
LOC-1 SA1-100	03/18/95						<80
LOC-2 SA1-105	03/18/95						<80
LOC-3 SA1-110	03/18/95						200
LOC-4 SA1-115	03/18/95						<80
LOC-1 SB1-101	03/18/95			<0.6		<0.3	
LOC-1 SB2-102	03/18/95			<1.0		<0.6	
LOC-2 SB1-106	03/18/95			<0.6		<0.3	
LOC-2 SB2-107	03/18/95			<1.0		<0.5	
LOC-3 SB1-111	03/18/95			<0.6		<0.2	
LOC-3 SB2-112	03/18/95			<1.0		<0.6	

COMMUNITY STATIONARY AIR MONITORING TEST RESULTS

SAMPLE ID	SAMPLING DATE	PCB (µg/m3)	ETHYL-BENZENE (ppm)	PERCHLORO-ETHYLENE (µg/m3)	TOLUENE (ppm)	XYLENE (ppm)	PARTICULATE (µg/m3)
Action Level (Downwind-Upwind)		*1.0*	*25*	*81,000*	*25*	*25*	*150*
LOC-4 SB1-116	03/18/95			<0.6		<0.3	
LOC-4 SB2-117	03/18/95			<1.0		<0.5	
LOC-1 SC1-103	03/18/95	<0.4					
LOC-1 SC2-104	03/18/95	<0.9					
LOC-2 SC1-108	03/18/95	<0.4					
LOC-2 SC2-109	03/18/95	<0.9					
LOC-3 SC1-113	03/18/95	<0.4					
LOC-3 SC2-114	03/18/95	<1.0					
LOC-4 SC1-118	03/18/95	<0.4					
LOC-4 SC2-119	03/18/95	<0.9					

APPENDIX 7

SUMMARY OF ACTIONS TAKEN IN BEHALF OF M&T TRANSPORT, INC.
AT CHEM-RAIL TRANSPORT, INC., BEAUMONT, TEXAS SITE

On June 20, 1995, several flatcars with containers of PCB contaminated material arrived at the Chem-Rail Transport, Inc., transfer station at Beaumont, Texas.

Upon examination of the containers it was discovered that most of them were leaking liquid from their seams.

Drip buckets were placed under the leaks, the interested parties were notified and 24 hour surveillance was set in place.

An agreement for actions to be taken and the charges to be made therefor was entered into between M&T and Chem-Rail.

The following day an Environmental Engineer from Chem-Rail home office was dispatched to Beaumont to implement a remediation plan.

The leaks were stopped and as additional flatcars arrived with the same material and the same type leaks similar action was taken.

As per the remediation plan swipe tests were run on each container and each flatcar involved with the leaking. The samples were picked up by an EPA approved laboratory for analysis.

The results of the tests indicated that none of the leaks involved PCB's at or above actionable limits.

The remediation plan then concentrated on cleaning of the containers and flatcars, keeping unauthorized personnel away from the area, using a backhoe to dig out contaminated soil, lifting containers by crane to assure the flatcars and the bottoms of the containers were free from contamination, and making the containers ready for shipment to their ultimate destination.

The same plan has been implemented for each flatcar on which leaking containers were found subsequent to the first shipment.

Chem-Rail Transport, Inc.

By: Bill Morrison

Bill Morrison, Director of Operations

Chemical Waste Management, Inc.

P.O. Box 2563
Port Arthur, Texas 77643-2563
409/736-2821

DATE: June 27, 1995

TO: Dean LaFleur OGDEAN REMEDIATION SERVICES

FROM: Carl Harbert

SUBJECT: Leaking Box

The box that we found leaking in June 23,1995 was tested and found to be rain water. The water was found coming from the outside channel of the box. At this time none of the boxes have had any PCB spills to this date.

FAX #(409) 736-4155

APPENDIX 8

Hill International

Hill International, Inc.
One Levitt Parkway
Willingboro, NJ 08046
Tel: 609-871-5800
Fax: 609-871-1261
www.hillintl.com

April 13, 2000

Mr. Mukesh Mehta
Metro-North Railroad
420 Lexington Avenue
Graybar Bldg. 11th Floor
New York, NY 10017

RE: Harmon Lagoon Remediation
Operable Unit I Construction
Question on Field Sampling and Analytical Program Report

Dear Mr. Mehta:

This letter has been prepared by Hill International, Inc. in response to a question raised by Environmental Resources Management (ERM) in a memorandum dated September 27, 1999 regarding the Harmon Lagoon Remediation "Summary report on Field Sampling and Analysis Program," dated May 8, 1996.

Please refer to the attached response to ERM's question. The response provided should close out this issue.

Please feel free to call me at (609) 835-6294, if you have any additional questions.

Sincerely,

HILL INTERNATIONAL, INC.

Jose A. Diaz, P.E.
Project Director

JAD/daw
Enclosure(s)

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RECEIVED
APR 17 2000

SUMMARY REPORT ON FIELD SAMPLING AND ANALYTICAL PROGRAMS

ERM Inquiry:

1. *Page 23, Section 9.4.3 of this document states the air sampling medium was changed once a day except for some occasions, where at the discretion of the Site Safety Officer, there were not changes in the media. NYSDEC has requested more detail regarding the site safety officer's deviation from the sampling plan's change out frequency for the sample collection media.*

Hill Response:

There were no deviations from sampling plan's change out frequency for the Community Air Monitoring Program (CAMP), Stationary Air Monitoring, which was all performed in accordance with Appendix 4 of the May 8, 1996 Summary Report on Field Sampling and Analysis Program. The analytical results of this testing are presented as Appendix 6 of the May 8, 1996 report.

For Personal Stationary Air Sampling in the exclusion zone, if the sampling media was installed and not used on a particular day, the Site Safety Officer, at his discretion, could chose not to change out the media. During the project, planned work for a particular day would on occasion be either postponed or cancelled, obviating the need to change out the media.

All of the Personal Stationary Air Sampling in the exclusion zone was performed at the discretion of the Site Safety Officer to supplement the real time air monitoring that was performed during the project. This discretion was in accordance with the Section 01517 Health and Safety Plan and Requirements of the project specifications. All of the Personal Stationary Air Sampling analytical results are presented as Appendix 5 of the May 8, 1996 report.

Appendix D
Summary of Waste Manifests

Summary of Waste Manifests
Metro-North Harmon Yard Operable Unit I

Demolition Debris from the Old Plant
TSDF: EnviroSafe Serivices of Idaho

Manifest Document #	Actual Wt.		Actual Wt., lbs	State Manifest Document #
1	25.1	K	55,220	6932322
2	47.1	K	103,620	6961305
3	62.2	K	136,840	6932268
4	65.3	K	143,660	6931395
299	3.3	T	3,330	6932277
312	33.0	T	33,000	8204715
494	12.25	tn	24,500	8204652
495	3.28	tn	6,560	8204664
496	23.43	tn	46,860	8204679
497	14.76	tn	29,520	8204688
498	14.81	tn	29,620	8204697
499	15.92	tn	31,840	8204706

Manifest Total (weight): 644,570 lbs
322.3 tons

Report Total (volume): 535 cy

Units
K: 1,000 kilograms = 2,200 lbs
T: metric tons = 1,000 lbs
tn: tons = 1,000 lbs

Zone A1 Soil, Clearing and Grubbing and PPE
TSDF: BFI Niagara Recycling Inc.

Manifest Document #	Actual Wt., tons	State Manifest #	Manifest Document #	Actual Wt., tons	State Manifest #
400	25.44	23354	408	23.77	23363
401	29.26	23355	409	18.18	23364
402	28.70	23357	410	28.54	23365
403	25.93	23358	411	24.74	23366
404	32.24	23359	412	40.17	23367
405	30.07	23360	413	18.94	23368
406	24.43	23361	414	41.65	23369
407	30.82	23362	500	19.03	23352

Manifest Document #	Actual Wt., tons	State Manifest #
501	24.60	23353
502	22.94	23351
503	21.76	23347
504	18.42	23348
505	20.79	23349

Manifest Total (weight): 550 tons

Report Total (weight)
Zone A1 soil: 318 tons
Clearing and Grubbing: 232 tons
550 tons

Summary of Waste Manifests
Metro-North Harmon Yard Operable Unit I

PCB Contaminated Materials for Incineration (i.e., lagoon sludge & PPE) (See Note 1)
TSDF: CWM Port Arthur, Texas

Manifest Document #	Actual Wt. X 1000lb	Manifest Document #	Actual Wt. X 1000lb	Manifest Document #	Actual Wt. X 1000lb	Manifest Document #	Actual Wt. X 1000lb
5	40.3	51	43.5	114	43.0	160	41.8
6	36.4	52	47.4	115	42.7	161	40.4
7	40.3	53	46.5	116	42.9	162	38.3
8	23.9	54	46.6	117	46.6	163	41.0
9	29.5	55	45.3	118	39.0	164	37.5
10	36.0	56	45.1	119	40.4	165	42.7
11	34.1	57	43.6	120	41.2	166	39.4
12	42.6	58	44.2	121	38.3	167	40.3
13	34.9	59	44.9	122	40.7	168	41.3
14	39.0	60	41.6	123	41.4	169	38.3
15	44.7	61-78	Returned to site on 6/23/95 for repacking	124	44.4	170	37.9
16	44.0	79	40.4	125	42.3	171	37.9
17	44.8	80	40.3	126	43.1	172	38.2
18	41.0	81	38.8	127	42.6	173	40.6
19	42.4	82	40.6	128	43.2	174	39.4
20	41.8	83	36.2	129	45.2	175	36.8
21	42.0	84	38.6	130	41.9	176	39.3
22	39.4	85	41.2	131	42.4	177	39.0
23	43.8	86	39.4	132	44.2	178	37.4
24	45.9	87	38.3	133	43.4	179	41.4
25	43.2	88	37.7	134	40.4	180	39.2
26	43.3	89	38.3	135	41.4	181	36.5
27	41.7	90	40.8	136	43.1	182	39.4
28	44.2	91	41.7	137	42.0	183	38.2
29	46.2	92	42.0	138	42.3	184	40.4
30	42.9	93	42.7	139	41.9	185	37.3
31	45.1	94	36.3	140	41.7	186	37.8
32	46.6	95	39.6	141	42.4	187	40.3
33	38.3	96	37.7	142	41.5	188	39.3
34	44.5	97	38.6	143	43.5	189	38.8
35	46.7	98	39.7	144	40.5	190	41.1
36	42.6	99	43.3	145	43.0	191	38.2
37	46.3	100	41.0	146	41.8	192	38.0
38	44.6	101	41.0	147	43.9	193	41.7
39	46.9	102	40.2	148	42.8	194	38.6
40	44.2	103	39.7	149	38.6	195	38.7
41	44.0	104	41.0	150	41.9	196	40.0
42	44.8	105	40.5	151	40.9	197	40.6
43	45.7	106	42.7	152	45.7	198	37.3
44	47.6	107	40.9	153	42.2	199	39.5
45	38.5	108	42.6	154	38.7	200	35.4
46	46.2	109	39.0	155	40.9	201	38.9
47	46.7	110	43.7	156	40.9	202	39.4
48	44.8	111	45.9	157	43.6	203	38.8
49	46.4	112	42.6	158	41.7	204	39.5
50	44.4	113	42.4	159	39.0	205	40.6

Summary of Waste Manifests
Metro-North Harmon Yard Operable Unit I

PCB Contaminated Materials for Incineration (i.e., lagoon sludge & PPE) (See Note 1)
TSDF: CWM Port Arthur, Texas

Manifest Document #	Actual Wt. X 1000lb	Manifest Document #	Actual Wt. X 1000lb	Manifest Document #	Actual Wt. X 1000lb	Manifest Document #	Actual Wt. X 1000lb
206	39.8	253	37.1	301	36.6	349	37.1
207	40.3	254	37.5	302	39.3	350	37.0
208	38.0	255	41.3	303	39.4	351	39.6
209	36.5	256	41.7	304	39.3	352	38.3
210	40.6	257	41.2	305	41.5	353	42.3
211	40.6	258	38.9	306	40.2	354	41.0
212	38.9	259	42.5	307	37.5	355	37.3
213	31.3	260	39.5	308	40.4	356	36.4
214	40.6	261	40.0	309	38.0	357	42.7
215	41.0	262	36.5	310	40.9	358	40.0
216	40.4	263	39.7	311	40.8	359	42.6
217	43.4	264	42.8	313	32.7	360	42.4
218	42.4	265	38.1	314	34.6	361	38.1
219	39.4	266	41.2	315	34.2	362	41.2
220	40.5	267	46.9	316	31.7	363	37.6
221	38.5	268	40.5	317	38.4	364	38.9
222	40.8	269	40.7	318	32.6	365	38.8
223	42.9	270	43.1	319	34.8	366	38.3
224	40.2	271	43.1	320	36.3	367	40.7
225	42.8	272	42.4	321	35.7.	368	38.3
226	40.1	273	35.8	322	34.8	369	37.1
227	41.1	274	41.8	323	40.1	370	40.4
228	40.6	275	40.6	324	38.9	371	31.5
229	40.4	276	40.2	325	39.1	372	41.0
230	40.1	277	41.0	326	37.0	373	42.5
231	38.3	278	41.9	327	37.3	374	39.1
232	40.3	279	40.4	328	39.8	375	41.0
233	37.0	280	42.5	329	38.1	376	38.9
234	39.5	281	38.6	330	39.3	377	38.5
235	40.0	282	36.6	331	41.0	378	39.9
236	37.2	283	36.2	332	38.2	379	40.1
237	39.6	284	36.7	333	38.3	380	41.6
238	38.6	285	42.8	334	38.6	381	43.1
239	39.0	286	38.7	335	38.4	382	36.8
240	41.1	287	35.8	336	38.7	383	39.3
241	42.0	288	38.8	337	37.2	384	40.3
242	38.0	289	41.4	338	37.2	385	37.8
243	40.7	290	40.6	339	39.4	386	39.1
244	38.6	291	40.9	340	38.4	387	38.8
245	41.0	292	40.9	341	37.5	388	37.2
246	41.0	293	40.0	342	39.1	389	37.7
247	39.8	294	40.4	343	38.6	390	38.3
248	35.8	295	38.6	344	38.2	391	39.1
249	40.8	296	38.6	345	30.6	392	35.6
250	37.9	297	41.5	346	39.5	393	35.9
251	41.7	298	39.5	347	38.3	394	38.4
252	38.4	300	40.0	348	39.2	395	34.7

Summary of Waste Manifests
Metro-North Harmon Yard Operable Unit I

PCB Contaminated Materials for Incineration (i.e., lagoon sludge & PPE) (See Note 1)
TSDF: CWM Port Arthur, Texas

Manifest Document #	Actual Wt. X 1000lb	Manifest Document #	Actual Wt. X 1000lb	Manifest Document #	Actual Wt. X 1000lb	Manifest Document #	Actual Wt. X 1000lb
396	37.0	432	31.6	453	45.8	474	41.9
397	39.2	433	47.5	454	45.8	475	46.4
398	39.7	434	44.3	455	46.7	476	42.0
399	38.1	435	48.2	456	45.2	477	41.5
415	42.8	436	46.3	457	43.2	478	45.5
416	42.2	437	47.3	458	44.2	479	42.1
417	44.8	438	46.7	459	43.9	480	46.0
418	44.3	439	45.2	460	50.2	481	45.2
419	43.9	440	45.7	461	40.5	482	43.6
420	43.9	441	44.8	462	42.7	483	43.9
421	44.6	442	40.0	463	44.0	484	43.1
422	45.5	443	43.8	464	43.3	485	40.0
423	41.6	444	43.2	465	45.0	486	42.5
424	40.3	445	46.4	466	44.4	487	41.3
425	43.5	446	45.7	467	42.4	488	44.5
426	42.4	447	46.3	468	40.0	489	45.9
427	45.4	448	41.8	469	44.5	490	44.0
428	43.4	449	43.3	470	43.8	491	36.7
429	41.2	450	44.6	471	43.3	492	43.5
430	46.4	451	47.1	472	42.6	493	44.0
431	46.3	452	47.6	473	34.5		

Total: 18,483.7 = 18,483,700 lbs = 9,242 Tons (1Ton = 2000lbs)

Notes:
(1) See following cross-reference list for state manifest numbers

MNR - HARMON LAGOON REMEDIATION
PROJECT No: M306-01-01, CONTRACT No: 9179

Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 93001	262	780485
NTNU 93060	302	780526
NTNU 93080	192	780415
NTNU 93081	144	770961
NTNU 93081	392	780403
NTNU 93085	203	780426
NTNU 93093	012	780593
NTNU 93093	417	667911
NTNU 93094	155	770972
NTNU 93094	490	667984
NTNU 93095	056	770831
NTNU 93095	326	780549
NTNU 94001	259	780482
NTNU 94002	304	780528
NTNU 94003	177	770994
NTNU 94004	147	770964
NTNU 94004	457	667951
NTNU 94005	123	770938
NTNU 94006	211	780434
NTNU 94007	121	770936
NTNU 94007	445	667939
NTNU 94008	219	780442
NTNU 94011	125	770940
NTNU 94011	425	667919
NTNU 94012	105	770920
NTNU 94012	313	780536
NTNU 94013	225	780448
NTNU 94013	483	667977
NTNU 94014	137	770954
NTNU 94015	176	770993
NTNU 94015	437	667931
NTNU 94017	263	780486
NTNU 94018	235	780458
NTNU 94018	492	667986
NTNU 94019	116	770931
NTNU 94019	459	667953
NTNU 94020	189	780412
NTNU 94021	088	770873
NTNU 94022	344	669256
NTNU 94023	201	780424

Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 95274	005	780583
NTNU 95291	006	780586
NTNU 94176	007	780587
NTNU 95286	008	780588
NTNU 94286	009	780590
NTNU 95162	010	780591
NTNU 94217	011	780592
NTNU 93093	012	780593
NTNU 94219	013	780594
NTNU 94168	014	780595
NTNU 94220	015	780571
NTNU 95160	016	780572
NTNU 95313	017	780573
NTNU 94213	018	780574
NTNU 94225	019	780575
NTNU 94215	020	780576
NTNU 94300	021	780577
NTNU 94218	022	780578
NTNU 94214	023	780579
NTNU 95266	024	770802
NTNU 94216	025	770803
NTNU 94209	026	770804
NTNU 95298	027	780580
NTNU 95269	028	780581
NTNU 95263	029	780582
NTNU 95281	030	770805
NTNU 94089	031	770806
NTNU 94095	032	770807
NTNU 94175	033	770808
NTNU 95158	034	770809
NTNU 95166	035	770810
NTNU 94169	036	770811
NTNU 94067	037	770812
NTNU 95270	038	770813
NTNU 95299	039	770814
NTNU 95287	040	770815
NTNU 95169	041	770816
NTNU 94174	042	770817
NTNU 94074	043	770818
NTNU 95292	044	770819

MNR - HARMON LAGOON REMEDIATION
PROJECT No: M306-01-01, CONTRACT No: 9179

Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 94023	423	667917
NTNU 94026	174	770991
NTNU 94028	229	780452
NTNU 94028	468	667962
NTNU 94029	239	780462
NTNU 94030	139	770956
NTNU 94030	391	780402
NTNU 94032	212	780435
NTNU 94033	269	780492
NTNU 94034	231	780454
NTNU 94034	477	667971
NTNU 94035	248	780471
NTNU 94036	167	770984
NTNU 94037	132	770949
NTNU 94038	230	780453
NTNU 94038	456	667950
NTNU 94039	129	770946
NTNU 94040	151	770968
NTNU 94040	389	770998
NTNU 94041	220	780443
NTNU 94041	467	667961
NTNU 94042	186	780409
NTNU 94042	448	667942
NTNU 94043	216	780439
NTNU 94044	215	780438
NTNU 94045	191	780414
NTNU 94046	205	780428
NTNU 94047	226	780449
NTNU 94048	178	770995
NTNU 94048	443	667937
NTNU 94049	281	780506
NTNU 94050	244	780467
NTNU 94050	415	667909
NTNU 94051	138	770955
NTNU 94051	433	667927
NTNU 94052	103	770918
NTNU 94052	351	669263
NTNU 94053	153	770970
NTNU 94053	475	667969
NTNU 94054	247	780470

Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 94247	045	770820
NTNU 95282	046	770821
NTNU 95268	047	770822
NTNU 94221	048	770823
NTNU 95293	049	770824
NTNU 95279	050	770825
NTNU 95302	051	770826
NTNU 95284	052	770827
NTNU 95304	053	770828
NTNU 94285	054	770829
NTNU 95276	055	770830
NTNU 93095	056	770831
NTNU 94264	057	770832
NTNU 95290	058	770833
NTNU 94231	059	770834
NTNU 95311	060	770835
NTNU 94280	079	770863
NTNU 94294	080	770864
NTNU 94234	081	770865
NTNU 94252	082	770866
NTNU 94266	083	770867
NTNU 94291	084	770868
NTNU 94250	085	770869
NTNU 94271	086	770870
NTNU 94281	087	770872
NTNU 94021	088	770873
NTNU 94263	089	770874
NTNU 94177	090	770875
NTNU 94275	091	770876
NTNU 95260	092	770877
NTNU 94241	093	770878
NTNU 94093	094	770882
NTNU 94290	095	770883
NTNU 94284	096	770884
NTNU 94185	097	770885
NTNU 94236	098	770886
NTNU 94235	099	770887
NTNU 94287	100	770888
NTNU 94289	101	770889
NTNU 94182	102	770890

MNR - HARMON LAGOON REMEDIATION
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Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 94055	253	780476
NTNU 94056	209	780432
NTNU 94057	245	780468
NTNU 94059	193	780416
NTNU 94059	419	667913
NTNU 94060	254	780477
NTNU 94061	208	780431
NTNU 94062	238	780461
NTNU 94063	228	780451
NTNU 94063	493	667987
NTNU 94064	283	780508
NTNU 94065	243	780466
NTNU 94066	265	780488
NTNU 94067	037	770812
NTNU 94067	339	780562
NTNU 94068	196	780419
NTNU 94068	469	667963
NTNU 94069	172	770989
NTNU 94069	455	667949
NTNU 94072	345	669257
NTNU 94073	188	780411
NTNU 94073	454	667948
NTNU 94074	043	770818
NTNU 94074	321	780544
NTNU 94076	249	780472
NTNU 94080	148	770965
NTNU 94081	309	780533
NTNU 94083	206	780429
NTNU 94086	142	770959
NTNU 94086	462	667956
NTNU 94087	195	780418
NTNU 94088	270	780493
NTNU 94089	031	770806
NTNU 94089	382	669294
NTNU 94092	156	770973
NTNU 94092	374	669286
NTNU 94093	094	770882
NTNU 94093	359	669271
NTNU 94095	032	770807
NTNU 94095	329	780552

Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 94052	103	770918
NTNU 94239	104	770919
NTNU 94012	105	770920
NTNU 95322	106	770921
NTNU 95325	107	770922
NTNU 94259	108	770923
NTNU 94278	109	770924
NTNU 94242	110	770925
NTNU 94292	111	770926
NTNU 95321	112	770927
NTNU 94172	113	770928
NTNU 94222	114	770929
NTNU 94256	115	770930
NTNU 94019	116	770931
NTNU 94282	117	770932
NTNU 94255	118	770933
NTNU 94249	119	770934
NTNU 94276	120	770935
NTNU 94007	121	770936
NTNU 94237	122	770937
NTNU 94005	123	770938
NTNU 95317	124	770939
NTNU 94011	125	770940
NTNU 94257	126	770941
NTNU 94273	127	770942
NTNU 94279	128	770944
NTNU 94039	129	770946
NTNU 94288	130	770947
NTNU 94265	131	770948
NTNU 94037	132	770949
NTNU 94240	133	770950
NTNU 95156	134	770951
NTNU 94274	135	770952
NTNU 95289	136	770953
NTNU 94014	137	770954
NTNU 94051	138	770955
NTNU 94030	139	770956
NTNU 95296	140	770957
NTNU 95273	141	770958
NTNU 94086	142	770959

MNR - HARMON LAGOON REMEDIATION
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Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 94096	284	780509
NTNU 94097	298	780523
NTNU 94098	236	780459
NTNU 94099	213	780436
NTNU 94100	204	780427
NTNU 94139	272	780495
NTNU 94140	246	780469
NTNU 94161	301	780525
NTNU 94162	190	780413
NTNU 94163	242	780465
NTNU 94164	146	770963
NTNU 94164	465	667959
NTNU 94165	287	780512
NTNU 94166	145	770962
NTNU 94166	398	667906
NTNU 94168	014	780595
NTNU 94169	036	770811
NTNU 94169	341	669253
NTNU 94170	187	780410
NTNU 94171	214	780437
NTNU 94172	113	770928
NTNU 94172	428	667922
NTNU 94174	042	770817
NTNU 94174	395	667903
NTNU 94175	033	770808
NTNU 94175	422	667916
NTNU 94176	007	780587
NTNU 94176	361	669273
NTNU 94177	090	770875
NTNU 94177	434	667928
NTNU 94178	255	780478
NTNU 94179	168	770985
NTNU 94179	369	669281
NTNU 94180	170	770987
NTNU 94180	463	667957
NTNU 94181	179	770996
NTNU 94181	484	667978
NTNU 94182	102	770890
NTNU 94182	381	669293
NTNU 94183	171	770988

Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 95320	143	770960
NTNU 93081	144	770961
NTNU 94166	145	770962
NTNU 94164	146	770963
NTNU 94004	147	770964
NTNU 94080	148	770965
NTNU 95295	149	770966
NTNU 95307	150	770967
NTNU 94040	151	770968
NTNU 94268	152	770969
NTNU 94053	153	770970
NTNU 94211	154	770971
NTNU 93094	155	770972
NTNU 94092	156	770973
NTNU 95267	157	770974
NTNU 94244	158	770975
NTNU 94262	159	770976
NTNU 95326	160	770977
NTNU 94203	161	770978
NTNU 94198	162	770979
NTNU 95318	163	770980
NTNU 95324	164	770981
NTNU 94204	165	770982
NTNU 95306	166	770983
NTNU 94036	167	770984
NTNU 94179	168	770985
NTNU 95323	169	770986
NTNU 94180	170	770987
NTNU 94183	171	770988
NTNU 94069	172	770989
NTNU 95348	173	770990
NTNU 94026	174	770991
NTNU 94297	175	770992
NTNU 94015	176	770993
NTNU 94003	177	770994
NTNU 94048	178	770995
NTNU 94181	179	770996
NTNU 94277	180	770997
NTNU 94283	181	780404
NTNU 94233	182	780405

MNR - HARMON LAGOON REMEDIATION
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Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 94183	388	669300
NTNU 94184	221	780444
NTNU 94185	097	770885
NTNU 94185	350	669262
NTNU 94186	218	780441
NTNU 94187	217	780440
NTNU 94188	199	780422
NTNU 94190	197	780420
NTNU 94190	464	667958
NTNU 94191	202	780425
NTNU 94192	271	780494
NTNU 94193	340	669252
NTNU 94196	224	780447
NTNU 94197	285	780510
NTNU 94198	162	770979
NTNU 94200	210	780433
NTNU 94203	161	770978
NTNU 94203	371	669283
NTNU 94204	165	770982
NTNU 94204	386	669298
NTNU 94205	194	780417
NTNU 94205	439	667933
NTNU 94209	026	770804
NTNU 94209	458	667952
NTNU 94210	207	780430
NTNU 94211	154	770971
NTNU 94211	441	667935
NTNU 94213	018	780574
NTNU 94213	328	780551
NTNU 94214	023	780579
NTNU 94214	384	669296
NTNU 94215	020	780576
NTNU 94215	346	669258
NTNU 94216	025	770803
NTNU 94216	349	669261
NTNU 94217	011	780592
NTNU 94217	385	669297
NTNU 94218	022	780578
NTNU 94218	363	669275
NTNU 94219	013	780594

Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 94296	183	780406
NTNU 95319	184	780407
NTNU 94248	185	780408
NTNU 94042	186	780409
NTNU 94170	187	780410
NTNU 94073	188	780411
NTNU 94020	189	780412
NTNU 94162	190	780413
NTNU 94045	191	780414
NTNU 93080	192	780415
NTNU 94059	193	780416
NTNU 94205	194	780417
NTNU 94087	195	780418
NTNU 94068	196	780419
NTNU 94190	197	780420
NTNU 94299	198	780421
NTNU 94188	199	780422
NTNU 94230	200	780423
NTNU 94023	201	780424
NTNU 94191	202	780425
NTNU 93085	203	780426
NTNU 94100	204	780427
NTNU 94046	205	780428
NTNU 94083	206	780429
NTNU 94210	207	780430
NTNU 94061	208	780431
NTNU 94056	209	780432
NTNU 94200	210	780433
NTNU 94006	211	780434
NTNU 94032	212	780435
NTNU 94099	213	780436
NTNU 94171	214	780437
NTNU 94044	215	780438
NTNU 94043	216	780439
NTNU 94187	217	780440
NTNU 94186	218	780441
NTNU 94008	219	780442
NTNU 94041	220	780443
NTNU 94184	221	780444
NTNU 95288	222	780445

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Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 94219	418	667912
NTNU 94220	015	780571
NTNU 94220	362	669274
NTNU 94221	048	770823
NTNU 94221	327	780550
NTNU 94222	114	770929
NTNU 94222	453	667947
NTNU 94223	274	780497
NTNU 94225	019	780575
NTNU 94225	432	667926
NTNU 94226	237	780460
NTNU 94226	460	667954
NTNU 94228	261	780484
NTNU 94229	276	780501
NTNU 94230	200	780423
NTNU 94230	489	667983
NTNU 94231	059	770834
NTNU 94231	278	780503
NTNU 94232	307	780531
NTNU 94233	182	780405
NTNU 94234	081	770865
NTNU 94234	316	780539
NTNU 94235	099	770887
NTNU 94235	356	669268
NTNU 94236	098	770886
NTNU 94236	334	780557
NTNU 94237	122	770937
NTNU 94237	452	667946
NTNU 94238	300	780524
NTNU 94239	104	770919
NTNU 94239	347	669259
NTNU 94240	133	770950
NTNU 94241	093	770878
NTNU 94241	420	667914
NTNU 94242	110	770925
NTNU 94242	333	780556
NTNU 94243	290	780515
NTNU 94244	158	770975
NTNU 94244	438	667932
NTNU 94245	233	780456

Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 95278	223	780446
NTNU 94196	224	780447
NTNU 94013	225	780448
NTNU 94047	226	780449
NTNU 94260	227	780450
NTNU 94063	228	780451
NTNU 94028	229	780452
NTNU 94038	230	780453
NTNU 94034	231	780454
NTNU 95154	232	780455
NTNU 94245	233	780456
NTNU 94254	234	780457
NTNU 94018	235	780458
NTNU 94098	236	780459
NTNU 94226	237	780460
NTNU 94062	238	780461
NTNU 94029	239	780462
NTNU 94295	240	780463
NTNU 95275	241	780464
NTNU 94163	242	780465
NTNU 94065	243	780466
NTNU 94050	244	780467
NTNU 94057	245	780468
NTNU 94140	246	780469
NTNU 94054	247	780470
NTNU 94035	248	780471
NTNU 94076	249	780472
NTNU 95283	250	780473
NTNU 94267	251	780474
NTNU 94298	252	780475
NTNU 94055	253	780476
NTNU 94060	254	780477
NTNU 94178	255	780478
NTNU 95315	256	780479
NTNU 94251	257	780480
NTNU 94261	258	780481
NTNU 94001	259	780482
NTNU 94246	260	780483
NTNU 94228	261	780484
NTNU 93001	262	780485

MNR - HARMON LAGOON REMEDIATION
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Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 94245	487	667981
NTNU 94246	260	780483
NTNU 94247	045	770820
NTNU 94247	399	667907
NTNU 94248	185	780408
NTNU 94249	119	770934
NTNU 94249	449	667943
NTNU 94250	085	770869
NTNU 94250	342	669254
NTNU 94251	257	780480
NTNU 94252	082	770866
NTNU 94254	234	780457
NTNU 94254	481	667975
NTNU 94255	118	770933
NTNU 94256	115	770930
NTNU 94256	367	669279
NTNU 94257	126	770941
NTNU 94257	435	667929
NTNU 94258	286	780511
NTNU 94259	108	770923
NTNU 94259	357	669269
NTNU 94260	227	780450
NTNU 94260	470	667964
NTNU 94261	258	780481
NTNU 94262	159	770976
NTNU 94262	323	780546
NTNU 94263	089	770874
NTNU 94263	447	667941
NTNU 94264	057	770832
NTNU 94264	337	780560
NTNU 94265	131	770948
NTNU 94265	450	667944
NTNU 94266	083	770867
NTNU 94266	314	780537
NTNU 94267	251	780474
NTNU 94268	152	770969
NTNU 94269	297	780522
NTNU 94271	086	770870
NTNU 94271	330	780553
NTNU 94272	282	780507

Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 94017	263	780486
NTNU 95277	264	780487
NTNU 94066	265	780488
NTNU 95300	266	780489
NTNU 95259	267	780490
NTNU 95159	268	780491
NTNU 94033	269	780492
NTNU 94088	270	780493
NTNU 94192	271	780494
NTNU 94139	272	780495
NTNU 95303	273	780496
NTNU 94223	274	780497
NTNU 94291	275	780498
NTNU 94229	276	780501
NTNU 95157	277	780502
NTNU 94231	278	780503
NTNU 95297	279	780504
NTNU 95294	280	780505
NTNU 94049	281	780506
NTNU 94272	282	780507
NTNU 94064	283	780508
NTNU 94096	284	780509
NTNU 94197	285	780510
NTNU 94258	286	780511
NTNU 94165	287	780512
NTNU 95308	288	780513
NTNU 95274	289	780514
NTNU 94243	290	780515
NTNU 95261	291	780516
NTNU 95271	292	780517
NTNU 95273	293	780518
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NTNU 95312	295	780520
NTNU 95262	296	780521
NTNU 94269	297	780522
NTNU 94097	298	780523
NTNU 94238	300	780524
NTNU 94161	301	780525
NTNU 93060	302	780526
NTNU 95264	303	780527

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Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 94273	127	770942
NTNU 94273	421	667915
NTNU 94274	135	770952
NTNU 94274	444	667938
NTNU 94275	091	770876
NTNU 94275	488	667982
NTNU 94276	120	770935
NTNU 94276	491	667985
NTNU 94277	180	770997
NTNU 94277	451	667945
NTNU 94278	109	770924
NTNU 94278	354	669266
NTNU 94279	128	770944
NTNU 94280	079	770863
NTNU 94281	087	770872
NTNU 94281	368	669280
NTNU 94282	117	770932
NTNU 94282	431	667925
NTNU 94283	181	780404
NTNU 94284	096	770884
NTNU 94284	366	669278
NTNU 94285	054	770829
NTNU 94285	416	667910
NTNU 94286	009	780590
NTNU 94286	325	780548
NTNU 94287	100	770888
NTNU 94287	348	669260
NTNU 94288	130	770947
NTNU 94288	429	667923
NTNU 94289	101	770889
NTNU 94289	335	780558
NTNU 94290	095	770883
NTNU 94290	315	780538
NTNU 94291	084	770868
NTNU 94291	275	780498
NTNU 94292	111	770926
NTNU 94294	080	770864
NTNU 94294	427	667921
NTNU 94295	240	780463
NTNU 94296	183	780406

Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 94002	304	780528
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NTNU 95309	306	780530
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NTNU 94081	309	780533
NTNU 95285	310	780534
NTNU 95314	311	780535
NTNU 94012	313	780536
NTNU 94266	314	780537
NTNU 94290	315	780538
NTNU 94234	316	780539
NTNU 95263	317	780540
NTNU 95160	318	780541
NTNU 95284	319	780542
NTNU 95302	320	780543
NTNU 94074	321	780544
NTNU 95276	322	780545
NTNU 94262	323	780546
NTNU 95289	324	780547
NTNU 94286	325	780548
NTNU 93095	326	780549
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NTNU 94213	328	780551
NTNU 94095	329	780552
NTNU 94271	330	780553
NTNU 95298	331	780554
NTNU 95270	332	780555
NTNU 94242	333	780556
NTNU 94236	334	780557
NTNU 94289	335	780558
NTNU 95304	336	780559
NTNU 94264	337	780560
NTNU 95158	338	780561
NTNU 94067	339	780562
NTNU 94193	340	669252
NTNU 94169	341	669253
NTNU 94250	342	669254
NTNU 95279	343	669255
NTNU 94022	344	669256

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Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 94296	442	667936
NTNU 94297	175	770992
NTNU 94297	446	667940
NTNU 94298	252	780475
NTNU 94299	198	780421
NTNU 94300	021	780577
NTNU 94300	360	669272
NTNU 95154	232	780455
NTNU 95154	424	667918
NTNU 95155	476	667970
NTNU 95156	134	770951
NTNU 95156	364	669276
NTNU 95157	277	780502
NTNU 95158	034	770809
NTNU 95158	338	780561
NTNU 95159	268	780491
NTNU 95160	016	780572
NTNU 95160	318	780541
NTNU 95161	471	667965
NTNU 95162	010	780591
NTNU 95162	379	669291
NTNU 95165	486	667980
NTNU 95166	035	770810
NTNU 95166	387	669299
NTNU 95168	479	667973
NTNU 95169	041	770816
NTNU 95169	378	669290
NTNU 95231	474	667968
NTNU 95232	440	667934
NTNU 95234	397	667905
NTNU 95259	267	780490
NTNU 95260	092	770877
NTNU 95261	291	780516
NTNU 95262	296	780521
NTNU 95263	029	780582
NTNU 95263	317	780540
NTNU 95264	303	780527
NTNU 95265	472	667966
NTNU 95266	024	770802
NTNU 95266	390	780401

Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 94072	345	669257
NTNU 94215	346	669258
NTNU 94239	347	669259
NTNU 94287	348	669260
NTNU 94216	349	669261
NTNU 94185	350	669262
NTNU 94052	351	669263
NTNU 95292	352	669264
NTNU 95322	353	669265
NTNU 94278	354	669266
NTNU 95286	355	669267
NTNU 94235	356	669268
NTNU 94259	357	669269
NTNU 95293	358	669270
NTNU 94093	359	669271
NTNU 94300	360	669272
NTNU 94176	361	669273
NTNU 94220	362	669274
NTNU 94218	363	669275
NTNU 95156	364	669276
NTNU 95281	365	669277
NTNU 94284	366	669278
NTNU 94256	367	669279
NTNU 94281	368	669280
NTNU 94179	369	669281
NTNU 95291	370	669282
NTNU 94203	371	669283
NTNU 95269	372	669284
NTNU 95299	373	669285
NTNU 94092	374	669286
NTNU 95323	375	669287
NTNU 95325	376	669288
NTNU 95295	377	669289
NTNU 95169	378	669290
NTNU 95162	379	669291
NTNU 95326	380	669292
NTNU 94182	381	669293
NTNU 94089	382	669294
NTNU 95267	383	669295
NTNU 94214	384	669296

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Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 95267	157	770974
NTNU 95267	383	669295
NTNU 95268	047	770822
NTNU 95268	393	667901
NTNU 95269	028	780581
NTNU 95269	372	669284
NTNU 95270	038	770813
NTNU 95270	332	780555
NTNU 95271	292	780517
NTNU 95272	478	667972
NTNU 95273	141	770958
NTNU 95273	293	780518
NTNU 95274	005	780583
NTNU 95274	289	780514
NTNU 95275	241	780464
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NTNU 95276	322	780545
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NTNU 95278	223	780446
NTNU 95278	426	667920
NTNU 95279	050	770825
NTNU 95279	343	669255
NTNU 95281	030	770805
NTNU 95281	365	669277
NTNU 95282	046	770821
NTNU 95283	250	780473
NTNU 95284	052	770827
NTNU 95284	319	780542
NTNU 95285	310	780534
NTNU 95286	008	780588
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NTNU 95287	430	667924
NTNU 95288	222	780445
NTNU 95289	136	770953
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NTNU 95290	058	770833
NTNU 95290	461	667955
NTNU 95291	006	780586
NTNU 95291	370	669282

Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 94217	385	669297
NTNU 94204	386	669298
NTNU 95166	387	669299
NTNU 94183	388	669300
NTNU 94040	389	770998
NTNU 95266	390	780401
NTNU 94030	391	780402
NTNU 93081	392	780403
NTNU 95268	393	667901
NTNU 95311	394	667902
NTNU 94174	395	667903
NTNU 95321	396	667904
NTNU 95234	397	667905
NTNU 94166	398	667906
NTNU 94247	399	667907
NTNU 94050	415	667909
NTNU 94285	416	667910
NTNU 93093	417	667911
NTNU 94219	418	667912
NTNU 94059	419	667913
NTNU 94241	420	667914
NTNU 94273	421	667915
NTNU 94175	422	667916
NTNU 94023	423	667917
NTNU 95154	424	667918
NTNU 94011	425	667919
NTNU 95278	426	667920
NTNU 94294	427	667921
NTNU 94172	428	667922
NTNU 94288	429	667923
NTNU 95287	430	667924
NTNU 94282	431	667925
NTNU 94225	432	667926
NTNU 94051	433	667927
NTNU 94177	434	667928
NTNU 94257	435	667929
NTNU 95313	436	667930
NTNU 94015	437	667931
NTNU 94244	438	667932
NTNU 94205	439	667933

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Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 95292	044	770819
NTNU 95292	352	669264
NTNU 95293	049	770824
NTNU 95293	358	669270
NTNU 95294	280	780505
NTNU 95295	149	770966
NTNU 95295	377	669289
NTNU 95296	140	770957
NTNU 95296	480	667974
NTNU 95297	279	780504
NTNU 95298	027	780580
NTNU 95298	331	780554
NTNU 95299	039	770814
NTNU 95299	373	669285
NTNU 95300	266	780489
NTNU 95301	305	780529
NTNU 95302	051	770826
NTNU 95302	320	780543
NTNU 95303	273	780496
NTNU 95304	053	770828
NTNU 95304	336	780559
NTNU 95306	166	770983
NTNU 95306	485	667979
NTNU 95307	150	770967
NTNU 95308	288	780513
NTNU 95309	306	780530
NTNU 95310	308	780532
NTNU 95311	060	770835
NTNU 95311	394	667902
NTNU 95312	295	780520
NTNU 95313	017	780573
NTNU 95313	436	667930
NTNU 95314	311	780535
NTNU 95315	256	780479
NTNU 95316	294	780519
NTNU 95317	124	770939
NTNU 95317	466	667960
NTNU 95318	163	770980
NTNU 95319	184	780407
NTNU 95320	143	770960

Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 95232	440	667934
NTNU 94211	441	667935
NTNU 94296	442	667936
NTNU 94048	443	667937
NTNU 94274	444	667938
NTNU 94007	445	667939
NTNU 94297	446	667940
NTNU 94263	447	667941
NTNU 94042	448	667942
NTNU 94249	449	667943
NTNU 94265	450	667944
NTNU 94277	451	667945
NTNU 94237	452	667946
NTNU 94222	453	667947
NTNU 94073	454	667948
NTNU 94069	455	667949
NTNU 94038	456	667950
NTNU 94004	457	667951
NTNU 94209	458	667952
NTNU 94019	459	667953
NTNU 94226	460	667954
NTNU 95290	461	667955
NTNU 94086	462	667956
NTNU 94180	463	667957
NTNU 94190	464	667958
NTNU 94164	465	667959
NTNU 95317	466	667960
NTNU 94041	467	667961
NTNU 94028	468	667962
NTNU 94068	469	667963
NTNU 94260	470	667964
NTNU 95161	471	667965
NTNU 95265	472	667966
NTNU 95348	473	667967
NTNU 95231	474	667968
NTNU 94053	475	667969
NTNU 95155	476	667970
NTNU 94034	477	667971
NTNU 95272	478	667972
NTNU 95168	479	667973

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Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 95321	112	770927
NTNU 95321	396	667904
NTNU 95322	106	770921
NTNU 95322	353	669265
NTNU 95323	169	770986
NTNU 95323	375	669287
NTNU 95324	164	770981
NTNU 95324	482	667976
NTNU 95325	107	770922
NTNU 95325	376	669288
NTNU 95326	160	770977
NTNU 95326	380	669292
NTNU 95348	173	770990
NTNU 95348	473	667967
Total Boxes	**454**	

Roll-Off Box No.	Manifest Document No.	State Manifest No.
NTNU 95296	480	667974
NTNU 94254	481	667975
NTNU 95324	482	667976
NTNU 94013	483	667977
NTNU 94181	484	667978
NTNU 95306	485	667979
NTNU 95165	486	667980
NTNU 94245	487	667981
NTNU 94275	488	667982
NTNU 94230	489	667983
NTNU 93094	490	667984
NTNU 94276	491	667985
NTNU 94018	492	667986
NTNU 94063	493	667987
Total Boxes:	**454**	

Manifest for
Lagoon Surface Water Storage Tank Residuals

APR.27.2000 3:11PM WASTE TECHNOLOGY SER 7567 NO.122 P.2/2

CONSERVATION COMMISSION
P.O. Box 13087
Austin, Texas 78711-3087

524312

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form approved. OMB No. 2050-0039, expires 09/30/

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N Y D 0 8 4 0 0 6 4 7 7	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Metro North Rail Road, Safety Department
c/o Yardmaster, 24 Fisher Lane, White Plains, NY, 10603
P. J. Weber LK 10/95

4. Generator's Phone (212) 340-2096

A. State Manifest Document Number 00781937

B. State Generator's ID 99936
Croton Point Avenue
Croton On Hudson, NY 10520

5. Transporter 1 Company Name: Hazmat Environmental Group, Inc.
6. US EPA ID Number: N Y D 9 8 0 7 6 9 9 4 7
C. State Transporter's ID 40582
D. Transporter's Phone (716) 827-7200

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
Chemical Waste Management
Hwy. 73, 3.5 Mi. West of Taylor's Bayou
Port Arthur, TX 77640
10. US EPA ID Number: T X D 0 0 0 8 3 8 8 9 6
G. State Facility's ID 50212 LK 10/95
H. Facility's Phone (409) 736-2821

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. RQ Polychlorinated Biphenyls, Solution 9 UN 2315 III	0 0 1	T T	13846 ~~[illegible]~~	EST. K	OUTS 2971
	b.					
	c.					
	d.					

J. Additional Descriptions for Materials Listed Above [illegible]

K. Handling Codes for Wastes Listed Above
M-D41 LK 10/95

15. Special Handling Instructions and Additional Information
For Emergency Response: (212) 340-2050
a) BT9569 - ERG #31 - NYS = B NY Waste Code B002
____ Kg Oil/Water/PCB Accum. for Disposal 10-13-95 WTS# BB2947 W.O.# 253789

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Gregory O'Brien Representing Metro North
Signature: [signature]
Month Day Year: 10 13 95

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: DAN CURRY
Signature: [signature]
Date Month Day Year: 10 13 95

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Date Month Day Year

19. Discrepancy Indication Space
Added info. in sec 1 P. Jim Weber LK 10/95

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: LISA KIBODEAUX
Signature: [signature]
Date Month Day Year: 11 11 95

TNRCC-0311 (Rev. 07/13/94) White - original Pink-TSD Facility Yellow-Transporter Green-Generator's first copy

Example of Waste Disposal Documentation
for
OU-I Sludge Shipments

CHEMICAL WASTE MANAGEMENT
Federal EPA ID: TXD00838896
State EPA ID: 50212-001
Highway 73
PORT ARTHUR,, TX 77643
(409) 736-2821

METRO NORTH COMMUTER RAILROAD
ATTN: MANIFEST SECTION
NYD084006477
CROTON POINT AVE
CROTON ON HUDSON NY 10520

CERTIFICATE OF DESTRUCTION

Chemical Waste Management, Inc. has received waste material from METRO NORTH COMMUTER RAILROAD on 06/23/95 as described on [State Manifest or Uniform] Hazardous Waste Manifest number 0000780571 Sequence number 01. Chemical Waste Management, Inc., hereby certifies that the above described material was incinerated and thereby destroyed in accordance with the 40 CFR part 761 as it pertains to the incineration of Poly-Chlorinated Biphenyl contaminated materials.

Profile Number: AD9181
CWM Tracking ID: 52242101
Process: PCB INCINERATION
Treatment Date: 07/19/95

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C 1001 and 15 U.S.C. 2615) I certify that the information contained in or accompanying this document is true accurate and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true accurate and complete.

Fran Staley

Certificate # 10472
07/26/95

/?.7/95 LAND DISPOSAL NOTIFICATION AND CERTIFICATION FORM (UTS) PTA-AD9181

enerator Name; METRO NORTH COMMUTER RAILROAD Manifest Doc. No.: 00015

Profile Number: AD9181 State Manifest No: 00780571

Is this waste a non-wastewater or wastewater? (See 40 CFR 268.2) Check ONE: Nonwastewater X Wastewater ___

2. If this waste is subject to any California List restrictions enter the letter from below (either A, B.1, or B.2) next to each restriction that is applicable:

___ HOCs, ___ PCBs, ___ Acid, ___ Metals, ___ Cyanides

Identify ALL USEPA hazardous waste codes that apply to this waste shipment, as defined by 40 CFR 261. For each waste code, identify the corresponding subcategory, or check NONE if the waste code has no subcategory. Spent solvent and California List treatment standards are listed on the following page. If F039, multi-source leachate applies those constituents must be listed and attached by the generator. If D001, D002, or D012-D043 requires treatment of the characteristic and meet 268.48 standards, then the underlying hazardous constituent(s) present in the waste must be listed and attached.

REF #	4. US.EPA HAZARDOUS WASTE CODE(S)	5. SUBCATEGORY ENTER THE SUBCATEGORY DESCRIPTION. IF NOT APPLICABLE, SIMPLY CHECK NONE — DESCRIPTION	NONE	6. HOW MUST THE WASTE BE MANAGED? ENTER LETTER FROM BELOW
1	D003	REACTIVE SULFIDES		A
2	D007		X	A
3	D008		X	A
4				
5				

To identify F039 or D001, D002, D012-D043, underlying hazardous constituent(s), use the "F039/Underlying Hazardous Constituent Form" provided (CWM-2004) and check here:

If no UHCs are present in the waste upon its initial generation check here: X

To list additional USEPA waste code(s) and subcategorie(s), use the supplemental sheet provided (CWM-2005-B) and check here:

HOW MUST THE WASTE BE MANAGED? In column 7 above, enter the letter (A, B1, B2, B3, C, ,D or E) below that describes how the waste must be managed to comply with the land disposal regulations (40 CFR 268.7). Please understand that if you enter the letter B1, B2, B3, or D, you are making the appropriate certification as provided below.

A. RESTRICTED WASTE REQUIRES TREATMENT

This waste must be treated to the applicable treatment standards set forth in 40 CFR Part 268 Subpart D, 268.32, or RCRA Section 3004(d).

___ For Hazardous Debris: "This hazardous debris is subject to the alternative treatment standards of 40 CFR Part 268.45."

B.1 RESTRICTED WASTE TREATED TO PERFORMANCE STANDARDS

"I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based upon my inquiry of those individuals immediately responsible for obtaining this information. I believe that the treatment process has been operated and maintained properly so as to comply with the performance levels specified in 40 CFR part 268 Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA Section 3004(d) without impermissible dilution of the prohibited waste. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."

B.2 RESTRICTED WASTES FOR WHICH THE TREATMENT STANDARD IS EXPRESSED AS A SPECIFIED TECHNOLOGY (AND THE WASTE HAS BEEN TREATED BY THAT TECHNOLOGY)

"I certify under penalty of the law that the waste has been treated in accordance with the requirements of 40 CFR 268.42. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."

B.3 GOOD FAITH ANALYTICAL CERTIFICATION FOR INCINERATED ORGANICS

"I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based upon my inquiry of those individuals immediately responsible for obtaining this information, I believe that the nonwastewater organic constituents have been treated by incineration in units operated in accordance with 40 CFR Part 264 Subpart O or Part 265 Subpart O, or by combustion in fuel substitution units operating in accordance with applicable technical requirements, and I have been unable to detect the nonwastewater organic constituents despite having used best good faith efforts to analyze for such constituents. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."

C. RESTRICTED WASTE SUBJECT TO A VARIANCE

This waste is subject to a national capacity variance, a treatability variance, or a case-by-case extension. Enter the effective date of prohibition in column 7 above.

___ For Hazardous Debris: "This hazardous debris is subject to the alternative treatment standards of 40 CFR Part 268.45."

D. RESTRICTED WASTE CAN BE LAND DISPOSED WITHOUT FURTHER TREATMENT

"I have determined that this waste meets all applicable treatment standards set forth in 40 CFR Part 268 Subpart D, and all applicable prohibition levels set forth in Section 268.32 or RCRA Section 3004(d), and therefore, can be land disposed without further treatment. A copy of all applicable treatment standards and specified treatment methods is maintained at the treatment, storage and disposal facility named above." "I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D and all applicable prohibitions set forth on 40 CFR 268.32 or RCRA section 3004(d). I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting false certifications, including the possibility of a fine and imprisonment."

E. WASTE IS NOT CURRENTLY SUBJECT TO PART 268 RESTRICTIONS

This waste is a newly identified waste that is not currently subject to any 40 CFR Part 268 restrictions.

I hereby certify that all information submitted in this and all associated documents is complete and accurate, to the best of my knowledge and information.

Signature _______________ Title CONST ENGR Date 06/07/95

Bill of Lading No. 15

rom: Ogden Remediation Services Co., Inc.
Metro-North Railroad
Harmon Lagoon Remediation
Croton-on-Hudson, New York
Contract No.: M306-01-01.9179

To: Chemical Waste Management, Inc.
Port Arthur, Texas

Quantity	Container/Car #	TX ~~NYS~~ Manifest #	Waste Classification	Loaded Weight
1	94220/TTCX	00780571	RQ, Hazardous Waste Solid, N.O.S., (D007, D008, D003, PCB), 9, NA3077, III	~~21.3 Tons~~
	93264			49,250#

ote: Hazardous Waste Manifest provided.

[signature]
ignature, Shipper
ep., Metro-North Railroad

06/07/91
Date

ROLL-OFF #NTNU 94220

HARMON LAGOON REMEDIATION

SLUDGE SOLIDIFICATION, LOADING, AND TRANSPORT

CHECKLIST OF MAJOR ACTIVITIES

Lining

1. Solidified sludge container inspected for door seals for cleanliness and integrity.
2. Box lid and interior inspected for sharp edges, holes, residue, etc..
3. Interior ladder rungs duct-taped.
4. Approximately 8" wedge of corn cob along bottom tailgate seal.
5. Bottom 10 mil liner installed with long tail draped over lid.
6. Smooth plastic on floor.
7. Sufficient slack on all sides provided.
8. Inspected integrity of bottom liner.
9. Top 10 mil liner installed with long tail over front/loading side of box. ✓
10. Smooth plastic on floor.
11. Sufficient slack on all sides provided.
12. Inspected integrity of top liner.

Inspector's Initials:
Date of Inspection: 6/2/05

Solidification

1. Dewatering completed before sludge excavation.
2. Lay down area designated for sludge drainage.
3. Sludge excavated to existing subgrade. ✓
4. Sludge and corn cob mixture achieved a slump of not greater than 1/2".

Inspector's Initials:
Date of Inspection: 6/2/05

Loading

1. Solidified sludge loaded cautiously and liner remained intact.
2. One (1) inch layer of corn cob placed on top of waste.
3. Long tail of load side (top) liner over waste.
4. Short tail of top liner folded over waste.
5. Both ends of top liner folded.
6. Short tail of load side (bottom) liner folded over waste.

Appendix E
Letter from Metro-North to NYSDEC
Zone A1 Soil Sampling for Waste Profile

Lagoon File

347 Madison Avenue
New York, NY 10017-3739
212 340-3000

Donald N. Nelson
President

Metro-North Railroad

April 19, 1995

Mr. Daniel Evans
Project Manager
Bureau of Construction Services
Div. of Hazardous Waste Remediation
New York State Department of
Environmental Conservation
50 Wolf Road
Albany, New York 12233

Re: Harmon Railroad Yard Wastewater Lagoon
Operable Unit I (OU-I)
Zone A1 Soil Sampling for Waste Profile
M306-01-01 / 9179 / 1.1.7 / Serial #MNE -0004

Dear Mr Evans:

For purposes of assuring the proper disposal of the Zone A1 soil from the Harmon Lagoon, Ogden Remediation Services Co, Inc., (ORSC) composited five (5) grab samples from Zone A1 and analyzed the composite for a determination of total PCBs. The analytical results attached herewith (Attachment A) show a concentration of 63 ppm, which would have required the disposal in a TSCA landfill as opposed to the planned disposal in a RCRA Subtitle D landfill based on the RI/FS sampling.

As only one composite sample was tested, and the analytical result conflicted with the RI/FS result, Metro North felt that the PCB concentration might not be representative of Zone A1. In consultation with ERM, Metro North developed additional sampling locations. THe new sampling plan retained all the five (5) sampling locations which ORSC had used and added five (5) additional locations peppered in intermittant areas, so that a close to real concentration picture emerges for the Zone A1 soil. All ten (10) samples were individually tested. The analytical results are attached herewith (Attachment B), which indicates that PCBs varied from 0.6 to 13.2 ppm. This determines that Zone A1 soil can be disposed in a RCRA Subtitle D landfill as planned.

Based on the analytical results obtained from individual samples taken now and during the RI/FS stage, it appears evident that the composite sample result should not be relied upon in disposing the Zone A1 soil.

Based on the results in Attachment B and the results from the RI/FS stage, Metro North feels that the Zone A1 soil boundaries require revision. The redefined boundaries are shown on Attachment C. This redefining of the boundaries has reduced the Zone A1 soil volume from 320 cubic yards to 212 cubic yards and adds the balance of 108 cubic yards to Zone A2 volume.

We feel comfortable with the revised Zone A1 soil boundaries, and we believe that NYSDEC will concur with this determination.

If you have any questions, please do not hesitate to contact me at (212)340-3951.

Sincerely,

Mmehta

Mukesh L. Mehta P.E.
Project Manager

cc: R.T. Yutko (MNR)
C.K. Bennett (MNR)
K.L. Timko (MNR)
J. McCullough (NYSDEC)
Dr C.Vasudevan (NYSDEC)
T. Lee (NYSDEC)
D. Dunthorn (Hill Int)
J. Diaz (Hill Int)
R. Rivera (ERM)
R. Lorfing (Ogden)

OGDEN

RECEIVED

MAR 2 · 1995

3.5.7.1

ATTACHMENT A.

Letter of Transmittal

TO: Hill International, Inc. HILL INTERNATIONAL
c/o MNR - Bldg. 11
1 Croton Pt. Ave.
Croton-on-Hudson, NY. 10001

DATE 29MAR95	PROJECT NO. M306-01-01.9179
ATTENTION D. Dunthorn	
RE: Metro North Comm. Railroad	
Harmon Lagoon Remediation	
ORSC	

ORSC - 0051

WE ARE SENDING YOU: By Hand

- ☑ Attached ☐ Prints ☐ Under separate cover via ______ the following items:
- ☐ Shop drawings ☐ Change order ☐ Plans ☐ Samples ☐ Specifications
- ☐ Copy of letter ☐ ______

COPIES	DATE	NO.	DESCRIPTION
1	3-29-95		Fascimile from Laboratory Resources, Inc.
			For sample collected on-site @ A1 Soils for
			Testing by Rick Lorfing (ORSC)
			★ Response ASAP ★

THESE ARE TRANSMITTED AS CHECKED BELOW:

- ☐ For approval ☐ Approved as submitted ☐ Resubmit ______ copies for approval
- ☐ For your use ☐ Approved as noted ☐ Submit ______ copies for distribution
- ☐ As requested ☐ Returned for corrections ☐ Return ______ corrected prints
- ☑ For review and comment ☐ ______
- ☐ For Bids Due ______ 19 ____ ☐ Prints Returned After Loan to Us

REMARKS: Don -
(1) Please review/respond ASAP. This sample was collected on-site 3-21-95, @ Zone A-1 (5 random composite of grab samples w/in Zone).
(2) Note the PCB concentration (63 ppm) is in excess of what's acceptable at a RCRA Subtitle D facility (i.e. 49 ppm).
This is in conjunction w/ Section 02220, 1.03, B. → Zone A-1 Soil Profile.

COPY TO: ~~CF13286~~ FFM 306-01-01.9179.
I. Pritchard, ORSC
J. Lawler

SIGNED: Dean D. LaFleur
DEAN D. LAFLEUR

285 Davidson Avenue
Somerset, NJ 08873
908 302 9500

Laboratory Resources, Inc.
100 Hollister Road
Teterboro, New Jersey 07608
Telephone : 201-288-3700
Fax : 201-288-5311

Facsimile Transmittal Information Sheet

Date : 3/25

To : R..K L..[illegible]

Company :

Fax No. : 908-302-5504

From : D[illegible] G[illegible]

Dept. :

Number Of Pages (Including this sheet) : 2

Comments :

Please contact us if you have any problems receiving this fax .

Thank You

A United Water Resources Company (NYSE)

Laboratory Resources Inc

CHAIN OF CUSTODY

LRI QUOTE #

PAGE 1 OF 1

APR-17-1995 11:27 FROM: . Panasonic FAX HILL INTER. 9142714915 P.04

CUSTOMER INFORMATION	
CUSTOMER:	Ogden Remediation Svcs
ADDRESS:	~~3211 Jermantown Rd.~~ 1 Croton Pt. Ave c/o Rigill
	Croton-on-Hudson, N.Y. 10520
TELEPHONE:	914-271-7841
FAX:	914-271-4167

PROJECT INFORMATION	
PROJECT:	Harmon Lagoon Remediation
PROJECT LOCATION:	Croton-on-Hudson STATE: N.Y.
PROJECT MANAGER:	Rick Carting
IN CASE WE HAVE ANY QUESTIONS WHEN SAMPLES ARRIVE WE SHOULD CALL: NAME	Rick Carting
TELEPHONE:	908-202-4500
FAX:	908-202-4504

BILLING INFORMATION	
BILL TO:	Ogden Remediation Svcs.
ADDRESS:	3211 Jermantown Rd.
	Fairfax, Va 22030
ATTENTION:	Purchasing - Regina Woelfle
TELEPHONE:	703-246-0477
PO #:	552-82-123090

LAB ID CODE	SAMPLE IDENTIFICATION	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE: COMPOSITE	SAMPLE TYPE: GRAB	SAMPLE MATRIX	# OF BOTTLES	ANALYSIS: Full TCLP	PCE	Flash								PRESERVATIVES: H2SO4	HCL	HNO3	NAOH	NON-PRES
	A-1 Soil	3/21/95	4:00	X		Soil	4															

TURNAROUND (INDICATE IN CALENDAR DAYS): 7 FAX X HARD COPY ____ DELIV. PKG.

NAME OF LAB PERSONNEL CONFIRMING:

DELIVERABLES / (CIRCLE ONE): DATA DATA/QC RED/DELIV NJ/CLP I NJ/CLP II NJ/REGL NY/ASP CLP OTHER

SAMPLER / AFFILIATION: Rick Carting / Ogden	DATE: 3/21/95
RECEIVED / AFFILIATION:	TIME: 4:00
RELINQUISHED / AFFILIATION:	DATE:
RECEIVED / AFFILIATION:	TIME:
RELINQUISHED / AFFILIATION:	DATE:
RECEIVED / AFFILIATION:	TIME:

☐ RETURN TO CLIENT FOR DISPOSAL ☐ LAB DISPOSAL

KNOWN HAZARD (FLAMMABLE, EXPLOSIVE, TOXIC)

☐ YES ☐ NO (IF YES EXPLAIN UNDER COMMENTS)

LAB USE CONDITIONS OF BOTTLES AND COOLER AT RECEIPT:

☐ COMPLIANT ☐ NOT COMPLIANT (IF NOT EXPLAIN UNDER COMMENTS)

COMMENTS

PCB ANALYSIS DATA SHEET

Client Sample ID No.

IA-1 SOIL

Lab Name: LRI

Lab Sample ID: T503343-01

Matrix: (soil/water) SOIL

Lab File ID: >03117

Sample wt/vol: 30.00 (g/ml) G

Extract VoL.: 10000 uL

Run Type: 8080PBA

Date Received: 03/23/95

%Moisture: 47.0

Date Extracted: 03/23/95

Dilution Factor: 100

Date Analyzed: 03/27/95

GC Column: RTX1701 ID: 0.53

pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q
12674-11-2	Aroclor 1016	3100	U
11104-28-2	Aroclor 1221	3100	U
11141-16-5	Aroclor 1232	3100	U
53469-21-9	Aroclor 1242	3100	U
12672-29-6	Aroclor 1248	~~3100~~	~~U~~
11097-69-1	Aroclor 1254	63000	
11096-82-5	Aroclor 1260	~~3100~~	~~U~~

SADF: 62.9

MUKESH
Recd 4/17/95

YORK

ANALYTICAL LABORATORIES, INC.

ONE RESEARCH DRIVE STAMFORD, CT 06906
142 TEMPLE STREET NEW HAVEN, CT 06510

THIS FACSIMILE WAS SENT FROM: [X] Stamford, CT LAB 203-325-1371 FAX 203-357-0166 [ ] New Haven, CT LAB 203-865-8053 FAX 203-562-3986 [ ] Waterbury, CT Sales Office 203-759-0133 FAX 203-757-3591

Fax Transmittal Cover Sheet

ATTACHMENT B.

This transmittal is being sent to:

Name	Karen Tinko
Company	Metro North
Fax Number	212-697-9079

This transmittal is being sent from:

Name	Phil Murphy
Date & Time	4-13-95/2:55
Reference	

This transmittal is 4 page(s), including this cover sheet

If problems with this transmission contact: [X] Stamford [ ] New Haven [ ] Waterbury

YORK
ANALYTICAL LABORATORIES, INC.
ONE RESEARCH DRIVE STAMFORD, CT 06906
(203) 325-1371 FAX (203) 357-0166

Technical Report

prepared for

Ms. Karen Timko
Metro North Commuter Railroad
347 Madison Avenue
19th Floor
New York, New York 10017

Project No. 95475R
April 13, 1995

SALES OFFICE
835 SOUTH MAIN STREET-SUITE NO. 6 WATERBURY, CT 06706 (203) 759-0133 FAX (203) 757-3591

Project No. 95475R
April 13, 1995
Metro North Commuter Railroad
347 Madison Avenue
19th Floor
New York, NY NY 10017
Attention: Ms. Karen Timko

Purpose and Results

Ten soil samples were sampled by AET personnel (Project # 5475) from Metro North and submitted to York Analytical Laboratories on April 4, 1995 for determination of Total PCBs. A copy of the chain-of-custody is attached.

The samples were analyzed according to the appropriate EPA SW-846 Methods.

The results of the analyses are detailed in Table 1.0. Arochlor, 1260 was the only variety of PCB found.

Table 1.0 - PCB Data

Sample Identification	Unit	PCB 1260
Boring #1	mg/Kg	7.0
Boring #2	mg/Kg	7.3
Boring #3	mg/Kg	1.6
Boring #4	mg/Kg	2.7
Boring #5	mg/Kg	8.1
Boring #6	mg/Kg	13.2
Boring #7	mg/Kg	10.8
Boring #8	mg/Kg	0.6
Boring #9	mg/Kg	2.7
Boring #10	mg/Kg	3.7

AET®
American Environmental Technologies Inc

Chain of Custody

ONE TERMINAL WAY, P.O. BOX 853
NORWICH, CT 06360
(203) 887-1932 ◇ FAX (203) 887-1933

11 GOLDSTEIN PLACE
NORWALK, CT 06855
(203) 855-8917

2666 STATE STREET
HAMDEN, CT 06517
(203) 281-2867 ◇ FAX (203) 281-2869

3 TROWBRIDGE DRIVE
BETHEL, CT 06801
(203) 744-3477 ◇ FAX (203) 744-0535

1139
C.O.C. #

Customer Name and Address: Metro North

soil water liquid air comp

Project # 5684

Sampler JE Brundage

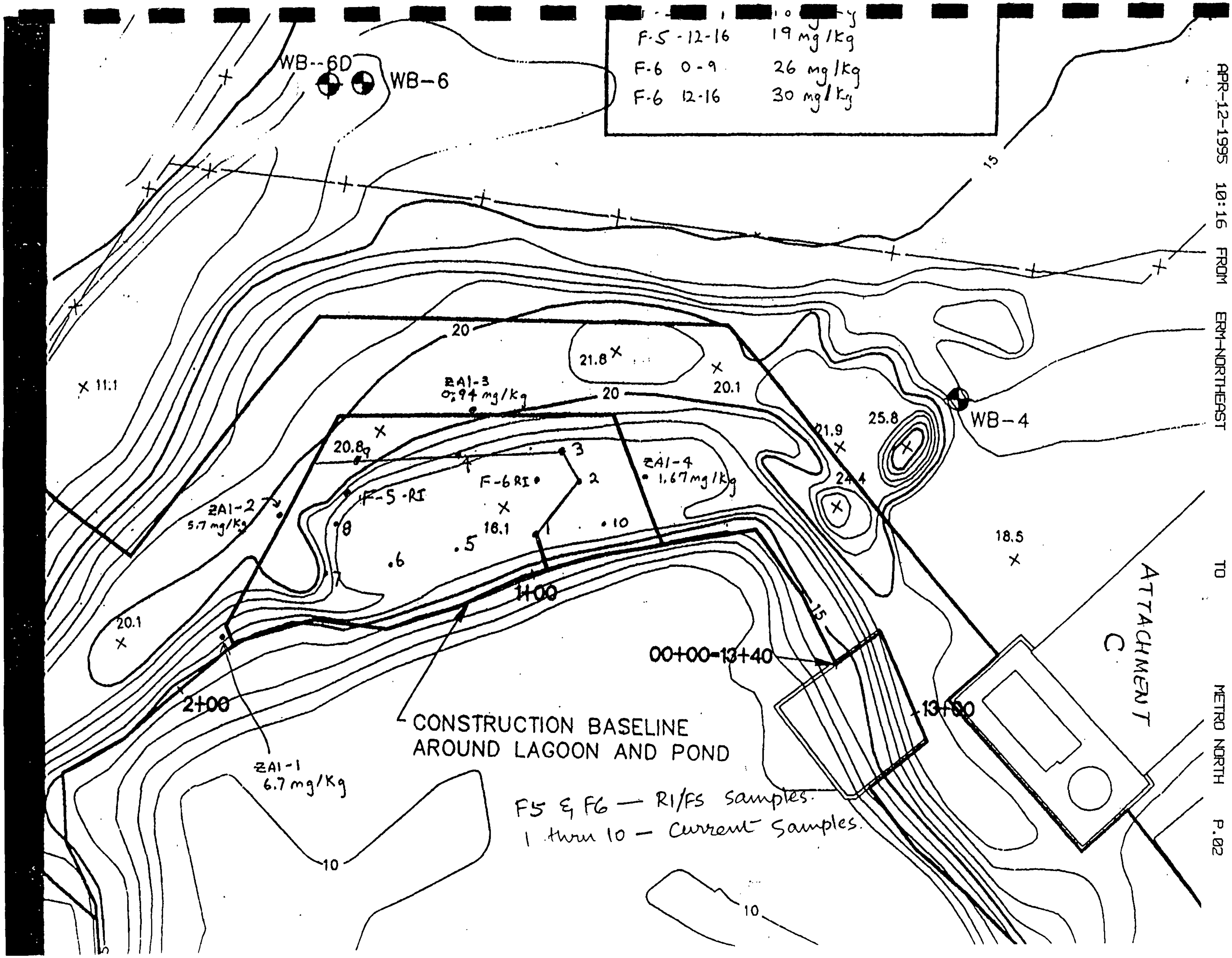
Signature [signature]

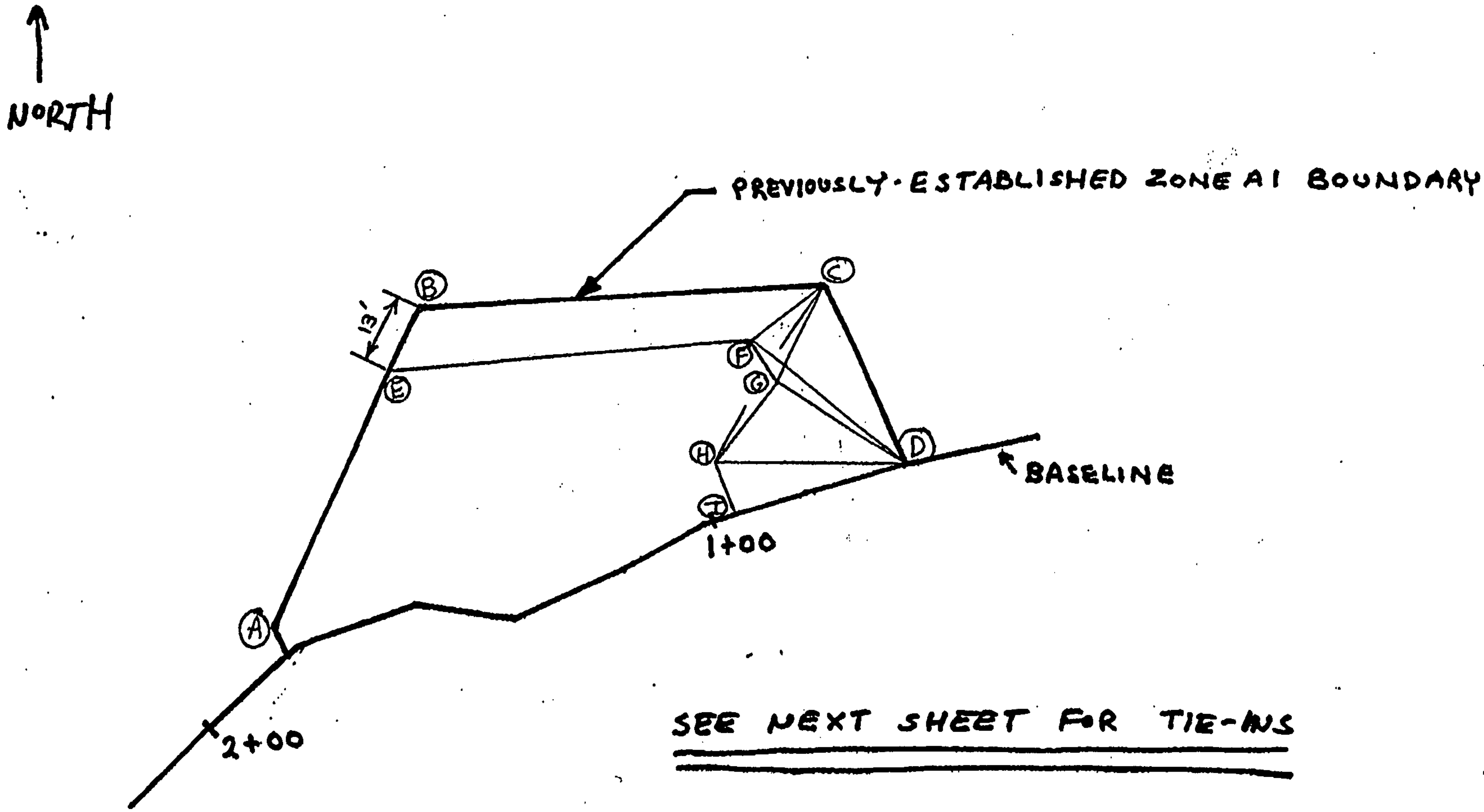
Sample #	Sample Location	Date of Collection	Sample Type	Analysis Requested	Preservative	Comments
-1	Boring # 1	4-4-95	1 Qt Glass	PCB	—	—
-2	2					
-3	3					
-4	4					
-5	5					
-6	6					
-7	7					
-8	8					
-9	9					
-10	10					

Relinquished By JE Brundage Signature [signature]	DATE 4-4-95	TIME 1315 hrs	Recieved By D. Ott Signature D Ott	DATE 4-4-95	TIME 1445
Relinquished By RE Rhoda Signature [signature]	DATE 4-4-95	TIME 1445	Recieved By Signature	DATE	TIME

SPECIAL INSTRUCTIONS

RUSH BY:


F-5 12-16 19 mg/Kg
F-6 0-9 26 mg/Kg
F-6 12-16 30 mg/Kg
WB-6D
WB-6
WB-4
15
20
21.8
20.1
11.1
ZA1-3
0.94 mg/Kg
20.8
ZA1-2
5.7 mg/Kg
F-5-RI
F-6 RI
ZA1-4
1.67 mg/Kg
21.9
25.8
24.4
18.5
18.1
1 2 3 .5 .6 7 8 .10
1+00
2+00
00+00-13+40
13+00
ZA1-1
6.7 mg/Kg
CONSTRUCTION BASELINE
AROUND LAGOON AND POND
F5 & F6 — RI/FS samples.
1 thru 10 — Current Samples.
10
ATTACHMENT C



SEE NEXT SHEET FOR TIE-INS

Proposed Layout of Zone A1 revised boundary

CORNER	TIE-INS
E	ON A LINE between A and B, CORNER E is 13' from B
F	17' FROM CORNER C AND 35' from CORNER D
G	19.5' from CORNER C AND 22' from CORNER D
H	37' from CORNER C AND 34' from CORNER D
I	PERPENDICULAR TO BASELINE, WILL MEET BASELINE AT STATION 0+96 ALSO, 43' from CORNER C, AND 31.5' from CORNER D

Appendix F
Summary Report on the Disposition of Project Generated Waste, May 1996,
prepared by Hill International

HILL

Metro North Raiload
HARMON LAGOON REMEDIATION

SUMMARY REPORT ON THE DISPOSITION OF PROJECT GENERATED WASTE

May 8, 1996

Hill International, Inc.
One Levitt Parkway
Willingboro, NJ 08046

HARMON LAGOON REMEDIATION

Summary Report of the Disposition of Project Generated Waste

BACKGROUND

The Harmon Lagoon was a wastewater storage facility component of the Old Wastewater Treatment Plant located at Metro-North's Croton Harmon railroad maintenance and repair facility. In 1980, the lagoon was found to be contaminated with polychlorinated biphenyl's (PCBs).

The method of remediation was set forth by the New York State Department of Environmental Conservation (NYSDEC) in its Record of Decision (ROD) in September 1992. The remedial actions included the following:

- Removal and off-site treatment of the PCB-containing sludge;
- Removal and on-site treatment of standing water in the lagoon;
- Excavation of contaminated soil and on-site and off-site disposal depending on the concentrations;.
- Installation of 4 groundwater recovery wells;
- Installation of 41 air sparging wells; and
- Installation of 10 piezometer wells.

During the remediation of the Harmon Lagoon the following waste streams (grouped by classification) were generated:

- Toxic Substance Control Act (TSCA) Waste;

  - PCB Contaminated Sludge
  - Sludge Contaminated Soil
  - Lagoon Surface Water Storage Tank Residuals
  - Contaminated Wastewater Treatment Plant Components
  - Contaminated Demolition Debris

- Resource Conservation and Recovery Act (RCRA) Waste;

  Hazardous
  - Recovered Petroleum (from UST at Old Sludge Drying Beds)
  - Sludge Bed Leachate

  Non-Hazardous
  - PCB Contaminated Soils (A1 and A2)
  - Clearing and Grubbing Debris
  - Spent Personal Protective Gear
  - Spent Activated Carbon
  - Well Development Water
  - Equipment Decontamination Wash Water
  - Water from Carbon Media Removal

- Lagoon Surface Water; and

- Miscellaneous Construction Debris

This report accounts for the disposition of the foregoing waste streams and verifies the existence of proof of disposal documentation. The sources of the disposal documentation have been provided for each waste stream.

ACCOUNT OF WASTE DISPOSAL

An account of the disposition of the above-listed waste streams follows.

PCB Contaminated Sludge

9259 tons of solidified sludge were loaded in 454 lined, 25 cubic yard containers by Ogden Remediation Services Corporation (ORSC) and transported via rail (Conrail et al.) to Chemical Waste Management (CWM) facilities in Texas during the period May 1995 to November 1995.

Manifests and Certificates of Destruction for 454 roll-offs of solidified sludge can be found in Project Files #M306-01-01/9179-3.5.10-0005 to 0298, 0300 to 0311, 0313 to 0399, and 0415 to 0493.

Sludge Contaminated Soil

Approximately 3 cubic yards of soil contaminated by leaking roll-offs in the period preceding June 23, 1995 was excavated and mixed with the solidified sludge by ORSC.

Lagoon Surface Water Storage Tank Residual

Approximately 5,000 gallons of residuals from the lagoon surface water primary storage tank were disposed of as a PCB contaminated waste by MNR. The waste was collected and transported by AET on October 13, 1995 by vacuum tanker overland to CWM facilities in Texas. This consisted of sediment laden lagoon surface water that could not be treated using the on-site wastewater treatment units.

The manifest and the certificate of destruction are in the custody of MNR's Environmental and Safety Department in North White Plains.

Contaminated Wastewater Treatment Plant Components

The spent bag filters and plumbing fixtures classified as PCB contaminated waste were placed in two 55-gallon drums (estimated at 880 lbs) by ORSC and were transported on December 7, 1995 to CWM Chemical Services, Inc., Model City, NY.

The manifest and certificate of disposal are in the custody of MNR's Environmental and Safety Department at North White Plains.

Demolition Debris

535 cubic yards of demolition debris from the former MNR wastewater treatment plant facilities which were in contact with sludge and all expendables associated with processing the sludge were loaded to rail containers by ORSC and transported on 5/9/95 and 11/8/95 to an Envirosafe Services of Idaho, Inc. (ESII) facility in Idaho.

Manifests and Certificates of Disposal for the shipments can be found in Project Files M306-01-01/9179-3.5.10-0001 to 0004, 0299, 0312, 0494 to 0499 and M306-01-01/9179-3.5.7.2.

Recovered Petroleum

A mixture of water and petroleum[1] recovered from two wells, WB-5D and WB-9, on the lagoon site were removed on April 7, 1995 and disposed of by American Environmental Technologies (AET) for Metro-North Railroad (MNR).

The manifest and certificate of destruction for this mixture are in the custody of MNR's Environmental and Safety Department at North White Plains.

Sludge Bed Leachate

Leachate[2] stored in an underground storage tank in the former sludge drying beds on the lagoon site was removed on April 24, 1995 and disposed of by AET.

The manifest and certificate of destruction of this leachate are in the custody of MNR's Environmental and Safety Department.

PCB Contaminated Soils (A1 and A2)

Soil having PCB concentrations less than 50 mg/kg but more than 10 mg/kg was designated Zone A1 while soil having PCB concentrations less than 10 mg/kg but more than 0.5 mg/kg was designated Zone A2.

318 tons (212 cubic yards) of A1 soil was excavated, loaded along with 232 tons of clearing and grubbing debris in 15 lined trucks by ORSC and transported on September 15, October 26 and 27, 1995 to BFI's Niagara Recycling Inc. in Niagara, NY.

Manifests and certificates of disposal can be found in Project Files M306-01-01/9179-3.5.10-0400 to 0414, 0500 to 0505 and M306-01-01/9179-3.5.7.1.

2,440 cubic yards of A2 soil was excavated and placed in the containment cell within the lagoon.

Clearing and Grubbing Debris

232 tons of clearing and grubbing debris from areas underlain by PCB contaminated soils were included with the A1 soils by ORSC and transported to a Browning Ferris Industries (BFI) facility in Niagara, NY.

---

[1] Actual quantity to be obtained from MNR Safety Dept.
[2] Actual quantity to be obtained from MNR Safety Dept.

Manifests and Certificates of Disposal for the shipments can be found in Project Files M306-01-01/9179-3.5.10-0400 to 0414, 0500 to 0505 and M306-01-01/9179-3.5.7.1.

Clearing and grubbing debris from "clean" areas were disposed along with miscellaneous construction debris by ORSC through Suburban Carting Corp. (SCC) of Mamaroneck, NY.

Spent Activated Carbon

Approximately 6,000 lbs. of activated carbon used in the treatment of the lagoon surface water were removed from their vessels and loaded by ORSC into a roll-off provided by MNR. The spent activated carbon was transported on November 29, 1995 to Model City Landfill, Inc., Model City, NY for disposal.

The manifest and certificate of disposal are in the custody of MNR's Environmental and Safety Department at North White Plains.

Spent Personal Protective Gear

Spent personal protective gear comprising mainly of tyvek suits, respirator cartridges, gloves, and overboots were disposed of at a TSCA facility if they were used during sludge handling. Those in contact with PCB contaminated soil were disposed of at a RCRA facility. This gear was combined with similar waste stream for disposal, and manifested accordingly.

Well Development Water

Approximately 200 gallons of well development water generated from the 42 air sparging, 10 piezometer, and 4 ground water recovery wells over the period were disposed of into the wet well of the MNR Wastewater Treatment Plant on March 26, 1996.

The well development water was sampled by AET for MNR on March 6, 1996 and analyzed by York Analytical. The results indicated that PCBs were not detected. A copy of the analytical report can obtained from MNR's Environmental and Safety Department at North White Plains.

Reclaimed Waters from Carbon Media Removal And Equipment Decontamination

Approximately 400 gallons of water was generated during the flushing of the spent activated carbon from their vessels which were part of the temporary wastewater treatment plant. Approximately 100 gallons of wash water was generated from the decontamination of construction equipment and the temporary wastewater treatment plant. Both of the foregoing batches of reclaimed water were consolidated during storage. They were disposed of into the wet well of the MNR Wastewater Treatment Plant on March 26, 1996.

The consolidated reclaimed waters were sampled by AET for MNR on 03/06/96 and analyzed by York Analytical. The results indicated that PCBs were not detected. A copy of the analytical report can be obtained from MNR's Environmental and Safety Department at North White Plains.

Lagoon Surface Water

127,400 gallons of lagoon surface water were treated in seven batches on site during the period June 1995 to October 1995 by ORSC using a TIGG-supplied plant consisting of Rosedale bag filters and two activated charcoal adsorption unit, and one metals removal unit. After SPDES compliance testing, the treated water was disposed of via MNR outfall. The analytical report for each batch can be found in Project File #306-01-01/1979-3.5.9.1.

Miscellaneous Construction Debris

From March 1995 through March 1996 520 cubic yards of assorted construction debris including clearing and grubbing material from "clean" areas were disposed of by ORSC through SCC. Disposal of another 30 cubic yards is anticipated through the end of the project.

smw/rpts-jad/audit2

Appendix G
Change Order Correspondence

CONTRACT [redacted] DEPARTMENT

COMMITMENT DOCUMENT CHECKLIST

CONTRACT/PURCHASE ORDER NO. 9179

CONTRACT/PURCHASE ORDER AMT. $3,971,129.00

CHANGE ORDER NO.(IF APPLICABLE) No. 001

CONTRACTOR/VENDOR Ogden Remediation Services Co. Inc.

DESCRIPTION Harmon Yard Lagoon Remediation

REQUESTING DEPARTMENT Capital Eng. FUNDING SOURCE NY State

PROJECT MANAGER M. Mehta CRP PROCUREMENT MANAGER J. Buckley

*AMOUNT OF ORIGINAL CONTRACT $3,971,129.00

*AMOUNT OF PREVIOUS CHANGES $ 0

*TOTAL PRIOR COMMITMENT $3,971,129.00

*AMOUNT OF THIS CHANGE $1,425,014.50

ATTACHMENTS: (X)

1. COMMITMENT DOCUMENT(CONTRACT/CHANGE ORDER/ (SUPPLEMENTAL AGREEMENT/APPROVAL OF PURCHASE) X
2. FTA APPROVAL MEMORANDUM (IF APPLICABLE) N/A
3. JUSTIFICATION DOCUMENT(CONTRACT FILE MEMO/BID TABULATION, PRICE/COST ANALYSIS, ETC.) X
4. PROJECT MANAGER MEMO (IF APPLICABLE) X
5. CONTRACTOR'S LETTER (IF APPLICABLE) X
6. CENTRAK PRINT-OUT (IF APPLICABLE) X
7. REQUISITION (IF APPLICABLE) X
8. INSURANCE (IF APPLICABLE) N/A
9. BOARD APPROVAL/RATIFICATION REC'D. X N/A

CHECKLIST FILE REVIEWED AND APPROVED:

CKB

DIRECTOR (REQUESTING DEPARTMENT)

VICE PRESIDENT (REQUESTING DEPARTMENT)

*This information must be shown if this commitment represents a Change Order or Supplemental Agreement.

347 Madison Avenue
New York, NY 10017-3739
212 340-3000

Donald N. Nelson
President

Metro-North Railroad

Ogden Remediation Services Co., Inc.
c/o Ogden Corporation
Two Pennsylvania Plaza
25th Floor
New York, New York 10121

Attention: Jerry Effinger, Assistant Secretary

Reference: Contract No. 9179
Harmon Yard Lagoon Remediation
Change Order No. 1

Gentlemen:

Pursuant to Article 3.02 (Variable Quantities Clause) of the above specified contract, Contractor agrees to provide the following additional labor, materials and equipment to accomplish the following work:

COR 31: Increase in Unit Quantities:

Payment Item #	Item Description	Units	Bid Unit Quantity (A)	Quantity at Comp. (B)	Quantity Difference (B-A)	Unit Price $	Amount Extension
02205.B	Excavate/Solidify	Ton	4,620	9,338	4,718	56.50	266,567.00
02205.C	Bulk Loading in Roll-off's	Ton	4,620	9,338	4,718	4.25	20,051.50
02850.C	Roll Off Leasing	Each	200	454	254	2,030.00	515,620.00
02850.D	Roll Off Transport to CWM-Texas	Ton	4,620	9,338	4,718	132.00	622,776.00

At the agreed price of $1,425,014.50

Metro-North accepted Ogden's reservation to have a right to negotiate and also gave Ogden notices of its reserving the right to negotiate.

Ogden Remediation Services Co., Inc. requested payment for the excess quantities (as shown above) on November 3, 1995.

Our review of this proposal (performed by Contracts, Capital Engineering and Metro-North's Inspection Consultant, Hill International, Inc.) found these unit prices for those items cited hereinabove to be fair and reasonable for the level of effort required to perform this work. As, such, we accepted the continued unit prices for the unit quantities exceeding those cited in the original agreement at the October 20, 1995 Change Order Meeting.

As these are project hard costs associated with the increased quantities of the sludge, 75% of the added costs are NYSDEC-EQBA reimbursable to Metro-North, after the Change Orders are executed with Ogden and amendments made to the State Assistance Contract.

As the Contract is near completion and a majority of the costs have already been expended, there are no changes in the Bonding Requirements.

The following Supporting Documentation is attached for a further review and understanding of this Change Order:

- Change Order No. 001
- Revised War certificate
- Board Submittal and Approval (October 1995)
- Metro-North Project Management Memorandums dated November 2 and 6, 1995
- Hill International, Inc.'s Recommendation Letter dated November 10, 1995
- Ogden Remediation Services Co. Inc.'s Letters dated October 2, 1995, November 1 and 3, 1995
- Purchase Requisition C240537

In accordance with the foregoing, approval of the subject Change Order No. 001 in the amount of $1,425,014.50 is recommended.

57982

Memorandum

Metro-North Railroad

Date November 10, 1995

To File 9179

From J. Buckley

Re Contract 9179
Harmon Yard Lagoon Remediation
Change Order No. 001

The purpose of the subject Change Order is to compensate the Contractor, Ogden Remediation Services Co., Inc. in the amount of $1,425,014.50 for the following increase in Contract Unit Quantities.

COR 031- Increase of Contract Unit Quantities for Excavation and Solidification Operations

Contract Item	Description	Units	Unit Price	Contract Extension
02205.B	Excavate/ Solidify Sludge	4,718 tons	56.50/ton	$266,567.00
02205.C	Bulk Loading in Roll-offs	4,718 tons	4.25/ton	$20,051.50
02850.C	Roll-off Leasing	254	2,030.00	$515,620.00
02850.D	Roll-off Trans-port to CWM-Texas	4,718 tons	132.00/ton	$622,776.00

On November 2, 1995 Metro-North Capital Department gave notice to the Contracts Department that the project unit quantities exceeded the contractual unit quantities for sludge excavation and solidification, loading into roll-offs, roll-off leasing and transportation of the roll-offs to Chemical Waste Management (Texas).

Ogden Remediation Services Co., Inc. has given Metro-North notice in letters dated October 2, 1995 and November 3, 1995 of the excess in quantities. Ogden's November 3, 1995 letter outlined an acceptance of the unit prices as illustrated in the original contract, reserving the right to negotiate these unit prices at a later date.

Pursuant to Chapter 4 - Changes to the Contract of the above-specified Contract, Metro-North will pay, and the Contractor will accept, as full payment, the sum of $1,425,014.50 for the additional labor, material, equipment and work provided for in this Change Order.

This Change Order includes all costs associated with this additional work including, but not limited to; direct and indirect costs, such as labor, material, escalations, extended home office overhead, field office overhead and loss of productivity and all other impact costs.

The remaining terms and conditions of this Contract, as amended remain the same.

If you are agreeable to the foregoing, please sign and return the enclosed copy of this letter, retaining the original for your records, whereupon we will regard the Contract as having been amended to the extent herein set forth.

Sincerely,

METRO-NORTH COMMUTER RAILROAD COMPANY

____

ACCEPTED:

OGDEN REMEDIATION SERVICES CO., INC.

BY: __________________________

57981

347 Madison Avenue
New York, NY 10017-3739
212 340-3000

Donald N. Nelson
President

Metro-North Railroad

Ogden Remediation Services Co., Inc.
3211 Jermantown Road
P.O. Box 10130
Fairfax, VA 22030

March 22, 1996

Attn: Mr. Thomas Pugh, Vice President

RE: **Contract No. 9179**
Harmon Yard Lagoon Remediation
Change Order No. 002

Gentlemen:

Pursuant to Chapter 4, Changes to the Contract, of the above specified Contract, Ogden Remediation Services Company, Inc. agrees to amend Contract 9179 to reflect the following modifications to the above-captioned Contract:

Change Order No. 002

- Extend the Contract Completion Date through May 3, 1996

Pursuant to Chapter 4, Changes to the Contract of the above specified Contract, Metro-North will amend the Contract completion date to be May 3, 1996, and Ogden Remediation Services Company, Inc. will accept such amendment at no cost to Metro-North.

The remaining terms and conditions of this Contract, as amended, remain the same.

Contract 9179
Page Two
Change Order No. 002

If you are agreeable to the foregoing, please sign the two (2) originals, retaining one original for your records while returning the other to Metro-North, whereupon we will regard the Contract as having been amended to the extent herein set forth.

Sincerely,

METRO-NORTH COMMUTER RAILROAD COMPANY

By: ______________________

APPROVED
AS TO FORM RLG

ACCEPTED:

OGDEN REMEDIATION SERVICES CO., INC.

*~~By:~~ ______________________

*EXECUTED PURSUANT TO ORSC'S COVER LETTER, DATED MARCH 28, 1996 ORSC-0197

42284

Memorandum

Chris
Pl return files
[illegible]

Metro-North Railroad

Date May 3, 1996

To J.V.Buckley

From M.L.Mehta MLM

Re Harmon Lagoon Remediation - On-Site work
Ogden Remediation Services Co. - Change Order #3
Document #M306-01-01/9179/1.1.11/Serial MNE-0053

Based on discussions with Ogden at the negotiations of March 5, 1996 and Hill International's subsequent documentation of the specific Change Order Requests (COR), the following represents the Capital Engineering Department's comments on those items:

COR #4 - This COR is for "Mechanical Department Inspection Delays" from 6/1/95 to 6/6/95. The amount agreed upon by all parties for this request is $ 10,710 and should be included in the next change order with no additional time.

COR #6 - This COR was established for the additional roll-off rental costs incurred by ORSC due to holding times at CWM exceeding 28 days. The final recommended amount and as agreeded by all parties for this COR was $ 115,820 and should be included in the next change order with no additional time.

COR #14 - This COR was established for the treatment of the lagoon surface water which was not a part of the ORSC's basic scope of the construction bid. A water treatment system was procured to treat the PCB contaminated lagoon surface water, so that the treated water satisfied the State Pollutant Discharge Elimination System (SPDES) permit for Harmon Yard and it be dischared through the outfall to the river.

The final recommended amount for this request was $ 32,272 for startup, operation and demobilization for return to vendor, and $ 24,840 for system rental. The system rental amount has been accounted for in the existing line item for treatment of Lagoon surface water. So the amount of $ 32,272 should be included in the next change order with no additional time.

COR #30 - This COR was established as an additional compensation for pumping water from lagoon to pond for interim storage to continue sludge solidification in the lagoon, rehandling of surface water from interim storage in pond, reduced quantity of the water treated compared to the base bid and extended time of treatment. The agreed upon amount for this request is $ 59,712 which is fair and reasonable cost for the work and should be included in the next change order with no additional time.

COR #38 - This COR was established for the work done by ORSC to install the storm water piping at a grade deeper than as shown on the design drawings, because several unidentified pipes and utility conduits were encountered at the design grade. The additional work associated with lowering the grade was recommended at $ 1,903 which is fair and reasonable. This should be included in the next change order with no additional time.

COR #39 - ORSC incurred rental costs for the rolloffs due to "Restricted Acceptance Rate at CWMI" as the movement from railhead to the plant was delayed when CWM plant was shut down for regular maintenance. This COR request was agreed upon at $ 28,426 with no additional time. Though this amount is recommended for payment to ORSC, CWM was made aware of this situation and payment. A credit for the full amount was obtained from CWM and is reflected in the Final Budget Recap executed with CWM under Contract 9180.

COR #41 - ORSC's intended substantial completion date as per the approved CPM was November 22, 1995. As the sludge quantity was exceeded by 4639 tons, a delay was encountered and contract completion was extended by 45 calender days to May 3, 1996. Due to substantial differing site conditions, the extended overhead for their Temporary facilities and Miscellaneous Conditions were projected to the end of May 1996. After the last rolloffs of sludge were shipped out on 10/4/95, ORSC implemented job acceleration to complete installation of the cap cover material before winter at a cost of $30,000. ORSC had requested compensation for overhead & field supervision and acceleration costs in the amount of $175,000. This amount was negotiated down to $94,680. The allocation is $30,000 for acceleration and $ 64,680 for schedule extension. This is a fair and reasonable cost and should be included in the next change order.

COR #42 - To solve the liner leakage problem encountered in June 1995, the revised lining procedure for the rolloffs along with "band-aid" measures were developed based on the conversations with ERM. In our letter MNE-0017 dated July 6, 1995 to ORSC, Metro-North had agreed at the time of issuance of the revised loading procedure to pay for the cost of "band-aid" measures to avoid an extended work stoppage and continue the job progress.

The cost associated with this item was approximately $ 243,000. The cost associated with the increased cost of transportation for the quantity over and above the original 230 containers covered by the unit prices was $176,000.

In addition to these hard costs, Ogden was also seeking damages for other costs associated with the failure of the liners in the amount of $365,000. In order to close out all issues associated with this claim, it has been proposed that this cost would be split between Metro-North and Ogden. Under the proposed settlement Metro-North would pay a lump sum total of $600,000 ($243,000 + $176,000 + $183,000 =$602,000 rounded to $600,000)

The **Attachment #1** is the **"Final Budget - Contract Unit Price Line Items"** which account for all the the changes to all the unit line item quantities for overruns and underruns. **Attachment #2** is the complete **"Change Order Log"** including the unit price change order amounts for overruns.

The **final budget** for the contract is as follows:

From Attachment #1 :	$ 5,416,069	
From Attachment #2 :	$ 942,933	(L/S part of the Final Negotiated C.O. amounts)
	$ 6,359,002	

A change order needs to be executed for an amount of **$ 962,858.50** which includes all the outstanding COR's negotiated for this project. The finalised C.O. log will be used to update MNR's amendment to State Assistance Contract (SAC) for NYSDEC-EQBA funding.

The recommendations for COR #1, #16, #17, #19, #20, #22 and #28 for a sum total of $ 64,090.00 were forwarded to you from C.K. Bennett of this department on 2/5/96 along with Hill International's documentation. Included in the same letter was the denial of COR #2 and the COR #21 for $ 15,600.00 was to be addressed for adjustment of the unit quantities only, which is done in Attachment #1.

A copy of the requisition # C244831 for $ 962,859 is attached for herewith as the original is in circulation for appropriate signatures.

If you have any questions, do not hesitate to call me at x4415.

cc: W.M. Aston/ R.T. Yutko/ C.K. Bennett/ J.J. Dragan/ D. Daks/ K.L. Timko/ R. Gans /R. Acquavella/ W. Apostolico/ C.Hansen/ J. Diaz/ D. Dunthorn/ File

Hill International, Inc.
Harmon Lagoon

5/1/96

MNR - HARMON LAGOON REMEDIATION
PROJECT No: M306-01-01, CONTRACT No: 9179

FINAL BUDGET - CONTRACT UNIT PRICE LINE ITEMS

				Base Budget		Current Budget		Final Budget		Base Variance		Current Variance	
Number	Description	Units	Unit Price	Quantity	Price	Quantity	Price	Quantity	Price	Price	%	Price	%
01000.A	Site Preparation	L/S	146,000.00	1	146,000	1	146,000	1	146,000	0	0	0	0
01000.B	Misc. Requirements	MO	12,880.00	14	180,320	14	180,320	15	193,200	12,880	7	12,880	7
01500.A	Temp Facilities & Util.	MO	25,900.00	13	336,700	13	336,700	15	388,500	51,800	15	51,800	15
01517.A	H&S Plan D2 Upgrade	C/D	132.00	165	21,780	165	21,780	49.5	6,534	-15,246	-70	-15,246	-70
01517.B	H&S Plan C Upgrade	C/D	180.00	60	10,800	60	10,800	179	32,265	21,465	199	21,465	199
01517.C	H&S Plan B Upgrade	C/D	960.00	5	4,800	5	4,800	0	0	-4,800	-100	-4,800	-100
01715.A	Decon Plan & Execute	MO	4,235.00	13	55,055	13	55,055	13	55,055	0	0	0	0
02050.A	Demo Existing Structs	Cu. Yd.	126.70	100	12,670	100	12,670	100	12,670	0	0	0	0
02200.A	Excavate A1 Soil	Cu. Yd.	14.10	320	4,512	320	4,512	212	2,989	-1,523	-34	-1,523	-34
02200.B	Exc. & Place A2 Soil	Cu. Yd.	10.20	2020	20,604	2020	20,604	2440	24,888	4,284	21	4,284	21
02205.A	Pump & Store Water	Gal	0.14	500000	70,000	500000	70,000	127400	42,676	-27,324	-39	-27,324	-39
02205.B	Exc. & Solidify Sludge	Ton	56.50	4620	261,030	9338	527,597	9259	523,134	262,104	100	-4,464	-1
02205.C	Bulk in Roll-Offs	Ton	4.25	4620	19,635	9338	39,687	9259	39,351	19,716	100	-336	-1
02210.A	F&I Sheet Piling	Sq. Ft.	12.00	37625	451,500	37625	451,500	38112	457,344	5,844	1	5,844	1
02210.B	Inst. Air Sparg. Wells	Lin. Ft.	65.60	796	52,185	796	52,185	665	43,591	-8,594	-16	-8,594	-16
02210.C	Air Sparging Piping	Lin. Ft.	15.30	2610	39,933	2610	39,933	2496	38,189	-1,744	-4	-1,744	-4
02210.D	Recovery Wells	Lin. Ft.	94.90	111	10,486	111	10,486	111	10,486	0	0	0	0
02210.E	Recovery Conduits	Lin. Ft.	7.00	2176	15,232	2176	15,232	1972	13,804	-1,428	-9	-1,428	-9
02210.F	Piezometer Wells	Lin. Ft.	64.00	236	15,104	236	15,104	235	15,021	-83	-1	-83	-1
02210.G	Vent Piping & Screens	Lin. Ft.	9.00	1900	17,100	1900	17,100	1822	16,398	-702	-4	-702	-4
02210.H	Storm Sewer Piping	Lin. Ft.	26.50	420	11,130	420	11,130	420	11,130	0	0	0	0
02220.A	Dispose Structs & Debris	Cu. Yd.	173.00	400	69,200	400	69,200	535	92,510	23,310	34	23,310	34
02220.B	Dispose A1 Soil	Ton	89.00	480	42,720	480	42,720	550	48,987	6,267	15	6,267	15
02225.A	Bank Run Gravel	Cu. Yd.	17.25	15200	262,200	15200	262,200	17379	299,788	37,588	14	37,588	14
02225.B	Pea Gravel	Cu. Yd.	15.40	4600	70,840	4600	70,840	4599	70,825	-15	0	-15	0
02225.C	CAP Cover Mat'l	Cu. Yd.	19.38	7260	156,090	7260	156,090	7312	141,670	-14,420	-9	-14,420	-9

Hill International, Inc.
Harmon Lagoon

5/1/96

MNR - HARMON LAGOON REMEDIATION
PROJECT No: M306-01-01, CONTRACT No: 9179

FINAL BUDGET - CONTRACT UNIT PRICE LINE ITEMS

				Base Budget		Current Budget		Final Budget		Base Variance		Current Variance	
Number	Description	Units	Unit Price	Quantity	Price	Quantity	Price	Quantity	Price	Price	%	Price	%
02225.D	Riprap	Cu. Yd.	131.00	46	6,026	46	6,026	46	6,026	0	0	0	0
02277.A	Geomembrane Liner	Sq. Ft.	1.00	62000	62,000	62000	62,000	62952	62,952	952	2	952	2
02277.B	Geomembrane Cap	Sq. Ft.	1.70	68600	116,620	68600	116,620	68600	116,620	0	0	0	0
02444.A	Fencing	Lin. Ft.	19.65	2300	45,195	2300	45,195	2459	48,319	3,124	7	3,124	7
02480.A	Topsoil & Seeding	Sq. Ft.	0.42	61000	25,620	61000	25,620	55651	23,373	-2,247	-9	-2,247	-9
02513.A	Perm Asphalt	Sq. Ft.	1.90	136400	259,160	136400	259,160	97388	185,037	-74,123	-29	-74,123	-29
02601.A	Storm Sewer Manholes	Each	3,630.00	3	10,890	3	10,890	3	10,890	0	0	0	0
02850.A	Trans Demo Debris	Cu. Yd.	122.30	400	48,920	400	48,920	535	65,399	16,479	34	16,479	34
02850.B	Trans A1 Soil	Ton	48.40	480	23,232	480	23,232	550	26,640	3,408	15	3,408	15
02850.C	Leasing of Roll-Offs	Each	2,030.00	200	406,000	454	921,620	454	921,620	515,620	127	0	0
02850.D	Roll-Off to Chem-W Texas	Ton	132.00	4620	609,840	9338	1,232,616	9259	1,222,188	612,348	100	-10,428	-1
TOTAL:					3,971,129		5,396,144		5,416,069	1,444,940	36	19,925	0

Current Budget Recap:	
Base Contract	$3,971,129
CO #1	$1,425,015
Current Budget	$5,396,144

MNR - HARMON LAGOON REMEDIATION
CONTRACT No. 9179 - OGDEN REMEDIATION SERVICES Co. Inc.

CHANGE ORDER LOG

FILE: M306-01-01 / 9179-3.11

	3.9	3.11.1											3.11.2	
		ORSC		MNR		Hill	ORSC		Final				MNR	
Description	TA	Request Number	Date	COR Number	Date	Review Date	Proposal $	Date	Negotiated $ L/S	Negotiated $ U/P	Days	Date	c/o Number	Date
Additional Signs & Gate	1	0044	3/23/95	001	8/11/95	9/28/95	$1,512.00	8/22/95	$1,512.00	-	-	1/29/96		
CAP Well/Napl Credit	4	0052	3/31/95	002	8/11/95	2/1/96	$973.00	8/22/95	Denied	-	-	2/28/96	-	-
Grade Crossings	-	0077	3/31/95	003	8/11/95	10/25/95	-	-	Withdrawn	-	-	10/30/95	-	-
Mechanical Inspection Delay	-	0088	6/15/95	004	8/11/95	3/7/96	$125,576.00	1/21/96	$10,710	-	-	3/5/96		
Stop Work (Leaks)	-	0094	6/28/95	005	8/11/95	1/18/96	-	12/22/95	Denied	-	-	2/26/96	-	-
Roll-Offs at CWM 28 days	-	0116	8/7/95	006	8/11/95	3/7/96	$160,019.00	2/28/96	$115,820	-	-	3/5/96		
Roll-Off Lining (Leaks)	-	0128	8/18/95	007	8/23/95	1/18/96	-	12/22/95	Denied	-	-	2/26/96	-	-
Roll-Off Re-Lining (Leaks)	-	0128	8/18/95	008	8/23/95	1/18/96	-	8/18/95	Denied	-	-	2/26/96	-	-
Roll-Off Decon (Leaks)	-	0128	8/18/95	009	8/23/95	1/18/96	-	12/22/95	Denied	-	-	2/26/96	-	-
Roll-Off Dumping (Leaks)	-	0128	8/18/95	010	8/23/95	1/18/96	-	12/22/95	Denied	-	-	2/26/96	-	-
Demurrage (Leaks)	-	0128	8/18/95	011	8/23/95	1/18/96	-	12/22/95	Denied	-	-	2/26/96	-	-
Roll-Off Re-Loading (Leaks)	-	0128	8/18/95	012	8/23/95	1/18/96	-	12/22/95	Denied	-	-	2/26/96	-	-
Roll-Off Add'l Freight (Leaks)	-	0128	8/18/95	013	8/23/95	1/18/96	-	12/22/95	Denied	-	-	2/26/96	-	-
Water Treatment	6	0128	8/18/95	014	8/23/95	3/8/96	$68,401.00	2/1/96	$32,272	24,840	-	3/5/96		
Clay Fill	-	0128	8/18/95	015	8/23/95	-	-	-	Cancelled	-	-	-	-	-
Stabilize Lagoon Floor	7	0128	8/18/95	016	8/23/95	2/1/96	$62,088.00	1/21/96	$44,099.00	-	-	1/29/96		
Well Development	8	0149	9/18/95	017	9/19/95	1/31/96	$4,985.00	1/21/96	$3,276.00	-	-	1/29/96		
Water in Dedicated Roll-Offs	-	0124	8/15/95	018	9/19/95	8/21/95	-	-	Denied	-	-	2/26/96	-	-
Settlement Measures	9	0149	9/18/95	019	9/19/95	1/31/96	$7,160.00	1/21/96	$5,921.00	-	-	1/29/96		
Sheeting Obstructions	5	0149	9/18/95	020	9/19/95	2/1/96	$7,242.00	8/22/95	$6,916.00	-	-	1/29/96		
Modify Sheeting	2	0149	9/18/95	021	9/19/95	9/29/95	$16,134.00	8/22/95	-	$15,600.00	-	1/29/96	-	-
Mod. Soil Boundaries	3	0149	9/18/95	022	9/19/95	2/1/96	$836.00	1/21/96	$791.00	-	-	1/29/96		
X'ing Gate Delay	-	0149	9/18/95	023	9/19/95	10/25/95	$667.00	9/28/95	Denied	-	-	2/26/96	-	-

Hill International, Inc.
Harmon Lagoon

5/2/96

MNR - HARMON LAGOON REMEDIATION
CONTRACT No. 9179 - OGDEN REMEDIATION SERVICES Co. Inc.

CHANGE ORDER LOG

FILE: M306-01-01 / 9179-3.11

	3.9	3.11.1												3.11.2	
		ORSC		MNR		Hill	ORSC		Final					MNR	
Description	TA	Request Number	Date	COR Number	Date	Review Date	Proposal $	Date	Negotiated $ L/S	Negotiated $ U/P	Days	Date	c/o Number	Date
Water Treatment-9/95	-	0149	9/18/95	024	9/19/95	Merged with COR 14					-	2/26/96	-	-
Stabilize Bottom-9/95	-	0149	9/18/95	025	9/19/95	Merged with COR 16					-	2/26/96	-	-
Demurrage @ CWM-9/95	-	0149	9/18/95	026	9/19/95	Merged with COR 6					-	2/26/96	-	-
Well 'A' Investigation	-	0161	10/16/95	027	10/18/95	Merged with COR 17					-	2/26/96	-	-
Re-Mobilize Well Drillers	-	0161	10/16/95	028	10/18/95	1/31/96	$2,835.00	1/21/96	$1,575.00	-	-	1/29/96		
Geosynthetic Extra	-	0161	10/16/95	029	10/18/95	1/31/96	Merged with COR 19			-	-	2/26/96	-	-
Water Storage Tank Rental	-	0163	10/25/95	030	11/1/95	3/8/96	$67,596.00	1/21/96	$59,712.00	-	-	3/5/96		
Sludge Quantity Variance	-	-	-	031	11/6/95	11/13/95	$1,425,014.00	-	-	$1,425,014.50	-	10/30/95	01	11/17/95
Time for Additional Sludge	-	-	2/22/96	-	-	3/20/96	COR 41	-	-	-	45	3/5/96	02	
Spill Response (Leaks)	-	0167	11/13/95	032	11/14/95	1/18/96	-	12/22/95	Denied	-	-	2/26/96	-	-
Claim Preparation (Leaks)	-	0167	11/13/95	033	11/14/95	1/18/96	-	12/22/95	Denied	-	-	2/26/96	-	-
Roll-Off Rehabilitation (Leaks)	-	0167	11/13/95	034	11/14/95	1/18/96	-	12/22/95	Denied	-	-	2/26/96	-	-
Inefficiencies (Leaks)	-	0167	11/13/95	035	11/14/95	-	-		Denied	-	-	2/26/96	-	-
Project Delay (Leaks)	-	0167	11/13/95	036	11/14/95	1/18/96	-	12/22/95	Denied	-	-	2/26/96	-	-
Diminished Capacity (Leaks)	-	0167	11/13/95	037	11/14/95	1/18/96	-	12/22/95	Denied	-	-	2/26/96	-	-
Storm Sewer Grade	-	0181	1/22/96	038	1/22/96	3/14/96	$2,371.00	2/16/96	$1,903	-	-	3/5/96		
Restricted Acceptance	-	0178	1/11/96	039	1/23/96	3/15/96	$47,376.00	2/28/96	$28,426	-	-	3/5/96		
Survey Services	-	0187	2/8/96	040	2/9/96	3/15/96	-	-	Withdrawn	-	-	3/5/96	-	-
Schedule & Acceleration	-	-	2/22/96	041		3/20/96	$135,704.00	1/22/96	$30,000.00	$64,680.00	-	3/5/96		
"Band-Aid" & Roll-Off Issues	-	0167	11/13/96	042		1/18/96	$1,002,162.00	12/22/96	$600,000.00	-	-	3/5/96		
Total:							$3,138,651.00		$942,933.00	$1,530,134.50	45.			

Apr. 2. 1996 2:10PM CWM FINANCE O. D. NO. 1010 P. 2/2

...son Avenue
New York, NY 10017-3739
212 340-3000

Donald N. Nelson
President

Metro-North Railroad

RECEIVED
APR - 2 1996
CONTRACT ADMINISTRATIO

March 29, 1996

Chemical Waste Management, Inc.
3001 Butterfield Road
Oak Brook, IL 60521

Attn: Richard C. Scherr, President, Thermal Operations

RE: Contract 9180
Incineration of Harmon Lagoon Sludge
Closeout Acknowledgment
M306-01-01/9180 2.10.1, Serial Number MNC-0004

Gentlemen:

Herein, find attached, the final budget recap for contract 9180, Harmon Yard Lagoon Incineration. The information shows $10,504,422.00 budgeted (including Change Order numbers 001 and 002) for this project. The final dollar amount for this project is $9,922,786.00. This figure includes the credit of $31,689.00 for boxes over 56 days and $28,426.00 for delayed acceptance for a variance of $581,636.00.

Metro-North requests Chemical Waste Management, Inc. acknowledge the final figure so that it may proceed with the closeout of this project.

If you have any questions please give me a call at (212) 340-3047.

Sincerely,

John V. Buckley
Senior Contract Administrator

Concur, Chemical Waste Management, Inc.

Attachments

cc: File 9180 D. Dunthorn M. Mehta
C. Bennett C. Hansen

63366

3/28/96

MNR - HARMON LAGOON REMEDIATION
PROJECT No: M306-01-01

CONTRACT 9180 (CWM)

FINAL BUDGET RECAP

	Budget Qty.	Unit	U/P	Budget $	Final Qty.	Final $	Variance	Notes
Incineration (Contract)	9,240,000	lb.	.51	4,712,400				
Incineration (CO#1)	6,630,000	lb.	Contract	3,381,300				
Incineration (CO#2)	2,805,980	lb.	Contract	1,431,050				
Subtotal (Incineration)	18,675,980	lb.	.51	$9,524,750	18,517,906	$9,444,132	$80,618	1
Decon (Contract)	200	ea.	500	100,000				
Decon (CO#1)	170	ea.	Contract	85,000				
Decon (CO#2)	80	ea.	Contract	40,000				
Subtotal (Decon)	450	ea.	500	$225,000	0	0	$225,000	2
Sampling (Contract)	200	ea.	105	21,000				
Sampling (CO#1,U/P Adj.)	(Contract)	ea.	170	34,000				
Subtotal (Sampling @ 275)	200	ea.	275	$55,000	200	$55,000	0	
Sampling (CO#1)	170	ea.	675	114,750				
Sampling (CO#2)	80	ea.	CO#1	54,000				
Subtotal (Sampling @675)	250	ea.	675	$168,750	144	$97,200	$71,550	3
Absorbent (CO#2 Misc.)	-	lb.	.40	incl./subtotal	0	0		
Low Flash (CO#2 Misc.)	-	lb.	.27	incl./subtotal	0	0		
High BTU (CO#2 Misc.)	-	lb.	.51	incl./subtotal	127,200	64,872		
Leaks (CO#2 Misc.)	-	ea.	605	incl./subtotal	16	9,680		
MNR Offsite (CO#2 Misc.)	-	-	Cost +10	incl./subtotal	-	139158		
3rd Party Storage (CO#2 Misc.)	-	-	Cost +10	incl./subtotal		128,268		
Forklift (CO#2 Misc.)	-	-	Cost +10	incl./subtotal		44,591		
Subtotal (CO#2 Misc.)				$530,922		$386,569	$144,353	4
Revised Contract Subtotal:				**$10,504,422**		**$9,982,901**	**$521,521**	

<u>Less Credits Due:</u>		
Boxes >56 days (CO#2 Misc.)	(31,689)	31,689
Delayed Acceptance	(28,426)	28,426
Grand Total:	**$9,922,786**	**$581,636**

MNR - HARMON LAGOON REMEDIATION
PROJECT No: M306-01-01

CONTRACT 9180 (CWM)

FINAL BUDGET RECAP

Notes:

1. Variance on incineration is due to field variation in actual quantity of sludge.
2. Decontamination was not required, as documented by the PCB Wipe-Test Program implemented by CWM.
3. Final sampling quantity was significantly below the budgeted quantity due to the re-use of Roll-Off containers as PCB-Dedicated.
4. CO#2 Miscellaneous costs reflect a net under-run due to contingency funds allocated to "Absorbent" and "Low-Flash", which were not required, per load sampling performed by CWM.

SUMMARY BY CHANGE ORDER

	Contract	CO# 1	CO# 2	Total
Incineration	4,712,400	3,381,300	1,431,050	9,524,750
Decon	100,000	85,000	40,000	225,000
Sampling	21,000	148,750	54,000	223,750
Misc.	0	0	530,922	530,922
	4,833,400	3,615,050	2,055,972	10,504,422