



EA ENGINEERING, 2350 Post Road  
 SCIENCE, AND Warwick, Rhode Island 02886  
 TECHNOLOGY Tel: (401) 736-3440  
 Fax: (401) 736-3423

**LETTER OF TRANSMITTAL**

TO: Sara Rapport, Sr. Asst. City Solicitor  
 City of Providence  
 Providence City Solicitor's Office  
 275 Westminster Street  
 Providence, RI 02903

|  |                   |
|--|-------------------|
| DATE: 4 August 2005                                    | JOB NO.: 61965.01 |
| ATTENTION: Ms. Rapport                                 |                   |
| RE: Response to RIDEM Comments on LRAWP - 15 July 2005 |                   |
| Former Gorham Manufacturing Facility, Parcel B         |                   |
| 333 Adelaide Avenue, Providence, Rhode Island          |                   |

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REMARKS: \_\_\_\_\_

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 Title Client Manager/Senior Engineer

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 J. Martella, RIDEM OWM  
 K. Owens, RIDEM OWM  
 L. Hellested, RIDEM OWM  
 B. Wagner, RIDEM Office of Legal Services  
 T. Deller, Providence Dept. of Planning  
 A. Sepe, Providence Dept. of Planning  
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**LETTER OF TRANSMITTAL**

TO: Alan Sepe  
 Providence Dept. of Public Property  
 Providence City Hall  
 25 Dorrance Street  
 Providence, RI 02903

|  |                   |
|--|-------------------|
| DATE: 4 August 2005                                    | JOB NO.: 61965.01 |
| ATTENTION: Mr. Sepe                                    |                   |
| RE: Response to RIDEM Comments on LRAWP - 15 July 2004 |                   |
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**LETTER OF TRANSMITTAL**

TO: Brian Wagner, Esq.  
RIDEM Office of Legal Services  
235 Promenade Street  
Providence, RI 02908

|  |                   |
|--|-------------------|
| DATE: 4 August 2005                                    | JOB NO.: 61965.01 |
| ATTENTION: Mr. Wagner                                  |                   |
| RE: Response to RIDEM Comments on LRAWP - 15 July 2005 |                   |
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**LETTER OF TRANSMITTAL**

TO: Leo Hellested  
RIDEM Office of Waste Management  
235 Promenade Street  
Providence, RI 02908

|  |                   |
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| DATE: 4 August 2005                                    | JOB NO.: 61965.01 |
| ATTENTION: Mr. Hellested                               |                   |
| RE: Response to RIDEM Comments on LRAWP - 15 July 2005 |                   |
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**LETTER OF TRANSMITTAL**

TO: Kelly Owens  
 RIDEM Office of Waste Management  
 235 Promenade Street  
 Providence, RI 02908

|  |                   |
|--|-------------------|
| DATE: 4 August 2005                                    | JOB NO.: 61965.01 |
| ATTENTION: Ms. Owens                                   |                   |
| RE: Response to RIDEM Comments on LRAWP - 15 July 2005 |                   |
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**LETTER OF TRANSMITTAL**

TO: Joseph Martella II  
RIDEM Office of Waste Management  
235 Promenade Street  
Providence, RI 02908

|  |                   |
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| DATE: 4 August 2005                                    | JOB NO.: 61965.01 |
| ATTENTION: Mr. Martella                                |                   |
| RE: Response to RIDEM Comments on LRAWP - 15 July 2005 |                   |
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 T. Deller, Providence Dept. of Planning  
 Sara Rapport, Esq., City of Providence  
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SIGNED Peter Martella  
 Title Client Manager/Senior Engineer



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**LETTER OF TRANSMITTAL**

TO: Thomas E. Deller, AICP  
City of Providence  
Department of Planning and Development  
400 Westminster Street  
Providence, RI 02903

|  |                   |
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| DATE: 4 August 2005                                    | JOB NO.: 61965.01 |
| ATTENTION: Mr. Deller                                  |                   |
| RE: Response to RIDEM Comments on LRAWP - 15 July 2005 |                   |
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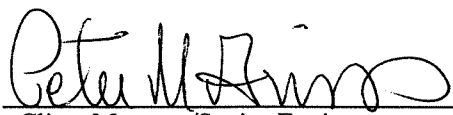
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**LETTER OF TRANSMITTAL**

TO: Jeff Crawford  
RIDEM Office of Waste Management  
235 Promenade Street  
Providence, RI 02908

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| DATE: 4 August 2005                                    | JOB NO.: 61965.01 |
| ATTENTION: Mr. Crawford                                |                   |
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**Title** Client Manager/Senior Engineer





EA Engineering, Science, and Technology, Inc.

Airport Professional Park  
2350 Post Road  
Warwick, Rhode Island 02886  
Telephone: 401-736-3440  
Fax: 401-736-3423  
www.eaest.com

4 August 2005

Mr. Jeffrey Crawford, Principal Environmental Scientist  
RIDEM Office of Waste Management  
Site Remediation Program  
235 Promenade Street  
Providence, RI 02908

RE: Response to RIDEM Limited Remedial Action Work Plan Comments dated 15 July 2005,  
Former Gorham Manufacturing Facility, Parcel B  
333 Adelaide Avenue, Providence, Rhode Island  
EA Project No. 61965.01.0004

Dear Mr. Crawford:

On behalf of the Providence Department of Public Property, EA Engineering, Science, and Technology, Inc. (EA) is offering the following response to the comments set forth in the 15 July 2005 comment letter for the Former Gorham Manufacturing Facility. These comments are based upon the technical discussions at the 26 July 2005 meeting attended by yourself and Joseph Martella, EA's Timothy Regan and Peter Grivers, and Rhode Island Analytical's Dan Simas. This letter and the associated attachments are intended to fulfill the obligations of the Providence Superior Court Order No. PC 05-2553, and allow the Providence Department of Public Property to move forward with the Limited Remedial Action Work Plan (LRAWP). The comments were as follows:

1. Regarding management and sampling for asbestos:
  - a. The LRAWP states that no contaminated soils are going to be generated for Off-site disposal at a licensed disposal facility. However, there are no proposals in the LRAWP to perform laboratory sampling of any excavated soils on site for hazardous materials or asbestos characterization. EA is only planning on providing OSHA personnel monitors to three employees and field screening using a Polarized Light Microscopy (PLM). They do not indicate the frequency of laboratory verification of the personal monitor sample collectors or the PLM results or what the turn around time by the laboratory are for any samples which are determined to contain asbestos above the ambient air guidelines so that work can be suspended as stated in the LRAWP.

**Response: On 19 July 2005, eight samples of potential asbestos containing building materials (ACBM) were collected within the proposed areas of disturbance. The results are provided in Attachment A. In addition, as agreed upon during the 26 July 2005 meeting, a total of eight soil samples will be collected from representative locations proposed for disturbance and analyzed for asbestos prior to initiating the site preparation activities. A figure illustrating the eight soil sampling locations is provided in Attachment B.**



**With respect to the OSHA sampling to be performed daily on three individuals (particularly the machine equipment operators and the onsite staff), the samples will be analyzed with a 24-hour turnaround time so proper corrective action can be taken, if needed. Currently the suspect materials can easily be removed from the excavated soil without assuming the soil in its entirety is contaminated. Should additional suspect materials be discovered, the onsite inspector will make the appropriate recommendations to safely remove and dispose of the material.**

**Regarding soil sampling for hazardous materials, historical soil sampling has been completed at the site for TPH, PAHs, VOCs, and priority pollutant metals. A representative soil sampling program will be completed at the conclusion of the site preparation activities in order to determine whether said activities have impacted the concentrations of these hazardous materials in site soil. The post-site preparation soil sampling program will consist of 8 soil samples collected across the areas of disturbance and analyzed for TPH, PAHs, VOCs, and priority pollutant metals. A figure illustrating the proposed post-site preparation soil sampling locations is provided in Attachment B.**

- b. The Court Order states that representative sampling will be performed for asbestos in several locations proposed for disturbance prior to work beginning. EA has indicated that on June 29, 2005, non-friable asbestos containing materials (ACM) and small amounts of ACM were observed on the surface of the soil by a RI Licensed Asbestos Project Monitor (RIAPM). Given this observation, a recommendation was made by the RIAPM that an asbestos inspector (presumably a Rhode Island Department of Health [RIDOH] Licensed Asbestos Inspector) is present during excavation. EA states in the LRAWP, *"it would not be prudent or feasible to accurately take blind cores of the soil at varying depths to verify if ACM had remained at the site"*. This position does not appear to follow the Order. For the record, the RIDOH stated on July 14, 2005 that they do not license RIAPM any more and if the project has determined that ACM is present, a plan should be filed with RIDOH for approval prior to work commencing

**Response: As previously mentioned, eight samples of ACBM were collected from the site on 19 July 2005. The analytical results are provided in Attachment A. In addition, as agreed upon during the 26 July 2005 meeting, a total of eight soil samples will be collected from representative locations proposed for disturbance and analyzed for asbestos prior to initiating the site preparation activities. A figure illustrating the eight soil sampling locations is provided in Attachment B.**

**In regard to the RIDOH requirements, an asbestos abatement plan is not required since a structure or facility does not exist at the site, and RIDOH does not regulate asbestos in soil.**

- c. Given the nature of the hazardous material and suspect ACM and observations, all materials segregated into dumpsters for offsite disposal at licensed disposal facilities should be wetted, covered and labeled accordingly.

**Response: Agreed.**



- d. The LRAWP discusses removing suspect ACM from debris piles and then managing the remainder of the debris pile as standard C&D. If separate and recoverable ACM is present in a debris pile, then the debris pile itself may still be considered ACM even after removal. Any debris pile that may contain residual ACM must be managed as ACM until it can be demonstrated through proper characterization that the debris pile is not ACM.

**Response: Agreed. All debris piles will be properly characterized by the licensed asbestos inspector prior to managing as standard C&D.**

- e. Brick is not exempt from solid waste regulations. Any brick that may have associated lead paint or asbestos mastic should not be processed (crushed and screened) or used as backfill until it has first been determined by representative sampling and analysis to be free of lead paint and asbestos prior to processing and/or reinterment.

**Response: Painted brick or waterproofing on brick containing lead or asbestos will be properly characterized, segregated, handled, and disposed of during the preparation work.**

- f. In Section 3.3.1 Basis for Asbestos Monitoring And Sampling, the LRAWP states that *"Since only a limited amount of the site is being excavated for the future building foundation, only those locations would be inspected and evaluated (for ACMs) during preparation activities."* The Department understands that this limited work is being done only to prepare the property for a future building foundation, however it should be noted that the entire proposed school site shall be inspected and evaluated for asbestos containing materials. Also, a figure should be included indicating proposed asbestos sampling locations.

**Response: As previously mentioned, Attachment B contains a figure indicating the locations of the ACBM samples collected on 19 July 2005. As agreed upon during the 26 July 2005 meeting, eight soil samples will be collected from representative locations proposed for disturbance and analyzed for asbestos (refer to response to Comment 1a).**

- g. The Community Notice does not mention the suspect ACM observed on June 29, 2005 as part of the Description section.

**Response: The Community Notice has been revised to include information regarding the observation of suspect ACBM and the proposed asbestos soil sampling activities (refer to response to Comments 1a and 1f). The revised Community Notice is included as Attachment C.**

- h. The LRAWP says up to three on-site workers will be fitted with ACM monitoring devices. **NO LESS THAN** three on-site workers should be fitted with ACM monitoring devices. Vacuum intakes should be attached near the workers' breathing zone to provide results that are representative of the levels within the inhalation area of the workers. Samples should be analyzed regularly with a quick turn-around to ensure the safety of on-site workers.



**Response: Agreed, with the exception that, as agreed upon during the 26 July 2005 meeting, if less than three on-site workers are present at the site, the requirement of "NO LESS THAN" three on-site workers should be fitted with ACM monitoring devices will not apply.**

- i. The Safety, Health, and Emergency Response Plan (SHERP) does not address the potential hazards and risks from asbestos.

**Response: The SHERP language has been updated to include references to asbestos. In particular, Table 1, Table 3, and various sections of the text (as applicable) have been updated. The revised SHERP is provided as Attachment D.**

- j. The LRAWP calls for Narragansett Electric Company (NEC) personnel to install three utility poles and perform utility trenching for subsurface conduits. It is unclear as to whether EA has provided this LRAWP to the NEC Field Health and Safety Supervisor for their review and comment prior to their employees operating at the site.

**Response: The NEC will be provided with a copy of the LRAWP and revised SHERP prior to their employees operating at the site.**

2. Regarding erosion and dust control measures:

- a. The LRAWP indicates that windscreens have been erected for purposes of dust control and that water will be available as needed. The LRAWP does not however, indicate that water is going to be applied regularly during the course of excavation and the manner in which the water is going to be applied (deck gun, spray truck, hoses etc.) for purposes of Dust Control pursuant to DEM Air Regulations.

**Response: A tanker truck equipped with multiple spray nozzles will regularly traverse the work area applying water throughout the course of excavation activities. The tanker truck will be equipped with hoses to facilitate manual application of water to debris, soil piles, and any other areas in need of dust control not covered by the tanker truck's continuous spray nozzles.**

- b. The temporary stockpiled soils should be covered with polyethylene at least 6mm or greater to prevent tearing.

**Response: The polyethylene sheeting used to cover soil stockpiles will be a minimum thickness of 6 mil.**

- c. The proposed limits of disturbance are unclear. A site figure should be provided clearly delineating to the limits of disturbance for the activities outlined in the LRAWP. This figure should also include erosion controls around the limits of disturbance as well as other erosion controls that are proposed for use in preventing the off-site migration of contaminated soils and sediments during the course of the proposed LRAWP work.



**Response: A drawing with the approximate limits of disturbance and erosion controls is provided in Attachment B. Please note that the City of Providence's architectural consultant for this project, Edward Rowse Architects, Inc., has prepared a Request for Preliminary Determination Application (RPDA) for the project. The RPDA was finalized and submitted to RIDEM's Office of Water Resources on 20 July 2005, and includes a more detailed erosion controls drawing for the site.**

- d. The LRAWP should include a proposal to conduct real-time dust monitoring at the perimeter of the site to ensure that site activities do not create unacceptable impacts to off-site air quality and risks to nearby populations. Air quality monitoring should be performed for Total Particulate PM10 (particles less than 10 microns), asbestos, and hazardous materials, where possible, based on the contaminants of concern at the site. Dust monitoring should conform to an established and recognized procedure (e.g., US Army Corps of Engineers Manual entitled *Design, Installation and Utilization of Fixed-Fenceline Sample Collection and Monitoring Systems – EM 200-1-5 1 October 1997*, or similar recognized and established guidance or practice). Dust monitoring stations should be established at upwind and downwind locations, and should be portable such that they may be moved as upwind and downwind locations change based on meteorological conditions. Site-specific action levels for dust monitoring (instantaneous and 24 hour average) should be proposed for Department approval based upon applicable air quality criteria and applicable regulations. Monitoring equipment should be equipped with alarms to indicate when action levels are exceeded. Dust monitoring results should be submitted to the Department on a weekly basis, at a minimum, and should be made part of the Operating Log for the LRAWP. The Department should be immediately notified of any exceedances of any approved action levels, any corrective action that was performed, and the results and effectiveness of corrective action measures.

**Response: As agreed upon during the 26 July 2005 meeting, a dust-monitoring program designed to be protective and proactive relative to minimizing and measuring potential impacts to off-site air quality, is proposed for implementation at the site. The proposed dust-monitoring program was developed in conjunction with environmental air monitoring specialists from RI Analytical Laboratory (Warwick, RI) and conforms with established practices. The dust-monitoring program will also be supplemented by a dust suppression program (windscreen installation and maintenance and regular water application) to prevent particulate matter from becoming airborne in accordance with RIDEM Air Pollution Control Regulation No. 5 – Fugitive Dust. The dust-monitoring program includes the following details:**

- **Daily on-site monitoring (8 hours per day) by personnel from RI Analytical Laboratory, experienced and qualified to perform dust monitoring and sampling.**
- **A baseline preliminary assessment will be completed prior to any site preparation activities included in the LRAWP, and daily sampling will be performed while site preparation activities are ongoing. A total of two dust**



**sampling stations will be established. During each working day, on-site dust monitoring and sampling personnel will place one station upwind and one downwind based upon meteorological conditions.**

- **Each sampling location will utilize a low volume-sampling pump to collect a time-weighted sample over the course of the workday during hours of on-site activities, approximately 8 am to 4 pm. The baseline assessment sample will also be collected over the hours of approximately 8 am to 4 pm prior to initiation of site preparation work.**
  - **As agreed upon during the 26 July 2005 meeting, the samples will be lab analyzed for nuisance dust and asbestos via PCM with a turnaround time of 24 hours.**
  - **Action levels and required responses for dust and asbestos are presented in Table 3 of the SHERP provided in Attachment D.**
  - **All dust sampling data will be forwarded to RIDEM on a weekly basis.**
- e. The Community Notice does not mention or specify any plans to apply water regularly during the excavation activities to keep dust at a minimum and in accordance with the Department's Air Regulation for Dust Control.

**Response: The Community Notice has been revised to include language regarding applying water during excavation activities to keep dust at a minimum. A copy of the revised Community Notice is included as Attachment C.**

3. Regarding the management of clean fill material:

- a. There is a discrepancy in the total volumes of backfill to be brought to the site. Page 2 Section 2.1 Excavation and Backfilling states that 4,000 cubic yards of backfill material is expected while on Page 6, Section 3.4 Fill Sampling states that 6,000 cubic yards is expected.

**Response: The correct volume of soil to be used as backfill at the site is approximately 4,000 cubic yards.**

- b. All proposed soils being brought to the site to be used as fill should be tested for all Residential Direct Exposure Criteria and GB Leachability Criteria as identified in Tables 1 and 2 of the Remediation Regulations and in accordance with the Order. The parameters should include VOC's, SVOC's, Priority Pollutant Metals, TPH, Pesticides and Herbicides etc. and should be tested at a frequency of one discrete grab sample per every 500 cubic yards.

**Response: As agreed upon during the 26 July 2005 meeting and to fulfill the Court Order, all fill material brought to the site will be demonstrated to comply with RIDEM's Residential Direct Exposure Criteria and GB Leachability Criteria**



**through sampling and laboratory analysis every 500 tons for arsenic. In addition, one-quarter of the total number of compliance samples will be analyzed for all of the compounds contained in Table 1 of the Remediation Regulations.**

- c. All clean fill should be stockpiled on polyethylene to prevent contact and intermingling with potentially contaminated site soils prior to placement.

**Response: Agreed.**

- d. A layer of geotextile fabric material or some other marker barrier should be placed between impacted site soils and the clean fill material so that clean fill material can be segregated from impacted soil during future intrusive site development activities (i.e. so that the clean fill can be distinguished from the contaminated soil when the foundations are excavated). Otherwise, there will be no way to distinguish the clean soil from contaminated soil in unsegregated areas, and the City will either have to recharacterize the fill to demonstrate that it is clean, or presume that it is all contaminated and manage it as such.

**Response: All areas of excavation where future building foundations are to be located will only be backfilled and compacted with clean fill up to the elevation/depth of the future foundation, thereby eliminating the need for re-excavation of the clean fill material. Therefore, the placement of geotextile fabric or other marker barrier will not be required in the future building foundation areas.**

- e. All utility trenches should be lined with a marker barrier and backfilled with clean fill material.

**Response: Agreed.**

4. Regarding general permitting issues:

- a. Any site work, which includes disturbance of greater than one acre, requires at a minimum that the performing party obtain a RIPDES Permit for storm water discharges associated with construction activity.

**Response: As previously mentioned, the City of Providence's architectural consultant for this project, Edward Rowse Architects, Inc., has prepared a Request for Preliminary Determination Application (RPDA) for the project. The RPDA was finalized and submitted to RIDEM's Office of Water Resources on 20 July 2005. Therefore, in accordance with instructions included in the General Permit - Rhode Island Pollutant Discharge Elimination System Discharge Associated with Construction Activity, and as agreed upon during the 26 July 2005 meeting, a Notice of Intent for this project will not be required.**

- b. The submittal entitled *Response to RIDEM Site Investigation Report Comments, dated 19, May 2005*, prepared by EA, and contained in the LRAWP submittal, indicates the a "Storm Water Pollution Prevention Plan (SWPPP) will be prepared for the Site, and has



*been submitted to the RIDEM Office of Water Resources (OWR) prior to initiating further site preparation activities.” As of this date, the OWM could not validate that the SWPPP has been submitted to the RIDEM-OWR as indicated in the response to comments. The City is reminded of its obligation to receive any required approval from the RIDEM-OWR RIPDES Program prior to commencing or continuing with site disturbance and earthmoving activities.*

**Response: See response to Comment 4a above.**

- c. Based on figures contained in the report entitled Site Investigation Report Addendum prepared by EA Engineering, an area of the proposed parking lot appears to be depicted within the 50’ wetland buffer of Mashapaug Pond. More recent site figures depict the parking lot outside of the 50’ wetland buffer. It is unclear whether or not the buffer lines, as depicted, have been verified or are correct. The City is reminded of its obligation to receive prior approval of an appropriate application by the Department’s Freshwater Wetlands Program prior to conducting any activities that may result in alteration of a Freshwater Wetland.

**Response: Regarding Freshwater Wetlands Program obligations, see response to Comment 4a above. Regarding the 50-foot wetland buffer line, the most recent site figures depicting the proposed parking lot outside of the buffer are correct. Previous figures inadvertently included an erroneous data point that resulted in the incorrect buffer delineation.**

5. The LRAWP does not identify the Contractors and/or Consultants for this site. In addition to EA Engineering, the LRAWP mentions a “Geotechnical Contractor” and a “RI Licensed Asbestos Project Monitor (RIAPM).” The Performing Party is required to provide the names, addresses, and telephone numbers of the contact persons of any contractors or consultants. The responsibilities of each consultant and/or contractor must be clearly explained.

**Response: The contractors and consultants currently associated with the LRAWP are presented below. Should any additions or changes to the list of contractors/consultants be made after submittal of this letter, RIDEM will be notified in writing.**

**Environmental Consultant – LRAWP Oversight:**

**EA Engineering, Science, and Technology, 2350 Post Road, Warwick, RI 02886; Timothy Regan, 401-736-3440**

**Asbestos and Dust Monitoring, Sampling, and Analysis:**

**RI Analytical Laboratory, EAM Division, 41 Illinois Avenue, Warwick RI 02888; Daniel Simas, 401-737-8500**

**General Contractor - Construction Manager:**

**H.V. Collins Company, 99 Gano Street, Providence, RI 02906; Brian McCourt, 401-421-4080**





**Architect – Wetlands Permitting:**  
**Edward Rowse Architects, Inc., 115 Cedar Street, Providence, RI 02903;**  
**Edward Rowse, 401-331-9200**

6. In accordance with 9.16 of the Remediation Regulations – Shut-Down, Closure, and Post-Closure Requirements, please provide a proposal to temporarily stabilize disturbed areas upon completion of the LRAWP activities pending performance of a Department approved Remedial Action.

**Response: Site engineering controls will continue to be maintained after the LRAWP activities are completed. Specific activities will include continued maintenance of the perimeter windscreen, the silt fencing and haybales, and the application of water to the site to minimize dust, as necessary.**

7. All solid waste must be sent for proper off-site disposal at a licensed facility within sixty (60) days of generation in accordance with the Solid Waste Regulations.

**Response: Agreed.**

On behalf of the Providence Department of Public Properties and the Providence School Department, EA thanks you in advance for your timely review of this letter and for acting expeditiously and in good faith regarding this matter. If you have any questions, please do not hesitate to contact the undersigned at 401-736-3440.

Sincerely,

EA ENGINEERING, SCIENCE,  
AND TECHNOLOGY, INC.

Peter M. Grivers, P.E., LSP  
Project Manager

Timothy Regan, P.E., M.B.A.  
Client Manager/Senior Engineer

PG/dk  
Attachments

cc: A. Sepe, Providence Department of Public Property  
T. Deller, Providence Redevelopment Agency  
J. Martella, RIDEM Office of Waste Management  
K. Owens, RIDEM Office of Waste Management

S. Rapport, Esq., City of Providence  
B. Wagner, Esq., RIDEM Legal Services  
L. Hellested, RIDEM Office of Waste Management  
EA File

## **Attachment A**

# **Suspect Asbestos Containing Building Materials Laboratory Analytical Report**



**R.I. Analytical**

Specialists in Environmental Services

Page 1 of 3

**CERTIFICATE OF ANALYSIS**

R.I. Analytical (EAM Division)  
Attn: Mr. Daniel Simas  
41 Illinois Avenue  
Warwick, RI 02888

**Date Received:** 7/18/2005  
**Date Reported:** 7/19/2005  
**Work Order #:** 0507-11561

Enclosed please find your sample(s) analysis results for asbestos content. The six asbestos types include amosite, chrysotile, crocidolite, anthophyllite, tremolite, and actinolite.

**METHODOLOGY:** Polarized Light Microscopy (PLM) as suggested by EPA/600/R-93/116, July 1993 edition.

If the samples are found to be inhomogeneous, individual components will be analyzed separately. If individual components cannot be separated, the samples will be homogenized and a single result will be provided for the entire sample.

Sample results pertain only to items tested. The report must not be reproduced except in full with permission of R.I. Analytical. Samples submitted for analysis will be retained for three months for your future reference.

Our laboratory maintains NVLAP accreditation for bulk asbestos fiber analysis NVLAP lab code 101440-0.

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government.

If you have any questions regarding this report, or if we may be of further assistance, please contact us.

Approved by:

  
\_\_\_\_\_  
Data Reporting

**R.I. Analytical Laboratories, Inc.**  
**CERTIFICATE OF ANALYSIS**

R.I. Analytical (EAM Division)  
 Date Received: 7/18/2005  
 Work Order #: 0507-11561  
 Site Location: PROJECT #050415 (EIGHT BULK SAMPLES)

Approved by: \_\_\_\_\_

Data Reporting

**METHOD: EPA/600/R-93-116**

| SAMPLE NO. | SAMPLE DESCRIPTION                            | PARAMETER          | SAMPLE RESULTS / UNITS | DATE ANALYZED | ANALYST |
|------------|---|--------------------|------------------------|---------------|---------|
| 001        | TRANSITE FOUND IN EXCAVATION TRENCH           | PLM FIBER ANALYSIS |                        |               |         |
|            |   | ASBESTOS           | POSITIVE               | 7/19/2005     | EDN     |
|            |   | Chrysotile         | 5-15 %                 | 7/19/2005     | EDN     |
|            |   | Non-fibrous        | 85-95 %                | 7/19/2005     | EDN     |
|            |   | Sample Color       | Gray                   | 7/19/2005     | EDN     |
| 002        | ROOFING FOUND IN EXCAVATION TRENCH            | PLM FIBER ANALYSIS |                        |               |         |
|            |   | ASBESTOS           | POSITIVE               | 7/19/2005     | EDN     |
|            |   | Chrysotile         | 5-15 %                 | 7/19/2005     | EDN     |
|            |   | Non-fibrous        | 85-95 %                | 7/19/2005     | EDN     |
|            |   | Sample Color       | Black                  | 7/19/2005     | EDN     |
| 003        | SUSPECT INSULATION FOUND IN EXCAVATION TRENCH | PLM FIBER ANALYSIS |                        |               |         |
|            |   | ASBESTOS           | POSITIVE               | 7/19/2005     | EDN     |
|            |   | Chrysotile         | 30-40 %                | 7/19/2005     | EDN     |
|            |   | Non-fibrous        | 60-70 %                | 7/19/2005     | EDN     |
|            |   | Sample Color       | Gray                   | 7/19/2005     | EDN     |
| 004        | MOSAIC LINOLEUM FOUND IN EXCAVATION TRENCH    | PLM FIBER ANALYSIS |                        |               |         |
|            |   | ASBESTOS           | POSITIVE               | 7/19/2005     | EDN     |
|            |   | Chrysotile         | 5-15 %                 | 7/19/2005     | EDN     |
|            |   | Non-fibrous        | 85-95 %                | 7/19/2005     | EDN     |
|            |   | Sample Color       | Gray                   | 7/19/2005     | EDN     |
| 005        | BRICK LINOLEUM FOUND IN EXCAVATION TRENCH     | PLM FIBER ANALYSIS |                        |               |         |
|            |   | ASBESTOS           | POSITIVE               | 7/19/2005     | EDN     |
|            |   | Chrysotile         | 5-15 %                 | 7/19/2005     | EDN     |
|            |   | Non-fibrous        | 85-95 %                | 7/19/2005     | EDN     |
|            |   | Sample Color       | Gray                   | 7/19/2005     | EDN     |
| 006        | ROOFING FOUND IN EXCAVATION TRENCH            | PLM FIBER ANALYSIS |                        |               |         |
|            |   | ASBESTOS           | NEGATIVE               | 7/19/2005     | EDN     |
|            |   | Non-fibrous        | 100 %                  | 7/19/2005     | EDN     |
|            |   | Sample Color       | Black                  | 7/19/2005     | EDN     |

**R.I. Analytical Laboratories, Inc.**  
**CERTIFICATE OF ANALYSIS**

R.I. Analytical (EAM Division)  
 Date Received: 7/18/2005  
 Work Order #: 0507-11561  
 Site Location: PROJECT #050415 (EIGHT BULK SAMPLES)

Approved by: \_\_\_\_\_

Data Reporting

**METHOD: EPA/600/R-93-116**

| <b>SAMPLE NO.</b> | <b>SAMPLE DESCRIPTION</b>                     | <b>PARAMETER</b>   | <b>SAMPLE RESULTS / UNITS</b> | <b>DATE ANALYZED</b> | <b>ANALYST</b> |
|-------------------|---|--------------------|-------------------------------|----------------------|----------------|
| 007               | ROOFING / FLASHING NEAR CONCRETE PILE (NORTH) | PLM FIBER ANALYSIS |                               |                      |                |
|                   |   | ASBESTOS           | NEGATIVE                      | 7/19/2005            | EDN            |
|                   |   | Chrysotile         | 5-15 %                        | 7/19/2005            | EDN            |
|                   |   | Non-fibrous        | 85-95 %                       | 7/19/2005            | EDN            |
|                   |   | Sample Color       | Black                         | 7/19/2005            | EDN            |
| 008               | SUSPECT INSULATION FOUND @ MIDDLE OF SITE     | PLM FIBER ANALYSIS |                               |                      |                |
|                   |   | ASBESTOS           | POSITIVE                      | 7/19/2005            | EDN            |
|                   |   | Chrysotile         | 30-40 %                       | 7/19/2005            | EDN            |
|                   |   | Non-fibrous        | 60-70 %                       | 7/19/2005            | EDN            |
|                   |   | Sample Color       | Black                         | 7/19/2005            | EDN            |

NOTE: SAMPLES MUST BE KEPT IN A SEALED CONTAINER AT ALL TIMES

| R. I. ANALYTICAL LABORATORIES, INC.   |                | Analysis Required                                |             |
|---|----------------|--|-------------|
| 41 Illinois Avenue · Warwick, Rhode Island 02888 131 Coolidge Street Bldg 2 Hudson, MA 01749<br>(401) 737-8500 Fax (401) 738-1970 (978) 568-0041 Fax (978) 568-0078 |                |  |             |
| Date Collected  | Time Collected | Sample ID  | Sample Type |
| 7/18  |                | #1 TRANSITE FOUND IN ESCAVATION TRENCH           |             |
|   |                | #2 ROOFING FOUND IN ESCAVATION TRENCH            | X           |
|   |                | #3 SUSPECT INSULATION FOUND IN ESCAVATION TRENCH | X           |
|   |                | #4 MISALC LINOLEUM FOUND IN ESCAVATION TRENCH    | X           |
|   |                | #5 BRICK LINOLEUM FOUND IN ESCAVATION TRENCH     | X           |
|   |                | #6 ROOFING FOUND IN ESCAVATION TRENCH            | X           |
|   |                | #7 ROOFING FOUND NEAR CONCRETE PILE (NORTH)      | X           |
|   |                | #8 SUSPECT INSULATION FOUND (MINOR) OF SITE      | X           |

|  |        |
|--|--------|
| Company Name: <u>R.I. ANAL LAB</u>           | P.O. # |
| Address: <u>41蔴蔴蔴 AVE.</u>                   |        |
| City / State / Zip: <u>Warwick, RI 02888</u> |        |
| Phone / Fax:                                 |        |
| Contact: <u>DANIEL SIMAS</u>                 |        |

|                                     |                                 |
|-------------------------------------|---------------------------------|
| Relinquished by: <u>[Signature]</u> | Date / Time: <u>7/18/05</u>     |
| Relinquished by: <u>[Signature]</u> | Date / Time: <u>[Signature]</u> |
| Relinquished by: <u>[Signature]</u> | Date / Time:                    |

|  |  |
|--|--|
| Collected by: <u>DANIEL SIMAS</u>  | Total Numbers of Cont.: <u>8</u>               |
| Turn Around Time: <input type="checkbox"/> Normal <input checked="" type="checkbox"/> Rush <u>24 HR.</u> | RIAL: <u>6507-11561</u>                        |
| <input type="checkbox"/> - Pick-Up Only  | <input type="checkbox"/> - Sampled _____ Hours |
| <input type="checkbox"/> - Shipped on Ice  |  |

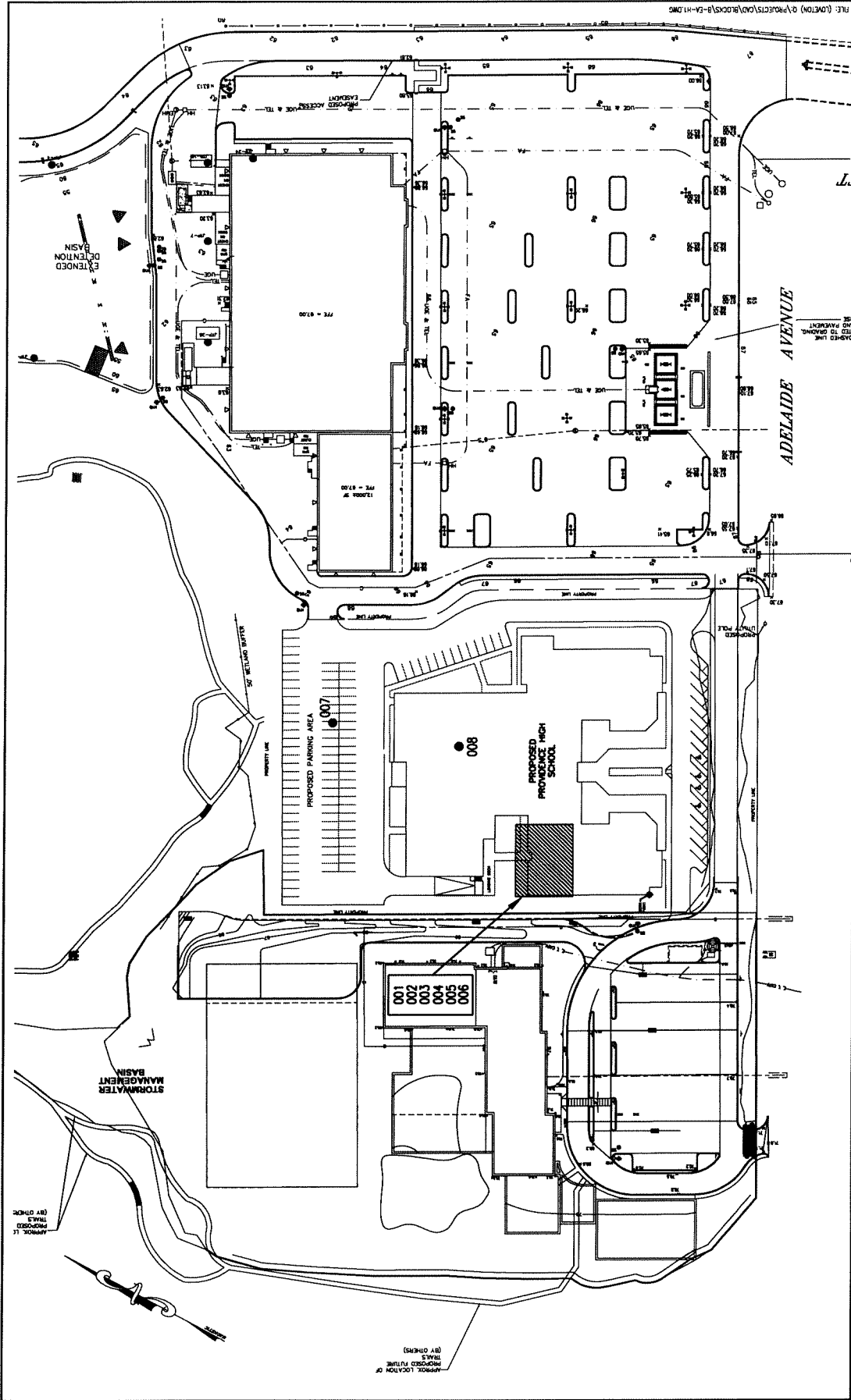
  

Comments: \* SAMPLES ARE RETAINED WITHIN THE LAB FOR A PERIOD OF THREE MONTHS, AFTER WHICH THEY ARE DISPOSED OF AT AN EPA APPROVED ASBESTOS LANDFILL. IF THE CLIENT WISHES TO RETAIN SAMPLES AFTER ANALYSIS, REQUESTS MUST BE MADE PRIOR TO THE THREE MONTH PERIOD.

050415

# **Attachment B**

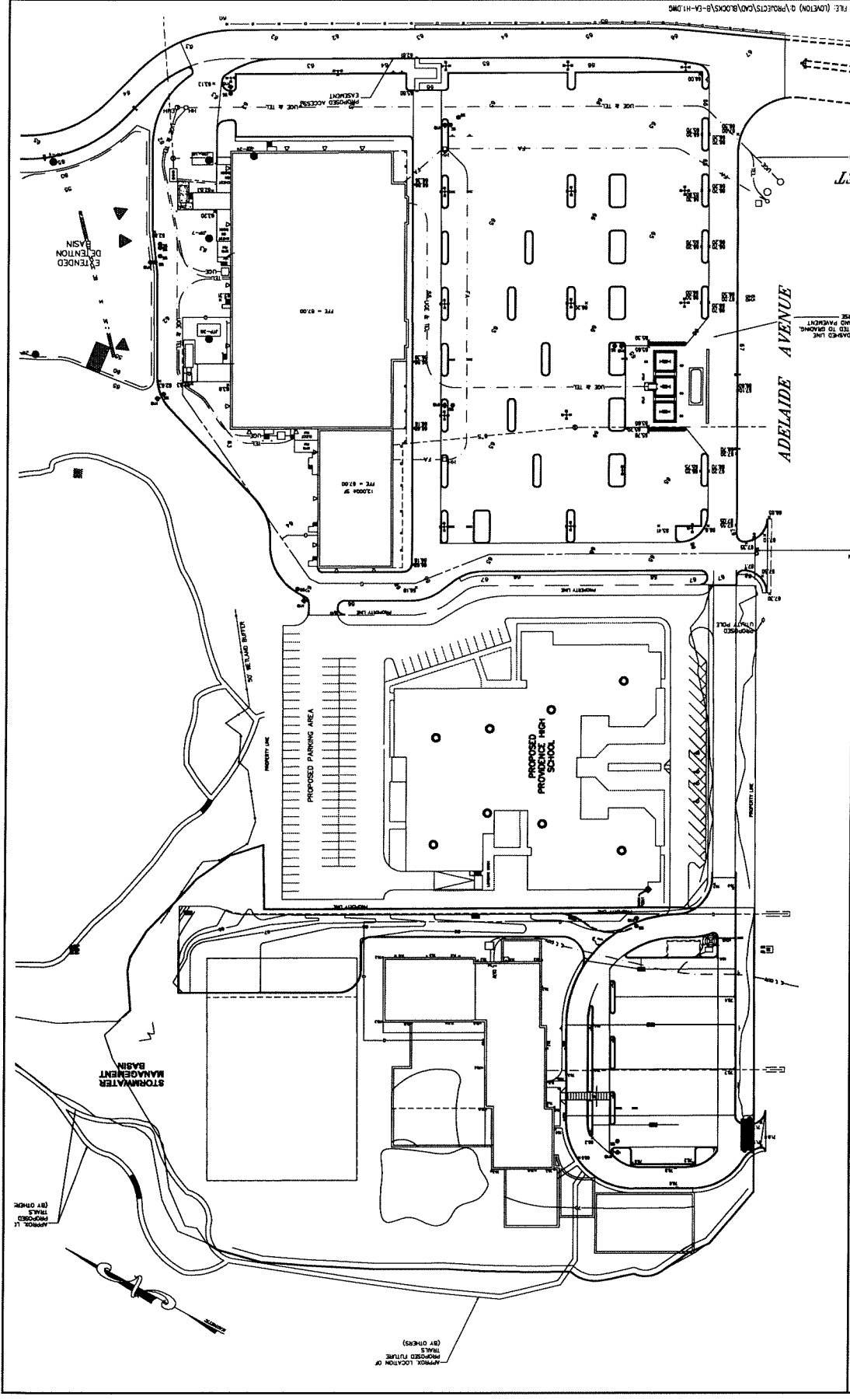
## **Figures**




|  |   |  |   |  |                    |                   |                 |                    |                    |                         |                       |
|--|---|--|---|--|--------------------|-------------------|-----------------|--------------------|--------------------|-------------------------|-----------------------|
| <b>EA</b><br>EA ENGINEERING,<br>SCIENCE, AND<br>TECHNOLOGY | FORMER GORHAM MANUFACTURING FACILITY PROPERTY, PARCEL B<br>PROVIDENCE, RHODE ISLAND |  | ACM SAMPLE<br>LOCATIONS<br>19 JULY 2005 |  | DESIGNED BY<br>PMG | CHECKED BY<br>PMG | DRAWN BY<br>WEL | PROJECT MGR.<br>TR | DATE<br>7-28-05    | PROJECT NO.<br>61965.01 | FILE NAME<br>ACM-SAMP |
|  |   |  |   |  |                    |                   |                 |                    | SCALE<br>1" = 100' | DRAWING NO.             | FIGURE                |

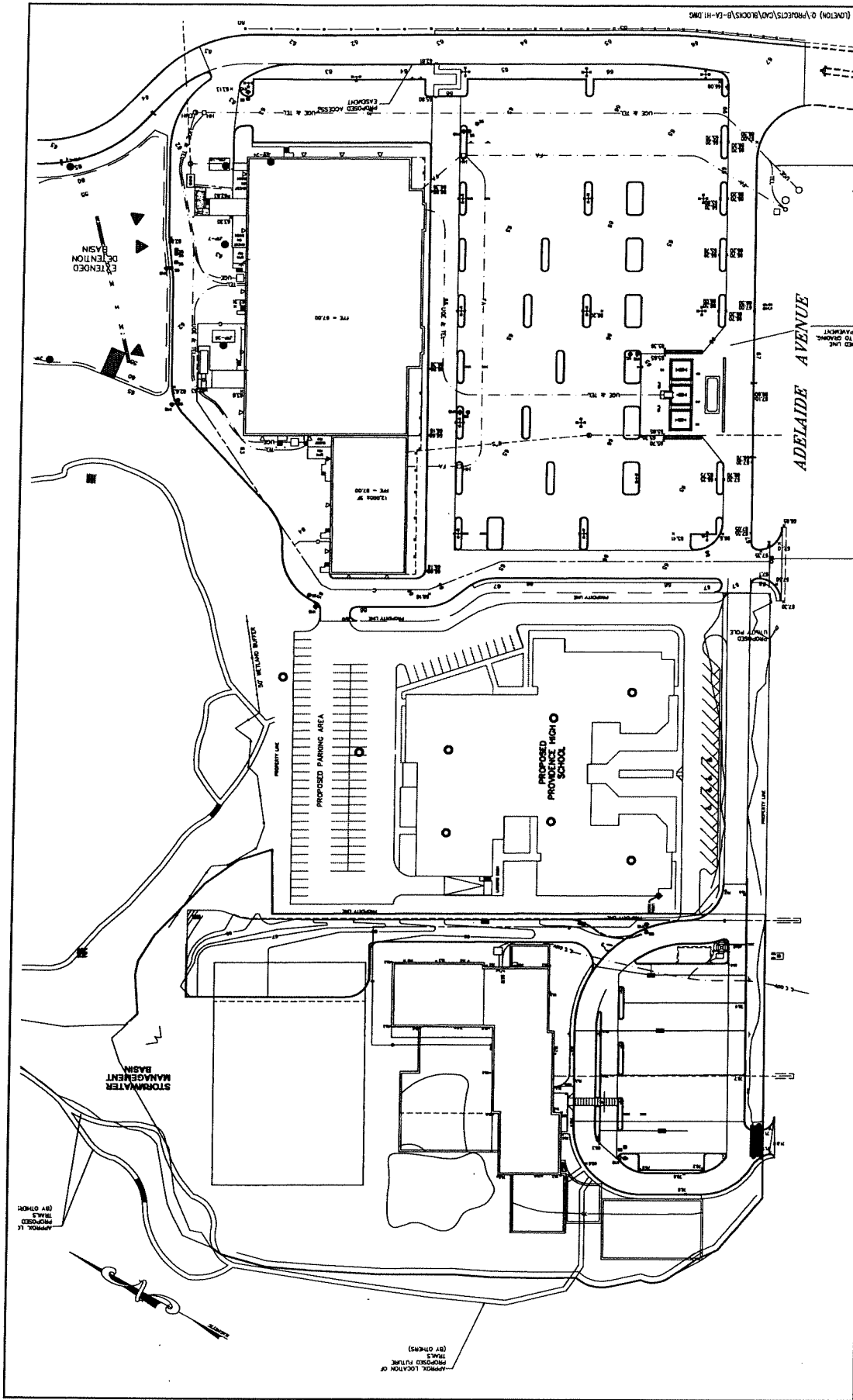
FILE: (LWTRN) \PROJECTS\CM\BLOCKS-B-01-H-DWG





|  |   |   |   |   |                   |                   |                    |                         |                        |
|--|---|---|---|---|-------------------|-------------------|--------------------|-------------------------|------------------------|
|  <b>EA</b><br>EA ENGINEERING,<br>SCIENCE, AND<br>TECHNOLOGY | FORMER CORHAM MANUFACTURING FACILITY PROPERTY, PARCEL B<br>PROVIDENCE, RHODE ISLAND | PROPOSED PRE-LRAMP ASBESTOS<br>SOIL SAMPLING<br>LOCATIONS |   | DESIGNED BY<br>PMG  | CHECKED BY<br>PMG | DRAWN BY<br>WEL   | DATE<br>7-28-05    | PROJECT NO.<br>61965.01 | FILE NAME<br>PRE-LRAMP |
|  | APPROX. LOCATION OF<br>PROPOSED FUTURE<br>TRAILS<br>(SEE OTHERS)                    | APPROX. LOCATION OF<br>PROPOSED<br>TRAILS<br>(SEE OTHERS) | APPROX. LOCATION OF<br>PROPOSED<br>TRAILS<br>(SEE OTHERS) | APPROX. LOCATION OF<br>PROPOSED<br>TRAILS<br>(SEE OTHERS) | PROJECT NO.<br>TR | PROJECT NO.<br>TR | SCALE<br>1" = 100' | DRAWING NO.             | FIGURE                 |

FILE: (LWENTON) D:\PROJECTS\04\BROOKS\B-03-11.DWG



|  |  |  |   |  |                    |                    |                 |                 |                         |                         |
|--|--|--|---|--|--------------------|--------------------|-----------------|-----------------|-------------------------|-------------------------|
| <b>EA</b><br>EA ENGINEERING,<br>SCIENCE, AND<br>TECHNOLOGY | FORMER CORHAM MANUFACTURING FACILITY, PARCEL B<br>PROVIDENCE, RHODE ISLAND |  | PROPOSED POST-LRAMP<br>SOIL BORING<br>LOCATIONS |  | DESIGNED BY<br>PMG | CHECKED BY<br>PMG  | DRAWN BY<br>WEL | DATE<br>7-28-05 | PROJECT NO.<br>61965.01 | FILE NAME<br>POST-LRAMP |
|  |  |  |   |  | PROJECT MGR.<br>TR | SCALE<br>1" = 100' | DRAWING NO.     | FIGURE          |                         |                         |

ADELAIDE AVENUE

PROPOSED HIGH SCHOOL

PROPOSED PARKING AREA

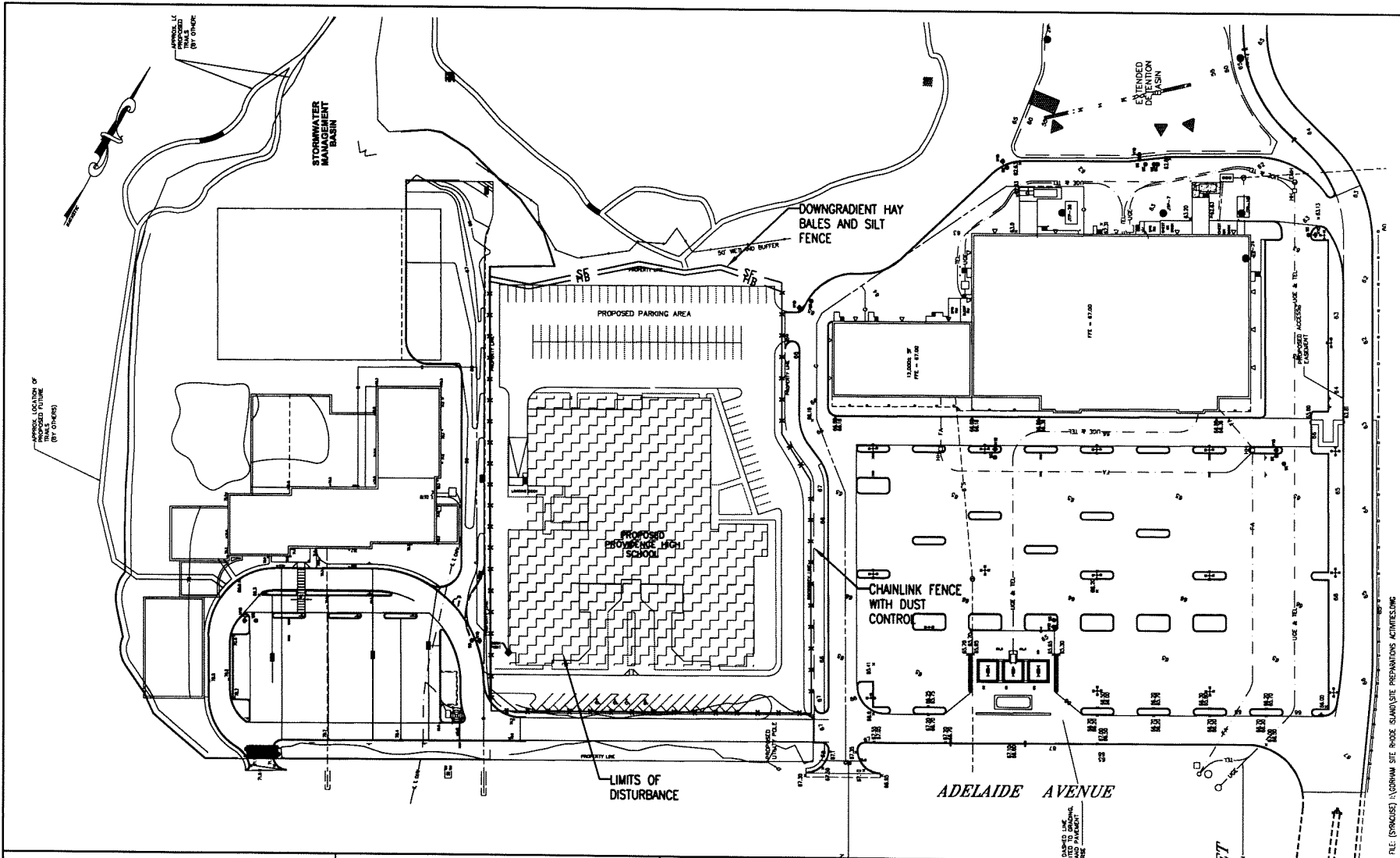
STORMWATER MANAGEMENT BASIN

EXTENDED DETENTION BASIN

APPROX. LOCATION OF  
 PROPOSED FUTURE  
 TRAILS  
 (BY OTHERS)

APPROX. LOCATION OF  
 TRAILS  
 (BY OTHERS)

FILE LOCATION: \PROJECTS\20\90005\9-FA-H1.MXD



FILE: (S:\PROJ) \GORHAM SITE ROAD SAND/SITE PREPARATION ACTIVITIES.DWG



FORMER GORHAM MANUFACTURING FACILITY PROPERTY, PARCEL B  
PROVIDENCE, RHODE ISLAND

LIMITS OF DISTURBANCE AND  
EROSION CONTROLS

|                    |                   |                    |                         |                      |
|--------------------|-------------------|--------------------|-------------------------|----------------------|
| DESIGNED BY<br>PMG | DRAWN BY<br>WEL   | DATE<br>7-28-05    | PROJECT NO.<br>61965.01 | FILE NAME<br>LOD-ERO |
| CHECKED BY<br>PMG  | PROJECT MGR<br>TR | SCALE<br>1" = 100' | DRAWING NO.<br>-        | FIGURE<br>-          |

NOT TO BE USED FOR CONSTRUCTION WITHOUT OWNER'S PERMISSION

## **Appendix C**

### **Community Notice**

# COMMUNITY NOTICE

## Work Being Performed at the Former Gorham Manufacturing Facility- Parcel B, 333 Adelaide Avenue, Providence, RI

**Description:** Loose fill material, including buried foundations and construction and/or demolition debris, will be excavated from within the proposed high school building area. Concrete and brick materials will be crushed onsite, and suitable materials will be stockpiled onsite to be reused as engineered fill beneath the proposed building. Any metal, wood, or other unsuitable materials (e.g., cleared vegetation) will be removed from the surface and segregated in dumpsters for proper off site disposal. Additional activities will include tree removal, backfilling, and utility preparation activities (utility pole/conduit installation).

The pending geotechnical preparation site work will not include any remediation activities and will not result in the offsite disposal of any soil. Site access will be controlled through the installation of a locking chain-link fence around the site perimeter. Fabric windscreen will also be installed and maintained along the entire site perimeter fence, and water will be applied regularly during excavation activities to prevent dust generation. All stockpiles will be protected with polyethylene sheeting when not in active use to reduce the potential for wind and water migration of site soils. The Mashapaug Pond and associated wetlands which have been field located and surveyed will be protected through the installation and maintenance of a silt fence and hay bales to prevent soil entrained in stormwater runoff from impacting the adjacent sensitive environment.

Suspect asbestos containing building materials (ACBM) have been identified at the site on 29 June 2005 and sampled for laboratory analysis on 19 July 2005. Eight additional representative soil samples from the site will be collected and analyzed for asbestos prior to the implementing the scope of work described in this Community Notice.

- This work is being performed pursuant to a RI Superior Court Order.
- This work is scheduled to begin the week of 8 August 2005 and is expected to continue for approximately 3-4 weeks, ending the week of 2 September 2005.
- This work will not include any construction and will not restrict any remedial considerations.
- A copy of the Limited Remedial Action Work Plan (LRAWP) prepared for the work described above can be reviewed at the Rhode Island Department of Environmental Management, (RIDEM) located at 235 Promenade Street in Providence. An appointment to review the LRAWP may be scheduled by calling:

RIDEM Office of Technical and Customer Assistance  
(401) 222-4700

- Questions regarding the work can also be directed to:

Timothy Regan P.E.  
EA Engineering, Science, and Technology, Inc.  
2350 Post Road, Warwick, RI 02886  
(401) 736-3440  
[tregan@eaest.com](mailto:tregan@eaest.com)

## **Appendix D**

# **Safety, Health, and Emergency Response Plan (SHERP)**

**Safety, Health, and Emergency Response Plan for  
Former Gorham Manufacturing – Parcel B  
333 Adelaide Avenue  
Providence, Rhode Island**

*Prepared for*

Mr. Alan R. Sepe  
Director of Public Property  
Department of Public Property  
City Hall  
Providence, Rhode Island 02903

*Prepared by*

EA Engineering, Science, and Technology, Inc.  
2350 Post Road  
Warwick, Rhode Island 02886  
(401) 736-3440

July 2005  
Version: FINAL  
EA Project No.: 61965.01

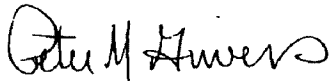
**Safety, Health, and Emergency Response Plan for  
Former Gorham Manufacturing – Parcel B  
333 Adelaide Avenue  
Providence, Rhode Island**

*Prepared for*

Mr. Alan R. Sepe  
Director of Public Property  
Department of Public Property  
City Hall  
Providence, Rhode Island 02903

*Prepared by*

EA Engineering, Science, and Technology, Inc.  
2350 Post Road  
Warwick, Rhode Island 02886  
(401) 736-3440

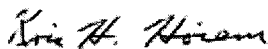


---

Peter M. Grivers, P.E., LSP  
Project Manager

8/3/05

Date



---

Kris Hoiem, CIH  
Program Safety and Health Officer

8/3/05

Date

July 2005  
Version: FINAL



**LIST OF FIGURES**

| <u>Number</u> | <u>Title</u>       |
|---------------|--------------------|
| 1             | Site location map. |
| 2             | Site plan.         |
| 3             | Hospital route.    |

**LIST OF TABLES**

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|---------------|--|
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| 2             | Emergency telephone numbers.                 |
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## 1. INTRODUCTION

### 1.1 PURPOSE

EA Engineering, Science, and Technology, Inc. (EA) has prepared this Safety, Health, and Emergency Response Plan (SHERP) for the purpose of providing personnel with protection standards and mandatory safety practices, procedures, and contingencies to be followed while performing field activities at the Parcel B area of the former Gorham Manufacturing site in Providence, Rhode Island. This SHERP, as developed, defines actions to be taken with respect to personal safety during site preparation activities as described in the Limited Remedial Action Work Plan (LRAWP) and construction and testing activities as described in the Remedial Action Work Plan. Work activities include surficial debris removal, earth moving operations, regrading, and site preparation. One copy of this SHERP will be maintained onsite for use during the scheduled field effort and made available for site use/employee review. All persons who enter the site are required to read and understand this SHERP and sign the SHERP Review Record (Attachment A). This SHERP addresses the following regulations and guidance documents:

- Occupational Safety and Health Administration (OSHA) Standards for General Industry, 29 CFR 1910
- OSHA Standards for Construction Industry, 29 CFR 1926
- National Institute of Occupational Safety and Health, OSHA, U.S. Environmental Protection Agency, and U.S. Coast Guard *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, October 1985.

### 1.2 BACKGROUND

#### 1.2.1 Site History

The site is currently undeveloped and lightly vegetated. There is some surficial disposal of white goods in the northwestern corner of the site. No hazardous materials are handled or generated at the site. To the east of the site is the Parcel A area of the former Gorham Manufacturing facility, which is currently developed with a commercial retail facility and associated fueling station and parking area. To the west of the site is the Parcel C portion of the former Gorham Manufacturing facility, which is also currently vacant. Mashapaug Pond is located to the north of the site (approximately 120 ft to the north), and Adelaide Avenue and its associated residences are located to the south. The Providence Water Supply Board provides potable water for the residences along Adelaide Avenue and the adjacent retail complex. No public water supplies are located within 1 mi of the site. A site locus map is included as Figure 1.

Several previous environmental investigations have been conducted at the former Gorham Manufacturing site, including remedial actions. These investigations include activities conducted both prior to and following the subdivision of the site into three separate parcels. No offsite migration of contaminants is associated with Parcel B. Therefore, some of these investigations have included Parcel B, although none have been conducted on Parcel B specifically prior to EA's January 2005 Limited Design Investigation.

The adjacent Mashapaug Pond is classified by Rhode Island Department of Environmental Management as a Class B Surface Water Body. This designation indicates that the pond is primarily used for fish and wildlife habitat and primary and secondary recreational activities, and is suitable for industrial, navigational, and irrigation processes. Groundwater at the site is classified as GB, indicating that it is not suitable for consumption without treatment. The direction of groundwater flow is presumed to be towards the north and Mashapaug Pond. Site investigations have encountered groundwater at approximately 25 ft below ground surface.

Topography over the site is generally flat, with a slight slope towards the north and Mashapaug Pond. According to the U.S. Geological Survey Topographic Map (Figure 1), the site is located at an elevation of approximately 70 ft below mean sea level, with an elevation of approximately 45 ft above mean sea level along the shoreline of the pond. Bedrock at the site is characterized as a meta-sedimentary sequence of the Rhode Island Formation. The bedrock surface was not encountered during any environmental investigations conducted at the site. Non-native fill material was encountered to approximately 15 ft below ground surface. Native soils observed during drilling activities were predominantly sand deposits.

The former Gorham Manufacturing facility was once the country's largest producer of silverware, and was also renowned for its statues, memorials, and architectural bronze work. The facility at the site reportedly began operations in 1890. Site activities included milling, forging, heat treating, plating, lacquering, polishing, and degreasing. Gorham Manufacturing operated at the site until 1967, at which time the facility was purchased by Textron. Operations ceased at the facility in 1986, and the facility was demolished in 2001. The current retail operations on Parcel A, to the east of Parcel B, began in 2002. Parcels B and C are currently owned by the City of Providence.

### **1.2.2 Scope of Work**

The scope of work activities described in the Remedial Action Work Plan consists of construction activities associated with the installation of an engineered cap. The scope of this SHERP includes, but is not limited to, safety and health hazards anticipated for field activities during construction, including:

- Shallow trench excavation
- Test pitting
- Soil, debris, and gas sampling

- Earth moving
- Engineered cap installation
- Site regrading.

The scope of this SHERP also includes all post-remedy soil disturbance activities and is intended to be used in conjunction with the Soil Management Plan and Environmental Land Usage Restriction for this site.

### **1.2.3 Potential Chemicals of Concern**

The chemicals of primary concern at Parcel B of the former Gorham Manufacturing site are total petroleum hydrocarbons (TPH), semivolatile organic compounds (SVOC), and asbestos containing materials (ACM) in soil, and chlorinated volatile organic compounds (CVOC) in groundwater. TPH is found primarily in deep subsurface soil samples. The highest concentrations were discovered in the northern portion of the site. SVOC were detected in surface soil samples collected in March 2001. Contaminants exceeding Residential Direct Exposure Criteria include benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene and chrysene. CVOC, specifically trichloroethene, are detected in both soil vapor and groundwater. Trichloroethene exceeds the applicable standards (here, the Connecticut Department of Environmental Protection Targeted Indoor Air Concentrations) in three of five soil vapor sampling points collected in February 2005 and in one of the groundwater samples collected in January 2005.

## **1.3 SAFETY, HEALTH, AND EMERGENCY RESPONSE PLAN ORGANIZATION**

This SHERP presents the overall approach to safety during execution of the project activities conducted at the Parcel B of the former Gorham Manufacturing site. This section presents an introduction and outlines the report organization. Section 2 summarizes the project management team. Section 3 outlines the hazard communications and environmental monitoring during field operations. Section 4 presents the required employee training. Section 5 details personal protective equipment (PPE). Section 6 summarizes emergency response reactions to site contingencies. Section 7 outlines site controls and work zones. Attachment A contains a copy of the SHERP Review Record. Attachment B provides the Site Entry and Exit Log. Attachment C provides an Accident/Loss and Incident Report form.

## 2. PROJECT MANAGEMENT

### 2.1 KEY PERSONNEL

The following table, and attached Table 2, contain information on key project personnel:

| Position   | Name             | Work Phone     | Home Phone     |
|--|------------------|----------------|----------------|
| Project Manager  | Timothy Regan    | (401) 736-3440 | (401) 241-5461 |
| Regional Safety and Health Officer                       | Kris Hoiem       | (410) 771-4950 | (410) 357-5485 |
| Field Manager  | Peter Grivers    | (401) 736-3440 | (401) 270-2591 |
| Site Safety and Health Officer/<br>Emergency Coordinator | Jill Ann Parrett | (401) 736-3440 | (401) 465-7138 |

### 2.2 RESPONSIBILITIES

Clear lines of authority will be established for enforcing compliance with the safety, health, and contingency procedures consistent with industry policies and procedures.

Designated EA personnel are responsible for implementation of the SHERP during field activities. This includes field supervision; implementing and directing emergency operations; coordinating with onsite and offsite emergency responders; enforcing safe work practices and decontamination procedures (if needed); ensuring proper use of PPE; communicating site safety program modifications and requirements to site personnel; proper reporting of injuries, illnesses, and incidents to the appropriate internal and external organizations; and containing and controlling the loss of potentially hazardous materials to soil, air, and surface/ground water during all phases of construction operations.

In the event of an onsite injury, occupational illness, near-miss, or environmental contamination incident, the following organizations/individuals will be notified as appropriate:

- Field Manager
- Site Safety and Health Officer/Emergency Coordinator
- Project Manager
- Program Safety and Health Officer
- EA Rhode Island Branch Manager
- Regional Safety and Health Officer.

#### 2.2.1 Project Manager

The **Project Manager** has overall responsibility for site activities and will be the primary contact during work activities. Specific responsibilities of the Project Manager include: approving the SHERP and its amendments, providing overall supervisory control for health and safety protocols in effect for the project, assuring adequate resources are available for health and safety,



and coordinating all site occupational health and safety issues with the Program Safety and Health Officer.

### **2.2.2 Regional Safety and Health Officer (or Designee)**

The *Regional Safety and Health Officer* has overall project responsibility for the development of this SHERP and will provide technical safety and health guidance, as needed.

### **2.2.3 Site Safety and Health Officer/Emergency Coordinator**

The *Site Safety and Health Officer/Emergency Coordinator* is responsible for coordination of onsite contingency operations, as well as the Site Safety and Health Program. The Site Safety and Health Officer/Emergency Coordinator will be onsite throughout the project and will be responsible for daily compliance with site safety and health requirements. Specific responsibilities of the Site Safety and Health Officer include daily site inspections, stopping work when an imminent health and safety risk exists, implementing the usage of forms presented as attachments to this SHERP, providing an initial health and safety briefing to all site workers, supervising the use of proper PPE, and investigating and preparing incident reports as necessary.

During an emergency, the Field Manager and Site Safety and Health Officer/Emergency Coordinator will be responsible for initiating and coordinating emergency responses/contingency operations.

The Program Safety and Health Officer, Field Manager, and Site Safety and Health Officer/Emergency Coordinator will have the authority to make on-the-spot corrections concerning safety, health, and environmental pollution infractions.

### **2.2.4 Field Manager**

The *Field Manager's* responsibilities include, but are not limited to, providing technical support to the Site Safety and Health Officer/Emergency Coordinator, evaluating onsite environmental monitoring results and reporting to the Project Manager and Program Safety and Health Officer, initiating evacuation of the work site when needed, communicating with offsite emergency responders, and coordinating activities of onsite and offsite emergency responders.

### **2.2.5 Employee Responsibilities**

EA and subcontractor employees are responsible for reading, understanding, and meeting the safety and health requirements contained in this SHERP. A Review Record sign-off sheet is provided in Attachment A. Employees are required to implement these procedures when conducting daily operations. This will also include receiving appropriate training and medical monitoring and utilization of safety and health equipment (to include PPE) to safely conduct site operations. This will also include maintaining appropriate grooming standards (removal or

proper trimming of beards, mustaches, and sideburns) to ensure the proper fit of respiratory protection. Employees will review each task prior to commencement to consider the potential safety and health hazards, and the measures to be taken in the event of an emergency. Employees should know where material safety data sheets, first aid supplies, and emergency equipment are maintained. The Field Manager and Site Safety and Health Officer/Emergency Coordinator should be notified of potential safety and health hazards, near-miss conditions, or incidents present on the job site or unusual effects believed to be related to hazardous chemical exposures. Failure to follow established safety and health procedures could result in immediate dismissal from the site.

### **2.2.6 Subcontractors**

Responsibilities of EA and subcontractor personnel include: following the SHERP and applicable safety and health rules, regulations, and procedures; using required controls, procedures, and safety devices, including PPE; notifying his/her supervisor of identified or suspected emergencies, safety, or health hazards; and complying with training and medical requirements.

### **3. ENVIRONMENTAL MONITORING DURING FIELD OPERATIONS**

#### **3.1 CHEMICAL HAZARDS**

##### **3.1.1 Area of Concern Chemical Hazards**

Information regarding chemicals of concern was gathered through the EA Site Investigation conducted in January-March 2005, as well as reviews of past activities conducted at Parcel B of the former Gorham Manufacturing site. Concerns identified suggest that the chemical of primary concern is TCE in vapor. Auxiliary contaminants of concern include PAHs, ACM, and TPH.

Table 1 provides a list of potential site chemical hazards and symptoms of overexposure.

##### **3.1.2 Chemicals for Equipment Calibrations and Operations**

The following chemicals are typically supplied by the primary investigation team:

- Isopropyl alcohol
- Isobutylene calibration gas
- Methane calibration gas.

These chemicals will be used for environmental monitoring equipment calibration and operation. The quantities to be used will not exceed 0.5-liter (L) quantities, and will be used under controlled environments. Chemicals used during the field activities will be properly contained and labeled. Occupational exposures will be negligible.

#### **3.2 PHYSICAL HAZARDS**

Physical hazards can potentially be present during field activities. These physical hazards may include, but not be limited to:

- Fire/explosion hazards
- Heat/cold stress
- Equipment hazards
- Slips, trips, and falls
- Noise hazards
- Electrical hazards
- Utilities
- Weather hazards.

Parcel B of the former Gorham Manufacturing site will be visually inspected for the presence of general safety hazards (e.g., trip/slip hazards, unstable surfaces or steep grades, and sharp

objects) prior to beginning work. If hazards are present, these hazards will be recorded and precautionary measures taken to prevent injury.

### **3.2.1 Fire/Explosion Hazards**

The potential for fire and/or explosion emergencies is always present. Workers must continuously monitor the work area for combustible or explosive gases. Employees should always be alert for unexpected events, such as ignition of chemicals or sudden release of materials under pressure, and be prepared to act in these emergencies.

Field vehicles will be equipped with a fire extinguisher. Employees must be trained in the proper use of fire suppression equipment. However, large fires that cannot be controlled with a fire extinguisher should be handled by professionals. The proper authorities should be notified in these instances.

### **3.2.2 Heat Stress and Heat-Related Illness**

Effects of heat stress and illness are possible during the performance of field activities at Parcel B of the former Gorham Manufacturing site. Injury from excess exposure to high temperatures may occur to persons working outdoors. This is a major concern when personnel are working in PPE clothing. The body's principal means of cooling is through the evaporation of sweat. When personnel are working in PPE, sweat is trapped inside the clothing and cannot evaporate, thus raising the body's core temperature and resulting in a heat-related illness.

The symptoms of heat-related illness include painful muscle spasms, dizziness, slurred speech, confusion, fainting, and cool, clammy skin. Site personnel should be familiar with these symptoms of heat-related illness and be prepared to administer first aid or to contact the appropriate emergency personnel.

### **3.2.3 Effects of Cold Exposure**

Effects of cold exposure are possible during the performance of field activities at Parcel B of the former Gorham Manufacturing site. Injury from cold exposure may occur in persons working outdoors during a period when temperatures average below freezing. The extremities, such as fingers, toes, and ears, are the most susceptible to frostbite.

Symptoms of cold stress include shivering, pain in the extremities, numbness, drowsiness, white or grayish skin, confusion, or fainting. To prevent cold stress, personnel should wear layers of loose-fitting clothing and head covering. Protection of the hands, feet, and head is particularly important because these are the areas most likely to be injured first by the cold. Bare skin contact with cold surfaces must be avoided.

### **3.2.4 Heavy Equipment Hazards**

The use of heavy equipment (e.g., excavators, graders, generators, etc.) may pose safety hazards to site workers. Heavy equipment work must be conducted only by trained, experienced personnel. Proper protective gear (hard-hats and steel-toed boots) will be worn onsite. If possible, personnel must remain outside the turning radius of large, moving equipment, with particular attention given to remaining within the line of sight of the operator and maintaining eye contact with the operator. Personnel will not approach the machines until they have stopped moving and have gotten the attention of the operator. Excavated materials will be kept at least 2 ft away from the excavation. There will be no entering a trench more than 4 ft deep. At a minimum, personnel must maintain visual contact with the equipment operator. No guards, safety appliances, or other devices may be removed or made ineffective unless repairs or maintenance are required, and then, only after power has been shut off, tagged, and locked out. Safety devices must be replaced once repair or maintenance is complete. Exhaust from equipment must be directed so that it does not endanger workers or obstruct the view of the operator. When not operational, equipment must be set and locked so that it cannot be activated, released, dropped, etc. No personnel will work beneath loads handled by lifting or digging equipment.

### **3.2.5 Noise Hazards**

Work around large equipment often creates excessive noise. Noise can cause workers to be startled, annoyed, or distracted; can cause physical damage to the ear, pain, and temporary and/or permanent hearing loss; and can interfere with communication. If workers are subjected to noise exceeding an 8-hour time-weighted average sound level of 85 dBA (decibels on the A-weighted scale), hearing protection will be selected with an appropriate noise reduction rating to comply with 29 CFR 1910.95 and to reduce noise levels to or below the permissible values. During the field activities where workers are using heavy equipment, such as drill rigs and excavators, hearing protection should be used.

### **3.2.6 Electrical Hazards**

Overhead power lines, electrical wiring, electrical equipment (electrical generators), and buried cables pose risks to workers of electric shock, burns, muscle twitches, heart fibrillation, and other physical injuries, as well as fire and explosion hazards. Workers will take appropriate protective measures when working near live electrical parts, including inspection of the work area, identification of potential spark sources, maintenance of a safe distance, proper illumination of the work areas, provision of barriers to prevent inadvertent contact, and use of nonconductive equipment. If overhead lines cannot be de-energized prior to the start of work, a 10-ft distance must be maintained between overhead energized power lines with a voltage of 50 kV and elevated equipment parts. This distance will be increased 4 in. for every 10 kV greater than 50 kV. For example, workers should maintain a distance of 11.7 ft from energized power lines with a voltage of 100 kV.

### **3.3.7 Utilities**

Underground utilities pose hazards to workers involved in excavation and other invasive operations. These hazards include electrical hazards, explosion, and asphyxiation, as well as costly and annoying hazards associated with damaging communication, sewer, and water lines. Prior to commencement of invasive operations, Rhode Island Dig Safe will be contacted to inspect and flag the area of investigation. Dig Safe's telephone number in Rhode Island is (888) 344-7233. Dig Safe requires 3 days notice prior to intrusive activities on the site.

Personnel should be aware that although an area may be cleared, it does not mean that unanticipated hazards will not appear. Workers should always be alert for unanticipated events such as snapping cables, drilling into unmarked underground utilities, and drilling into a heavily contaminated zone. Such occurrences should prompt involved individuals to halt work immediately and take appropriate corrective measures to gain control of the situation. A careful walkover inspection of the project area should be performed where trenching and excavations will take place, being particularly careful to look for surface indicators of additional and unmarked utilities.

### **3.2.8 Weather Hazards**

Weather conditions should always be taken into consideration. Heavy rains or snowfall, electrical storms, high winds, and extreme temperatures, for example, may create extremely dangerous situations for employees. Equipment performance may also be impaired because of inclement weather. Whenever unfavorable conditions arise, the Site Safety and Health Officer/Emergency Coordinator will evaluate both the safety hazards and ability of the employees to effectively perform given tasks under such conditions. Activities may be halted at their discretion.

Wind direction should be accounted for when positioning equipment at sampling locations. If exposure to organic vapors or dust emissions is anticipated, workers should locate upwind of sampling point. Wind direction often changes abruptly and without warning, so personnel should always be prepared to reposition, if necessary.

### **3.2.9 Biological Hazards**

During site activities, attention will be paid to biological hazards such as ticks, mosquitoes, and other biting insects. Personnel will have commercial bug spray onsite to use if necessary.

Attention will also be paid to the presence of irritant plants such as poison ivy, oak, and sumac. If exposed, personnel should flush the area with soap and water.

### 3.3 SAFE WORK PRACTICES

#### 3.3.1 Site-Specific Work Practices

Safe work practices that must be followed by site workers, include:

- Eat, drink, and smoke only in those areas designated by the Site Safety and Health Officer/Emergency Coordinator. These activities will not take place within any work zone.
- In the event the potential for chemical contamination exists onsite, employees will wash and conduct appropriate decontamination activities.
- Defective PPE must be repaired or replaced immediately.
- Each employee required to take prescription drugs will notify the Field Manager and/or Site Safety and Health Officer/Emergency Coordinator prior to the start of work. Controlled or unauthorized drugs will **not** be permitted onsite at any time.

### 3.4 ENVIRONMENTAL MONITORING

For intrusive work (e.g., trench excavation) conducted onsite, environmental monitoring for toxic and flammable/combustible gases will be performed continuously during onsite construction activities using a combustible gas indicator and a photo ionization detector (PID). Instruments will only be used by employees who have been trained in the proper operation, use limitations, and calibration of the monitoring equipment. Monitoring will be conducted at intervals not greater than once every 30 minutes using either the PID or the combustible gas indicator. Instrument calibration and measurements taken will be logged in the field notebook.

Environmental monitoring will include sufficient monitoring of air quality in work zones during intrusive field operations to assess levels of employee exposure and to verify that the level of PPE being worn by personnel is adequate. Monitoring will be conducted to ensure that contaminants are not migrating offsite to minimize the exposure to nearby populations and/or workers. Table 3 summarizes the monitoring requirements for the project.

If visible dust is emitted in the breathing zone, dust suppression will be implemented. If dust can not be suppressed, environmental sampling for dust will be implemented and action levels established.

#### 3.4.1 Calibration and Maintenance

Direct-reading instruments will be calibrated on a daily basis and prior to use with a known concentration of calibration gas (isobutylene for use with the PID and methane for the

combustible gas indicator) following the instrument manufacturer's guidance. Instructions in the manufacturer's operations manual regarding storage, cleaning, and maintenance of the instruments will be followed. Calibration will be properly recorded in the field logbook to show the date, calibration material type and concentration, and the actual reading obtained. Equipment failing to meet the manufacturer's standards for accuracy and repeatability will be considered suspect and replaced with an alternate, properly functioning piece of equipment.

#### **4. EMPLOYEE TRAINING**

##### **4.1 SITE WORKERS**

Personnel who will be performing construction-related non-hazardous waste operations are not required to have been trained according to U.S. Department of Labor OSHA Standard, 29 CFR 1926.65 *Hazardous Waste Operations and Emergency Response*. These workers will have appropriate safety and health training based upon their specific job tasks and activities.

The Site Safety and Health Officer/Emergency Coordinator and personnel conducting the field sampling and monitoring for site gases and vapors during intrusive operations (e.g., Geoprobe) will be trained as required to meet the U.S. Department of Labor OSHA Standard, 29 CFR 1926.65, *Hazardous Waste Operations and Emergency Response* to qualify as hazardous waste site workers and supervisor. Training will include:

- A minimum of 40 hours of initial offsite instruction
- A minimum of 3 days of actual field experience under the direct supervision of a trained, experienced supervisor
- An 8-hour "refresher" training period annually
- Additional training that addresses unique or special hazards/operational requirements.

Onsite supervisors who are directly responsible for or who supervise employees will receive at least 8 additional hours of hazardous waste operations training for supervisors. Copies of training certificates and dates of attendance will be provided to the Site Safety and Health Officer/Emergency Coordinator prior to the commencement of field activities, and will be available through the Site Safety and Health Officer/Emergency Coordinator upon request.

##### **4.1.1 Subcontractor Training**

The Project Manager will obtain a written list of subcontractor personnel to be onsite for intrusive site activities only. The subcontractor will provide written certification from subcontractor management that these workers meet the training requirements for their assigned tasks to conduct intrusive activities such as excavation.



#### **4.1.2 Pre-Entry Orientation Session**

Prior to entering the site, personnel will attend a pre-entry orientation session presented by the Site Safety and Health Officer/Emergency Coordinator. Personnel will verify attendance of this meeting by signing the SHERP Review Record provided in Attachment A. Visitors entering designated work areas will be subject to applicable safety and health regulations during field operations at the site. The Field Manager and/or Site Safety and Health Officer/Emergency Coordinator is responsible for briefing the personnel onsite of potential hazards that may be encountered on the site, the presence and location of the site SHERP, and emergency response procedures. Visitors will be under the direct supervision of the Field Manager and/or Site Safety and Health Officer/Emergency Coordinator or his/her representative.

At a minimum, the pre-entry orientation session will discuss the contents of this SHERP, PPE, potential hazards, health effects of hazards associated with onsite activities, and the potential hazards presented by unearthing unidentified hazardous materials. Personnel will be instructed in the emergency procedures to include onsite communications and implementation of the site-specific contingency plans.

#### **4.2 MEDICAL SURVEILLANCE**

Non-hazardous waste site workers will be medically examined to meet OSHA requirements specific to their job. Hazardous waste site workers must have satisfactorily completed a comprehensive medical examination by a licensed physician within 12 months (or 24 months pending physician's approval) prior to the start of site operations. Subcontractors will provide this information in writing to the Project Manager for their workers prior to mobilization onsite. Copies of this information will be kept onsite by the Site Safety and Health Officer/Emergency Coordinator. Medical surveillance protocol and examination results will be reviewed by a licensed physician who is certified in Occupational Medicine by the American Board of Preventative Medicine. Medical surveillance protocols will comply with 29 CFR 1910.120. The content of medical examinations will be determined by the attending physician and will be based upon the guidelines in the *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*. Medical examinations and consultations will be provided for employees covered by this program on the following schedule:

- Prior to field work assignment
- At least annually (or every other year with the approval of the occupational physician) for employees covered by the program
- At termination of employment or reassignment to an area where the employee would not be covered if the employee has not been examined within the past 6 months

- As soon as possible upon the development of signs or symptoms that may indicate an overexposure to hazardous substances or other health hazards, or that an unprotected person has been exposed in an emergency situation
- More frequently if the physician deems such examination necessary to maintain employee health.

An accurate record of the medical surveillance will be maintained for each EA employee for a period of no less than 30 years after the termination of employment. Records will be managed and maintained per recordkeeping provisions of EA's *Safety and Health Program Manual* (SHP-001). Records must include at least the following information about the employee:

- Name and social security number
- Physician's written opinions, recommendations, limitations, and test results
- Employee medical complaints related to hazardous waste operations
- Information provided to the physician by the employee concerning possible exposures, accidents, etc.

### **4.3 HAZARD COMMUNICATION PROGRAM**

#### **4.3.1 Hazard Communication**

The Site Safety and Health Officer/Emergency Coordinator will conduct regularly scheduled safety meetings with site workers to discuss the planned activities, since these activities and workers may change over the duration of the project. The objective of instituting a Hazard Communication Program is to ensure that hazards associated with the site and with chemicals brought onsite by EA or subcontractors are evaluated, and that information concerning these hazards is transmitted to site employees. Site personnel include EA and subcontractor employees, manufacturer's representatives, or local agency employees, and other workers who observe or perform services onsite. Employee awareness of chemical identities, health and physical hazards, properties, and characteristics is essential to safely handle chemicals and to minimize potential hazards. The Hazard Communication Program must follow OSHA requirements listed in 29 CFR 1926.59.

#### **4.3.2 Hazard Communication Labeling**

The Site Safety and Health Officer/Emergency Coordinator will ensure that containers are properly labeled and that workers know the contents of containers. Container labels will contain, at a minimum, information on name of product on container, chemical(s) in product, manufacturer's name and address, protective equipment required for the safe handling of the product, and first-aid procedures in case of overexposure to product contents.

### **4.3.3 Material Safety Data Sheets**

The Site Safety and Health Officer/Emergency Coordinator will maintain a current alphabetical file of complete material safety data sheets (MSDSs) for each hazardous substance stored or used at the work site. The file must be easily accessible to employees. Subcontractors and visitors to the workplace will be informed of the existence and location of this file. Workers and visitors will be instructed on how to read and understand the information shown on the MSDSs. Subcontractors must inform the Site Safety and Health Officer/Emergency Coordinator about hazardous substances which they bring onsite and provide MSDSs.

### **4.3.4 Hazard Communication Training**

Site workers and visitors will be informed of the Hazard Communication Program, their legal rights under the program, the location of the chemical inventory, and the location of the MSDS file. Prior to site work or potential exposure to hazardous substances, the Site Safety and Health Officer/Emergency Coordinator will describe hazardous substances routinely used and provide information about:

- Nature of potential chemical hazards
- Appropriate work practices
- Appropriate control programs
- Appropriate protective measures
- Methods to detect presence or release of hazardous substances
- Emergency procedures.

## **5. PERSONAL PROTECTIVE EQUIPMENT**

### **5.1 PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS**

Based upon currently available information, the site will require Level D protection for anticipated conditions and intrusive activities. In the event that potential chemical hazards are identified, the level of protection may be upgraded appropriately to the potential hazard conditions. Only those personnel identified and qualified for hazardous waste work as defined in 29 CFR 1926.65 will be allowed to upgrade beyond Level D or provide support of hazardous material/substance contingency operations. Only the Site Safety and Health Officer/Emergency Coordinator, in conjunction with the Program Safety and Health Officer, will be allowed to approve PPE upgrade beyond Level D and site re-entry for the purpose of hazardous conditions assessment.

The following is a list of the Level D PPE components for the minimum level of protection authorized for use during this project.

- Coveralls or appropriate work clothes
- Steel-toe, steel-shank safety boots/shoes
- Hard hats (with overhead activities such as drilling, excavation, and other heavy equipment operation)
- Chemical resistant gloves (nitrile) as appropriate to prevent contact with contaminated media during excavation activities
- Leather work gloves (as needed)
- Safety glasses with side shields and face shield (as needed) or impact-resistant chemical goggles; safety glasses, goggles, and face shields will meet American National Standards Institute requirements for impact resistance and safety
- Hearing protection (as needed).

The following is a list of the Modified Level D PPE components for the minimum level of protection authorized for use during this project.

- Tyvek
- Steel-toe, steel-shank safety boots/shoes
- Boot covers for steel-toe boots
- Hard hats (with overhead activities such as drilling, excavation, and other heavy equipment operation)
- Chemical resistant gloves (nitrile) as appropriate to prevent contact with contaminated media during excavation activities
- Leather work gloves (as needed)
- Safety glasses with side shields and face shield (as needed) or impact-resistant chemical goggles; safety glasses, goggles, and face shields will meet American National Standards Institute requirements for impact resistance and safety
- Hearing protection (as needed).

The following is a list of the Level C PPE components for the maximum levels of protection authorized for use during this project:

- Full facepiece, air purifying respirator equipped with combination organic vapor high efficiency particulate cartridges
- Poly-coated Tyvek coveralls
- Steel-toe, steel-shank safety boots/shoes
- Chemical-resistant boot covers
- Hard hat
- Hearing protectors
- Chemical resistant gloves (neoprene or nitrile) as appropriate to prevent contact with contaminated media during excavation activities.

## **6. EMERGENCY RESPONSE AND REACTION TO SITE CONTINGENCIES**

### **6.1 EMERGENCY RECOGNITION**

Prior to work startup, personnel must be familiar with emergency condition identification, notification, and response procedures. The emergency telephone numbers for local emergency response and reporting organizations and directions to the nearest hospital are provided in Table 2. The Field Manager, along with the Site Safety and Health Officer/Emergency Coordinator, will rehearse/review emergency procedures and/or applicable site contingencies initially during site orientation and as part of the ongoing site safety program with EA and subcontractor personnel. Onsite emergencies will ultimately be handled by offsite emergency personnel. Initial response and first-aid treatment, however, will be provided onsite.

Person(s) identifying an accident, injury, emergency condition, or a scenario requiring implementation of a response in support of this SHERP will immediately take actions to report the situation to the Field Manager and Site Safety and Health Officer/Emergency Coordinator. Notification may take place by runner, hand-held radio, or telephone. The Field Manager and Site Safety and Health Officer/Emergency Coordinator will initiate the required response based upon the type of incident, following the procedures contained in this SHERP. Chain-of-command and sign-in sheets for personnel on the site will be established at the beginning of each work day to ensure personnel are accounted for and who will take control should the Field Manager and/or Site Safety and Health Officer/Emergency Coordinator become injured. The following items constitute those site conditions requiring an emergency response or contingency action in accordance with this SHERP:

- Fire/explosion
- Heavy equipment accident
- Natural disaster
- Medical emergency
- Discovery of unanticipated hazards (e.g., unmarked utility lines, heavily contaminated material).

Follow-on operations to evaluate and control the source of fire, explosions, and hazardous materials incidents will occur only after discussion with the Project Manager, Field Manager, and/or Site Safety and Health Officer/Emergency Coordinator. The Field Manager and/or Site Safety and Health Officer/Emergency Coordinator will act as the Emergency Coordinator at the site to coordinate onsite activities and contingencies with outside response organizations. If the Field Manager is unable to act as the emergency coordinator, then the authority to take action will be transferred to the Site Safety and Health Officer/Emergency Coordinator, or other designee, as indicated in the daily updated chain-of-command.

## **6.2 OPERATIONS SHUTDOWN**

Operations shutdown may be mandated by the former Gorham Manufacturing Site Safety and Health Officer/Emergency Coordinator or the Project Manager. Conditions warranting work stoppage will include (but are not limited to):

- Uncontrolled fire
- Explosion
- Uncovering potentially dangerous buried hazardous materials
- Conditions immediately dangerous to life and health or the environment
- Potential for electrical storms
- Treacherous weather-related conditions
- Limited visibility
- Air contaminant concentrations in excess of the action levels contained in Table 3.

## **6.3 PROCEDURES FOR HANDLING EMERGENCY INCIDENTS**

In the event of an emergency, the information available at that time must be properly evaluated and the appropriate steps taken to implement the emergency response plan. The Site Safety and Health Officer/Emergency Coordinator will assume command of the situation. He/she will alert the emergency management system per Table 2, and evacuate personnel to the pre-designated evacuation location. The Site Safety and Health Officer/Emergency Coordinator will make required notifications to include, but not be limited to the EA Project Manager or EA Regional Safety and Health Officer, as defined in this SHERP and Table 2, and the appropriate federal and state agencies.

Site personnel will have the capability of notifying emergency responders directly from the site using the phone in the company vehicle or in the site support office.

The Project Manager will complete and submit to a City of Providence-appointed representative an Accident/Loss and Incident Report using the format contained in Attachment C. The following information will be provided when reporting an emergency:

1. Name and location of person reporting
2. Location of accident/incident
3. Name and affiliation of injured party
4. Description of injuries, fire, spill, or explosion
5. Status of medical aid and/or other emergency control efforts
6. Details of chemicals involved
7. Summary of accident, including suspected cause and time it occurred
8. Temporary control measures taken to minimize further risk.

This information is not to be released under any circumstances to parties other than those listed in this section and emergency response team members. Once emergency response agencies have been notified, the Project Manager will be immediately notified.

#### **6.4 MEDICAL EMERGENCIES**

Personnel should always be alert for signs and symptoms of illnesses related to chemical, physical, and onsite health hazards. Severe injuries resulting from accidents must be recognized as emergencies and treated as such. At least one person currently trained in first aid/ cardiopulmonary resuscitation must be present onsite at all times. This will normally be the Site Safety and Health Officer/Emergency Coordinator.

In a medical emergency, the Site Safety and Health Officer/Emergency Coordinator must sound the emergency alarm, upon which work must stop and personnel must move to the predesignated evacuation location. **If the emergency situation cannot be conveyed by word of mouth, a whistle or other horn will be sounded. Three short blasts, separated by a 2-second silence, will be used as the emergency signal.** Personnel currently trained in first aid will evaluate the nature of the injury, decontaminate the victim (if necessary), and initiate first aid assistance immediately and transport if appropriate. First aid will be administered only to limit further injury and stabilize the victim. The local Emergency Medical Services must be notified immediately if needed.

Although not anticipated, victims who are heavily contaminated with toxic or dangerous materials must be decontaminated before being transported from the site. Since no hazardous materials are anticipated, a formal decontamination station will not be available; however, there is an emergency eyewash station in each of the EA vehicles. Decontamination will consist of removal of contaminated coveralls/clothing, and wrapping the victim in a sheet or other clothlike

material. No persons will re-enter the site of injury/illness until the cause of the injury or symptoms has been determined and controlled. At no time will personnel transport victims to emergency medical facilities unless the injury does not pose an immediate threat to life and transport to the emergency medical facility can be accomplished without the risk of further injury. Emergency Medical Services will be used to transport serious injuries offsite unless deemed otherwise by the Site Safety and Health Officer/Emergency Coordinator.

The Site Safety and Health Officer/Emergency Coordinator must complete an Accident/Loss and Incident Report (Attachment C) and submit it to the Project Manager within 24 hours of the following types of incidents:

- Job-related injuries and illnesses
- Accidents resulting in loss or damage to property
- Accidents involving vehicles and/or vessels, whether or not they result in damage to property or personnel
- Accidents in which there may have been no injury or property damage, but which have a high probability of recurring with at least a moderate risk to personnel or property
- Near-miss incidents that could have resulted in any of the conditions defined above.

An accident that results in a fatality or the hospitalization of three or more employees must be reported within 8 hours to the U.S. Department of Labor through the Project Manager. Subcontractors are responsible for their reporting.

In order to support onsite medical emergencies, first aid/emergency medical equipment will be available at the following locations:

- |                     |                             |
|---------------------|-----------------------------|
| • First-aid kit     | Company vehicle             |
| • Eyewash           | Company vehicle             |
| • Emergency alarm   | Horn on the company vehicle |
| • Copy of the SHERP | Company vehicle             |
| • Telephone         | Company vehicle.            |

The eyewash kit must be portable and capable of supplying at least a 15-minute supply of potable water to the eyes.

## 6.5 FIRE/EXPLOSION EMERGENCIES

Fire and explosion must be immediately recognized as an emergency. The Site Safety and Health Officer/Emergency Coordinator must sound an emergency signal, and personnel must be



decontaminated (if necessary) and evacuated to the pre-designated evacuation location. Only persons properly trained in fire suppression and other emergency response procedures will support control activities. Control activities will consist of the use of onsite portable fire extinguishers for limited fire suppression and employee evacuation. Upon sounding the emergency alarm, personnel will evacuate the hazard location and assemble at the designated site meeting area. Only the Site Safety and Health Officer/Emergency Coordinator, or those site personnel trained in the use of portable fire extinguishers will attempt to suppress a site fire. Small, multi-purpose dry chemical extinguishers will be maintained in each EA vehicle onsite. Fires not able to be extinguished using onsite extinguishers will require the support of the local Fire Department. The Site Safety and Health Officer/Emergency Coordinator should take measures to reduce injury and illness by evacuating personnel from the hazard location as quickly as possible. The Site Safety and Health Officer/Emergency Coordinator must then notify the local Fire Department. The Site Safety and Health Officer/Emergency Coordinator will determine proper followup actions. Site personnel will not resume work during or after a fire/explosion incident until the Emergency Coordinator has directed that the incident is over and work may resume. During the incident, site personnel will remain outside the incident area and obey the instructions of the Emergency Coordinator.

## **6.6 EMERGENCY TELEPHONE NUMBERS**

Communications will be by telephones located in the EA vehicle onsite; field personnel will have access to this telephone to directly contact offsite emergency response organizations. Refer to Table 2 for a listing of emergency telephone numbers.

## **6.7 CONTROL OF SITE-PRODUCED AMBIENT NOISE LEVELS**

In order to maintain ambient noise levels within acceptable standards, site activities can only take place between the hours of 0700 to 1900 hours each work day. Complaints by local inhabitants received by the Site Safety and Health Officer/Emergency Coordinator will prompt sound level reduction measures as needed.

## 7. SITE CONTROL AND WORK ZONES

The following work zones will be established during implementation of RAWP activities at Parcel B of the former Gorham Manufacturing site as a means of site control.

### 7.1 WORK ZONES

Work zones will be established in accordance with the following:

- **Exclusion Zone (EZ)**—The EZ at Parcel B of the former Gorham Manufacturing site will be designated prior to intrusive activities. For this investigation, the entire site will be considered as the EZ. Personnel entering the EZ must wear the prescribed level of protective equipment. Unauthorized personnel will not be allowed in this area. This area has either known or potential contamination and has the highest potential for exposure to chemicals onsite.

Persons who enter the EZ must wear the appropriate level of PPE for the degree and types of hazards present at the site. If the EZ is subdivided, different levels of PPE may be appropriate. Each sub-area of the EZ should be clearly marked to identify hazards and required level of PPE.

- **Contamination Reduction Zone (CRZ)**—One access point from the CRZ to the EZ will be designated by the Site Safety and Health Officer/Emergency Coordinator. The purpose of the CRZ is to reduce the possibility that the Support Zone (SZ) will become contaminated or affected by the site hazards. Because of both distance and decontamination procedures, the degree of contamination in the CRZ generally will decrease as one moves from the hotline to the SZ.

The CRZ will be established outside the areas of known or potential contamination. Contamination Reduction Corridors, which are access control points between the EZ and CRZ, should be established for both personnel and heavy equipment. These corridors should consist of an appropriate number of decontamination stations necessary to address the contaminants of the particular site (see National Institute of Occupational Safety and Health/OSHA/U.S. Coast Guard/U.S. Environmental Protection Agency *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, October 1985 for information on decontamination procedures and work zones).

- **Support Zone**—The SZ is the uncontaminated area where workers are unlikely to be exposed to hazardous substances or dangerous conditions. The SZ is the appropriate location for the command post, equipment and supply center, field laboratory, vehicles, and other administrative or support functions that are necessary to keep site operations running efficiently.

Potentially contaminated clothing, equipment, and samples must remain outside the SZ until decontaminated. However, personnel located in the SZ must receive instruction in proper evacuation procedures in case of a hazardous substance emergency. The SZ should be upwind and as far from the EZ as practicable.

## **7.2 PERSONAL PROTECTIVE EQUIPMENT IN WORK ZONES**

The level of PPE will depend upon the type of work performed and site monitoring data. Level D will be the minimum protection in the EZ. The CRZ will require a minimum Level D. No specific PPE requirements are needed in the SZ, as contaminated materials are prohibited from being stored in this area. Only authorized personnel will be permitted in the EZ and CRZ. Entering these zones will require donning the required PPE prior to entry. These zones will be established prior to beginning the field activities. Exiting the EZ will require going through decontamination in the CRZ.

## **7.3 SAFE WORK PRACTICES IN WORK ZONES**

Safe work practices to be followed by site workers include:

- Eating, drinking, chewing gum or tobacco, and smoking are prohibited in the EZ and CRZ.
- Hands and face must be thoroughly washed upon leaving the work area.
- Prescription drugs must not be taken by personnel unless specifically approved by a licensed physician who is familiar with the issues of worker exposure to hazardous materials.
- When respirators are required, facial hair that interferes with the face-to-facepiece fit of the respirator will not be permitted.
- Personnel onsite must use the buddy system; visual contact must be maintained between team members at all times.
- Work is allowed during daylight hours only.
- If dust is being visually generated in the EZ, the Site Safety and Health Officer/ Emergency Coordinator will advise on procedures for misting or wetting the soil to prevent possible exposure from inhalation of soil contaminants.

- Possessing, using, purchasing, distributing, selling, or having controlled substances in your system during the work day, including meal or break periods onsite, is strictly prohibited.
- The use or possession of alcoholic beverages onsite is prohibited. Similarly, reporting to work or performing one's job assignments with excessive levels of alcohol in one's system will not be permitted.







**ACCIDENT/LOSS REPORT**

THIS REPORT MUST BE COMPLETED BY THE INJURED EMPLOYEE'S SUPERVISOR AND FAXED TO EA CORPORATE HUMAN RESOURCES WITHIN 24 HOURS OF ANY ACCIDENT. THE FAX NUMBER IS (410) 771-1780.

**NOTE:** WHENEVER AN EMPLOYEE IS SENT FOR MEDICAL TREATMENT FOR A WORK RELATED INJURY OR ILLNESS, PAGE 4 OF THIS REPORT MUST ACCOMPANY THAT INDIVIDUAL TO ENSURE THAT ALL INVOICES/BILLS/ CORRESPONDENCE ARE SENT TO CORPORATE CENTER FOR TIMELY RESPONSE.

DATE OF ACCIDENT: \_\_\_\_\_ TIME OF ACCIDENT: \_\_\_\_\_

EXACT LOCATION WHERE ACCIDENT OCCURRED (including street, city, and state): \_\_\_\_\_

NAME OF INJURED EMPLOYEE: \_\_\_\_\_

HOME ADDRESS: \_\_\_\_\_

HOME PHONE: \_\_\_\_\_ DATE OF BIRTH: \_\_\_\_\_

AGE: \_\_\_\_\_ SEX:  MALE  FEMALE MARITAL STATUS: \_\_\_\_\_

SOCIAL SECURITY NUMBER: \_\_\_\_\_ DATE OF HIRE: \_\_\_\_\_

NUMBER OF DEPENDENTS: \_\_\_\_\_

EMPLOYEE JOB TITLE: \_\_\_\_\_

DEPARTMENT IN WHICH REGULARLY EMPLOYED: \_\_\_\_\_

EXPLAIN WHAT HAPPENED (include what the employee was doing at the time of the accident and how the accident occurred): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

DESCRIBE THE INJURY AND THE SPECIFIC PART OF THE BODY AFFECTED (i.e., laceration, right hand, third finger, second joint): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

OBJECT OR SUBSTANCE THAT DIRECTLY INJURED EMPLOYEE: \_\_\_\_\_

NAME AND ADDRESS OF THE PHYSICIAN (if medical attention was administered): \_\_\_\_\_

**\* PLEASE ATTACH THE PHYSICIAN'S WRITTEN RETURN TO WORK SLIP \***

**NOTE: A PHYSICIAN'S RETURN TO WORK SLIP IS REQUIRED PRIOR TO ALLOWING THE WORKER TO RETURN TO WORK.**

IS THE EMPLOYEE EXPECTED TO LOSE AT LEAST ONE FULL DAY OF WORK? \_\_\_\_\_

WAS THE EMPLOYEE ASSIGNED TO RESTRICTED DUTY? \_\_\_\_\_

NUMBER OF DAYS AND HOURS EMPLOYEE USUALLY WORKS PER WEEK: \_\_\_\_\_

LIST ALL PPE EMPLOYEE WAS WEARING AND ALL SAFETY DEVICES IN USE AT THE TIME OF THE ACCIDENT: \_\_\_\_\_

DESCRIBE THE PREVENTIVE MEASURES TAKEN TO AVERT A RECURRENCE OF THIS TYPE OF INCIDENT: \_\_\_\_\_

DATE WHEN MEASURES WERE IMPLEMENTED AND BY WHOM: \_\_\_\_\_

### **AUTOMOBILE ACCIDENT INFORMATION**

AUTHORITY CONTACTED AND REPORT NO.: \_\_\_\_\_

EA EMPLOYEE VEHICLE YEAR, MAKE, AND MODEL: \_\_\_\_\_

V.I.N.: \_\_\_\_\_ PLATE/TAG NO: \_\_\_\_\_

OWNER'S NAME AND ADDRESS: \_\_\_\_\_

DRIVER'S NAME AND ADDRESS: \_\_\_\_\_

RELATION TO INSURED: \_\_\_\_\_ DRIVER'S LICENSE NO.: \_\_\_\_\_

DESCRIBE DAMAGE TO YOUR PROPERTY: \_\_\_\_\_

DESCRIBE DAMAGE TO OTHER VEHICLE OR PROPERTY: \_\_\_\_\_



OTHER DRIVER'S NAME AND ADDRESS: \_\_\_\_\_

OTHER DRIVER'S PHONE: \_\_\_\_\_

OTHER DRIVER'S INSURANCE COMPANY AND PHONE: \_\_\_\_\_

LOCATION OF OTHER VEHICLE: \_\_\_\_\_

NAME, ADDRESS, AND PHONE OF OTHER INJURED PARTIES: \_\_\_\_\_

WITNESS:

NAME: \_\_\_\_\_ PHONE: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

STATEMENT: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

NAME: \_\_\_\_\_ PHONE: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

STATEMENT: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

DATE OF THIS REPORT: \_\_\_\_\_ REPORT PREPARED BY: \_\_\_\_\_

I have read this report and the contents as to how the accident/loss occurred are accurate to the best of my knowledge.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Injured Employee



I am seeking medical treatment for a work related injury/illness.

Please forward all bills/invoices/correspondence to:

**EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.**

**CORPORATE OFFICE**

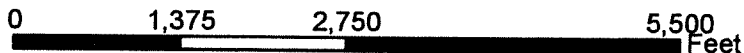
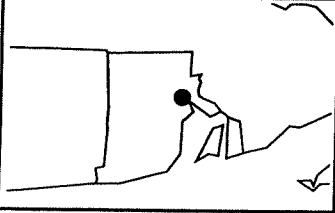
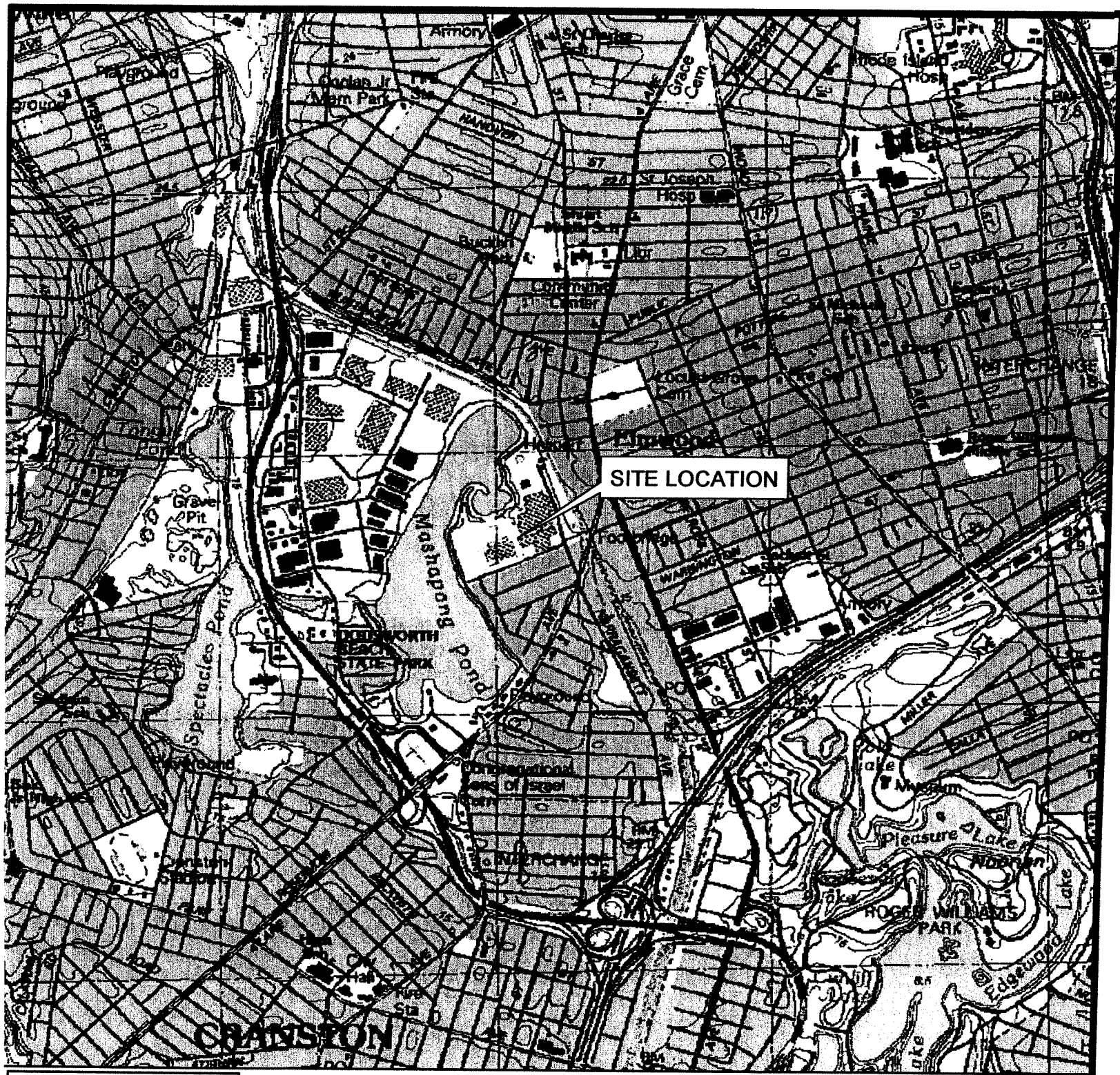
**11019 MCCORMICK ROAD**

**HUNT VALLEY, MD 21031**

**ATTENTION: HUMAN RESOURCES**

**(410) 771-1625**





FORMER GORHAM MANUFACTURING SITE, PARCEL B  
 333 ADELAIDE AVENUE  
 PROVIDENCE, RHODE ISLAND

FIGURE 1  
 SITE LOCATION MAP

|                    |                    |                   |                   |                    |                        |                        |  |
|--------------------|--------------------|-------------------|-------------------|--------------------|------------------------|------------------------|--|
| PROJECT MGR:<br>TR | DESIGNED BY:<br>DC | CREATED BY:<br>DC | CHECKED BY:<br>JP | SCALE:<br>AS SHOWN | DATE:<br>FEBRUARY 2005 | PROJECT NO:<br>6196501 | FILE NO:<br>I:\RIFIG1<br>333 ADELAIDE_PROV.MXD |
|--------------------|--------------------|-------------------|-------------------|--------------------|------------------------|------------------------|--|

MASHAUG  
RIVER

PARCEL B  
PROPERTY BOUNDARY

PROPOSED  
BUILDING FOOTPRINT

PARKING AREA

PARCEL A

PARCEL C

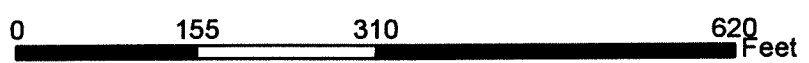
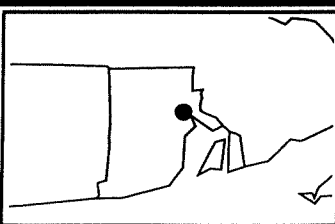
PARKING AREA

ADELAIDE AVENUE

LEGEND:



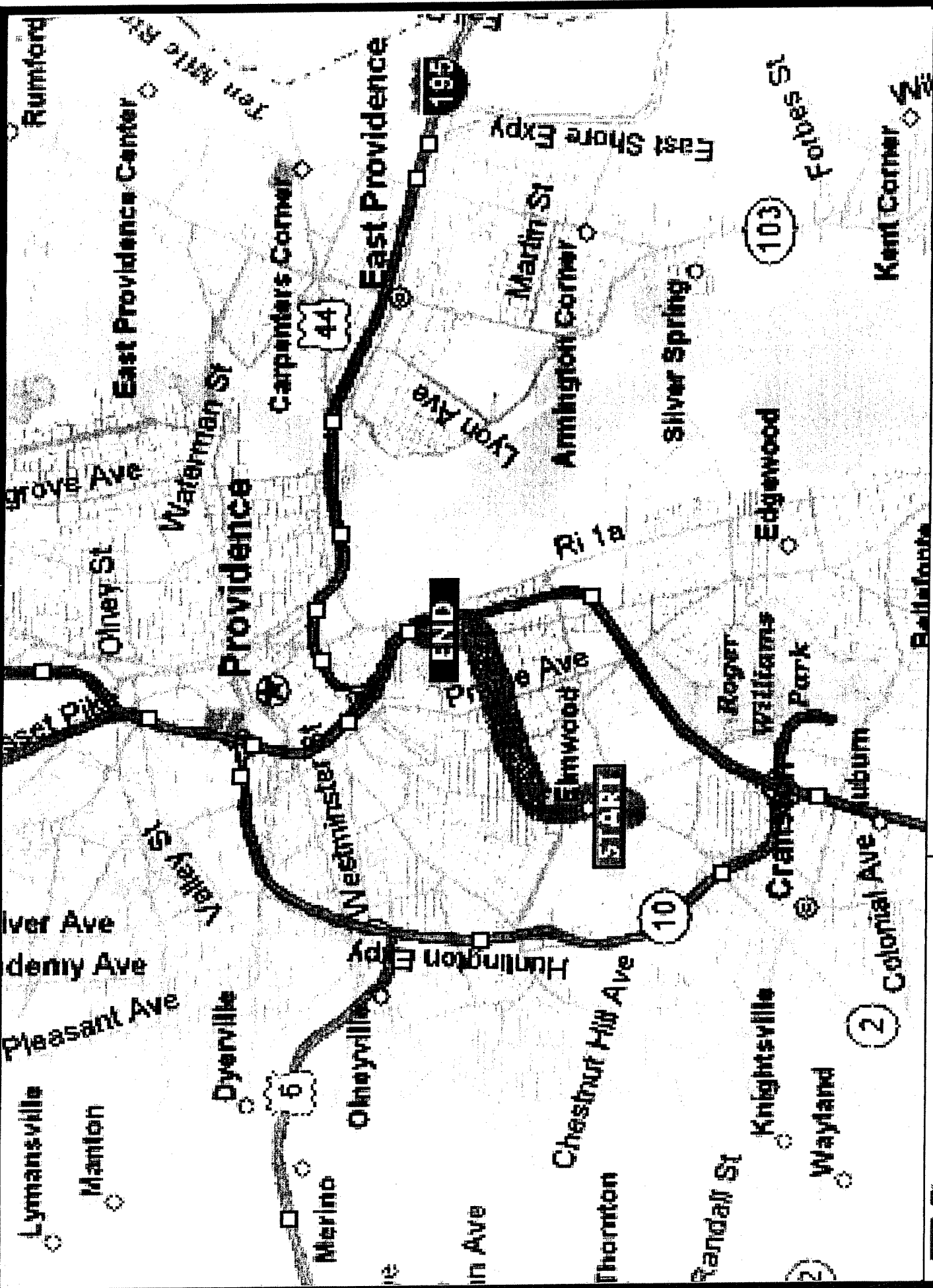
FILL AREA  
TPH TREATMENT AREA  
PCE GROUNDWATER PLUME



FORMER GORHAM MANUFACTURING SITE, PARCEL B  
333 ADELAIDE AVENUE  
PROVIDENCE, RHODE ISLAND

FIGURE 2  
SITE PLAN AND  
AREAS OF CONCERN

|                    |                    |                   |                   |                    |                     |                        |  |
|--------------------|--------------------|-------------------|-------------------|--------------------|---------------------|------------------------|--|
| PROJECT MGR:<br>TR | DESIGNED BY:<br>DC | CREATED BY:<br>DC | CHECKED BY:<br>JP | SCALE:<br>AS SHOWN | DATE:<br>MARCH 2005 | PROJECT NO:<br>6196501 | FILE NO:<br>I:\R\FIG2- AERIAL<br>333 ADELAIDE_PROV.MXD |
|--------------------|--------------------|-------------------|-------------------|--------------------|---------------------|------------------------|--|



**FIGURE 3**  
**HOSPITAL ROUTE**

EA Engineering, Science, and Technology  
2350 Post Road  
Wanwick, Rhode Island 02886

FORMER GORHAM MANUFACTURING FACILITY PROPERTY, PARCEL B  
PROVIDENCE, RHODE ISLAND

|                   |                    |                 |                   |              |                    |                        |         |
|-------------------|--------------------|-----------------|-------------------|--------------|--------------------|------------------------|---------|
| PROJECT MGR<br>TR | DESIGNED BY<br>JAP | DRAWN BY<br>MDG | CHECKED BY<br>JAP | SCALE<br>N/A | DATE<br>MARCH 2005 | PROJECT No<br>61965.01 | FILE No |
|-------------------|--------------------|-----------------|-------------------|--------------|--------------------|------------------------|---------|

TABLE 1 POTENTIALLY PRESENT COMPOUNDS OR SUBSTANCES

| Compound   | PEL/TLV <sup>(a)</sup>  | Signs and Symptoms of Exposure   |
|--|---|--|
| <b>POTENTIAL SITE CONTAMINANTS OF CONCERN</b>  |   |  |
| Petroleum Hydrocarbon  | No PEL/TLV  | Overexposure may cause: irritation to the eyes, skin, mucous membranes; dermatitis; headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis (aspiration liquid); possible liver, kidney damage; potential occupational carcinogen. |
| Semi Volatile Organic Compounds  | No PEL/TLV  | Can irritate eyes and skin. Toxic by ingestion, inhalation, or skin adsorption. Can cause headache, malaise, nausea, vomiting, abdominal pains, irritated bladder, profuse sweating, jaundice, hematuria, hemoglobinnuria, liver damage, convulsions, and coma.  |
| Chlorinated Volatile Organic Compounds   | 1 ppm   | Overexposure may cause irritation to the eyes, skin, mucous membranes; kidney damage; potential occupational carcinogen.   |
| Trichloroethene  | 270 mg/m <sup>3</sup>   | This substance is an irritant to the eyes and skin. TCE overexposure can cause headaches, vertigo, visual disturbances, tremors, somnolence, nausea/vomiting, and cardiac arrhythmia. Suspected carcinogen.  |
| Asbestos   | OSHA: 0.1 f/cc (PEL)<br>OSHA: 1.0 f/cc (STEL)<br>RIDOH: 0.01 f/cc | Exposure to asbestos fibers by inhalation may cause Asbestosis, Mesothelioma, or Lung Cancer. The latency period from asbestos exposure to disease onset is between 20-40 years. Known carcinogen.   |
| <b>DECONTAMINATION FLUIDS</b>  |   |  |
| Isopropyl Alcohol  | 400 ppm   | This product is an irritant of the eyes, nose, and throat. Overexposure can cause drowsiness and headache.   |
| <p>(a) Permissible Exposure Limit (Occupational Safety and Health Administration) or Threshold Limit Value American Conference of Governmental Industrial Hygienists for time-weighted average exposure for an 8-hour workday or 40-hour work week. When both Permissible Exposure Limits and Threshold Limit Values are available for a chemical, the lowest (i.e., most conservative) value is presented.</p> <p>NOTE: ppm = Parts per million.<br/> mg/m<sup>3</sup> = Milligrams per cubic meter.<br/> f/cc = Fibers per cubic centimeter.<br/> STEL = Short Term Exposure Limit (based upon a 30 minute sample during highest anticipated exposure).<br/> RIDOH = RI Department of Health has a non-occupational exposure limit used as a clearance criteria.</p> |   |  |

TABLE 2 EMERGENCY TELEPHONE NUMBERS

| Title   | Name   | Telephone No.                    |
|---|--|----------------------------------|
| <b>OFFSITE EMERGENCY NUMBERS</b>  |  |                                  |
| Police  | Providence Police Department                                     | 911                              |
| Fire  | Providence Fire Department                                       | 911                              |
| Ambulance   | General emergency 911  | 911                              |
| Hospital  | Rhode Island Hospital<br>593 Eddy Street<br>Providence, RI 02903 | (401) 444-4000                   |
| Directions to Hospital: Go southeast from Site on Downing Street. Turn LEFT onto ALVIN ST. Turn LEFT onto Route 2 North. Bear LEFT onto ELMWOOD AVE/(Rte 1 North). Turn RIGHT onto PUBLIC ST. Follow for 1 mile and turn LEFT onto EDDY ST. Hospital is 0.1 miles on left at 593 EDDY ST. Driving time: 7 minutes Distance: 2 miles |  |                                  |
| <b>EA Emergency Numbers</b>   |  |                                  |
| Project Manager   | Peter Grivers  | (401) 736-3440<br>(401) 270-2591 |
| Program Safety and Health Officer   | Kris Hoiem   | (410) 329-5149                   |
| Field Manager   | Peter Grivers  | (401) 935-5080                   |
| Site Safety and Health Officer/Emergency Coordinator  | Jill Ann Parrett   | (401) 465-7138                   |
| <b>Environmental Emergency Numbers</b>  |  |                                  |
| Rhode Island Department of Environmental Management Spill Reporting   | ---  | (401) 222-3070                   |
| Chemical Emergency Center (significant chemical leak or spill)  | ---  | (800) 424-9300                   |



TABLE 3 SITE CONTAMINANT MONITORING REQUIREMENTS

| Task           | Instrument  | Frequency and Location   | Action Levels <sup>(a)</sup>                 | Required Response  |
|----------------|---|--|--|--|
| Intrusive work | PID   | Initially during intrusive work and when excavation is started; every 30 minutes in the breathing zone.  | Background<br>>Background to 5 ppm<br>>5 ppm | Continue work.<br>Evacuate to a safe upwind location and wait for levels to dissipate. Retest the area after 15 minutes. If levels have not dissipated, upgrade to Level C. Continue work in Level C personal protective equipment or retest in another 15 minutes.<br>Evacuate to a safe upwind location immediately. Retest area after 15 minutes wearing Level C personal protective equipment. If sampling results defined by the flame ionization detector have not dissipated in 30 minutes, contact the Program Safety and Health Officer and Project Manager for further guidance.<br>Continue work. Monitor continuously. |
| Intrusive work | Combustible Gas Meter   | Initially during intrusive work and when excavation is started; every 30 minutes in breathing zone and areas occupied by personnel and spark-producing equipment.  | 0-10% LEL<br>(0-0.5% Methane)                | Continue work. Monitor continuously.   |
| Intrusive work | Combustible Gas Meter   |  | > 10% LEL                                    | Evacuate personnel from work area. Move upwind. Keep unnecessary equipment out of area.  |
| Intrusive work | Low Flow Personnel Pump (1-3 LPM) with a 25 mm, 0.8 um pore size cassette | Initially as a baseline and during site preparation activities, daily personnel asbestos samples will be collected on operators in or about the breathing zone, and asbestos samples along the fence line at upgradient and downgradient wind locations. | > 0.01 f/cc                                  | Utilize proper PPE and respirator protection with HEPA (P100) cartridges, re-evaluate engineering controls, and continue wet methods for dust minimization.  |
| Intrusive work | Low Flow Personnel Pump (1-3 LPM) with a 37 mm PVC membrane               | Initially as a baseline and during site preparation activities, daily personnel dust samples will be collected on operators in or about the breathing zone, and area dust samples along the fence line at upgradient and downgradient wind locations.    | > 15 ug/m <sup>3</sup>                       | Utilize proper PPE and respirator protection with HEPA (P100) cartridges, re-evaluate engineering controls, and continue wet methods for dust minimization.  |

(a) Action levels for photo-ionization detector (PID) or flame-ionization detector (FID) are based upon unknown concentrations and measurements taken above background concentrations when background concentration is less than 1 ppm. When background concentrations exceed 1 ppm total volatile hydrocarbons, PID, or FID action levels will be inclusive of background concentrations and so noted on the environmental monitoring record.

NOTE: LEL = Lower explosive limit.  
 LPM = Liters per minute  
 PPE = Personal protective equipment.  
 HEPA = High efficiency particulate air [filter].