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FOCUSED FACILITY WASTE DISPOSAL, DECOMMISSIONING AND DEMOLITION ACTIVITIES BASF RFP No. PLVL 817

BASF CORPORATION FACILITY, PLAINVILLE, MA



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1 INTRODUCTION

BASF Corporation (BASF) owns a former manufacturing facility located on approximately 22 acres at 36 Taunton Street in Plainville, Massachusetts (referred to as the Facility or the Site). **Figure 1** provides a map showing the location of the Site. At the request of BASF, Ramboll Environ US Corporation (Ramboll Environ) has prepared this bid package for the proposed decommissioning, and demolition activities at the Site. The overall scope of work includes the following tasks:

- Scope Item A: Implementation of Temporary Site security improvements, temporary work spaces, and Project Management
- Scope Item B: Asbestos abatement
- Scope Item C: Removal and off-site disposal/recycling of miscellaneous hazardous, nonhazardous, universal and general building refuse waste and debris
- Scope Item D: Decommissioning and off-site disposal of aboveground process piping, utilities, ventilation systems, and appurtenances
- Scope Item E: Removal and management of certain existing building envelopes
- Scope Item F: Removal and management of certain existing concrete slabs
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- Scope Item H: Decommissioning and off-site disposal of belowground process piping and utilities
- Scope Item I: Removal of sump pits
- Scope Item J: Scanning and removing ferrous metal debris from subsurface
- Scope Item K: Rototilling of compost and hydroseeding
- Scope Item L: Final housekeeping activities
- Scope Item M: Installation of permanent fencing

Background information related to Site history is provided in Section 2 and a detailed discussion regarding the proposed scope of work is provided in Section 3. General logistics and project information are provided in Section 4. Bid instructions are provided in Section 5.

The publications and regulatory references listed below form a part of this specification to the extent referenced.

- Draft Interim Guidance Document for Beneficial Use Determination Regulations (310 CMR 19.060), 1997, prepared by the Massachusetts Department of Environmental Protection (MassDEP).
- Massachusetts Clean Water Act, MGL Chapter 21, Sections 26-53.
- Massachusetts Chapter 91 Water Quality Regulations, 310 CMR 9.00, specifically Massachusetts Water Quality Certification Regulations, 314 CMR 9.06(6)(a).
- Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas, May 2003, prepared by the Franklin, Hampden, and Hampshire Conservation Districts.
- Massachusetts Stormwater Handbook, 1997, prepared by MassDEP.
- Massachusetts Wetlands Protection Act, 310 CMR 10.05(6)(k), MGL Chapter 131, Section 40.00.
- Safety and Health Regulations for Construction (29 CFR Part 1926), prepared by Occupational Safety and Health Administration.

2 BACKGROUND INFORMATION

2.1 Site Descriptions and Current Conditions

A Site plan showing the location of key Site features is provided as **Figure 2** and a detailed Site plan is provided as **Figure 3**. The Facility was formerly owned by the Engelhard Corporation (Engelhard), which operated from the mid-1950 to 1993 as a metal fabrication and finishing plant. The Facility was constructed in 1957 and initially consisted of two building with operations primarily consisting of rolling and fabricating steel and titanium, and fabricating uranium fuel elements under license from U.S. Atomic Energy Commission (AEC). In 1962, fabrication of uranium fuel elements ceased and all nuclear materials and equipment were removed from the Facility and sold.

The Facility was subsequently expanded with the construction of additional adjoining buildings, eventually covering a contiguous area of approximately 300,000 square feet (SF). During this period, the Facility operations consisted primarily of fabrication and finishing gold and silver into wire and flat stock for the jewelry and electronic industries. Processing included melting of raw materials, mixing metals to make alloys, shaping (i.e., drawing and forming) the metal, and heat-treating and finishing the product.

During operations, the Engelhard generated various aqueous, airborne and/or solid waste streams, which may have contained cyanides, metals (including cadmium and chromium), chlorinated solvents, acids, metal hydroxide sludge, and metals-containing dust. Historically, wastewater generated at the Facility was discharged to various on-site disposal ponds and leach fields. Beginning in 1973, the Facility operated a wastewater treatment plant (WWTP) within Building 10 which consisted of an ion exchange system designed to remove metals from the metal processing wastes and return treated waste water to the manufacturing process for reuse. The wastewater treatment plant was replaced in 1981 with a pretreatment plant where wastewater was treated by pH adjustment, solids settling and discharge to a municipal sewer. Selected wastewater streams were pretreated for reduction of hexavalent chromium and cyanide destruction before being combined with the main wastewater stream.

Engelhard operations ceased at the Site in 1993. During the subsequent five year shutdown period, the majority of Facility buildings were demolished.

The Site is currently occupied by Buildings 8, 10, and 11 as shown on **Figures 2 and 3**.

- Portions of Building 8 are used as office space (northeast corner) to manage ongoing Facility maintenance and monitoring activities. The Building 8 warehouse is primarily vacant, having been cleared after most recently being used by BASF to store various nonhazardous wastes, debris, office equipment/electronics, and other miscellaneous materials. Limited hand tools and other nonhazardous items remain in a room in the northern portion of Building 8.
- Building 10, attached to the west end of Building 8, is vacant.
- Building 11 is currently used to house a groundwater treatment plant (GWTP) and environmental equipment.

The majority of the remainder of the Site consists of concrete slabs, foundations, vacant gravel-covered land associated with previously demolished buildings, asphalt parking areas, and wooded land to the south and west of the Facility adjacent to Turnpike Lake, as shown on **Figures 2 and 3**.

2.2 Surrounding Land Uses

The Site is located in an area of mixed commercial, residential and natural preservation land uses. It is bordered by Turnpike Lake to the west and south, and a forested and wetland area owned by the Natural Resource Trust of Plainville to the north. Forested wetlands and a private residence are located to the east across Taunton Street.

2.3 Summary of Environmental Conditions

As a result of its historical metallurgical operations, Engelhard produced a variety of aqueous and solid wastes that were managed at the Facility. Based on historical information and preliminary studies, the United States Environmental Protection Agency (USEPA) Region I and, as a secondary party, the Massachusetts Department of Environmental Protection (MassDEP), and Engelhard entered into an Administrative Consent Order (ACO) [RCRA Docket No. I-92-1051] in the Fall of 1993 that, among other items, required Engelhard to: 1) investigate several potential areas of concern (AOCs); 2) assess the potential for migration of constituents off-site; 3) evaluate the potential human health and ecological risks posed by the presence of these constituents in the AOCs; and 4) implement certain specified "Stabilization Measures", as defined under RCRA, at the Site. The results of this investigation, and an assessment of the potential for migration of constituents off-site, are summarized in the *Revised Draft RCRA Facility Investigation Report* (RFI report), dated April 2011. Excerpted figures and tables from the RFI report are provided in **Attachment 1**.

A figure showing the location of AOCs is provided as **Figure 4**. AOCs within the vicinity of Buildings 8 and 10 include the following:

- **AOC A-1 and A-12 (exterior AOCs formerly used for the disposal of wastewater).** These AOCs are characterized by subsurface contamination by metals and to a lesser degree chlorinated volatile organic compounds (CVOCs).
- **AOC 5, 6, 14 and 29 (inside the building footprint).** These AOCs represent a potential source of CVOCs in groundwater. Some AOCs (AOCs 5, 6 and 14) may also be a potential source of metals in soils and groundwater.

2.4 Summary of Previous Asbestos Testing

In 2013, Environmental Health Investigations, Inc. (EHI) performed a predemolition hazardous materials survey (HMS) of the Facility to identify asbestos to be removed prior to demolition. Limited asbestos abatement was subsequently performed at the Site in 2013 and 2014. A copy of the EHI's revised HMS is provided in **Attachment 2**, which has been updated to reflect the asbestos removed from the Site.

A list of the asbestos containing materials identified by EHI remaining in Buildings 8 and 10 is provided below:

Building 8

- Window glazing - approximately 200 windows throughout Building 8
- Tar coating - roof on Trane HVAC duct work covering fiberglass insulation, 2 Trane units, 240 square feet
- Roofing - east 2nd floor roof, 15,000 square feet

Building 10

- Roofing including roof flashing – south half of roof, 3,200 square feet

In addition, a hazardous materials identification survey was not completed for the first floor office areas in the northeast corner of Building 8 as this area was occupied at the time of the 2013 survey conducted by EHI. See Figure S-2B of EHI's report (**Attachment 2**) for the locations of asbestos samples collected in and around the northeast office area. For the purposes of this document, BASF would like to assume that all potential asbestos containing materials (ACM) (tile and associated mastic, etc.) in this office area contains asbestos and will be removed prior to demolition. This is approximately 1,350 square feet.

2.5 Summary of Previous Lead Based Paint Testing

In 2013, EHI performed a HMS of the Facility to identify lead based paint, where present. A copy of the HMS is provided in **Attachment 2**. Based on the results of EHI's survey, lead concentrations in paint range from <0.01 to 5.12% by weight at the Site. Therefore, EHI stated the following in the HMS:

"A multitude of surfaces were found to have detectable levels of lead in paint via lead paint chip sampling and analysis. The site wide materials that should be treated as containing lead paint include:

- *All Structural Steel including: Columns, Beams, Trusses and all related Steel Components*
- *Yellow Painted Railings and Bumper Protection Posts*
- *Metal Facade Wall Paneling*
- *Concrete Walls"*

The OSHA Lead in Construction Standard 1926.62 is applicable to the scope of work described herein.

3 SCOPE OF WORK

The following section defines the scope of activities for this project. Construction drawings and scope of work figures are provided following the text of this document. Technical Specifications are included as **Attachment 3**.

3.1 Scope Item A – Implementation of Temporary Site Security Improvements, Temporary Work Spaces, and Project Management

BASF has identified the need for certain security improvements at the Site along with a temporary work space for the Contractor. The scope of services captured under Item A are:

- Contractor shall provide an onsite trailer with office space for both the Contractor's use as well as the Owner's Representative use. Wi-Fi internet service for both the Owner's Representative as well as the Contractor will be provided by the Contractor in the trailer.
- Improvements to Site security through installation of a comprehensive temporary fencing system surrounding the work area around Buildings 8 and 10 (see **Figure 5**).
- Modification of the existing northern gate to a double-hinged 20-foot gate.
- Completion of project management services conducted throughout the completion of the scope of work described herein. This includes, but is not limited to the following:
 - Preparation for and Attendance at Preconstruction Conference (Technical Specification 01 31 19.13, Attachment 3)
 - Preparation for and Attendance at Project Progress Meetings (Technical Specification 01 31 19.23, Attachment 3)
 - Completion of Project Schedule and Weekly Progress Reports (Technical Specification 01 32 00, Attachment 3)
 - Staffing, invoicing, and other miscellaneous project management tasks.

3.2 Scope Item B – Asbestos Abatement

In 2013, EHI performed a HMS of the Facility to identify asbestos to be removed prior to demolition. Limited asbestos abatement was subsequently performed at the Site in 2013 and 2014. A copy of the EHI's revised HMS is provided in **Attachment 2**, which has been updated to reflect the asbestos removed from the Site.

A list of the asbestos containing materials identified by EHI remaining in Buildings 8 and 10 is provided below:

Building 8

- Window glazing - approximately 200 windows throughout Building 8
- Tar coating – roof on Trane HVAC duct work covering fiberglass insulation, 2 Trane units, 240 square feet
- Roofing – east 2nd floor roof, 15,000 square feet

Building 10

- Roofing including roof flashing – south half of roof, 3,200 square feet

In addition, a hazardous materials identification survey was not completed for the first floor office areas in the northeast corner of Building 8 as this area was occupied at the time of the 2013

survey conducted by EHI. See Figure S-2B of EHI's report (**Attachment 2**) for the locations of asbestos samples collected in and around the northeast office area. For the purposes of this document, BASF would like to assume that all potential ACM (tile and associated mastic, etc.) in this office area contains asbestos and these building materials will also be abated as part of Item B. This is approximately 1,350 square feet.

The scope of services captured under Item B is:

1. The Contractor will submit applicable permits prior to conducting Item B activities (see Section 4.8 below).
2. The Contractor shall supply all labor, materials, equipment, services, insurance (with specific coverage for work on asbestos), and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations.
3. The asbestos abatement work plan shall include the removal of asbestos-containing materials as specified herein as well as those specified in Technical Specifications or any of the supporting Contracting Documents.
4. For all interior ACM, remove in accordance federal, state and local regulations under containment with negative air pressure and a 3-stage contiguous decontamination unit.
5. For all exterior ACM, remove in accordance federal, state and local regulations. If alternate work practices (AWPs) are to be implemented, it is the responsibility of the Contractor to get regulatory approval for these activities.
6. All ACM shall be disposed by the Contractor at a preapproved off-site facility (refer to **Attachment 5**). The Contractor may propose alternate off-site disposal facilities; however, these will be subject to BASF's prior written approval.
7. The Owner's Representative will serve as the Project Monitor. The Project Monitor will conduct air monitoring prior to the start of abatement and after completion of abatement activities. Contractor should allow 24 hours for clearance sampling before proceeding with work in interior areas where asbestos abatement is completed.

3.3 Scope Item C – Removal and Off-Site Disposal/Recycling of Miscellaneous Hazardous, Nonhazardous, Universal and General Building Refuse Waste and Debris

A limited amount of accumulated waste and debris is present within Buildings 8 and 10. The accumulated waste and debris is comprised of miscellaneous items accumulated during facility operations shut down and includes refuse, equipment, and debris related to previous Site operations.

The scope of services captured under Item C is:

1. Decommissioning or demolition, removal, sorting, characterization, loading, transportation and off-site management (disposal, recycling or reuse) of any and all equipment, materials, debris, and refuse associated with Buildings 8 and 10. All equipment not designated for salvaging by the Owner shall become the property of the Contractor, who may reuse, recycle or otherwise dispose of these materials at preapproved off-site facilities (refer to **Attachment 5**). The Contractor may propose alternate off-site disposal facilities; however, these will be subject to BASF's prior written approval.

3.4 Scope Item D – Decommissioning and Off-Site Disposal of Aboveground Process Piping, Utilities, Ventilation Systems, and Appurtenances

Numerous aboveground process piping, utilities piping and conduits, ventilation systems, and appurtenances associated with manufacturing processes extend through the ceilings, walls, and

floors of both Buildings 8 and 10. The Contractor is solely responsible for independently locating and developing a complete and thorough understanding of existing subsurface and aboveground piping/utilities within the defined project limits at the Site.

For information purposes, known and suspected subsurface utilities are provided on **Figure 6**. Also, a partial list of aboveground piping/conduits is provided below, which the Contractor should verify and amend as needed:

Table 3.4.1: Aboveground Piping/Utilities	
Utility	Provider
Potable Water	Plainville Water and Sewer Department 171 E Bacon St, Plainville, MA 02762 (508) 695-6871
Sewer / Wastewater	Plainville Water and Sewer Department 171 E Bacon St, Plainville, MA 02762 (508) 695-6871
Fire Suppression	Plainville Water and Sewer Department 171 E Bacon St, Plainville, MA 02762 (508) 695-6871
Electrical	National Grid P.O. Box 960, Northborough, MA 01532 Customer service: (800) 322-3223 Power outage or downed line: (800) 465 -1212 Account #: 41177-96017
Propane	Suburban Propane 100 Cedar Hill Street, Marlborough, MA 01752 (508) 481-1000 Account : 36 Taunton Street, BASF Corporation
HVAC	Environmental Systems Inc. 6 Howard Ireland Drive, Attleboro, MA 02703 (508) 226-6006
Process Piping	Not available
Data/Voice	Verizon P.O. Box 15124, Albany, NY 12212 (866) 483-9700 Account # : 508 699 2068 868 006 4

Note that many of the piping/conduits listed above are also present below ground. Removal of the belowground piping/conduits is further discussed in Scope Item H.

It is noted that some of the aboveground piping systems were previously connected to machinery and equipment involved with the processing of metals at the facility. While the contractor is solely responsible for the appropriate handling and disposal of all aboveground process piping, utilities, ventilation systems, and appurtenances, in February and April 2017, the Owner’s Representative collected representative samples to evaluate the potential presence and nature of residual metals

and/or other contaminants of concern within the existing piping or equipment in the facility (i.e., mist collection systems, etc.). A summary table is provided below for the samples collected.

Table 3.4.2: Samples Collected From Aboveground Piping/Utilities		
Sample ID	Media	Location
SP-1	Wipe from inside of overhead process piping	Former Form Roll Clean Room
SP-2	Wipe from inside of overhead process piping	Former Form Roll Area
SP-3	Wipe from inside of overhead process piping	Former Contacts Area
SP-6	Wipe from inside of overhead vent pipe	Former Cleaning & Electroplating Room
SP-7	Wipe from inside of overhead vent pipe	Former Cleaning & Electroplating Room
SP-8	Wipe from inside of overhead vent pipe	Former Cleaning & Electroplating Room
SP-10	Wipe from inside of mist collector #1	Findings Room
SP-11	Wipe from inside of mist collector #2	Findings Room
F-11	Bulk sample of the filter from inside of mist collector #1	Findings Room
F-12	Bulk sample of the filter from inside of mist collector #2	Findings Room
SP-12	Wipe from inside of air handling equipment	Outside northern wall of Building 10

The locations of samples collected is provided on **Figure 5**. Summary tables, laboratory reports as well as photographs of the sampling locations are provided in **Attachment 4**. In order to mark out which aboveground piping systems are considered to be associated with the processing of metals at the facility (i.e., not HVAC or utilities), the Owner’s Representative has spray-painted these pipes with orange paint, which is approximately 600 linear feet of pipe, ranging from 2” diameter to 24” diameter. Decontamination and/or other special handling procedures may be required for existing piping or equipment based on the results of this sampling. The Contractor may use this information but the Contractor is solely responsible for the proper handling and disposal of the aboveground piping systems.

The scope of services captured under Item D is:

1. Decommissioning or demolition, removal, sorting, characterization, loading, transportation and off-site management (disposal, recycling or reuse) of any and all above ground piping, ducts, conduits, and appurtenances associated with Buildings 8 and 10. All equipment and fixtures not designated for salvaging by the Owner shall become the property of the Contractor, who may reuse, recycle or otherwise dispose of these

materials at preapproved off-site facilities (refer to **Attachment 5**). The Contractor may propose alternate off-site disposal facilities; however, these will be subject to BASF's prior written approval.

2. Decommissioning or demolition, removal, sorting, characterization, loading, transportation and off-site management (disposal, recycling or reuse) of propane tank (and associated saddles) located west of Building 10 (as shown on **Figure 5**) and associated blast walls, and an exterior electrical panel. All equipment and fixtures not designated for salvaging by the Owner shall become the property of the Contractor, who may reuse, recycle or otherwise dispose of these materials at preapproved off-site facilities (refer to **Attachment 5**). The Contractor may propose alternate off-site disposal facilities; however, these will be subject to BASF's prior written approval.
3. Decommissioning or demolition, removal, sorting, characterization, loading, transportation and off-site management (disposal, recycling or reuse) of transformer located south of Building 10, as shown on **Figure 5**. All equipment and fixtures not designated for salvaging by the Owner shall become the property of the Contractor, who may reuse, recycle or otherwise dispose of these materials at preapproved off-site facilities (refer to **Attachment 5**). The Contractor may propose alternate off-site disposal facilities; however, these will be subject to BASF's prior written approval. Note: Testing of the transformer oil was conducted in February 2017 by NRC and the oil was confirmed to contain 605 mg/L PCBs (see **Attachment 4** for laboratory report).
4. The Contractor shall carefully dismantle piping, ducts and conduits that previously contained regulated or hazardous fluids, with precautions taken to prevent injury to persons and property. All process piping, ducts and conduits shall be drained and steam cleaned. Decontamination fluids shall be containerized and following characterization by the Contractor, disposed at a preapproved off-site facility (refer to **Attachment 5**). The Contractor may propose alternate off-site disposal facilities; however, these will be subject to BASF's prior written approval.
5. Removal, sorting, and salvage of items designated for salvage by the Owner, including the existing electrical lighting in Building 10 and radiant heating systems throughout Buildings 8 and 10. The propane radiant heating units are to be relocated and stored in Building 11. The lights from Building 10 are to be reinstalled for use in Building 11.

3.5 Scope Item E – Removal and Management of Certain Existing Building Envelopes

As part of this task any and all concrete walls, metal beams, timber supports, and/or similar associated with the building envelopes of the buildings (Buildings 8 and 10) will be demolished, removed and managed. A detailed plan of Buildings 8 and 10 is provided as **Figure 5**.

Numerous groundwater monitoring wells, which are still in use, have been installed through the concrete slabs to facilitate environmental assessment activities and are to be protected (reference **Figures 7A, 7B, 7C and 7D**).

The scope of services captured under Item E is:

1. The Contractor will submit applicable permits prior to conducting Item E activities (see Section 4.8 below).
2. Installation and maintenance of any and all soil and sediment erosion control measures required by the Contractor-procured soil erosion sediment control plan.

3. Vegetation clearing around Buildings 8 and 10 will only be conducted in areas where this activity is necessary to conduct the demolition scope of work described herein.
4. Implementation of measures to protect the existing monitoring wells during implementation of the scope of work, namely the vehicle spotters, reflective marking, signage, barricades and/or temporary bollards surrounding the wells to avoid damage to the monitoring wells during building envelope removal. Figures showing monitoring well locations in the vicinity of the work area are provided as **Figures 7A, 7B, 7C and 7D**.
5. Demolition and removal of any and all roof materials, wall materials, aboveground concrete structures, metal beams, timber supports, and/or similar associated with the building envelopes located within the defined project limits (former Buildings 8 and 10), which is approximately 95,000 SF. The demolition limits will be clearly demarcated and defined by BASF prior to mobilization. Note that soils underlying the concrete slabs are to remain undisturbed to the extent practicable during the implementation of the work, as these materials may be contaminated.
 - a. Based on the presence of lead based paint at the Site identified by EHI, the Contractor must conduct demolition activities in accordance with OSHA 29 CFR part 1926.62 Lead Exposure in Construction. The lead in construction standard is applicable to all occupational exposure to lead in all construction work in which lead in any amount is present in an occupationally related context. The Contractor is responsible for the development and implementation of a worker protection program in accordance with 29 CFR 1926.20 and 29 CFR 1926.62 (e). To implement the worker protection program properly, the Contractor needs to designate a competent person, i.e., one who is capable of identifying existing and predictable hazards or working conditions which are hazardous or dangerous to employees, in accordance with the general safety and health provisions of OSHA's construction standards.
6. For concrete or cinder block walls, all materials that are painted and/or coated need to be segregated and stockpiled separately from materials that are not painted and/or coated. Each concrete stockpile will then be separately 1) processed/crushed on-site to <3" diameter, and 2) stockpiled for potential future use as backfill at the Site. The stockpiles will be placed at an onsite location that is yet to be determined. It is imperative that to the extent practicable, the coated vs uncoated material is not mixed as BASF is currently evaluating the potential for beneficial reuse of these building materials ("BUD material") under the provisions of the MassDEP. The BUD material stockpile will be covered with a DURA♦SKRIM 12BV® liner (12 mm thick) (or equivalent). A Wind Defender® wind mesh (or equivalent) will then be installed over the liner with sand bags anchored around the perimeter of the BUD material stockpile.

3.6 Scope Item F – Removal and Management of Certain Existing Concrete Slabs

As part of this task any and all concrete floor/building slabs and/or similar associated with the building envelopes of the former buildings (Buildings 8 and 10) will be demolished, removed and managed to a depth of 4 feet below grade. A detailed plan of Buildings 8 and 10 is provided as **Figure 5**. There is limited information available on the construction of the slab(s), however, for estimating purposes the slab is assumed to be approximately 6 to 8-inches thick and reinforced with steel rebar. Numerous groundwater monitoring wells, which are still in use, have been installed through these concrete slabs to facilitate environmental assessment activities and are to be protected (reference **Figures 7A, 7B, 7C and 7D**).

The scope of services captured under Item F is:

1. The Contractor will submit applicable permits prior to conducting Item F activities (see Section 4.8 below).
2. Installation and maintenance of any and all soil and sediment erosion control measures required by the Contractor-procured soil erosion sediment control plan.
3. Implementation of measures to protect the existing monitoring wells during implementation of the scope of work. Within the Buildings 8 and 10, this includes double cutting and air gapping the concrete slab surrounding the wells to avoid damage to the monitoring wells during concrete slab removal. Additionally, temporary barricades and/or bollards surrounding the wells is required. Figures showing monitoring well locations in the vicinity of the work area are provided as **Figures 7A, 7B, 7C and 7D**.
4. Demolition and removal of any and all concrete slabs located within the defined project limits (former Buildings 8 and 10), which extend approximately 95,000 SF. The demolition limits will be clearly demarcated and defined by BASF prior to mobilization. Note that soils underlying the concrete slabs are to remain undisturbed to the extent practicable during the implementation of the work, as these materials may be contaminated. If environmental impacts to soil (i.e., staining, odors, etc.) are observed during removal of the slabs, work in that area must temporarily stop and the Owner's Representative is to be immediately notified by the Contractor.
 - a. Based on the presence of lead based paint at the Site identified by EHI, the Contractor must conduct demolition activities in accordance with OSHA 29 CFR part 1926.62 Lead Exposure in Construction. The lead in construction standard is applicable to all occupational exposure to lead in all construction work in which lead in any amount is present in an occupationally related context. The Contractor is responsible for the development and implementation of a worker protection program in accordance with 29 CFR 1926.20 and 29 CFR 1926.62 (e). To implement the worker protection program properly, the Contractor needs to designate a competent person, i.e., one who is capable of identifying existing and predictable hazards or working conditions which are hazardous or dangerous to employees, in accordance with the general safety and health provisions of OSHA's construction standards.
5. Certain portions of the existing concrete slabs contain various floor coatings associated with former facility operations. As also described in Scope Item E, BASF is currently evaluating the beneficial reuse of crushed concrete at the Site. As such, all concrete floor slabs that are painted and/or coated need to be segregated and stockpiled separately from concrete floor slabs that are not painted and/or coated. These coated and uncoated stockpiles can be mixed with coated or uncoated stockpiles associated with the building envelope (Scope Item E). Each concrete stockpile will then be separately 1) processed/crushed on-site to <3" diameter, and 2) stockpiled for potential future use as backfill at the Site. The stockpiles will be placed at an onsite location that is yet to be determined. It is imperative that to the extent practicable, the coated and uncoated material are not mixed as BASF is currently evaluating the potential for beneficial reuse of these building materials ("BUD material") under the provisions of the MassDEP. The BUD material stockpile will be covered with a DURA♦SKRIM 12BV® liner (12 mm thick) (or equivalent). A Wind Defender® wind mesh (or equivalent) will then be installed over the liner with sand bags anchored around the perimeter of the BUD material stockpile.

6. Only as needed to create a level final grade, backfilling of the resultant demolition area using imported backfill. Imported backfill will consist of ¾" diameter washed stone that can be obtained from a local quarry (Boro Sand and Stone Corp. of Plainville, Massachusetts).

3.7 Scope Item G – Removal and Management of Certain Existing Concrete Foundations

As part of this task, any and all foundations, footing walls, piers and/or similar associated with the concrete floor/building slabs of the former buildings (Buildings 8 and 10) will be demolished, removed and managed to a depth of 4 feet below grade. A detailed plan of Buildings 8 and 10 is provided as **Figure 5**. There is limited information available on the configuration of foundations, footings, piers, and/or similar, however, for estimating purposes the foundations and footing walls are assumed to be approximately 4 to 6 feet deep and reinforced with steel. The Contractor shall develop and provide as part of its response, its own estimates on the quantity of foundations, footing walls and piers to be removed.

The scope of services captured under Item G is:

1. The Contractor will submit applicable permits prior to conducting Item G activities (see Section 4.8 below).
2. Installation and maintenance of any and all soil and sediment erosion control measures required by the Contractor-procured soil erosion sediment control plan.
3. Implementation of measures to protect the existing monitoring wells during implementation of the scope of work. Within the Buildings 8 and 10, this includes double cutting and air gapping the concrete slab surrounding the wells to avoid damage to the monitoring wells during concrete slab removal. Additionally, temporary barricades and/or bollards surrounding the wells is required. Figures showing monitoring well locations in the vicinity of the work area are provided as **Figures 7A through 7D**.
4. Demolition and removal of any and all foundations down to 4 feet below grade within the defined project limits (former Buildings 8 and 10), which extend approximately 95,000 SF. The demolition limits will be clearly demarcated and defined by BASF prior to mobilization. Note that soils surrounding the foundations are to remain undisturbed to the extent practicable during the implementation of the work, as these materials may be contaminated. If environmental impacts to soil (i.e., staining, odors, etc.) are observed during removal of the foundations, work in that area must temporarily stop and the Owner's Representative is to be immediately notified by the Contractor.
5. For subsurface foundations that are not painted and/or coated, this concrete will be 1) excavated, 2) processed/crushed to <3" diameter on-site, and 3) backfilled back into its approximate original location.
6. Certain portions of the foundations may be painted and/or coated¹. As described in Scope Item E, BASF is currently evaluating the beneficial reuse of crushed coated concrete at the Site. As such, all concrete foundations that are painted and/or coated need to be segregated and stockpiled separately from concrete foundations that are not painted and/or coated. The coated stockpiles can be mixed with the coated stockpile associated with the building envelope and floor slab (Scope Items E and F). The coated concrete

¹ If potential asbestos containing coatings on the foundation are observed during excavation (e.g., waterproofing), additional testing of the concrete will be necessary prior to confirming on-site and off-site disposal options.

stockpile will be 1) processed/crushed on-site to <3" diameter, and 2) stockpiled for potential future use as backfill at the Site. The stockpiles will be placed at an onsite location that is yet to be determined. It is imperative that to the extent practicable, the coated and uncoated material are not mixed as BASF is currently evaluating the potential for beneficial reuse of these building materials ("BUD material") under the provisions of the MassDEP. The BUD material stockpile will be covered with a DURA♦SKRIM 12BV® liner (12 mm thick) (or equivalent). A Wind Defender® wind mesh (or equivalent) will then be installed over the liner with sand bags anchored around the perimeter of the BUD material stockpile.

7. Only as needed to create a level final grade after placing crushed uncoated concrete backfilling of the resultant demolition area using imported backfill. Imported backfill will consist of ¾" diameter washed stone that can be obtained from a local quarry (Boro Sand and Stone Corp. of Plainville, Massachusetts).

3.8 Scope Item H – Decommissioning and Off-Site Disposal of Belowground Process Piping and Utilities

Numerous belowground pipes associated with manufacturing processes and utilities are either known or suspected to be present beneath the concrete slabs of Buildings 8 and 10 and the immediate surrounding area. The Contractor is solely responsible for independently locating and developing a complete and thorough understanding of existing subsurface and aboveground utilities within the defined project limits at the Site.

New subsurface utilities (water, sewer, etc.) are currently being installed by others for Building 11, which will be installed in the driveway north of Building 8. The locations of these utilities and requirements associated with these utilities will be provided to the Contractor as an addendum to this document. This documentation will include any utility cutoff letters and locations where utilities have been terminated.

For information purposes, known and suspected subsurface utilities are provided on **Figure 6**. Also, a partial list of utility providers is listed below, which the Contractor should verify and amend as needed:

Table 3.8.1: Belowground Piping/Utilities	
Utility	Provider
Potable Water	Plainville Water and Sewer Department 171 E Bacon St, Plainville, MA 02762 (508) 695-6871
Sewer / Wastewater	Plainville Water and Sewer Department 171 E Bacon St, Plainville, MA 02762 (508) 695-6871
Fire Suppression	Plainville Water and Sewer Department 171 E Bacon St, Plainville, MA 02762 (508) 695-6871
Electrical	National Grid P.O. Box 960, Northborough, MA 01532

Table 3.8.1: Belowground Piping/Utilities	
Utility	Provider
	Customer service: (800) 322-3223 Power outage or downed line: (800) 465 -1212 Account #: 41177-96017
Propane	Suburban Propane 100 Cedar Hill Street, Marlborough, MA 01752 (508) 481-1000 Account : 36 Taunton Street, BASF Corporation
Process Piping	Not Available
Data/Voice	Verizon P.O. Box 15124, Albany, NY 12212 (866) 483-9700 Account # : 508 699 2068 868 006 4

The scope of services captured under Item H is:

1. The Contractor will submit a BASF permit for line breaking/cutting, if determined necessary by BASF.
2. The Contractor will submit applicable regulatory permits prior to conducting Item H activities (see Section 4.8 below).
3. Prior to the start of subsurface disturbance, all active utility lines will be locked out and tagged out, including but not limited to the propane line running from the tank to Buildings 10 and 11.
4. Decommissioning or demolition, removal, sorting, characterization, loading, transportation and off-site management (disposal, recycling or reuse) of any and all subsurface piping, conduits, and appurtenances within the footprint of Buildings 8 and 10. All subsurface utilities located outside the footprint of Buildings 8 and 10 will be left in place. There is limited information available on the configuration of utilities, however, for estimating purposes assume all utilities within the footprint of Buildings 8 and 10 will be removed to a maximum depth of 4 feet below grade and capped, if utilities extend beyond 4 feet in depth. Note that soils surrounding the subsurface piping is to remain undisturbed to the extent practicable during the implementation of the work, as these materials may be contaminated.
5. Utilities exiting the footprint of Buildings 8 and 10 will be capped. In addition, the sewer pipes east of Building 8 will be cut and capped near Taunton Street, as shown on **Figure 6**.
6. The Contractor shall carefully dismantle piping, ducts and conduits that previously contained regulated or hazardous fluids, with precautions taken to prevent injury to persons and property. All process piping shall be drained and steam cleaned. Decontamination fluids shall be containerized and following characterization by the Contractor, disposed at a preapproved off-site facility (refer to **Attachment 5**). The

Contractor may propose alternate off-site disposal facilities; however, these will be subject to BASF's prior written approval.

7. Only as needed to create a level final grade, backfilling of the resultant excavation area using imported backfill. Imported backfill will consist of ¾" diameter washed stone that can be obtained from a local quarry (Boro Sand and Stone Corp. of Plainville, Massachusetts).

3.9 Scope Item I – Removal of Sump Pits

Seven (7) sump pits are known to exist within Buildings 8 and 10, as shown on **Figure 5**. For these sump pits, the concrete bottom shall be removed so that samples of soil can then be collected by the Owner's Representative. Upon receipt of analytical data, further instruction will be provided to the Contractor as to when the sump pit excavation can be backfilled.

The scope of services captured under Item I is:

1. The Contractor will submit applicable permits prior to conducting Item I activities (see Section 4.8 below).
2. Installation and maintenance of any and all soil and sediment erosion control measures required by the Contractor-procured soil erosion sediment control plan.
3. Demolition and removal of sump pit sides and bottom. Note that soils to the sides of the sump pits, as well as beneath the concrete bottom of the sump pit, are to remain undisturbed to the extent practicable during the implementation of the work, as these materials may be contaminated. However, for sump pits greater than 4 feet in depth, soil on the sidewalls will need to be sloped back in a 1:1 manner in order to allow for access into the excavation by the Owner's Representative for sampling of the soil. Soil excavated from the sidewalls of the excavation is to be temporarily stockpiled adjacent to the excavation.
4. As none of the sump pits are known to be constructed of painted and/or coated concrete, this concrete will be 1) excavated, 2) segregated, 3) processed/crushed on-site, and 4) stockpiled as unregulated backfill material.
5. Prior to backfill, a geotextile fabric (or "witness fabric") will be placed in the bottom of the excavation.
6. The sump pit areas will then be backfilled to grade of the resultant demolition area using a) soil excavated from sump pit excavation (for pits greater than 4 feet in depth), or b) imported backfill. Imported backfill will consist of ¾" diameter washed stone that can be obtained from a local quarry (Boro Sand and Stone Corp. of Plainville, Massachusetts).

3.10 Scope Item J – Scanning and Removal of Ferrous Metal Debris from Subsurface

As part of this task, the 95,000 SF former facility footprint will be subjected to ferrous metal (i.e., rebar, nails, etc.) removal to extract said material throughout the footprint of Buildings 8 and 10.

The scope of services captured under Item J is:

1. Extraction of rebar, other ferrous metal objects, and/or similar from depths up to approximately 6 inches aided by the use of a mobile, vehicle-mounted magnet or equivalent. An example of the equipment desired is the Rhino Series™ tow behind magnet (<http://www.bluestreakequipment.com/shop/tow-behind-magnetic-sweepers-for->

[grass-dirt-and-other-rough-surfaces/rhino-series/](#)). This process may be repeated after rototilling of compost if significant metal is brought to the surface as a result of the rototilling process.

2. Removal, sorting, characterization, loading, transportation and off-site management (disposal, recycling or reuse) of any extracted ferrous material and/or similar.

3.11 Scope Item K – Rototilling of Compost and Hydroseeding

As part of this task, the 95,000 SF former facility footprint will be rototilled with compost such that vegetation can be established for erosion controls.

The scope of services captured under Item K is:

1. Installation and maintenance of any and all soil and sediment erosion control measures required by the Contractor-procured soil erosion sediment control plan.
2. Import of approximately 1,800 cubic yards of compost such that a layer of approximately 6 inches of compost is spread across the 95,000 SF former facility footprint.
3. Rototilling of the compost (imported compost as well as onsite material from wood-chipping activities) will then be completed using a Ford 6600 Tractor/Howard Rototiller (Ferris) (or equivalent) to mix the compost into the approximate upper 2-3" of subgrade soil.
4. Extraction of rebar, other ferrous metal objects, and/or similar may need to be repeated after rototilling of compost if significant metal is brought to the surface as a result of the rototilling process (see Item J above).
5. Installation of hydroseeding for erosion stabilization. Hydroseeding will be applied to exposed soil areas within the boundary of former Building 8/10, utilizing a seed mixture, fertilizer ratio, and application rate and procedures defined in Section 3.06 of Specification 31 25 00 in **Attachment 3**.

3.12 Scope Item L – Final Housekeeping Activities

The scope of services captured under Item L is:

1. All piles of brush within the Site boundary will be wood chipped and mixed with the compost from Scope Item K prior to installation of the compost.
2. All brush less than 1" diameter within the fenced portion of the Site will be cut flush to the ground, wood chipped and mixed with the compost from Scope Item K prior to installation of the compost.
3. All brush less than 1" diameter outside the fenced portion of the southern portion of the Site, and within 2 feet of the fence, will be cut flush to the ground, wood chipped and mixed with the compost from Scope Item K prior to installation of the compost.
4. Loose pine needles and leaf litter on the ground surface in the southern portion of the Site will be gathered to the extent practicable, wood chipped and mixed with the compost from Scope Item K prior to installation of the compost.
5. All rebar extruding from concrete within the fenced portion of the Site will be burned and removed to eliminate this health and safety issue. This includes, but is not limited to, the edge of former Buildings 1 and 2.

6. All miscellaneous concrete debris at the ground surface within the fenced portion of the Site should be gathered segregated, stockpiled and crushed along with either the coated or uncoated stockpiles described in Scope Item F.
7. The motor associated with the sliding fence-gate in the southeast portion of the Site, is to be removed and disposed. Handling of the equipment will be performed consistent with the guidelines in Scope Item C.
8. Fire hydrants and PIV valves within the fenced portion of the Site should be removed and cut flush to the ground. An open pipe at the ground surface adjacent to the PIV valve in the central portion of the southern part of the Site should be filled with concrete to remove this potential conduit to the subsurface. Disposal of the hydrants and valves should be performed consistent with the guidelines in Scope Item C.
9. The turbidity curtain is to be removed from Turnpike Lake, adjacent to the southern portion of the Site after grass seed on the upland area has exhibited growth. The removal of the turbidity curtain will be performed via man-power (no equipment needed). This is estimated to require 2 to 3 technicians in waders or dry suits to 1) manually remove the turbidity curtain, 2) clean it via rinsing, 3) lay the curtain out to dry, and 4) fold it and store it in Building 11.
10. All trash/refuse located on the ground surface within the fenced portion of the southern portion of the Site, should be collected for offsite disposal.

3.13 Scope Item M – Installation of Permanent Fencing

BASF has identified the need for certain security improvements at the Site upon completion of the scope of work described above. The scope of services captured under Item M is:

- Upon completion of demolition activities, improvements to Site security through installation of a comprehensive permanent fencing system along the northern edge of Buildings 8 and 10, as well as the eastern edge of Building 8, as shown on **Figure 3**. This permanent fencing will tie into the existing fencing system, as also shown on **Figure 3**. The permanent fencing system to be installed will be constructed of fencing equivalent to the existing fencing (8-foot high chained link fence with barbed wire at top).

4 GENERAL INFORMATION AND PROJECT LOGISTICS

4.1 Health and Safety

Health and safety is paramount to the successful completion of this project. The Contractor is solely responsible for providing a safe work environment for its employees, subcontractors, agents, authorized personnel, BASF personnel, authorized representatives, authorized (approved in the Avetta system) consultants and/or similar. The Contractor is responsible for developing, implementing and adhering to its own site-specific health and safety plan (HASP), developed in accordance with all applicable federal, state and local laws and regulations and the technical specifications (refer to **Attachment 3**) during the implementation of this scope of work. The Contractor is notified that the Site is undergoing active investigation and remediation activities under the RCRA Corrective Action Program. In relation to these on-going investigation and remediation activities, Ramboll Environ (as the Owner's Representative) will be conducting the following activities during the implementation of this scope of work:

- Field screening for the presence of volatile organic compounds (VOCs) in the breathing zone during implementation of intrusive subsurface activities related to Scope Items D through I.

BASF will provide field screening data to the Contractor; however, the Contractor shall not construe this action as Contractor relief from performing the required screening and monitoring activities required by the Contractor's HASP, applicable federal, state and local laws and regulations and/or the technical specifications (refer to **Attachment 3**).

In addition, BASF has completed (May 2017) a radiological soils remediation at the Plainville Site in compliance with the Massachusetts Department of Public Health Radiation Control Program (RCP). BASF does not, however, expect to have the final Project Report approved by RCP at the time of this Work Plan implementation. Therefore, BASF will provide an initial radiological awareness training session for all field staff prior to work activities. This training is expected to take less than one hour and can be integrated into the Contractor's Health and Safety training session. In order to verify that no radiological issues are present within the work described above in Section 3, periodic contamination surveys during implementation of intrusive subsurface activities related to Scope Items D through I are to be conducted by the Contractor, as described below.

- During concrete breaking and chipping operations, Contractor will utilize a LUDLUM 2221 ratemeter/scaler with a 44-9 GM pancake probe (or equivalent) to periodically survey the concrete for potential radiological contamination. All concrete removal will be scanned at rate of 10%.
- During all concrete removal activities, Contractor will perform radiological monitoring to ensure that no exposure to alpha, beta, or gamma radiation occurs. While it is not anticipated that any radiological sources will be encountered, in the event that a radiological source is discovered, work will immediately be suspended, and appropriate Contractor and BASF personnel will be notified in order to determine a path forward.

A Radiological Screening and Response Action Work Plan should be prepared and submitted to BASF by the selected Contractor for implementation of the Scope of Work. This plan, including necessary response actions for specific triggering events, will be included in the Contractor's Health and Safety Plan.

4.2 Site Access

BASF is restricting Site access to certain access points for the duration of the project. Primary access to the facility for this scope of work will be the main entrance to the Site located due east of Building 8 along Taunton Street (Rte 152), as shown on **Figure 3**. Vehicle and heavy equipment traffic at the Site should be restricted to the primary vehicle travel route identified on **Figure 3**.

A secondary access gate is located in the southeast corner of the Site at the paved entrance off of Taunton Street (Rte 152), however access through this gate may only be permitted after obtaining prior BASF approval.

As shown on **Figure 3**, certain areas of the Site are to remain free and clear of any and all equipment, facilities, stockpiles, materials, and/or similar during the completion of this project. Specifically, the Contractor is specifically prohibited from using the Building 11 parking and loading areas for any purpose and the Contractor is prohibited from disrupting and/or interfering with the GWTP operations during implementation of the Scope of Work without written permission from BASF.

In addition, investigation and remediation work on the southern portion of the Site may be occurring at the same time as the proposed scope of work described herein. In order to avoid interfering with this work, the Contractor is prohibited from the southern portion of the Site unless prior BASF approval has been granted. A line showing the boundary of the approved Contractor work area is shown on **Figure 3**.

Also shown on **Figure 3** are asphalt paved areas is located immediately north and east of Building 8. These areas are recommended as the primary equipment laydown, parking and personnel staging area for Site activities.

Facility entrance and truck routes may represent potential access constraints for heavy equipment, in particular semi-tractor trailers, "low-boy" equipment delivery truck, end dump and roll-off box trucks. To mitigate potential access issues, Contractor will be required to evaluate and define additional access improvements deemed necessary by the Contractor and include associated costs in their bid. Modifications to the access plan will be submitted by the Contractor to BASF for consideration, review and approval.

4.3 Building Access

Access for the Contractor to Buildings 8 and 10 by BASF will not be restricted. However, BASF understands that working hours may be restricted to 7:00 am to 7:00 pm or limited by local ordinance.

4.4 Utilities

The demolition of structures, tanks, piping, electrical components, and concrete present the potential for encountering utilities that may be energized, under pressure, or contain hazardous substances. Utilities that may be encountered include electric power, natural gas, fire suppression, water, sewer, and communication lines. Potentially energized overhead power lines and circuit breakers may also be an issue. For information purposes, known and suspected subsurface utilities are provided on **Figure 6**.

The Contractor is solely responsible for independently locating and developing a complete and thorough understanding of existing subsurface and aboveground utilities within the defined project limits at the Site. The Contractor will be responsible for ensuring that all utilities servicing the work areas are disconnected and/or de-energized, equipment lock out-tag out (LOTO) procedures

are implemented, and/or piping and electrical lines are air-gapped prior to initiating any intrusive work in accordance with the federal, state and local requirements and regulations, and the technical specifications. The Contractor shall be responsible for protecting the integrity and operation of existing utilities servicing all equipment and fixtures designated for salvaging by the Owner, including the existing overhead lighting in Building 10 and radiant heating systems in Buildings 8 and 10 to be stored in Building 11. The Contractor shall ensure that any and all utility services to Building 11 are not interrupted for any reason during implementation of the scope of work.

4.5 BASF Provided Facilities

Building 11, as shown on **Figure 2**, is currently serviced by water, sewer, and electricity, which will be made available to the Contractor for implementation of the Scope of Work. Connections to these utilities will be identified during the mandatory walkover prior to bidding. The Contractor will be responsible for electrical hookup and metered box for use by the Contractor during the implementation of this project. Temporary facilities, included but not limited to an office trailer for both the Contractor and Owner's Representative, communications, sanitary facilities, and office space, will be the responsibility of the Contractor.

4.6 Security

The Contractor is solely responsible for all activities within the defined project area upon initiation of mobilization activities. The Contractor is responsible for security provisions related to access to and from the defined project areas at the Site, as well as providing any security personnel and measures deemed necessary for the protection of equipment, personnel and materials, and the safe and successful completion of this work.

Two locked gates are located immediately northwest of Building 10, and in the southeast portion of the Site near Taunton Street (Rte 152), respectively, as shown on **Figure 3**.

In addition, magnetic key cards are currently utilized to enter Buildings 8 and 10 with the only access located at the main entrance to Building 8, in the northeast corner of the building.

BASF will provide access keys for both the gates and buildings to a limited number of approved personnel identified by the Contractor. The Contractor will be required to return all keys to BASF at the completion of the work. The Contractor will be required to provide all copies of access keys for any security structures installed during implementation of the scope of work at the completion of the work.

4.7 Laws and Regulations

The Contractor is solely responsible for ensuring that all activities performed by the Contractor for this scope of work are completed in accordance with all applicable federal, state, and local/municipal laws and regulations.

4.8 Regulating Agency Approval and Permit Requirements

It is recognized that certain approvals and permits are required and integral to the sequencing and completion of this scope of work. The following table identifies the main permits required to complete the work, their status, the anticipated timeframes for procurement and the responsible entity. This list is not intended to identify all required permits. Local, state and federal permits or approvals not identified in the table below, but required for implementation of the scope of work shall be the sole responsibility of the Contractor.

Table 4.8.1: Permits and Approvals				
Permit/Approval	Regulating Agency	Anticipated Timeframe	Responsible Party	Current Status
National Pollutant Discharge Elimination System (NPDES) Permitting for Discharges from Construction Activities				
a) Historical Commission Evaluation	Massachusetts Historical Commission (MHC)	Received verbal approval from MHC on April 20, 2017	BASF	Completed
b) Construction General Permit Notice of Intent	U.S. Environmental Protection Agency (EPA)	To be completed 4 weeks after Notice to Proceed	Contractor	To be completed
c) Storm Water Pollution Prevention Plan (SWPPP)	EPA	To be completed 4 weeks after Notice to Proceed	Contractor	To be completed
Off-Site Waste Disposal Profiling and Acceptance Approval	Varies: EPA, state, municipalities, facility permit	Varies	Contractor	To be completed as needed during the project
Air Quality	MassDEP	To be completed 2 weeks prior to mobilization	Contractor	To be completed at least 10 days prior to start of work
Demolition Permit	Town of Plainville Building Department	To be completed 4 weeks after Notice to Proceed	Contractor	
DigSafe	Massachusetts Law	To be completed 1 week prior to mobilization	Contractor	

Provided below is a brief summary of the permits and the activities that warrant them:

- **Beneficial Use Determination (BUD):** Although not included in the table above, BASF is considering the on-site reuse of the coated concrete building materials, as described above in Scope Items E, F and G. A BUD is required to be approved by MassDEP prior to on-site reuse, per *Draft Interim Guidance Document for Beneficial Use Determination Regulations* (310 CMR 19.060). Preparation and submittal of the BUD is outside the scope of work described herein by the Contractor.
- **NPDES Permitting Requirements:** A NPDES Construction General Permit (CGP) is applicable for projects with a proposed disturbed area greater than 1 acre and less than 5 acres. Therefore, a CGP Notice of Intent (NOI) must be prepared by the Contractor and submitted, to EPA at least 14 days prior to the start of subsurface disturbance. As required by the CGP NOI, a determination from the Massachusetts Historical Commission will be filed by BASF prior to the start of work². And lastly, as required by the CGP NOI, a SWPPP will be prepared by the Contractor for BASF's review and approval prior to the start of work.
- **Off-site waste disposal profiling and acceptance approval (as needed):** Prior to shipping waste off-site, communications with the receiving landfill facilities will be required to ensure that the waste has been properly characterized and also to verify that it meets the receiving facility's permit requirements.
- **Air Quality:** In accordance with 310 CMR 7.09, MassDEP requires notification 10 working days prior to the construction or demolition of a building. The purpose of the notification requirement is to protect public health and the environment by preventing the release of dust or other potentially hazardous air pollutants to the ambient air. Under the federal National Emission Standards for Hazardous Air Pollutants (NESHAP), EPA also requires notification of demolition of a building. Notification must be made using MassDEP's "BWP AQ 06 Notification Prior to Construction or Demolition."
- **Demolition Permit:** Permitting from the Town of Plainville must be obtained prior to the start of demolition activities. In 2014, during the last demolition project on-site, the Building Department required that a permit titled "Building Permit Application for any Building other than a One- or Two-Family Dwelling" was completed and submitted for review/approval. This form requires the signature of a Massachusetts Construction Supervisors License. In addition, a "Demolition Permit" may also be required from the Town of Plainville, as is listed on their website. The Contractor should confirm the permitting requirements with the Town, as it is possible that newer forms are now available. It is understood that local ordinances may restrict Site activities to certain working hours and that these restrictions will be defined in the required demolition permit from the City of Plainville. BASF understands that working hours may be restricted to 7:00 am to 7:00 pm.
- **DigSafe Permit:** Massachusetts State law requires that DigSafe (811) is notified at least 3 business days prior to excavation activities. DigSafe can be contacted locally by calling 811. A ticket number will be provided by DigSafe as proof of notification.

The Contractor is responsible for understanding and adhering to any and all permit restrictions and conditions.

² BASF has completed notification to the Massachusetts Historical Commission for other previous demolition activities at the Site and obtained a determination that it is unlikely that activities at the Site will affect significant historic or archaeological resources. Therefore, it is not anticipated that any issues associated with the Massachusetts Historical Commission will be encountered.

4.9 Waste Disposal and Waste Recycling Facilities

In 2013, BASF contracted EHI to perform a predemolition HMS of the Facility. The revised HMS (**Attachment 2**) identifies waste materials to be removed during the decommissioning and demolition work, including regulated and nonregulated waste materials, drum, universal waste, chemicals/products, and equipment. While the HMS provides an approximate list of waste materials, this report has been provided to the Contractor for reference purposes and that the Contractor is solely responsible for quantifying and characterizing all waste all waste streams for transportation and off-site disposal purposes.

A list of approved BASF waste disposal and recycling facilities is provided in **Attachment 5**. While all equipment and fixtures not designated for salvaging by the Owner shall become the property of the Contractor, the Contractor shall assume that all materials to be managed off-site shall be disposed at one of these preapproved off-site facilities. The Contractor may propose alternate off-site disposal facilities; however, these will be subject to BASF's prior written approval. Documentation on any materials designated as hazardous or otherwise requiring special handling, including but not limited to characterization and material handling, transport and disposal plans, shall be submitted to BASF for review, and approval.

It should be noted that some equipment, products, appliances, piping and appurtenances may include hazardous substances, including but not limited to ozone depleting substances, lead acid batteries, PCB containing capacitors, fuel and oil. The Contractor shall drain, containerize and manage (reuse, recycle or dispose) hazardous substances products, equipment and appliances in accordance with applicable local, state and federal, as well as the Technical Specifications (refer to **Attachment 3**).

4.10 BASF Premobilization Responsibilities

In anticipation of the decommissioning and demolition activities, BASF is responsible for the following activities:

- BASF has already submitted a request for determination from the Massachusetts Historical Commission as part of the NPDES CGP NOI requirements. The completion of the CGP NOI and the SWPPP is the responsibility of the Contractor; and
- BASF has already completed a predemolition HMS including asbestos and lead based paint (**Attachment 2**).

5 BID INSTRUCTIONS

Contractor is required to familiarize itself with the project information and Site facilities and will prepare a bid based on their independent assessment of the Facility's condition. The Contractor will review and analyze the information contained in this RFP or provided by BASF, and may request additional information and Facility tours as needed to prepare the bid. The Contractor will assume all costs associated with response to this RFP including meetings and Site walks prior to award of contract.

A mandatory meeting and site tour will be conducted by BASF prior to award of contract to give the Contractors an opportunity to familiarize themselves with the Facility, assess Site access and material staging requirements, collect measurements for calculating volumes and preparing cost estimates, evaluate potential recyclable materials and equipment, and ultimately prepare a bid. Material volumes contained in the RFP are provided for BASF's convenience and bid leveling purposes and should not be relied upon by the Contractor.

An Acknowledgement of Inquiry is provided in **Attachment 6** and a Bid Form is provided as **Attachment 8**. The Contractor is to include the number of days they anticipate necessary to complete the scope of work in **Attachment 8**.

The BASF Terms and Conditions applicable to this project are provided as **Attachment 9**.

5.1 Health and Safety

Health and safety is paramount to the successful completion of this project. The Contractor is solely responsible for providing a safe work environment for its employees, subcontractors, agents, authorized personnel, BASF personnel, authorized representatives, authorized consultants and/or similar in accordance with all applicable federal, state and local laws and regulations during the completion of this scope of work.

All Contractors will include the following documentation in their bid response:

- The Contractor and any major subcontractors (responsible for greater than 35% of work) must be registered with PICs/Avetta Health and Safety program prior to starting project work. An Experience and Health and Safety questionnaire (see **Attachment 7**) shall be completed and submitted by the Contractor and each Subcontractor as part of the bid. A questionnaire is not required for vendors that will only supply materials or equipment or receive waste materials;
- Provide documentation to confirm that Contractor's employees and subcontractors have received the required health and safety training in accordance with applicable federal, state and local laws and regulations;
- Provide a project-specific organizational chart containing project team lines of communication, roles and responsibilities;
- Provide evidence of medical surveillance and medical approvals for Contractor's employees and subcontractors, if applicable, to comply with the regulations to protect against hazards exposure;
- The Contractor will be required to prepare a project-specific HASP and submit to BASF for their review and approval a minimum of 15 business days prior to mobilization. The HASP shall comply with all federal, state and local applicable laws and regulations; and the HASP will certify that the contractors Health and Safety Procedures are equal to or exceed the BASF Life Saving Rules

- Designate a field Site Health and Safety Officer (HSO) who will be responsible for ensuring that Contractor's employees and subcontractors comply with the Contractor's Site-specific HASP and is implementing appropriate additional health and safety measures as required by on-site activities. Contractor shall lead and/or participate in daily safety meeting prior to work each day. The daily safety meetings should include safety topics that are relevant to the work being conducted and the HASP will certify that the Contractors Health and Safety Procedures are equal to or exceed the BASF Life Saving Rules.

5.2 General

All bids must conform to the requirements of this RFP to be responsive and qualified. The Owner encourages the Bidder to submit cost effective alternatives to the work described in this RFP, provided that such alternatives are in addition to a fully qualified bid and not in lieu of it. If alternative contracting strategy, compensation, fee structure or incentives are proposed, the Bidder shall provide sufficient discussion and supporting data to permit the Owner to evaluate the alternatives relative to the base bid.

5.3 Acknowledgement

BASF's Acknowledgement Form is presented as **Attachment 6** to this RFP. Please print, complete, scan and submit this form electronically to Mr. William Barelski at **william.barelski@basf.com** by: **Friday, 9/15/17** to indicate your intent to respond to this RFP.

5.4 Communications during Bidding

All technical, commercial and proprietary questions or requests for clarification shall be sent electronically to the Procurement Agent.

William B Barelski
Procurement Agent - Ecology Services
BASF Corporation
100 Park Ave.
Florham Park, NJ, 07932
Phone: 973-245-6117

E-mail: william.barelski@basf.com

Bidders agree to keep all information relative to this RFP confidential and not disclose to a third party except as may be necessary to prepare a responsive bid.

All identified errors or conflicts in this RFP should promptly be brought to the attention of the Procurement Agent.

5.5 Bid Submission Requirements

Bids shall be submitted as follows:

1. Bids must be submitted **separately** in two parts reflecting a Technical Offering Package and a Commercial Package.

2. The **Technical** Offering will be submitted electronically to: **Sealed_bids_Services@BASF.com**. The Technical Offering submittal will contain the project work scope, project team, schedule and potential alternatives as planned by your company, and shall include any potential exceptions to the BASF Short Form Fixed Price Environmental Construction Contract.
3. The **Commercial** Offering will be sent to: **Sealed_bids_services@BASF.com**, with a hard copy delivered to the attention of:

William B. Barelski
Procurement Agent
BASF Corporation
100 Park Ave.,
Florham Park, NJ 07932

4. The Commercial Offering will contain the cost of work, per the format listed in the Bid Form and include Time and Material rates applicable to this project.
5. **Packages must be clearly addressed as either: Technical or Commercial with the BASF Bid Number, Project description and bid due date.**

5.6 Bid Format

The Bidder shall submit its **Technical Offering** in the following format in response to this RFP:

1. Section 1 shall consist of, at a minimum:

An organization chart showing Bidder's proposed office and field team for this particular job, showing lines of authority, accountability, responsibility, communication, and key positions identified by title and brief job description, as they relate to this Project.

The identification of the Bidder's key personnel who will be assigned to each key project position, together with a brief resume for each person, indicating education, relevant experience and recent client references. (Include names of individual clients with current address and telephone number). Key personnel shall include, at a minimum, the Project Manager and Full Time Operations personnel.

A plan of approach, execution and schedule setting forth how the Bidder proposes to perform the various tasks outlined in this RFP and accompanying documents, including detailed information on the manpower, subcontractors, vendors and equipment to be used to complete activities. Alternate approaches for this work will be captured in this section.

An explanation of Bidder's subcontracting strategy, tasks to be subcontracted, identification of each proposed subcontractor by name, an outline of the qualifications and the experience of each proposed subcontractor for its respective part of the Work. All primary subcontractors must be registered with Avetta prior to starting project work and be approved by the Owner in writing. Subcontractor Experience and Health and Safety

data shall be included by the Bidder for each Subcontractor as part of the bid. Health and Safety data is not required for vendors that will only supply materials or equipment.

2. Section 2 shall consist of, at a minimum:

Each of the Bidder's exceptions, if any, to the BASF Short Form Fixed Price Environmental Construction Contract and all Attachments thereto (collectively, the Contract Documents), itemizing the reasons for such exception, and indicating specific alternative wording that the Bidder would accept. If the Bidder takes no exceptions to any of the Contract Documents, then the section shall so state. The Owner will evaluate any exceptions or limitations in evaluating competing bids. Exceptions or limitations which result in a significant reallocation of risk may result in a bid being determined to be non-responsive, and such a bid may be excluded from further consideration.

3. Section 3 shall consist of, at a minimum:

The Bidder's qualifications and experience for performing this work as well as any additional relevant information and assumptions.

The Bidder shall submit its **Commercial Offering** in the following format in response to this RFP:

1. Section 1 of the Commercial Offering shall be an executed copy of the Bid Form specifying the compensation for which Bidder proposes to perform the Work. Bids shall include all labor, material, equipment, taxes and all other indirect and direct costs (including subcontracts and third party costs) required to perform the activities in accordance with this RFP. In addition, this section shall include the Bidder's acknowledgement that it has received all addenda to this RFP.

5.7 Contract Documents

Prior to submitting a Bid, the Bidder must examine all Contract Documents. It is the responsibility of the Bidder to thoroughly inform itself, prior to Bidding, as to the existing conditions and limitations under which the work is to be performed. All Bids submitted shall include a sum to cover any and all items necessary to perform the Work as set forth in the Contract Documents. No allowance will be made to any Bidder because of his lack of full examination or knowledge of said documents. The Bidder's submission of his Bid shall be conclusive evidence that he or she has made such an examination. Complete sets of Contract Documents must be used in preparing bids. The Owner assumes no responsibility for errors or misinterpretations resulting from the use of incomplete sets of Contract Documents. The Owner in making copies of the Contract Documents available on the above terms, do so only for the purpose of obtaining bids on the Work and do not confer or grant license for any other use.

5.8 Site Visit and Review of Site Conditions

The Bidder, before submitting its bid, shall visit the Site where the Work is to be performed and fully inform itself of all local conditions pertinent to the Work. Failure to visit the Site shall not constitute a basis for claims including delays or extra charges. A mandatory Site visit will be held

for all Bidders on the date specified. The Site bid tour is an integral part of this project and bidders should expect to be on-site for at least 2 hours. A site visit will be held on **Friday, 9/22/17 at 9:00 AM at 36 Taunton Street, Plainville, MA.**

5.9 Interpretation of Contract Documents

The following information should be considered by contractors preparing bids.

1. The Bidder shall familiarize itself with the Work and Site to ensure the fulfillment of the intent of the Contract Documents.
2. If Bidder is in doubt as to the true meaning of any part of these Contract Documents, it shall promptly submit a request for information to the Owner.
3. Interpretations and clarifications will be extended to all bidders as responses to the information requests.
4. Addenda may also be issued as deemed advisable by the Owner.
5. If conflicts between the Contract Documents and any other Project Documentation are encountered, the Contractor shall notify the Owner immediately. Unless otherwise determined by the Owner, the contract documents shall govern.

5.10 Evaluation and Delivery of the Bid

Bids shall be executed and delivered as follows:

1. One (1) executed copy of the Technical and Commercial Offering of the bid, formatted according to Section 5.6, shall be delivered at the time specified. Both bid packages can be submitted electronically as a PDF file by e-mail (to the sealed bid address) prior to the submittal deadline; however the Commercial hard copy must be received by overnight delivery service the following day.
2. The bid shall contain acknowledgement of all Addenda received and the telephone number and contact name for communication regarding the bid must be included.

5.11 Solicitation Schedule and Communications

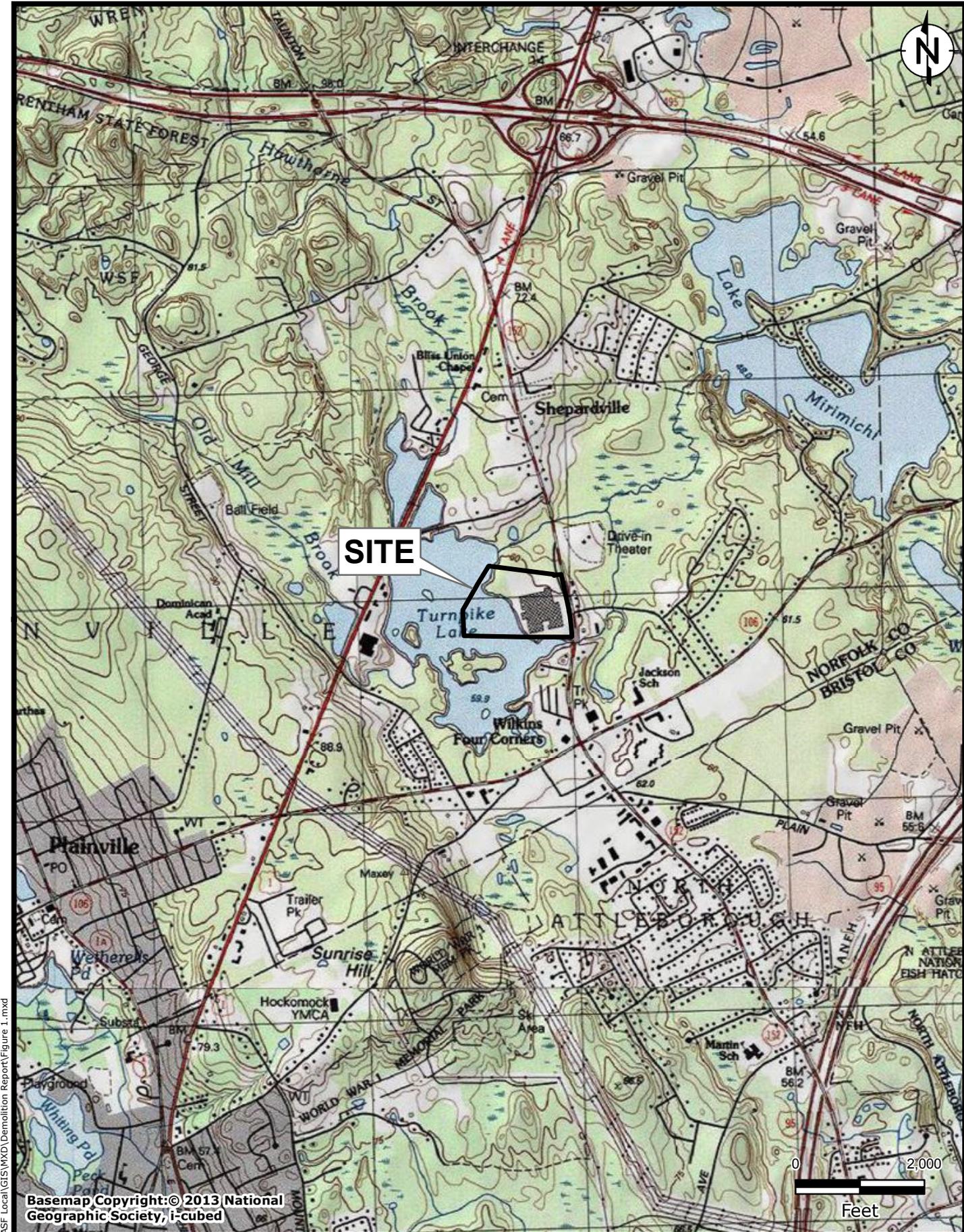
Questions and Answers - BASF plans to document all un-answered questions generated during the bid walk and will issue a formal response to all bidders by **Monday, 10/2/17**. In addition, there will be an open "question" period where BASF will consolidate all inquiries submitted and will attempt to address these questions as they are posted. During the inquiry period, concluding on **Wednesday, 9/27/17**, please direct all questions to the BASF Procurement Agent.

Proposal Due Date - Proposals are due no later than **Monday, 10/9/17 close of business**. Please complete your proposal in sufficient time to reach the addresses presented via U.S. mail or alternate no later than the date and time specified.

Award Notification – At BASF’s discretion, bidders may be requested to attend an on-site meeting to review the content of their proposal, and to discuss any alternatives presented in their

submittal. BASF intends to select a winning bidder and issue an award notification on or about **Monday, 10/23/17.**

Figures



Basemap Copyright: © 2013 National Geographic Society, i-cubed

C:\Users\cdunn\Desktop\BASF Local\GIS\WXD\Demolition Report\Figure 1.mxd

 <p>DRAFTED BY: CWD DATE: 2/9/2017</p>	<p align="center">Site Location Map BASF Facility 36 Taunton Street Plainville, Massachusetts</p>	<p align="center">FIGURE 1 PROJECT</p>
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Edge of Turnpike Lake

Building 11

Property Boundary

Access Gate

Building 8

Building 10

Taunton Street (Rt 152)

Restricted Access Gate



Site Plan

BASF Facility
36 Taunton Street
Plainville, Massachusetts



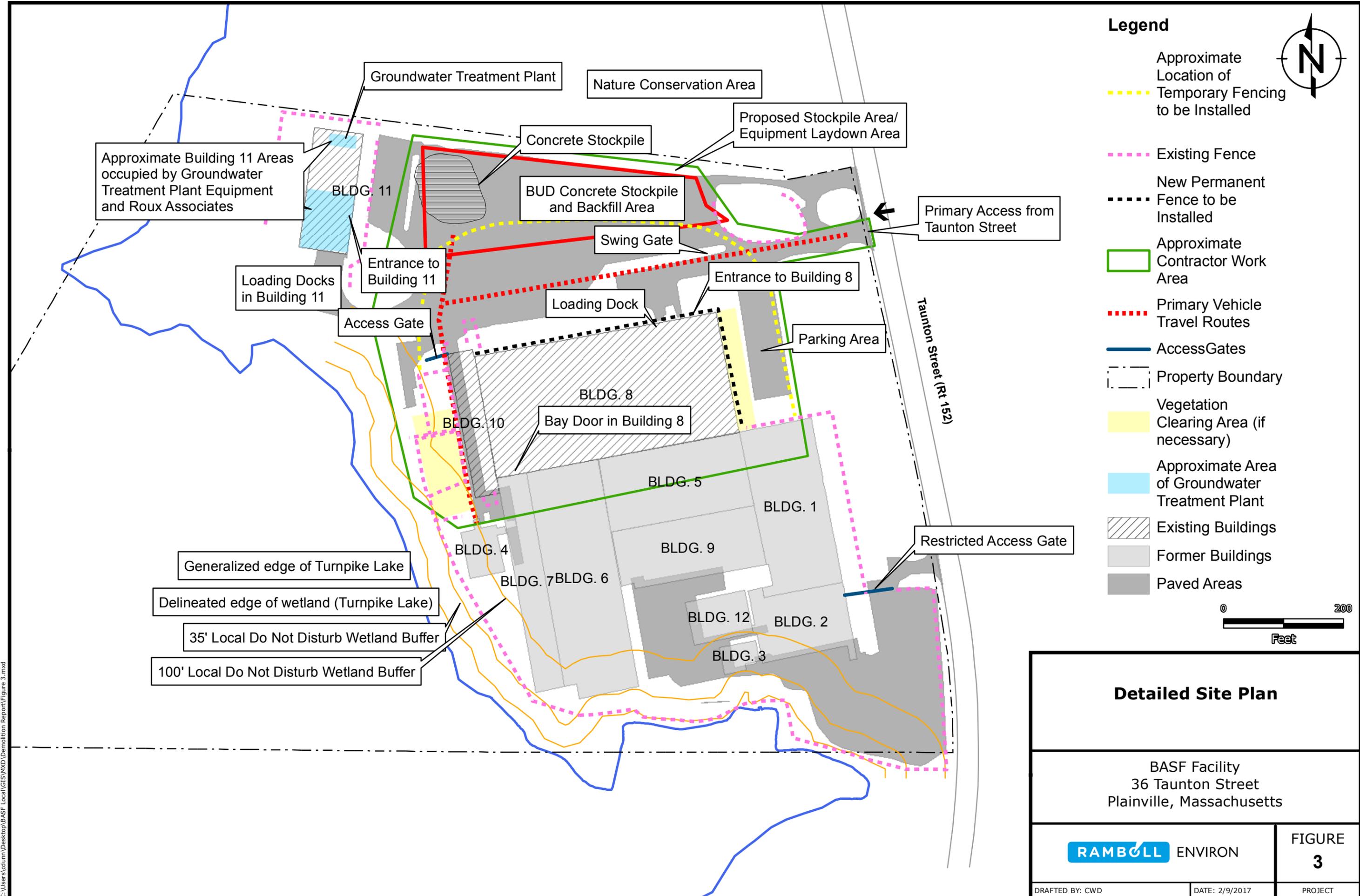
FIGURE
2

DRAFTED BY: CWD

DATE: 2/9/2017

PROJECT

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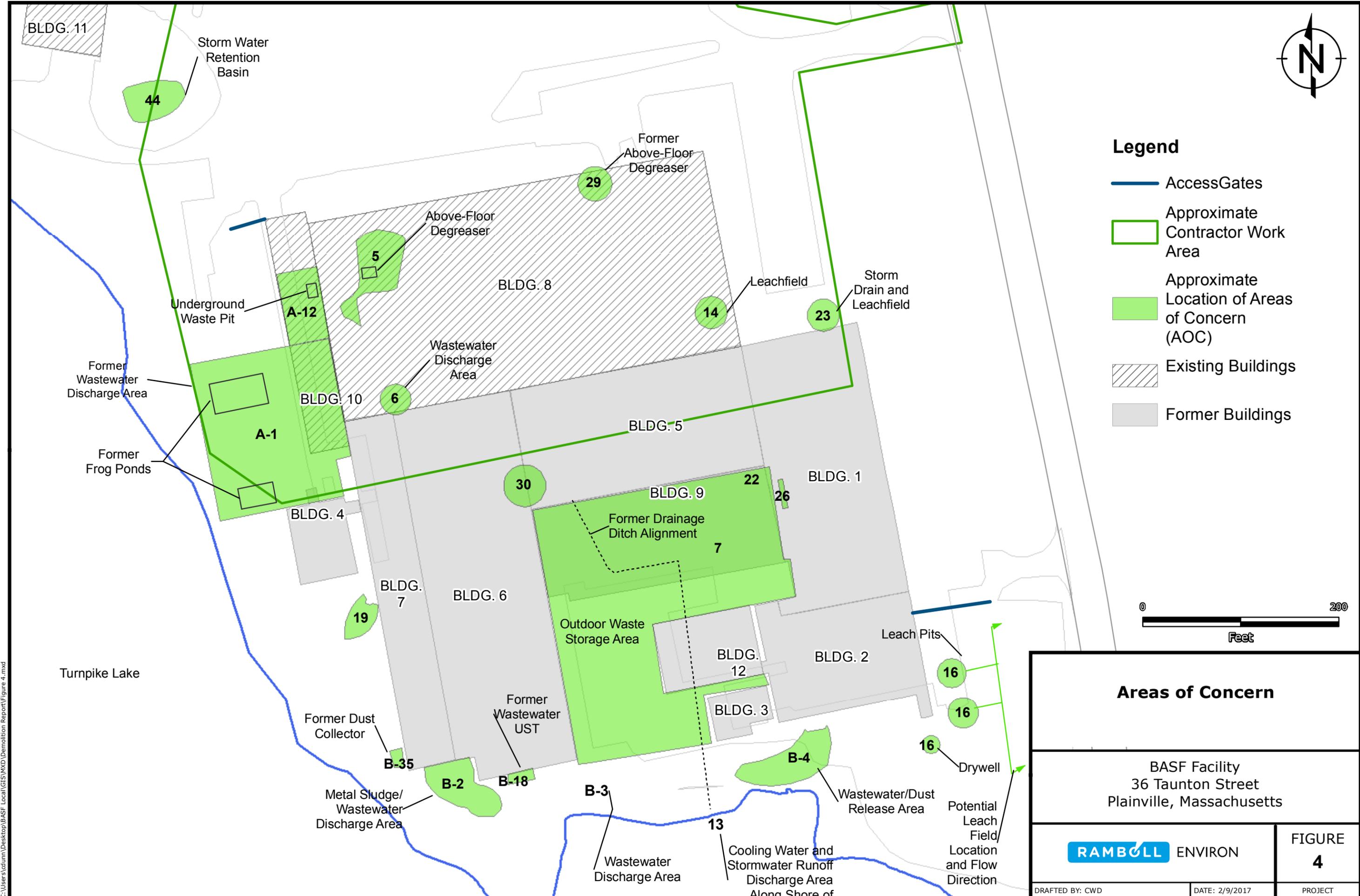
Detailed Site Plan

BASF Facility
 36 Taunton Street
 Plainville, Massachusetts



FIGURE
3

C:\Users\cdum\Documents\BASF_Local\GIS\WXD\Demolition Report\Figure 3.mxd



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Legend

-  Approximate Sample Location
-  Areas Containing or Assumed to Contain Asbestos
-  Areas to be Demolished/Removed

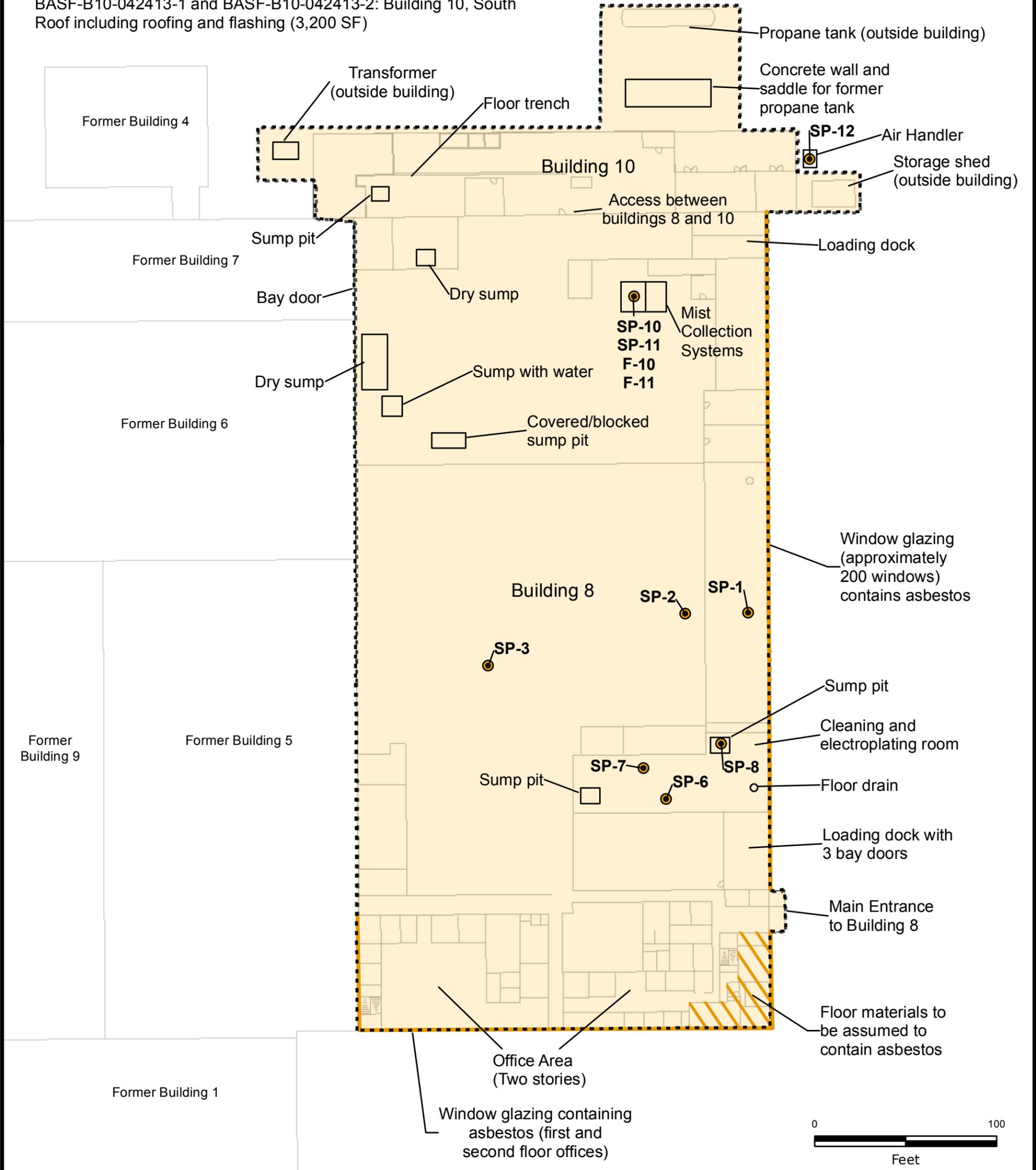
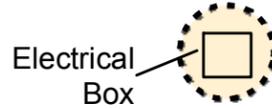


Asbestos sampling locations not shown (reference Attachment 3):

BASF-B8-042413-29: Building 8, Tar Coating, Main Roof - West Side - Covering Fiberglass Insulated Duct Work (2 Trane Units, 240 SF)

BASF-B8-042413-30: Building 8, East 2nd Floor Roof (15,000 SF)

BASF-B10-042413-1 and BASF-B10-042413-2: Building 10, South Roof including roofing and flashing (3,200 SF)



Detail of Buildings 8 and 10 BASF Facility

36 Taunton St
Plainville, MA

FIGURE

5

PROJECT



Legend

- Location of Utility to be Cut and Capped
- Catchbasin
- Extraction Well
- Hydrant
- Lightpole
- Manhole
- Ammonia
- Stormwater
- Electric
- Electrical and Water for Extraction Wells
- Fire Suppression
- Gas
- Headwall
- Hydrogen
- Propane
- Sewer
- Water
- Approximate Contractor Work Area
- Existing Buildings
- Former Buildings

Data Sources:
 Existing Water & Sewer (Exterior) Schematic, Engelhard Corporation, Plainville, MA, date unknown

Site Plan, Boring Log, New England Customer Service Facility, Drawing No. 1, Engelhard, 8/27/81

Site Plan Utilities, Finished Grading, Paving, Fencing, New England Customer Service Facility, Drawing No. 2, Engelhard, 8/27/81

Site Plan, Kidde Constructors, Drawing S-100, 6/30/72

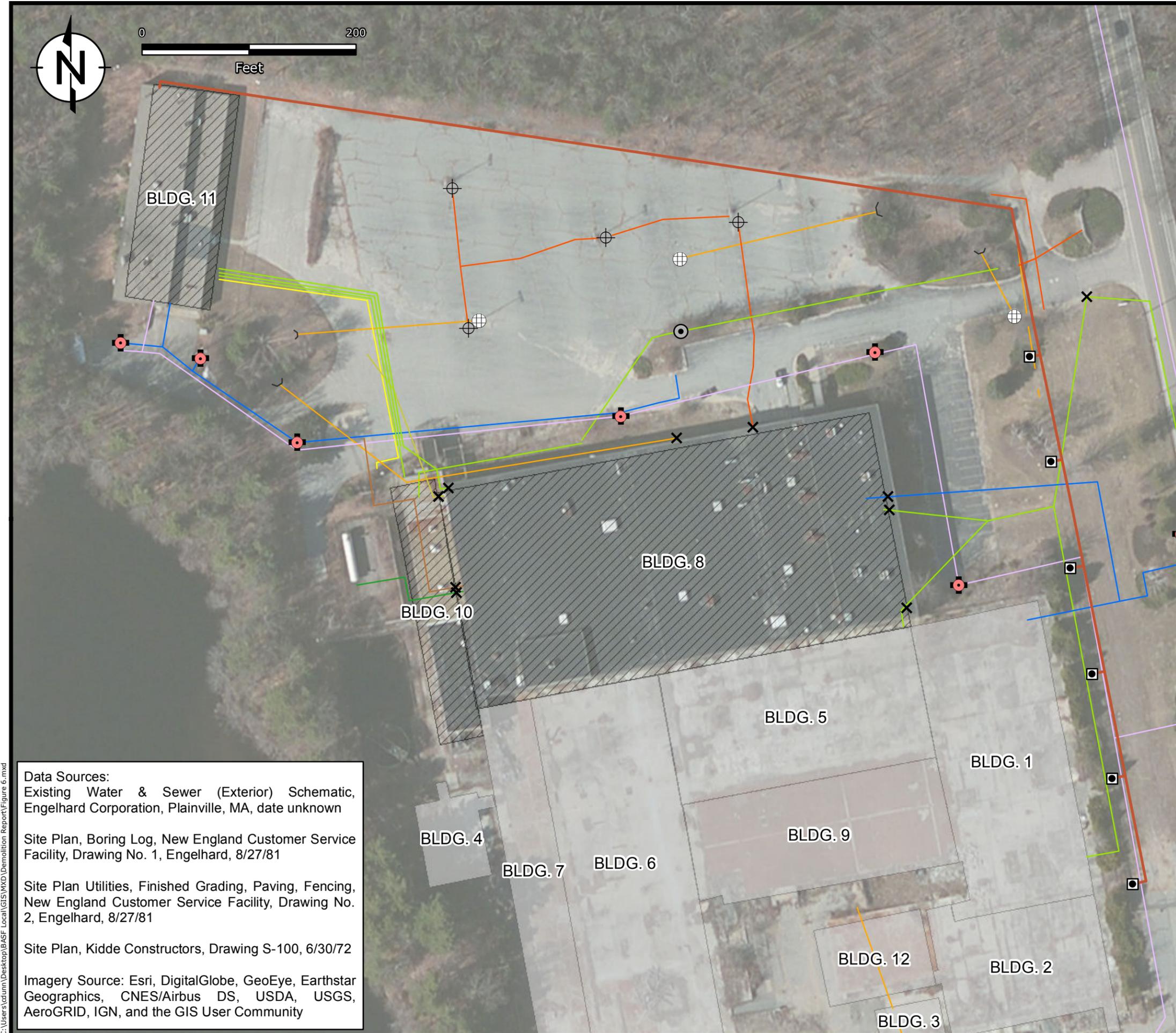
Imagery Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Approximate Locations of Known or Suspected Subsurface Utilities

BASF Facility
 36 Taunton Street
 Plainville, Massachusetts

FIGURE
6

DRAFTED BY: CWD
DATE: 2/10/2017
PROJECT



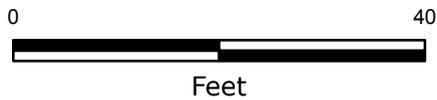
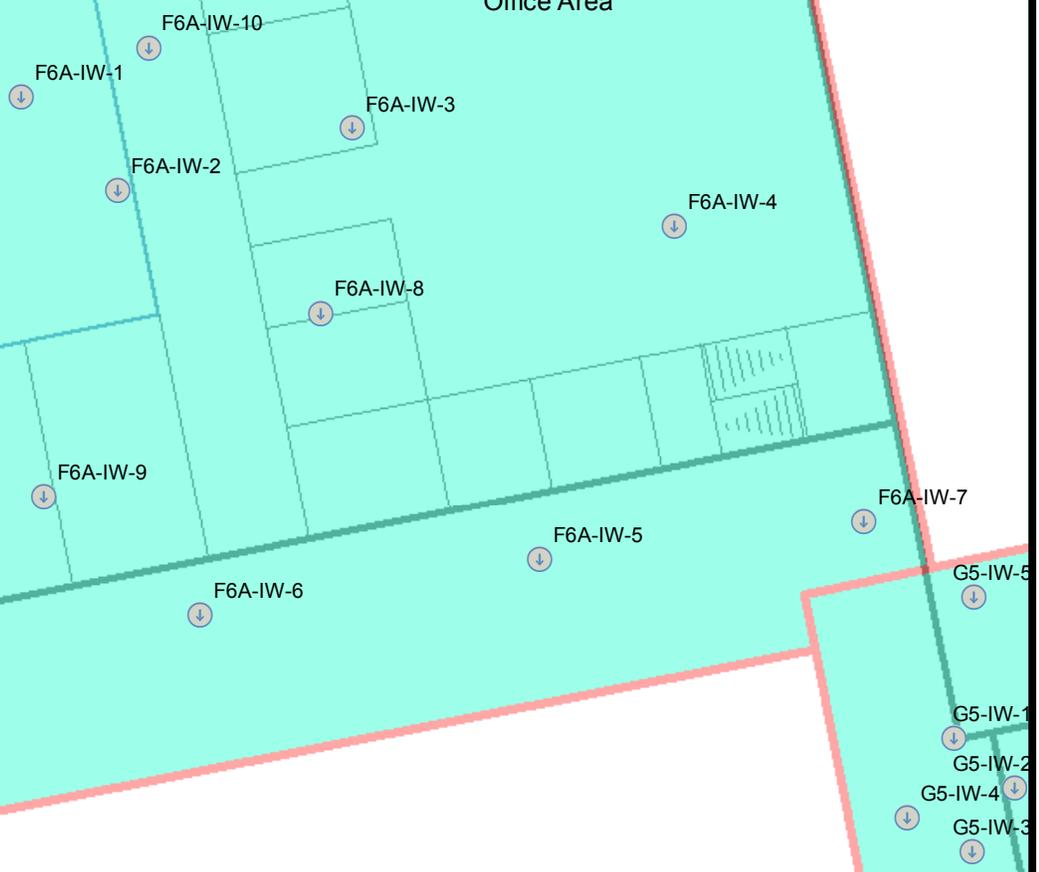


Legend

-  ERFs Injection Wells
-  Monitoring Well Protection Area

Warehouse Area

Office Area



M:\BASF Plainville\GIS\WXD\Demolition Report\Figure 7B.mxd



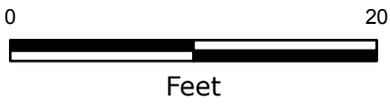
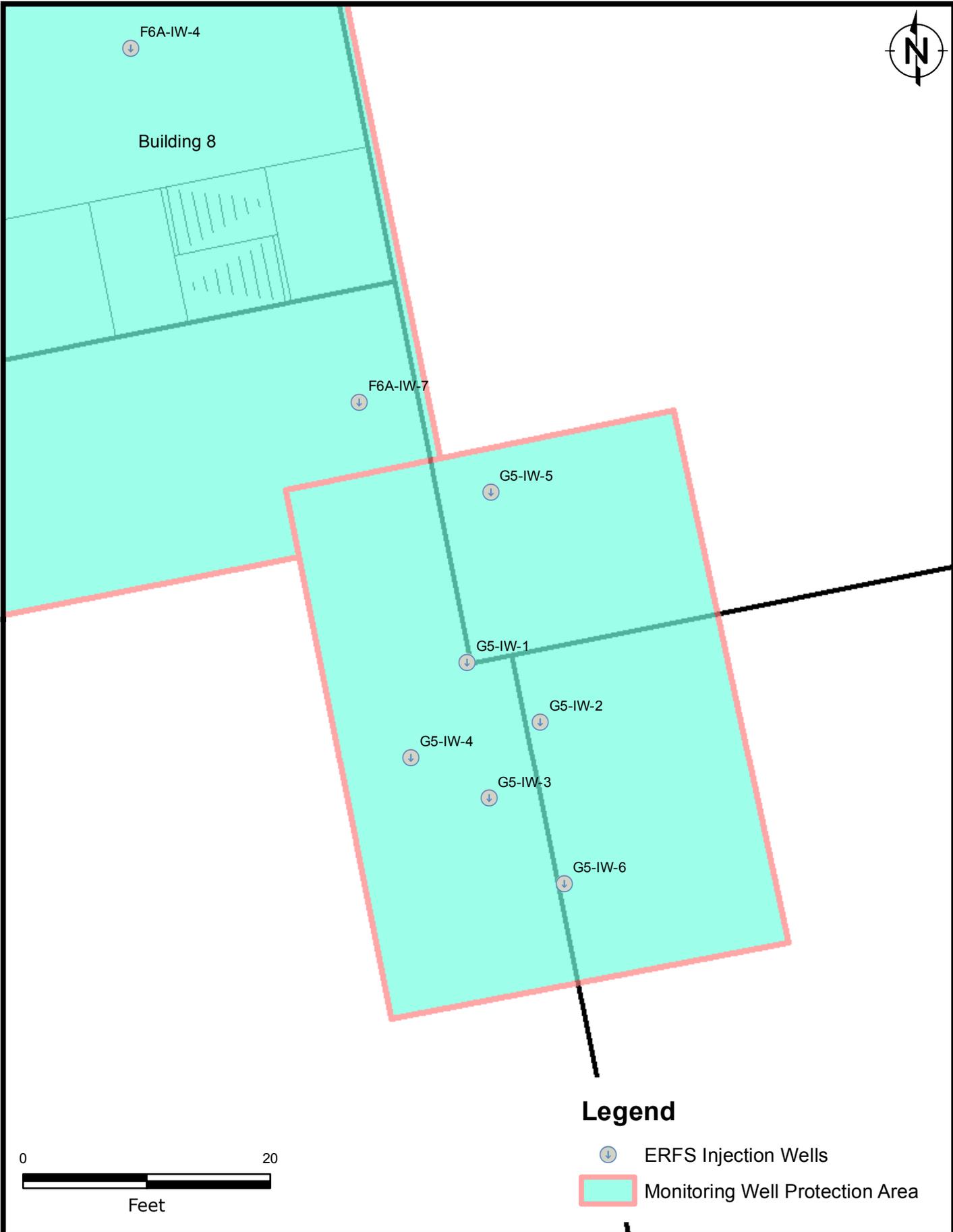
ERFS F6A Treatment Area Plan BASF Facility 32 Taunton Street Plainville, Massachusetts

FIGURE
7B

DRAFTED BY: CWD

DATE: 1/11/2017

PROJECT



Legend

-  ERFs Injection Wells
-  Monitoring Well Protection Area

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ERFS G5 Treatment Area Plan
BASF Facility
32 Taunton Street
Plainville, Massachusetts

FIGURE
7C

DRAFTED BY: CWD

DATE: 1/11/2017

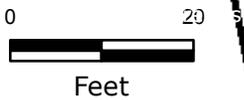
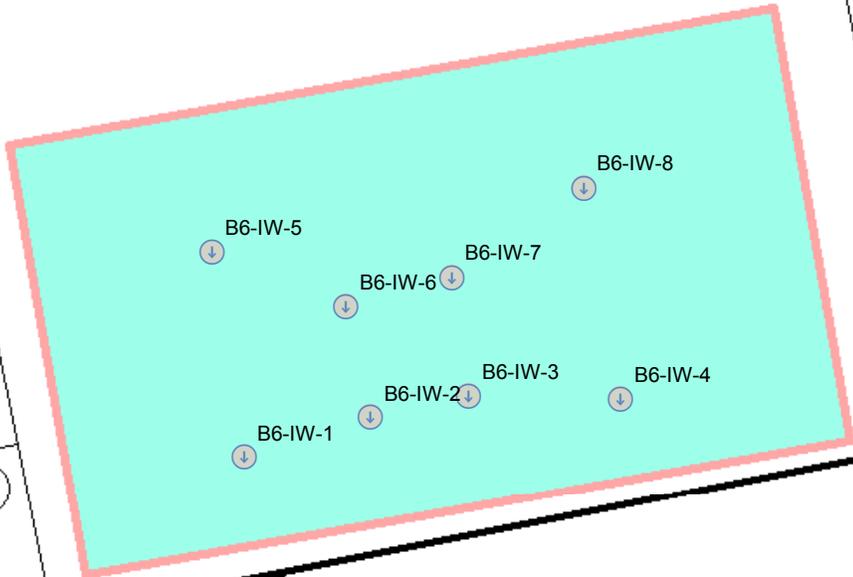
PROJECT



Legend

-  ERFs Injection Wells
-  Monitoring Well Protection Area

Building 8



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ERFS B6 Treatment Area Plan
BASF Facility
32 Taunton Street
Plainville, Massachusetts

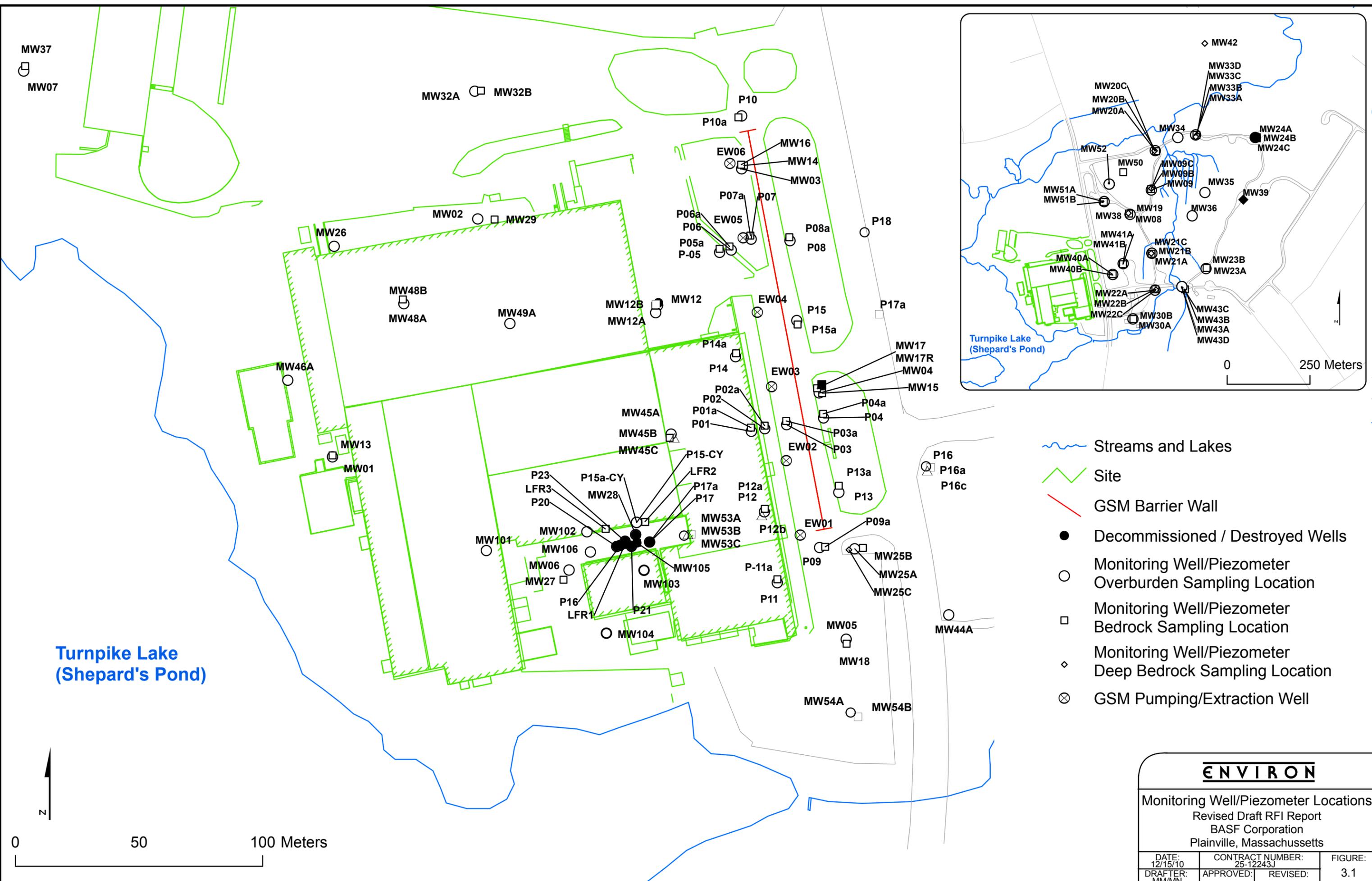
FIGURE
7D

DRAFTED BY: CWD

DATE: 1/11/2017

PROJECT

Attachment 1: Figures and Tables for Soil Data beneath Buildings 8 and 10



- Streams and Lakes
- Site
- GSM Barrier Wall
- Decommissioned / Destroyed Wells
- Monitoring Well/Piezometer Overburden Sampling Location
- Monitoring Well/Piezometer Bedrock Sampling Location
- Monitoring Well/Piezometer Deep Bedrock Sampling Location
- GSM Pumping/Extraction Well

ENVIRON

Monitoring Well/Piezometer Locations
 Revised Draft RFI Report
 BASF Corporation
 Plainville, Massachusetts

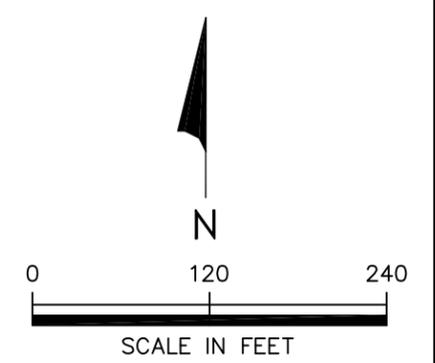
DATE: 12/15/10	CONTRACT NUMBER: 25-12243J	FIGURE: 3.1
DRAFTER: MM/MN	APPROVED:	REVISED:

EXPLANATION

- SB-45 Soil Boring - Phase I, 1995
- ⊕ SB-RD33 Soil Boring for Radionuclide Investigation - Phase I, 1995
- SB-36CR Soil Boring - Phase II, 1997
- SB-50 Soil Boring - Supplemental Field Investigation 2005
- - - - - Dirt Road
- ~ ~ ~ ~ ~ Stream
- - - - - Property Boundary
- ▬ Current Building
- ⊙ 6 Approximate Locations of Area of Concern (AOC)
- A-12 Approximate Location of Sub-AOC
- ▬ Building Demolished in 1996 and 1997.

NOTE: Laboratory sample location IDs for soil borings SB-50 thru SB-59 are as follows:

SB-50	AOCA1	SB1
SB-51	AOCA1	SB2
SB-52	AOCA1	SB3
SB-53	SB-4	
SB-54	SB-3	
SB-55	AOC14	SB2
SB-56	AOC14	SB1
SB-57	SB220	
SB-58	AOC30	SB1
SB-59	AOC30	SB2

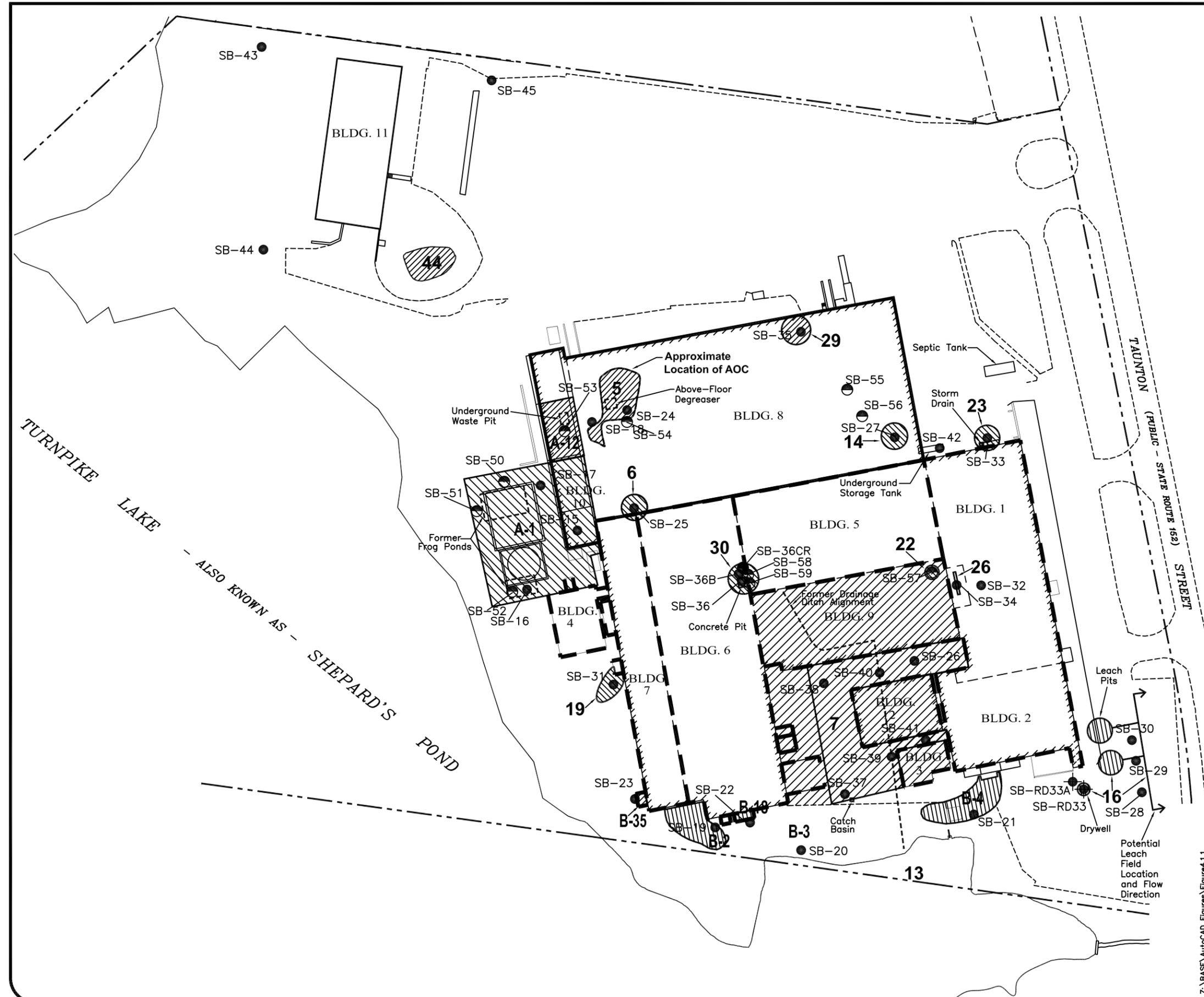


ENVIRON

RFI Soil Boring Locations
 Revised Draft RFI Report
 BASF Corporation
 Plainville, Massachusetts

DATE: 10/16/2006	CONTRACT NUMBER: 25-12243J	FIGURE 4.1.1
DRAFTER: RS	APPROVED:	REVISED: MN

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TURNPIKE LAKE
 - ALSO KNOWN AS - SHEPARD'S POND

TAUNTON (PUBLIC - STATE ROUTE 152) STREET

EXPLANATION

- SB-45 Soil Boring – Phase I, 1995
- ⊕ SB-RD33 Soil Boring for Radionuclide Investigation – Phase I, 1995
- SB-36CR Soil Boring – Phase II, 1997
- ⊙ SB-50 Soil Boring – Supplemental Field Investigation 2005
- Current Building
- ⊙ 6 Approximate Locations of Area of Concern (AOC)
- A-12 Approximate Location of Sub-AOC
- - - Building Demolished in 1996 and 1997.

NOTE: Laboratory sample location IDs for soil borings SB-50 thru SB-54 are as follows:

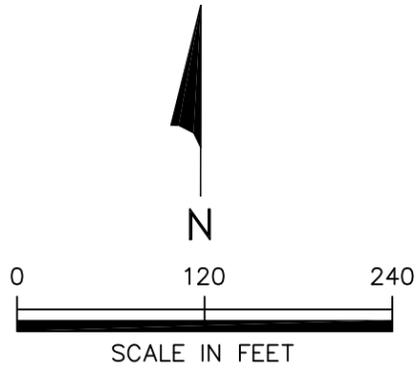
- SB-50 AOCA1 SB1
- SB-51 AOCA1 SB2
- SB-52 AOCA1 SB3
- SB-53 SB-4
- SB-54 SB-3

*NA= Not Analyzed
Soil Boring ID

SB-17	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
2	10.5	13.4	NA	24.6	11.8J	NA	9.8J	40.3J
5	2.3	7.6	NA	9.2	5.5J	NA	3.5J	31.7J
7	14.5	11.3	NA	49.6	5.6J	NA	1.7J	51.8J

Depth (ft)

"U" qualifier indicates not detected.
"J" qualifier indicates estimated value.
Cd—Cadmium
Cr—Chromium
Cu—Copper
Pb—Lead
Ni—Nickel
Ag—Silver
Zn—Zinc



SB-24	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
8	1.2	7.7	NA	112	9.0J	NA	12.9J	50.1J
8D	1.4	12.2	NA	76.8	16.7J	NA	5.9J	45.4J

SB-54	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
0	0.46U	5.5	NA	9.7	4.3	7.5	2.9	18
3	0.41U	7.4	NA	8.5	3.7	10	1.1	20
7.5	2.8	4.8	NA	53J	5.6	9J	4.2J	54
7.5(D)	2.9	4.8	NA	100J	6.1	20J	10J	55

SB-18	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
2	0.42U	6.4J	1.2U	5.3	3.8	NA	0.42U	24.2
2D	0.43U	7.6J	0.54U	7.6	5.1	NA	1.0	25.4
5	0.42U	11.0J	1.3 U	12.9	4.8	NA	0.83	29.1

SB-53	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
0	1200	110	NA	290	38	18	110	440
4	15	14	NA	8	4.4	4.4	6.2	20
8	9	14	NA	12	4.4	5.4	4.3	32

SB-17	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
2	10.5	13.4	NA	24.6	11.8J	NA	9.8J	40.3J
5	2.3	7.6	NA	9.2	5.5J	NA	3.5J	31.7J
7	14.5	11.3	NA	49.6	5.6J	NA	1.7J	51.8J

SB-50	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
1	2.1	7.7	NA	10	14	5.2	3.4	65
7	0.41U	6.4	NA	6.8	4	5	0.41U	19
9	5	6.8	NA	30	3.2	5.6	1.3	26

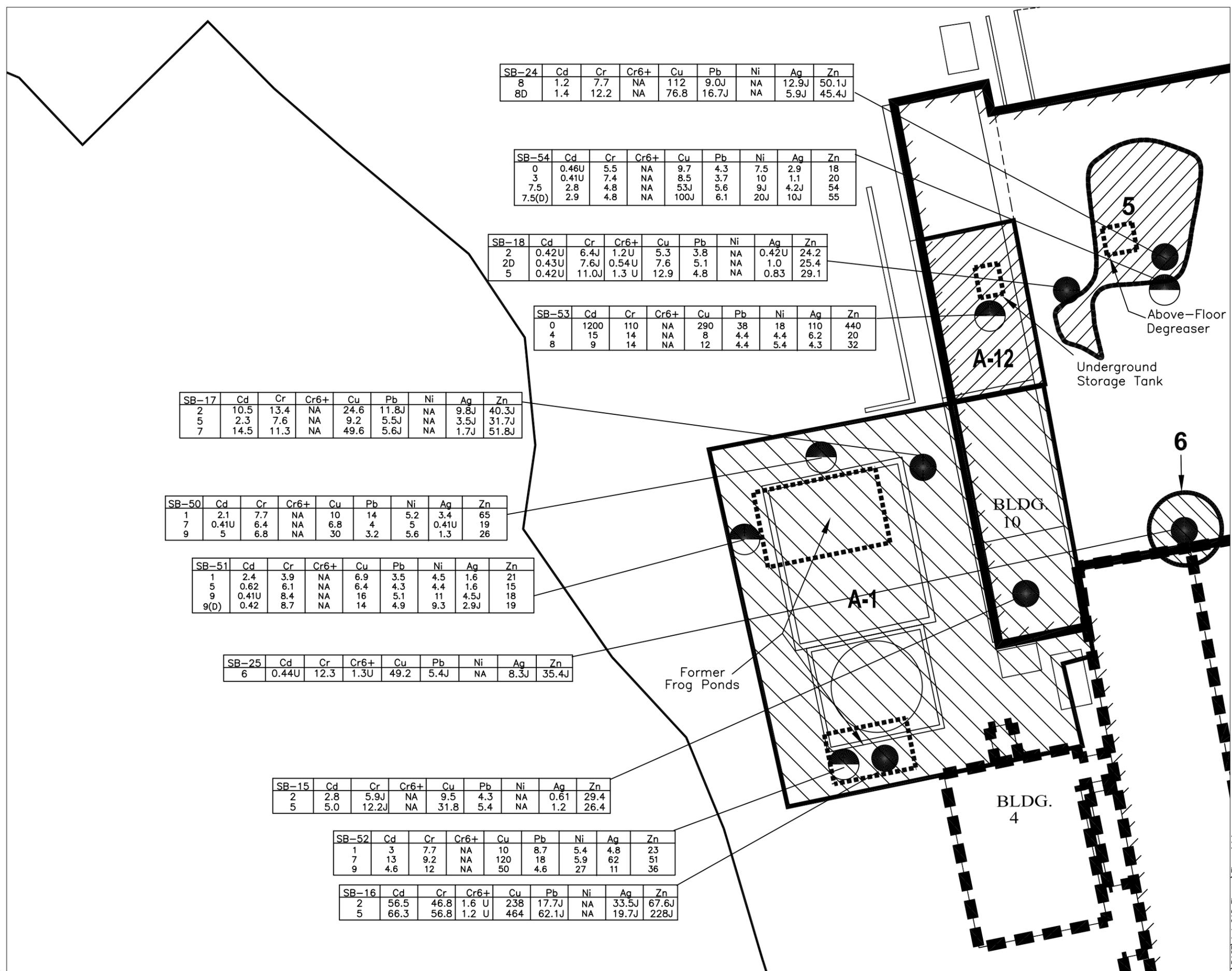
SB-51	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
1	2.4	3.9	NA	6.9	3.5	4.5	1.6	21
5	0.62	6.1	NA	6.4	4.3	4.4	1.6	15
9	0.41U	8.4	NA	16	5.1	11	4.5J	18
9(D)	0.42	8.7	NA	14	4.9	9.3	2.9J	19

SB-25	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
6	0.44U	12.3	1.3U	49.2	5.4J	NA	8.3J	35.4J

SB-15	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
2	2.8	5.9J	NA	9.5	4.3	NA	0.61	29.4
5	5.0	12.2J	NA	31.8	5.4	NA	1.2	26.4

SB-52	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
1	3	7.7	NA	10	8.7	5.4	4.8	23
7	13	9.2	NA	120	18	5.9	62	51
9	4.6	12	NA	50	4.6	27	11	36

SB-16	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
2	56.5	46.8	1.6 U	238	17.7J	NA	33.5J	67.6J
5	66.3	56.8	1.2 U	464	62.1J	NA	19.7J	228J



ENVIRON

RFI Soil Boring Locations-
AOCs A-1, A-12 and 5
BASF Corporation
Plainville, Massachusetts

DATE: 12/20/2006	CONTRACT NUMBER: 25-12243E	FIGURE 9.1.4
DRAFTER: RS	APPROVED: MN	

Z:\BASF\AutoCAD Figures\Figure4.1.1

Table 4.1.6: Soil Sampling Program - Detected Metals
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

DRAFT

SITE LOCATION	SB-15	SB-15	SB-16	SB-16	SB-17
SAMPLE DEPTH	2	5	2	5	2
SAMPLE ID	EP-SB15-1-2-4	EP-SB15-2-5-7	EP-SB16-1-2-4	EP-SB16-2-5-7	EP-SB17-1-2-4
LABORATORY SDG NO.	Z0140	Z0140	Z0041	Z0041	Z0041
SAMPLE DATE	2/7/1995	2/7/1995	1/20/1995	1/20/1995	1/13/1995
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	--	--	6.6	--	--
Arsenic	0.35	0.4	1.2 J	2.1 J	1.3
Beryllium	--	--	0.32	--	--
Cadmium	2.8	5	56.5	66.3	10.5
Chromium (total)	5.9 J	12.2 J	46.8	56.8	13.4
Copper	9.5	31.8	238	464	24.6
Cyanide	--	--	5.9	6.6	--
Lead	n/a	5.4	17.7 J	62.1 J	11.8 J
Mercury	--	--	--	--	--
Nickel	6.0 J	5.9 J	17.5	17.7	9.8
Selenium	--	--	0.34	0.34 J	--
Silver	0.61	1.2	33.5 J	19.7 J	9.8 J
Thallium	--	--	--	--	--
Zinc	29.4	26.4	67.6 J	228 J	40.3 J

Notes:

- (1) "J" qualifier indicates estimated value.
 - (2) "--" indicates compound not detected above detection limit.
 - (3) "n/a" indicates compound not analyzed for.
 - (4) "D" in sample ID indicates duplicate sample.
 - (5) "RE" in sample ID indicates laboratory reanalysis.
- mg/kg = milligrams per kilogram.

Table 4.1.6: Soil Sampling Program - Detected Metals
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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SITE LOCATION	SB-17	SB-17	SB-18	SB-18	SB-19
SAMPLE DEPTH	5	7	2	6	2
SAMPLE ID	EP-SB17-2-5-7	EP-SB17-3-7-9	EP-SB18-1-2-4	EP-SB18-2-5-7	EP-SB19-1-2-4
LABORATORY SDG NO.	Z0041	Z0041	Z0140	Z0140	
SAMPLE DATE	1/13/1995	3/7/12	2/6/1995	2/6/1995	12/22/1994
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	5.6 U	--	--	--	--
Arsenic	0.41	0.29	0.8	0.94	1.7
Beryllium	0.22 U	--	--	--	--
Cadmium	2.3	14.5	--	--	265
Chromium (total)	7.6	11.3	6.4 J	11.0 J	10.1
Copper	9.2	49.6	5.3	12.9	9.7 J
Cyanide	0.53 U	--	--	--	n/a
Lead	5.5 J	5.6 J	3.8	4.8	11.7
Mercury	0.098 U	--	--	--	--
Nickel	16.9	9.2	5.2 J	9.9 J	7.7
Selenium	0.22 U	--	--	--	0.42
Silver	3.5 J	1.7 J	--	0.83	11.6
Thallium	0.22 U	--	--	--	--
Zinc	31.7 J	51.8 J	24.2	29.1	49.1

Notes:

- (1) "J" qualifier indicates estimated value.
 - (2) "--" indicates compound not detected above detection limit.
 - (3) "n/a" indicates compound not analyzed for.
 - (4) "D" in sample ID indicates duplicate sample.
 - (5) "RE" in sample ID indicates laboratory reanalysis.
- mg/kg = milligrams per kilogram.

Table 4.1.6: Soil Sampling Program - Detected Metals
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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SITE LOCATION	SB-23	SB-24	SB-25	SB-26	SB-26	SB-27
SAMPLE DEPTH	9	8	6	2	8	6
SAMPLE ID	EP-SB23-3-9-11	EP-SB24-2-8-10	EP-SB25-2-6-8	EP-SB26-1-2-4	EP-SB26-2-8-10	EP-SB27-1-6-8
LABORATORY SDG NO.		A0041	A0041			A0140
SAMPLE DATE	12/20/1994	1/30/1995	34724	12/20/1994	12/20/1994	2/13/1995
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	--	--	--	--	--	--
Arsenic	0.44 J	0.79 J	0.42 J	0.77 J	0.26 J	0.66
Beryllium	--	--	--	--	--	--
Cadmium	--	1.2	--	--	--	--
Chromium (total)	6.6	7.7	12.3	8.6	5.7	12.0 J
Copper	4.2 J	112	49.2	8.6 J	3.5 J	7.1
Cyanide	n/a	n/a	n/a	--	--	n/a
Lead	4.9	9.0 J	5.4 J	7.7	4	5.2
Mercury	--	--	--	--	--	--
Nickel	7.5	9.1	8.5	8.5	7.4	7.7 J
Selenium	--	--	--	--	--	--
Silver	--	12.9 J	8.3 J	0.81	--	--
Thallium	--	--	--	--	--	--
Zinc	29.3	50.1 J	35.4 J	34.6	19.3	27.3

Notes:

- (1) "J" qualifier indicates estimated value.
 - (2) "--" indicates compound not detected above detection limit.
 - (3) "n/a" indicates compound not analyzed for.
 - (4) "D" in sample ID indicates duplicate sample.
 - (5) "RE" in sample ID indicates laboratory reanalysis.
- mg/kg = milligrams per kilogram.

Table 4.1.6: Soil Sampling Program - Detected Metals
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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SITE LOCATION	SB-27	SB-28	SB-28	SB-29	SB-29	SB-30
SAMPLE DEPTH	18	5	7	5	15	5
SAMPLE ID	EP-SB27-2-18-20	EP-SB28-1-5-7	EP-SB28-2-7-9	EP-SB29-1-5-7	EP-SB29-2-15-17	EP-SB30-1-5-7
LABORATORY SDG NO.	Z0417					
SAMPLE DATE	4/7/1995	12/8/1994	12/8/1994	12/7/1994	12/7/1994	12/6/1994
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	--	--	--	--	--	--
Arsenic	1.6	--	6.2	--	1.1	0.75
Beryllium	0.37	--	--	--	--	--
Cadmium	--	0.89	6.6	1.2	--	0.42
Chromium (total)	17.2 J	5.2	7.6	--	10.2	5.2
Copper	22.1	4	4.7	--	15.2	--
Cyanide	n/a	n/a	n/a	n/a	n/a	n/a
Lead	8.9	3.1	3.3	3.6	6	3.5
Mercury	--	--	--	--	--	--
Nickel	12.6	7.2	6.9	4.8	10.3	6.8
Selenium	0.79	--	--	--	--	--
Silver	1.9	--	--	--	--	--
Thallium	--	--	--	--	--	--
Zinc	41.9	33.4	20.2	17.8	27.4	21.3

Notes:

- (1) "J" qualifier indicates estimated value.
 - (2) "--" indicates compound not detected above detection limit.
 - (3) "n/a" indicates compound not analyzed for.
 - (4) "D" in sample ID indicates duplicate sample.
 - (5) "RE" in sample ID indicates laboratory reanalysis.
- mg/kg = milligrams per kilogram.

Table 4.1.7: Soil Sampling Program - SPLP Analytical Results for Metals
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:	SB-19	SB-20	SB-22	SB-23	SB-27
SAMPLE DEPTH:	8	5	2	9	18
SAMPLE ID:	EP-SB19-3-8-10	EP-SB20-2-5-7	EP-SB22-1-2-4	EP-SB23-3-9-11	EP-SB27-2-18-20
LABORATORY SDG NO.:	A1413	Z1413	B1413	A1413	Z0417
UNITS	mg/L	mg/L	mg/L	mg/L	mg/L
Cadmium	0.0169	0.087	0.0516	--	--
Chromium	--	0.0035	--	--	0.0707
Copper	--	--	--	--	0.122 J
Lead	--	0.0115	--	--	0.0555
Zinc	--	0.118	--	--	0.177 J

Notes:

- (1) "J" qualifier indicates estimated value.
 - (2) "--" indicates compound not detected above detection limit.
 - (3) "D" in sample ID indicates duplicate sample.
- mg/L = milligrams per Liter

Table 4.1.8: RFI Phase I/II Soil Sampling Program - Detected VOCs
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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SAMPLE LOCATION:	SB-16	SB-16	SB-17	SB-18	SB-19	SB-20
SAMPLE DEPTH:	2	5	2	2	5	2
SAMPLE ID:	EP-SB16-1-2-4	EP-SB16-2-5-7	EP-SB17-1-2-4	EP-SB18-1-2-4	EP-SB19-2-5-7	EP-SB20-1-2-4
LABORATORY SDG NO.:	Z0041	Z0041	Z0041	Z0140	A1413	Z1413
DATE SAMPLED:	1/20/1995	1/20/1995	1/13/1995	2/6/1995	12/22/1994	12/13/1994
UNITS	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
1,1,1-trichloroethane	23	2 J	--	--	--	--
1,1-dichloroethane	2 J	--	--	--	--	--
1,1-dichloroethene	--	--	--	--	--	--
Benzene	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	2 J	--
Methylene chloride	--	--	--	--	--	--
Styrene	--	--	--	--	2 J	--
Tetrachloroethene	120	28	2 J	--	--	3 J
Toluene	1 J	--	1 J	2 J	8	2 J
Trichloroethene	110	14	--	--	--	--
Vinyl acetate	--	--	--	--	--	--
Xylenes, total	--	--	--	--	9	--

Notes:

- (1) "J" qualifier indicates estimated value.
- (2) "--" indicates compound not detected above detection limit.
- (3) "D" in sample ID indicates duplicate sample.
- µg/kg = micrograms per kilogram
- (4) fill material collected from within AOC 30

Table 4.1.8: RFI Phase I/II Soil Sampling Program - Detected VOCs
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

DRAFT

SAMPLE LOCATION:	SB-22	SB-22	SB-22	SB-24	SB-24	SB-24
SAMPLE DEPTH:	2	5	7	2	2	8
SAMPLE ID:	EP-SB22-1-2-4	EP-SB22-2-5-7	EP-SB22-3-7-9	EP-SB24-1-2-4	EP-SB24-1-2-4D	EP-SB24-2-8-10
LABORATORY SDG NO.:	B1413	B1413	B1413	A0041	A0041	A0041
DATE SAMPLED:	12/22/1994	12/22/1994	12/22/1994	1/30/1995	1/30/1995	1/30/1995
UNITS	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
1,1,1-trichloroethane	--	--	--	--	--	--
1,1-dichloroethane	--	--	--	--	--	--
1,1-dichloroethene	--	--	--	--	--	--
Benzene	--	--	--	--	4 J	--
Chlorobenzene	--	--	--	--	4 J	--
Chloroethane	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--
Styrene	--	--	--	--	--	--
Tetrachloroethene	4900	84	98	5200	470	6
Toluene	--	--	--	--	--	--
Trichloroethene	--	--	2 J	--	--	--
Vinyl acetate	--	--	--	--	--	--
Xylenes, total	--	--	--	--	--	--

Notes:

- (1) "J" qualifier indicates estimated value.
- (2) "--" indicates compound not detected above detection limit.
- (3) "D" in sample ID indicates duplicate sample.
- µg/kg = micrograms per kilogram
- (4) fill material collected from within AOC 30

Table 4.1.8: RFI Phase I/II Soil Sampling Program - Detected VOCs
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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SAMPLE LOCATION:	SB-25	SB-25	SB-25	SB-29	SB-30	SB-30
SAMPLE DEPTH:	2	6	14	15	5	15
SAMPLE ID:	EP-SB25-1-2-4	EP-SB25-2-6-8	EP-SB25-3-14-16	EP-SB29-2-15-17	EP-SB30-1-5-7	EP-SB30-2-15-17
LABORATORY SDG NO.:	A0041	A0041	A0041	Z1413	Z1413	Z1413
DATE SAMPLED:	1/24/1995	1/25/1995	1/25/1995	12/7/1994	12/6/1994	12/6/1994
UNITS	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
1,1,1-trichloroethane	--	16	6800	--	--	2 J
1,1-dichloroethane	--	4 J	470 J	--	--	1 J
1,1-dichloroethene	--	--	500 J	--	--	--
Benzene	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--
Styrene	--	--	--	--	--	--
Tetrachloroethene	3 J	220	--	2 J	--	2 J
Toluene	--	--	--	--	--	--
Trichloroethene	--	--	--	220	--	10
Vinyl acetate	--	--	--	--	1 J	--
Xylenes, total	--	--	--	--	--	--

Notes:

- (1) "J" qualifier indicates estimated value.
- (2) "--" indicates compound not detected above detection limit.
- (3) "D" in sample ID indicates duplicate sample.
- µg/kg = micrograms per kilogram
- (4) fill material collected from within AOC 30

Table 4.1.8: RFI Phase I/II Soil Sampling Program - Detected VOCs
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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SAMPLE LOCATION:	SB-32	SB-32	SB-34	SB-34	SB-35	SB-36
SAMPLE DEPTH:	2	8	2	6	25	1
SAMPLE ID:	EP-SB32-1-2-4	EP-SB32-2-8-10	EP-SB34-1-2-4	EP-SB34-2-6-8	EP-SB35-4-25-27	EP-SB36-1-1-3
LABORATORY SDG NO.:	A0140	A0140	Z0140	Z0140	Z0140	Z0147
DATE SAMPLED:	2/10/1995	2/10/1995	2/9/1995	2/10/1995	2/9/1995	1/23/1995
UNITS	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
1,1,1-trichloroethane	--	4 J	--	--	--	--
1,1-dichloroethane	--	--	--	--	--	12000 J
1,1-dichloroethene	--	--	--	--	--	--
Benzene	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	2900 J
Ethylbenzene	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--
Styrene	--	--	--	--	--	--
Tetrachloroethene	14	140	8	8	7	2200 J
Toluene	--	--	--	--	--	--
Trichloroethene	--	--	--	--	8	--
Vinyl acetate	--	--	0.4 J	--	--	--
Xylenes, total	--	--	--	--	--	--

Notes:

- (1) "J" qualifier indicates estimated value.
- (2) "--" indicates compound not detected above detection limit.
- (3) "D" in sample ID indicates duplicate sample.
- µg/kg = micrograms per kilogram
- (4) fill material collected from within AOC 30

Table 4.1.10: RFI Soil Sampling Program - Detected BTEX and TPHD
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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SAMPLE LOCATION:	SB-16	SB-17	SB-18	SB-19	SB-20	SB-24	SB-36B
SAMPLE DEPTH:	2	2	2	5	2	2	2
SAMPLE ID:	EP-SB16-1-2-4	EP-SB17-1-2-4	EP-SB18-1-2-4	EP-SB19-2-5-7	EP-SB20-1-2-4	EP-SB24-1-2-4D	EP-SB36B-1-2-4
LABORATORY SDG NO.:	Z0041	Z0041	Z0140	A1413	Z1413	A0041	A0041
DATE SAMPLED:	1/20/1995	1/13/1995	2/6/1995	12/22/1994	12/13/1994	1/30/1995	1/26/1995
UNITS	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Benzene	--	--	--	--	--	4 J	--
Ethyl benzene	--	--	--	2 J	--	--	--
Toluene	1 J	1 J	2 J	8	2 J	--	2 J
Xylenes, total	--	--	--	9	--	--	--
TPH (as diesel)	--	--	--	--	--	--	--

Notes:

- (1) "J" qualifier indicates estimated value.
 - (2) "--" indicates compound not detected
 - (3) "D" in sample ID indicates duplicate sample.
- µg/kg = micrograms per kilogram

Table 6.1.1: Supplemental RFI Soil Sampling Program
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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Soil Boring	Sample ID	Date Collected	Lab Report No.	Analyses ⁽¹⁾				
				VOC	SVOC	PCB	PPM	TOC
SB-50	AOCA1 SB1-1-1	10-10-05	L0512119	√		√	√	
SB-50	AOCA1 SB1-2-7	10-10-05	L0512119	√		√	√	
SB-50	AOCA1 SB1-3-9	10-10-05	L0512119	√		√	√	
SB-51	AOCA1 SB2-1-1	10-11-05	L0512119	√		√	√	
SB-51	AOCA1 SB2-2-5	10-11-05	L0512119	√		√	√	
SB-51	AOCA1 SB2-3-9	10-11-05	L0512119	√		√	√	
SB-52	AOCA1 SB2-3-9 (dup)	10-11-05	L0512119	√		√	√	
SB-52	AOCA1 SB3-1-1	10-10-05	L0512119	√		√	√	
SB-52	AOCA1 SB3-2-7	10-10-05	L0512119	√		√	√	
SB-52	AOCA1 SB3-3-9	10-10-05	L0512119	√		√	√	
SB-53	SB-4-0-2	11-10-05	L0513787	√	√		√	
SB-53	SB-4-4-6	11-10-05	L0513787	√	√		√	
SB-53	SB-4-8-10	11-10-05	L0513787	√	√		√	
SB-54	SB-3-0-2	11-10-05	L0513787	√	√		√	
SB-54	SB-3-3-5	11-10-05	L0513787	√	√		√	
SB-54	SB-3-7.5-9.5	11-10-05	L0513787	√	√		√	
SB-54	SB-3-7.5-9.5 (dup)	11-10-05	L0513787	√	√		√	
SB-55	AOC14 SB2-1-10	10-24-05	L0512756	√			√	
SB-55	AOC14 SB2-1-10 (dup)	10-24-05	L0512756	√			√	
SB-55	AOC14 SB2-16	10-24-05	L0512756	√			√	
SB-56	AOC14 SB1-1-9	10-21-05	L0512684	√			√	
SB-56	AOC14 SB1-2-15	10-21-05	L0512684	√			√	
SB-56	AOC14 SB1-2-15 (dup)	10-21-05	L0512684	√			√	
SB-57	SB-220-0.5-2	09-14-05	L0510808	√	√		√	
SB-57	SB-220-2-4	09-14-05	L0510808	√	√		√	
SB-57	SB-220-6-8	09-14-05	L0510808	√	√		√	
SB-57	SB-220-10-11.5	09-14-05	L0510808	√	√		√	
SB-57	SB-220-12-14	09-14-05	L0510808					√
SB-58	AOC 30 SB-1-6	11-14-05	L0514001			√		
SB-59	AOC 30 SB-2-5	11-14-05	L0514001			√		
MW-12B	MW12B-A	09-23-05	L0511458					√
	MW12B-B	09-23-05	L0511458					√
MW-45B	MW-45B-12-14	09-16-05	L0510956					√
	MW-45B-22-23.5	09-16-05	L0510956					√
		AOC 30 Concrete Pit Samples						
AOC30	AOC30-2S	10-05-05	L0511851	√				
	AOC30-2N	10-05-05	L0511851	√				
	AOC30-1	10-04-05	L0511859	√				
		Surface Soil Samples						
	AOCA-1SS-01	12/05/05	L0514775	√		√	√	
	AOCA-1SS-01 (dup)	12/05/05	L0514775	√		√	√	
	AOCA-1SS-02	12/05/05	L0514775	√		√	√	
	AOCA-1SS-03	12/05/05	L0514775	√		√	√	
		Floodplain Soil Samples						
	FS-SD-01	06/01/10	L1008325				√	
	FS-SD-50	06/01/10	L1008325				√	
	FS-SD-204	06/01/10	L1008325				√	
	FS-SD-209	06/01/10	L1008325				√	

Table 6.1.6 Supplemental RFI Soil Sampling Results - VOCs (high)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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LOCATION		SB-53		SB-54		SB-54		SB-54		SB-54	
SAMPLE ID		SB-4-0-2		SB-3-0-2		SB-3-3-5		SB-3-7.5-9.5		SB-3-7.5-9.5 DUP	
SAMPLING DATE		10-NOV-05		10-NOV-05		10-NOV-05		10-NOV-05		10-NOV-05	
LAB SAMPLE ID		L0513787-01	Qual	L0513787-04	Qual	L0513787-05	Qual	L0513787-06	Qual	L0513787-07	Qual
Volatile Organics by MCP											
8260B/5035-High											
1,1,1,2-Tetrachloroethane	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
1,1,1-Trichloroethane	mg/kg	0.05	U	0.048	U	0.036	U	0.049	U	0.056	U
1,1,2,2-Tetrachloroethane	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
1,1,2-Trichloroethane	mg/kg	0.061	U	0.072	U	0.054	U	0.074	U	0.083	U
1,1-Dichloroethane	mg/kg	0.061	U	0.072	U	0.054	U	0.074	U	0.083	U
1,1-Dichloroethene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
1,1-Dichloropropene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
1,2,3-Trichlorobenzene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
1,2,3-Trichloropropane	mg/kg	0.41	U	0.48	U	0.36	U	0.49	U	0.56	U
1,2,4-Trichlorobenzene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
1,2,4-Trimethylbenzene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
1,2-Dibromo-3-chloropropane	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
1,2-Dibromoethane	mg/kg	0.16	U	0.19	U	0.14	U	0.2	U	0.22	U
1,2-Dichlorobenzene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
1,2-Dichloroethane	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
1,2-Dichloropropane	mg/kg	0.14	U	0.17	U	0.12	U	0.17	U	0.19	U
1,3,5-Trimethylbenzene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
1,3-Dichlorobenzene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
1,3-Dichloropropane	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
1,4-Dichlorobenzene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
1,4-Dioxane	mg/kg	20	U	24	U	18	U	25	U	28	U
2,2-Dichloropropane	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
2-Butanone	mg/kg	0.41	U	0.48	U	0.36	U	0.49	U	0.56	U
2-Hexanone	mg/kg	0.41	U	0.48	U	0.36	U	0.49	U	0.56	U
4-Methyl-2-pentanone	mg/kg	0.41	U	0.48	U	0.36	U	0.49	U	0.56	U
Acetone	mg/kg	0.41	U	0.48	U	0.36	U	0.49	U	0.56	U
Benzene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
Bromobenzene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
Bromochloromethane	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
Bromodichloromethane	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
Bromoform	mg/kg	0.16	U	0.19	U	0.14	U	0.2	U	0.22	U
Bromomethane	mg/kg	0.082	U	0.096	U	0.072	U	0.099	U	0.11	U
Carbon disulfide	mg/kg	0.41	U	0.48	U	0.36	U	0.49	U	0.56	U
Carbon tetrachloride	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
Chlorobenzene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
Chloroethane	mg/kg	0.082	U	0.096	U	0.072	U	0.099	U	0.11	U
Chloroform	mg/kg	0.061	U	0.072	U	0.054	U	0.074	U	0.083	U
Chloromethane	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
Dibromochloromethane	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U

Table 6.1.6 Supplemental RFI Soil Sampling Results - VOCs (high)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-53		SB-54		SB-54		SB-54		SB-54	
SAMPLE ID		SB-4-0-2		SB-3-0-2		SB-3-3-5		SB-3-7.5-9.5		SB-3-7.5-9.5 DUP	
SAMPLING DATE		10-NOV-05		10-NOV-05		10-NOV-05		10-NOV-05		10-NOV-05	
LAB SAMPLE ID		L0513787-01		L0513787-04		L0513787-05		L0513787-06		L0513787-07	
	Units		Qual		Qual		Qual		Qual		Qual
Dibromomethane	mg/kg	0.41	U	0.48	U	0.36	U	0.49	U	0.56	U
Dichlorodifluoromethane	mg/kg	0.41	UJ	0.48	UJ	0.36	UJ	0.49	UJ	0.56	UJ
Ethyl ether	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.16	U	0.19	U	0.14	U	0.2	U	0.22	U
Ethylbenzene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
Hexachlorobutadiene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
Isopropyl Ether	mg/kg	0.16	U	0.19	U	0.14	U	0.2	U	0.22	U
Isopropylbenzene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
Methyl tert butyl ether	mg/kg	0.082	U	0.096	U	0.072	U	0.099	U	0.11	U
Methylene chloride	mg/kg	0.41	U	0.48	U	0.36	U	0.49	U	0.56	U
Naphthalene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
Styrene	mg/kg	0.082	U	0.096	U	0.072	U	0.099	U	0.11	U
Tertiary-Amyl Methyl Ether	mg/kg	0.16	U	0.19	U	0.14	U	0.2	U	0.22	U
Tetrachloroethene	mg/kg	3.2		0.91		0.86		1.3	J	2.5	J
Tetrahydrofuran	mg/kg	0.82	U	0.96	U	0.72	U	0.99	U	1.1	U
Toluene	mg/kg	0.061	U	0.072	U	0.054	U	0.074	U	0.083	U
Trichloroethene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
Trichlorofluoromethane	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
Vinyl chloride	mg/kg	0.082	U	0.096	U	0.072	U	0.099	U	0.11	U
cis-1,2-Dichloroethene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
cis-1,3-Dichloropropene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
n-Butylbenzene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
n-Propylbenzene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
o-Chlorotoluene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
o-Xylene	mg/kg	0.082	U	0.096	U	0.072	U	0.099	U	0.11	U
p-Chlorotoluene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
p-Isopropyltoluene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
p/m-Xylene	mg/kg	0.082	U	0.096	U	0.072	U	0.099	U	0.11	U
sec-Butylbenzene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
tert-Butylbenzene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
trans-1,2-Dichloroethene	mg/kg	0.061	U	0.072	U	0.054	U	0.074	U	0.083	U
trans-1,3-Dichloropropene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U

U - Not Detected
J - Estimated value

Table 6.1.7 Supplemental RFI Soil Sampling Results - VOCs (low)
 Revised Draft RFI Report
 BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-52		SB-52		SB-52		SB-52		SB-56	
SAMPLE ID		AOCA1 SB3-1-1RE		AOCA1 SB3-2-7		AOCA1 SB3-2-7RE		AOCA1 SB3-3-9		AOCA1 SB3-3-9	
SAMPLING DATE		10-OCT-05		10-OCT-05		10-OCT-05		10-OCT-05		21-OCT-05	
LAB SAMPLE ID	Units	L0512119-07	Qual	L0512119-08	Qual	L0512119-08	Qual	L0512119-09	Qual	L0512684-02	Qual
Volatile Organics by MCP 8260B/5035-Low											
1,1,1,2-Tetrachloroethane	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
1,1,1-Trichloroethane	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
1,1,2,2-Tetrachloroethane	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
1,1,2-Trichloroethane	mg/kg	0.0017	U	0.0015	U	0.0015	U	0.0013	U	0.0011	U
1,1-Dichloroethane	mg/kg	0.0017	U	0.0015	U	0.0015	U	0.0013	U	0.0011	U
1,1-Dichloroethene	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
1,1-Dichloropropene	mg/kg	0.0057	U	0.005	U	0.005	U	0.0044	U	0.0038	U
1,2,3-Trichlorobenzene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
1,2,3-Trichloropropane	mg/kg	0.011	U	0.01	U	0.0099	U	0.0087	U	0.0076	U
1,2,4-Trichlorobenzene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	UJ	0.0038	U
1,2,4-Trimethylbenzene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
1,2-Dibromo-3-chloropropane	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
1,2-Dibromoethane	mg/kg	0.0046	U	0.004	U	0.004	U	0.0035	U	0.0031	U
1,2-Dichlorobenzene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
1,2-Dichloroethane	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
1,2-Dichloropropane	mg/kg	0.004	U	0.0035	U	0.0035	U	0.003	U	0.0027	U
1,3,5-Trimethylbenzene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
1,3-Dichlorobenzene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
1,3-Dichloropropane	mg/kg	0.0057	U	0.005	U	0.005	U	0.0044	U	0.0038	U
1,4-Dichlorobenzene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
1,4-Dioxane	mg/kg	0.57	U	0.5	U	0.5	U	0.44	U	0.38	U
2,2-Dichloropropane	mg/kg	0.0057	U	0.005	U	0.005	U	0.0044	U	0.0038	U
2-Butanone	mg/kg	0.011	U	0.01	U	0.012	J	0.0087	U	0.0076	U
2-Hexanone	mg/kg	0.011	U	0.01	U	0.0099	U	0.0087	U	0.0076	U
4-Methyl-2-pentanone	mg/kg	0.011	U	0.01	U	0.0099	U	0.0087	U	0.0076	U
Acetone	mg/kg	0.078	J	0.037		0.062	J	0.021		0.076	U
Benzene	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
Bromobenzene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
Bromochloromethane	mg/kg	0.0057	U	0.005	U	0.005	U	0.0044	U	0.0038	U
Bromodichloromethane	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
Bromoform	mg/kg	0.0046	U	0.004	U	0.004	U	0.0035	U	0.0031	U
Bromomethane	mg/kg	0.0023	UJ	0.002	UJ	0.002	UJ	0.0017	UJ	0.0015	U
Carbon disulfide	mg/kg	0.011	U	0.01	U	0.0099	U	0.0087	U	0.0076	U
Carbon tetrachloride	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
Chlorobenzene	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
Chloroethane	mg/kg	0.0023	U	0.002	U	0.002	U	0.0017	U	0.0015	U
Chloroform	mg/kg	0.0017	U	0.0015	U	0.0015	U	0.0013	U	0.0011	U
Chloromethane	mg/kg	0.0057	U	0.005	U	0.005	U	0.0044	U	0.0038	U
Dibromochloromethane	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
Dibromomethane	mg/kg	0.011	U	0.01	U	0.0099	U	0.0087	U	0.0076	U

Table 6.1.7 Supplemental RFI Soil Sampling Results - VOCs (low)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-52		SB-52		SB-52		SB-52		SB-56	
SAMPLE ID		AOCA1 SB3-1-1RE		AOCA1 SB3-2-7		AOCA1 SB3-2-7RE		AOCA1 SB3-3-9		AOC 14_SB1_2_15	
SAMPLING DATE		10-OCT-05		10-OCT-05		10-OCT-05		10-OCT-05		21-OCT-05	
LAB SAMPLE ID	Units	L0512119-07	Qual	L0512119-08	Qual	L0512119-08	Qual	L0512119-09	Qual	L0512684-02	Qual
Dichlorodifluoromethane	mg/kg	0.011	UJ	0.01	UJ	0.0099	UJ	0.0087	UJ	0.0076	U
Ethyl ether	mg/kg	0.0057	U	0.005	U	0.005	U	0.0044	U	0.0038	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.0046	U	0.004	U	0.004	U	0.0035	U	0.0031	U
Ethylbenzene	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
Hexachlorobutadiene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
Isopropyl Ether	mg/kg	0.0046	U	0.004	U	0.004	U	0.0035	U	0.0031	U
Isopropylbenzene	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
Methyl tert butyl ether	mg/kg	0.0023	U	0.002	U	0.002	U	0.0017	U	0.0015	U
Methylene chloride	mg/kg	0.011	U	0.01	U	0.0099	U	0.0087	U	0.0076	U
Naphthalene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
Styrene	mg/kg	0.0023	U	0.002	U	0.002	U	0.0017	U	0.0015	U
Tertiary-Amyl Methyl Ether	mg/kg	0.0046	U	0.004	U	0.004	U	0.0035	U	0.0031	U
Tetrachloroethene	mg/kg	0.018	J	0.0053		0.0064	J	0.0011		0.0018	
Tetrahydrofuran	mg/kg	0.023	U	0.02	U	0.02	U	0.017	U	0.015	U
Toluene	mg/kg	0.0017	U	0.0015	U	0.0015	U	0.0013	U	0.0011	U
Trichloroethene	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
Trichlorofluoromethane	mg/kg	0.0057	U	0.005	U	0.005	U	0.0044	U	0.0038	U
Vinyl chloride	mg/kg	0.0023	U	0.002	U	0.002	U	0.0017	U	0.0015	U
cis-1,2-Dichloroethene	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
cis-1,3-Dichloropropene	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
n-Butylbenzene	mg/kg	0.0011	U	0.001	UJ	0.00099	U	0.00087	U	0.00076	U
n-Propylbenzene	mg/kg	0.0011	UJ	0.001	U	0.00099	UJ	0.00087	U	0.00076	U
o-Chlorotoluene	mg/kg	0.0057	UJ	0.005	U	0.005	U	0.0044	U	0.0038	U
o-Xylene	mg/kg	0.0023	U	0.002	U	0.002	U	0.0017	U	0.0015	U
p-Chlorotoluene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
p-Isopropyltoluene	mg/kg	0.0011	UJ	0.001	UJ	0.00099	UJ	0.00087	U	0.00076	U
p/m-Xylene	mg/kg	0.0023	U	0.002	U	0.002	U	0.0017	U	0.0015	U
sec-Butylbenzene	mg/kg	0.0011	UJ	0.001	UJ	0.00099	UJ	0.00087	U	0.00076	U
tert-Butylbenzene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
trans-1,2-Dichloroethene	mg/kg	0.0017	U	0.0015	U	0.0015	U	0.0013	U	0.0011	U
trans-1,3-Dichloropropene	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U

U - Not Detected
J - Estimated value
Loc. ID with "-RE" indicates a re-analysis by the lab

Table 6.1.7 Supplemental RFI Soil Sampling Results - VOCs (low)
 Revised Draft RFI Report
 BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-56		SB-55		SB-53		SB-53		SS-A1-01	
SAMPLE ID		AOC 14_SB1_2_15 (dup)		AOC14 SB-2-16		SB-4-4-6		SB-4-8-10		AOCA-1SS-01	
SAMPLING DATE		21-OCT-05		24-OCT-05		10-NOV-05		10-NOV-05		05-DEC-05	
LAB SAMPLE ID	Units	L0512684-03	Qual	L0512756-03	Qual	L0513787-02	Qual	L0513787-03	Qual	L0514775-01	Qual
Volatile Organics by MCP 8260B/5035-Low											
1,1,1,2-Tetrachloroethane	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
1,1,1-Trichloroethane	mg/kg	0.00054	U	0.0041		0.00065	U	0.00084		0.00087	U
1,1,2,2-Tetrachloroethane	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
1,1,2-Trichloroethane	mg/kg	0.00081	U	0.0013	U	0.00098	U	0.0011	U	0.0013	U
1,1-Dichloroethane	mg/kg	0.00081	U	0.0013	U	0.00098	U	0.0011	U	0.0013	U
1,1-Dichloroethene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
1,1-Dichloropropene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
1,2,3-Trichlorobenzene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
1,2,3-Trichloropropane	mg/kg	0.0054	U	0.0084	U	0.0065	U	0.0071	U	0.0087	U
1,2,4-Trichlorobenzene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
1,2,4-Trimethylbenzene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
1,2-Dibromo-3-chloropropane	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
1,2-Dibromoethane	mg/kg	0.0022	U	0.0034	U	0.0026	U	0.0028	U	0.0035	U
1,2-Dichlorobenzene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
1,2-Dichloroethane	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
1,2-Dichloropropane	mg/kg	0.0019	U	0.003	U	0.0023	U	0.0025	U	0.003	U
1,3,5-Trimethylbenzene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
1,3-Dichlorobenzene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
1,3-Dichloropropane	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
1,4-Dichlorobenzene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
1,4-Dioxane	mg/kg	0.27	U	0.42	U	0.33	U	0.35	U	0.44	U
2,2-Dichloropropane	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
2-Butanone	mg/kg	0.0054	U	0.0084	U	0.0065	U	0.0071	U	0.013	
2-Hexanone	mg/kg	0.0054	U	0.0084	U	0.0065	U	0.0071	U	0.0087	U
4-Methyl-2-pentanone	mg/kg	0.0054	U	0.0084	U	0.0065	U	0.0071	U	0.0087	U
Acetone	mg/kg	0.0054	U	0.026		0.013		0.031		0.21	
Benzene	mg/kg	0.00054	U	0.0011		0.00065	U	0.00071	U	0.00087	U
Bromobenzene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
Bromochloromethane	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
Bromodichloromethane	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
Bromoform	mg/kg	0.0022	U	0.0034	U	0.0026	U	0.0028	U	0.0035	U
Bromomethane	mg/kg	0.0011	U	0.0017	U	0.0013	U	0.0014	U	0.0017	U
Carbon disulfide	mg/kg	0.0054	U	0.0084	U	0.0065	U	0.0071	U	0.0087	U
Carbon tetrachloride	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
Chlorobenzene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
Chloroethane	mg/kg	0.0011	U	0.0017	U	0.0013	U	0.0014	U	0.0017	U
Chloroform	mg/kg	0.00081	U	0.0013	U	0.00098	U	0.0011	U	0.0013	U
Chloromethane	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
Dibromochloromethane	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
Dibromomethane	mg/kg	0.0054	U	0.0084	U	0.0065	U	0.0071	U	0.0087	U

Table 6.1.7 Supplemental RFI Soil Sampling Results - VOCs (low)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-56		SB-55		SB-53		SB-53		SS-A1-01	
SAMPLE ID		AOC 14_SB1_2_15 (dup)		AOC14 SB-2-16		SB-4-4-6		SB-4-8-10		AOCA-ISS-01	
SAMPLING DATE		21-OCT-05		24-OCT-05		10-NOV-05		10-NOV-05		05-DEC-05	
LAB SAMPLE ID		L0512684-03		L0512756-03		L0513787-02		L0513787-03		L0514775-01	
	Units		Qual		Qual		Qual		Qual		Qual
Dichlorodifluoromethane	mg/kg	0.0054	U	0.0084	UJ	0.0065	UJ	0.0071	UJ	0.0087	UJ
Ethyl ether	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.0022	U	0.0034	U	0.0026	U	0.0028	U	0.0035	U
Ethylbenzene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
Hexachlorobutadiene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
Isopropyl Ether	mg/kg	0.0022	U	0.0034	U	0.0026	U	0.0028	U	0.0035	U
Isopropylbenzene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
Methyl tert butyl ether	mg/kg	0.0011	U	0.0017	U	0.0013	U	0.0014	U	0.0017	U
Methylene chloride	mg/kg	0.0054	U	0.0084	U	0.0065	U	0.0071	U	0.0087	U
Naphthalene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
Styrene	mg/kg	0.0011	U	0.0017	U	0.0013	U	0.0014	U	0.0017	U
Tertiary-Amyl Methyl Ether	mg/kg	0.0022	U	0.0034	U	0.0026	U	0.0028	U	0.0035	U
Tetrachloroethene	mg/kg	0.0014	U	0.044	U	0.0025	U	0.014	U	0.00087	U
Tetrahydrofuran	mg/kg	0.011	U	0.017	U	0.013	U	0.014	U	0.017	U
Toluene	mg/kg	0.00081	U	0.0019	U	0.00098	U	0.0011	U	0.0013	U
Trichloroethene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
Trichlorofluoromethane	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
Vinyl chloride	mg/kg	0.0011	U	0.0017	U	0.0013	U	0.0014	U	0.0017	U
cis-1,2-Dichloroethene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
cis-1,3-Dichloropropene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
n-Butylbenzene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
n-Propylbenzene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
o-Chlorotoluene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
o-Xylene	mg/kg	0.0011	U	0.0017	U	0.0013	U	0.0014	U	0.0017	U
p-Chlorotoluene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
p-Isopropyltoluene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
p/m-Xylene	mg/kg	0.0011	U	0.0017	U	0.0013	U	0.0014	U	0.0017	U
sec-Butylbenzene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
tert-Butylbenzene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
trans-1,2-Dichloroethene	mg/kg	0.00081	U	0.0013	U	0.00098	U	0.0011	U	0.0013	U
trans-1,3-Dichloropropene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U

U - Not Detected
 J - Estimated value
 Loc. ID with "-RE" indicates a re-analysis by the lab

Table 6.1.8 Supplemental RFI Soil Sampling Results - SVOCs
 Revised Draft RFI Report
 BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-53		SB-53		SB-53		SB-54		SB-54
SAMPLE ID		SB-4-0-2		SB-4-4-6		SB-4-8-10		SB-3-0-2		SB-3-3-5
SAMPLING DATE		10-NOV-05		10-NOV-05		10-NOV-05		10-NOV-05		10-NOV-05
LAB SAMPLE ID		L0513787-01	Qual	L0513787-02	Qual	L0513787-03	Qual	L0513787-04	Qual	L0513787-05
Semivolatile Organics by MCP 8270C										
1,2,4-Trichlorobenzene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
1,2-Dichlorobenzene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
1,3-Dichlorobenzene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
1,4-Dichlorobenzene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
2,4,5-Trichlorophenol	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
2,4,6-Trichlorophenol	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
2,4-Dichlorophenol	mg/kg	0.7	U	0.69	U	0.71	U	0.78	U	0.68
2,4-Dimethylphenol	mg/kg	0.35	UJ	0.34	UJ	0.35	UJ	0.39	UJ	0.34
2,4-Dinitrophenol	mg/kg	1.4	U	1.4	U	1.4	U	1.6	U	1.4
2,4-Dinitrotoluene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
2,6-Dinitrotoluene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
2-Chloronaphthalene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
2-Chlorophenol	mg/kg	0.42	U	0.41	U	0.42	U	0.47	U	0.41
2-Methylnaphthalene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
2-Methylphenol	mg/kg	0.42	U	0.41	U	0.42	U	0.47	U	0.41
2-Nitrophenol	mg/kg	1.4	U	1.4	U	1.4	U	1.6	U	1.4
3,3'-Dichlorobenzidine	mg/kg	0.7	U	0.69	U	0.71	U	0.78	U	0.68
3-Methylphenol/4-Methylphenol	mg/kg	0.42	U	0.41	U	0.42	U	0.47	U	0.41
4-Bromophenyl phenyl ether	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
4-Chloroaniline	mg/kg	0.35	UJ	0.34	UJ	0.35	UJ	0.39	UJ	0.34
4-Nitrophenol	mg/kg	0.7	U	0.69	U	0.71	U	0.78	U	0.68
Acenaphthene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Acenaphthylene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Acetophenone	mg/kg	1.4	U	1.4	U	1.4	U	1.6	U	1.4
Aniline	mg/kg	0.7	UJ	0.69	UJ	0.71	UJ	0.78	UJ	0.68
Anthracene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Azobenzene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Benzo(a)anthracene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Benzo(a)pyrene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Benzo(b)fluoranthene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Benzo(ghi)perylene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Benzo(k)fluoranthene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Bis(2-Ethylhexyl)phthalate	mg/kg	0.7	U	0.69	U	0.71	U	0.78	U	0.68
Bis(2-chloroethoxy)methane	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Bis(2-chloroethyl)ether	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Bis(2-chloroisopropyl)ether	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Butyl benzyl phthalate	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34

Table 6.1.8 Supplemental RFI Soil Sampling Results - SVOCs
 Revised Draft RFI Report
 BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION			SB-54		SB-54	
SAMPLE ID			SB-3-7.5-9.5		SB-3-7.5-9.5 DUP	
SAMPLING DATE			10-NOV-05		10-NOV-05	
LAB SAMPLE ID			L0513787-06		L0513787-07	
	Units	Qual		Qual		Qual
Semivolatile Organics by MCP 8270C						
1,2,4-Trichlorobenzene	mg/kg	U	0.36	U	0.36	U
1,2-Dichlorobenzene	mg/kg	U	0.36	U	0.36	U
1,3-Dichlorobenzene	mg/kg	U	0.36	U	0.36	U
1,4-Dichlorobenzene	mg/kg	U	0.36	U	0.36	U
2,4,5-Trichlorophenol	mg/kg	U	0.36	U	0.36	U
2,4,6-Trichlorophenol	mg/kg	U	0.36	U	0.36	U
2,4-Dichlorophenol	mg/kg	U	0.72	U	0.72	U
2,4-Dimethylphenol	mg/kg	UJ	0.36	UJ	0.36	UJ
2,4-Dinitrophenol	mg/kg	U	1.4	U	1.4	U
2,4-Dinitrotoluene	mg/kg	U	0.36	U	0.36	U
2,6-Dinitrotoluene	mg/kg	U	0.36	U	0.36	U
2-Chloronaphthalene	mg/kg	U	0.36	U	0.36	U
2-Chlorophenol	mg/kg	U	0.43	U	0.43	U
2-Methylnaphthalene	mg/kg	U	0.36	U	0.36	U
2-Methylphenol	mg/kg	U	0.43	U	0.43	U
2-Nitrophenol	mg/kg	U	1.4	U	1.4	U
3,3'-Dichlorobenzidine	mg/kg	U	0.72	U	0.72	U
3-Methylphenol/4-Methylphenol	mg/kg	U	0.43	U	0.43	U
4-Bromophenyl phenyl ether	mg/kg	U	0.36	U	0.36	U
4-Chloroaniline	mg/kg	UJ	0.36	UJ	0.36	UJ
4-Nitrophenol	mg/kg	U	0.72	U	0.72	U
Acenaphthene	mg/kg	U	0.36	U	0.36	U
Acenaphthylene	mg/kg	U	0.36	U	0.36	U
Acetophenone	mg/kg	U	1.4	U	1.4	U
Aniline	mg/kg	UJ	0.72	UJ	0.72	UJ
Anthracene	mg/kg	U	0.36	U	0.36	U
Azobenzene	mg/kg	U	0.36	U	0.36	U
Benzo(a)anthracene	mg/kg	U	0.36	U	0.36	U
Benzo(a)pyrene	mg/kg	U	0.36	U	0.36	U
Benzo(b)fluoranthene	mg/kg	U	0.36	U	0.36	U
Benzo(ghi)perylene	mg/kg	U	0.36	U	0.36	U
Benzo(k)fluoranthene	mg/kg	U	0.36	U	0.36	U
Bis(2-Ethylhexyl)phthalate	mg/kg	U	0.72	U	0.72	U
Bis(2-chloroethoxy)methane	mg/kg	U	0.36	U	0.36	U
Bis(2-chloroethyl)ether	mg/kg	U	0.36	U	0.36	U
Bis(2-chloroisopropyl)ether	mg/kg	U	0.36	U	0.36	U
Butyl benzyl phthalate	mg/kg	U	0.36	U	0.36	U

Table 6.1.9 Supplemental RFI Soil Sampling Results - Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-52		SB-52		SB-56		SB-56	
SAMPLE ID		AOCA1 SB3-2-7		AOCA1 SB3-3-9		AOC 14_SB1-1-9		AOC 14_SB1-2-15	
SAMPLING DATE		10-OCT-05		10-OCT-05		21-OCT-05		21-OCT-05	
LAB SAMPLE ID		L0512119-08		L0512119-09		L0512684-01		L0512684-02	
	Units		Qual		Qual		Qual		Qual
Total Metals by MCP									
6000/7000 series									
Antimony, Total	mg/kg	2.5	U	2.1	U	2.2	U	2.1	U
Arsenic, Total	mg/kg	1.7		1.2		1.7		0.98	
Beryllium, Total	mg/kg	0.25	U	0.21		0.22	U	0.21	U
Cadmium, Total	mg/kg	13		4.6		0.44	U	0.41	U
Chromium, Total	mg/kg	9.2		12		8.2		6.4	
Copper, Total	mg/kg	120		50		6.8		6.3	
Lead, Total	mg/kg	18		4.6		4.6		3.7	
Mercury, Total	mg/kg	0.097	U	0.079	U	0.091	U	0.082	U
Nickel, Total	mg/kg	5.9		27		5.9		6.5	
Selenium, Total	mg/kg	2.5	U	2.1	U	2.2	U	2.1	U
Silver, Total	mg/kg	62		11		0.44	U	0.41	U
Thallium, Total	mg/kg	2.5	U	2.1	U	2.2	U	2.1	U
Zinc, Total	mg/kg	51		36		16		13	

U - Not Detected
J - Estimated value

Table 6.1.9 Supplemental RFI Soil Sampling Results - Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-56		SB-55		SB-55		SB-55	
SAMPLE ID		AOC 14_SB1-2-15DUP		AOC14 SB2-1-10		AOC14 SB2-1-10DUP		AOC14 SB-2-16	
SAMPLING DATE		21-OCT-05		24-OCT-05		24-OCT-05		24-OCT-05	
LAB SAMPLE ID		L0512684-03		L0512756-01		L0512756-02		L0512756-03	
	Units		Qual		Qual		Qual		Qual
Total Metals by MCP									
6000/7000 series									
Antimony, Total	mg/kg	2	U	2.2	U	2.2	U	2	
Arsenic, Total	mg/kg	0.95		1.8		2.4		0.41	
Beryllium, Total	mg/kg	0.2	U	0.25		0.25		0.2	
Cadmium, Total	mg/kg	0.41	U	0.45	U	0.43	U	0.41	
Chromium, Total	mg/kg	6.7		8.8		10		16	
Copper, Total	mg/kg	5.2		7.4		8.1		8.2	
Lead, Total	mg/kg	3.4		4.8		5.3		3.8	
Mercury, Total	mg/kg	0.084	U	0.092	U	0.088	U	0.08	
Nickel, Total	mg/kg	5		4.9		6		6.2	
Selenium, Total	mg/kg	2	U	2.2	U	2.2	U	2	
Silver, Total	mg/kg	0.41	U	0.45	U	0.43	U	0.41	
Thallium, Total	mg/kg	2	U	2.2	U	2.2	U	2	
Zinc, Total	mg/kg	13		18		20		16	

U - Not Detected
J - Estimated value

Table 6.1.9 Supplemental RFI Soil Sampling Results - Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION			SB-53		SB-53		SB-53		SB-54	
SAMPLE ID			SB-4-0-2		SB-4-4-6		SB-4-8-10		SB-3-0-2	
SAMPLING DATE			10-NOV-05		10-NOV-05		10-NOV-05		10-NOV-05	
LAB SAMPLE ID			L0513787-01	Qual	L0513787-02	Qual	L0513787-03	Qual	L0513787-04	Qual
	Units	Qual								
Total Metals by MCP 6000/7000 series										
Antimony, Total	mg/kg	U	2.1	U	2	U	2.1	U	2.3	U
Arsenic, Total	mg/kg	U	1.9		1.2		1		2.1	
Beryllium, Total	mg/kg	U	0.21	U	0.2	U	0.21	U	0.23	U
Cadmium, Total	mg/kg	U	1200		15		9		0.46	U
Chromium, Total	mg/kg		110		14		14		5.5	
Copper, Total	mg/kg		290		8		12		9.7	
Lead, Total	mg/kg		38		4.4		4.4		4.3	
Mercury, Total	mg/kg	U	0.23		0.08	U	0.084	U	0.089	U
Nickel, Total	mg/kg		18		4.4		5.4		7.5	
Selenium, Total	mg/kg	U	2.1	U	2	U	2.1	U	2.3	U
Silver, Total	mg/kg	U	110		6.2		4.3		2.9	
Thallium, Total	mg/kg	U	2.1	U	2	U	2.1	U	2.3	U
Zinc, Total	mg/kg		440		20		32		18	

U - Not Detected
J - Estimated value

Table 6.1.9 Supplemental RFI Soil Sampling Results - Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-54		SB-54		SB-54		SS-A1-01		
SAMPLE ID		SB-3-3-5		SB-3-7.5-9.5		SB-3-7.5-9.5 DUP		SS-A1-01		
SAMPLING DATE		10-NOV-05		10-NOV-05		10-NOV-05		05-DEC-05		
LAB SAMPLE ID		L0513787-05		L0513787-06		L0513787-07		L0514775-01		
	Units		Qual		Qual		Qual		Qual	
Total Metals by MCP										
6000/7000 series										
Antimony, Total	mg/kg	2	U	2.1	U	2.1	U	2.3	U	
Arsenic, Total	mg/kg	1.2		1.1		1.2		1.5		
Beryllium, Total	mg/kg	0.2	U	0.21	U	0.21	U	0.23	U	
Cadmium, Total	mg/kg	0.41	U	2.8		2.9		2		
Chromium, Total	mg/kg	7.4		4.8		4.8		4.6		
Copper, Total	mg/kg	8.5		53	J	100	J	12		
Lead, Total	mg/kg	3.7		5.6		6.1		13		
Mercury, Total	mg/kg	0.079	U	0.09	U	0.089	U	0.091	U	
Nickel, Total	mg/kg	10		9	J	20	J	4.6		
Selenium, Total	mg/kg	2	U	2.1	U	2.1	U	2.3	U	
Silver, Total	mg/kg	1.1		4.2	J	10	J	4.3		
Thallium, Total	mg/kg	2	U	2.1	U	2.1	U	2.3	U	
Zinc, Total	mg/kg	20		54		55		26		

U - Not Detected
J - Estimated value

Attachment 2: Predemolition Hazardous Materials Survey

June 30, 2015

Via Electronic Mail

Mr. Ed Vanyo
Remediation Specialist Sr. II
BASF Corporation
100 Park Avenue
Florham Park, NJ 07932

**RE: REVISED HAZARDOUS MATERIALS IDENTIFICATION SURVEY
REPORT JUNE 30, 2015
BASF CORPORATION FACILITY
32 TAUNTON STREET, PLAINVILLE, MA**

Dear Ed:

Per request of BASF Corporation (BASF), and in anticipation of the demolition of Buildings 8 and 10 (tentatively scheduled for 2016) at the above referenced site (Site), Ramboll Environ US Corporation (Ramboll Environ, formerly ENVIRON International Corporation "ENVIRON") has updated/annotated the June 2013 Hazardous Materials Identification Survey report (June 2013 Survey Report), prepared by Environmental Health Investigations, Inc. (EHI).¹ The June 2013 Survey Report documented hazardous materials present at the Site based on EHI's site inspection conducted between April 23, 2013 and June 11, 2013.

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As subsequent select abatement and removal activities were completed at the Site in late 2013 and 2014, in association with focused Site decommissioning activities, BASF requested that the June 2013 Survey Report be annotated/updated to reflect more current conditions (herein referred to as the "Revised June 2013 Survey Report – June 30, 2015" (Revised June 2013 Survey Report)).² The updated/annotated Revised June 2013 Survey Report is provided as Attachment A.

The bases for the modifications provided in the Revised June 2013 Survey Report is as follow:

- In September 2013, approximately 3,500 square feet of asbestos containing materials (ACM), consisting of floor tile and associated mastic, were

¹ EHI's June 20, 2013 Hazardous Materials Identification Survey included asbestos, lead based paint (LBP), PCBs in caulk, concrete characterization, hazardous waste evaluation, and hazardous materials inventory. It should be noted that EHI's survey included all of Buildings 8, 10 and 11 including the roof areas and the exterior façade and windows, except for the first floor office areas in the northeast corner of Building 8 occupied by the tenant (FSP One).

² No material sampling or assessments were conducted as part of this scope of work.

removed from the southeast office area on the first floor of Building 8 to facilitate the planned groundwater remediation activities conducted by ERFS. The ACM abatement was completed by Dec-Tam Corporation of North Reading, Massachusetts from September 3–6, 2013. Abatement monitoring was conducted by Covino Environmental Associates Inc. (Covino) of Woburn, Massachusetts as documented in Covino’s *Asbestos Abatement Certification* letter, dated September 9, 2013.

- In October 2013, ACM materials identified in the June 2013 Survey Report were removed from the interiors of Buildings 8, 10, and 11, and a small area on the concrete slab of former Building 5 to facilitate planned facility demolition activities. These ACM materials included floor tile and associated mastic, carpet mastic, wall covering mastic, laboratory bench tops, industrial oven insulation, etc. The ACM abatement was completed by NCM Demolition and Remediation, LP of Wilmington, Massachusetts from October 7–25, 2013. Abatement monitoring was conducted by Covino as documented in Covino’s *Asbestos Abatement Monitoring Reports* dated November 18, 2013. Note that ACM materials identified on the exterior of the buildings, including roofing materials and window glazing, were not abated in conjunction with these efforts.
- During the summer of 2014, limited decommissioning and demolition of select areas of the Site was conducted by Viasant LLC. This work included:
 - Demolition and off-site disposal of an equalization tank and secondary containment basin located immediately west of Building 10;
 - Decommissioning and off-site disposal of the wastewater treatment plant (WWTP) facilities, structures, materials, and appurtenances within Building 10;
 - Removal and off-site disposal/recycling of miscellaneous hazardous, nonhazardous, universal, and general building refuse waste and debris within Buildings 8, 10, and 11;
 - Removal of treated timbers from the slab foundation for former Building 6; and
 - Removal and management of certain existing concrete slabs and building foundations. Note that select concrete foundations were crushed and backfilled in place. Select concrete slabs were crushed and temporarily stockpiled onsite for use as future backfill at the Site.

Documentation of these abatement activities is included in the *Focused Facility Waste Disposal, Decommissioning, and Demolition Program Closeout Report*, prepared by Ramboll Environ, dated February 2015.

- During the summer of 2014, ACM was abated on an as needed basis to support limited decommissioning and demolition activities. This work included:
 - Abatement of asbestos floor tiles from the Building 2 concrete slab by NorthStar Demolition and Remediation (NorthStar) in June 2014. The location of these floor tiles is shown on Figure M-2A in Attachment A.
 - Abatement of gaskets in 1 of 2 boilers in Building 11 by NorthStar in August 2014. The location of the boiler containing ACM is shown on Figure M-2D in Attachment A. Note that the 2nd boiler was tested for asbestos, but was non-detect. Both boilers were removed by Viasant LLC during the abovementioned activities.

Based on the above actions, Ramboll Environ updated relevant sections of the original June 2013 Survey Report (highlighted in red) to reflect changes in the presence of hazardous materials (abated

or removed from the Site during the activities described above)³. Figures in the Revised June 2013 Survey Report were also amended by noting which materials have been removed/ abated (yellow text box with "Removed"). As such, the Revised June 2013 Survey Report reflects changes in conditions relative to the following hazardous material categories:

- ACM (Sections 2.1, 2.2);
- Structures with LBP (Sections 3.1, 3.2);
- Hazardous waste (Section 6.0); and
- Hazardous materials/universal wastes (Section 7.0).

Further, the Revised June 2013 Survey Report highlights (highlighted in yellow) ACM that is still present at the Site as provided in Sections 2.1 and 2.2. As provided in Section 2.1 and 2.2, ACM is present in select building materials in Buildings 8, 10 and 11.⁴ Based on the 2013 ACM inspection results, ACM has been identified in the following remaining building materials:

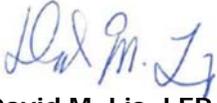
- Building 8
 - Window glazing - approximately 200 windows throughout Building 8
 - Tar coating – roof on Trane HVAC duct work covering fiberglass insulation, 2 Trane units, 240 square feet
 - Roofing – east 2nd floor roof, 15,000 square feet
- Building 10
 - Roofing including roof flashing – south half of roof, 3,200 square feet
- Building 11
 - Roofing and all associated flashing (perimeter and HVAC) – roof (upper and front lower roof), 17,500 square feet
 - Window glazing – approximately 30 windows along the front of the building

Ramboll Environ is pleased to have provided the above services to prepare the Revised June 2013 Survey Report on behalf of BASF. If you have any further questions regarding the updated/annotated report, please do not hesitate to contact David Lis at (860) 503 1661 or Jason Wilkinson at (978) 449-0339.

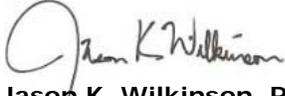
³ Note that the section of the June 2013 Survey Report related to PCBs in caulk (Section 4.0) was not updated as all caulk still remains in place. Similarly, the section of the June 2013 Survey Report related to concrete characterization (Section 5.0) was not updated as the concrete slabs tested by EHI either remain in place or were temporarily stockpiled onsite; therefore, these building materials all still remain onsite.

⁴ A hazardous materials identification survey was not completed for the first floor office areas in the northeast corner of Building 8 as this area was occupied by FSP One at the time of the 2013 survey conducted by EHI. See Figure S-2B of EHI's report (Attachment A) for the locations of asbestos samples collected in and around the FSP One offices. It is our understanding that BASF will assume that all potential ACM (i.e., tile and associated mastic, etc.) in this office area contains asbestos and will hire an abatement contractor for proper removal.

Sincerely,

Handwritten signature of David M. Lis in blue ink.

David M. Lis, LEP
Principal

Handwritten signature of Jason K. Wilkinson in black ink.

Jason K. Wilkinson, PG
Senior Manager

Cc: Mark Nielsen, Ramboll Environ

DML/JKW:bl
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ATTACHMENT A
REVISED JUNE 2013 SURVEY REPORT – JUNE 30, 2015



Environmental Health Investigations, Inc.

655 West Shore Trail
Sparta, New Jersey 07871

Phone/Fax: 973-729-5649

www.ehi-inc.com

June 20, 2013

Revised - June 30, 2015

Mr. Edward Vanyo
BASF Corporation
100 Campus Drive
Florham Park, NJ 07932

Email: ed.vanyo@basf.com

Re: BASF Plainville, Massachusetts Facility
Predemolition Building Investigation Report
EHI Project #: 0834-4545

Dear Mr. Vanyo:

Enclosed is our report of findings pertaining to the Hazardous Materials Identification survey conducted at the BASF, 32 Taunton Street, Plainville, MA facility. We appreciate this opportunity and apologize for the delay.

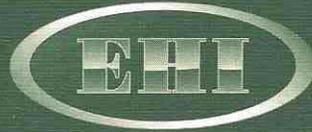
Please let us know if you have any questions or require any modifications.

Very truly yours,

William S. Kerbel, CIH
President

Ramboll Environ - Revision June 30, 2015

As subsequent abatement and removal activities were completed at the Site in late 2013 and 2014, in association with focused Site decommissioning activities, this report has been annotated/updated by Ramboll Environ to reflect more current conditions in anticipation of the demolition of Buildings 8 and 10 (tentatively scheduled for 2016). Sections highlighted in red reflect changes in the presence of hazardous materials that were abated or removed from the Site subsequent to EHI's hazardous materials survey. Sections highlighted in yellow reflect asbestos containing materials that remains present at the Site and has not yet been abated.



Environmental Health Investigations, Inc.

655 West Shore Trail
Sparta, New Jersey 07871

Phone/Fax: 973-729-5649
www.ehi-inc.com

REPORT OF FINDINGS

Hazardous Materials Identification Survey

Conducted At:

BASF Corporation
32 Taunton Street
Plainville, MA 02762

On Behalf Of:

BASF Corporation
100 Campus Drive
Florham Park, NJ 07932

Survey Conducted: April 23, 2013 - June 11, 2013

Report Date: June 20, 2013

Revised by Ramboll Environ on June 30, 2015

EHI Project #: 0834-4545

**BASF Corporation
32 Taunton Street
Plainville, MA**

**Hazardous Material Survey
April 23, 2013 - June 11, 2013
EHI Project #: 0834-4545**

1.0 Introduction

Environmental Health Investigations, Inc. (EHI) was retained by BASF Corporation to conduct a hazardous materials investigation and assessment at the BASF facility located at 32 Taunton Street, Plainville, Massachusetts.

The investigation was conducted on April 23, 24, 25, 26 and June 11, 2013. The investigation included a full asbestos survey including sampling and analysis, a lead paint survey, PCB in caulks survey, concrete characterization, hazardous waste evaluation of specific materials and a hazardous material inventory.

2.0 Asbestos Materials

In order to accurately determine the extent of the asbestos containing materials throughout the site, EHI inspected the exterior of the buildings including roofs, facades, slabs and windows. All interior spaces were inspected as well including offices, warehouse area, labs, production areas, mechanical spaces, pipe chases and ceiling plenums. Representative samples of suspect homogeneous materials were collected. Homogeneous building materials are those materials which are like in color and texture. EHI also noted material quantity and location in order to attain an accurate and useful account of all asbestos containing materials. Some of the materials collected include: roofing, caulks, floor coverings, various thermal system insulations, ceiling tiles, transite paneling, lab bench tops, mastics, sheetrock and spackle.

All collected asbestos samples were analyzed via Polarized Light Microscopy (PLM). If a sample was considered non-friable organically bound (NOB) it was further analyzed via Transmission Electron Microscopy (TEM) to confirm the presence of asbestos if the initial PLM analysis was inconclusive. Materials from this project that were subject to TEM analysis

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included roofing, floor coverings, mastics, adhesives and caulks. Samples of all suspect materials were submitted to AmeriSci Laboratories, Inc. of 117 E. 30th St. New York, NY for analysis. By definition a regulated asbestos material is one that contains more than one percent (>1%) asbestos.

BDL = Below Detection Level

2.1 Asbestos Sampling Results

A multitude of asbestos containing materials were found during the survey. Appendix Two of this report contains a copy of all of the laboratory analytical reports from AmeriSci NY Laboratory. A listing of the results for the analyses of the bulk samples of suspected asbestos materials collected as part of the inspection is provided below.

Those samples with the NA/PS results designation are considered asbestos containing. NA/PS (Not Analyzed / Positive Stop) means the samples were not analyzed because the first sample of that particular homogeneous set was found to be asbestos therefore analysis of the second sample was not necessary.

Asbestos Sample Results			
(NA/PS = Not Analyzed/Positive Stop)			
Sample #:	Material	Location/Description	Regulated Asbestos YES or No
Building 8			
BASF-B8-042413-1	Carpet Mastic	North East Conference Room	No
BASF-B8-042413-2	Cove Base and associated Mastic	North East Office Area in "Board Room"	No
BASF-B8-042413-3	1'x1' White Floor Tile and associated Mastic	North East Office Area	Tile: YES Mastic: No
BASF-B8-042413-3A	1'x1' White Floor Tile and associated Mastic	North East Office Area in Nurse Station	Tile: NA/PS Mastic: YES

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Asbestos Sample Results			
(NA/PS = Not Analyzed/Positive Stop)			
Sample #:	Material	Location/Description	Regulated Asbestos YES or No
Building 8			
BASF-B8-042413-2A	Cove Base and associated Mastic	Nurse Office	No
BASF-B8-042413-4	2'x4' Ceiling Tile	North East Office Area: Office Near Nurse Station	No
BASF-B8-042413-1A	Carpet Mastic	North East Corner Office under Blue Carpet	No
BASF-B8-042413-5	Sheetrock and Spackle (composite)	South East Office Area	No
BASF-B8-042413-6	Cementitious Pipe Elbow Insulation	Nurse Office: In Ladies Room Wet Wall	No
BASF-B8-042413-4A	2'x4' Ceiling Tile	South East Office Area	No
BASF-B8-042413-5A	Sheetrock and Spackle (composite)	North East Office Area	No
BASF-B8-042413-7	1'x1' Terrazzo Floor Tile and associated Mastic	Hallway outside Nurse Station	Tile: No Mastic: YES
BASF-B8-042413-7A	1'x1' Terrazzo Floor Tile and associated Mastic	North East Main Entrance Lobby	Tile: No Mastic: NA/PS
BASF-B8-042413-8	1'x1' White Floor Tile	North Main Entrance Security Console	No
BASF-B8-042413-9	3 Layers of Floor Tile and Mastic	North Main Entrance Security Locker Room	Tile: YES Mastic: YES
BASF-B8-042413-10	1'x1' Light Gray Floor Tile and Mastic	North East Computer Room	Tile: YES Mastic: No
BASF-B8-042413-11	1'x1' Pink/Tan Floor Tile	North East Offices under Blue Carpet	No
BASF-B8-042413-12	2'x4' Ceiling Tile w/ Vinyl Veneer	Center Hall between Men's Room and Kitchen	No
BASF-B8-042413-12A	2'x4' Ceiling Tile w/ Vinyl Veneer	Nurse Station	No
BASF-B8-042413-6B	Cementitious Pipe Elbow Insulation	South East Office Area in Ceiling Plenum	No
BASF-B8-042413-6C	Cementitious Pipe Elbow Insulation	Warehouse South Men's Room Toilet Chase	No

Asbestos Sample Results			
(NA/PS = Not Analyzed/Positive Stop)			
Sample #:	Material	Location/Description	Regulated Asbestos YES or No
Building 8			
BASF-B8-042413-13	Wood Paneling Adhesive	2nd Floor North East Conference Room	YES
BASF-B8-042413-13A	Wood Paneling Adhesive	2 nd Floor North East Conference Room	NA/PS
BASF-B8-042413-14	2'x2' Ceiling Tile	2 nd Floor North East Office	No
BASF-B8-042413-14A	2'x2' Ceiling Tile	2 nd Floor North East Office	No
BASF-B8-042413-15	2'x4' Ceiling Tile	2 nd Floor South East Office Area	No
BASF-B8-042413-15A	2'x4' Ceiling Tile	2 nd Floor North East Office Area	No
BASF-B8-042413-16	1'x1' White w/ Brown Streaks Floor Tile and associated Mastic	2nd Floor South East Office Area in SW Corner Lab	Tile: YES Mastic: YES
BASF-B8-042413-16A	1'x1' White w/ Brown Streaks Floor Tile and associated Mastic	2 nd Floor North East Office Area in North Transformer Room	NA/PS
BASF-B8-042413-17	Carpet Mastic/Glue	2 nd Floor North East Office Area outside Ladies Room	No
BASF-B8-042413-17A	Carpet Mastic/Glue	2 nd Floor South East Office Area	No
BASF-B8-042413-18	Window Glazing	1st Floor East Windows	YES
BASF-B8-042413-18A	Window Glazing	1 st Floor North Windows of Warehouse in Machine Shop	No
BASF-B8-042413-19	1'x1' Green Floor Tile and associated Adhesive	1 st Floor Warehouse Offices near Break Room	No
BASF-B8-042413-20	1'x1' Gray Floor Tile and associated Adhesive	1 st Floor Warehouse Lab near Break Room	No
BASF-B8-042413-21	1'x1' Lt. Gray Floor Tile	1 st Floor Warehouse - South East Men's Locker Room	No
BASF-B8-042413-22	1'x1' Blue Floor Tile and associated Adhesive	1 st Floor Warehouse - South East Women's Locker Room	No
BASF-B8-042413-23	1'x1' Tan Floor Tile and associated Adhesive	Center of Warehouse	Tile: YES Adhesive: YES
BASF-B8-042413-24	1'x1' Beige Floor Tile	North West Corner of Warehouse near Sprinkler Control Valve	No

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Asbestos Sample Results		(NA/PS = Not Analyzed/Positive Stop)	
Sample #:	Material	Location/Description	Regulated Asbestos YES or No
Building 8			
BASF-B8-042413-25	1'x1' Carmel Floor Tile	North West Corner Office	YES
BASF-B8-042413-26	Transite Panel	Warehouse South West Corner associated w/ Linberg Heavy Duty Oven	YES
BASF-B8-042413-27	Roofing (field)	Main Roof - East Half	No
BASF-B8-042413-27A	Roofing (field)	Main Roof - West Half	No
BASF-B8-042413-28	Perimeter Roof Flashing	Main Roof - North Edge	No
BASF-B8-042413-28A	Perimeter Roof Flashing	Main Roof - East Bulkhead adjacent to 2 nd Floor Office Area	No
BASF-B8-042413-29	Tar Coating	Main Roof - West Side - covering fiberglass insulated Duct Work	YES
BASF-B8-042413-29A	Tar Coating	Main Roof - East Side - covering fiberglass insulated Duct Work	NA/PS
BASF-B8-042413-30	Roofing (field)	East 2 nd Floor Roof	YES
BASF-B8-042413-31	Roofing (field)	South West Mezzanine Upper Roof	No
BASF-B8-042413-32	Window Caulk	Exterior Corner Office Windows	No
BASF-B8-042413-33	Expansion Joint Material	Warehouse in Seam in Concrete Floor	No
BASF-B8-042413-34	Building Caulk	Exterior North Side of Warehouse at Seam in Masonry Wall	No
BASF-B8-042413-35	Door Caulk	Exterior North Side Door	No
BASF-B8-042413-32A	Window Caulk	Exterior North Side Window to Warehouse	No
BASF-B8-042413-35A	Door Caulk	Exterior South Side Door	No
BASF-B8-042413-33A	Expansion Joint Material	Warehouse in Seam in Concrete Floor	No
BASF-B8-042413-34A	Building Caulk	Exterior East Side below Windows at Seam in Brick Facade	No
BASF-B8-042413-36	Cementitious Pipe Elbow Insulation	Warehouse Roof Drain	No
BASF-B8-042413-36A	Cementitious Pipe Elbow Insulation	Warehouse Roof Drain	No

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Asbestos Sample Results (NA/PS = Not Analyzed/Positive Stop)			
Sample #:	Material	Location/Description	Regulated Asbestos YES or No
Building 8			
BASF-B8-042413-36B	Cementitious Pipe Elbow Insulation	Warehouse Roof Drain	No

Asbestos Sample Results (NA/PS = Not Analyzed/Positive Stop)			
Sample #:	Material	Location/Description	Regulated Asbestos YES or No
Building 10			
BASF-B10-042413-1	Roofing (field)	South Roof - North Side	YES
BASF-B10-042413-1A	Roofing (field)	South Roof - South Side	NA/PS
BASF-B10-042413-2	Perimeter Roof Flashing	South Roof - West Edge	YES
BASF-B10-042413-2A	Roof Flashing	South Roof - East Bulk Head	NA/PS
BASF-B10-042413-3	4'x1' Blue Floor Tile and associated Adhesive	Office near Clarifier Tank	Tile: YES Adhesive: No
BASF-B10-042413-4	Cementitious Pipe Fitting Insulation	Along Ceiling on Fiberglass Insulated Steam Line	No
BASF-B10-042413-4A	Cementitious Pipe Fitting Insulation	Along Ceiling on Fiberglass Insulated Steam Line	No
BASF-B10-042413-4B	Cementitious Pipe Fitting Insulation	Along Ceiling on Fiberglass Insulated Steam Line	No
BASF-B10-042413-5	Lab Bench Top	Inside Lab - Control Room	YES
BASF-B10-042413-6	Transite Hood Lining	Inside Lab - Control Room	YES
BASF-B10-042413-7	Wall Panel Insulation	Lab/Control Room Walls	No
BASF-B10-042413-7A	Wall Panel Insulation	Office Walls near Clarifier Tank	No
BASF-B10-042413-8	Caulk	Exterior of Building at Equalization Tank where the Tank meets the Concrete Base	No
BASF-B10-042413-8A	Caulk	Exterior of Building at Equalization Tank where the Tank meets the Concrete Base	No

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Asbestos Sample Results (NA/PS = Not Analyzed/Positive Stop)			
Sample #:	Material	Location/Description	Regulated Asbestos YES or No
Building 10			
BASF-B10-042413-9	Roof Seam Caulk (white)	Standing Seam Roof at Center Exhaust Fan	No
BASF-B10-042413-9A	Roof Seam Caulk (white)	Standing Seam Roof at South Exhaust Fan	No

Asbestos Sample Results (NA/PS = Not Analyzed/Positive Stop)			
Sample #:	Material	Location/Description	Regulated Asbestos YES or No
Building 11			
BASF-B11-042513-1	Carpet Mastic	Office Area north of Front Main Entrance associated with Brown Carpet	No
BASF-B11-042513-1A	Carpet Mastic	Office Area north of Front Main Entrance associated with Brown Carpet	No
BASF-B11-042513-2	2'x4' Ceiling Tile	Office Area north of Front Main Entrance	No
BASF-B11-042513-2A	2'x4' Ceiling Tile	Office Area north of Front Main Entrance	No
BASF-B11-042513-3	Cove Base and associated Mastic	Office Area north of Front Main Entrance	No
BASF-B11-042513-3A	Cove Base and associated Mastic	Office across the Hall from the North East Men's Room	No
BASF-B11-042513-4	1'x1' Tan w/ Brown Floor Tile and associated Mastic	Front Main Entrance Hallway	Tile: YES Mastic: No
BASF-B11-042513-4A	1'x1' Tan w/ Brown Floor Tile and associated Mastic	North East Corner Office near Lab	Tile: NA/PS Mastic: No
BASF-B11-042513-5	Sheetrock and Spackle (composite)	South East Corner Garage Bay on Wall of Storage Room	No

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EHI Project #: 0834-4545

Asbestos Sample Results			
(NA/PS = Not Analyzed/Positive Stop)			
Sample #:	Material	Location/Description	Regulated Asbestos YES or No
Building 11			
BASF-B11-042513-5A	Sheetrock and Spackle (composite)	Office Area north of Front Main Entrance	No
BASF-B11-042513-6	Lab Bench Top	North East Corner Lab	YES
BASF-B11-042513-7	Transite Fume Hood Liner	North East Corner Lab in Fume Hood	YES
BASF-B11-042513-8	Wood Wall Paneling Adhesive	Office Area north of Front Main Entrance	No
BASF-B11-042513-8A	Wood Wall Paneling Adhesive	Office Area north of Front Main Entrance	No
BASF-B11-042513-9	Adhesive	West Walls of Treatment Area where Fiberglass Wall Panels are Adhered	No
BASF-B11-042513-9A	Adhesive	West Wall of Treatment Area where Fiberglass Wall Panels are Adhered	No
BASF-B11-042513-10	Boiler Gasket	North End - Boiler Room on Blue (East) Boiler Ends	No
BASF-B11-042513-11	Boiler Gasket	North End - Boiler Room on Yellow (West) Boiler Ends	No
BASF-B11-042513-12	Roofing (field)	East Lower Roof	YES
BASF-B11-042513-12A	Roofing (field)	West Upper Roof	NA/PS
BASF-B11-042513-13	Perimeter Roof Flashing	East Lower Roof Edge	YES
BASF-B11-042513-13A	Perimeter Roof Flashing	West Lower Roof Edge	NA/PS
BASF-B11-042513-14	Roof Flashing	East Lower Roof HVAC Flashing	YES
BASF-B11-042513-14A	Roof Flashing	West Upper HVAC Exhaust Fan Flashing	NA/PS
BASF-B11-042513-15	Pitch Pocket	West Upper Roof South West Corner where Electrical Conduit penetrate Roof	No
BASF-B11-042513-16	Door Caulk	Exterior Main Front Entrance Door	No
BASF-B11-042513-16A	Door Caulk	Exterior North Door	No

BASF Corporation
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Plainville, MA

Hazardous Material Survey
April 23, 2013 - June 11, 2013
EHI Project #: 0834-4545

Asbestos Sample Results (NA/PS = Not Analyzed/Positive Stop)			
Sample #:	Material	Location/Description	Regulated Asbestos YES or No
Building 11			
BASF-B11-042513-17	Window Caulk	Exterior East Windows South Half	No
BASF-B11-042513-17A	Window Caulk	Exterior East Windows North Half	No
BASF-B11-042513-18	Building Caulk	Exterior North Side of Masonry Wall	No
BASF-B11-042513-18A	Building Caulk	Exterior South West Corner on Masonry Wall	No
BASF-B11-042513-19	Flooring Compound	Interior Water Treatment Area inside Dyke Area	No
BASF-B11-042513-19A	Flooring Compound	Interior Water Treatment Area inside Dyke Area	No
BASF-B11-042513-20	Window Glazing	Office North of Front Main Entrance	YES
BASF-B11-042513-21	Window Glazing	Exterior Front Windows	YES

Asbestos Sample Results (NA/PS = Not Analyzed/Positive Stop)			
Sample #:	Material	Location/Description	Regulated Asbestos YES or No
Building 2 and Building 5 (slabs)			
BASF-B5-042513-1	Floor Tile	Bldg. 5 Slab	YES
BASF-B2-042513-1	1'x1' Brown Wood Chip Pattern Floor Tile and associated Mastic	Bldg. 2 - South East Corner Slab	Tile: No Mastic: No

2.2 Summary of Asbestos Containing Materials

Material:	Location:	Quantity:
Building 8		
1'x1' White Floor Tile and associated Mastic	Throughout the North East Office Area <i>*In some rooms the tile is found under carpet</i>	9,500 SF
1'x1' Terrazzo Style Floor Tile and associated Mastic	North East Office Area Hallways including Entrance Vestibule and Stairway Landing	1,160 SF

BASF Corporation
32 Taunton Street
Plainville, MA

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Material:	Location:	Quantity:
Building 8		
3 Layers of Floor Tile and Mastie	North East Office Area in Security Locker Room	250 SF
1'x1' Light Gray Floor Tile (only)	North East Office Area in Computer Room	450 SF
Wood Paneling Wall Adhesive	2 nd Floor North East Office Area Conference Room Executive Offices	2,500 SF of actual wood paneling
1'x1' Floor Tile (white w/ brown) and associated Mastie	2 nd Floor North East Office Area: North and South Transformer Room South West Lab Men's and Women's Rooms	930 SF
Window Glazing	Windows Throughout the Facility	200 windows
1'x1' Tan Floor Tile and associated Adhesive	Middle of Warehouse in Grid F1 Middle of Warehouse in Grid G3	240 SF
1'x1' Carmel Floor Tile	North West Corner Office in Grid B5	420 SF
Transite Oven Panels	Warehouse associated with Lindberg Heavy Duty Oven <i>(located in Grid D1 at the time of the inspection, however the unit is not tied down and may be moved)</i>	45 SF
Tar Coating	Roof on Trane HVAC Duct Work covering Fiberglass Insulation	2 Trane Units 240 SF total
Roofing (field)	East 2 nd Floor Roof	15,000 SF

Material:	Location:	Quantity:
Building 10		
Roofing (field) including Roof Flashing	Roof - South Half	3,200 SF
1'x1' Blue Floor Tile	Office near Clarifier Tank	430 SF
Lab Bench Top	Inside Lab/Control Room	25 SF
Transite Hood Liner	Inside Lab/Control Room	30 SF

Material:	Location:	Quantity:
Building 11		
1'x1' Tan w/ Brown Floor Tile (only)	Main Entrance Hallway Operations Office Operations Bathroom Processing Area/Lab Kitchenettes Office Area Closet	1,150 SF
Lab Bench Top	North East Corner Lab – “Processing Area” on Bench Top and inside Fume Hood	20SF
Transite Fume Hood Liner	North East Corner Lab – “Processing Area”	45 SF
Roofing (field) and all associated Flashing (Perimeter and HVAC)	Roof (upper and front lower roof)	17,500 SF
Window Glazing	Windows along the Front of the Building	30 Windows

Material:	Location:	Quantity:
Building 5		
Floor Tile	Slab where Building once stood	450 SF

2.3 Asbestos Containing Materials

All identified asbestos containing materials must be removed by a licenced Commonwealth of Massachusetts Asbestos Abatement Contractor prior to disturbance resulting from demolition or renovation activities in accordance with local, state and federal regulations.

Sample #: BASF-B8-042413-7 collected in Building 8 indicates that the floor tile in the office area hallways is *not* asbestos containing however the associated mastic *is* asbestos containing. In Section 4.2, summary of asbestos containing materials, the tile is listed as asbestos containing. The reasoning for this is because the mastic is bound to the tile and separation of the mastic from the tile is virtually impossible, therefore the floor tile is rendered asbestos containing.

To determine the overall lead paint presence in the painted surfaces found throughout the facility, EHI collected paint chip samples of various painted surfaces.

EHI collected paint chips of abundant and/or large scale surfaces especially those surfaces which may be pulverized, cut, grinded and/or torched during demolition or renovation activities thus creating potential lead dust or fumes. Surfaces where paint chips were collected include, structural steel building components, masonry walls and metal walls/facades.

A total of 25 paint chip samples were collected with respect to color of paint, substrate and component. All the samples were collected utilizing a paint scraper and/or chisel to remove the paint without affecting the substrate. In order for the laboratory to attain an accurate measurement of the lead in paint, EHI made sure to not submit any of the underlying substrate thus avoiding any potential skewing of the lab results submitted in *% by weight* values.

Lead paint chip samples were submitted to Eastern Analytical Services, Inc of 4 Westchester Plaza in Elmsford, NY.

3.1 Lead Paint Chip Results

U.S. EPA defines lead paint as those painted surfaces containing more than 0.5 % by weight of lead. The OSHA Guidelines do not accept the EPA definition and require that negative exposure assessments be conducted for work that may disturb surfaces which contain *any* detectable amount of lead.

The laboratory report in relation to the lead paint chip samples can be found in Appendix Three of this report. Below is a summary of the paint chip sample results.

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Sample #:	Location/Description	Result (% by weight)
BASF-B8-042513-1L	Building 8: Warehouse - Structural Steel Column outside Breakroom - Gray Paint	0.77
BASF-B8-042513-2L	Building 8: Warehouse - Structural Steel Column outside Men's Locker Room - Brown Paint	0.18
BASF-B8-042513-3L	Building 8: 1 st Floor South East Office Area - Cement Block Wall - Cream Colored Paint	0.03
BASF-B8-042513-4L	Building 8: 1 st Floor South East Office Area - Structural Steel Column - Red Paint	1.72
BASF-B8-042513-5L	Building 8: North Side Machine Shop - Cement Block Wall (Upper) - White Paint	BDL <0.01
BASF-B8-042513-6L	Building 8: 1 st Floor East Side Office Area - Structural Steel Beam - Red Paint	5.12
BASF-B8-042513-7L	Building 8: North Side Machine Shop - Cement Block Wall (Lower) - Blue Paint	0.02
BASF-B8-042513-8L	Building 8: Warehouse - Structural Steel Beam along South Wall	0.55
BASF-B8-042513-9L	Building 8: Warehouse - Corrugated Steel Ceiling Decking	0.24
BASF-B8-042513-10L	Building 8: Warehouse - South Electrical Mezzanine Railing - Yellow Paint	0.24
BASF-B8-042513-11L	Building 8: Warehouse - Floor - Gray Paint	0.01
BASF-B10-042513-12L	Building 10: Warehouse - North Upper Wall Metal Paneling above Windows - Cream Colored Paint	0.06
BASF-B10-042513-13L	Building 10: Exterior - North Masonry Wall of Warehouse - Cream Colored Paint	BDL <0.01
BASF-B10-042513-14L	Building 10: Structural Steel I-Beam Column - Cream Colored Paint	0.03
BASF-B10-042513-15L	Building 10: Structural Steel Cylindrical Column - Cream Colored Paint	0.02
BASF-B10-042513-16L	Building 10: Clarifier Tank - Blue Paint	BDL <0.01
BASF-B10-042513-17L	Building 10: Sodium Hydroxide Tank - Yellow Paint	0.46
BASF-B10-042513-18L	Building 10: Exterior Equalization Tank - Green Paint	0.01
BASF-B11-042613-19L	Building 11: Water Treatment Area - Structural Steel Column - White Paint	0.01
BASF-B11-042613-20L	Building 11: Water Treatment Area - Structural Steel Beam - White Paint	0.01

Sample #:	Location/Description	Result (% by weight)
BASF-B11-042613-21L	Building 11: Water Treatment Area - Structural Steel Ceiling Truss - White Paint	0.20
BASF-B11-042613-22L	Building 11: Water Treatment Area - Cement Block Wall	0.01
BASF-B11-042613-23L	Building 11: Water Treatment Area - Metal Office Door Casing - Brown Paint	BDL <0.01
BASF-B11-042613-24L	Building 11: Office Area - Structural Steel Column in Ceiling Plenum - Gray Paint	0.01
BASF-B11-042613-25L	Building 11: Water Treatment Area - Concrete Floor - Gray Paint	0.01

BDL = Below Detection Level

3.2 Summary of Lead Painted Surfaces

A multitude of surfaces were found to have detectable levels of lead in paint via lead paint chip sampling and analysis. The site wide materials that should be treated as containing lead paint include:

- All Structural Steel including: Columns, Beams, Trusses and all related Steel Components
- ~~Green Equalization Tank and associated Green Painted Components~~
- ~~Yellow Painted Sodium Hydroxide Tank in Bldg. 10~~
- Yellow Painted Railings and Bumper Protection Posts
- Metal Facade Wall Paneling
- Concrete Walls

3.3 Discussion

The U.S. EPA-HUD defines lead paint as those painted surfaces containing 1.0 mg/cm² lead or greater; or 0.5% by weight or greater. The OSHA Guidelines do not accept the EPA definition and require that negative exposure assessments be conducted for work that may

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disturb surfaces which contain *any* detectable amount of lead.

According to OSHA Lead in Construction Standard 1926.62, any contractor whose work will involve contact with these surfaces must be apprised of the levels of lead in these painted surfaces. The aim of the OSHA Lead in Construction Standard is to ensure that employee/worker exposure to lead does not equal or exceed the established OSHA action level of $30 \mu\text{g}/\text{m}^3$ or an 8 hour exposure limit of $50 \mu\text{g}/\text{m}^3$ no matter the amount of lead found in the materials involved. As such, work involving the disturbance and possible exposure to lead containing materials of any and all levels of lead must be accompanied by the use of appropriate personal protective equipment (PPE) and personal air monitoring in order to measure worker/employee exposure. This monitoring establishes what minimum level of appropriate PPE can be used. Historical data in the form of a negative exposure assessment for a given task and conditions can be used to demonstrate that worker/employee exposure will not exceed a certain level and that the proper PPE is known and is being used.

4.0 Polychlorinated Biphenyls

Part of the survey also included sampling building caulks for Polychlorinated Biphenyl (PCB) content. EHI generally considered three classifications of caulk based on usage; window, door and building caulk. EHI collected composite samples of each individual classification of caulk. The goal was to collect enough caulk to fill a 4 ounce glass jar in order to give the lab enough material so they can provide a lowest minimum detectable level possible.

The caulk samples were analyzed for PCB content by Integrated Analytical Laboratories, LL of 273 Franklin Road in Randolph, New Jersey.

4.1 PCB Caulk Sampling

No PCB contaminated caulks were found as part of our site wide survey. The US -EPA considers material with a PCB concentration of ≥ 50 ppm to be PCB contaminated and therefore a hazardous material. Below is a summary of lab results for the various caulks sampled.

Appendix Four contains the laboratories results summary.

Sample #	Location/Description	Result (ppm) ND = Non Detected
BASF-B8-042513-1C	Bldg. 8: Window Caulk - Composite	ND
BASF-B8-042513-2C	Bldg. 8: Door Caulk - Composite	ND
BASF-B8-042513-3C	Bldg. 8 Building Caulk - Composite	ND
BASF-B10-042513-4C	Bldg. 10: Metal Standing Seam Roof Caulk - Composite	ND
BASF-B11-042513-5C	Bldg. 11: Window Caulk - Composite	ND
BASF-B11-042513-6C	Bldg. 11: Door Caulk - Composite	ND
BASF-B11-042513-7C	Bldg. 11: Building Caulk - Composite	ND

5.0 Concrete Characterization

Samples were collected using procedures described in the United States Environmental Protection Agency draft document “Standard Operating Procedure for Sampling Concrete in The Field”. This procedure involves the use of a large diameter drill bit (1&1/4”dia.) in conjunction with a hammer drill to generate finely ground concrete powder samples. Sufficient holes were drilled to a depth of approximately one inch to generate a sample sufficient in size for sample analysis. All sampling locations were biased toward visible staining or other indication of potential contamination. Sampling areas were determined based on each distinct operation or use focusing on known or suspected areas of contamination. Upon collection, the sample was designated an identification number, describing its location and date collected. The sample was

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then delivered to a third party laboratory, Integrated Analytical Laboratories, for analysis.

Each of the samples were analyzed for PAH's, PCB's and Heavy Metals.

Massachusetts encourages the recycling of concrete rubble. The material should not be painted or otherwise coated. In the case of the BASF plant most walls and floors are painted or otherwise coated. Massachusetts DEP provided EHI unofficially with guidance for the reuse of masonry that has been painted or otherwise coated. The C1, C2 and C3 values were provided by Massachusetts DEP.

Please refer to Appendix Six for a map detailing the locations where concrete samples were collected.

5.1 Concrete Results

The following is a summary of the concrete results:

Sample Identification: BASF-C-042413-1

Location: Building 10 - Waste Water Treatment- Concrete Floor Sample- South Side- 12 Feet from Sump Pump- Heavily Stained, Flaking White Color

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	0.168	*	*	
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's	0168	None *	None *	2
Metals				
Aluminum	12,800			
Antimony	Not Detected	4	10	20
Arsenic	5.22	10	10	20
Barium	86.0	50 *	500	1000
Beryllium	0.617	0.3 *	50	100
Cadmium	62.5	1 *	1 *	2 *
Calcium	12,700			
Chromium	24.0	15 *	500	100
Cobalt	7.75			
Copper	63.6			
Iron	18,400			
Lead	9.17	50	150	300
Magnesium	4,660			
Manganese	440			
Mercury	0.267	0.15 *	10	20
Nickel	44.4	10 *	10 *	20 *
Potassium	2,210			
Selenium	Not Detected	10	200	400
Silver	27.7	4 *	4 *	8 *
Sodium	1,450			
Thallium	Not Detected	4	4	8
Vanadium	28.9	15 *	300	600
Zinc	103	50 *	1250	2500
Hexavalent Chromium	Not Detected	15	15	30

Sample Identification: BASF-C-042413-2

Location: Building 10 - Waste Water Treatment- Concrete Floor Sample- South Side- At Base of 3rd Metal Column- Heavily Stained, Yellow/Green Color

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	0.030	*	*	
Anthracene	Not Detected			
Fluoranthene	0.024	*	*	
Pyrene	0.043	*	*	
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH	0.097	None *	None *	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	0.118	*	*	
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's	0.118	None *	None *	2
Metals				
Aluminum	9,130			
Antimony	0.839	4	10	20
Arsenic	3.83	10	10	20
Barium	84.9	50 *	500	1000
Beryllium	0.603	0.3 *	50	100
Cadmium	218	1 *	1 *	2 *
Calcium	10,800			
Chromium	33.2	15 *	500	100
Cobalt	6.34			
Copper	471			
Iron	12,200			
Lead	18.2	50	150	300
Magnesium	3,160			
Manganese	268			
Mercury	1.20	0.15 *	10	20
Nickel	236	10 *	10 *	20 *
Potassium	1,630			
Selenium	Not Detected	10	200	400
Silver	7.31	4 *	4 *	8
Sodium	6,950			
Thallium	Not Detected	4	4	8
Vanadium	21.8	15 *	300	600
Zinc	236	50 *	1250	2500
Hexavalent Chromium	Not Detected	15	15	30

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Sample Identification: BASF-C-042413-3

Location: Building 10 - Waste Water Treatment- Concrete Floor Sample- South Side of Building 8- At Base of Cyanide Storage Tank- White Staining

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	12,200			
Antimony	Not Detected	4	10	20
Arsenic	4.40	10	10	20
Barium	178	50 *	500	1000
Beryllium	0.672	0.3 *	50	100
Cadmium	55.3	1 *	1 *	2 *
Calcium	13,800			
Chromium	29.2	15 *	500	1000
Cobalt	7.34			
Copper	101			
Iron	18,100			
Lead	16.4	50	150	300
Magnesium	4,880			
Manganese	409			
Mercury	0.054	0.15	10	20
Nickel	28.1	10 *	10 *	20 *
Potassium	2450			
Selenium	Not Detected	10	200	400
Silver	4.53	4 *	4 *	8
Sodium	3,760			
Thallium	Not Detected	4	4	8
Vanadium	30.0	15 *	300	600
Zinc	128	50 *	1250	2500
Hexavalent Chromium	0.856	15	15	30

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Sample Identification: BASF-C-042413-4

Location: Building 10 - Waste Water Treatment- Concrete Floor Sample- South Side of Building 8- Adjacent to NaOH Tank and Adjacent to Floor Drain- Stained White/Green Color

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	7,260			
Antimony	Not Detected	4	10	20
Arsenic	2.85	10	10	20
Barium	66.0	50 *	500	1000
Beryllium	Not Detected	0.3	50	100
Cadmium	14.7	1 *	1 *	2 *
Calcium	10,300			
Chromium	12.2	15	500	1000
Cobalt	20.4			
Copper	76.5			
Iron	7,950			
Lead	6.59	50	150	300
Magnesium	2,130			
Manganese	171			
Mercury	0.048	0.15	10	20
Nickel	66.9	10 *	10 *	20 *
Potassium	1,370			
Selenium	Not Detected	10	200	400
Silver	125	4 *	4 *	8 *
Sodium	1,050			
Thallium	Not Detected	4	4	8
Vanadium	16.9	15	300	600
Zinc	58.9	50 *	1250	2500
Hexavalent Chromium	1.16	15 *	15	30

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Sample Identification: BASF-C-042413-5

Location: Building 10 - Waste Water Treatment- Concrete Floor Sample- West Side of Main Corridor- Heavily Stained, White Color

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	7,040			
Antimony	Not Detected	4	10	20
Arsenic	3.03	10	10	20
Barium	64.8	50 *	500	1000
Beryllium	Not Detected	0.3	50	100
Cadmium	12.1	1 *	1 *	2 *
Calcium	7,650			
Chromium	13.1	15	500	1000
Cobalt	7.66			
Copper	42.7			
Iron	9,270			
Lead	6.37	50	150	300
Magnesium	2,500			
Manganese	225			
Mercury	0.150	0.15	10	20
Nickel	41.1	10 *	10 *	20 *
Potassium	1,420			
Selenium	Not Detected	10	200	400
Silver	14.6	4 *	4 *	8 *
Sodium	1,280			
Thallium	Not Detected	4	4	8
Vanadium	16.5	15 *	300	600
Zinc	48.4	50	1250	250
Hexavalent Chromium	Not Detected	15	15	30

Sample Identification: BASF-C-042413-6

Location: Building 10 - Waste Water Treatment- Concrete Floor Sample- In Dyked Area for Sulfuric Acid Tank- West Side of Main Corridor- Heavily Stained, White Color

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	7,780			
Antimony	Not Detected	4	10	20
Arsenic	3.32	10	10	20
Barium	72.9	50 *	500	1000
Beryllium	0.487	0.3 *	50	100
Cadmium	1.05	1 *	1 *	2
Calcium	13,000			
Chromium	15.4	15 *	500	1000
Cobalt	5.51			
Copper	12.1			
Iron	9,350			
Lead	5.42	50	150	300
Magnesium	2,620			
Manganese	201			
Mercury	0.012	0.15	10	20
Nickel	11.2	10 *	10 *	20
Potassium	1,750			
Selenium	Not Detected	10	200	400
Silver	7.90	4 *	4 *	8
Sodium	1,830			
Thallium	Not Detected	4	4	8
Vanadium	19.1	15 *	300	600
Zinc	27.2	50	1250	2500
Hexavalent Chromium	1.08	15	15	30

BASF Corporation
32 Taunton Street
Plainville, MA

Hazardous Material Survey
April 23, 2013 - June 11, 2013
EHI Project #: 0834-4545

Sample Identification: BASF-C-042413-7

Location: Building 10 -Waste Water Treatment- Concrete Floor Sample- Southwest Side of Cyanide Treatment Tank- Stained Area

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	10,200			
Antimony	Not Detected	4	10	20
Arsenic	3.43	10	10	20
Barium	99.3	50 *	500	1000
Beryllium	0.545	0.3 *	50	100
Cadmium	13.8	1 *	1 *	2 *
Calcium	11,700			
Chromium	20.0	15 *	500	1000
Cobalt	8.29			
Copper	79.1			
Iron	13,900			
Lead	6.85	50	150	300
Magnesium	4,130			
Manganese	284			
Mercury	0.032	0.15	10	20
Nickel	50.4	10 *	10 *	20 *
Potassium	2,870			
Selenium	Not Detected	10	200	400
Silver	47.9	4 *	4 *	8 *
Sodium	845			
Thallium	Not Detected	4	4	8
Vanadium	23.8	15 *	300	600
Zinc	57.7	50 *	1250	2500
Hexavalent Chromium	0.818	15	15	30

**BASF Corporation
32 Taunton Street
Plainville, MA**

**Hazardous Material Survey
April 23, 2013 - June 11, 2013
EHI Project #: 0834-4545**

Sample Identification: BASF-C-042413-8

Location: Building 10 - Waste Water Treatment- Concrete Floor Sample- Northwest Side of the Chrome Treatment Tank

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	9,350			
Antimony	Not Detected	4	110	20
Arsenic	3.28	10	10	20
Barium	88.4	50 *	500	1000
Beryllium	0.550	0.3 *	50	100
Cadmium	4.41	1 *	1 *	2 *
Calcium	11,600			
Chromium	17.5	15 *	500	1000
Cobalt	6.83			
Copper	26.2			
Iron	12,000			
Lead	5.52	50	150	300
Magnesium	3,570			
Manganese	255			
Mercury	0.018	0.15	10	20
Nickel	199	10 *	10 *	20 *
Potassium	2,710			
Selenium	Not Detected	10	200	400
Silver	7.91	4 *	4 *	8 *
Sodium	594			
Thallium	Not Detected	4	4	8
Vanadium	21.5	15 *	300	600
Zinc	41.6	50	1250	2500
Hexavalent Chromium	1.16	15	15	30

Sample Identification: BASF-C-042413-9

Location: Building 10 - Waste Water Treatment-Concrete Floor Sample- Lab Floor Painted Red-Stained White Color

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	200
Metals				
Aluminum	11,300			
Antimony	Not Detected	4	10	20
Arsenic	3.79	10	10	20
Barium	80.9	50 *	500	1000
Beryllium	0.719	0.3 *	50	100
Cadmium	6.64	1 *	1 *	2 *
Calcium	11,300			
Chromium	20.9	15 *	500	1000
Cobalt	7.09			
Copper	57.3			
Iron	14,800			
Lead	9.41	50	150	300
Magnesium	4,170			
Manganese	363			
Mercury	0.071	0.15	10	20
Nickel	19.8	10 *	10 *	20
Potassium	1,980			
Selenium	Not Detected	10	200	400
Silver	4.57	4 *	4 *	8
Sodium	4,330			
Thallium	Not Detected	4	4	8
Vanadium	26.3	15 *	300	600
Zinc	86.1	50 *	1250	2500
Hexavalent Chromium	0.741	15	15	30

Sample Identification: BASF-C-042413-10

Location: Building 10 - Waste Water Treatment- Concrete Floor Sample- North Storage Room 10 Feet North of Overhead Doors - Stained Area

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	11,000			
Antimony	Not Detected	4	10	20
Arsenic	3.8	10	10	20
Barium	110	50 *	500	1000
Beryllium	0.611	0.3 *	50	100
Cadmium	31.6	1 *	1 *	2 *
Calcium	11,400			
Chromium	22.7	15 *	500	1000
Cobalt	7.90			
Copper	90.1			
Iron	14,700			
Lead	8.9	50	150	300
Magnesium	4,520			
Manganese	276			
Mercury	0.084	0.15	10	20
Nickel	25.9	10 *	10 *	20 *
Potassium	3,210			
Selenium	Not Detected	10	200	400
Silver	49.4	4 *	4 *	8 *
Sodium	695			
Thallium	Not Detected	4	4	8
Vanadium	27.7	15 *	300	600
Zinc	59.9	50 *	1250	2500
Hexavalent Chromium	1.24	15	15	30

Sample Identification: BASF-C-042413-11

Location: Building 8- West Side of Warehouse- Concrete Floor Sample- Collected at Grid Location B2- Stained Black

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	0.124	*	*	
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None *	None *	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	11,100			
Antimony	Not Detected	4	10	20
Arsenic	3.72	10	10	20
Barium	71.8	50 *	500	1000
Beryllium	0.601	0.3 *	50	100
Cadmium	54.7	1 *	1 *	2 *
Calcium	12,200			
Chromium	30.4	15 *	500	1000
Cobalt	7.63			
Copper	155			
Iron	14,800			
Lead	14.3	50	150	300
Magnesium	5,750			
Manganese	365			
Mercury	0.107	0.15	10	20
Nickel	57.3	10 *	10 *	20 *
Potassium	2,610			
Selenium	Not Detected	10	200	400
Silver	23.1	4 *	4 *	8 *
Sodium	1030			
Thallium	Not Detected	4	4	8
Vanadium	25.0	15 *	300	600
Zinc	106	50 *	1250	2500
Hexavalent Chromium	0.665	15	15	30

Sample Identification: BASF-C-042413-12

Location: Building 8- North Side of Warehouse- Concrete Floor Sample- Collected at Grid Location B5

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	10,700			
Antimony	Not Detected	4	10	20
Arsenic	4.86	10	10	20
Barium	105	50 *	500	1000
Beryllium	0.617	0.3 *	50	100
Cadmium	2.49	1 *	1 *	2 *
Calcium	14,700			
Chromium	17.2	15 *	500	1000
Cobalt	6.62			
Copper	14.6			
Iron	13,700			
Lead	8.01	50	150	300
Magnesium	3,940			
Manganese	314			
Mercury	0.037	0.15	10	20
Nickel	19.8	10 *	10 *	20
Potassium	1,780			
Selenium	Not Detected	10	200	400
Silver	4.44	4	4	8
Sodium	606			
Thallium	Not Detected	4	4	8
Vanadium	27.8	15 *	300	600
Zinc	44.4	50	1250	2500
Hexavalent Chromium	0.894	15	15	30

Sample Identification: BASF-C-042413-13

Location: Building 8- Warehouse- Concrete Floor Sample- Collected at Grid Location D4

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	0.046	*	*	
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH	0.046	None *	None *	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	13,800			
Antimony	Not Detected	4	10	20
Arsenic	5.31	10	10	20
Barium	115	50 *	500	1000
Beryllium	0.773	0.3 *	50	100
Cadmium	4.62	1 *	1 *	2 *
Calcium	14,200			
Chromium	20.8	15 *	500	1000
Cobalt	9.37			
Copper	19.7			
Iron	17,700			
Lead	9.78	50	150	300
Magnesium	5,090			
Manganese	429			
Mercury	0.024	0.15	10	20
Nickel	31.9	10 *	10 *	20 *
Potassium	2,160			
Selenium	Not Detected	10	200	400
Silver	2.68	4	4	8
Sodium	591			
Thallium	Not Detected	4	4	8
Vanadium	33.4	15 *	300	600
Zinc	58.9	50 *	1250	2500
Hexavalent Chromium	0.970	15	15	30

Sample Identification: BASF-C-042413-14

Location: Building 8- Warehouse- Concrete Floor Sample- Collected from Grid Location D2

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	13,700			
Antimony	Not Detected	4	10	20
Arsenic	4.60	10	10	20
Barium	823	50 *	500 *	1000
Beryllium	0.811	0.3 *	50	100
Cadmium	28.8	1 *	1 *	2 *
Calcium	14,900			
Chromium	20.5	15 *	500	1000
Cobalt	8.47			
Copper	68.9			
Iron	17,300			
Lead	10.1	50	150	300
Magnesium	5,000			
Manganese	396			
Mercury	0.065	0.15	10	20
Nickel	37.5	10 *	10 *	20 *
Potassium	2,560			
Selenium	Not Detected	10	200	400
Silver	23.9	4 *	4 *	8 *
Sodium	1,230			
Thallium	Not Detected	4	4	8
Vanadium	34.8	15 *	300	600
Zinc	147	50 *	1250	2500
Hexavalent Chromium	0.322	15	15	30

Sample Identification: BASF-C-042413-15

Location: Building 8- North Side of Building- Concrete Floor Sample- Collected from Grid Location C5

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	11,800			
Antimony	Not Detected	4	10	20
Arsenic	4.04	10	10	20
Barium	83.1	50 *	500	1000
Beryllium	0.707	0.3 *	50	100
Cadmium	3.82	1 *	1 *	2 *
Calcium	10,700			
Chromium	20.1	15 *	500	1000
Cobalt	9.11			
Copper	147			
Iron	14,900			
Lead	9.45	50	150	300
Magnesium	4,630			
Manganese	315			
Mercury	0.085	0.15	10	20
Nickel	77.3	10 *	10 *	20 *
Potassium	1,860			
Selenium	Not Detected	10	200	400
Silver	7.08	4 *	4 *	8
Sodium	683			
Thallium	Not Detected	4	4	8
Vanadium	25.6	15 *	300	600
Zinc	276	50 *	1250	2500
Hexavalent Chromium	0.283	15	15	30

Sample Identification: BASF-C-042513-16

Location: Building 8- Concrete Floor Sample- Collected at Grid Location E4 - Stained Area

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	0.027	*	*	
Anthracene	Not Detected			
Fluoranthene	0.036	*	*	
Pyrene	0.034	*	*	
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH	0.097	None *	None *	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	14,600			
Antimony	Not Detected	4	10	20
Arsenic	3.75	10	10	20
Barium	86.8	50 *	500	1000
Beryllium	1.07	0.3 *	50	100
Cadmium	1.74	1 *	1 *	2
Calcium	14,300			
Chromium	42.3	15 *	500	1000
Cobalt	11.1			
Copper	86.8			
Iron	18,800			
Lead	22.2	50	150	300
Magnesium	6,280			
Manganese	408			
Mercury	0.021	0.15	10	20
Nickel	40.6	10 *	10 *	20 *
Potassium	2,140			
Selenium	Not Detected	10	200	400
Silver	3.91	4	4	8
Sodium	646			
Thallium	Not Detected	4	4	8
Vanadium	36.9	15 *	300	600
Zinc	179	50 *	1250	2500
Hexavalent Chromium	5.24	15	15	30

Sample Identification: BASF-C-042513-17

Location: Building 8- Concrete Floor Sample- Collected at Grid Location G5 - Heavily Stained, Black Color

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	12,600			
Antimony	Not Detected	4	10	20
Arsenic	4.41	10	10	20
Barium	106	50 *	500	1000
Beryllium	0.761	0.3 *	50	100
Cadmium	1.93	1 *	1 *	2 *
Calcium	13,500			
Chromium	22.5	15 *	500	1000
Cobalt	12.4			
Copper	19.8			
Iron	16,300			
Lead	8.66	50	150	300
Magnesium	4,770			
Manganese	380			
Mercury	0.025	0.15	10	20
Nickel	42.3	10 *	10 *	20 *
Potassium	2,190			
Selenium	Not Detected	10	200	400
Silver	18.6	4 *	4 *	8 *
Sodium	581			
Thallium	Not Detected	4	4	8
Vanadium	30.4	15 *	300	600
Zinc	51.5	50 *	1250	2500
Hexavalent Chromium	5.66	15	15	30

Sample Identification: BASF-C-042513-18

Location: Building 8- Concrete Floor Sample- Collected at Grid Location F1- Stained White in Color

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	0.072	*	*	
Anthracene	Not Detected			
Fluoranthene	0.060	*	*	
Pyrene	0.045	*	*	
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH	0.177	None *	None *	
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	0.472	*	*	
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's	0.472	None *	None *	2
Metals				
Aluminum	12,400			
Antimony	Not Detected	4	10	20
Arsenic	4.43	10	10	20
Barium	87.0	50 *	500	1000
Beryllium	0.698	0.3 *	50	100
Cadmium	1.06	1 *	1 *	2
Calcium	13,800			
Chromium	19.0	15 *	500	1000
Cobalt	8.17			
Copper	23.0			
Iron	16,700			
Lead	7.87	50	150	300
Magnesium	4,850			
Manganese	398			
Mercury	0.019	0.15	10	20
Nickel	18.7	10 *	10 *	20
Potassium	1,930			
Selenium	Not Detected	10	200	400
Silver	0.444	4	4	8
Sodium	534			
Thallium	Not Detected	4	4	8
Vanadium	30.9	15 *	300	600
Zinc	60.6	50 *	1250	2500
Hexavalent Chromium	1.24	15	15	30

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Plainville, MA

Hazardous Material Survey
April 23, 2013 - June 11, 2013
EHI Project #: 0834-4545

Sample Identification: BASF-C-042513-19

Location: Building 8- Concrete Floor Sample- Collected at Grid Location G2 - Stained Black in Color

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	12,600			
Antimony	Not Detected	4	10	20
Arsenic	4.34	10	10	20
Barium	148	50 *	500	1000
Beryllium	0.796	0.3 *	50	100
Cadmium	5.56	1 *	1 *	2 *
Calcium	14,000			
Chromium	23.8	15 *	500	1000
Cobalt	11.4			
Copper	39.9			
Iron	17,000			
Lead	17.9	50	150	300
Magnesium	5,310			
Manganese	367			
Mercury	0.038	0.15	10	20
Nickel	28.8	10 *	10 *	20 *
Potassium	2,570			
Selenium	Not Detected	10	200	400
Silver	8.47	4 *	4 *	8 *
Sodium	654			
Thallium	Not Detected	4	4	8
Vanadium	30.5	15 *	300	600
Zinc	83.5	50 *	1250	2500
Hexavalent Chromium	2.15	15	15	30

Sample Identification: BASF-C-042513-20

Location: Building 8- Concrete Floor Sample- Collected at Grid Location I2 by Roof Drain Clean out- Stained Grey in Color

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	0.025	*	*	
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH	0.025	None *	None *	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	13,700			
Antimony	Not Detected	4	10	20
Arsenic	4.82	10	10	20
Barium	119	50 *	5000	1000
Beryllium	0.997	0.3 *	50	100
Cadmium	4.76	1 *	1 *	2 *
Calcium	14,200			
Chromium	28.1	15	500	1000
Cobalt	11.7			
Copper	48.0			
Iron	18,700			
Lead	25.8	50	150	300
Magnesium	5,590			
Manganese	423			
Mercury	0.087	0.15	10	20
Nickel	37.6	10 *	10 *	20 *
Potassium	2,310			
Selenium	Not Detected	10	200	400
Silver	7.16	4 *	4 *	8
Sodium	985			
Thallium	Not Detected	4	4	8
Vanadium	34.6	15 *	300	600
Zinc	185	50 *	1250	2500
Hexavalent Chromium	Not Detected	15	15	30

Sample Identification: BASF-C-042513-21

Location: Building 8- Concrete Floor Sample- Collected at Grid Location K1 near Men's Restroom- Stained Grey in Color

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	12,400			
Antimony	Not Detected	4	10	20
Arsenic	5.06	10	10	20
Barium	97.3	50 *	500	1000
Beryllium	0.779	0.3 *	50	100
Cadmium	1.61	1 *	1 *	2
Calcium	14,400			
Chromium	18.8	15 *	500	1000
Cobalt	9.06			
Copper	19.7			
Iron	17,000			
Lead	15.4	50	150	300
Magnesium	4,800			
Manganese	395			
Mercury	0.046	0.15	10	20
Nickel	18.9	10 *	10 *	20
Potassium	2,030			
Selenium	Not Detected	10	200	400
Silver	2.32	4	4	8
Sodium	687			
Thallium	Not Detected	4	4	8
Vanadium	30.1	15 *	300	600
Zinc	55.2	50 *	1250	2500
Hexavalent Chromium	0.951	15	15	30

Sample Identification: BASF-C-042513-22

Location: Building 8- Concrete Floor Sample- Collected at Grid Location K5 in Store Room - Stained Black in Color

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	0.028	*	*	
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	0.034			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH	0.062	None *	None *	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	15,100			
Antimony	0.744	4	10	20
Arsenic	5.27	10	10	20
Barium	139	50 *	500	1000
Beryllium	0.805	0.3 *	50	10
Cadmium	3.86	1 *	1 *	2 *
Calcium	15,200			
Chromium	19.9	15 *	500	1000
Cobalt	9.27			
Copper	18.7			
Iron	19,500			
Lead	9.04	50	150	300
Magnesium	5,690			
Manganese	398			
Mercury	0.145	0.15	10	20
Nickel	18.2	10 *	10 *	20
Potassium	2,600			
Selenium	Not Detected	10	200	400
Silver	1.01	4	4	8
Sodium	614			
Thallium	Not Detected	4	4	8
Vanadium	36.5	15 *	300	600
Zinc	52.1	50 *	1250	2500
Hexavalent Chromium	Not Detected	15	15	30

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Hazardous Material Survey
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EHI Project #: 0834-4545

Sample Identification: BASF-C-042513-23

Location: Building 8-Concrete Floor Sample- Collected at Grid Location J5 in Workshop - Stained Black in Color

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	0.028	*	*	
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH	0.028	None *	None *	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	4,120			
Antimony	Not Detected	4	10	20
Arsenic	2.52	10	10	20
Barium	16.5	50	500	1000
Beryllium	Not Detected	0.3	50	100
Cadmium	13.7	1 *	1 *	2 *
Calcium	5,230			
Chromium	7.15	15	500	1000
Cobalt	2.92			
Copper	250			
Iron	6,470			
Lead	6.70	50	150	300
Magnesium	1,170			
Manganese	134			
Mercury	0.00947	0.15	10	20
Nickel	12.6	10 *	10 *	20
Potassium	1,120			
Selenium	Not Detected	10	200	400
Silver	126	4 *	4 *	8 *
Sodium	893			
Thallium	Not Detected	4	4	8
Vanadium	3.83	15	300	600
Zinc	64.9	50 *	1250	2500
Hexavalent Chromium	Not Detected	15	15	30

Sample Identification: BASF-C-042513-24

Location: Building 8- Concrete Floor Sample- Collected at Grid Location H5-Stained Area

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	12,300			
Antimony	Not Detected	4	10	20
Arsenic	4.16	10	10	20
Barium	102	50 *	500	1000
Beryllium	0.711	0.3 *	50	100
Cadmium	1.70	1 *	1 *	2
Calcium	12,700			
Chromium	20.8	15 *	500	1000
Cobalt	9.69			
Copper	31.5			
Iron	16,300			
Lead	7.16	50	150	300
Magnesium	4,830			
Manganese	370			
Mercury	0.133	0.15	10	20
Nickel	22.4	10 *	10 *	20 *
Potassium	2,050			
Selenium	Not Detected	10	200	400
Silver	112	4 *	4 *	8 *
Sodium	532			
Thallium	Not Detected	4	4	8
Vanadium	30.7	15 *	300	600
Zinc	105	50 *	1250	2500
Hexavalent Chromium	0.458	15	15	30

Sample Identification: BASF-C-042513-25

Location: Building 8- Concrete Floor Sample- Collected at Grid Location G5 -Stained Yellow/Green Color

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	0.013	*	*	
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH	0.013	None *	None *	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	11,900			
Antimony	Not Detected	4	10	20
Arsenic	4.34	10	10	20
Barium	103	50 *	500	1000
Beryllium	0.721	0.3 *	50	100
Cadmium	0.852	1	1	2
Calcium	13,800			
Chromium	19.6	15 *	500	1000
Cobalt	9.50			
Copper	46.2			
Iron	16,500			
Lead	10.2	50	150	300
Magnesium	4,470			
Manganese	343			
Mercury	0.016	0.15	10	20
Nickel	947	10 *	10 *	20 *
Potassium	1,990			
Selenium	Not Detected	10	200	400
Silver	6.88	4 *	4 *	8
Sodium	525			
Thallium	Not Detected	4	4	8
Vanadium	29.4	15 *	300	600
Zinc	53.8	50 *	1250	2500
Hexavalent Chromium	Not Detected	15	15	30

Sample Identification: BASF-C-042513-26

Location: Former Building 3- Concrete Floor Sample- North Side

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	0.248	*	*	
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's	0.248	None *	None *	2
Metals				
Aluminum	9,690			
Antimony	Not Detected	4	10	20
Arsenic	2.63	10	10	20
Barium	63.8	50 *	500	1000
Beryllium	0.711	0.3 *	50	100
Cadmium	27.4	1 *	1 *	2 *
Calcium	11,400			
Chromium	22.1	15 *	500	1000
Cobalt	6.74			
Copper	69.5			
Iron	13,100			
Lead	13.6	50	150	300
Magnesium	4,140			
Manganese	323			
Mercury	0.017	0.15	10	20
Nickel	25.5	10 *	10 *	20 *
Potassium	2,440			
Selenium	Not Detected	10	200	400
Silver	26.5	4 *	4 *	8 *
Sodium	1,500			
Thallium	Not Detected	4	4	8
Vanadium	26.3	15 *	300	600
Zinc	129	50 *	1250	2500
Hexavalent Chromium	3.64	15	15	30

Sample Identification: BASF-C-042713-27

Location: Former Building 12- Concrete Floor Sample- Stained Rust Color

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	11,700			
Antimony	Not Detected	4	10	20
Arsenic	8.87	10	10	20
Barium	90.4	50 *	500	1000
Beryllium	0.630	0.3 *	50	100
Cadmium	Not Detected	1	1	2
Calcium	15,600			
Chromium	94.8	15 *	500	1000
Cobalt	10.6			
Copper	104			
Iron	47,600			
Lead	6.53	50	150	300
Magnesium	3,960			
Manganese	713			
Mercury	0.00778	0.15	10	20
Nickel	61.7	10 *	10 *	20 *
Potassium	2,250			
Selenium	Not Detected	10	200	400
Silver	Not Detected	4	4	8
Sodium	1,170			
Thallium	Not Detected	4	4	8
Vanadium	26.8	15 *	300	600
Zinc	38.6	50	1250	2500
Hexavalent Chromium	0.951	15	15	30

BASF Corporation
32 Taunton Street
Plainville, MA

Hazardous Material Survey
April 23, 2013 - June 11, 2013
EHI Project #: 0834-4545

Sample Identification: BASF-C-042513-28

Location: Former Building 2- Concrete Floor Sample- Southwest Side

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	6.27			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	8,970			
Antimony	Not Detected	4	10	20
Arsenic	4.10	10	10	20
Barium	96.1	50 *	500	1000
Beryllium	Not Detected	0.3	50	100
Cadmium	1.77	1 *	1 *	2
Calcium	12,900			
Chromium	11.7	15	500	1000
Cobalt	5.28			
Copper	7.43			
Iron	11,600			
Lead	4.86	50	150	300
Magnesium	3,400			
Manganese	334			
Mercury	0.015	0.15	10	20
Nickel	7.65	10	10	20
Potassium	3,350			
Selenium	Not Detected	10	200	400
Silver	0.769	4	4	8
Sodium	1,170			
Thallium	Not Detected	4	4	8
Vanadium	21.0	15 *	300	600
Zinc	45.1	50	1250	2500
Hexavalent Chromium	Not Detected	15	15	30

Sample Identification: BASF-C-042513-29

Location: Former Building 9- Concrete Floor Sample- Stained Rust Colored

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	13,000			
Antimony	Not Detected	4	10	20
Arsenic	17.4	10 *	10 *	20
Barium	83.8	50 *	500	1000
Beryllium	0.921	0.3 *	50	100
Cadmium	0.397	1	1	2
Calcium	15,200			
Chromium	195	15 *	500	1000
Cobalt	15.9			
Copper	218			
Iron	114,000			
Lead	7.18	50	150	300
Magnesium	5,660			
Manganese	1,030			
Mercury	Not Detected	0.15	10	20
Nickel	101	10 *	10 *	20 *
Potassium	2,230			
Selenium	Not Detected	10	200	400
Silver	Not Detected	4	4	8
Sodium	1,580			
Thallium	Not Detected	4	4	8
Vanadium	36.5	15 *	300	600
Zinc	45.1	50	1250	2500
Hexavalent Chromium	1.41	15	15	300

Sample Identification: BASF-C-042513-30

Location: Former Building 1- Concrete Floor Sample

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	0.034	*	*	
Anthracene	Not Detected			
Fluoranthene	0.054	*	*	
Pyrene	0.054	*	*	
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH	0.142	None *	None *	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	1.10	*	*	
Aroclor-1254	0.837	*	*	
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's	1.937	None *	None *	2
Metals				
Aluminum	9,040			
Antimony	Not Detected	4	10	20
Arsenic	2.05	10	10	20
Barium	53.3	50 *	500	1000
Beryllium	Not Detected	0.3	50	100
Cadmium	31.0	1 *	1 *	2 *
Calcium	10,900			
Chromium	14.9	15	500	1000
Cobalt	6.89			
Copper	36.0			
Iron	11,600			
Lead	5.59	50	150	300
Magnesium	4,390			
Manganese	282			
Mercury	0.00955	0.15	10	20
Nickel	13.1	10 *	10 *	20
Potassium	2,080			
Selenium	Not Detected	10	200	400
Silver	0.509	4	4	8
Sodium	1,140			
Thallium	Not Detected	4	4	8
Vanadium	22.9	15 *	300	600
Zinc	43.5	50	1250	2500
Hexavalent Chromium	0.307	15	15	30

Sample Identification: BASF-C-042513-31

Location: Former Building 5- Concrete Floor Sample- Stained Brown in Color

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH				
PCB's		None	None	100
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	10,700			
Antimony	Not Detected	4	10	20
Arsenic	5.43	10	10	20
Barium	110	50 *	500	1000
Beryllium	0.604	0.3 *	50	100
Cadmium	0.404	1	1	2
Calcium	12,800			
Chromium	17.7	15 *	500	1000
Cobalt	7.00			
Copper	16.6			
Iron	14,800			
Lead	5.88	50	150	300
Magnesium	4,910			
Manganese	353			
Mercury	0.013	0.15	10	20
Nickel	13.8	10 *	10 *	20
Potassium	1,820			
Selenium	Not Detected	10	200	400
Silver	0.359	4	4	8
Sodium	1,000			
Thallium	Not Detected	4	4	8
Vanadium	33.0	15 *	300	600
Zinc	39.7	50	1250	2500
Hexavalent Chromium	1.48	15	15	30

BASF Corporation
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Plainville, MA

Hazardous Material Survey
April 23, 2013 - June 11, 2013
EHI Project #: 0834-4545

Sample Identification: BASF-C-042513-32

Location: Former Building 6- Concrete Floor Sample

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	0.034	*	*	
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH	0.034	None *	None *	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	0.227	*	*	

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's	0.227	None *	None *	2
Metals				
Aluminum	9,880			
Antimony	Not Detected	4	10	20
Arsenic	9.95	10	10	20
Barium	98.3	50 *	500	1000
Beryllium	Not Detected	0.3	50	100
Cadmium	1.19	1 *	1 *	2
Calcium	12,500			
Chromium	23.9	15	500	1000
Cobalt	5.98			
Copper	18.2			
Iron	13,700			
Lead	5.89	50	150	300
Magnesium	4,140			
Manganese	281			
Mercury	0.00971	0.15	10	20
Nickel	14.2	10 *	10 *	20
Potassium	1,950			
Selenium	Not Detected	10	200	400
Silver	0.320	4	4	8
Sodium	452			
Thallium	Not Detected	4	4	8
Vanadium	25.0	15 *	300	600
Zinc	31.7	50	1250	2500
Hexavalent Chromium	Not Detected	15	15	30

Sample Identification: BASF-C-042513-33

Location: Former Building 7- Stained Rust C

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	14,100			
Antimony	Not Detected	4	10	20
Arsenic	8.14	10	10	20
Barium	83.1	50 *	500	1000
Beryllium	0.710	0.3 *	50	100
Cadmium	0.935	1	1	2
Calcium	12,900			
Chromium	70.8	15 *	500	1000
Cobalt	10.2			
Copper	147			
Iron	40,800			
Lead	8.10	50	150	300
Magnesium	5,290			
Manganese	597			
Mercury	0.00924	0.15	10	20
Nickel	57.8	10 *	10 *	20 *
Potassium	2,070			
Selenium	Not Detected	10	200	400
Silver	Not Detected	4	4	8
Sodium	905			
Thallium	Not Detected	4	4	8
Vanadium	28.6	15 *	300	600
Zinc	47.6	50	1250	2500
Hexavalent Chromium	1.25	15	15	30

Sample Identification: BASF-C-042513-34

Location: Former Building 4- Concrete Floor Sample

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	8,780			
Antimony	Not Detected	4	10	20
Arsenic	2.78	10	10	20
Barium	70.2	50 *	500	1000
Beryllium	Not Detected	0.3	50	100
Cadmium	Not Detected	1	1	2
Calcium	12,000			
Chromium	24.1	15 *	500	1000
Cobalt	4.84			
Copper	11.9			
Iron	11,300			
Lead	6.49	50	150	300
Magnesium	3,420			
Manganese	335			
Mercury	Not Detected	0.15	10	20
Nickel	15.1	10 *	10 *	20
Potassium	1,490			
Selenium	Not Detected	10	200	400
Silver	Not Detected	4	4	8
Sodium	667			
Thallium	Not Detected	4	4	8
Vanadium	20.9	15 *	300	600
Zinc	38.5	50	1250	2500
Hexavalent Chromium	3.30	15	15	30

Sample Identification: BASF-C-042613-35

Location: Building 11- Concrete Floor Sample- In Boiler Room- Stained Area

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	100
Metals				
Aluminum	12,200			
Antimony	Not Detected	4	10	20
Arsenic	15.5	10 *	10 *	20
Barium	76.5	50 *	500	1000
Beryllium	0.823	0.3 *	50	100
Cadmium	2.02	1 *	1 *	2 *
Calcium	16,500			
Chromium	164	15 *	500	1000
Cobalt	17.4			
Copper	347			
Iron	87,300			
Lead	8.62	50	150	300
Magnesium	5,050			
Manganese	954			
Mercury	0.191	0.15 *	10	20
Nickel	135	10 *	10 *	20 *
Potassium	1,930			
Selenium	Not Detected	10	200	400
Silver	3.33	4	4	8
Sodium	2,880			
Thallium	Not Detected	4	4	8
Vanadium	36.7	15 *	300	600
Zinc	48.3	50	1250	2500
Hexavalent Chromium	Not Detected	15	15	30

Sample Identification: BASF-C-042613-36

Location: Building 11- Concrete Floor Sample- Northeast Store Room- Stained Area

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	100
Metals				
Aluminum	14,300			
Antimony	Not Detected	4	10	20
Arsenic	7.54	10	10	20
Barium	69.6	50 *	500	1000
Beryllium	1.19	0.3 *	50	100
Cadmium	0.518	1	1	2
Calcium	12,400			
Chromium	22.4	15 *	500	1000
Cobalt	15.2			
Copper	18.1			
Iron	19,000			
Lead	21.6	50	150	300
Magnesium	6,630			
Manganese	487			
Mercury	0.039	0.15	10	20
Nickel	19.3	10 *	10 *	20
Potassium	1,980			
Selenium	Not Detected	10	200	400
Silver	0.499	4	4	8
Sodium	547			
Thallium	Not Detected	4	4	8
Vanadium	29.4	15 *	300	600
Zinc	58.9	50 *	1250	2500
Hexavalent Chromium	1.22	15	15	30

Sample Identification: BASF-C-042613-37

Location: Building 11- Concrete Floor Sample- Northeast Side of Building - Heavily Stained, Black in Color

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	0.057	*	*	
2-Methylnaphthalene	0.178	*	*	
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	0.084	*	*	
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH	0.319	None *	None *	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	12,400			
Antimony	0.888	4	10	20
Arsenic	11.4	10 *	10 *	20
Barium	70.2	50 *	500	1000
Beryllium	0.863	0.3 *	50	100
Cadmium	8.43	1 *	1 *	2 *
Calcium	16,200			
Chromium	80.2	15 *	500	1000
Cobalt	13.2			
Copper	171			
Iron	45,900			
Lead	12.4	50	150	300
Magnesium	5,580			
Manganese	692			
Mercury	0.925	0.15 *	10	20
Nickel	71.5	10 *	10 *	20 *
Potassium	1,950			
Selenium	Not Detected	10	200	400
Silver	18.3	4 *	4 *	8 *
Sodium	764			
Thallium	Not Detected	4	4	8
Vanadium	30.4	15 *	300	600
Zinc	109	50 *	1250	2500
Hexavalent Chromium	Not Detected	15	15	30

Sample Identification: BASF-C-042613-38

Location: Building 11- Concrete Floor Sample- Collected Between Tank # TA-02 and Air Stripper- Stained Rust Color

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	0.021	*	*	
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH	0.021	None *	None *	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	11,900			
Antimony	2.29	4	10	20
Arsenic	7.56	10	10	20
Barium	66.3	50 *	500	1000
Beryllium	0.705	0.3 *	50	100
Cadmium	10.8	1 *	1 *	2 *
Calcium	13,500			
Chromium	81.5	15 *	500	1000
Cobalt	12.0			
Copper	177			
Iron	46,000			
Lead	7.68	50	150	300
Magnesium	4,780			
Manganese	638			
Mercury	1.12	0.15	10	20
Nickel	66.6	10 *	10 *	20 *
Potassium	2,440			
Selenium	Not Detected	10	200	400
Silver	10.8	4 *	4 *	8 *
Sodium	1,590			
Thallium	Not Detected	4	4	8
Vanadium	29.2	15 *	300	600
Zinc	64.8	50 *	1250	2500
Hexavalent Chromium	Not Detected	15	15	30

BASF Corporation
32 Taunton Street
Plainville, MA

Hazardous Material Survey
April 23, 2013 - June 11, 2013
EHI Project #: 0834-4545

Sample Identification: BASF-C-042613-39

Location: Building 11- Concrete Floor Sample- At Vault- Heavily Stained

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	15,800			
Antimony	Not Detected	4	10	20
Arsenic	8.42	10	10	20
Barium	82.7	50 *	500	1000
Beryllium	1.16	0.3 *	50	100
Cadmium	0.799	1	1	2
Calcium	14,200			
Chromium	23.6	15 *	500	1000
Cobalt	11.8			
Copper	16.1			
Iron	20,300			
Lead	10.8	50	150	300
Magnesium	7,140			
Manganese	540			
Mercury	0.063	0.15	10	20
Nickel	20.3	10 *	10 *	20 *
Potassium	2,080			
Selenium	Not Detected	10	200	400
Silver	0.727	4	4	8
Sodium	400			
Thallium	Not Detected	4	4	8
Vanadium	32.5	15 *	300	600
Zinc	60.4	50 *	1250	2500
Hexavalent Chromium	1.94	15	15	30

Sample Identification: BASF-C-042613-40

Location: Building 11- Concrete Floor Sample- At Southeast Loading Dock

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
Semivolatiles - PAH				
Naphthalene	Not Detected			
2-Methylnaphthalene	Not Detected			
Acenaphthylene	Not Detected			
Acenaphthene	Not Detected			
Fluorene	Not Detected			
Phenanthrene	Not Detected			
Anthracene	Not Detected			
Fluoranthene	Not Detected			
Pyrene	Not Detected			
Benzo[a]anthracene	Not Detected			
Chrysene	Not Detected			
Benzo[b]fluoranthene	Not Detected			
Benzo[k]fluoranthene	Not Detected			
Benzo[a]pyrene	Not Detected			
Indeno[1,2,3-cd]pyrene	Not Detected			
Dibenz[a,h]anthracene	Not Detected			
Benzo[g,h,i]perylene	Not Detected			
TOTAL PAH		None	None	100
PCB's				
Aroclor-1016	Not Detected			
Aroclor-1221	Not Detected			
Aroclor-1232	Not Detected			
Aroclor-1242	Not Detected			
Aroclor-1248	Not Detected			
Aroclor-1254	Not Detected			
Aroclor-1260	Not Detected			

Parameter	Concentration mg/kg	C1 - Criteria 1	C2 - Criteria 2	C3 - Criteria 3
PCB's				
Aroclor-1262	Not Detected			
Aroclor-1268	Not Detected			
Total PCB's		None	None	2
Metals				
Aluminum	15,100			
Antimony	Not Detected	4	10	20
Arsenic	6.14	10	10	20
Barium	74.2	50 *	500	1000
Beryllium	1.04	0.3 *	50	100
Cadmium	1.11	1 *	1 *	2
Calcium	13,800			
Chromium	23.0	15	500	1000
Cobalt	10.9			
Copper	18.7			
Iron	19,900			
Lead	8.80	50	150	300
Magnesium	7,170			
Manganese	532			
Mercury	0.069	0.15	10	20
Nickel	20.2	10 *	10 *	20 *
Potassium	1,970			
Selenium	Not Detected	10	200	400
Silver	0.908	4	4	8
Sodium	478			
Thallium	Not Detected	4	4	8
Vanadium	32.7	15 *	300	600
Zinc	60.7	50 *	1250	2500
Hexavalent Chromium	1.37	15	15	30

* Indicates Exceedance

Brick and concrete rubble such as rubble generated by the demolition of buildings must be handled in accordance with Massachusetts Solid Waste Regulations.

The regulation allows and Massachusetts DEP encourages the recycling of the rubble. The material cannot be painted or otherwise coated.

The C-1, C-2 and C-3 designations were provided to EHI by Massachusetts DEP. They were presented as guidance for the reuse of masonry that has been painted or otherwise coated. The values identified are proposed values and do not represent the Department's final decision on the reuse issue, but these values have been used to make some past department decisions for reuse of coated concrete and brick.

6.0 Hazardous Waste Characterization

6.1 Outdoor Clarifier/Settling Tank

The outdoor clarifier/settling tank located to the west of Building 10 contained less than six inches of sediment and approximately one foot of clear liquid. A sample of the mixture was collected using a sludge judge. The samples were submitted for hazardous waste characterization. Following is a summary of the results.

PARAMETER (Units)	Conc
TCLP Volatiles (Units)	(mg/L-ppm)
Vinyl chloride	ND
1,1 Dichloroethene	ND
2-Butanone (MEK)	ND
Chloroform	ND
Carbon tetrachloride	ND
1,2 Dichloroethane (EDC)	ND
Benzene	ND
Trichloroethene	ND
Tetrachloroethene	ND
Chlorobenzene	ND
1,4 Dichlorobenzene	ND

TCLP Semivolatiles (Units)	(mg/L-ppm)
Pyridine	ND
1,4-Dichlorobenzene	ND
2-Methylphenol	ND
4-Methylphenol	ND
3-Methylphenol	ND
Hexachloroethane	ND
Nitrobenzene	ND
Hexachlorobutadiene	ND
2,4,6-Trichlorophenol	ND
2,4,5-Trichlorophenol	ND
2,4-Dinitrotoluene	ND
Hexachlorobenzene	ND
Pentachlorophenol	ND
PCB's (Units)	(ug/L-ppb)
Aroclor-1016	ND
Aroclor-1221	ND
Aroclor-1232	ND
Aroclor-1242	ND
Aroclor-1248	ND
Aroclor-1254	ND
Aroclor-1260	ND
PCB _s	ND
TCLP Pesticides (Units)	(mg/L-ppm)
gamma-BHC (Lindane)	ND
Heptachlor	ND
Heptachlor epoxide	ND
Endrin	ND
Methoxychlor	ND
Chlordane	ND
Toxaphene	ND
PARAMETER (Units)	Case
TCLP Herbicides (Units)	(mg/L-ppm)
2,4-D	ND
2,4,5-TP (Silvex)	ND
Hydrocarbons (Units)	(ug/L-ppb)
TPH-DRO	488
Hydrocarbons (Units)	(ug/L-ppb)
TPH-GRO	ND

TCLP Metals (Units)	(mg/L-ppm)
TCLP Arsenic	ND
TCLP Barium	ND
TCLP Cadmium	ND
TCLP Chromium	ND
TCLP Lead	ND
TCLP Mercury	ND
TCLP Selenium	ND
TCLP Silver	0.144
General Analytical (Units)	
pH/Corrosivity(SU)	7.05
Total Solids(ug/L)	260000
Sulfide, Reactive(ug/L)	ND
Cyanide, Reactive(ug/L)	ND
Flash Point(°C)	No Flash @100C

ND = Not Detected

6.2 Filled In Pit - Building 8

A pit located near the former cleaning and electroplating area of Building 8 (approximately Column Line 15) was filled with remnants of a sandblasting operation. It was reported that the paint that was removed contained lead. A sample was collected and submitted for hazardous waste characterization. Following is a summary of the results:

PARAMETER(Units)	Conc
TCLP Volatiles (Units)	(mg/L-ppm)
Vinyl chloride	ND
1,1-Dichloroethene	ND
2-Butanone (MEK)	ND
Chloroform	ND
Carbon tetrachloride	ND
1,2-Dichloroethane (EDC)	ND
Benzene	ND
Trichloroethene	ND
Tetrachloroethene	ND
Chlorobenzene	ND
1,4-Dichlorobenzene	ND

TCLP Semivolatiles (Units)	(mg/L-ppm)
Pyridine	ND
1,4-Dichlorobenzene	ND
2-Methylphenol	ND
4-Methylphenol	ND
3-Methylphenol	ND
Hexachloroethane	ND
Nitrobenzene	ND
Hexachlorobutadiene	ND
2,4,6-Trichlorophenol	ND
2,4,5-Trichlorophenol	ND
2,4-Dinitrotoluene	ND
Hexachlorobenzene	ND
Pentachlorophenol	ND
PCB's (Units)	(mg/Kg-ppm)
Aroclor-1016	ND
Aroclor-1221	ND
Aroclor-1232	ND
Aroclor-1242	ND
Aroclor-1248	1-10
Aroclor-1254	ND
Aroclor-1260	ND
PCB _s	1-10
TCLP Pesticides (Units)	(mg/L-ppm)
gamma-BHC (Lindane)	ND
Heptachlor	ND
Heptachlor epoxide	ND
Endrin	ND
Methoxychlor	ND
Chlordane	ND
Toxaphene	ND
PARAMETER (Units)	Case
TCLP Herbicides (Units)	(mg/L-ppm)
2,4-D	ND
2,4,5-TP (Silvex)	ND
Hydrocarbons (Units)	(mg/Kg-ppm)
TPH-DRO	394
Hydrocarbons (Units)	(mg/Kg-ppm)
TPH-GRO	142

TCLP Metals (Units)	(mg/L-ppm)
TCLP Arsenic	ND
TCLP Barium	ND
TCLP Cadmium	0.773
TCLP Chromium	ND
TCLP Lead	0.069
TCLP Mercury	ND
TCLP Selenium	ND
TCLP Silver	ND
General Analytical (Units)	
pH/Corrosivity(SU)	6.93
Sulfide, Reactive(mg/Kg-ppm)	ND
Cyanide, Reactive(mg/Kg-ppm)	ND
Ignitability(Yes/No)	NO
Percent Solids(%)	99.5

ND = Not Detected

6.3 Discharge Area - Building 10

There is a grated discharge pit on the south end of Building 10. There is a buildup of dry sludge at the base of the pit. A sample of this material was collected and analyzed for hazardous waste characterization. The following is a summary of the results.

PARAMETER(Units)	Conc
TCLP Volatiles (Units)	(mg/L-ppm)
Vinyl chloride	ND
1,1 Dichloroethene	ND
2-Butanone (MEK)	ND
Chloroform	ND
Carbon tetrachloride	ND
1,2 Dichloroethane (EDC)	ND
Benzene	ND
Trichloroethene	ND
Tetrachloroethene	ND
Chlorobenzene	ND
1,4 Dichlorobenzene	ND

TCLP Semivolatiles (Units)	(mg/L-ppm)
Pyridine	ND
1,4-Dichlorobenzene	ND
2-Methylphenol	ND
4-Methylphenol	ND
3-Methylphenol	ND
Hexachloroethane	ND
Nitrobenzene	ND
Hexachlorobutadiene	ND
2,4,6-Trichlorophenol	ND
2,4,5-Trichlorophenol	ND
2,4-Dinitrotoluene	ND
Hexachlorobenzene	ND
Pentachlorophenol	ND
PCB's (Units)	(mg/Kg-ppm)
Aroclor-1016	ND
Aroclor-1221	ND
Aroclor-1232	ND
Aroclor-1242	ND
Aroclor-1248	0.649
Aroclor-1254	ND
Aroclor-1260	ND
PCBs	0.649
TCLP Pesticides (Units)	(mg/L-ppm)
gamma-BHC (Lindane)	ND
Heptachlor	ND
Heptachlor epoxide	ND
Endrin	ND
Methoxychlor	ND
Chlordane	ND
Toxaphene	ND

ND = Analyzed for but Not Detected at the MDL

PARAMETER(Units)	Conc
TCLP Herbicides (Units)	(mg/L-ppm)
2,4-D	ND
2,4,5 TP (Silvex)	ND
Hydrocarbons (Units)	(mg/Kg-ppm)
TPH DRO	2780
Hydrocarbons (Units)	(mg/Kg-ppm)
TPH GRO	ND

TCLP Metals (Units)	(mg/L-ppm)
TCLP Arsenic	ND
TCLP Barium	ND
TCLP Cadmium	39.6
TCLP Chromium	ND
TCLP Lead	ND
TCLP Mercury	0.000778
TCLP Selenium	ND
TCLP Silver	0.092
General Analytical (Units)	
pH/Corrosivity(SU)	7.46
Sulfide, Reactive(mg/Kg ppm)	ND
Cyanide, Reactive(mg/Kg ppm)	ND
Ignitability(Yes/No)	NO
Percent Solids(%)	68

ND = Not Detected

6.4 Discussion

The liquid/sediment collected from the Outdoor Clarifier/Settling Tank is not a hazardous waste.

The material used to fill the pit in Building 8 does not exhibit the characteristics of a hazardous waste.

The dry sludge from the Building 10 Settling/Discharge Pit exceeds the TCLP limit of 1 mg/L and therefore must be treated as a hazardous waste.

7.0 Hazardous Materials/Universal Wastes

The interior of each building was inspected for the presence of hazardous materials and universal wastes. As part of this inspection process EHI identified building materials considered universal wastes as well as stored materials requiring special disposal.

7.1 Building 8 - Office Areas - First Floor

The following universal wastes and/or hazardous materials were identified:

664 Fluorescent Light Bulbs

332 Light Fixture Ballasts (could not verify if PCB free)

6 Thermostats Containing Mercury

1 Refrigerator

Miscellaneous E-Waste

Miscellaneous Household Cleaning Products

7.2 Building 8 - Office Areas - Second Floor

424 Fluorescent Light Bulbs

* Ballasts Do Not Contain PCB's

3 Transformers

Miscellaneous E-Waste

6 Thermostats Containing Mercury

7.3 Corridor Between Offices & Warehouse

6 U Type Fluorescent Light Fixtures

(12 Fluorescent Bus, 6 Ballasts)

10 Single Bulb Light Fixtures

(10 Bulbs, 10 Ballasts)

7.4 Building 8 - Warehouse

The warehouse is broken into individual grids as shown on the map in Appendix One.

<u>Quadrant</u>	<u>Waste Item</u>
K-1	18 Fluorescent Bulbs 12 Ballasts
K-2	9 Fluorescent Bulbs 12 Ballasts
K-3	4 Fluorescent Bulbs 4 Ballasts

K-4	3 Fluorescent Bulbs 2 Ballasts
K-5	6 Florescent Bulbs 6 Ballasts
J-1	3 Fluorescent Bulbs 3 Ballasts
J-2	8 Fluorescent Bulbs 8 Ballasts
J-3	5 Bulbs 5 Ballasts
J-4	14 Fluorescent Bulbs 7 Ballasts 3 Transformers
J-5	2 One Gallon Paint Thinner Miscellaneous Paints
I-1	17 Florescent Bulbs 12 Ballasts
I-2	6 Fluorescent Bulbs 6 Ballasts
I-3	5 Fluorescent Bulbs 6 Ballasts
I-4 Lunch Room	Air Conditioner Refrigerator Microwave Oven
I-4 Office	Air Conditioner
I-4 Lab	Air Conditioner
I-5 Hazardous Materials Storage	5 Gallon Bucket Sulfuric Acid 5 Gallon Bucket Boric Acid Empty Container Potassium Cyanide 5 Gallon Liquid Nickel Chloride 5 Gallon Nickel Additive Bleach

H-1	12 Fluorescent Bulbs 12 Ballasts
H-2	12 Fluorescent Bulbs 12 Ballasts
H-3	4 Fluorescent Bulbs 4 Ballasts
H-4	9 Fluorescent Bulbs 9 Ballasts
H-5	9 Fluorescent Bulbs 9 Ballasts
G-1	3 Fluorescent Bulbs 3 Ballasts
G-2	12 Fluorescent Bulbs 12 Ballasts
G-3	7 Fluorescent Bulbs 7 Ballasts
G-4	9 Fluorescent Bulbs 9 Ballasts
G-5	9 Fluorescent Bulbs 9 Ballasts
F-1	2 Fluorescent Bulbs 2 Ballasts
F-2	9 Fluorescent Bulbs 9 Ballasts
F-3	7 Fluorescent Bulbs 7 Ballasts
F-4	6 Fluorescent Bulbs 6 Ballasts
F-5	8 Fluorescent Bulbs 8 Bulbs
E-1	13 Fluorescent Bulbs 10 Ballasts

E-2	9 Fluorescent Bulbs 9 Ballasts
E-3	7 Fluorescent Bulbs 7 Ballasts
E-4	6 Fluorescent Bulbs 6 Ballasts
E-5	8 Fluorescent Bulbs 8 Ballasts
D-1	12 Fluorescent Bulbs 12 Ballasts (15 Empty 55 Gallon Metal Drums Marked PSA Drilling Water) Lindberg Hevi Duty Oven (Has Transite) 2 Gas Cylinders Halon
D-2	4 Fluorescent Bulbs 4 Ballasts Miscellaneous House Paint Fiber Drum with Unknown Filler Material
D-3	8 Fluorescent Bulbs 8 Ballasts
D-4	6 Fluorescent Bulbs 6 Ballasts
D-5	6 Fluorescent Bulbs 6 Ballasts Miscellaneous Electrical Components
C-1	Halogen Lamps 30 Fire Extinguisher 5 Compressors Generator 5 Lead Batteries 3 Air Conditioners Miscellaneous Electrical Switches 1 Refrigerator Miscellaneous Equipment
C-2	8 Fluorescent Bulbs 8 Ballasts

C-3	7 Fluorescent Bulbs 7 Ballasts
C-4	8 Fluorescent Bulbs 8 Ballasts
C-5	6 Fluorescent Bulbs 3 Ballasts Thermostat Unlabelled Transformer
B-1	Halogen Lights
B-2	6 Fluorescent Bulbs 6 Ballasts
B-3	7 Fluorescent Bulbs 7 Ballasts
B-4	6 Fluorescent Bulbs 6 Ballasts
B-5	80 Fluorescent Bulbs 20 Ballasts
A-1	2 Fluorescent Bulbs 2 Ballasts Empty 55 Gallon Drums
A-2	5 Fluorescent Bulbs 5 Ballasts 55 Gallon Drums Filled with Refuse
A-3	8 Fluorescent Bulbs 8 Ballasts Air Conditioner Transformer 3 Five Gallon Paint Primer Gas Lawn Mower
A-4	9 Fluorescent Bulbs 9 Ballasts

4 Fluorescent Bulbs
4 Ballasts
13 Gas Tanks Marked Acetylene, Oxygen,
Nitrous Oxide, Methane/Argon and
Compressed Air

There are 36 Mercury Vapor Labors found scattered throughout the warehouse.

7.5 Building 10

7.5.1 Building 10 Tanks

Each of the tanks in Building 10 were inspected to determine contents:

1. Waste Water Soil Oil—approximately one inch of oily residue exists on bottom of the tank.
2. Cyanide Storage—approximately one inch of dry cake sediment on bottom of the tank.
3. Chromium Storage—approximately one inch dry cake sediment on bottom of tank.
4. Caustic/Sodium Hydroxide—tank is clean.
5. Sulfuric Acid—tank is clean.
6. Cyanide Treatment—less than one inch residue on bottom.
7. Chromium Treatment—bluish film on bottom of tank.
8. Sludge Setting Tank—approximately one inch of dry caked sediment on the bottom of the tank.
9. Clarifier—less than one inch of dry caked sediment on bottom of tank.

7.5.2 Building 10 - South Wall to Control Room

1. Transformer.
2. One Blue 55 Gallon Drum Labeled Hazardous Waste—Sodium Hydroxide.
3. One 55 Gallon Drum Marked PPE, Absorbent Pads, Sodium Hydroxide.
4. 10 Gallon Metal Drum With Only Sludge at Bottom (< 1 inch).
5. 3 Pallets of Old Light Fixtures Bulb and Ballasts Intact.
6. One Orange Metal Container Marked Sodium Hydroxide/Caustic Soda (one inch on

bottom).

7. ~~One Empty Orange Container Marked Sodium Carbonate.~~
8. ~~One Red 55 Gallon Container of Waste Oil Approximately 10 % Full.~~

7.5.3 Lab/Control Room

1. ~~55 Gallon Drum Nick Sulfamate.~~
2. ~~One Gallon Ammonium Hydroxide.~~
3. ~~One Gallon EDTA Disodium Salt.~~
4. ~~One Gallon Jar Sodium Sulfide.~~
5. ~~One Liter Silver Nitrate.~~
6. ~~Container of 7440-22-4.~~
7. ~~One Gallon Sodium Hydroxide.~~
8. ~~One Gallon Ethanol~~
9. ~~One Gallon Container Ethyl Ether~~
10. ~~One Small Plastic Container Marked Poly Sulfide.~~
11. ~~500 Grams Mannitol~~
12. ~~3 Kg Sodium Sulfite~~
13. ~~500 Grams Precipitated Sulfur~~
14. ~~3 Liters of Hydrochloric Acid~~
15. ~~One Gallon Container Unknown Liquid.~~
16. ~~4 Liters of Anhydrous Ethyl Ether.~~
17. ~~4 Liters of Ethyl Alcohol.~~
18. ~~2 Kg Sodium Chloride Crystals~~
19. ~~2 Kg Sodium Sulfide~~
20. ~~Two 2.5 Liter Nitric Acid.~~

~~21. Various Buffers/PH Reagents.~~

~~22. Various Small Quantities of Samples and Spent Reagents.~~

7.5.4 North of Control Room

1. Scott Air Pack Compressed Air Tank.

Ramboll Environ notes that 1 of the 2 compressed air tanks were observed on 6/18/15 to remain onsite.

~~2. 1 Chlorine Treatment Unit with Gas Tank Attached.~~

~~3. 2 Tanks Quik Freeze~~

~~4. One 55 Gallon Drum Aquametm Sodium Dimethyldithiocarbamate.~~

~~5. Various Empty Drums Formerly Containing Sulfuric Acid and Sodium Hydroxide.~~

~~6. One Partially Full Sulfuric Acid 55 Gallon Drum Marked "1"~~

~~7. Miscellaneous House Paint.~~

~~8. One Gallon Antifreeze.~~

~~9. 12 Mercury Vapor Lamps~~

~~10. 20 Fluorescent Light Fixtures (40 Fluorescent Bulbs & Ballasts).~~

7.6 Building 11

1. 15 Mercury Vapor Lamps.

2. 150 Fluorescent Bulbs.

3. 150 Ballasts.

4. 1 Propane Gas Cylinder.

5. Household Cleaning Products.

6. Empty Drum Marked Aluminum Sulfate with Residue on Drum.

7. One 55 Gallon Drum Marked Non Hazardous Filter Press Solid.

8. Stored Used and New Florescent Bulbs.

9. 2 Car Batteries.

10. 3 Water Conditioning Tanks

BASF Corporation
32 Taunton Street
Plainville, MA

Hazardous Material Survey
April 23, 2013 - June 11, 2013
EHI Project #: 0834-4545

11. Air Conditioners.
12. Transformers.
13. Miscellaneous Paints/Caulk.
14. Fourteen 55 Gallon Drums Caustic Soda

8.0 Radiation

A walkthrough of the property was conducted on April 26, 2013. An SE International 4EC handheld Radiation Detector was utilized. The 4EC detector is a general purpose survey meter capable of detecting alpha, beta, gamma and x-rays.

No measurement over background was observed.

**BASF Corporation
32 Taunton Street
Plainville, MA**

**Hazardous Material Survey
April 23, 2013 - June 11, 2013
EHI Project #: 0834-4545**

A P P E N D I X

One

Asbestos Containing Material Locations

Asbestos Sampling Locations

Lead Sample Locations

Concrete Sample Locations



- LEGEND**
-  - 1'x1' CARMEL FLOOR TILE **Removed**
 -  - 1'x1' BLUE FLOOR TILE **Removed**
 -  - LAB BENCH TOP & TRANSITE FUME HOOD LINER **Removed**
 -  - TRANSITE OVER PANELS **Removed**
 -  - 1'x1' TAN FLOOR TILE AND ASSOCIATED ADHESIVE **Removed**
 -  - FLOOR TILE **Removed**
 -  - WINDOW GLAZING

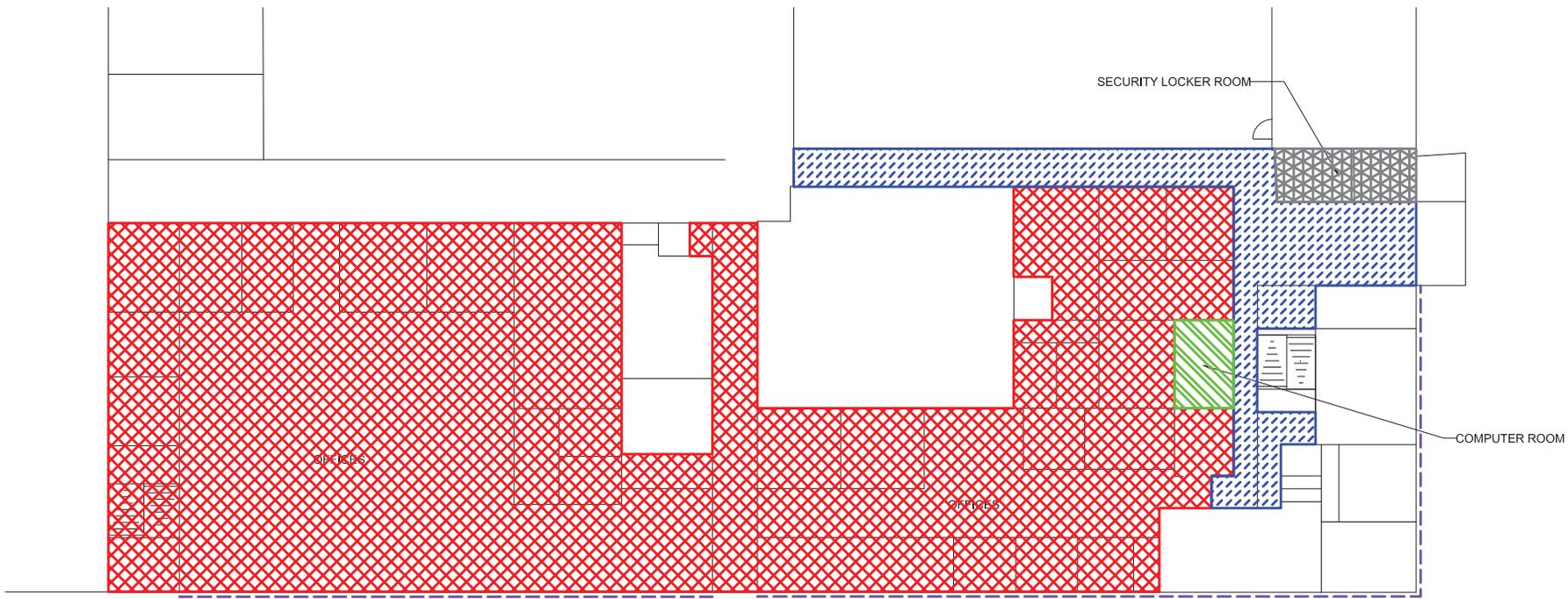
DRAWING:
 ASBESTOS CONTAINING
 MATERIAL LOCATIONS
 FIRST FLOOR LEVEL

ADDRESS:
 BASF,
 32 TAUNTON ST.
 PLAINVILLE, MA

ENVIRONMENTAL HEALTH INVESTIGATIONS INC.
 655 WEST SHORE TRAIL
 SPARTA, NJ 07871
 PH: 973-729-5649
 P/N: 0834-4545
 DATE: 6/21/13

M-2A

REV	DATE	COMMENTS



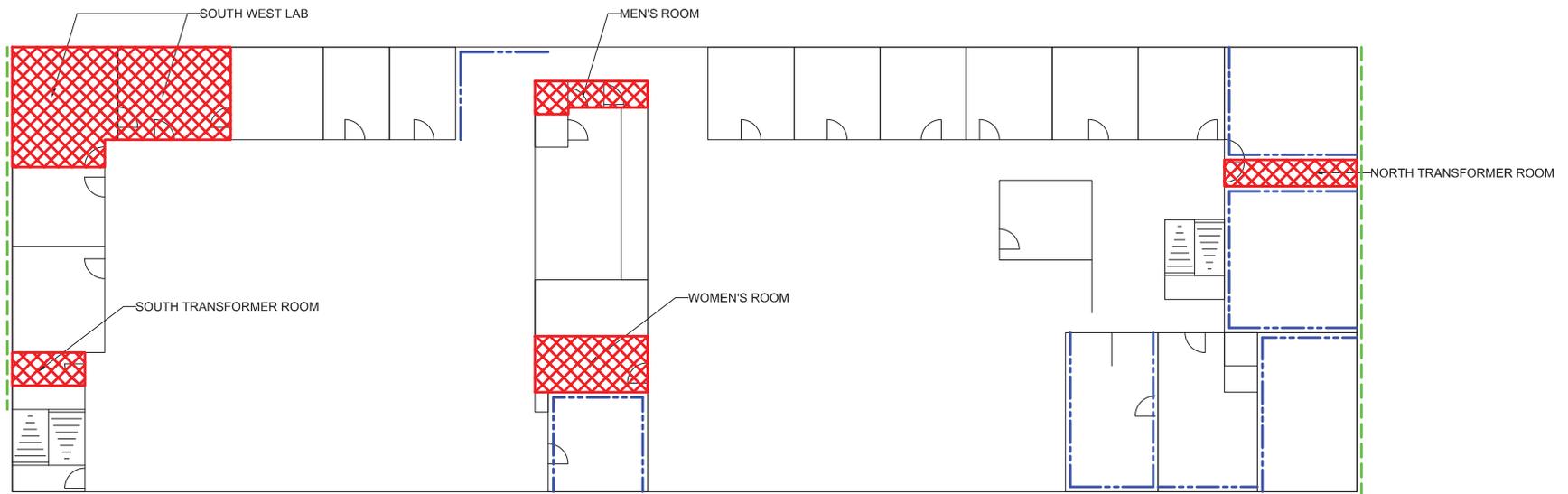
LEGEND

- Removed
- 1'x1' WHITE FLOOR TILE AND ASSOCIATED MASTIC
- Removed
- 1'x1' TERRAZO STYLE FLOOR TILE AND ASSOCIATED MASTIC
- Removed
- 1'x1' LIGHT GRAY FLOOR TILE (ONLY)
- (3) LAYERS OF FLOOR TILE & ASSOCIATED MASTIC
Removed
- - - - - WINDOW GLAZING

DRAWING: ASBESTOS CONTAINING MATERIAL LOCATIONS	ADDRESS: BASF, BUILDING 8 32 TAUNTON ST. PLAINVILLE, MA	ENVIRONMENTAL HEALTH INVESTIGATIONS INC. 655 WEST SHORE TRAIL SPARTA, NJ 07871 PH: 973-729-5649 P/N: 0834-4545
FIRST FLOOR OFFICE AREA		DATE: 6/21/13

REV	DATE	COMMENTS

M-2B



LEGEND

- 
- 1'x1' WHITE WITH BROWN FLOOR TILE AND ASSOCIATED MASTIC
Removed
- - - - -
WOOD WALL PANELING ADHESIVE
Removed
- - - - -
WINDOW GLAZING

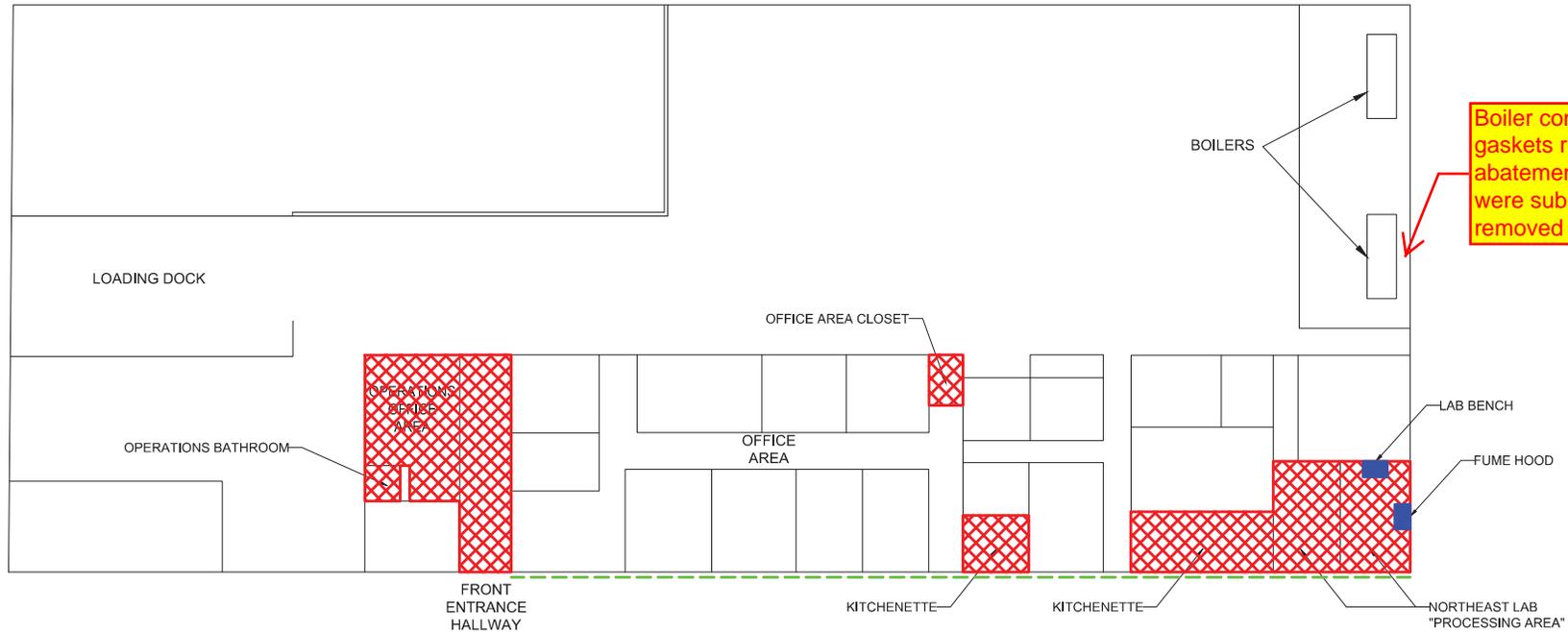
DRAWING:
 ASBESTOS CONTAINING
 MATERIAL LOCATIONS
 SECOND FLOOR OFFICE AREA

ADDRESS:
 BASF,
 BUILDING 8
 32 TAUNTON ST.
 PLAINVILLE, MA

ENVIRONMENTAL HEALTH INVESTIGATIONS INC.
 655 WEST SHORE TRAIL
 SPARTA, NJ 07871
 PH: 973-729-5649
 P/N: 0834-4545
 DATE: 6/21/13

REV	DATE	COMMENTS

M-2C



Boiler contained asbestos gaskets requiring abatement. Both boilers were subsequently removed by Viasant.

LEGEND

 - 1'x1' TAN WITH BROWN FLOOR TILE (ONLY) **Removed**

 - LAB BENCH & FUME HOOD LINING **Removed**

 - WINDOW GLAZING

DRAWING:
ASBESTOS CONTAINING
MATERIAL LOCATIONS

ADDRESS:
BASF,
BUILDING 11
32 TAUNTON ST.
PLAINVILLE, MA

ENVIRONMENTAL HEALTH INVESTIGATIONS INC.
655 WEST SHORE TRAIL
SPARTA, NJ 07871
PH: 973-729-5649
P/N: 0834-4545

DATE: 6/21/13

M-2D

REV	DATE	COMMENTS



EQUALIZATION TANK

BASF-B10-042413-8

BASF-B10-042413-8A

BASF-B10-042413-4

BASF-B10-042413-7A

BASF-B10-042413-3

FORMER BUILDING 4

BASF-B10-042413-4A

BASF-B10-042413-4B

BUILDING 10

FORMER BUILDING 7

BASF-B8-042413-25

BASF-B8-042413-24

FORMER BUILDING 6

BASF-B10-042413-5

BASF-B10-042413-6

BASF-B10-042413-7

BASF-B8-042413-26

BASF-B8-042413-35

BASF-B5-042513-1

BASF-B8-042413-23

BASF-B8-042413-36B

BASF-B8-042413-32A

FORMER BUILDING 12

FORMER BUILDING 9

FORMER BUILDING 5

BASF-B8-042413-22

BASF-B8-042413-34

BASF-B8-042413-33

BASF-B8-042413-20

BASF-B8-042413-19

BASF-B8-042413-18A

BASF-B8-042413-36

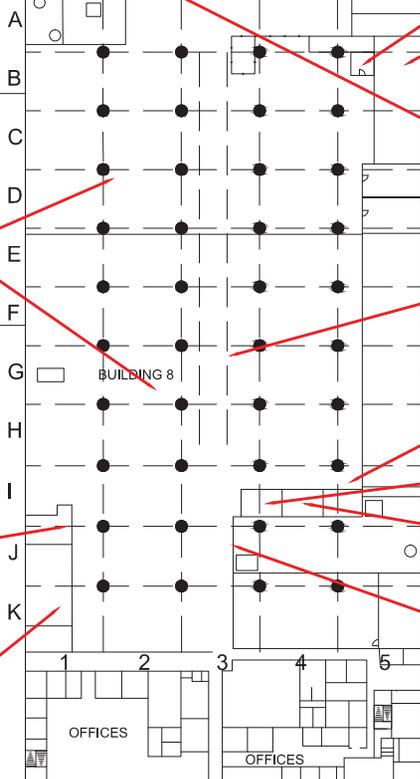
BASF-B8-042413-36A

FORMER BUILDING 3

FORMER BUILDING 2

FORMER BUILDING 1

BASF-B2-042513-1



LEGEND

BASF-BX-XXXXXX-XX

- INDICATES ASBESTOS SAMPLE LOCATIONS (SAMPLES 1-2A, 9 & 9A, WERE TAKEN FROM THE BUILDING 10 ROOF) (SAMPLES 27-31 WERE TAKEN FROM THE BUILDING 8 ROOF)

DRAWING:
ASBESTOS SAMPLE LOCATIONS

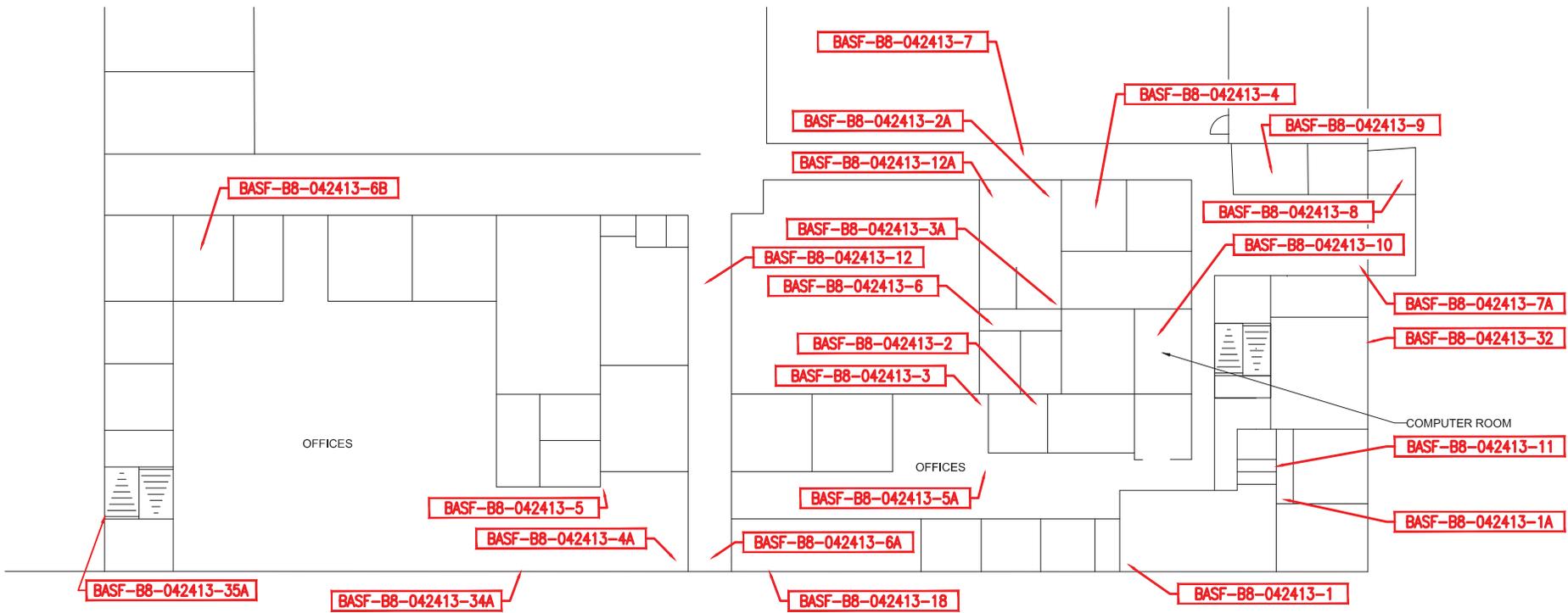
ADDRESS:
BASF,
32 TAUNTON ST.
PLAINVILLE, MA

ENVIRONMENTAL HEALTH INVESTIGATIONS INC.
655 WEST SHORE TRAIL
SPARTA, NJ 07871
PH: 973-729-5649
P/N: 0834-4545

REV	DATE	COMMENTS

DATE: 6/21/13

S-2A



LEGEND

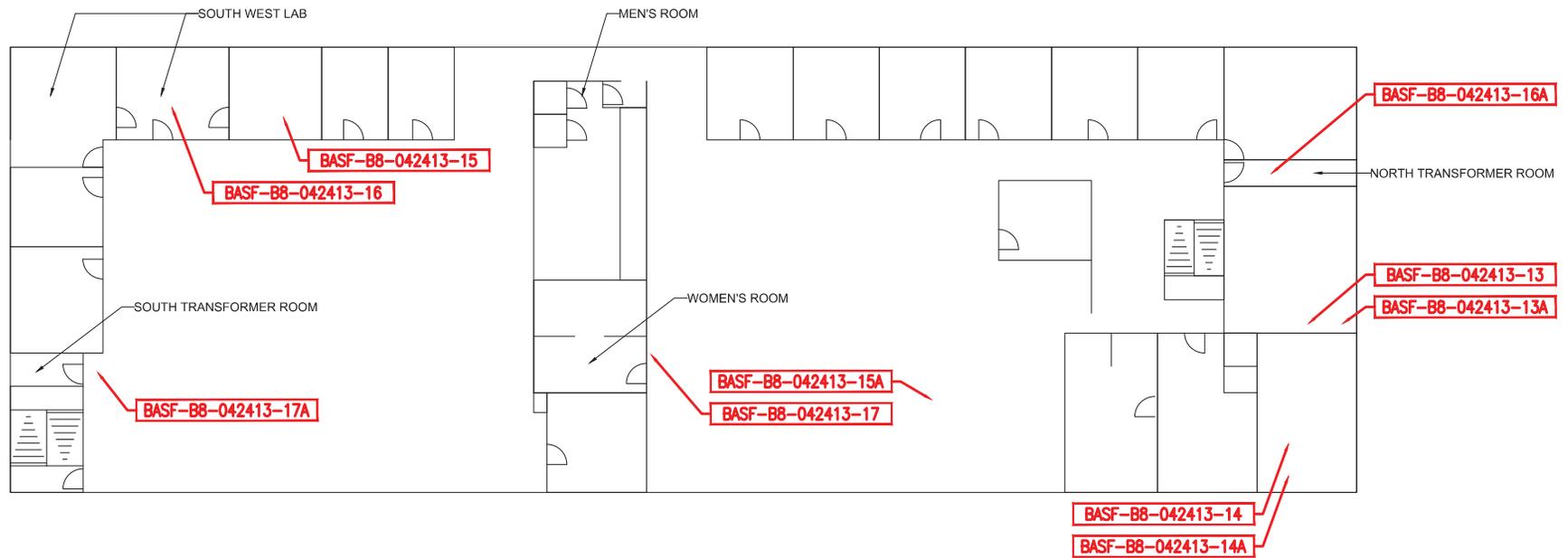
BASF-BX-XXXXXX-XX
 - INDICATES ASBESTOS SAMPLE LOCATIONS

DRAWING:
 ASBESTOS SAMPLE LOCATIONS
 FIRST FLOOR OFFICE AREA

ADDRESS:
 BASF,
 BUILDING 8
 32 TAUNTON ST.
 PLAINVILLE, MA

ENVIRONMENTAL HEALTH INVESTIGATIONS INC.
 655 WEST SHORE TRAIL
 SPARTA, NJ 07871
 PH: 973-729-5649
 P/N: 0834-4545
 DATE: 6/21/13

REV	DATE	COMMENTS

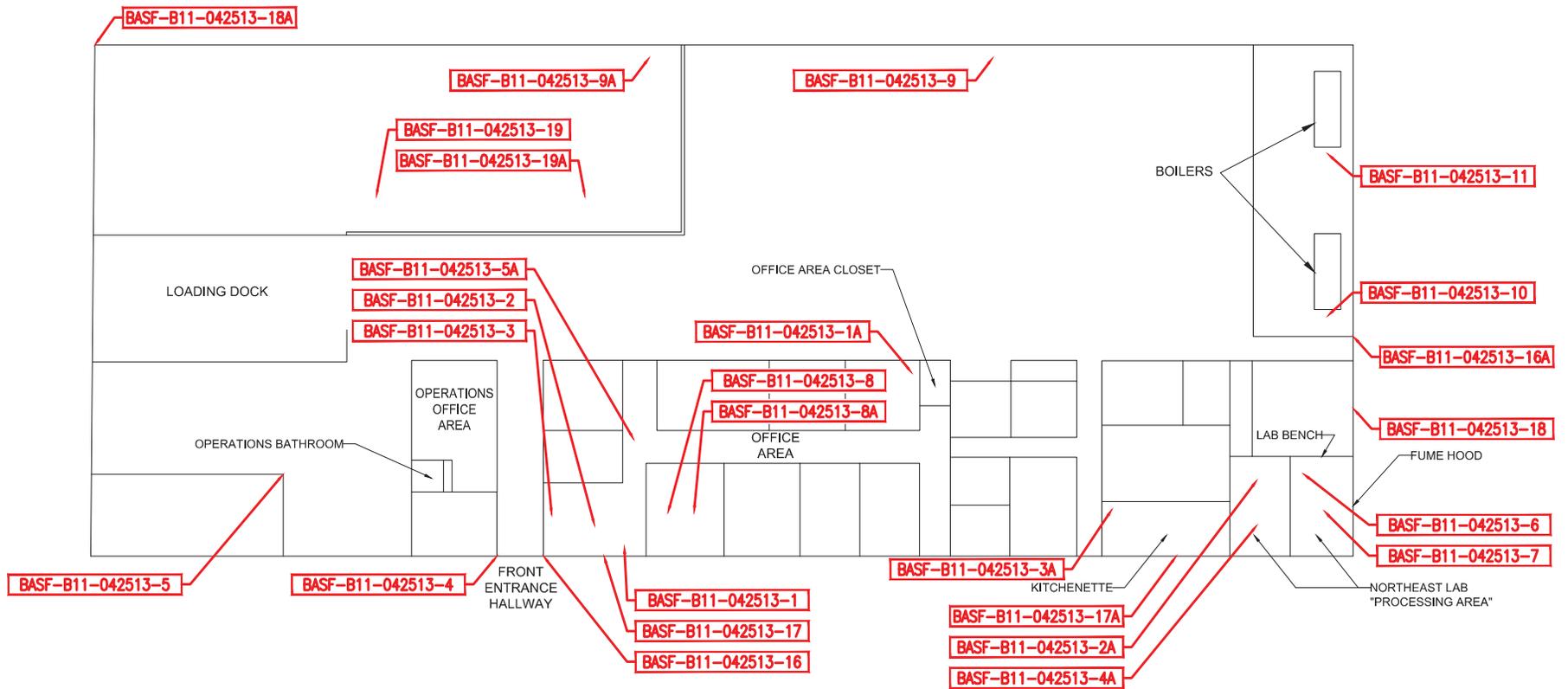


LEGEND

BASF-BX-XXXXXX-XX ———
 - INDICATES ASBESTOS SAMPLE LOCATIONS

DRAWING: ASBESTOS SAMPLE LOCATIONS		ADDRESS: BASF, BUILDING 8 32 TAUNTON ST. PLAINVILLE, MA	ENVIRONMENTAL HEALTH INVESTIGATIONS INC. 655 WEST SHORE TRAIL SPARTA, NJ 07871 PH: 973-729-5649 P/N: 0834-4545	S-2C
REV	DATE	COMMENTS	DATE: 6/21/13	

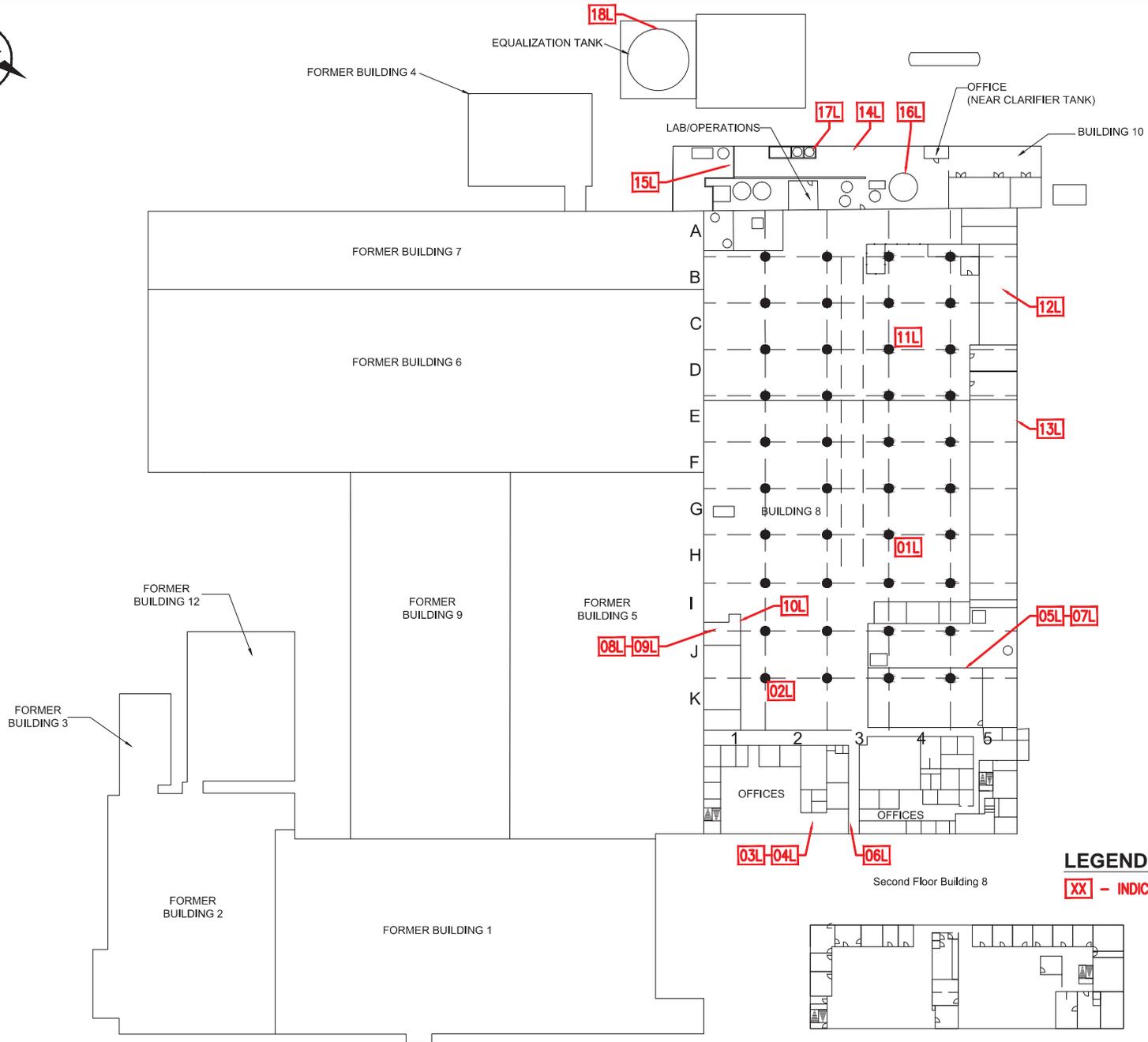
SECOND FLOOR OFFICE AREA



LEGEND

BASF-BX-XXXXXX-XX ———
 - INDICATES ASBESTOS SAMPLE LOCATIONS
 (SAMPLES 12-15 WERE TAKEN FROM THE ROOF)

DRAWING: ASBESTOS SAMPLE LOCATIONS		ADDRESS: BASF, BUILDING 11 32 TAUNTON ST. PLAINVILLE, MA	ENVIRONMENTAL HEALTH INVESTIGATIONS INC. 655 WEST SHORE TRAIL SPARTA, NJ 07871 PH: 973-729-5649 P/N: 0834-4545	S-2D
REV	DATE	COMMENTS	DATE: 6/21/13	



LEGEND
 [XX] - INDICATES LEAD PAINT SAMPLE LOCATIONS

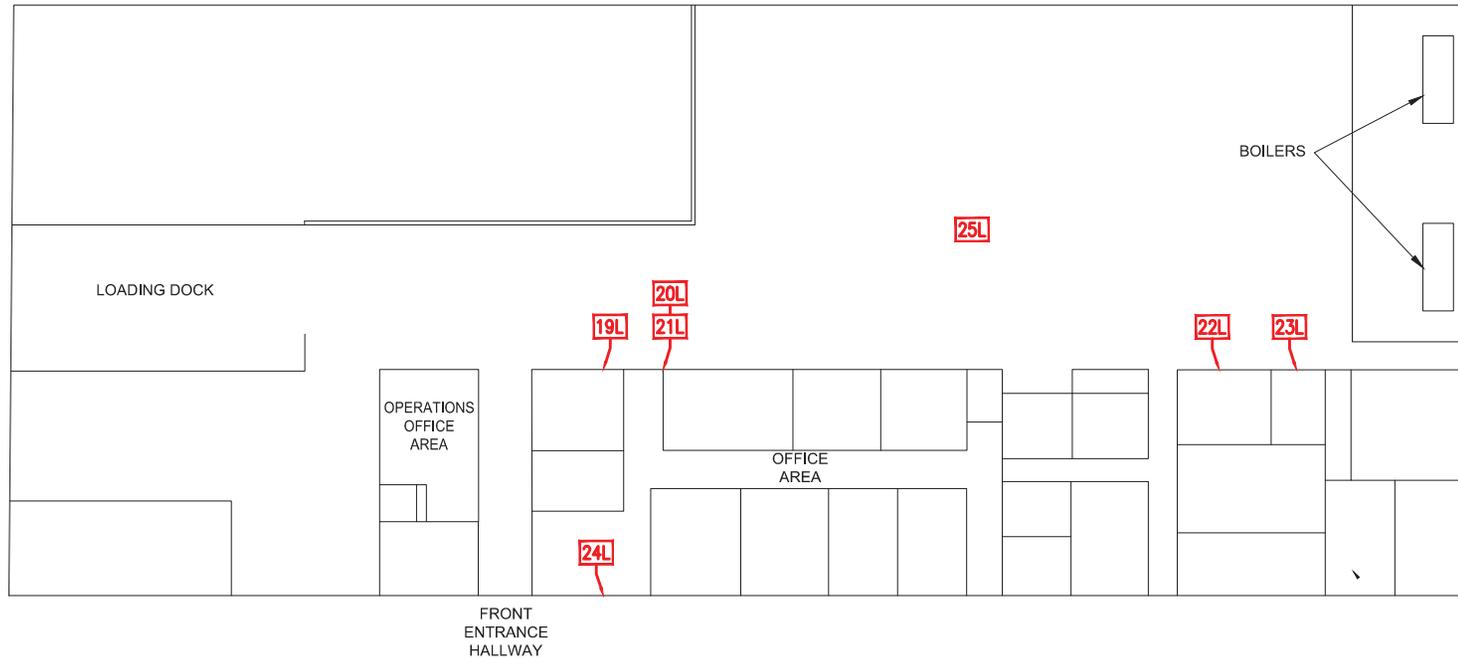
DRAWING:
 LEAD PAINT SAMPLE LOCATIONS
 FIRST FLOOR LEVEL

ADDRESS:
 BASF,
 32 TAUNTON ST.
 PLAINVILLE, MA

ENVIRONMENTAL HEALTH INVESTIGATIONS INC.
 655 WEST SHORE TRAIL
 SPARTA, NJ 07871
 PH: 973-729-5649
 P/N: 0834-4545
 DATE: 6/21/13

REV	DATE	COMMENTS

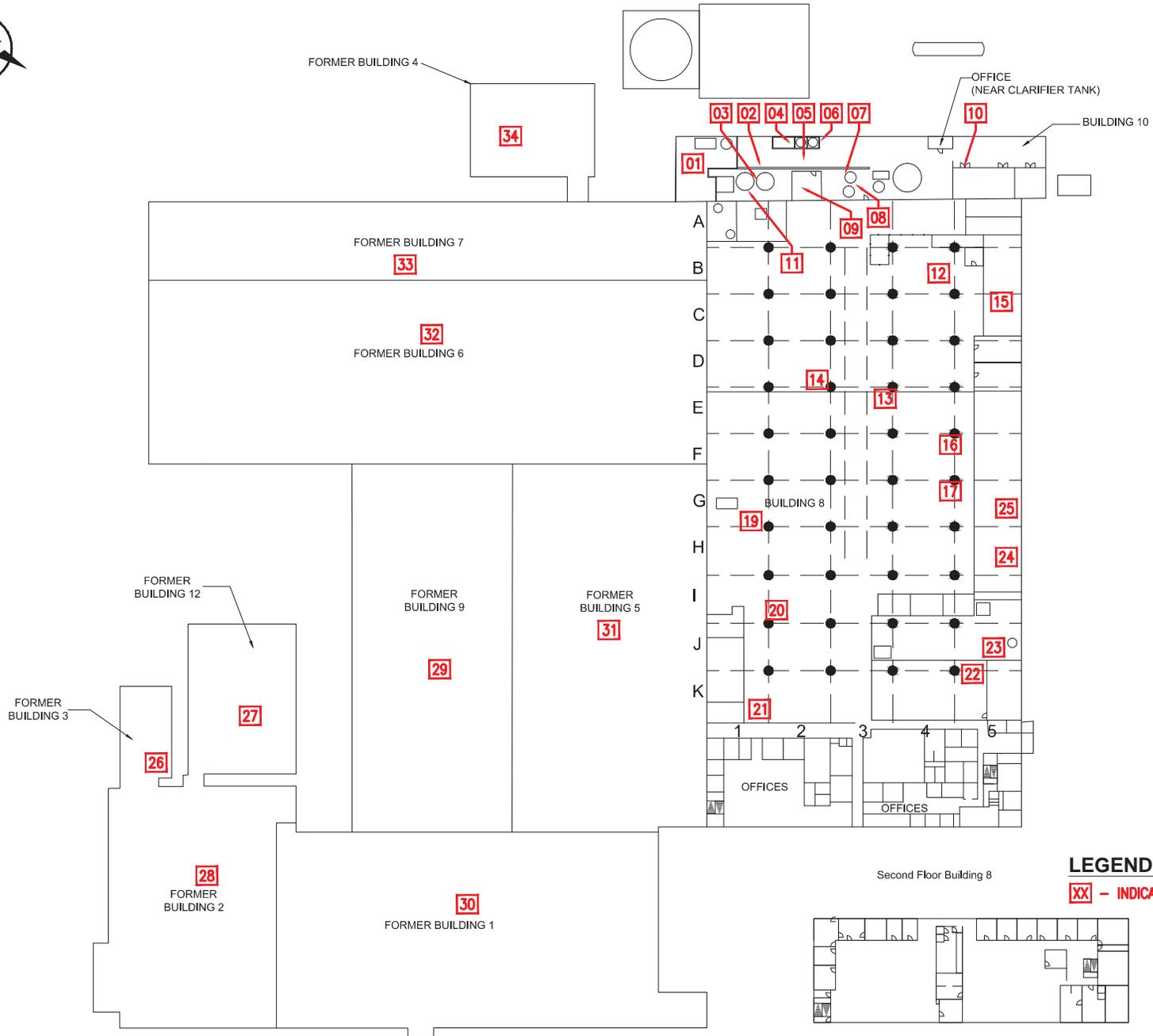
L-2A



LEGEND

[XX] - INDICATES LEAD PAINT SAMPLE LOCATIONS

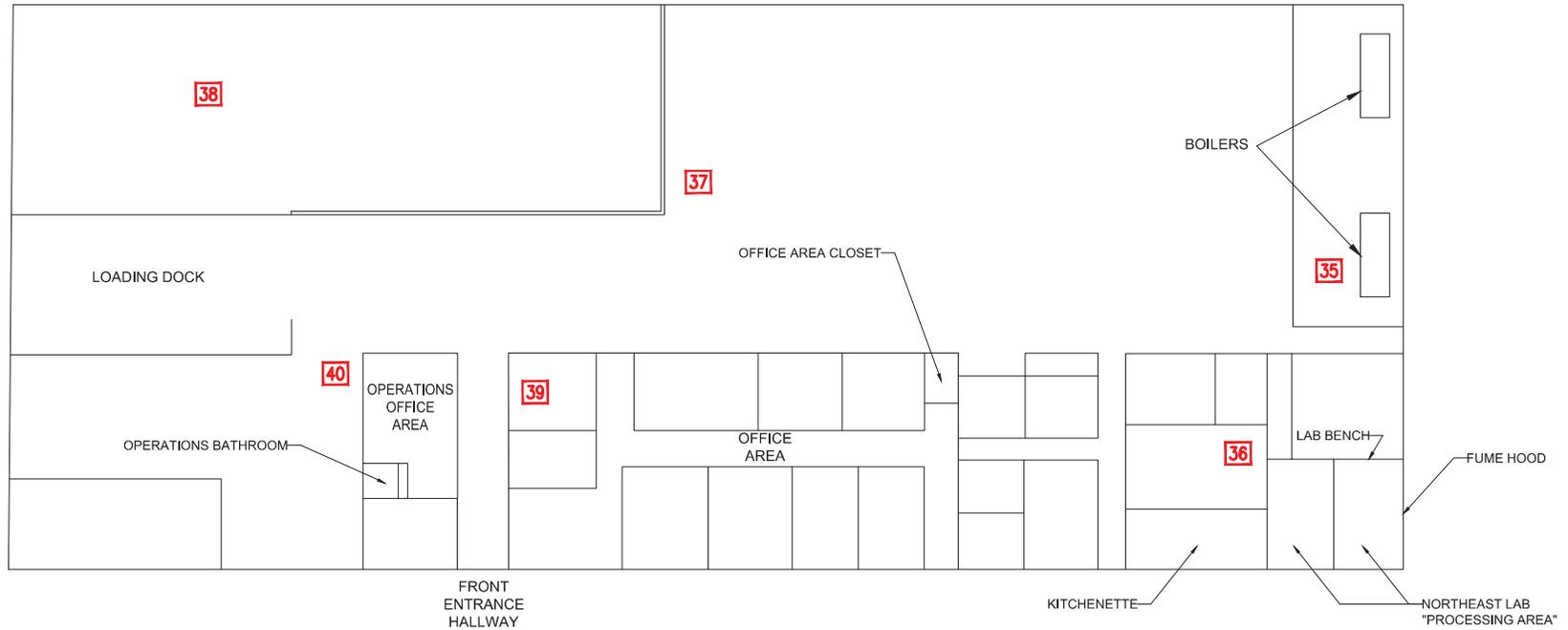
DRAWING: LEAD PAINT SAMPLE LOCATIONS		ADDRESS: BASF, BUILDING 11 32 TAUNTON ST. PLAINVILLE, MA	ENVIRONMENTAL HEALTH INVESTIGATIONS INC. 655 WEST SHORE TRAIL SPARTA, NJ 07871 PH: 973-729-5649 P/N: 0834-4545	DATE: 6/21/13	L-2D
REV	DATE	COMMENTS			



LEGEND
 [XX] - INDICATES CONCRETE SAMPLE LOCATIONS

DRAWING: CONCRETE SAMPLE LOCATIONS		ADDRESS: BASF, 32 TAUNTON ST. PLAINVILLE, MA	ENVIRONMENTAL HEALTH INVESTIGATIONS INC. 655 WEST SHORE TRAIL SPARTA, NJ 07871 PH: 973-729-5649 P/N: 0834-4545	C-2A
FIRST FLOOR LEVEL			DATE: 6/21/13	

REV	DATE	COMMENTS



LEGEND

[XX] - INDICATES CONCRETE SAMPLE LOCATIONS

DRAWING: CONCRETE SAMPLE LOCATIONS		ADDRESS: BASF, BUILDING 11 32 TAUNTON ST. PLAINVILLE, MA	ENVIRONMENTAL HEALTH INVESTIGATIONS INC. 655 WEST SHORE TRAIL SPARTA, NJ 07871 PH: 973-729-5649 P/N: 0834-4545	C-2D
REV	DATE	COMMENTS	DATE: 6/21/13	

Attachment 3: Technical Specifications

TABLE OF CONTENTS

<u>Section No.</u>	<u>Title</u>
DIVISION 1 – GENERAL REQUIREMENTS	
01 31 19.13	Preconstruction Conference
01 31 19.23	Project Progress Meetings
01 32 00	Project Schedule and Progress Reports
01 35 29.13	Health and Safety
01 41 00	Regulatory Requirements
01 42 00	References, Abbreviations and Definitions
01 52 00	Temporary Construction Facilities
01 71 13	Mobilization and Demobilization
DIVISION 2 – SITE WORK	
02 01 00	Maintenance and Protection of Existing Conditions
02 21 00	Surveying
02 31 00	Asbestos Abatement
02 41 00	Decommissioning and Demolition
02 42 00	Chain Link Fence
02 81 00	Transportation and Disposal of Waste Material
DIVISION 31 – EARTHWORK	
31 11 00	Clearing and Grubbing
31 23 23	Backfill and Compaction
31 24 00	Grading
31 25 00	Soil Erosion and Sediment Control

**SECTION 01 31 19.13
PRECONSTRUCTION CONFERENCE**

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Within 30 calendar days after the Contract Award and at least 15 calendar days prior to mobilization, a Preconstruction Conference will be held between the Contractor, the Site Owner, and the Owner's Representative. Attendance by the Contractor's superintendent, quality control personnel, safety personnel, and any major subcontractor's superintendents is required. To the maximum extent practicable, the Contractor will assign the same person or persons to represent the Contractor at project meetings throughout progress of the Work. The purpose of this conference is to review submittals, health and safety matters, environmental protection, project schedules and payment, and procurement of materials.
- B. As part of the Preconstruction Conference, quality control procedures to be used for all on-site and off-site work will be discussed, and the interrelationship of the Contractor's Management and the Owner's Representative will be defined.
- C. As part of the Preconstruction Conference, the Contractor shall meet with the Owner's Representative to discuss how work will be implemented, including, but not limited to, work procedures, safety considerations associated with those work procedures, heavy equipment to be used, training to operate equipment, and safety requirements, such as training and safety equipment.

1.02 RELATED WORK NOT INCLUDED

- A. Section 01 32 00 Project Schedule and Progress Reports
- B. Section 01 35 29.13 Health and Safety
- C. Section 01 41 00 Regulatory Requirements
- D. Section 01 52 00 Temporary Construction Facilities
- E. Section 01 71 13 Mobilization and Demobilization
- F. Section 02 01 00 Maintenance and Protection of Existing Conditions
- G. Section 02 21 00 Surveying
- H. Section 02 31 00 Asbestos Abatement
- I. Section 02 41 00 Decommissioning and Demolition
- J. Section 02 42 00 Chain Link Fence
- K. Section 02 81 00 Transportation and Disposal of Waste Material
- L. Section 31 11 00 Clearing and Grubbing

- M. Section 31 23 23 Backfill and Compaction
- N. Section 31 24 00 Grading
- O. Section 31 25 00 Soil Erosion and Sediment Control

1.03 SUBMITTALS

The Contractor shall provide the Owner's Representative three (3) copies of the following at least five (5) days prior to the preconstruction conference:

- A. Preliminary construction/critical path schedule;
- B. Traffic control plan;
- C. Schedule of values;
- D. List of subcontractors;
- E. List of material suppliers, preliminary data submittals, and submittals/shop drawings for material items identified in the construction specifications;
- F. Identification of Contractor's Personnel: Project Manager, Superintendent, other key personnel;
- G. Prevailing Wage Reports; and
- H. List of required submittals / Shop Drawings from the construction specifications.

1.04 REFERENCES

(Reserved)

1.05 DEFINITIONS

(Reserved)

PART 2 PRODUCTS

(Reserved)

PART 3 EXECUTION

3.01 GENERAL

The Contractor shall schedule and administer the Preconstruction Conference, as specified in Paragraph 1.01.

3.02 GENERAL CONFERENCE MEETING REQUIREMENTS

The Owner's Representative shall administer the following general requirements for the conference meetings:

- A. Prepare agenda for conferences.
- B. Make physical arrangements for conferences.
- C. Preside at conferences.
- D. Record the minutes including a detailed description of proceedings and decisions.

3.03 GENERAL CONFERENCE MEETING AGENDA

The following items shall be reviewed at the meeting:

- A. Lines and methods of communication between the Owner's Representative and Contractor.
- B. Contract Compliance.
- C. Coordination of Project.
 - a. Owner's Representative's inspections.
 - b. Construction Inspection Plan.
 - c. Special inspections/testing.
 - d. Working hours.
 - e. Date, time and location for weekly construction meetings.
 - f. Safety.
 - g. Traffic control.
 - h. Sound restrictions.
 - i. Verification of schedule compliance and remaining construction days.
- D. Control surveys.
- E. Contractor submittals to be provided prior to the meeting.
- F. Procedures and sample pay request forms with prevailing wage certification.
- G. Procedures and examples of Design Clarification, Field Directives, Modification Proposals (MP) and Change Orders.
- H. Procedures for submitting submittals/shop drawings and requesting substitutions.
- I. Responsibility of Contractor to maintain record documents.
- J. Emergency Telephone List.
- K. Special Items:
 - a. SDS Data.

- b. Work Limits/Security and safety-first aid procedures and confined spaces procedure.
 - c. Adjoining Work (if any) in progress.
 - d. Permits.
 - e. Staging, deliveries and contractor/employee parking.
- L. Verification of Drawings and Specifications by Contractor.
- M. Notice to Proceed date.
- N. Other.

END OF SECTION

**SECTION 01 31 19.23
PROJECT PROGRESS MEETINGS**

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This section describes the minimum requirements for conducting Project Progress Meetings during execution of the remedial action.
- B. The Owner's Representative shall schedule and administer Project Progress Meetings at a minimum frequency of one per week. Additional meetings shall be scheduled and administered when requested by either the Owner's Representative or the Contractor during any stage of the project to address any significant questions, establish new guidelines, introduce a new aspect to the project, or any other items that will affect the progress of work. A suggested meeting agenda is provided within this section.

1.02 RELATED WORK NOT INCLUDED

(Reserved)

1.03 SUBMITTALS

- A. Project Progress Meeting Minutes: The Contractor shall be responsible for recording the minutes of Project Progress Meetings and detail any significant proceedings and decisions. The Contractor shall distribute copies to each participant in the meeting.
- B. Revisions to minutes: Unless published minutes are challenged in writing prior to the next regularly scheduled progress meeting, they will be accepted as properly stating the activities and decisions of the meeting. Persons challenging published minutes shall reproduce and distribute copies of the challenge to all indicated recipients of the particular set of minutes. Challenge to minutes shall be settled as priority portion of "old business" at the next regularly scheduled meeting.

1.04 REFERENCES

(Reserved)

1.05 DEFINITIONS

(Reserved)

PART 2 PRODUCT

(Reserved)

PART 3 EXECUTION

3.01 GENERAL

- A. The Contractor shall schedule and administer Project Progress Meetings at a minimum frequency of once per week and additional meetings as required, and if requested by the Owner's Representative or the Contractor.
- B. The Contractor shall administer the following general requirements for the Progress Meetings:
 - a. Prepare agenda for meetings;
 - b. Make physical arrangements for meetings;
 - c. Preside at meetings; and
 - d. Record the minutes including a detailed description of proceedings and decisions.

3.02 AGENDA

- A. The following items shall be reviewed and discussed at each progress meeting:
 - a. Review and approve minutes of previous meeting.
 - b. Review of Health and Safety issues;
 - c. Review work completed in the prior week and compare against schedule. Identify issues, conflicts and problems that may have resulted in delays and corrective actions.
 - d. Review status, progress, and issues related to compliance with the overall construction schedule; identify construction days used and days remaining under the Contract, and any request for time extensions. Determine if schedule needs to be updated to reflect any changes. Develop and maintain a work item schedule status report.
 - e. Review status, and identify issues, conflicts and problems of pending work and proposed corrective actions.
 - f. Review new work that has started prior to the last meeting and/or will be started before the next meeting and identify any issues, concerns, or problems requiring action.
 - g. Review projected three-week schedule.

- h. Establish and maintain a submittal/shop drawing log showing status for all items identified in the specifications. Review status of long-lead time items that may require expedited review.
- i. Establish and maintain log and status of Design Clarifications, Field Directives and Change Orders. Review status of pending actions, degree of completion, and the need for processing change orders. Review pending changes and substitutions.
- j. Review status of special testing, if required, and implementation of inspection schedule.
- k. Review changes to record documents.
- l. Review status of work in progress and pending pay requests.
- m. Review other issues affecting implementation of project.

END OF SECTION

**SECTION 01 32 00
PROJECT SCHEDULE AND PROGRESS REPORTS**

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall furnish all labor, materials, equipment, and incidentals required to prepare project schedules using a critical path method (CPM) and prepare weekly progress reports for review by the Owner's Representative.

1.02 RELATED WORK NOT INCLUDED

- A. Section 01 52 00 Temporary Construction Facilities
- B. Section 01 71 13 Mobilization and Demobilization
- C. Section 02 01 00 Maintenance and protection of Existing Conditions
- D. Section 02 21 00 Surveying
- E. Section 02 31 00 Asbestos Abatement
- F. Section 02 41 00 Decommissioning and Demolition
- G. Section 02 81 00 Transportation and Disposal of Waste Material
- H. Section 31 11 00 Clearing and Grubbing
- I. Section 31 23 23 Backfill and Compaction
- J. Section 31 24 00 Grading
- K. Section 31 25 00 Soil Erosion and Sediment Control

1.03 SUBMITTALS

- A. Project Schedule: The anticipated Project Schedule shall be submitted with the Bid for approval. The final Project Schedule shall be submitted within ten (10) days after the Notice to Proceed (NTP) is provided. The schedule shall provide a reasonable sequence of activities that represent work through the entire project and shall be at a reasonable level of detail.
- B. Periodic Updates: Based on the result of weekly progress meetings, the Contractor shall submit weekly progress reports. These submissions shall enable the Owner's Representative to assess the Contractor's progress in a timely manner, and evaluate any deviations from the original schedule.

1.04 REFERENCES

(Reserved)

1.05 DEFINITIONS

(Reserved)

PART 2 PRODUCT

(Reserved)

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- A. The Contractor shall furnish all labor, materials, equipment, and incidentals required to prepare and update CPM project schedules and prepare the weekly progress reports for review by the Owner's Representative.
- B. The approved Project Schedule shall be used to: measure the progress of the work, aid in evaluating time extensions, provide the basis of all progress payments, and inform Agencies in a timely manner of any deviations from the original schedule.
- C. Dates shall be shown on the diagram for start of project, any contract required interim completion dates, and contract completion dates.

3.02 ACTIVITY DURATIONS

(Reserved)

3.03 REQUESTS FOR TIME EXTENSIONS

- A. In the event the Contractor requests an extension of the contract completion date, the Contractor shall furnish the following for a determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the contract: justification, project schedule data, and supporting evidence as requested by the Owner's Representative.
- B. The Project Schedule shall clearly display that the Contractor has used, in full, all the float time available for the work involved with this request. The Owner's Representative's determination as to the number of allowable days of contract extension shall be based upon the project schedule updates in effect for the time period in question, and other factual information. Actual delays that are found to be caused by the Contractor's own actions, which result in the extension of the schedule, shall not be a cause for a time extension to the contract completion date.
- C. The Contractor shall be responsible for any additional costs incurred due to scheduling alterations that were not approved in writing by the Owner's Representative. It should be noted that approval of a modified schedule does not mean approval of reimbursement for additional costs.

END OF SECTION

**SECTION 01 35 29.13
HEALTH AND SAFETY**

PART 1 GENERAL

1.01 DESCRIPTION

- A. The Contractor shall prepare the Contractor's Health and Safety Plan (HASP) to address all activities to be performed during the Work. The Contractor shall furnish all labor, materials, equipment, and incidentals required to implement the Contractor's Health and Safety Plan. The Contractor shall also perform dust monitoring and provide controls necessary to minimize the creation and dispersion of dust, and implement dust control measures, if deemed necessary by the Owner's Representative. At the daily job briefing and/or tailgate conference, the Contractor shall provide the Owner's Representative in attendance at the meeting all relevant information on the Work to be performed, its location, and the equipment to be used.
- B. The Contractor shall review the minimum requirements established in the site-specific HASP prepared by Ramboll Environ. The Contractor's HASP shall, at a minimum, meet the requirements of the site-specific HASP.
- C. Site soils may be contaminated above applicable standards. The contractor shall only disturb or otherwise perform intrusive activities within site soils if directed by the Owner's Representative and after the Contractor's HASP has been updated to address potential hazards associated with the proposed intrusive activities.
- D. Limited building materials containing asbestos containing material (ACM) and/or lead-based paint (LBP) are known to exist on-site, as identified in **Attachment 2** of the RFP.

1.02 RELATED WORK NOT INCLUDED

- A. Section 01 52 00 Temporary Construction Facilities
- B. Section 01 71 13 Mobilization and Demobilization
- C. Section 02 01 00 Maintenance and Protection of Existing Conditions
- D. Section 02 21 00 Surveying
- E. Section 02 31 00 Asbestos Abatement
- F. Section 02 41 00 Decommissioning and Demolition
- G. Section 02 81 00 Transportation and Disposal of Waste Material
- H. Section 31 11 00 Clearing and Grubbing
- I. Section 31 23 23 Backfill and Compaction
- J. Section 31 24 00 Grading

K. Section 31 25 00 Soil Erosion and Sediment Control

1.03 SUBMITTALS

- A. Plan: Within five (5) days after receipt of Notice to Proceed, the Contractor shall submit a site-specific HASP addressing health and safety management methods specific to the project. The Plan shall, at a minimum, include:
- a. The name of the individual at the jobsite responsible for implementation and compliance with this Plan.
 - b. Protection of the public.
 - c. A description of tasks to be undertaken and equipment mobilized for this project.
 - d. A list of all known safety or health hazards, problems and proposed control mechanisms.
 - e. SDS of and procedures for using, disposing of, or storing for all chemicals, products, or regulated materials to be used by the Contractor.
 - f. A list of personal protecting equipment, monitoring devices, and hazard-specific plans or permits as appropriate and required by State and Federal regulations.
 - g. A description of emergency response measures, equipment available for emergency response to address accidents and releases of materials, including, but not limited to, first aid, eye wash/showers, and fire extinguishing equipment, and location of this equipment at the job site.
 - h. Emergency phone number contacts and location of the nearest medical facility.
 - i. A monitoring and inspection plan and record keeping measures to ensure that equipment and work practices comply with this Plan.
 - j. Personnel names, training, and notification procedures as appropriate to ensure that all jobsite personnel are familiar with the Plan elements. Include copies of training certificates.
 - k. Procedures for safe storage and handling of flammable liquids.
 - l. If applicable, the Contractor shall include procedures for safe storage and handling of compressed gasses.
 - m. Other issues which the Contractor determines are appropriate and necessary to protect worker safety and health.
- B. Contractor Dust Control Plan describing techniques and methods proposed to control dust during the project.
- C. The following information shall be provided (where applicable) for all materials imported to the Site:

- a. Chemical composition of material and SDS;
 - b. Description of the method of application; and
 - c. Manufacturer's catalog data for equipment required for use and storage.
- D. Certification: Certification that all materials proposed by the Contractor meet all Federal, State, and local regulations.

1.04 REFERENCES

- A. Federal Standards, Occupational Safety and Health Administration (OSHA):
 - a. Title 29 Code of Federal Regulations Section 1910 Hazardous Waste Site Worker Operations.
 - b. Title 29 Code of Federal Regulations Section 1926 Excavations.
- B. Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas; May 2003.

1.05 DEFINITIONS

(Reserved)

PART 2 PRODUCT

- A. Dust monitor shall be PDR Dataram or approved equal.
- B. Organic vapor monitor shall be Photo-Ionization Detector.

PART 3 EXECUTION

3.01 HEALTH AND SAFETY

- A. The Contractor shall be solely responsible for the health and safety of its employees, agents, and lower-tier subcontractors for the duration of the services. The Contractor shall assign a Health and Safety Officer and shall ensure that each Subcontractor designates a Subcontractor's Health and Safety Officer. The Health and Safety Officer (HSO) shall:
 - a. Be capable of identifying all hazards and have the authority to stop work and take immediate action to correct the hazard.
 - b. Resolve safety-related issues raised by the Owner or the Owner's Representative.
 - c. Be present on the Site whenever the Owner's Safety Observer is present on the Site.

- d. Identify themselves to the Owner's Representative and the Owner's Safety Observer at the briefing/tailgate conference.
- e. Verify that all work is performed in accordance with the HASP.
- B. The Owner's Representative will not act as the HSO for the contractor or its subcontractors. However, should the Owner's Representative observe conditions that would warrant action, the Owner's Representative will inform the Contractor's HSO and may interrupt operations until such conditions are addressed.
- C. The Owner's Representative will review and comment upon the HASP prepared by the selected Contractor, but will not approve the HASP. Any information provided by the Owner's Representative is without warranty or representation as to its completeness or suitability. The Contractor shall indemnify and hold the Owner's Representative, the Owner, any subsidiary related and affiliated companies of each, and the officers, directors, agents, employees, and assigns of each, harmless from and against any and all claims, demands, suits, judgments, losses, or expenses of any nature whatsoever arising directly or indirectly from the Contractor's noncompliance with the Contractor's development or implementation of health and safety programs and plans for its employees, agents and lower-tier subcontractors.
- D. The Contractor shall comply with all applicable Federal, State, and local Health and Safety requirements and standards relating to job site and employer safety, including, but not limited to, the Occupational Safety and Health Act of 1970, as amended, and the standards and regulations issued thereunder.
- E. At a minimum, Contractor and Subcontractor personnel directly involved in the Work shall have training in:
 - a. First aid, for each Contractor's and Subcontractor's HSO;
 - b. Confined space work, if the employees will be working in and around confined spaces;
 - c. Shoring and trenching, if work will be in excavations; and
 - d. The Contractor's procedures for confined space rescues.
- F. Neither the Owner nor the Owner's Representative shall be responsible for the creation, content, or implementation of the Contractor's HASP, nor are the Owner or the Owner's Representative responsible for the health and safety of the Contractor's employees, agents, and lower-tier subcontractors.

3.02 ACCIDENT REPORTING

- A. Any incident, injury, or accident (including near misses) need to be reported to the Owner's Representative and the BASF Inactive Sites team member as soon as possible (who immediately will report that to the BASF Sites Manager). The BASF Inactive Sites team member will then work with the EHS Remediation

team member in submitting an AIM Report per BASF Corporate Procedure BC032.010 Section 4.2.1.

- B. Accidents resulting in damage to property other than that of the Contractor shall be reported to the Owner's Representative within twenty-four (24) hours of the occurrence.
- C. A copy of each accident report, which the Contractor or subcontractors have submitted to their insurance carriers, shall be forwarded to the Owner's Representative as soon as possible, but in no event later than seven (7) calendar days after the accident occurred.

3.03 DUST MONITORING

- A. The Contractor shall collect background dust level data with the use of a hand-held total dust monitor prior to beginning work activities. If the background dust readings are greater than the maximum allowable dust levels specified herein or in the Contractor's site-specific HASP, the background dust levels will be used as the maximum allowable.
- B. The Contractor shall implement any personal air monitoring which the Contractor may deem necessary for the protection of their work force.
- C. The Contractor shall conduct continuous real time total dust monitoring during earthwork activities and at other times as requested by the Owner's Representative.
- D. The Contractor shall calculate Time-Weighted Average (TWA) dust concentrations at least twice per working day using a hand-held total dust monitor. The monitoring shall be used to measure total dust concentrations in the vicinity of the work activities (i.e., within the worker breathing zone) and along the nearest downwind property boundary. One complete set of measurements shall be made in the morning, followed by another set of measurements in the afternoon. Monitoring shall also be performed when significant changes in weather occur, such as significant change in wind speed, change in wind direction, or at the request of the Owner's Representative. At each location, a 15 minute-average reading shall be obtained. The two 15 minute-average readings shall be combined to estimate an eight hour TWA concentration. At the time of readings, the wind direction and speed should be recorded.
- E. The Contractor shall immediately notify the Owner's Representative and propose methods to reduce dust levels if the TWA exceeds:
 - a. 0.15 mg/m³ at the downwind property boundary or background level, whichever is greatest, or
 - b. 5 mg/m³ in the immediate vicinity of the work.
- F. The portable total dust monitor shall be calibrated at the beginning of each workday in accordance with the manufacturer's specifications. The unit shall be programmed to measure average particulate levels over 15-minute intervals. The monitoring shall then be conducted at each sampling location, in turn,

according to the predetermined schedule. At each location, the unit shall be activated to measure a 15 minute-average time. The value obtained from the digital read-out shall be noted on the field data sheet.

- G. This monitoring is not intended to be a substitute for any personal air monitoring which the Contractor may deem necessary for the protection of their work force.
- H. The Contractor shall furnish to the Owner's Representative a daily report presenting the results of the previous day's air monitoring.

3.04 DUST CONTROL

- A. The Contractor shall conduct all operations and maintain the work area so as to minimize creation and dispersion of dust. Dust is to be controlled by an approved method according to the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas and may include watering with a solution of calcium chloride and water. Severe dust problems shall be controlled with mulch, gravel and other temporary restoration methods subject to the approval of the Owner's Representative.
- B. The Contractor shall implement dust control procedures (e.g., application of water) to prevent dust from leaving the work area based on the results of airborne particulate visual observations. The Contractor shall prepare and submit a plan describing techniques and methods proposed to control dust during the project.
- C. In the event that it becomes necessary, in the opinion of the Owner's Representative and based on the results of airborne particulate visual observations, to provide additional measures to control the release of dust, such measures shall be immediately implemented, at no additional cost.
- D. The Owner's Representative shall reserve the right to suspend Work at any time if necessary due to dust generation which causes a safety or air quality problem or which may cause contamination of adjacent areas. The Contractor shall not be entitled to any additional compensation for suspension of Work under such conditions.
- E. Visible dust shall not be permitted to leave the Site.

END OF SECTION

**SECTION 01 41 00
REGULATORY REQUIREMENTS**

PART 1 GENERAL

1.01 DESCRIPTION

- A. The Contractor shall use the most recent revision of all regulatory documents identified in the Specifications in effect at the time of bid opening.
- B. All waste shall be managed, transported and disposed in accordance with the Technical Specifications and the Standard Contract Terms.

1.02 RELATED WORK NOT INCLUDED

- A. Section 01 52 00 Temporary Construction Facilities
- B. Section 01 71 13 Mobilization and Demobilization
- C. Section 02 01 00 Maintenance and Protection of Existing Conditions
- D. Section 02 21 00 Surveying
- E. Section 02 31 00 Asbestos Abatement
- F. Section 02 41 00 Decommissioning and Demolition
- G. Section 02 81 00 Transportation and Disposal of Waste Material
- H. Section 31 11 00 Clearing and Grubbing
- I. Section 31 23 23 Backfill and Compaction
- J. Section 31 24 00 Grading
- K. Section 31 25 00 Soil Erosion and Sediment Control

1.03 SUBMITTALS

(Reserved)

1.04 REFERENCES

1.04.01 ON-SITE

On-site waste handling regulations and requirements shall include, but not necessarily be limited to, the following:

- A. Resource Conservation and Recovery Act (RCRA) (42 United States Code (USC) 6901, Subtitle C).
- B. Noise Control Act of 1972, 42 USC 4901.
- C. Clean Air Act, Section 306, 42 USC 7606.
- D. Clean Water Act, Section 508, 33 USC 1368.

- E. Administration of Clean Air Act and Federal Water Pollution Control Act with respect to Federal Contracts, Grants, and Loans (Executive Order 11738, 1973).
- F. Occupational Safety and Health Administration (OSHA) Standards:
 - a. 29 CFR 1910 (General Industry),
 - b. 1910.120 (Hazardous Waste Operations and Emergency Response),
 - c. 1910.134 (Respiratory Protection),
 - d. 1910.146 (Permit-Required Confined Spaces), and
 - e. 1926 (Construction Industry).
- G. Environmental Protection Agency (EPA) Standards:
 - a. 40 CFR 121 – State Certification of Activities Requiring a Federal License or Permit
 - b. 40 CFR 122 – EPA Administered Permit Programs: The National Pollutant Discharge Elimination System
 - c. 40 CFR 123 – State Program Requirements
 - d. 40 CFR 124 – Procedures for Decision-making
 - e. 40 CFR 268 – Land Disposal Restrictions
 - f. 40 CFR 268 – Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution In Commerce, And Use Prohibitions
- H. Code of Massachusetts Regulations (CMR) Title 310 – Department of Environmental Protection

1.04.02 TRANSPORTATION

Waste material transportation regulations shall include, but not necessarily be limited to, the following:

- A. Federal Resource Conservation and Recovery Act (RCRA) USC 6901, Subtitle C.
- B. Federal Resource Conservation and Recovery Act (RCRA) USC 6901, Subtitle D.
- C. Toxics Substances Control Act (TSCA) 15 U.S.C. §2601 et seq.
- D. Occupational Safety and Health Administration (OSHA) Standards (29 CFR 1910 and 1926).
- E. 40 CFR 268 – Land Disposal Restrictions,
- F. 40 CFR 302 – Designation, Reportable Quantities, and Notification.
- G. Federal Highway Administration Regulations under 49 CFR 390-397.
- H. Department of Transportation Regulations applicable to method of transport, including: 49 CFR 177 – Carriage by Public Highway and Posted weight limitations on roads and bridges.

1.04.03 OFF-SITE DISPOSAL

Off-site disposal of solid waste regulations shall include, but not necessarily be limited to, the following:

- A. Resource Conservation and Recovery Act (RCRA), 42 USC 6901, Subtitle C.
- B. Toxic Substances Control Act, 15 U.S.C. 2601–2629.
- C. Occupational Safety and Health Administration (OSHA) Standards: 29 CFR

1910 and 1926.

D. 40 CFR 761 – Subpart D – Storage and Disposal

1.04.04 LAND USE

Land use regulations shall include, but not necessarily be limited to, the following:

- A. 33 CFR 330 – Nationwide Permit Program
- B. Clean Water Act Section 404

1.05 DEFINITIONS

(Reserved)

PART 2 PRODUCTS

(Reserved)

PART 3 EXECUTION

(Reserved)

END OF SECTION

**SECTION 01 42 00
REFERENCES, ABBREVIATIONS AND DEFINITIONS**

PART 1 GENERAL

1.01 DESCRIPTION

- A. The Work performed by the Contractor under this contract shall meet the requirements and recommendations of all Standards, Institutes, Associations, etc. referred to throughout the documents and specifications as if they were fully reproduced herein. Unless otherwise noted, the latest editions shall apply.

1.02 RELATED WORK NOT INCLUDED

- | | | |
|----|------------------|---|
| A. | Section 01 52 00 | Temporary Construction Facilities |
| B. | Section 01 71 13 | Mobilization and Demobilization |
| C. | Section 02 01 00 | Maintenance and Protection of Existing Conditions |
| D. | Section 02 21 00 | Surveying |
| E. | Section 02 31 00 | Asbestos Abatement |
| F. | Section 02 41 00 | Decommissioning and Demolition |
| G. | Section 02 81 00 | Transportation and Disposal of Waste Material |
| H. | Section 31 11 00 | Clearing and Grubbing |
| I. | Section 31 23 23 | Backfill and Compaction |
| J. | Section 31 24 00 | Grading |
| K. | Section 31 25 00 | Soil Erosion and Sediment Control |

1.03 SUBMITTALS

(Reserved)

1.04 REFERENCES

STANDARDS/REGULATIONS

ACRONYM STANDARDS/REGULATIONS

AASHTO	American Association of State Highway and Transportation Officials
AMS	Agricultural Marketing Society
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
CAA	Clean Air Act

CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
DOT	Department of Transportation
EM	Engineering Manual
ER	Engineering Regulation
FWS	United States Fish and Wildlife Services
HSO	Health and Safety Officer
IEEE	Institute of Electrical and Electronics Engineers
MassDEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation
MUTCD	Manual on Uniform Traffic Control Devices
NFPA	National Fire Protection Association
NSF	National Sanitation Foundation International
NIOSH	National Institute for Occupational Safety and Health
NEMA	National Electrical Manufacturers Association
NPDES	National Pollution Discharge Elimination System
NPS	United States National Park Services
NAAQS	National Ambient Air Quality Standards
NCP	National Contingency Plan
NLUR	Notice of Land Use Restrictions
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
RCRA	Resource Conservation and Recovery Act
TSCA	Toxic Substances Control Act
USC	United States Code
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USDOD	United States Department of Defense
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey

ACRONYM/ABBREVIATIONS

AAQS	Ambient Air Quality Standards
BOD	Biochemical Oxygen Demand
CDQC	Chemical Data Quality Control
CIH	Certified Industrial Hygienist
CLP	Contract Laboratory Program
COC	Chain of Custody
COA	Consent Order and Agreement
CPM	Critical Path Method
CQA	Construction Quality Assurance
CQC	Contractor Quality Control
DQO	Data Quality Objective
DO	Dissolved Oxygen
EMP	Environmental Monitoring Plan
ERP	Emergency Response Plan
ERT	Emergency Response Team
EZ	Exclusion Zone

FALC	Fish and Aquatic Life Criteria
FID	Flame Ionization Detector
FSP	Field Sampling Plan
LDR	Land Disposal Regulations
LEL	Lower Explosive Limit
MCL	Maximum Contaminant Levels
MSDS	Material Safety Data Sheet
NCA	Noise Control Act
NPL	National Priorities List
NTP	Notice to Proceed
NOI	Notice of Intent
PID	Photoionization Detector
PPE	Personal Protective Equipment
PVC	Poly Vinyl Chloride
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
ROW	Right-of-Way
ROD	Record of Decision
SAP	Sampling and Analysis Plan
SVOC	Semi Volatile Organic Compound
TAL	Target Analyte List
TCL	Target Compound List
TDC	Transportation and Disposal Coordinator
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
TSDF	Treatment, Storage and Disposal Facility
VOC	Volatile Organic Compound

1.05 DEFINITIONS

- A. Addenda: Written documents issued prior to the opening of Bids which clarify, correct, or change the Bidding Documents or the Contract Documents.
- B. As-built or Record Drawings: The drawings, diagrams, and details which are prepared by Contractor or his subcontractors to record actual construction, are updated concurrent with construction progress, and are converted to a final set of documents to be submitted to the Owner's Representative with a claim for final Application for Payment. As-built or Record Drawings shall include necessary survey information, field changes of dimension and detail, details not on original Contract Drawings, and any other information as required by the Contract Documents. As-built or record drawings shall be provided in AutoCAD format.
- C. Bid: The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices and the Work to be performed.
- D. Bidder: One who submits a Bid directly to the Owner's Representative, as distinct from a sub-bidder, who submits a bid to Bidder.

- E. Bidding Documents: Includes the General Information, Summary of Work, General Construction Requirements, Design Drawings, Specifications and Supporting Documentation (including all Addenda issued prior to receipt of Bids).
- F. Bonds: Bid, performance, payment and maintenance bonds and other instruments of security.
- G. Change Order: An order approved by the Owner's Representative and signed by the Contracting Party and/or the Owner for Changed Work, as defined herein.
- H. Changed Work: Work which is deleted or omitted from or different from the original Scope of Work. Changed Work does not include work that, based on industry standards, reasonably should have been assumed to be present in a complete and correct Scope of Work such that the Work meets the requirements and intent of the Contract Documents, as defined herein, and any further amendments thereto, and any and all applicable rules, regulations, guidelines, and policies of all Federal, State, and local regulatory agencies.
- I. Contract: The written agreement between the Contracting Party with Contractor covering the Work to be performed; other Contract Documents are attached to the Contract and made a part thereof as provided therein.
- J. Contract Documents: Includes all plans, construction specifications, details, reports, Health and Safety Plan, executed agreements, insurances, change orders, addenda or other information made part of this Contract.
- K. Contractor: The person, firm or corporation with whom the Contracting Party has entered into the Contract.
- L. Contract Drawings: The Drawings, which show the character and scope of the Work to be performed and which, are referenced in the Contract Documents.
- M. Defective Work: Any portion of the Work which is not performed strictly in accordance with the express requirements of the Contract Documents.
- N. Design Drawings: Refer to Contract Drawings.
- O. Effective Date of the Contract: The date indicated in the Contract on which it becomes effective, but if no such date is indicated it means the date on which the Contract is signed and delivered by the last of the two parties to sign and deliver.
- P. Laws and Regulations; Laws or Regulations: Laws, rules, regulations, ordinances, codes, and/or orders of any governmental entity having jurisdiction over the Work which apply to the Work.
- Q. MassDEP or MassDEP Representative: A representative from the Massachusetts Department of Environmental Protection assigned to this project.
- R. Material: Any tangible item to be incorporated into the Work, including, but not limited to, all materials, equipment, machinery, and parts, whether furnished by Contractor, its subcontractor or by others.
- S. Notice of Award: The written notice by the Owner's Representative to the apparent successful Bidder stating that upon compliance by the apparent

successful Bidder with the conditions precedent enumerated therein, with the time specified, the Contracting Party will sign and deliver the Agreement.

- T. Notice to Proceed: A written notice given by the Owner's Representative to Contractor fixing the date on which the contract time will commence to run and on which Contractor shall start to perform Contractor's obligations under the Contract Documents.
- U. Provide: Indicates to furnish and install.
- V. Schedule of Values: Contractor's itemized listing of activities of the Work, setting forth in a form acceptable to the Contracting party. The same activities shall be incorporated into the Contractor's progress schedule.
- W. Shop Drawings: All drawings, diagrams, illustrations, schedules, vendor catalogs, and other data which are specifically prepared by or for the Contractor to illustrate some portion of the Work; and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by the Contractor to illustrate materials or equipment for some portion of the Work.
- X. Subcontractor: An individual, firm, or corporation having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
- Y. Supplier: An individual, firm, or corporation having a direct contract with Contractor or with any other Subcontractor for the supply of equipment or materials as part of the Work at the Site.
- Z. Technical Specifications (Specifications): Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.
- AA. Will or Shall: Indicates must.
- BB. Work: The totality of duties and obligations imposed upon and that are required to be observed, performed, and fulfilled by the Contractor, whether directly or indirectly through other contractors, subcontractors, persons or entities under this Agreement and the other Contract Documents to achieve final completion of the transactions contemplated hereby and thereby, including, among other things, all labor, supervision, work, supplies, fixtures, furnishings, equipment, services, tools, materials, computers, transportation, utility, storage, remediation, removal, cleanup, items, documents, instruments, records, papers, and things to achieve the Project's objectives under the Agreement and the other Contract Documents.
- CC. Written Amendment: A written amendment of the Contract Documents, signed by Contracting Party with the Contractor on or after the Effective Date of the Contract and normally dealing with the nonengineering or nontechnical rather than strictly work-related aspects of the Contract.

PART 2 PRODUCT

(Reserved)

PART 3 EXECUTION

(Reserved)

END OF SECTION

**SECTION 01 52 00
TEMPORARY CONSTRUCTION FACILITIES**

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Construction facilities (i.e. support zone) shall be constructed in the area designated in the Contract Drawings and shall conform to this Specification. The Contractor shall be responsible for arranging and providing all temporary construction facilities required. The Contractor shall pay all costs for such facilities and controls, unless otherwise specified, until such facilities and controls are removed from the Site. Construction facilities and temporary controls shall include the following activities:
 - a. Establishing equipment and materials staging, storage, and laydown areas;
 - b. Providing field facilities for necessary Contractor storage facilities; and
 - c. Providing fire protection, lighting, safety equipment, and equipment decontamination as required by OSHA, local regulations, and the specifications herein.
- B. The Contractor shall provide field office facilities for Contractor use during Site construction activities, if necessary. The Contractor shall arrange for electrical hookup from the nearest electrical pole to the field office.
- C. The Contractor shall provide temporary sanitary facilities during the course of the Site operations for all Site personnel.
- D. The Contractor shall obtain all required permits and connections for temporary utility service. The National Electrical Code and all local, State, and Federal codes, laws, and regulations remain in full effect.

1.02 RELATED WORK NOT INCLUDED

- A. Section 01 35 29.13 Health and Safety
- B. Section 01 71 13 Mobilization and Demobilization
- C. Section 02 31 00 Asbestos Abatement
- D. Section 02 41 00 Decommissioning and Demolition
- E. Section 02 42 00 Chain Link Fence
- F. Section 31 11 00 Clearing and Grubbing
- G. Section 31 23 23 Backfill and Compaction
- H. Section 31 24 00 Grading
- I. Section 31 25 00 Soil Erosion and Sediment Control

1.03 SUBMITTALS

(Reserved)

1.04 REFERENCES

(Reserved)

1.05 DEFINITIONS

(Reserved)

PART 2 PRODUCT

2.01 MATERIALS

- A. The temporary construction facilities shall be of adequate size and content for the administration of the contract, storage of materials required for installation, and provision for personnel shelter.
- B. Equipment required for the personal safety of workers shall be furnished in full compliance with specific safety requirements of local and federal agencies including OSHA.

2.02 FIELD OFFICES

- A. Any field office space required shall be supplied, installed, and maintained by the Contractor.
- B. The Contractor shall provide all utility hookups to the Contractor's trailer and shall be responsible for all associated charges.

2.03 OTHER FACILITIES

- A. All structures other than storage sheds installed under this Specification shall be provided with, as a minimum, the following services:
 - a. Potable bottled water;
 - b. Fire Extinguisher. Non-toxic, dry chemical, fire extinguisher meeting Underwriters Laboratories, Inc., approval for Class A, Class B, and Class C fires with a minimum rating of 2A: IOB: IOC;
 - c. First Aid Kit. As a minimum the kit shall include antiseptic kit, eyewash solution, bandages, insect sting medication, aspirin and acetaminophen, and coldpack;
 - d. First aid medications appropriate for the initial treatment of burns, abrasions, fractures, and ingestion or dermal contact with on-site hazardous waste; and

- e. A separate or partitioned equipment storage area with an access through a lockable door.

2.04 TEMPORARY SANITARY FACILITIES

- A. The Contractor shall provide and maintain toilet accommodations for all persons employed or engaged in the Work. Such facilities shall meet any and all requirements of law, rule, or regulation. The Contractor shall remove such facilities at the completion of the Work.

PART 3 EXECUTION

3.01 LOCATION

- A. Field offices and storage trailers shall be located or constructed in the designated area as shown in the Contract Drawings and properly set up for all anticipated weather conditions.

3.02 FIRST AID FACILITIES

- A. The Contractor shall provide and maintain first aid equipment in the various work areas and provide for the treatment of minor injuries to its employees. The Contractor shall designate personnel with qualifications to administer first aid. The Contractor shall be responsible for transportation and treatment of employees with injuries in accordance with their Health and Safety Plan.

3.03 MAINTENANCE

- A. The Contractor shall maintain all temporary construction facilities and shall perform all necessary repairs, replacement, cleaning and any other maintenance required as directed by the Owner's Representative. Maintenance shall include sweeping and any other cleaning necessary to keep the project vicinity area free of objectionable soil, dust and debris.

END OF SECTION

**SECTION 01 71 13
MOBILIZATION AND DEMOBILIZATION**

PART 1 – GENERAL

1.01 DESCRIPTION

- A. The Contractor shall be responsible for the mobilization and demobilization of equipment, supplies, and Contractor personnel necessary to complete work performed under this contract.

1.02 RELATED WORK NOT INCLUDED

- A. Section 01 31 19.13 Preconstruction Conference
- B. Section 01 35 29.13 Health and Safety
- C. Section 01 52 00 Temporary Construction Facilities
- D. Section 02 01 00 Maintenance and Protection of Existing Conditions
- E. Section 02 21 00 Surveying
- F. Section 02 31 00 Asbestos Abatement
- G. Section 02 41 00 Decommissioning and Demolition
- H. Section 31 11 00 Clearing and Grubbing
- I. Section 31 23 23 Backfill and Compaction
- J. Section 31 24 00 Grading
- K. Section 31 25 00 Soil Erosion and Sediment Control

1.03 SUBMITTALS

- A. The Contractor shall submit for review and approval a complete site access, staging, and stockpiling plan. If construction is to be phased, the Contractor shall identify all areas to be used for access, staging, and stockpiling for each construction phase.
- B. The Contractor shall submit a Notice of Substantial Completion to the Owner's Representative prior to demobilization from the Site.
- C. The Contractor shall submit as-built drawings and survey records to the Owner's Representative within thirty (30) days of remediation completion.

1.04 REFERENCES

(Reserved)

1.05 DEFINITIONS

(Reserved)

PART 2 – PRODUCTS

(Reserved)

PART 3 – EXECUTION

3.01 MOBILIZATION

- A. The Contractor shall be responsible for the following mobilization activities:
 - a. Procuring materials and equipment.
 - b. Having those materials and equipment delivered to the Site.
 - c. Documenting (photo or video) existing site conditions.
 - d. Installing soil erosion and sediment control measures as shown in the Contract Drawings.
 - e. Attending a pre-construction meeting prior to the commencement of construction activities.
 - f. Identifying and marking underground utilities.
 - g. Identifying on-site groundwater monitoring wells.
 - h. Coordinating the planned Site operations with the Owner's Representative.
 - i. Verifying utility hookups and toilet facilities.
 - j. Scheduling the preconstruction meeting to review the project plan, permits, scheduling, and the site-specific Health and Safety Plan.
- B. The Contractor shall provide and setup field office(s), office supplies, sanitary facilities, First Aid and PPE supplies, temporary power, small tools, and equipment.
- C. The Contractor shall provide the means to power all equipment and tools necessary to complete the Work, and shall not rely on availability of Site power.
- D. The Contractor shall coordinate with the Owner's Representative the location of field offices, sanitary facilities, lay-down areas, temporary storage facilities, and parking.

3.02 DEMOBILIZATION

- A. The Contractor shall be responsible for the following demobilization activities:
 - a. Removing materials and equipment from project limits.
 - b. Removing soil erosion and sediment control measures.
 - c. Scheduling the post-construction inspection to review completed work.

- B. The Contractor shall remove all Temporary Work, facilities tools, and equipment at Work completion.
- C. The Contractor shall dispose of all waste materials in accordance with the requirements set forth in these construction specifications.

3.03 PERFORMANCE

- A. The Contractor shall be responsible for any additional costs incurred due to scheduling alterations that were not approved in writing by the Owner's Representative. It should be noted that approval of a modified schedule does not mean approval of reimbursement for additional costs.

END OF SECTION

**SECTION 02 01 00
MAINTENANCE AND PROTECTION OF EXISTING CONDITIONS**

PART 1 GENERAL

1.01 SUMMARY

- A. This section defines the requirements for protection of existing site conditions and the environment (land, air, water, and ecological resources).
- B. The Contractor shall obtain and operate within required Local, State, and Federal permits and applicable requirements to implement the proposed work.
- C. The Contractor shall furnish all labor, equipment, and materials required for maintenance and protection of existing site conditions and the environment during and as the result of construction operations.

1.02 RELATED WORK NOT INCLUDED

- A. Section 01 31 19.13 Preconstruction Conference
- B. Section 01 35 29.13 Health and Safety
- C. Section 01 52 00 Temporary Construction Facilities
- D. Section 02 01 00 Maintenance and Protection of Existing Conditions
- E. Section 02 31 00 Asbestos Abatement
- F. Section 02 41 00 Decommissioning and Demolition
- G. Section 31 11 00 Clearing and Grubbing
- H. Section 31 23 23 Backfill and Compaction
- I. Section 31 24 00 Grading
- J. Section 31 25 00 Soil Erosion and Sediment Control

1.03 SUBMITTALS

(Reserved)

1.04 REFERENCES

CODE OF FEDERAL REGULATIONS (CFR)

40 CFR 279 Standards for the Management of Used Oil

CODE OF MASSACHUSETTS REGULATION (CMR)

310 CMR 40 Massachusetts Contingency Plan

1.05 DEFINITIONS

(Reserved)

PART 2 PRODUCTS

(Reserved)

PART 3 EXECUTION

3.01 PROTECTION OF LAND AND WATER RESOURCES

- A. The Contractor shall confine all activities to areas defined in the Contract Drawings and Specifications.
- B. Prior to commencement of any construction activities, the Contractor shall identify any land, water or wetland resources to be preserved, maintained or protected within the work area.
 - a. Protection areas shall be marked or fenced to restrict access.
 - b. Isolated protection areas within the general work area shall be marked or fenced with markers that are visible in the dark.
 - c. The Contractor's personnel shall be knowledgeable of the purpose for markings and/or protection.
- C. Where construction equipment is to be mobilized from another site, the Contractor shall clean the equipment prior to mobilization to ensure that the equipment is free from soil and/or sediment residuals.
- D. The Contractor shall provide effective protection for land, water, wetlands, wildlife and vegetation resources at all times. All work shall be performed in such a manner that objectionable conditions will not be created in land, wetlands, environmentally sensitive areas, and/or bodies of water adjacent to, or within the project area.
- E. The Contractor shall monitor construction activities to prevent pollution of land, wetlands, surface water or groundwater with fuels, oils, or other harmful materials.
 - a. Measures shall be taken by the Contractor to prevent chemicals, fuels, oils, grease, waste washings, and other harmful materials from being released to land, wetlands, surface water or groundwater.
 - b. Storage, fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spill and evaporation.

- c. Used lubricants and used oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, State, and local laws and regulations.
 - d. The Contractor shall manage, store and dispose fuel, lubricants and oil in accordance with all Federal, State, and local laws and regulations.
 - e. It is the responsibility of the Contractor to investigate and comply with all applicable Federal, State, County, and Municipal laws concerning pollution of land, wetlands and/or bodies of water.
 - f. Should any spillage occur, the Contractor shall immediately notify the proper authorities and the Owner's Representative.
 - g. The Contractor will be responsible for any and all cost associated with the cleanup of spillages, including but not limited to delineation, characterization, excavation, backfilling and disposal.
- F. Except for areas indicated in the Contract Drawings to be cleared, the Contractor shall not:
- a. remove, cut, deface, injure, or destroy land or wetlands resources including trees, shrubs, vines, grasses, topsoil, and land forms without prior written approval by the Owner's Representative.
 - b. fasten or attach ropes, cables, or guys to any trees for anchorage without prior written approval by the Owner's Representative.
- G. The Contractor shall not use site soils, on-site surface water or groundwater without prior written approval by the Owner's Representative.
- H. Surfaces within the construction limit shall be graded to control erosion, and shall comply with all requirements of a Soil Erosion and Sediment Control Plan approval from the local soil conservation district.
- I. The Contractor shall remove any stone, soil, waste, or other materials displaced into areas to be preserved, maintained or protected, and restore the area to its original condition.
- J. Disturbed areas shall be graded and filled as required to prevent ponding of surface water. The disturbed area shall be fully restored to the satisfaction of the Owner's Representative.
- K. The Contractor shall remove all markings and/or protection from the site prior to demobilization.

3.02 PROTECTION OF FISH AND WILDLIFE

- A. The Contractor shall not alter water flows or otherwise disturb native habitat adjacent to the project area.
- B. The Contractor shall take all required measures to prevent any interference or disturbance to fish and wildlife.

- C. Wash waters and wastewaters shall be treated and managed in accordance with applicable permits prior to their release into the river or other waterways.
- D. Should polluting or fouling of any watercourse occur, the Contractor shall immediately notify the proper authorities. The Contractor shall be responsible for any and all costs associated with the cleanup of polluted waters.

3.03 PROTECTION OF EXISTING FACILITIES

- A. The Contractor shall take all necessary precautions to avoid damage to existing facilities, including utilities and equipment, to remain in place, to be reused, or to remain the property of the Owner.
- B. The Contractor shall, to the satisfaction of the Owner, repair or replace any and all damaged items or facilities at no additional cost to the Owner.

3.04 PROTECTION OF GROUNDWATER MONITORING WELL NETWORK

- A. The Contractor shall maintain all existing monitoring wells, and protect them from damage from equipment and vehicular traffic.
- B. The Contractor shall immediately report to the Owner's Representative of any damage to an existing well. The Contractor shall retain a Massachusetts licensed driller to repair or reinstall damaged monitoring wells at the Contractor's own expense.

3.05 NOISE AND VIBRATION CONTROL

- A. The Contractor shall use every effort and means to minimize noise and vibration caused by the Contractor's operations.
- B. The Contractor shall provide working machinery equipped with adequate muffler systems.
- C. Construction shall be limited to daytime hours or as restricted by Plainville municipal ordinances.
- D. The Contractor is responsible for maintaining compliance with all applicable noise regulations and all provisions of the State of Massachusetts rules.

END OF SECTION

**SECTION 02 21 00
SURVEYING**

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall furnish all labor, materials, equipment, and incidentals required to provide surveying services during site activities. Surveying will be required to define the pre-construction, compliance, and as-built conditions of the site prior to demobilization.
- B. All surveying shall be performed by a Professional Land Surveyor licensed in the State of Massachusetts.

1.02 RELATED WORK NOT INCLUDED

- A. Section 01 35 29.13 Health and Safety
- B. Section 02 01 00 Maintenance and Protection of Existing Conditions
- C. Section 02 41 00 Decommissioning and Demolition
- D. Section 31 11 00 Clearing and Grubbing
- E. Section 31 24 00 Grading
- F. Section 31 23 23 Backfill and Compaction

1.03 SUBMITTALS

- A. Surveyor Information: Contact information of the surveyor shall be submitted by the Contractor to the Owner's Representative before performing any survey work.
- B. Survey Accuracy Documentation: On request, documentation verifying accuracy of survey work shall be submitted to the Owner's Representative by the Contractor.
- C. Field Notes: Copies of the surveyor's field notes, calculations, and graphical layouts.
- D. Preconstruction Surveys: Submit surveys of all work areas.
- E. Compliance Surveys: Submit compliance surveys of all excavation and backfill operations.
- F. As-Built Drawings: As-Built Drawings shall be submitted, including final topography, monitoring wells, fence, and tree lines on the site and any areas disturbed by the Contractor.

1.04 REFERENCES

CODE OF MASSACHUSETTS REGULATION (CMR)

250 CMR 06 Land Surveying Procedures and Standards

1.05 DEFINITIONS

(Reserved)

PART 2 PRODUCTS

(Reserved)

PART 3 EXECUTION

3.01 INSPECTION

- A. The Contractor shall verify locations of site reference and survey control points prior to starting work. The Owner's Representative must be promptly notified of any discrepancies discovered.

3.02 SURVEY REFERENCE POINTS

- A. The Contractor shall take all reasonable measures to protect site reference points prior to initiating site work. Reference points shall not be relocated without prior written approval of the Owner's Representative. The Owner's Representative shall be immediately notified of loss, damage, or destruction of any reference point, or any relocation required because of changes in grade or other reasons.
- B. The Contractor shall install two permanent elevation benchmarks and two horizontal control points located in positions unlikely to be disturbed by vehicular traffic or construction operations throughout construction.
- C. Horizontal coordinates (X and Y) of benchmarks and survey control points shall be determined and recorded with a maximum permissible error of 0.10 feet in any coordinate direction. Elevations (Z) shall be determined and recorded with a maximum permissible error of 0.01 feet.
- D. The Contractor shall clearly identify benchmarks and record existing elevations and locate a reference datum level used to establish benchmark elevations sufficiently distant so as not to be affected by movement resulting from excavation operations. Elevations shall be verified from existing benchmarks by the Surveyor.

3.03 SURVEY REQUIREMENTS

- A. The Contractor shall establish the exact position or location of all work control points. All work shall be referenced to and established from the control points, re-established where necessary and maintained throughout the life of the contract.
- B. Surveys shall be performed prior to excavation to determine pre-construction elevations.
- C. Surveys shall also be performed immediately after each excavation and backfill to document as-built conditions.

3.04 PROJECT RECORD DOCUMENTS

- A. A complete, accurate log of control and survey work as it progresses shall be maintained at the work site by the Contractor.
- B. Upon completion of the work, all record documents must be submitted to the Owner's Representative.
- C. The Contractor shall prepare an As-Built submittal which will include five sets of signed and sealed as-built drawings depicting the (a) the pre-construction grades; (b) the post-excavation and -staging grades; and (c) the grades after backfilling and compaction.
- D. The Contractor shall also provide an electronic copy of all survey records in AutoCAD format.

END OF SECTION

**SECTION 02 31 00
ASBESTOS ABATEMENT**

PART 1 GENERAL

1.1 SCOPE

- A. The work specified herein shall be the abatement of asbestos-containing materials by persons who are knowledgeable, qualified, and trained in the removal, treatment, handling, and disposal of asbestos-containing material, and the subsequent cleaning of the affected environment. The Contractor shall have a Competent Person in control on the job site at all times during asbestos abatement work. This person must comply with applicable Federal, State and Local regulations which mandate work practices, and be capable of performing the work of this contract.
- B. The Contractor shall be licensed by the Commonwealth of Massachusetts in accordance with Code of Massachusetts Regulations, 453 CMR 6. Should any portion of the work be subcontracted, the subcontractor must also be licensed in accordance with these regulations.
- C. The Owner's Representative will retain the services of a Commonwealth of Massachusetts licensed Project Monitor for protection of its interests and those using the building. Pre-abatement, during abatement and post-abatement sampling will be conducted as deemed necessary.
- D. Deviations from this Specification require the written approval of the Owner's Representative.
- E. For areas (if any) that are not proposed for full demolition, restore all work areas and auxiliary areas utilized during abatement to conditions equal to or better than original. Any damage caused during the performance of abatement activities shall be repaired by the Contractor (e.g., paint peeled off by barrier tape, nail holes, water damage, removal of ceiling tiles or concrete blocks, broken glass, etc.) at no additional expense to the Owner's Representative. The Contractor is responsible for protecting all objects in work areas that are permanent fixtures, designated for salvage, or too large to remove.

The Contractor shall be responsible for the following general requirements:

- 1. Obtain all approvals and permits, and submit all notifications required.
- 2. Provide, erect, and maintain all planking, bracing, shoring, barricades, and warning signs.
- 3. Unless otherwise specified, all equipment, fixtures, piping and debris resulting from demolition shall become the property of the Contractor and shall be removed from the premises.
- 4. Materials to be reused shall be removed with the utmost care to prevent damage of any kind. All material to be reused shall be stored as directed. The Contractor shall coordinate with the Owner's Representative as to the storage location.

- 5. Materials not scheduled for reuse shall be removed from the site and disposed of in accordance with all applicable Federal, State and Local requirements.
- F. It shall be the responsibility of the Contractor to protect and preserve in operating condition, all utilities traversing the building and site. Damage to any utility due to work under this Contract shall be repaired to the satisfaction of the Owner's Representative at no cost to the Owner's Representative.

1.2 DESCRIPTION OF WORK

- A. The Contractor shall supply all labor, materials, equipment, services, insurance (with specific coverage for work on asbestos), and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations and these specifications.
- B. The asbestos abatement work plan shall include the removal of asbestos-containing materials as specified herein as well as specified in any of the supporting Contracting Documents. Perform abatement in accordance with federal, state, and local guidelines or under an approved Alternative Work Practice (AWP) from the Commonwealth of Massachusetts Department of Labor (DOL).
- C. Remove all ACM in accordance federal, state and local regulations.

1.3 DEFINITIONS

Adequately Wet - Sufficiently mix or penetrate with liquid to prevent the release of particulates. If visible emissions are observed coming from asbestos-containing material, then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wet.

AHERA - Asbestos Hazard Emergency Response Act - U. S. EPA regulation 40 CFR Part 763 under Section 203 of Title II of the Toxic Substances Control Act (TSCA), 15 U.S.C. 2643. This rule mandates inspections, accreditations of persons involved with asbestos, and - final air clearances following abatement in public and private schools, and public and commercial buildings.

Alternative Work Practice (AWP) - Commonwealth of Massachusetts Department of Labor-approved deviation from Asbestos Standards (453 CMR 6).

Asbestos - The term asbestos includes chrysotile, amosite, crocidolite, asbestiform tremolite, asbestos, anthophyllite asbestos, actinolite asbestos and any of these minerals that has been chemically treated and/or altered.

Asbestos Abatement - The removal, encapsulation, enclosure, renovation, repair, demolition or other disturbance of asbestos-containing materials except activities which are related to the removal or repair of asbestos cement pipe and are performed as defined in 453 CMR 6 of the Code of Massachusetts Regulations.

Asbestos-Containing Waste Materials (ACM Waste) - Any waste that either contains or is contaminated with asbestos. This term includes asbestos-containing materials and materials contaminated with asbestos including disposable equipment and clothing, filters from control devices, polyethylene sheeting generated from disassembly of a containment structure, and any other items from within regulated areas which cannot be properly decontaminated.

Asbestos Control Area - An area where asbestos abatement operations are performed which is isolated by physical boundaries which assist in the prevention of the uncontrolled release of asbestos dust, fibers, or debris. Two examples of an Asbestos Control Area are a "full containment" and a "glovebag".

Asbestos Fiber - A particulate form of asbestos, tremolite, anthophyllite, actinolite, or a combination of these minerals having a length of five micrometers or longer, with a length-to-diameter ratio of at least 3 to 1.

Authorized Asbestos Disposal Facility - A location approved by the Massachusetts Department of Environmental Protection for handling and disposing of asbestos waste or by an equivalent regulatory agency if the material is disposed of outside the Commonwealth of Massachusetts.

Category I Non-Friable Asbestos-Containing Material (ACM) - Asbestos-containing packings, gaskets, resilient floor coverings and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in Appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy.

Category II Non-Friable ACM - Any material, excluding Category I non-friable ACM, containing more than 1 percent asbestos as determined using the method specified in Appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy that when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Class I Asbestos Work - Activities involving the removal of TSI and surfacing ACM and PACM.

Class II Asbestos Work - Activities involving the removal of ACM which is not TSI or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

Class III Asbestos Work - Repair and maintenance operations, where ACM, including TSI and surfacing material, is likely to be disturbed.

Class IV Asbestos Work - Maintenance and custodial activities during which employees contact ACM and PACM and activities to clean up waste and debris containing ACM and PACM.

Competent Person - In addition to the definition in 29 CFR 1926.32(f), one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32(f): in addition, for Class I and Class II work who is specifically trained in a training course which meet the criteria of EPA's Model Accreditation Plan (40 CFR 763).

Critical Barrier - A minimum of two layers of six (6) mil polyethylene sheeting taped securely over windows, doorways, diffusers, grilles and any other openings between the Work Area and uncontaminated areas outside of the Work Area, including the outside of the building.

Decontamination Enclosure System - A series of rooms separated from the Work Area and from each other by air locks, for the decontamination of workers and equipment.

Differential Pressure - A difference in the static air pressure between the Work Area and occupied areas, and is developed by the use of HEPA filtered exhaust fans. This differential is generally in the range of 0.02 to 0.04 inches of water column.

Encapsulant - Specific materials in various forms used to chemically entrap asbestos fibers in various configurations to prevent these fibers from becoming airborne.

Encapsulation - The application of an encapsulant to asbestos-containing building materials to control the possible release of asbestos fibers into the air.

Equipment Decontamination Enclosure System - The portion of a Decontamination Enclosure System designed for controlled transfer of materials and equipment into or out of the Work Area, typically consisting of a Washroom and a Holding Area.

Friable Asbestos Material - Material containing more than 1 percent asbestos as determined using the method specified in Appendix A, subpart F, 40 CFR part 763, Section 1, Polarized Light Microscopy, that when dry can be crumbled, pulverized or reduced to powder by hand pressure. If the asbestos content is less than 10 percent as determined by a method other than point counting by polarized light microscopy (PLM), verify the asbestos content by point counting using PLM.

Glovebag - A sealed compartment with attached inner gloves used for the handling of asbestos-containing materials. Properly installed and used glovebags provide a small Work Area enclosure typically used for small scale asbestos stripping operations. Information on glovebag installation, equipment and supplies, and work practices is contained in 29 CFR 1926.1101).

Glovebag Technique - A method with limited applications for removing small amounts of friable asbestos-containing material from HVAC ducts, short piping runs, valves, joints, elbows, and other non-planar surfaces in a non-contaminated work area. The glovebag assembly is a manufactured or fabricated device consisting of a glovebag (typically constructed of six (6) mil polyethylene or polyvinyl chloride plastic), two inward projecting long sleeves, an internal tool pouch, and an attached, labeled receptacle for asbestos waste. The glovebag is constructed and installed in such a manner that it surrounds the object or material to be removed and contains all asbestos fibers released during the process. This technique requires AWP application and may only be used if pre-approved by DOL or with the approval of the Design Consultant, Owner's Representative's Project Monitor and DOL when not pre-approved.

HEPA Filter Equipment - High-efficiency particulate air (HEPA) filtered vacuum and/or exhaust ventilation equipment with a filter system capable of trapping and retaining asbestos fibers. Filters shall be of 99.97 percent efficiency for retaining fibers of 0.3 microns in diameter or larger.

Lock-Down - The procedure of spraying polyethylene sheeting and building materials with an encapsulant type sealant to seal in non-visible asbestos-containing residue.

Mini-Containment - A procedure using a single layer of polyethylene sheeting to contain the Work Area. Access to the mini-containment is controlled by an air lock which also serves as a Holding Area. This procedure requires AWP application and may only be used if pre-approved by DOL or with the approval of the Design Consultant, Owner's Representative's Project Monitor and DOL when not pre-approved.

Non-Friable Asbestos-Containing Material - Material containing more than 1 percent asbestos as determined using the method specified in Appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy, that when dry cannot be crumbled, pulverized or reduced to powder by hand pressure.

NPE - Negative pressure enclosure.

Permissible Exposure Limit (PEL) - (1) time-weighted average unit (TWA). The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 0.1 fiber per cubic centimeter (f/cc) or air as an eight (8) hour time-weighted average time (TWA). (2) excursion limit. The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 1.0 fibers per cubic centimeter of air (f/cc) as averaged over a sampling period of thirty (30) minutes.

Presumed Asbestos-Containing Material (PACM) - TSI and surfacing material found in buildings constructed no later than 1980.

Project Monitor - The certified and licensed individual contracted or employed by the building owner or contractor to supervise and/or conduct air monitoring and analysis schemes. This individual is responsible for recognition of technical deficiencies in procedures during both planning and on-site phases of an abatement project. Requirements for Project Monitor are defined in the Code of Massachusetts regulations (453 CMR 6). In addition to these requirements, this person shall be listed in the American Industrial Hygiene Association's Asbestos Analysts Registry.

Regulated Area - Area established by the employer to demarcate areas where Class I, II and III work is conducted and any adjoining area where debris and waste from such asbestos work accumulate; a work area within which airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed the Permissible Exposure Limit.

Regulated Asbestos-Containing Material (RACM) - (a) Friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

Wet Cleaning - The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water, and afterwards thoroughly decontaminated or disposed of as asbestos-contaminated waste.

Worker Decontamination Enclosure System - The portion of a Decontamination Enclosure System designed for controlled passage of workers and authorized visitors, typically consisting of a Clean Room, a Shower Room and an Equipment Room that is under negative pressure.

1.4 REFERENCES

A. The current issue of each document shall govern. Where conflict among requirements or with these specifications exists, the more stringent requirements shall apply.

1. Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1001 - Asbestos, Tremolite, Anthophyllite, and Actinolite

29 CFR 1910.134 - Respiratory Protection

29 CFR 1926.21 - Safety Training and Education

29 CFR 1926.32 - Competent Person

29 CFR 1926.51 - Sanitation

29 CFR 1926.59 - Hazard Communication.
29 CFR 1926.62 - Lead in Construction
29 CFR 1926.200 - Accident Prevention Signs and Tags
29 CFR 1926.417 - Lockout and Tagging of Circuits
29 CFR 1926.1101 - Asbestos

2. Environmental Protection Agency (EPA)

40 CFR 61, Subpart M - National Emission Standards for Hazardous Air Pollutants;
Asbestos NESHAP Revision; Final Rule
40 CFR 260-271 - Hazardous Waste Disposal
40 CFR 763, Subpart E - Asbestos Hazard Emergency Response Act (AHERA)
40 CFR 763, Subpart G - Worker Protection Rule

3. Code of Massachusetts Regulations (CMR)

453 CMR 6 – The Removal, Containment, or Encapsulation of Asbestos

4. American National Standards Institute (ANSI)

ANSI Z9.2 - Fundamentals Governing the Design and Operation of Local Exhaust
Systems
ANSI Z88.2 - Respiratory Protection

5. American Society of Testing and Materials (ASTM)

ASTM E 84 - Surface Burning Characteristics of Building Materials
ASTM E 96 - Water Vapor Transmission of Materials
ASTM E 119 - Fire Tests of Building and Construction Materials
ASTM E 736 - Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to
Structural Members
ASTM E 1368 - Visual Inspection of Asbestos Abatement Projects
ASTM E 1494 - Encapsulants for Spray- or Trowel- Applied Friable Asbestos-Containing
Building Materials

6. Underwriters Laboratories, Inc. (UL)

UL 586 - High-Efficiency, Particulate, Air Filter Units

1.5 DOCUMENTATION

A. Submit two copies of the following documentation to ensure compliance with the applicable regulations. An up to date copy shall be retained at the job site at all times. Submission must be made prior to the Pre-abatement Meeting, which will be held two weeks prior to the start of abatement. The General Contractor, Abatement Contractor, Architect, Asbestos Project Designer and Owner's Representative shall be present at the meeting.

B. Statements:

Notification to Commonwealth of Massachusetts Department of Labor (ten (10) days before the start of asbestos abatement).

Notification to Commonwealth of Massachusetts Department of Environmental Protection (if waste is to be disposed of in Massachusetts).

Worker Medical Certification.

Worker Training Certification Worker Respirator Fit Testing OSHA Laboratory Certification.

Contractor's Project Monitor Certification.

Landfill Approval.

Safety Plan.

Respirator Protection Plan.

Initial Exposure Assessment.

1. Copies of all required notifications, approvals and permits for the removal, disposal and transport asbestos-containing or contaminated materials.
2. Documentation from a physician certifying that all employees who may be exposed to airborne asbestos in excess of the background level have been provided with an opportunity to be medically monitored to determine whether they are physically capable of working while wearing the respirator required without suffering adverse health effects. In addition, document that personnel have received medical monitoring required in 29 CFR 1926.1101. They shall also be informed of the specific types of respirators the employee shall be required to wear and the work he/she will be required to perform as well as special work place conditions such as high temperature, high humidity and chemical contaminants which to which he/she may be exposed.
3. Documentation certifying that all employees have received training in the proper handling of materials that contain asbestos; understand the health implications and risks involved, including the illnesses possible from exposure to airborne asbestos fibers; understands the use and limits of respiratory equipment to be used; and understands the results of monitoring of airborne quantities of asbestos as related to health and respiratory equipment as indicated in 29 CFR 1926.1101 on an initial and annual basis.
4. Documentation of respiratory fit testing for all employees who must enter the Work Area. This fit testing shall be in accordance with qualitative procedures as detailed in 29 CFR 1926.1101.
5. Qualifications of the Project Monitor the Contractor proposes for air sampling to assure workers are using appropriate respiratory protection in accordance with OSHA Standard 1926.1101. Include the name and address of the testing laboratory proposed to perform air monitoring on behalf of the Contractor, along with their NIOSH PAT Program I.D. number.
6. Establish and supervise in accordance with 29 CFR 1926.21, a program for the education and training of workers in the recognition, avoidance and prevention of unsafe conditions and the regulations applicable to the work environment to control or eliminate any hazards or other exposure to illness or injury. Include any site specific information to address health and safety procedures unique to this project.

7. Establish a written Respiratory Protection Plan in accordance with 29 CFR 1910.134. This plan shall establish procedures governing the selection and use of respirators and shall include such information as training in the proper use of respirators; medical examination of workers to determine whether or not they may be assigned an activity where respiratory protection is required; training in proper use and limitations of respirators; respirator fit testing; regular inspection and evaluation of the continued effectiveness of the program; and other elements included in the standard.
 8. Demonstrate that employee's exposures will be below the PELs for Class I asbestos work until the employer conducts exposure monitoring and documents that employees on that job will not be exposed in excess of the PELs, or otherwise make a Negative Exposure Assessment. The employer shall presume that employees are exposed in excess of the TWA and excursion limit.
- C. Records:
1. Sign-in/out Logs;
 2. Pressure Differential Recording Data;
 3. NPE Inspection; and
 4. Smoke Test Logs.
- D. During the asbestos abatement, submit to the Project Monitor and receive acknowledgment of the following:
1. Results of the personal air sampling data within one (1) working day of when the sampling was done.
 2. Copies of all waste shipment records of asbestos waste that is transported from the facility site.
- E. At the conclusion of the project, submit to the Project Monitor and receive acknowledgment of the following:
1. The original copy of all completed waste shipment records. This shall be submitted to the Project Monitor within 35 days from the date the waste was transported from the facility site.

1.6 PERSONNEL PROTECTION

- A. Instruct workers in all aspects of personnel protection, work procedures, emergency evacuation procedures and use of equipment including procedures unique to this project.
- B. Ensure workers are fully protected with respirators and protective clothing during work in the Asbestos Control Area, where there is the possibility of disturbing asbestos- containing or asbestos-contaminated materials.
- C. Respiratory protection shall meet the requirements of OSHA as required in 29 CFR 1910.134 and 29 CFR 1926.1101. Provide appropriate respiratory protection for each worker and ensure usage during potential asbestos exposure. As a minimum, workers shall be equipped with powered air-purifying respirators (PAPR) with HEPA filters.

TECHNICAL SPECIFICATION SECTION 02 31 00
SURVEYING
DECOMMISSIONING AND DEMOLITION ACTIVITIES
BASF CORPORATION PLAINVILLE SITE, PLAINVILLE, MASSACHUSETTS
REVISION: 0.0
DATE: JANUARY 16, 2017
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- D. Select respirators from among those jointly approved as being acceptable for protection by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR Part 11. Provide an adequate supply of filter elements for respirators in use.
- E. Minimum respiratory protection shall be as follows:

Airborne concentration of asbestos, tremolite, anthophyllite, actinolite or a combination of these minerals	Required Respirator ¹
Not in excess of 1 f/cc (10 x PEL) or otherwise as required	Half mask air purifying respirator other than a disposable respirator, equipped with high efficiency filters.
Not in excess of 5 f/cc (50 X PEL)	Full face piece air purifying respirator equipped with high efficiency filters.
Not in excess of 10 f/cc (100 x PEL)	Any powered air purifying respirator equipped with high efficiency filters or any supplied air respirator operated in continuous flow mode.
Not in excess of 100 f/cc (1000 X PEL)	Full face piece supplied air respirator operated in pressure demand mode.
Greater than 100 f/cc (>1000 x PEL) or unknown concentration	Full face piece supplied air respirator operated in pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus.

Airborne concentration of asbestos, tremolite, anthophyllite, actinolite or a combination of these minerals	Required Respirator ¹
<p>Notes:</p> <ol style="list-style-type: none"> 1. Respirators assigned for higher airborne fiber concentrations may be used at lower concentrations. 2. A high-efficiency filter means a filter that is at least 99.97 percent efficient against mono-dispersed particles of 0.3 micrometers in diameter or larger. 3. The Contractor shall provide a full face piece supplied air respirator operated in the pressure demand mode equipped with an auxiliary positive pressure self-contained breathing apparatus for all persons within the regulated area where apparatus for all persons within the regulated area where Class I work is being performed for which a negative exposure assessment has not been produced and, the exposure assessment indicates the exposure level will not exceed 1 f/cc as an 8-hour time weighted average. A full face piece supplied air respirator operated in the pressure demand mode equipped with an auxiliary positive pressure self-contained breathing apparatus shall be provided under such conditions, if the exposure assessment indicates exposure levels above 1 f/cc as an 8 hour time weighted average. 4. If compressed air is used for supplied air respirators, this air will meet the requirements for grade D breathing air as described by the Compressed Gas Association Commodity Specification G-7.1-1996. The compressor will be equipped with the necessary safety devices and sorbents/filters, and be situated to avoid entry of contaminated air. In addition, the compressor will be equipped with alarms to indicate failure or overheating, and additional alarms for indicating the presence of carbon monoxide. Air-line couplings will be incompatible with outlets for other gas systems to prevent inadvertent servicing of air-line respirators with non-respirable gases. 	

- F. Provide and require all workers to wear protective clothing in Work Areas where asbestos fiber concentrations exceed permissible limits established by OSHA. Protective clothing shall include impervious coveralls with elastic wrists and ankles, head covering, gloves and foot coverings.
- G. Provide all authorized persons entering contaminated areas with proper respirators and protective clothing.
- H. Ensure that all workers and authorized persons enter and leave the Asbestos Control Area through the Worker Decontamination Enclosure System.
- I. Ensure all contaminated protective clothing remains in the Equipment Room for reuse or disposal of as contaminated waste.
- J. Ensure workers do not eat, drink, smoke or chew gum or tobacco while in the Asbestos Control Area.

1.7 EQUIPMENT REMOVAL PROCEDURE

- A. Clean surfaces of contaminated containers and equipment thoroughly by vacuuming with HEPA filtered equipment and wet wiping before moving such items into the Equipment Decontamination Enclosure System for final cleaning and removal to uncontaminated

areas. Ensure that personnel do not leave the Asbestos Control Area through the Equipment Decontamination Enclosure System.

1.8 SEQUENCE OF WORK

- A. Proceed in accordance with the sequence of work as mutually agreed upon with the Owner's Representative.

The following sequence of work shall be used for the asbestos abatement work:

1. A visual inspection of the Work Area to determine pre-existing damage to facility components.
2. Release of work area to the Contractor.
3. All temporary utilities required for the project shall be on site and operational prior to the initiation of asbestos work.
4. Removal of all movable objects from the Work Area undergoing abatement by the Contractor.
5. Abatement of all asbestos-containing materials by the Contractor.
6. Air sampling by the Owner's Representative's Project Monitor for re-occupancy.
7. Cleanup by the Contractor. Work Areas must be returned to their original condition or better.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name and product technical description. Do not use damaged or deteriorating materials. Material that becomes contaminated with asbestos shall be decontaminated or disposed of as asbestos waste.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Fire retardant polyethylene sheet in roll size to minimize the frequency of joints, shall be delivered to job site with factory label indicating four (4) or six (6) mil.
- B. Polyethylene disposable bags shall be six (6) mil with pre-printed label. Disposable bags shall be opaque.
- C. Tape shall be capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheet to finished or unfinished surfaces. Tape must be capable of adhering under both dry and wet conditions.
- D. Surfactant (wetting agent) shall consist of fifty (50) percent polyoxyethylene ether and fifty (50) percent polyoxyethylene ester, or equivalent, and shall be mixed with water to provide a concentration one (1) ounce surfactant to five (5) gallons of water or as directed by the manufacturer.

- E. Containers must be impermeable and shall be both air and watertight. Containers shall be labeled in accordance with OSHA Standard 29 CFR 1926.1101 and EPA 40 CFR Part 61.152 as appropriate.
- F. Labels and signs shall conform to OSHA Standard 29 CFR 1926.1101.
- G. Encapsulant shall be bridging or penetrating type which has been approved by the Design Consultant. Usage shall be in accordance with manufacturer's printed technical data. Encapsulant must be compatible with new materials being installed. Encapsulant shall be clear.
- H. Glovebag assembly shall be manufactured of six (6) mil transparent polyethylene or PVC with two (2) inward projecting long sleeve gloves, an internal pouch for tools, and an attached labeled receptacle for waste.

2.2 TOOLS AND EQUIPMENT

- A. Tools and equipment shall be suitable for asbestos removal.
- B. Protective clothing, respirators, filter cartridges, air filters and sample filter cassettes shall be provided in sufficient quantities for the project.
- C. Electrical equipment, protective devices, emergency generators and power cables shall conform to all applicable codes.
- D. Shower stalls and plumbing shall include sufficient hose length and drain system or an acceptable alternate. Showers shall be equipped with hot and cold or warm running water. One shower stall shall be provided for each eight workers.
- E. Exhaust air filtration units shall be equipped with HEPA filters capable of providing sufficient air exhaust to create a minimum pressure differential of 0.02 inches of water column, and to allow a sufficient flow of air through the area. An automatic warning system shall be incorporated into the equipment to indicate pressure drop or unit failure. No air movement system or air filtering equipment shall discharge unfiltered air outside the Asbestos Control Area.
- F. Pressure differential automatic recording instrument shall be provided to ensure exhaust air filtration devices provide the minimum pressure differential required between the Work Area and occupied areas of the facility.
- G. Spray equipment shall be capable of mixing wetting agent with water and capable of generating sufficient pressure and volume. Hose length shall be sufficient to reach all of the Asbestos Control Area.
- H. Vacuum units, of suitable size and capabilities for the project, shall have HEPA filters capable of trapping and retaining at least 99.97 percent of all monodispersed particles of 0.3 microns in diameter or larger.
- I. Ladders and/or scaffolds shall be of adequate length, strength and sufficient quantity to support the work schedule.

- J. Other materials such as lumber, nails and hardware necessary to construct and dismantle the decontamination enclosures and the barriers that isolate the Work Area shall be provided as appropriate for the work.

PART 3 EXECUTION

3.1 PREPARATION OF WORK AREA ENCLOSURE SYSTEM

- A. Prior to beginning work, the Design Consultant, Owner's Representative and Contractor shall perform a visual survey of the Work Area and list all pre-existing damage to building components. The Contractor shall submit to the Owner's Representative's Representative a list which shall include all damaged areas not scheduled to be repaired under this Contract and include photographs, video tapes as applicable.
- B. Post warning signs meeting the specifications of OSHA 29 CFR 1910 and 29 CFR 1926.1101 at each Regulated Area. In addition, signs shall be posted at all approaches to Regulated Areas so that an employee may read the sign and take the necessary protective steps before entering the area. Additional signs may require posting following construction of work place enclosure barriers.
- C. Utilize engineering controls and personnel protective equipment while installing enclosures and supports when asbestos-containing materials may be disturbed.
- D. When feasible, shut down and lock out electrical power, including all receptacles and light fixtures. Protect receptacles and light fixtures remaining in the Work Area with six (6) mil polyethylene and seal with tape. Protect fire alarm system components remaining in the area with six (6) mil polyethylene and seal with tape. Coordinate all power and fire alarm isolation with the Owner's Representative.
- E. Provide temporary power and lighting, if applicable, and ensure safe installation, including ground fault protection, of temporary power sources and equipment in compliance with applicable electrical code and OSHA requirements. The Contractor is responsible for proper connection and installation of electrical wiring.
- F. Shut down and isolate heating, cooling, and ventilating air systems to prevent contamination and fiber dispersal to other areas of the building. Seal all vents. Construct wooden platform over gas burners and gas trains to prevent damage.
- G. The Contractor will be responsible for movable objects within the proposed Work Areas to a temporary location.
- H. Pre-clean fixed objects within the proposed Work Areas, using HEPA filtered vacuum equipment and/or wet cleaning methods as appropriate, and enclose with two layers of six (6) mil polyethylene sheeting sealed with tape. Objects which must remain in the Work Area and which require special ventilation or enclosure include electrical equipment, pumps, compressors, control panels, and meter equipment.
- I. Clean the proposed Work Areas using HEPA filtered vacuum equipment and/or wet cleaning methods as appropriate. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters.

- J. Seal off all openings between the Work Area and the uncontaminated areas outside of the Work Area with critical barriers. Doorways and corridors which will not be used for passage during work must be sealed with fixed critical barriers.
- K. Conspicuously label and maintain emergency and fire exits from the Asbestos Control Area satisfactory to the Project Monitor.

3.2 WORKER DECONTAMINATION ENCLOSURE SYSTEM

- A. Establish contiguous to the Work Area, a Worker Decontamination Enclosure System consisting of Equipment Room, Shower Room and Clean Room in series. Access to the Work Area shall only be through this enclosure.
- B. Access between rooms in the Worker Decontamination Enclosure System shall be through double flap curtained openings (air locks). Other effective designs are permissible. The Clean Room, Shower Room and Equipment Room located within the Worker Decontamination Enclosure, shall be completely sealed ensuring sole source of air flow into the Asbestos Control Area originates from the outside uncontaminated areas.
- C. The Clean Room shall be adequately sized to accommodate workers and shall be equipped with a suitable number of hooks, lockers, shelves, etc., for workers to store personal articles and clothing. Changing areas of the Clean Room shall be suitably screened from areas occupied by the public.
- D. The Shower Room shall be of sufficient capacity to accommodate the number of workers. Supply warm water to showers. Provide one shower for each eight workers. No worker or other person shall leave an Asbestos Control Area without showering. Shower water shall be collected and filtered using best available technology and dumped down an approved drain.
- E. No personnel or equipment shall be permitted to leave the Asbestos Control Area unless just decontaminated by showering, wet cleaning or HEPA vacuuming to remove all asbestos debris. No asbestos-contaminated materials or persons shall enter the Clean Room.

3.3 EQUIPMENT DECONTAMINATION ENCLOSURE SYSTEM

- A. Establish contiguous to the Work Area an Equipment Decontamination Enclosure System consisting of two (2) totally enclosed chambers divided by a double flap curtained opening. Other effective designs are permissible. This enclosure must be constructed so as to ensure that no personnel enter or exit through this unit.

3.4 SEPARATION OF WORK AREAS FROM OCCUPIED AREAS

- A. Occupied areas and/or building space not within the Asbestos Control Area shall be separated from asbestos abatement Work Areas by means of airtight barriers. Barriers at openings with dimensions exceeding two (2) feet in both directions shall be blocked with fixed critical barriers.

- B. Do not impair required building exits from any occupied building area. Where normal exits have been blocked by the asbestos work, provide temporary exit signs directing building occupants to the nearest available exit location.
- C. For Class I work, visually inspect and smoke test barriers to assure an effective seal. Repair defects immediately.
- D. Create a pressure differential in the range of 0.02 to 0.04 inches of water column between the Work Area and occupied areas by the use of acceptable pressure differential equipment. Provide a sufficient quantity of units to exhaust the volume of air within the Asbestos Control Area a minimum of four times per hour. Continuously monitor the pressure differential between the Work Area and occupied areas utilizing recording type equipment to ensure exhaust air filtration equipment maintains a minimum pressure differential of 0.02 inches of water column.

3.5 ASBESTOS REMOVAL

- A. A Competent Person shall be on the job at all times to ensure the establishment and maintenance of the negative pressure enclosure (NPE) and proper work practices throughout the project.
- B. Do not begin abatement work until authorized by the Owner's Representative's Project Monitor. Follow the steps for abatement as outlined in Section 1.8, Sequence of Work.
- C. For all Class I work, before beginning work within the enclosure and at the beginning of each shift, the NPE shall be inspected for breaches, and smoke tested for leaks, and any leaks sealed. Results of the NPE inspection shall be logged.
- D. Spray asbestos materials with amended water, using airless spray equipment capable of providing a "mist" application to reduce the release of fibers during the removal operation.
- E. In order to maintain indoor asbestos concentrations at a minimum, remove the wet asbestos in manageable sections. Materials shall not be allowed to dry out. Material drop shall not exceed 8 feet. For heights up to 15 feet provide inclined chutes or scaffolding to intercept drop. For heights exceeding 15 feet provide enclosed dust-proof chutes.
- F. Fill disposal containers (six (6) mil polyethylene bags or fiber drums) as removal proceeds, seal filled containers, apply caution labels and clean containers before removal to wash area. Bags shall be securely sealed to prevent accidental opening and leakage by taping in gooseneck fashion. Bags may be placed in drums for staging and transportation to the disposal site. Bags shall be decontaminated by wet cleaning and HEPA vacuuming before being placed in clean drums and sealed with locking ring tops. Large components removed intact may be wrapped in two (2) layers of six (6) mil polyethylene sheeting secured with tape for transport to the waste disposal site. Small components and asbestos containing waste with sharp-edged components (e.g., nails, screws, metal lath, tin sheeting) which could tear polyethylene bags and sheeting shall be placed in clean drums and sealed with locking ring tops. Wet clean each container thoroughly before moving to Holding Area. Ensure that workers do not enter from uncontaminated areas into the Washroom or the Work Area. Ensure that contaminated workers do not exit the Work Area through the Equipment Decontamination Enclosure.

- G. After completion of stripping work, all surfaces from which asbestos has been removed shall be wet brushed, using a nylon brush, wet wiped and sponged or cleaned by an equivalent method to remove all visible material (wire brushes are not permitted). During this work the surfaces being cleaned shall be kept wet.
- H. If at any time during asbestos removal, should the Owner's Representative's Project Monitor suspect contamination of areas outside the Work Area, the Contractor shall stop all abatement work and take steps to decontaminate these areas and eliminate causes of such contamination. Unprotected individuals shall be prohibited from entering contaminated areas until air sampling and visual inspections determine decontamination.
- I. Containerize asbestos-containing waste material removed daily. Do not allow ACM to remain on the floor overnight, allowing it to dry out.

3.6 CLEAN-UP PROCEDURE

- A. Remove and containerize all visible accumulations of asbestos-containing and/or asbestos-contaminated debris which may have splattered or collected on the polyethylene wall covering. Carefully remove the cleaned outer layer of polyethylene from the walls, fold inward as material is being removed, and place in disposal containers. Any debris which may have leaked behind the outer layer shall be removed by HEPA vacuuming and/or wet cleaning.
- B. Remove contamination from the exteriors of the negative air machines, scaffolding, ladders, extension cords, hoses and other equipment inside the Work Area. Cleaning may be accomplished by brushing, HEPA vacuuming and/or wet cleaning.
- C. The Owner Representative's Project Monitor shall conduct a thorough visual inspection utilizing a high-intensity flashlight, with the containment barriers in place, to detect visible accumulations of dust or bulk asbestos-containing materials remaining in the Work Area. Should dust, debris or residue be detected, the Contractor shall repeat the cleaning, at the Contractor's expense, until the area is in compliance. The visual inspection will detect incomplete work, damage caused by the abatement activity, and inadequate clean-up of the work site. At the conclusion of the final visual inspection, the Owner's Representative's Project Monitor and the Contractor's supervisor shall certify that they have visually inspected the work area and have found no dust, debris or residue.
- D. Once the area has been recleaned, any equipment, tools or materials not required for completion of the work, shall be removed from the Work Area. Negative air filtration devices shall remain in place and operating for the remainder of the clean-up operation.
- E. Apply a lock-down encapsulant to all surfaces within the Work Area from which asbestos has been removed and the cleaned inner layer of polyethylene in the clean room.
- F. Air sampling for re-occupancy clearance shall be undertaken using aggressive sampling techniques. Analysis of clearance samples shall follow Commonwealth of Massachusetts Regulations, Section 19a-332a-12. Areas which do not comply shall continue to be cleaned by and at the Contractors expense, until the specified Standard of Cleaning is achieved as evidenced by results of air testing. When the Work Area passes the re-occupancy clearance, controls established by this specification may be removed.

- G. Remove all remaining polyethylene, including critical barriers, and Decontamination Enclosure Systems leaving negative air filtration devices in operation. HEPA vacuum and/or wet wipe any visible residue which is uncovered during this process. Dispose of poly as asbestos waste.

3.7 REINSTALLATION OF DISPLACED EQUIPMENT

- A. After re-occupancy is granted, re-secure mounted items removed during the course of the work to their former positions.
- B. Re-establish to proper working order all HVAC, mechanical and electrical systems including lights, exit lights, fire alarm systems and sound systems.
- C. Install new filters in HVAC systems and dispose of used filters as asbestos- containing waste. All systems shall be function tested in the presence of the Owner's Representative.

3.8 DISPOSAL OF ASBESTOS

- A. Disposal of asbestos-containing and/or asbestos contaminated material shall occur at an authorized site and must be in compliance with the requirements of, and authorized by the Office of Solid Waste Management, Department of Environmental Protection, or other designated agency having jurisdiction over solid waste disposal.
- B. Disposal approval shall be obtained prior to commencement of asbestos removal.
- C. Warning signs must be attached to vehicles used to transport asbestos containing waste. Warning signs shall be posted during loading and unloading of disposal containers. The signs must be posted so that they are plainly visible.
- D. Waste removal dumpsters and cargo areas of transport vehicles shall be lined with a layer of six (6) mil polyethylene sheeting to prevent contamination from leaking or spilled containers. Floor sheeting shall be installed first, and shall be extended up sidewalls 12-inches. Wall sheeting shall overlap floor sheeting 24-inches and shall be taped into place.
- E. The completed waste shipment record shall be provided to the Owner's Representative.

3.9 CONTRACTOR RESPONSIBILITY

- A. Conduct air sampling, as necessary, to assure that workers are using appropriate respiratory protection in accordance with OSHA Standard 1926.1101. Perform monitoring to determine accurately the airborne concentrations of asbestos to which employees may be exposed. Determinations of employee exposure shall be made from breathing zone air samples that are representative of the 8-hour TWA and 30- minute short-term exposures of each employee. Documentation of air sampling results must be recorded at the work site within twenty-four (24) hours of receipt of results, and shall be available for review until the job is complete.

3.10 AIR SAMPLING SCHEDULE

- A. At a minimum, air sampling by the Owner’s Representative’s Project Monitor will be conducted in accordance with the following schedule:

<u>Abatement Activity</u>	<u>Pre- Abatement</u>	<u>During Post- Abatement</u>	<u>Abatement</u>
Greater than 160 s.f./260 l.f.	PCM ¹	PCM	TEM ²
Equal to or less than 160 s.f./260 l.f.	PCM	PCM	PCM
Tent and Glovebag Procedures	---	PCM	PCM
Note: 1) PCM (Phase Contrast Microscopy) 2) TEM (Transmission Electron Microscopy)			

- B. Frequency and duration of the air sampling during abatement will be representative of the actual conditions during the abatement. The size of the asbestos project will be a factor in the number of samples required to monitor the abatement activities. In addition to OSHA compliance monitoring (personal sampling accomplished by the Contractor) a minimum schedule of samples will be established by a certified and licensed Project Monitor for Background, Abatement, and Post-Abatement Sampling.
- C. Post-abatement clearance air monitoring requirements are as follows:
1. Air sampling will not begin until at least 12 hours after wet cleaning has been completed and no visible water or condensation remain.
 2. Sampling equipment will be placed at random around the Work Area.
 3. The representative samplers placed outside the Work Area but within the building will be located to avoid any air that might escape through the isolation barriers and will be approximately 50 feet from the entrance to the Work Area, and 25 feet from the isolation barriers.
 4. The following aggressive air sampling procedures will be used within the Work Area during all air clearance monitoring:
 - a. Before starting the sampling pumps, direct the exhaust from forced air equipment (such as a 1 horsepower leaf blower) against all walls, ceilings, floors, ledges and other surfaces in the Work Area. This should take at least 5 minutes per 1000 SF of floor area.
 - b. Place a minimum 20-inch fan in the center of the room. (Use one fan per 10,000 cubic feet of room space, minimum). Place the fan on slow speed and point it toward the ceiling.
 - c. Start the sampling pumps and sample for the required time.

- d. Turn off the pump and then the fan(s) when sampling is complete.
5. Air volumes taken for clearance sampling shall be sufficient to accurately determine (to a 95 percent probability) fiber concentrations to 0.010 f/cc of air.
6. If sample results are above acceptable criteria the work area shall be thoroughly recleaned using HEPA vacuuming and/or wet cleaning, with the negative pressure ventilation system in operation. New samples shall be collected in the Work Area as described above. The process shall be repeated until the Work Area passes the test, with the cost of repeat sampling being borne entirely by the Contractor.
7. For an asbestos abatement project with more than one homogeneous Work Area, the release criterion shall be applied independently to each Work Area.

3.11 ACTION CRITERIA

- A. If air samples collected outside of the Work Area during abatement activities indicate airborne fiber concentrations greater than original background levels or greater than 0.050 f/cc, as determined by Phase Contrast Microscopy (PCM), whichever is larger, an examination of the Work Area perimeter shall be conducted and the integrity of barriers shall be restored. Cleanup of surfaces outside the Work Area using HEPA vacuum equipment or wet cleaning techniques shall be done prior to resuming abatement activities.

END OF SECTION

**SECTION 02 41 00
DECOMMISSIONING AND DEMOLITION**

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. This specification covers requirements for decommissioning, demolishing, and dismantling of existing building materials, equipment and utilities, which are to be salvaged, recycled, or disposed.
- B. The Contractor shall furnish all labor, material, equipment and incidentals necessary for decommissioning, demolishing, and dismantling and salvaging, recycling, or disposing of structures, equipment and appurtenances designated in the Contract Drawings.
- C. The Contractor shall protect and ensure the operation of equipment and fixtures designated for salvaging by the Owner.
- D. All equipment and fixtures not designated for salvaging by the Owner shall become the property of the Contractor, who may can reuse, recycle or otherwise dispose of these materials at preapproved off-site facilities.
- E. All waste materials shall be characterized, managed, transported and disposed in accordance with the Technical Specifications, the Standard Contract Terms, and the Disposal Facility's requirements.
- F. With the exception of the following, no asbestos containing material (ACM) is known to remain on-site.
 - a. window glazing in Building 8,
 - b. tar coating on the roof of Building 8 (i.e. Roof on Trane HVAC Duct Work covering Fiberglass Insulation),
 - c. roof of the second floor of Building 8 East
 - d. roofing and roof flashing of Building 10,
 - e. roofing and all associated flashing (perimeter and HVAC) of Building Building 11
 - f. window glazing in Building 11
- G. All other previously identified ACM and LBP have been abated and removed from the Site.
- H. Soils potentially contaminated above applicable standards are present at the locations shown in the Contract Drawings. The contractor shall only disturb or otherwise perform intrusive activities within site soils if directed by the Owner's Representative.
- I. The Contractor shall comply with all applicable regulations and procure all necessary permits to complete the work which will not be specifically provided by the Owner.

1.02 RELATED WORK NOT INCLUDED

- | | | |
|----|---------------------|---|
| A. | Section 01 35 29.13 | Health and Safety |
| B. | Section 01 71 13 | Mobilization and Demobilization |
| C. | Section 02 01 00 | Maintenance and Protection of Existing Conditions |
| D. | Section 02 31 00 | Asbestos Abatement |
| E. | Section 02 42 00 | Chain Link Fence |
| F. | Section 02 81 00 | Transportation and Disposal of Waste Materials |
| G. | Section 31 11 00 | Clearing and Grubbing |
| H. | Section 31 23 23 | Backfill and Compaction |
| I. | Section 31 24 00 | Grading |
| J. | Section 31 25 00 | Soil Erosion and Sediment Control |

1.03 SUBMITTALS

- B. The Contractor shall prepare an Existing Conditions Plan in the presence of the Owner's Representative documenting the existing condition of structures and other facilities adjacent to the areas of decommissioning or demolition. Photographs are considered an acceptable record of existing conditions. The Plan shall include records of elevations of elevation of the top of foundation walls, finish floor elevations, potential conflicting electrical conduits, plumbing lines and alarms systems, the location and extent of existing cracks and other damage, and description of surface conditions that exist prior to before starting work.
- C. Where the meters or related equipment are the property of the local utility companies and not of the Owner, the Contractor shall determine the utilities requirements for their disposal.
- D. The Contractor shall prepare a Decommissioning and Demolition Plan and submit proposed salvage, demolition, decommissioning, and removal procedures for approval prior to mobilization. The plan shall include:
- A drawing(s) identifying all equipment, appurtenances and materials which are to be decommissioned or demolished for approval prior to mobilization. The drawing shall identify detailed procedures for careful removal and storage of materials specified by the Owner to be salvaged.
 - Coordination with other work in progress.
 - A disconnection schedule of utility services.
 - A detailed description of methods and equipment to be used for each operation and of the sequence of operations.
 - Details on how components and materials are to be managed (i.e., salvaged, recycled or disposed off-site) and identify the salvaging, recycling or disposal facility.

- f. Sample tracking forms for all removed materials indicating type, quantities, condition, destination, and end use.
 - g. If the existing roof deck is to be used as a working platform, include certification by a Professional Engineer of suitability of deck as a safe working platform. If inspection reveals a safety hazard to workers, the Contractor shall provide a roof safety plan that defines provisions for securing the safety of the workers throughout the performance of the work and provides procedures for safe conduct of the work in accordance. The roof safety plan shall be approved by a licensed Structural Professional Engineer prior to commencement of work.
- E. The Contractor shall provide copies of all local, State and Federal permits procured by the Contractor for implementation of the Work.
- F. The Contractor shall provide written Notification of Demolition and Decommissioning at least ten (10) working days prior to initiation of the work, for all demolition and decommissioning work involving "load-supporting" structures and/or asbestos work.
- G. The Contractor shall submit documentation certifying that the Contractor and/or its Demolition Supervisor has a current Demolition License in the State of Massachusetts and a minimum of five years of experience with the work required by this Specification.
- H. The Contractor shall provide receipts, manifest, bills of lading, and/or certificates documenting the salvaging, recycling or disposal of all decommissioned or demolished equipment, appurtenances and materials.
- I. The Contractor shall provide copies of notices of non-compliance or notices of violation issued by a Federal, State, or local regulatory agency issued to the Contractor in relation to any work performed under this contract. The Contractor shall provide copies of such notices to the Owner's Representative within 24 hours of receipt. The Contractor shall also furnish all relevant documents regarding the incident and any information requested by the Owner's Representative, and shall coordinate its response to the notice with the Owner's Representative prior to submission to the notifying authority. The Contractor shall also furnish a copy to the Owner's Representative of all documents submitted to the regulatory authority, including the final reply to the notice, and all other materials, until the matter is resolved.

1.04 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AIR-CONDITIONING, HEATING AND REFRIGERATION INSTITUTE (AHRI)

AHRI Guideline K (2009) Guideline for Containers for Recovered Non-Flammable
Fluorocarbon Refrigerants

AMERICAN SOCIETY OF SAFETY ENGINEERS (ASSE/SAFE)

ASSE/SAFE A10.6 (2006) Safety Requirements for Demolition Operations

CODE OF FEDERAL REGULATIONS (CFR)

40 CFR 61	National Emission Standards for Hazardous Air Pollutants
40 CFR 82	Protection of Stratospheric Ozone
49 CFR 173.301	Shipment of Compressed Gases in Cylinders and Spherical Pressure Vessels

CODE OF MASSACHUSETTS REGULATION (CMR)

310 CMR 19	Solid Waste Management Regulations
310 CMR 30	Hazardous Waste
310 CMR 40	Massachusetts Contingency Plan
310 CMR 76	Disposal Prohibition of Mercury-Added Products in Solid Waste
453 CMR 06	The Removal, Containment or Encapsulation of Asbestos
520 CMR 14	Excavation and Trench Safety

1.05 DEFINITIONS

- A. "Demolition" means the wrecking or taking out of any "load-supporting structural member" of a facility together with any related handling operations.
- B. "Decommission" or "Dismantling" means the disassembly of buildings to recover materials.
- C. "Regulated asbestos-containing material" (RACM) means:
 - a. Friable asbestos material;
 - b. Category I nonfriable ACM that has become friable;
 - c. Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or;
 - d. Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition, decommission, or dismantling operations regulated by this subpart.

PART 2 - PRODUCTS

2.01 TEMPORARY FENCING

- A. Temporary fencing shall be at least 6 feet high, consistently restrictive from top to grade, and without horizontal openings wider than 2 inches.
- B. Temporary fencing shall not have barbed-wire top strands.
- C. Temporary fencing shall have "drive"-type post tips.
- D. Temporary fencing shall conform to the specifications set forth in **Section 02 42 00 – Chain Link Fence** as applicable.

PART 3 - EXECUTION

3.01 GENERAL

- A. In addition to the requirements of the Contract Documents, the Contractor shall conform to the safety requirements contained in ASSE/SAFE A10.6.
- B. Prior to the start of work, the Contractor shall install temporary fencing around the project area indicated in the Contract Drawings. Locking gates shall be installed or maintained at existing openings.
- C. The Contractor shall not disturb existing construction beyond the extent indicated in the Contract Drawings. Where necessary, the Contractor shall:
 - a. take all necessary precautions to avoid damage to existing items or facilities to remain in place, to be reused, or to remain the property of the Owner.
 - b. protect the integrity of wells and injection points within the project area by limiting removal of concrete slabs to a distance of at least 3 feet from the center of the well.
 - c. provide temporary shoring and bracing for support of building components to prevent settlement or other movement.
 - d. implement protective measures to control accumulation and migration of dust and dirt in all work areas.
 - e. remove snow, dust, dirt, and debris from work areas at the end of each work day.
- D. The Contractor shall not commence excavation, filling, and other earth-moving operations that are sequential to demolition or decommissioning work in areas occupied by structures to be demolished or decommissioned until all demolition and decommissioning in the area has been completed and debris removed.

- E. The Contractor shall coordinate the work with other contractors and their subcontractors.
- F. Where removal of existing utilities and pavement is specified or indicated, the Contractor shall provide approved barricades and/or temporary covering of exposed areas, as directed by the Owner's Representative.
- G. The Contractor shall prevent unsafe or hazardous conditions by filling all holes, open basements and other hazardous openings upon discovery or creation.
- H. Where pedestrian and driver safety is endangered in the work area, the Contractor shall deploy traffic barricades with flashing lights.
- I. Before, during, and after the demolition and decommissioning work, the Contractor shall continuously evaluate the condition of both the structure being demolished and/or decommissioned and adjoining structures and take immediate action to protect all personnel working in and around the project site. The Contractor shall cease operations immediately if adjoining structures appear to be in danger and shall notify the Owner's Representative. Work shall not resume without approval from the Owner's Representative.
- J. No area, section, or component of floors, roofs, walls, columns, pilasters, or other structural element shall be left unsupported without adequate and secured bracing, shoring, or lateral support to prevent collapse or failure resulting from cutting, removal, decommissioning, or demolition work.
- K. For portions of the building to remain, the Contractor shall protect building interior and materials and equipment from the weather at all times. Where removal of existing roofing is necessary to accomplish work, the Contractor shall have materials and workmen ready to provide adequate and temporary covering of exposed areas.
- L. The Contractor shall protect vegetation indicated in the Contract Drawings to remain by installing a six (6)-foot high fence, secured at least five (5) feet from the trunk of individual trees or encompassing the outer perimeter of the canopy of trees. The Contractor shall replace any tree designated to remain that is damaged during the work under this contract with like-kind at no additional cost to the Owner.
- M. The use of explosives shall not be permitted.
- N. Burning of materials removed from demolition and decommissioning activities will not be permitted.
- O. Repair or replace damaged items as approved by the Contracting Officer.
- P. The Contractor shall remove rubbish and debris from the project as soon as practicable and shall control the pace of demolition and decommissioning activities to ensure that material, rubbish and debris accumulations inside or outside the building are prevented. If at the discretion of the Owner's Representative, the rate of material, rubbish and debris accumulations exceeds the rate of material off-site disposal, the Contractor shall limit or halt demolition and decommissioning activities.

3.02 DISCONNECTING EXISTING UTILITIES

- A. The Contractor shall maintain existing utilities indicated to remain in service and protect against damage during demolition, decommission and dismantling operations.
- B. The Contractor shall not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by the Owner.
- C. The Contractor shall not interrupt existing utilities unless temporary utility services have been approved and provided.
- D. The Contractor shall obtain the necessary permits for local utilities to disconnect all existing utilities servicing the Work area.
- E. The Contractor shall de-energize the work area prior to initiating any decommissioning or demolition work.
- F. Prior to start of work, the Contractor shall shutoff, disconnect and seal all utilities serving each work area.
- G. The Contractor shall remove existing utilities servicing or connected to equipment to be dismantled, decommissioned or demolished as indicated in the Contract Documents. All utilities shall be terminated in a manner conforming to the nationally recognized code covering the specific utility and approved by the Owner's Representative. The Contractor shall shut off and cap utilities for future use.
- H. Should the Contractor encounter a utility line that is not indicated on the Contract Drawings, the Contractor shall notify the Owner's Representative prior to further work in that area.
- I. The removed piping, conduit, meters and related equipment shall be managed in accordance with the Contractor's Decommissioning and Demolition Plan.

3.03 TEMPORARY FENCING

- A. Temporary fencing installation shall conform to the specifications set forth in **Section 02 42 00 – Chain Link Fence** as applicable.

3.04 ROOFING

(Reserved)

3.05 STRUCTURES, STRUCTURAL STEEL, MASONRY, AND CONCRETE

- A. The Contractor shall remove existing structures and associated foundation as indicated in the Contract Documents.
- B. The Contractor shall demolish structures in a systematic manner from the top of the structure to the ground, completing demolition work above each tier or floor before the supporting members on the lower level are disturbed.

- C. The Contractor shall demolish walls in small sections, removing structural framing members and lowering to ground by means of derricks, platforms hoists, or other suitable.
- D. The Contractor shall dismantle structural steel at field connections and in a manner that will prevent bending or damage. Flame-cutting torches are permitted when other methods of dismantling are not practical
- E. The Contractor shall locate demolition equipment throughout the structure and remove materials so as to not impose excessive loads to supporting walls, floors, or framing.
- F. Structures, or the remaining portions thereof, not exceeding 80 feet in height may be demolished by the mechanical method of demolition.
- G. The Contractor shall sawcut and remove masonry so as to prevent damage to surfaces to remain. The Contractor shall provide square, straight edges and corners where existing masonry adjoins other locations.
- H. The Contractor shall remove concrete slabs including aggregate base as indicated in the Contract Drawings. The Contractor shall sawcut concrete along straight lines to a minimum depth of 2 inches.
- I. The Contractor shall carefully dismantle pits, sumps, equalization tanks, secondary containment structures or other similar structures that previously contained or currently contain fluids, with precautions taken to prevent injury to persons and property. Prior to removal of these structures, fluids, sediment and sludge that may be present shall be containerized and following characterization by the Contractor, disposed at an approved facility. All associated piping, ducts and conduits shall be removed in accordance with the requirements of this Specification.
- J. Where cuts in concrete walls are necessary, these should be perpendicular to the face and in alignment with the cut in the opposite face. The Contractor shall break out the remainder of the concrete provided that the broken area is concealed in the finished work, and the remaining concrete is sound. At locations where the broken face cannot be concealed, the Contractor shall grind smooth or sawcut entirely through the concrete.
- K. Where removals leave holes and damaged surfaces exposed in the finished work, the Contractor shall patch and repair these holes and damaged surfaces to match adjacent finished surfaces. Finished surfaces of patched area shall be flush with the adjacent existing surface, shall match the existing adjacent surface as closely as possible as to texture and finish. The Contractor shall:
 - a. completely fill holes and depressions in concrete and masonry caused by previous physical damage or left as a result of removals in existing masonry walls to remain, with an approved masonry patching material, applied in accordance with the manufacturer's printed instructions.
 - b. patch to match existing floor tile where existing partitions have been removed leaving damaged or missing resilient tile flooring.
 - c. patch to match and seal existing ceiling and roofing materials where demolition, decommissioning, or dismantling operations have resulted in

damage to the ceiling or roof.

- d. patch acoustic lay-in ceiling where partitions have been removed. The transition between the different ceiling heights shall be effected by continuing the higher ceiling level over to the first runner on the lower ceiling and closing the vertical opening with a painted sheet metal strip.
- L. All structural steel (i.e., structural steel, steel joists, girders, angles, plates, columns and shapes) shall be managed in accordance with the Contractor's Decommissioning and Demolition Plan.
- M. Masonry and concrete, excluding reinforcement or embedded piping and conduits, shall be managed in accordance with **Section 31 23 23 – Backfill and Compaction**. Masonry and concrete with reinforcement or embedded piping and conduits shall be managed in accordance with the disposal requirements of this Specification.

3.06 PAVING

(Reserved)

3.07 MISCELLANEOUS METAL

- A. The Contractor shall remove for recycling or disposal existing shop-fabricated items (e.g., access doors and frames, steel gratings, metal ladders, wire mesh partitions, metal railings, metal windows) and light-gage and cold-formed metal framing (e.g., steel studs, steel trusses, metal gutters, roofing and siding, metal toilet partitions, toilet accessories),
- B. All removed miscellaneous items shall be managed in accordance with the Contractor's Decommissioning and Demolition Plan.

3.08 CARPENTRY

- A. The Contractor shall remove existing timber structures in a systematic manner from the top of the structure to the ground, completing demolition work above each tier or floor before the supporting members on the lower level are disturbed.
- B. The Contractor shall remove for recycling or disposal lumber, millwork items, finished boards, windows, doors, frames, and cabinets, and similar items as whole units, complete with trim, hardware and accessories.
- C. All removed carpentry items shall be managed in accordance with the Contractor's Decommissioning and Demolition Plan.

3.09 CARPET

(Reserved)

3.10 ACOUSTIC CEILING TILE

(Reserved)

3.11 AIR CONDITIONING EQUIPMENT

- A. The Contractor shall remove air conditioning, refrigeration, and other equipment containing refrigerants without releasing chlorofluorocarbon refrigerants to the atmosphere in accordance with the Clean Air Act Amendment of 1990.
- B. The Contractor shall recover all refrigerants prior to removing air conditioning, refrigeration, and other equipment containing refrigerants and dispose of in accordance with the disposal requirements of this Specification.

3.12 CYLINDERS AND CANISTERS

- A. The Contractor shall deactivate fire suppression system cylinders and canisters with electrical charges or initiators prior to shipment.
- B. The Contractor shall use safety caps to cover exposed actuation mechanisms and discharge ports on cylinders and canisters.
- C. The Contractor shall remove all fire suppression system cylinders and canisters and dispose of in accordance with the disposal requirements of this Specification.

3.13 LOCKSETS ON SWINGING DOORS

(Reserved)

3.14 MECHANICAL EQUIPMENT AND FIXTURES

- A. The Contractor shall disconnect mechanical hardware at the nearest connection to existing services to remain, unless otherwise noted in the Contract Drawings.
- B. The Contractor shall disconnect mechanical equipment and fixtures at fittings, and shall remove service valves attached to the unit.
- C. The Contractor shall remove water, dirt, dust, and foreign matter from units. All tanks, piping and fixtures shall be drained and, if interiors were previously used to store regulated or hazardous liquids, they shall be steam cleaned. Decontamination fluids shall be containerized and following characterization by the Contractor, disposed at an approved facility.
- D. All items of equipment and fixtures not designated for salvaging by the Owner shall be temporarily stored in designated areas for subsequent recycling, reuse or disposal, as arranged by the Contractor.

3.15 PIPING, DUCTS, AND CONDUITS

- A. The Contractor shall disconnect piping, ducts and conduits at unions, flanges and valves, and fittings as required to reduce the pipe into straight lengths for practical storage and transport as indicated in the Contract Documents.
- B. The Contractor shall carefully dismantle piping, ducts and conduits that previously contained regulated or hazardous fluids, with precautions taken to prevent injury to persons and property. All piping, ducts and conduits shall be drained and steam cleaned. Decontamination fluids shall be containerized and following characterization by the Contractor, disposed at an approved facility.
- C. Piping, ducts and conduits that previously contained regulated or hazardous fluids shall be stored in containers or over liners.
- D. All piping, ducts and conduits shall be temporarily stored in designated areas for subsequent recycling, reuse or disposal, as arranged by the Contractor. The Contractor may opt to store piping, ducts and conduits according to size and type.
- E. If the piping that remains can become pressurized due to upstream valve failure, the Contractor shall attach end caps, blind flanges, or other types of plugs or fittings with a pressure gage and bleed valve to the open end of the pipe to ensure positive leak control.
- F. All piping, ducts, and conduits including supports, cleats, straps, knobs, sprinkler heads, hangers, plates, valves, and specialty items shall be temporarily stored in designated areas for subsequent recycling, reuse or disposal, as arranged by the Contractor.

3.16 FIXTURES, MOTORS AND MACHINES

- A. The Contractor shall remove and manage (salvage, recycle or dispose of) motors, motor controllers, wiring systems, components, and operating and control equipment that are attached to the driven equipment. The Contractor shall disconnect primary, secondary, control, communication, and signal circuits at the point of attachment to their distribution system.
- B. The Contractor shall remove and manage (salvage, recycle or dispose of) electrical fixtures. Incandescent, mercury-vapor, and fluorescent lamps and fluorescent ballasts manufactured prior to 1978, shall be boxed and tagged for identification, and protected from breakage, and dispose of in accordance with the disposal requirements of this Specification.
- C. The Contractor shall remove and manage (salvage, recycle or dispose of) switches, switchgear, transformers, conductors including wire and nonmetallic sheathed and flexible armored cable, regulators, meters, instruments, plates, circuit breakers, panelboards, outlet boxes, and similar items.
- D. The Contractor shall remove and manage (salvage, recycle or dispose of) wiring ducts or troughs. Where applicable, the Contractor shall remove plug-in or

disconnecting devices from the busway.

3.17 ELEVATORS AND CONVEYING EQUIPMENT

(Reserved)

3.18 SALVAGING OF EQUIPMENT FOR OWNER

- A. The Contractor shall not remove equipment designated for salvaging until approved by the Owner's Representative.
- B. The Contractor shall remove materials and equipment designated by the Owner for salvaging and deliver them to the designated storage area at the site.
- C. The Contractor shall remove and salvage Owner designated fixtures, motors and machines associated with plumbing, heating, air conditioning, refrigeration, and other mechanical system installations, unless broken, damaged, or otherwise unserviceable.
- D. For equipment and fixtures designated for salvaging by the Owner, the Contractor shall:
 - a. salvage each unit as a whole. List, index, and tag salvaged items for identification, storage, and protection from damage.
 - b. salvage each unit with its normal operating auxiliary equipment and shall transport salvaged equipment and fixtures, including motors and machines, to the storage area designated by the Owner's Representative.
 - c. secure motors attached by flexible connections to the unit. Change lubricating systems with the proper oil or grease.
 - d. seal openings with caps, plates, or plugs.
- E. The Contractor shall remove salvaged items in a manner to prevent damage, and packed or crated to protect the items from damage while in storage or during shipment. Items damaged during removal or storage must be repaired or replaced to match existing items.

3.19 DISPOSAL OF DEMOLITION AND DECOMMISSIONING MATERIALS

- A. Except for equipment salvaged for the Owner, all materials and equipment removed, shall become the property of the Contractor and shall be removed from the property. Title to materials resulting from demolition and decommissioning, and materials and equipment to be removed, is vested in the Contractor upon approval Contractor's Demolition and Decommissioning Plan and authorization by the Owner's Representative to begin demolition and decommissioning. The Owner will not be responsible for the condition or loss of, or damage to, such property after contract award.

- B. The Contractor shall characterize and dispose of debris, rubbish, scrap, and other materials resulting from demolition and decommissioning operations and not designated for salvaging by the Owner in accordance with the disposal facility's requirements and all applicable federal, state and local regulations as specified in the Demolition and Decommissioning Plan.
- C. The Contractor shall containerize all fluids, sediment and sludge contained in pits, sumps, equalization tanks, secondary containment structures or other similar structures. Materials with different properties (e.g., liquid, sludge, sediment) and originating from different areas shall be managed as separate waste streams. Following characterization of each waste stream by the Contractor, such materials shall be disposed at an approved facility.
- D. The Contractor shall containerize all regulated or hazardous fluids contained in mechanical equipment, fixtures, piping, ducts and conduits, and any decontamination fluids. Following characterization by the Contractor, such fluids shall be disposed at an approved facility.
- E. Contaminated soil that may be encountered underneath slabs shall be managed in accordance as directed by the Owner's Representative.
- F. The Contractor shall prevent the discharge of Class I and Class II Ozone Depleting Substances, as defined in Section, 602(a) and (b) of The Clean Air Act, to the atmosphere. The Contractor shall
 - a. place recovered Ozone Depleting Substances in cylinders meeting AHRI Guideline K suitable for the type Ozone Depleting Substances (filled to no more than 80 percent capacity) with no more than one type of type Ozone Depleting Substance placed permitted in each container.
 - b. apply an appropriate warning/hazardous label to the containers in accordance with Department of Transportation regulations.
 - c. provide a tag with the following information:
 - i. origin or source of Ozone Depleting Substances (e.g., fire extinguishers, window air conditioner, refrigerator, etc.) Activity name and unit identification code
 - ii. Contractor point of contact and phone number
 - iii. Type and mass of Ozone Depleting Substances contained
 - iv. Date of shipment
 - d. remove and dispose recovered Ozone Depleting Substances in accordance with 40 CFR 82.
 - e. dispose products, equipment and appliances containing Ozone Depleting Substances in a sealed, self-contained system (e.g. refrigerators and window air conditioners) in accordance with 40 CFR 82.
 - f. submit a shipping receipt or bill of lading for all containers of ozone depleting substance disposed off-site.
- G. The Contractor shall remove and dispose of items with unique or regulated disposal requirements (e.g., batteries, materials with lead based finishes,

incandescent, mercury-vapor, and fluorescent lamps and fluorescent ballasts manufactured prior to 1978) in the manner dictated by law or in the most environmentally responsible manner.

- H. Storage of removed materials on the project site is prohibited. Showing for sale or selling materials and equipment on site is prohibited.
- I. The Contractor shall transport all materials resulting from demolition and decommissioning operations and not designated for salvaging by the Owner in accordance with **Section 02 81 00 – Transportation and Disposal of Waste Materials.**

3.20 CLEANUP

- A. Disturbed areas shall be graded and restored in accordance with **Section 02 20 10 – Grading** and **Section 31 23 23 – Backfill and Compaction.**
- B. Prior to demobilization, the Contractor shall install permanent fencing in accordance with **Section 02 42 00 – Chain Link Fence.**

END OF SECTION

**SECTION 02 42 00
CHAIN LINK FENCE**

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall furnish all labor, materials, equipment, and incidentals necessary to install chain link fencing of the required height in designated areas the site shown in the Construction Drawings and as specified herein.
- B. All installation shall be performed in accordance with the manufacturer's recommendations.
- C. Chain link fence and gates shall be maintained, as necessary, by the Contractor until the completion of this contract or as directed by the Engineer. Other fencing shall be maintained or removed from the site when no longer needed, as directed by the Engineer. The Contractor shall dispose of fencing removed.

1.02 RELATED WORK NOT INCLUDED

(Reserved)

1.03 SUBMITTALS

- A. Submit to the ENGINEER for approval, shop drawings showing layout and details of construction and erection of fencing and all accessories required.
- B. Drawings shall show details of the following: post sizes and sections; post setting and bracing; attachment of fabric and support members; attachment to chain link fencing; and, any other details, materials or specifications required to erect the fences along the lines indicated on the Design Drawings.
- C. The Contractor shall submit to the Company's Representative copies of certifications of the fencing materials.
- D. A survey shall be performed immediately after installation of the fence to document as-built conditions. All surveys shall be performed in accordance with **Section 02 21 00** (Surveying).

1.04 REFERENCES

American Society for Testing and Materials (ASTM)

- | | |
|--------------------------|--|
| ASTM A 116 (2005) | Standard Specification for Metallic-Coated, Steel Woven Wire Fence Fabric |
| ASTM A 153/A 153M (2009) | Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware |

ASTM A 702 (1989; R 2006)	Standard Specification for Steel Fence Posts and Assemblies, Hot Wrought
ASTM A 780/A 780M (2009)	Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
ASTM A 90/A 90M (2009)	Standard Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings
ASTM B 117 (2009)	Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM C 94/C 94M (2009a)	Standard Specification for Ready-Mixed Concrete
ASTM F 1043 (2008)	Strength and Protective Coatings on Metal Industrial Chain-Link Fence Framework
ASTM F 1083 (2008)	Standard Specification for Pipe, Steel, Hot-Dipped Zinc Coated (Galvanized) Welded, for Fence Structures
ASTM F 567 (2007)	Standard Practice for Installation of Chain Link Fence
ASTM F 626 (2008)	Standard Specification for Fence Fittings
ASTM F 883 (2009)	Padlocks
ASTM G 152 (2006)	Operating Open Flame Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials
ASTM G 153 (2004)	Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials
ASTM G 154 (2006)	Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials
ASTM G 155 (2005a)	Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials

U.S. General Services Administration (GSA)

FS RR-F-191 (Rev K)	Fencing, Wire and Post Metal (and Gates, Chain-Link Fence Fabric, and Accessories)
FS RR-F-191/1 (Rev D)	Fencing, Wire and Post, Metal (Chain-Link Fence Fabric)
FS RR-F-191/2 (Rev D)	Fencing, Wire and Post, Metal (Chain-Link Fence Gates)
FS RR-F-191/3 (Rev D)	Fencing, Wire and Post, Metal (Chain-Link Fence Posts, Top Rails and Braces)
FS RR-F-191/4 (Rev D)	Fencing, Wire and Post, Metal (Chain-Link Fence Accessories)

1.05 DEFINITIONS

(Reserved)

PART 2 - PRODUCTS

2.01 GENERAL

- A. Fencing materials shall comply with the requirements of ASTM A 116, ASTM A 702, and ASTM F 626.

2.02 FABRIC

- A. Fencing fabric shall consist of No. 9-gage wires woven into a 2-inch diamond mesh, with dimensions of fabric and wire conforming to ASTM A 116, ASTM A 702 and ASTM F 626, with 1.20 ounces per square foot zinc galvanizing.
- B. Top selvage for the chain link fence shall be twisted and barbed. Bottom selvage shall be knuckled.

2.03 LINE POSTS

- A. The line posts shall be at least DN50 O.D. pipe weighing 3.65 pounds per linear foot.

2.04 END, CORNER, AND PULL POSTS

- A. The end, corner, and pull posts shall be at least DN70 O.D. pipe weighing 4.64 pounds per linear foot.

2.05 SLEEVES

- A. Sleeves for setting into concrete construction shall be of the same material as post sections, sized 1-inch greater than the diameter or of the post. Flat plates shall be welded to each sleeve base to provide anchorage and prevent intrusion of concrete.

2.06 TOP RAIL

- A. Top rail shall be a minimum of DN40 pipe rails weighing 1.82 pounds per linear foot. Expansion couplings of 6-inches long shall be provided at each joint in top rails.

2.07 CENTER RAILS BETWEEN LINE POSTS

- A. Center rails between line posts shall be of DN40 O.D. pipe weighing 1.82 pounds per linear foot.

2.08 POST-BRACE ASSEMBLY

- A. Bracing shall consist of DN40 O.D. pipe weighing 1.82 pounds per linear foot and 3/8 inch adjustable truss rods and turnbuckles.

2.09 TENSION WIRE

- A. Tension wire used for the fence shall be No. 7-gage galvanized coiled spring wire with zinc coating that weighs not less than 1.2 ounces per square foot.

2.10 STRETCHER BARS

- A. Stretcher bars shall have one-piece lengths equal to the full height of the fabric with a minimum cross section of 3/16 by 3/4 inch, in accordance with ASTM A 116, ASTM A 702 and ASTM F 626.

2.11 POST TOPS

- A. Post tops shall be steel, wrought iron, or malleable iron designed as a weathertight closure cap. One cap shall be provided for each post, unless equal protection is provided by a combination post-cap and barbed-wire supporting arm. Caps shall have openings to permit through passage of the top rail.

2.12 STRETCHER BAR BANDS

- A. Stretcher bar bands for securing stretcher bars to posts shall be steel, wrought iron, or malleable iron spaced not over 15 inches on center. Bands may also be used in conjunction with special fittings for securing rails to posts. Bands shall have projecting edges chamfered or eased.

2.13 MISCELLANEOUS HARDWARE

- A. Miscellaneous hot-dip galvanized hardware shall be provided as required.

2.14 WIRE TIES

- A. Galvanized 16-gage steel wire shall be used for tying fabric to line posts, spaced 12 inches on center. Wire ties shall be spaced 24 inches on center for tying fabric to rails and braces. To tie fabric to tension wire, space 0.105-inch hog rings 24 inches on center. Manufacturer's standard procedure will be accepted if of equal strength and durability.

2.15 CONCRETE

- A. Concrete used for encasement footing should conform to ASTM C 94/C 94M, and yielding a minimum 28-day compressive strength of 3,000 psi.

2.16 GROUT

- A. Grout used for fence installation should have proportions one part Portland cement to three parts clean, well-graded sand and a minimum amount of water to produce a workable mix.

2.17 GATES

- A. Gates shall be designed to meet the same forced entry and anti-climb characteristics as the other portions of the fence. Gates shall have manually operated gates with positive locking latch for vehicle access.

2.18 BARBED WIRE

- A. Double 12-½ gauge twisted strand wire, with 4 point 14 gauge round barbs spaced 5 inches on center. Strand wire coating shall be Type A- Aluminized 0.30 oz/ft² with aluminum alloy barbs.

PART 3 - EXECUTION

3.01 GENERAL

- A. The Contractor shall clear fence line of trees, brush, debris, and other obstacles, and ensure final grading and established elevations are complete prior to commencing fence installation.
- B. Post footings shall be excavated in virgin soil, of minimum sizes as indicated. Footings for line posts should be spaced 10 feet on center, with bottoms of the holes approximately 3-inches below the bottoms of the posts. Bottom of each post shall be set not less than 36-inches below finished grade. Soil from excavations should be uniformly spread on site adjacent to the fence line.
- C. The Contractor shall remove loose and foreign materials from holes and the soil moistened prior to placing concrete.
- D. All posts set shall be grouted into sleeved holes in concrete with an approved grouting material.
- E. The Contractor shall remove waste fencing materials and other debris from the work site upon completion of fence installation.

3.02 CHAIN LINK FENCE AND GATES

- A. Fence shall be installed as indicated at the locations shown in the Design Drawings to limit access to the site. Line posts shall be spaced equidistant at intervals not exceeding 10 feet. Terminal posts shall be set at abrupt changes in vertical and horizontal alignment. Fabric shall be continuous between terminal posts; however, runs between terminal posts shall not exceed 500 feet. Any damage to galvanized surfaces, including welding, shall be repaired with paint containing zinc dust in accordance with ASTM A 780.
- B. Post holes shall be cleared of loose material. Waste material shall be disposed of in accordance with applicable local, state and federal regulations. The ground

surface irregularities along the fence line shall be eliminated to the extent necessary to maintain a 2-inch plus or minus one-inch clearance between the bottom of the fabric and finish grade.

- C. Posts shall be set plumb and in alignment. Posts shall be set in concrete. Concrete shall be thoroughly consolidated around each post, shall be free of voids and finished to form a dome. Concrete shall be allowed to cure for 72 hours prior to attachment of any item to the posts.
- D. Top rails shall be supported at each post to form a continuous brace between terminal posts. Where required, sections of top rail shall be joined using sleeves or couplings that will allow expansion or contraction of the rail.
- E. Braces and truss rods shall be installed as indicated and in conformance with the standard practice for the fence furnished. Horizontal (compression) braces and diagonal truss (tension) rods shall be installed on fences over 6 feet in height. Braces and truss rods shall extend from terminal posts to line posts. Diagonal braces shall form an angle of approximately 40 to 50 degrees with the horizontal. No bracing is required on fences 6 feet high or less if a top rail is installed.
- F. Tension wires shall be installed along the bottom of the fence line and attached to the terminal posts of each stretch of the fence. Bottom tension wire shall be installed within the bottom 6 inches of the installed fabric. Tension wires shall be pulled taut and shall be free of sag.
- G. Chain link fabric shall be installed on the side of the post indicated. Fabric shall be attached to terminal posts with stretcher bars and tension bands. Bands shall be spaced at approximately 12-inch intervals. The fabric shall be installed and pulled taut to provide a smooth and uniform appearance free from sag, without permanently distorting the fabric diamond or reducing the fabric height. Fabric shall be cut by untwisting and removing pickets. Splicing shall be accomplished by weaving a single picket into the ends of the rolls to be joined. The bottom of the installed fabric shall be 2-inches plus or minus 1 inch above the ground.
- H. During construction, the Contractor shall fix or replace fencing as necessary.
- I. Swing gates and gateposts shall be installed in compliance with ASTM F567. Direction of swing shall be inward. Gates shall be plumb in the closed position having a bottom clearance of 3 inches grade permitting. Hinge and latch offset opening space from the gate frame to the post shall be no greater than 3 inches in the closed position. Double gate drop bar receivers shall be set in a concrete footing minimum 6 inch diameter 24 inch deep. Gate leaf holdbacks shall be installed for all double gates.

3.03 BARBED WIRE

- A. Barbed wire strands shall be spaced uniformly and attached to frame with brace bands.
- B. Extension arms on line posts and corner posts shall be inclined at approximately 45 degrees away from property enclosed unless otherwise specified in contract documents.

- C. Strands of barbed wire shall be stretched to remove sag and be anchored firmly to extension arms.
- D. Each strand of barbed wire shall be attached to terminal post using a brace band.
- E. Barbed wire on gates shall be attached to vertical members of gates.

END OF SECTION

**SECTION 02 81 00
TRANSPORTATION AND DISPOSAL OF WASTE MATERIALS**

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall furnish all labor, material, equipment and incidentals necessary for on-site removal and off-site transportation and disposal of the materials, including, but not limited to:
 - a. Excavated materials from the limits of excavation as shown in the Construction Drawings; and
 - b. Waste generated by the Contractor.
- B. Waste generated from Site activities shall be disposed of at approved disposal facilities or beneficial reuse sites.
- C. All waste shall be managed, transported and disposed in accordance with the Technical Specifications and the Standard Contract Terms.

1.02 RELATED WORK NOT INCLUDED

- A. Section 01 52 00 Temporary Construction Facilities
- B. Section 01 71 13 Mobilization and Demobilization
- C. Section 02 01 00 Maintenance and Protection of Existing Conditions
- D. Section 02 31 00 Asbestos Abatement
- E. Section 02 41 00 Decommissioning and Demolition
- F. Section 31 11 00 Clearing and Grubbing
- G. Section 31 23 23 Backfill and Compaction
- H. Section 31 24 00 Grading
- I. Section 31 25 00 Soil Erosion and Sediment Control

1.03 SUBMITTALS

- A. The Contractor shall obtain letters of commitment from waste haulers and from any treatment or disposal facility agreeing to handle and dispose of waste materials from the Site. In the event that a facility is prohibited from issuing a letter of commitment without a sample of the waste, a conditional type letter will be acceptable. Such a conditional letter shall specifically state what types and quantities of waste the facility will accept. A copy of each letter shall be maintained by the Contractor in its files.
- B. The letters of commitment from any proposed waste disposal facility to be used shall include:

- a. Name and EPA or State identification number of the Disposal Facility.
 - b. Facility address with name and responsible contact for the facility.
 - c. Telephone number for principal contact.
 - d. Signature.
 - e. A description of the proposed disposal facility.
 - f. Any and all necessary disposal permit authorizations for each type of waste stream.
 - g. Unit of measure utilized at facility for costing purposes.
- C. The letters of commitment from the proposed waste hauler(s) be used shall include:
- a. Name and EPA or State identification number of each waste hauler.
 - b. Each waste hauler's address with name and responsible contact for the operations.
 - c. Telephone number for principal contact.
 - d. Signature.
 - e. List of types and sizes of all transport vehicles (i.e., trucks) and equipment to be used by the waste hauler.
- D. The Contractor shall:
- a. Provide a list of all active (unresolved) compliance orders (or agreements), enforcement notices or notices of violation issued to the proposed facility;
 - b. State the source and nature of the cause of violation, if known; and,
 - c. If groundwater contamination is noted, provide details of the facility's groundwater monitoring program.
- E. The Contractor shall submit the proposed truck route from the on-site excavation area to relevant disposal facility. The route(s) to and from the disposal facility shall be in accordance with the disposal facility's requirements and Federal, State and local regulations, laws and ordinances. The Contractor shall specify the weight limitations on all sections of the route(s) and indicate the maximum truck load/weight that will be maintained in accordance with route weight limits and any other applicable Federal, State and local regulations.
- F. In the event that a manifest copy documenting receipt of wastes at the disposal facility is not received within twenty (20) calendar days of shipment initiation, the Contractor shall prepare and submit an exception report to the Company's Representative within twenty (20) calendar days of shipment initiation.
- G. The Contractor shall submit to the Company's Representative certificates documenting the ultimate disposal of wastes within twenty (20) calendar days of initial shipment. Receipt of these certificates will be required for final payment.

- H. All transportation-related shipping documents, including draft waste manifests, draft land disposal restriction notifications, draft bills of lading, lists of corresponding proposed labels, packages, marks and placards to be used for shipment, waste profiles and supporting waste analysis documents shall be submitted to the Company's Representative for review a minimum of seven (7) calendar days prior to the anticipated shipping date. Packaging assurances shall be furnished prior to transporting hazardous material. Generator copies of hazardous waste manifests, land disposal restriction notifications, bills of lading and supporting waste analysis documents shall be furnished when shipments are originated.
- I. The Contractor shall submit certification that all operators and vehicles used to transport waste meet all existing Federal, State and local regulations for vehicle operations.
- J. The Contractor shall provide copies of notices of non-compliance or notices of violation issued by a Federal, State, or local regulatory agency issued to the Contractor in relation to any work performed under this contract. The Contractor shall provide copies of such notices to the Company's Representative within 24 hours of receipt. The Contractor shall also furnish all relevant documents regarding the incident and any information requested by the Company's Representative and shall coordinate its response to the notice with the Company's Representative prior to submission to the notifying authority. The Contractor shall also furnish a copy to the Company's Representative of all documents submitted to the regulatory authority, including the final reply to the notice and all other materials, until the matter is resolved.
- K. The Contractor shall identify the Transportation and Disposal Coordinator (TDC) and provide evidence of the TDC's qualifications prior to mobilization.

1.04 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

CODE OF FEDERAL REGULATIONS (CFR)

40 CFR 268	Code of Federal Regulations (CFR) - Land Disposal Restrictions
40 CFR 761	Subpart D – Storage and Disposal

CODE OF MASSACHUSETTS REGULATION (CMR)

310 CMR 19	Solid Waste Management Regulations
310 CMR 30	Hazardous Waste
310 CMR 76	Disposal Prohibition of Mercury-Added Products in Solid Waste

1.05 DEFINITIONS

(Reserved)

PART 2 PRODUCTS

2.01 EQUIPMENT AND FACILITIES

- A. The Contractor shall utilize appropriate vehicles and other miscellaneous equipment and tools necessary to handle excavated material in a safe and environmentally sound manner.
- B. The Contractor shall provide, install and maintain any temporary loading facilities as required for the material handling operations.

2.02 SPILL RESPONSE MATERIALS

- A. The Contractor shall provide spill control materials and equipment which are sufficient to meet the requirements described in the Contractor's approved Health and Safety Plan.
- B. The Contractor shall provide appropriate response materials including, but not limited to, containers, adsorbents, shovels and personal protective equipment. Spill response materials shall be available at all times when contaminated materials/wastes are being handled or transported. Spill response materials shall be compatible with the type of materials and contaminants being handled.

PART 3 EXECUTION

3.01 GENERAL

- A. The Contractor shall designate, by position and title, one person to act as the Transportation and Disposal Coordinator (TDC) for this contract. The TDC shall serve as the single point of contact for all environmental regulatory matters and shall have overall responsibility for total environmental compliance at the Site including, but not limited to, accurate identification and classification of materials to be disposed of, determination of proper shipping names, identification of marking, labeling, packaging and placarding requirements, completion of waste profiles, bills of lading, exception and discrepancy reports and all other environmental documentation.
- B. The Contractor's employees shall be trained, tested and certified to safely and effectively carry out their assigned duties in accordance with the Contractor's approved Health and Safety Plan for the Site.
- C. Prior to shipment of any hazardous wastes off-site, the Contractor shall provide written certification to the Owner's Representative that hazardous wastes have been properly packaged, labeled, and marked in accordance with Department of Transportation and USEPA requirements.
- D. The Contractor shall coordinate vehicle inspection and recording of quantities leaving the Site with the Owner's Representative. These quantities shall be

verified with recorded quantities at the disposal facility(ies). If any deviation between the two quantity records occurs, the matter is to be reported immediately to the Owner's Representative.

3.02 NON-HAZARDOUS WASTE MANAGEMENT

- A. All materials to be generated from the proposed activities are anticipated to be non-hazardous.
- B. Trees and vegetation which have been cleared and grubbed and cannot be reused on-site shall be disposed at a licensed at an approved disposal/recycling facility or approved beneficial reuse site.
- C. Prior to mobilization, the Contractor shall characterize all materials for disposal purposes in accordance with the accepting facility requirements. Available analytical data will be provided upon request.

3.03 LIQUID WASTE MANAGEMENT AND STORAGE

- A. Liquid including but not limited to wastewater generated from decontamination of personal protective equipment and field equipment shall be directly pumped, piped or transported to on-site frac tanks for subsequent treatment and/or disposal. The frac tanks shall be maintained according to applicable regulations including, regulations for a temporary unit as specified in 40 CFR 264.553.
- B. Liquid waste from the Site shall be treated or disposed of off-site in a facility licensed in the Commonwealth of Massachusetts.

3.04 HAULING

- A. The Contractor shall coordinate vehicle inspection and recording of quantities leaving the Site with the Company's Representative. These quantities shall be verified with recorded quantities at the disposal facility(ies). If any deviation between the two quantity records occurs, the matter is to be reported immediately to the Company's Representative.
- B. The Contractor shall ensure that all trucks entering work areas shown in the Construction Drawings and hauling materials off-site are decontaminated in the designated truck wash area.
- C. The Contractor shall be held responsible for any and all actions necessary to remedy situations involving material spilled in transit or mud and dust tracked off-site.
- D. The Contractor shall be responsible for inspecting the access routes for road conditions, overhead clearance and weight restrictions. The Contractor shall also comply with weight restrictions by specifying a maximum weight in accordance with any limitations. The Contractor shall provide certified weigh records for each load from an off-site scale house or propose a system to weigh loaded trucks before they exit the Site. The proposed weigh system shall be

approved by the Company's Representative.

- E. The Contractor shall protect trucks against contamination by properly covering and lining them with compatible material or by decontaminating them prior to any use other than hauling contaminated materials. The Contractor is responsible for inspection of transportation vehicles prior to leaving the Site, to verify no material adheres to the wheels, undercarriage, tailgates, covers or other areas of transport vehicles.
- F. To the maximum extent possible, the Contractor shall avoid use of local streets and residential areas to transport any excavated contaminated material and/or waste off-site.
- G. The Contractor shall only use the transporter(s) identified in the approved plans for the performance of work. Any use of substitute or additional transporters must have previous written approval from the Company's Representative.
- H. The Contractor shall not combine materials from other projects with material from the Site.
- I. The Contractor shall coordinate the schedule for vehicle arrival and material deliveries at the construction Site to meet the approved project schedule. The schedule shall be compatible with the availability of equipment and personnel for material handling operations.
- J. The shipping vehicles shall be in good operating condition and shall have current inspection certificates. Vehicles may be inspected by the Company's Representative at the Site prior to loading to verify that the vehicles have no fluid leaks, no unusually noisy mufflers or tailpipes, tires that are in good condition, operational brakes, horn, steering, operating controls and safety devices. Vehicles shall be free of excess dirt, debris, oil, grease and excessive rust. Vehicle beds used for hauling shall be free from drain holes, cracks or other conditions that might permit waste to leak from the vehicle beds.
- K. The drivers shall be fully trained and licensed and have no prior major traffic violations. Major traffic violations are violations or incidents in which the driver was cited for being reckless, careless or driving while intoxicated or while under the influence. The Company's Representative may reject any driver deemed unqualified or unsafe to perform the work.
- L. The Contractor shall schedule all movement of equipment, soil and materials in order to minimize disturbance to the local neighborhood. The trucks shall be scheduled and routed in such a manner as to prevent excess traffic from waiting on-site during the excavation and loading activities. No prolonged idling of trucks shall be allowed while waiting and as otherwise prohibited by Title 6 NYCRR, Subpart 217-3 (an engine of a heavy duty vehicle may not to idle for more than five consecutive minutes when such vehicle is not in motion). The loaded trucks shall be routed to the off-site disposal facility.

3.05 TRUCK WASH AND DECONTAMINATION

- A. All equipment or vehicles that enters work areas or comes in contact with contaminated soil or water shall be decontaminated prior to leaving the site. No equipment including, but not limited to, excavators, backhoes and trucks,

shall be allowed to leave work areas without being fully decontaminated.

- B. Trucks shall enter the designated truck wash area to be defined by the Contractor and approved by the Company's Representative. The wash area shall be free of standing water prior to trucks entering the wash area. Upon entering, trucks shall be pressure washed to remove contaminated materials from the exterior and underside of the truck.
- C. Decontamination water and accumulated soils shall be evacuated from the truck wash area prior to the pressure washed truck leaving the decontamination area.
- D. Decontamination water shall be managed in accordance with the requirements of the Contractor's approved Health and Safety Plan and Paragraph 3.03 of this Section.

END OF SECTION

**SECTION 31 11 00
CLEARING AND GRUBBING**

PART 1 – GENERAL

1.01 DESCRIPTION

- A. The Contractor shall furnish all labor, materials, equipment and incidentals required to perform all clearing and grubbing activities.
- B. This work shall consist of clearing, grubbing, removal, and satisfactory disposal of all of trees, snags, logs, brush, stumps, and shrubs from the designated areas, except those items designated to remain.

1.02 RELATED WORK NOT INCLUDED

- A. Section 01 52 00 Temporary Construction Facilities
- B. Section 01 71 13 Mobilization and Demobilization
- C. Section 02 01 00 Maintenance and Protection of Existing Conditions
- D. Section 02 21 00 Surveying
- E. Section 02 41 00 Decommissioning and Demolition
- F. Section 02 81 00 Transportation and Disposal of Waste Material
- G. Section 31 23 23 Backfill and Compaction
- H. Section 31 24 00 Grading
- I. Section 31 25 00 Soil Erosion and Sediment Control

1.03 SUBMITTALS

(Reserved)

1.04 REFERENCES

(Reserved)

1.05 DEFINITIONS

(Reserved)

PART 2 – PRODUCTS

(Reserved)

PART 3 – EXECUTION

3.01 MECHANICAL CLEARING AND GRUBBING

- A. The Contractor shall clear and grub out all brush, hedges, weeds, heavy vegetation, and other vegetation material or growth, present on any and all areas within the project limits of disturbance, as indicated on the Contract Drawings. The Contractor shall also remove rubbish, debris and other objectionable materials as part of the clearing activities.
- B. The Contractor shall maintain all areas within the project limits of disturbance in a neat, serviceable, and satisfactory condition until the project is accepted.
- C. This work shall include the preservation from injury of all trees and other vegetation that are not within designated areas of clearing and grubbing, unless designated by the Owner's Representative.

3.02 DISPOSAL

- A. All non-contaminated materials removed as a result of this project shall be disposed of by the Contractor at one of the Owner Approved composting or disposal facilities.
- B. The Contractor is responsible for complying with all local rules and regulations and the payment of any and all fees that may result from the disposal at locations away from the construction location.

3.03 PROTECTION OF EXISTING VEGETATION

- A. This work shall be performed in accordance with **Section 02 01 00** (Maintenance and Protection of Existing Conditions) of these Specification.
- B. Trees and other vegetation designated to remain undisturbed shall be protected from damage throughout the duration of the construction period. Any damages resulting from the Contractor's operations or neglect shall be repaired by the Contractor.
- C. Earthwork, stockpiling of materials, vehicular parking, and excessive foot or vehicular traffic shall not be allowed within the drip line of vegetation designated to remain in place. Vegetation damaged by any of these or similar actions shall be replaced with viable vegetation of the same species, similar condition, and like size unless otherwise approved by the Owner's Representative.

3.04 PERFORMANCE

- A. The Contractor shall not burn or bury clearing and grubbing waste on-site.
- B. Trees and limbs outside the construction area shall not be removed without the prior written approval of the Owner's Representative.
- C. Damage to trees and shrubs that are outside the construction or excavation area shall be corrected at the Contractor's expense.

END OF SECTION

**SECTION 31 23 23
BACKFILL AND COMPACTION**

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall furnish all labor, materials, equipment and incidentals necessary to backfill and compact all remedial areas as shown in the Contract Drawings and specified herein.
- B. All imported earthen materials used for backfill, if any, shall be suitable for use as fill as specified in this section. All imported materials shall be analyzed by an off-site laboratory and certified containing concentrations less than S-1/GW-1, as defined in the Massachusetts Contingency Plan (MCP), 310 CMR 40.

1.02 RELATED WORK NOT INCLUDED

- A. Section 01 32 00 Project Schedule and Progress Reports
- B. Section 01 35 29.13 Health and Safety
- C. Section 01 71 13 Mobilization and Demobilization
- D. Section 02 01 00 Maintenance and Protection of Existing Conditions
- E. Section 02 21 00 Surveying
- F. Section 02 41 00 Decommissioning and Demolition
- G. Section 02 81 00 Transportation and Disposal of Waste Material
- H. Section 31 11 00 Clearing and Grubbing
- I. Section 31 24 00 Grading
- J. Section 31 25 00 Soil Erosion and Sediment Control

1.03 SUBMITTALS

- A. Prior to delivery, the Contractor shall submit to the Owner's Representative copies of certified laboratory test results and certificates of compliance attesting that imported materials meet the specified requirements for each imported material source. The Contractor shall not use imported materials without prior written authorization from the Owner's Representative. With respect to the certification of imported materials, the following shall apply:
 - a. All imported materials (with the exception of crushed stone) shall be subjected, at a minimum, to the following analyses to ensure that materials are free from chemical contamination:
 - i. RCRA 8 Metals via EPA Methods 6010 and 7471 (mercury)
 - ii. VOCs via EPA Method 8260

- iii. SVOCs via EPA Method 8270
 - iv. PCBs via EPA Method 8082 via soxhlet extraction
 - v. TPH via EPA 8100
- b. A minimum of one sample shall be subjected to chemical analyses specified in Paragraphs 1.03C(a) per 500 cubic yards of imported material and no less than one test per borrow area. The Owner's Representative may direct additional tests should soil materials change during the course of work.
- c. The Contractor shall submit to the Owner's Representative copies of licenses, certifications or other qualifications of the soil testing laboratory performing the field and/or laboratory testing.
- d. A third-party certification shall be submitted for each imported material source certifying that "*the materials originate from a virgin source and that, based on a review of historical site documentation, interviews of personnel with historical knowledge of the site and an inspection of the site and proposed borrow areas, the materials do not originate from an area of known historical discharges or evidence of contamination.*"
- e. With the exception of compost and crushed stone (i.e., washed ¾" diameter stone), all imported materials shall be subjected, at a minimum, to a soil classification (ASTM C 136, ASTM D 422, ASTM D 1140, ASTM D 2487 and/or ASTM D 4318), natural moisture content (ASTM D 2216) and modified proctor test (ASTM D 1557).

1.04 REFERENCES

310 CMR 30 CODE OF MASSACHUSETTS REGULATION (CMR)
 Massachusetts Contingency Plan

MASSACHUSETTS DEP

WSC/ORS-95-141 Guidance for Disposal Site Risk Characterization
WSC-13-500 Similar Soils Provision Guidance

Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas; May 2003; Franklin, Hampden, Hampshire Conservation Districts.

American Society for Testing and Materials (ASTM)

C 136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
D 422 Method for Particle-Size Analysis of Soils
D 1140 Standard Test Method for Amount of Material in Soils Finer than the No. 200 (75- µm) Sieve

- D 1557 Laboratory Compaction Characteristics of Soils Using Modified Effort
- D 2216 Laboratory Determination of Water (Moisture) Content of Soil, Rock and Soil Aggregate Mixtures
- D 2487 Classification of Soils for Engineering Purposes
- D 2922 Density of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depth)
- D 2974 Standard Test Methods for Moisture, Ash and Organic Matter of Peat and Other Organic Soils
- D 3017 Moisture Content of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depth)
- D 4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils
- D 4972 Test Method for pH of Soils
- D 5268 Standard Specification for Topsoil Used for Landscaping Purposes

1.05 DEFINITIONS

(Reserved)

PART 2 - PRODUCTS

2.01 IMPORTED MATERIAL

- A. Imported materials shall consist of either compost, soil or processed quarry material.
- B. Imported materials shall consist of clean, uncontaminated soil free of clay organic material, loam, wood, trash, snow, ice, frozen soil and other objectionable material which may be compressible or which cannot be compacted properly. The material shall not contain stones, broken concrete or similar objects.
- C. Imported materials shall be tested to ensure that it contains concentrations less than S-1/GW-1, as defined in the Massachusetts Contingency Plan (MCP), 310 CMR 40.
- D. Backfill material shall consist of imported fill material or, if allowed by Owner's Representative, crushed concrete originating from the Site.
- E. Imported soil shall be either sandy silt or silty clay (SM or ML) and will have the following physical properties as determined by laboratory testing prior to

delivery to the Site:

- a. Backfill material shall have hydraulic conductivity of 10^{-5} cm/s after compaction.
 - b. Backfill material shall have plasticity index less than 4 (< 4).
 - c. 100% of the backfill material shall pass through a No. 20 sieve.
 - d. 40% of the backfill material shall pass through a No. 200 sieve.
- F. Imported processed quarry material shall be either sandy silt or silty clay (SM or ML) and will have the following physical properties as determined by laboratory testing prior to delivery to the Site:
- a. Backfill material shall have hydraulic conductivity of 10^{-5} cm/s after compaction.
 - b. Backfill material shall have plasticity index less than 4 (< 4).
 - c. 100% of the backfill material shall pass through a No. 20 sieve.
 - d. 40% of the backfill material shall pass through a No. 200 sieve.
- G. Sources of imported materials shall be approved by the Owner's Representative before the materials are delivered to the Site.
- H. If crushed concrete from on-site sources is approved for use as backfill, it shall have a maximum dimension in any direction of 3 inches. It shall be free of conduits, piping, reinforcement, or other foreign material.
- I. Any imported materials delivered to the Site which do not meet the specifications or which has become mixed with unacceptable amounts of subsoil during any operation at the source or during, placing or spreading, shall be rejected and replaced with acceptable material.

2.02 COMPOST

- A. Compost shall be loose, natural, unfrozen, friable, fertile material possessing the characteristics of representative compost in the vicinity which produce heavy growths of vegetation. The compost shall be free from clay lumps, subsoil, noxious weeds, stones larger than 1 inch (25 mm) in diameter, sticks, stumps, brush, lime, cement, ashes, slag, or other deleterious matter or other material detrimental to plant growth.
- B. Sources of compost shall be approved by the Owner's Representative before the material is moved or delivered to the Site.
- C. Any material delivered to the Site which does not meet the specifications, or which has become mixed with unacceptable amounts of subsoil during any operation at the source or during, placing, or spreading, shall be rejected and replaced with acceptable material.

2.03 DEMARCATION LAYER

- A. The demarcation layer shall be IWT/Cargo-Guard DN 7525 High Visible Orange Demarcation Netting, or an approved equivalent.
- B. The demarcation layer shall be constructed of extruded polypropylene and shall be non-toxic to vegetation, be inert to common chemicals, and be mildew and rot resistant.

PART 3 - EXECUTION

3.01 GENERAL

- A. Soil erosion control measures and facilities such as silt fence, diversions, etc., shall be in place prior to any site disturbance activities.
- B. The site grading shall be performed in accordance with the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas.

3.02 SUBGRADE PREPARATION

- A. Subgrade surface shall not be frozen or contain frost. Unsatisfactory material in surfaces to receive fill or in excavated area shall be removed and replaced with satisfactory materials as directed by the Owner's Representative.
- B. The Contractor shall test the in-place density of the subgrade in accordance with ASTM D 2922 and ASTM D 3017 (nuclear gauge) every 400 square feet. If the in-place densities are greater than the specified density for the backfill materials, no compaction of existing subgrade will be required.
- C. When subgrade densities are less than the specified density for the backfill materials, the ground surface shall be broken up to a minimum depth of 6 inches, pulverized and compacted to the specified density.
- D. Material shall be moistened or aerated and dried as necessary to provide the moisture content that will readily facilitate obtaining the specified compaction with the equipment used.

3.03 BACKFILLING AND REGRADING

- A. Either imported backfill material or processed quarry material will be used as borrow soils to backfill excavations and regrade the site as shown in the Contract Drawings. If allowed by authorized in writing by Owner's Representative, the Contractor may also use crushed uncoated concrete originating from the Site as backfill.
- B. Upon completion of excavation or material removal and prior to backfilling, where specified in the Contract, the Contractor shall place a demarcation layer in the excavation area.
- C. The Contractor shall backfill and regrade to the contours, elevations and dimensions indicated in the Contract Drawings. Placement of materials shall

not create swales or areas where ponding of water will occur.

- D. The Contractor shall ensure that backfilling and regrading in areas identified in the Contract Drawings that have historically been subject to flooding will not alter existing drainage patterns, impact off-site properties or degrade on-site storm water management.
- E. Backfill materials shall not be placed on surfaces that are frozen or contain frost. In the event that the subgrade or any fill which has already been placed is frozen, it shall be scarified, thawed and recompacted or removed, to the approval of the Owner's Representative before the new fill is placed. Any soft spots resulting from frost shall be removed or recompacted to the satisfaction of the Owner's Representative before new fill material is placed. Unsatisfactory material in surfaces to receive fill or in excavated area shall be removed and replaced with satisfactory materials as directed by the Owner's Representative.
- F. Backfill materials shall be thoroughly mixed and spread evenly by mechanical equipment or other means above the approved subgrade in lifts not exceeding twelve (12) inches before compaction (or less, if needed to achieve the specified densities) and shall be built up in horizontal layers as nearly even as practicable.
- G. Grading tolerances shall be plus or minus 0.1 feet for all exposed backfill or regarded surfaces unless otherwise indicated on the Contract Drawings.
- H. Prior to placement of subsequent overlying material lifts, the density of the in-place lift shall be tested in accordance with ASTM D 3017 (nuclear gauge) every 400 square feet. In addition, in-place moisture content shall be verified in accordance with ASTM D 2216. If the in-place densities are greater than the specified density for the backfill materials, no additional compaction will be required.
- I. When backfill material densities are less than the specified density, the lift shall be recompacted to the specified density. Sloped surfaces steeper than 1 vertical to 4 horizontal shall be plowed, stepped, benched or broken up so that the fill material will bond with the existing material.
- J. In the event of slides, sloughing or erosion in any part of the work, the Contractor shall remove the disturbed material from the damaged area and shall rebuild such portion as directed by the Owner's Representative.
- K. The Contractor shall maintain all completed fills in compacted state, smooth and free from ruts or indentations at the end of any working day when significant precipitation is forecast. Any soft spots shall be removed or recompacted to the satisfaction of the Owner's Representative before new fill material is placed.
- L. Upon completion of the backfill and regrading operations, the finished grade shall be smooth, free of ruts, terraces and holes and conform to elevations shown on the Contract Drawings.

3.04 COMPACTION

- A. The Contractor shall be responsible for providing appropriate compactive effort.
- B. Successive lifts of fill shall not be placed until the previous lift is accepted by the Owner's Representative.

3.05 TOP SOIL PLACEMENT

(Reserved)

END OF SECTION

**SECTION 31 24 00
GRADING**

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall furnish all labor, materials, equipment and incidentals necessary to grade the areas as shown in the Design Drawings and specified herein using site soils and/or imported backfill, if necessary.
- B. All imported earthen materials shall be analyzed by a qualified, off-site laboratory and certified clean in accordance with **Section 31 23 23 (Backfill and Compaction)**.

1.02 RELATED WORK NOT INCLUDED

- A. Section 01 32 00 Project Schedule and Progress Reports
- B. Section 01 35 29.13 Health and Safety
- C. Section 01 71 13 Mobilization and Demobilization
- D. Section 02 01 00 Maintenance and Protection of Existing Conditions
- E. Section 02 21 00 Surveying
- F. Section 02 41 00 Decommissioning and Demolition
- G. Section 02 81 00 Transportation and Disposal of Waste Material
- H. Section 31 11 00 Clearing and Grubbing
- I. Section 31 23 16 Excavation and Material Management
- J. Section 31 23 23 Backfill and Compaction
- K. Section 31 25 00 Soil Erosion and Sediment Control

1.03 SUBMITTALS

(Reserved)

1.04 REFERENCES

- A. American Society for Testing and Materials
ASTM D-6938 Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

1.05 DEFINITIONS

(Reserved)

PART 2 - PRODUCTS

(Reserved)

PART 3 - EXECUTION

3.01 SUBGRADE PREPARATION

- A. Subgrade surface shall not be frozen or contain frost.
- B. Material shall be moistened or aerated and dried as necessary to provide the moisture content that will readily facilitate compaction with the equipment used.
- C. In the event of slides, sloughing, or erosion in any part of the work, the Contractor shall remove the disturbed material from the damaged area and shall rebuild such portion as directed by Owner's Representative.

3.02 GRADING

- A. The Contractor shall grade using existing site soils to contours, elevations, and dimensions indicated in the Design Drawings. Grading shall not create swales or areas where ponding of water will occur. The final finish grade shall be smooth, free of ruts, terraces and holes.
- B. The finished grade shall be as shown in the Design Drawings. Owner's Representative shall retain the right to make minor adjustments in lines or grades if found necessary, as the work progresses.
- C. Areas shall be maintained free of trash and debris until final inspection has been completed and the Owner's Representative has accepted the work. After acceptance, no further filling or grading shall be permitted except with the approval of and inspection by Owner's Representative.

3.03 FIELD QUALITY CONTROL

- A. If ASTM D6938 (nuclear gauge) testing is to be performed, the nuclear gauge equipment should be calibrated and adjusted at the beginning of each working day by the procedure described in ASTM D 6938, and the manufacturer's requirements.
- B. Inspections and test results shall be certified by a Professional Engineer licensed in the Commonwealth of Massachusetts. These certifications shall state that the tests and observations were performed by or under the direct supervision of the engineer and that the results are representative of the materials or conditions being certified by the tests.
- C. Interim test reports shall be submitted to Owner's Representative. The results of these tests and compliance with these Specifications shall be the basis upon which satisfactory completion of work shall be judged by Owner's

Representative.

END OF SECTION

**SECTION 31 25 00
SOIL EROSION AND SEDIMENT CONTROL**

PART 1 – GENERAL

1.01 DESCRIPTION

- A. The Contractor shall develop and implement a Soil Erosion and Sediment Control (SESC) Plan, which shall include all necessary measures to minimize any potential erosion, siltation and/or turbidity impacts as a result of the construction activities.
- B. The Contractor shall furnish all labor, materials, equipment and incidentals necessary to implement the approved SESC Plans or otherwise required by the Owner's Representative. Control shall include all necessary measures to minimize any potential erosion, divert and manage siltation storm water away from excavations, and/or prevent turbidity impacts as a result of the construction activities.
- C. The Contractor shall implement any and all stormwater management and soil erosion and sediment control devices and measures required by the SESC Plan prior to initiating any construction activities and shall maintain these devices and measures throughout the duration of the work.

1.02 RELATED WORK NOT INCLUDED

- A. Section 01 35 29.13 Health and Safety
- B. Section 01 71 13 Mobilization and Demobilization
- C. Section 02 01 00 Maintenance and Protection of Existing Conditions
- D. Section 02 41 00 Decommissioning and Demolition
- E. Section 02 81 00 Transportation and Disposal of Waste Material
- F. Section 31 11 00 Clearing and Grubbing
- G. Section 31 23 23 Backfill and Compaction
- H. Section 31 24 00 Grading

1.03 SUBMITTALS

- A. The Contractor shall submit a detailed plan depicting proposed erosion control measures.

1.04 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas; May 2003; Franklin, Hampden, Hampshire Conservation Districts.

1.05 DEFINITIONS

(Reserved)

PART 2 – PRODUCTS

- A. The Contractor shall furnish all materials, products and incidentals necessary to implement the approved SESC Plans or otherwise required by the Owner's Representative. These may include:
 - a. Straw or Hay Bales
 - b. Temporary Silt Fences
 - c. Temporary Liners
 - d. Temporary Truck Wash
 - e. Geotextile
 - f. Stabilized Construction Access
 - g. Temporary and Permanent Seed, Mulch, and Amendments

PART 3 – EXECUTION

3.01 GENERAL

- A. A copy of the certified SESC Plan shall be maintained at the Site during construction.
- B. Applicable erosion and sediment control practices shall be left in place until construction is completed and/or the area is stabilized.
- C. If work is suspended for an extended period of time, the Contractor shall be responsible for controlling erosion, pollution, sedimentation and runoff during the shutdown period.
- D. The Contractor shall perform all work, furnish all materials and install all measures required to reasonably control soil erosion resulting from construction operations and prevent excessive flow of sediment from the Site.

3.02 STORM WATER MANAGEMENT

- A. The Contractor shall prevent surface runoff from areas uphill of the excavation and staging areas using earthen berms or other suitable means. Contaminated materials shall not be used to divert storm water.
- B. The Site shall be graded and maintained at all times such that all stormwater runoff is diverted to soil erosion and sediment control facilities.

- C. The Contractor shall divert stormwater away from the excavation and staging areas through temporary drainage swales, temporary piping or other suitable means. The Contractor shall not be permitted to divert extraneous water onto adjacent properties.
- D. The excavation area that has been cleared of vegetation and the staging area shall be covered on a daily basis with a temporary liner when weather forecasts call for rain.
- E. Within the excavation and staging areas, construction activities shall be phased and/or a temporary diversion system shall be provided such that precipitation which falls on an uncovered work area does not flow into adjacent non-contaminated areas.
- F. All sedimentation structures will be inspected and maintained on a regular basis and after every storm event.

3.03 SILTATION AND EROSION CONTROL

- A. Siltation and erosion control practices shall be consistent with procedures outlined in the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas.
- B. The Contractor shall maintain erosion control measures (i.e., silt fencing and/or hay bales) in a satisfactory condition for the duration of the project or until removal is approved by the Owner's Representative. The erosion control measures become the property of the Contractor whenever it is removed.

3.04 STABILIZED CONSTRUCTION ACCESS

- A. Construction entrances shall be constructed and maintained in accordance with the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas to reduce the amount of sediment transported onto paved roads by vehicles or equipment and provide stable area for entrances or exit from the construction Site.
- B. A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction Site. Vehicles leaving the Site must travel over the entire length of the stabilized construction entrance.
- C. After construction is complete and the Site is stabilized, the stabilized construction entrance will be removed and the area stabilized unless it will be used as an underlayment for a driveway.

3.05 CONSTRUCTION REQUIREMENTS

- A. The Owner's Representative has the authority to limit the surface area of erodible earth material exposed by grubbing, excavation and fill operations and to direct the Contractor to provide immediate, permanent or temporary control measures to prevent contamination of adjacent properties or water bodies. Such work may involve the use of temporary mulches, mats, seeding or other

control devices or methods as necessary to control erosion.

- B. The Owner's Representative has the authority to limit the work area in progress commensurate with the Contractor's ability in keeping the progress of the work and the maintenance of the temporary SESC measures current, in accordance within the project schedule.
- C. In the event of conflict between these requirements and pollution control laws, rules or regulations or other Federal, State or local agencies, the more restrictive laws, rules or regulations shall prevail.

3.06 SEEDING, FERTILIZING and MULCHING

- A. Fertilizer application for seedbed preparation shall be performed in accordance with the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas and Stormwater Handbook and the SESC and SWPPP Plans, once approved.
- B. Seeding operations shall be performed only during periods when beneficial results can be obtained. When drought, excessive moisture, or other unsatisfactory conditions prevail, the work shall be stopped when directed. When special conditions warrant a variance to the seeding operations, the Contractor's proposed alternate times shall be submitted to the Norfolk County Soil Conservation District approval for approval.
- C. All areas shall be seeded immediately following site preparation. If the prepared areas to be seeded become compacted before seeding, the surface shall be loosened using disks, rakes, or other methods.
- D. The Contractor shall thoroughly mix all seed, and evenly sow the seed over the prepared areas at the required rates specified in the products section of this Specification.
- E. Seeding operations shall not take place when the wind velocity will prevent uniform seed distribution, immediately following rain, or when ground is too dry. Only areas that can be mulched on the same day shall be seeded.
- F. Mulching shall be performed in accordance with the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas and Stormwater Handbook and the SESC and SWPPP Plans, once approved.
- G. Mulch shall be applied on all seeded areas to ensure against erosion before grass is established to promote earlier vegetation cover.
- H. The Contractor shall not mulch during high winds and mulch that becomes displaced shall be immediately replaced.
- I. Within 24 hours after seeding an area, the Contractor shall evenly place mulch, replacing mulch that becomes displaced immediately.
- J. Upon completion of the seeding and mulching operation in an area, the area shall be protected from traffic or other use.

END OF SECTION

Attachment 4: Supplemental Data

- Final Report
- Re-Issued Report
- Revised Report

Report Date:
28-Feb-17 17:47

Laboratory Report

ENPRO Services, Inc.
19 National Drive
Franklin, MA 02038
Attn: Keith Buchanan

Project: Taunton St. - Plainville, MA
Project #: 111332

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SC31802-01	T-1	Oil	18-Feb-17 09:00	21-Feb-17 14:40
SC31802-02	T-2	Oil	18-Feb-17 09:15	21-Feb-17 14:40

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received. All applicable NELAC requirements have been met.

- Massachusetts # M-MA138/MA1110
- Connecticut # PH-0777
- Florida # E87936
- Maine # MA138
- New Hampshire # 2972/2538
- New Jersey # MA011
- New York # 11393
- Pennsylvania # 68-04426/68-02924
- Rhode Island # LAO00348
- USDA # P330-15-00375
- Vermont # VT-11393



Authorized by:



June O'Connor
Laboratory Director

Eurofins Spectrum Analytical holds primary certification in the State of Massachusetts for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of Massachusetts does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.

Please note that this report contains 9 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Eurofins Spectrum Analytical, Inc.

Eurofins Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Eurofins Spectrum Analytical, Inc. is currently accredited for the specific method or analyte indicated. Please refer to our Quality web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Eurofins Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey, Pennsylvania and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (PA-68-04426).

Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

CASE NARRATIVE:

Data has been reported to the RDL. This report excludes estimated concentrations detected below the RDL and above the MDL (J-Flag).

All non-detects and all results below the reporting limit are reported as "<" (less than) the reporting limit in this report.

The samples were received 2.0 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

SW846 8082A

Samples:

SC31802-02 T-2

This flag indicates the concentration for this analyte is an estimated value due to exceeding the calibration range or interferences resulting in a biased final concentration.

Aroclor-1242

SC31802-02RE1 T-2

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

Sample Acceptance Check Form

Client: ENPRO Services, Inc. - Franklin, MA
 Project: Taunton St. - Plainville, MA / 111332
 Work Order: SC31802
 Sample(s) received on: 2/21/2017

The following outlines the condition of samples for the attached Chain of Custody upon receipt.

	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Were custody seals present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Were custody seals intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were samples received at a temperature of $\leq 6^{\circ}\text{C}$?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples refrigerated upon transfer to laboratory representative?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were sample containers received intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples accompanied by a Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did sample container labels agree with Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples received within method-specific holding times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Summary of Hits

Lab ID: SC31802-02

Client ID: T-2

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Aroclor-1242	536000	E	377	µg/kg	SW846 8082A

Lab ID: SC31802-02RE1

Client ID: T-2

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Aroclor-1242 [2C]	605000	D	7540	µg/kg	SW846 8082A

Please note that because there are no reporting limits associated with hazardous waste characterizations or micro analyses, this summary does not include hits from these analyses if included in this work order.

Sample Identification

T-1

SC31802-01

Client Project #

111332

Matrix

Oil

Collection Date/Time

18-Feb-17 09:00

Received

21-Feb-17

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>MDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Analyst</i>	<i>Batch</i>	<i>Cert.</i>
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Semivolatile Organic Compounds by GCPolychlorinated BiphenylsPrepared by method SW846 3580A

12674-11-2	Aroclor-1016	< 371		µg/kg	371	219	1	SW846 8082A	27-Feb-17	27-Feb-17	IMR	1703546	
11104-28-2	Aroclor-1221	< 371		µg/kg	371	227	1	"	"	"	"	"	"
11141-16-5	Aroclor-1232	< 371		µg/kg	371	236	1	"	"	"	"	"	"
53469-21-9	Aroclor-1242	< 371		µg/kg	371	172	1	"	"	"	"	"	"
12672-29-6	Aroclor-1248	< 371		µg/kg	371	136	1	"	"	"	"	"	"
11097-69-1	Aroclor-1254	< 371		µg/kg	371	174	1	"	"	"	"	"	"
11096-82-5	Aroclor-1260	< 371		µg/kg	371	192	1	"	"	"	"	"	"
37324-23-5	Aroclor-1262	< 371		µg/kg	371	189	1	"	"	"	"	"	"
11100-14-4	Aroclor-1268	< 371		µg/kg	371	203	1	"	"	"	"	"	"

Surrogate recoveries:

10386-84-2	4,4-DB-Octafluorobiphenyl (Sr)	75			30-150 %			"	"	"	"	"	"
10386-84-2	4,4-DB-Octafluorobiphenyl (Sr) [2C]	75			30-150 %			"	"	"	"	"	"
2051-24-3	Decachlorobiphenyl (Sr)	100			30-150 %			"	"	"	"	"	"
2051-24-3	Decachlorobiphenyl (Sr) [2C]	85			30-150 %			"	"	"	"	"	"

This laboratory report is not valid without an authorized signature on the cover page.

Sample Identification

T-2

SC31802-02

Client Project #

111332

Matrix

Oil

Collection Date/Time

18-Feb-17 09:15

Received

21-Feb-17

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
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Semivolatile Organic Compounds by GC

Polychlorinated Biphenyls

Prepared by method SW846 3580A

12674-11-2	Aroclor-1016	< 377		µg/kg	377	223	1	SW846 8082A	27-Feb-17	27-Feb-17	IMR	1703546	
11104-28-2	Aroclor-1221	< 377		µg/kg	377	231	1	"	"	"	"	"	"
11141-16-5	Aroclor-1232	< 377		µg/kg	377	241	1	"	"	"	"	"	"
53469-21-9	Aroclor-1242	536,000	E	µg/kg	377	175	1	"	"	"	"	"	"
12672-29-6	Aroclor-1248	< 377		µg/kg	377	139	1	"	"	"	"	"	"
11097-69-1	Aroclor-1254	< 377		µg/kg	377	177	1	"	"	"	"	"	"
11096-82-5	Aroclor-1260	< 377		µg/kg	377	196	1	"	"	"	"	"	"
37324-23-5	Aroclor-1262	< 377		µg/kg	377	192	1	"	"	"	"	"	"
11100-14-4	Aroclor-1268	< 377		µg/kg	377	207	1	"	"	"	"	"	"

Surrogate recoveries:

10386-84-2	4,4-DB-Octafluorobiphenyl (Sr)	65			30-150 %			"	"	"	"	"	"
10386-84-2	4,4-DB-Octafluorobiphenyl (Sr) [2C]	80			30-150 %			"	"	"	"	"	"
2051-24-3	Decachlorobiphenyl (Sr)	105			30-150 %			"	"	"	"	"	"
2051-24-3	Decachlorobiphenyl (Sr) [2C]	95			30-150 %			"	"	"	"	"	"

Re-analysis of Polychlorinated Biphenyls

GS1

Prepared by method SW846 3580A

12674-11-2	Aroclor-1016	< 7540	D	µg/kg	7540	4460	20	SW846 8082A	27-Feb-17	28-Feb-17	IMR	1703546	
11104-28-2	Aroclor-1221	< 7540	D	µg/kg	7540	4630	20	"	"	"	"	"	"
11141-16-5	Aroclor-1232	< 7540	D	µg/kg	7540	4810	20	"	"	"	"	"	"
53469-21-9	Aroclor-1242 [2C]	605,000	D	µg/kg	7540	4090	20	"	"	"	"	"	"
12672-29-6	Aroclor-1248	< 7540	D	µg/kg	7540	2770	20	"	"	"	"	"	"
11097-69-1	Aroclor-1254	< 7540	D	µg/kg	7540	3550	20	"	"	"	"	"	"
11096-82-5	Aroclor-1260	< 7540	D	µg/kg	7540	3910	20	"	"	"	"	"	"
37324-23-5	Aroclor-1262	< 7540	D	µg/kg	7540	3840	20	"	"	"	"	"	"
11100-14-4	Aroclor-1268	< 7540	D	µg/kg	7540	4140	20	"	"	"	"	"	"

Surrogate recoveries:

10386-84-2	4,4-DB-Octafluorobiphenyl (Sr)	100			30-150 %			"	"	"	"	"	"
10386-84-2	4,4-DB-Octafluorobiphenyl (Sr) [2C]	100			30-150 %			"	"	"	"	"	"
2051-24-3	Decachlorobiphenyl (Sr)	100			30-150 %			"	"	"	"	"	"
2051-24-3	Decachlorobiphenyl (Sr) [2C]	100			30-150 %			"	"	"	"	"	"

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Semivolatile Organic Compounds by GC - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1703546 - SW846 3580A										
Blank (1703546-BLK1)					<u>Prepared & Analyzed: 27-Feb-17</u>					
Aroclor-1016	< 393		µg/kg	393						
Aroclor-1016 [2C]	< 393		µg/kg	393						
Aroclor-1221	< 393		µg/kg	393						
Aroclor-1221 [2C]	< 393		µg/kg	393						
Aroclor-1232	< 393		µg/kg	393						
Aroclor-1232 [2C]	< 393		µg/kg	393						
Aroclor-1242	< 393		µg/kg	393						
Aroclor-1242 [2C]	< 393		µg/kg	393						
Aroclor-1248	< 393		µg/kg	393						
Aroclor-1248 [2C]	< 393		µg/kg	393						
Aroclor-1254	< 393		µg/kg	393						
Aroclor-1254 [2C]	< 393		µg/kg	393						
Aroclor-1260	< 393		µg/kg	393						
Aroclor-1260 [2C]	< 393		µg/kg	393						
Aroclor-1262	< 393		µg/kg	393						
Aroclor-1262 [2C]	< 393		µg/kg	393						
Aroclor-1268	< 393		µg/kg	393						
Aroclor-1268 [2C]	< 393		µg/kg	393						
<i>Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)</i>	275		µg/kg	393			70	30-150		
<i>Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]</i>	275		µg/kg	393			70	30-150		
<i>Surrogate: Decachlorobiphenyl (Sr)</i>	334		µg/kg	393			85	30-150		
<i>Surrogate: Decachlorobiphenyl (Sr) [2C]</i>	314		µg/kg	393			80	30-150		
LCS (1703546-BS1)					<u>Prepared & Analyzed: 27-Feb-17</u>					
Aroclor-1016	3750		µg/kg	383	4780		78	50-140		
Aroclor-1016 [2C]	3460		µg/kg	383	4780		72	50-140		
Aroclor-1260	3650		µg/kg	383	4780		76	50-140		
Aroclor-1260 [2C]	3140		µg/kg	383	4780		66	50-140		
<i>Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)</i>	268		µg/kg	383			70	30-150		
<i>Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]</i>	249		µg/kg	383			65	30-150		
<i>Surrogate: Decachlorobiphenyl (Sr)</i>	306		µg/kg	383			80	30-150		
<i>Surrogate: Decachlorobiphenyl (Sr) [2C]</i>	287		µg/kg	383			75	30-150		
LCS Dup (1703546-BSD1)					<u>Prepared & Analyzed: 27-Feb-17</u>					
Aroclor-1016	3870		µg/kg	385	4820		80	50-140	3	30
Aroclor-1016 [2C]	3450		µg/kg	385	4820		72	50-140	0.4	30
Aroclor-1260	3720		µg/kg	385	4820		77	50-140	2	30
Aroclor-1260 [2C]	3290		µg/kg	385	4820		68	50-140	5	30
<i>Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)</i>	270		µg/kg	385			70	30-150		
<i>Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]</i>	250		µg/kg	385			65	30-150		
<i>Surrogate: Decachlorobiphenyl (Sr)</i>	289		µg/kg	385			75	30-150		
<i>Surrogate: Decachlorobiphenyl (Sr) [2C]</i>	289		µg/kg	385			75	30-150		
Duplicate (1703546-DUP1)			Source: SC31802-01			<u>Prepared & Analyzed: 27-Feb-17</u>				
Aroclor-1016	< 377		µg/kg	377		BRL				40
Aroclor-1016 [2C]	< 377		µg/kg	377		BRL				40
Aroclor-1221	< 377		µg/kg	377		BRL				40
Aroclor-1221 [2C]	< 377		µg/kg	377		BRL				40
Aroclor-1232	< 377		µg/kg	377		BRL				40
Aroclor-1232 [2C]	< 377		µg/kg	377		BRL				40
Aroclor-1242	< 377		µg/kg	377		BRL				40

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Semivolatile Organic Compounds by GC - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1703546 - SW846 3580A										
<u>Duplicate (1703546-DUP1)</u>			<u>Source: SC31802-01</u>			<u>Prepared & Analyzed: 27-Feb-17</u>				
Aroclor-1242 [2C]	< 377		µg/kg	377		BRL				40
Aroclor-1248	< 377		µg/kg	377		BRL				40
Aroclor-1248 [2C]	< 377		µg/kg	377		BRL				40
Aroclor-1254	< 377		µg/kg	377		BRL				40
Aroclor-1254 [2C]	< 377		µg/kg	377		BRL				40
Aroclor-1260	< 377		µg/kg	377		BRL				40
Aroclor-1260 [2C]	< 377		µg/kg	377		BRL				40
Aroclor-1262	< 377		µg/kg	377		BRL				40
Aroclor-1262 [2C]	< 377		µg/kg	377		BRL				40
Aroclor-1268	< 377		µg/kg	377		BRL				40
Aroclor-1268 [2C]	< 377		µg/kg	377		BRL				40
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	283		µg/kg		377		75	30-150		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]	302		µg/kg		377		80	30-150		
Surrogate: Decachlorobiphenyl (Sr)	396		µg/kg		377		105	30-150		
Surrogate: Decachlorobiphenyl (Sr) [2C]	339		µg/kg		377		90	30-150		
<u>Matrix Spike (1703546-MS1)</u>			<u>Source: SC31802-01</u>			<u>Prepared & Analyzed: 27-Feb-17</u>				
Aroclor-1016	3820		µg/kg	362	4530	BRL	84	40-135		
Aroclor-1016 [2C]	3610		µg/kg	362	4530	BRL	80	40-135		
Aroclor-1260	3820		µg/kg	362	4530	BRL	84	40-135		
Aroclor-1260 [2C]	3440		µg/kg	362	4530	BRL	76	40-135		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	308		µg/kg		362		85	30-150		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]	290		µg/kg		362		80	30-150		
Surrogate: Decachlorobiphenyl (Sr)	417		µg/kg		362		115	30-150		
Surrogate: Decachlorobiphenyl (Sr) [2C]	362		µg/kg		362		100	30-150		
<u>Matrix Spike Dup (1703546-MSD1)</u>			<u>Source: SC31802-01</u>			<u>Prepared & Analyzed: 27-Feb-17</u>				
Aroclor-1016	4560		µg/kg	399	4980	BRL	92	40-135	18	30
Aroclor-1016 [2C]	4440		µg/kg	399	4980	BRL	89	40-135	21	30
Aroclor-1260	4680		µg/kg	399	4980	BRL	94	40-135	20	30
Aroclor-1260 [2C]	4170		µg/kg	399	4980	BRL	84	40-135	19	30
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	359		µg/kg		399		90	30-150		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]	359		µg/kg		399		90	30-150		
Surrogate: Decachlorobiphenyl (Sr)	498		µg/kg		399		125	30-150		
Surrogate: Decachlorobiphenyl (Sr) [2C]	439		µg/kg		399		110	30-150		

This laboratory report is not valid without an authorized signature on the cover page.

Notes and Definitions

D	Data reported from a dilution
E	This flag indicates the concentration for this analyte is an estimated value due to exceeding the calibration range or interferences resulting in a biased final concentration.
GS1	Sample dilution required for high concentration of target analytes to be within the instrument calibration range.
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.



Photo 1: Sampling location SP-1



Photo 2: Sampling location SP-2



Photo 3: Sampling location SP-3



Photo 4: Sampling location SP-6 in electroplating room



Photo 5: Sampling location SP-7 in electroplating room, SP-8 was similar in appearance, in the northern portion of the electroplating room above the sump pit



Photo 6: Sampling location SP-10, SP-11, F-10 and F-11



Photo 7: Sampling location SP-12

February 23, 2017

Dale Cross
Ramboll Environ US Corporation - Hartford, CT
100 Pearl Street, East Tower, Third Floor
Hartford, CT 06103

Project Location: Plainville, MA
Client Job Number:
Project Number: 08-2337AR
Laboratory Work Order Number: 17B0624

Enclosed are results of analyses for samples received by the laboratory on February 15, 2017. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Aaron L. Benoit", with a horizontal line extending to the right from the end of the signature.

Aaron L. Benoit
Project Manager

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Ramboll Environ US Corporation - Hartford, CT
 100 Pearl Street, East Tower, Third Floor
 Hartford, CT 06103
 ATTN: Dale Cross

REPORT DATE: 2/23/2017

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 08-2337AR

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 17B0624

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Plainville, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
SP-1	17B0624-01	Wipe		SW-846 8260C	
SP-1	17B0624-02	Wipe		SW-846 6010C/D Modified SW-846 6010C-D SW-846 7471B	
SP-2	17B0624-03	Wipe		SW-846 8260C	
SP-2	17B0624-04	Wipe		SW-846 6010C/D Modified SW-846 6010C-D SW-846 7471B	
SP-3	17B0624-05	Wipe		SW-846 8260C	
SP-3	17B0624-06	Wipe		SW-846 6010C/D Modified SW-846 6010C-D SW-846 7471B	
SP-6	17B0624-07	Wipe		SW-846 8260C	
SP-6	17B0624-08	Wipe		SW-846 6010C/D Modified SW-846 6010C-D SW-846 7471B	
SP-7	17B0624-09	Wipe		SW-846 8260C	
SP-8	17B0624-11	Wipe		SW-846 8260C	
SP-8	17B0624-12	Wipe		SW-846 6010C/D Modified SW-846 6010C-D SW-846 7471B	
SP-10	17B0624-13	Sludge		SW-846 8260C	
SP-10	17B0624-14	Sludge		SW-846 6010C-D SW-846 7471B SW-846 9014	
SP-11	17B0624-15	Sludge		SW-846 8260C	
SP-11	17B0624-16	Sludge		SW-846 6010C-D SW-846 7471B SW-846 9014	
F-10	17B0624-17	Product/Solid		SW-846 6010C-D SW-846 8260C SW-846 9014	
F-11	17B0624-18	Product/Solid		SW-846 6010C-D SW-846 7471B SW-846 8260C SW-846 9014	

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332
SW-846 6010C-D

Qualifications:**B**

Analyte is found in the associated blank as well as in the sample.

Analyte & Samples(s) Qualified:**Zinc**

17B0624-02[SP-1], 17B0624-04[SP-2], 17B0624-06[SP-3], 17B0624-08[SP-6], 17B0624-12[SP-8], B170817-BLK1, B170817-BS1, B170817-BSD1

B-07

Data is not affected by elevated level in blank since sample result is >10x level found in the blank.

Analyte & Samples(s) Qualified:**Zinc**

17B0624-04[SP-2], 17B0624-06[SP-3], 17B0624-08[SP-6], 17B0624-12[SP-8]

L-06

Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits. Reported value for this compound is likely to be biased on the high side.

Analyte & Samples(s) Qualified:**Zinc**

B170817-BS1, B170817-BSD1

L-07

Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.

Analyte & Samples(s) Qualified:**Beryllium**

B170899-BS1, B170899-BSD1, B170900-BSD1

M-10

The reporting limit verification for the AIHA lead program is outside of control limits for this element. Any reported result at or near the detection limit may be biased on the high side.

Analyte & Samples(s) Qualified:**Lead**

B171043-MRL1

SW-846 8260C

Qualifications:**L-04**

Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits. Reported value for this compound is likely to be biased on the low side.

Analyte & Samples(s) Qualified:**2-Hexanone (MBK)**

17B0624-01[SP-1], 17B0624-03[SP-2], 17B0624-05[SP-3], 17B0624-07[SP-6], 17B0624-09[SP-7], 17B0624-11[SP-8], 17B0624-13[SP-10], 17B0624-15[SP-11], B170574-BLK1, B170574-BS1, B170574-BSD1, B170597-BLK1, B170597-BS1, B170597-BSD1

Chloromethane

17B0624-01[SP-1], 17B0624-03[SP-2], 17B0624-05[SP-3], 17B0624-07[SP-6], 17B0624-09[SP-7], 17B0624-11[SP-8], B170574-BLK1, B170574-BS1, B170574-BSD1

RL-07

Elevated reporting limit based on lowest point in calibration.

MA CAM reporting limit not met.

Analyte & Samples(s) Qualified:**Bromoform**

17B0624-17[F-10]

Carbon Disulfide

17B0624-17[F-10]

Chloromethane

17B0624-17[F-10]

Methylene Chloride

17B0624-17[F-10]

RL-14

Elevated reporting limit due to foaming sample matrix. MA CAM reporting limit not met.

Analyte & Samples(s) Qualified:

17B0624-18[F-11]

V-05

Continuing calibration did not meet method specifications and was biased on the low side for this compound. Increased uncertainty is associated with the reported value which is likely to be biased on the low side.

Analyte & Samples(s) Qualified:**2-Hexanone (MBK)**

17B0624-01[SP-1], 17B0624-03[SP-2], 17B0624-05[SP-3], 17B0624-07[SP-6], 17B0624-09[SP-7], 17B0624-11[SP-8], 17B0624-13[SP-10], 17B0624-15[SP-11], B170574-BLK1, B170574-BS1, B170574-BSD1, B170597-BLK1, B170597-BS1, B170597-BSD1

Chloromethane

17B0624-01[SP-1], 17B0624-03[SP-2], 17B0624-05[SP-3], 17B0624-07[SP-6], 17B0624-09[SP-7], 17B0624-11[SP-8], 17B0624-13[SP-10], 17B0624-15[SP-11], B170574-BLK1, B170574-BS1, B170574-BSD1, B170597-BLK1, B170597-BS1, B170597-BSD1

Methyl Acetate

17B0624-01[SP-1], 17B0624-03[SP-2], 17B0624-05[SP-3], 17B0624-07[SP-6], 17B0624-09[SP-7], 17B0624-11[SP-8], 17B0624-13[SP-10], 17B0624-15[SP-11], B170574-BLK1, B170597-BLK1

tert-Butyl Alcohol (TBA)

17B0624-01[SP-1], 17B0624-03[SP-2], 17B0624-05[SP-3], 17B0624-07[SP-6], 17B0624-09[SP-7], 17B0624-11[SP-8], 17B0624-13[SP-10], 17B0624-15[SP-11], 17B0624-17[F-10], 17B0624-18[F-11], B170574-BLK1, B170574-BS1, B170574-BSD1, B170597-BLK1, B170597-BS1, B170597-BSD1, B170714-BLK1, B170714-BS1, B170714-BSD1

V-16

Response factor is less than method specified minimum acceptable value. Reduced precision and accuracy may be associated with reported result.

Analyte & Samples(s) Qualified:**1,4-Dioxane**

17B0624-01[SP-1], 17B0624-03[SP-2], 17B0624-05[SP-3], 17B0624-07[SP-6], 17B0624-09[SP-7], 17B0624-11[SP-8], 17B0624-13[SP-10], 17B0624-15[SP-11], 17B0624-17[F-10], 17B0624-18[F-11], B170574-BLK1, B170574-BS1, B170574-BSD1, B170597-BLK1, B170597-BS1, B170597-BSD1, B170714-BLK1, B170714-BS1, B170714-BSD1

tert-Butyl Alcohol (TBA)

17B0624-01[SP-1], 17B0624-03[SP-2], 17B0624-05[SP-3], 17B0624-07[SP-6], 17B0624-09[SP-7], 17B0624-11[SP-8], 17B0624-13[SP-10], 17B0624-15[SP-11], 17B0624-17[F-10], 17B0624-18[F-11], B170574-BLK1, B170574-BS1, B170574-BSD1, B170597-BLK1, B170597-BS1, B170597-BSD1, B170714-BLK1, B170714-BS1, B170714-BSD1

V-20

Continuing calibration did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:**Carbon Disulfide**

B170714-BS1, B170714-BSD1

Methylene Chloride

B170714-BS1, B170714-BSD1

SW-846 6010C/D SW-846 6020A/B

For NC, Metals methods SW-846 6010D and SW-846 6020B are followed, and for all other states methods SW-846 6010C and SW-846 6020A are followed.

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington
Project Manager

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: SP-1

Sampled: 2/15/2017 11:35

Sample ID: 17B0624-01

Sample Matrix: Wipe

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.76	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Acrylonitrile	ND	0.076	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.0076	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Benzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Bromobenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Bromochloromethane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Bromodichloromethane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Bromoform	ND	0.061	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Bromomethane	ND	0.031	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
2-Butanone (MEK)	ND	0.31	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
tert-Butyl Alcohol (TBA)	ND	0.31	µg/Wipe	1	V-05, V-16	SW-846 8260C	2/16/17	2/19/17 9:43	EEH
n-Butylbenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
sec-Butylbenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
tert-Butylbenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.0076	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Carbon Disulfide	ND	0.046	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Carbon Tetrachloride	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Chlorobenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Chlorodibromomethane	ND	0.0076	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Chloroethane	ND	0.031	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Chloroform	ND	0.031	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Chloromethane	ND	0.031	µg/Wipe	1	V-05, L-04	SW-846 8260C	2/16/17	2/19/17 9:43	EEH
2-Chlorotoluene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
4-Chlorotoluene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.076	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,2-Dibromoethane (EDB)	ND	0.0076	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Dibromomethane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,2-Dichlorobenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,3-Dichlorobenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,4-Dichlorobenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
trans-1,4-Dichloro-2-butene	ND	0.031	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Dichlorodifluoromethane (Freon 12)	ND	0.031	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,1-Dichloroethane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,2-Dichloroethane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,1-Dichloroethylene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
cis-1,2-Dichloroethylene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
trans-1,2-Dichloroethylene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,2-Dichloropropane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,3-Dichloropropane	ND	0.0076	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
2,2-Dichloropropane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,1-Dichloropropene	ND	0.031	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
cis-1,3-Dichloropropene	ND	0.0076	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
trans-1,3-Dichloropropene	ND	0.0076	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Diethyl Ether	ND	0.031	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: SP-1

Sampled: 2/15/2017 11:35

Sample ID: 17B0624-01

Sample Matrix: Wipe

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.0076	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,4-Dioxane	ND	0.76	µg/Wipe	1	V-16	SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Ethylbenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Hexachlorobutadiene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
2-Hexanone (MBK)	ND	0.15	µg/Wipe	1	V-05, L-04	SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Isopropylbenzene (Cumene)	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
p-Isopropyltoluene (p-Cymene)	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Methyl Acetate	ND	0.15	µg/Wipe	1	V-05	SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Methyl tert-Butyl Ether (MTBE)	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Methyl Cyclohexane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Methylene Chloride	ND	0.076	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
4-Methyl-2-pentanone (MIBK)	ND	0.15	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Naphthalene	ND	0.031	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
n-Propylbenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Styrene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,1,1,2-Tetrachloroethane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,1,2,2-Tetrachloroethane	ND	0.0076	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Tetrachloroethylene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Tetrahydrofuran	ND	0.15	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Toluene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,2,3-Trichlorobenzene	ND	0.076	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,2,4-Trichlorobenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,3,5-Trichlorobenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,1,1-Trichloroethane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,1,2-Trichloroethane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Trichloroethylene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Trichlorofluoromethane (Freon 11)	ND	0.031	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,2,3-Trichloropropane	ND	0.031	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,2,4-Trimethylbenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
1,3,5-Trimethylbenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Vinyl Chloride	ND	0.031	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
m+p Xylene	ND	0.031	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
o-Xylene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 9:43	EEH
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
1,2-Dichloroethane-d4		101	70-130					2/19/17 9:43	
Toluene-d8		98.4	70-130					2/19/17 9:43	
4-Bromofluorobenzene		96.7	70-130					2/19/17 9:43	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Sampled: 2/15/2017 11:35

Field Sample #: SP-1

Sample ID: 17B0624-02

Sample Matrix: Wipe

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 12:44	QNW
Arsenic	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 12:44	QNW
Beryllium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 12:44	QNW
Cadmium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 12:44	QNW
Chromium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 12:44	QNW
Copper	7.9	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 12:44	QNW
Lead	<2.5	2.5	µg/Wipe	1		SW-846 6010C/D Modified	2/21/17	2/22/17 12:44	QNW
Mercury	ND	0.025	µg/Wipe	1		SW-846 7471B	2/21/17	2/22/17 10:37	TJK
Nickel	72	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 12:44	QNW
Selenium	ND	25	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 12:44	QNW
Silver	4.3	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 12:44	QNW
Thallium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 12:44	QNW
Zinc	95	2.5	µg/Wipe	1	B	SW-846 6010C-D	2/21/17	2/22/17 12:44	QNW

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: SP-2

Sampled: 2/15/2017 11:22

Sample ID: 17B0624-03

Sample Matrix: Wipe

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.63	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Acrylonitrile	ND	0.063	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.0063	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Benzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Bromobenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Bromochloromethane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Bromodichloromethane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Bromoform	ND	0.051	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Bromomethane	ND	0.025	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
2-Butanone (MEK)	ND	0.25	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
tert-Butyl Alcohol (TBA)	ND	0.25	µg/Wipe	1	V-05, V-16	SW-846 8260C	2/16/17	2/19/17 10:10	EEH
n-Butylbenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
sec-Butylbenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
tert-Butylbenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.0063	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Carbon Disulfide	ND	0.038	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Carbon Tetrachloride	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Chlorobenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Chlorodibromomethane	ND	0.0063	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Chloroethane	ND	0.025	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Chloroform	ND	0.025	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Chloromethane	ND	0.025	µg/Wipe	1	L-04, V-05	SW-846 8260C	2/16/17	2/19/17 10:10	EEH
2-Chlorotoluene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
4-Chlorotoluene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.063	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,2-Dibromoethane (EDB)	ND	0.0063	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Dibromomethane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,2-Dichlorobenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,3-Dichlorobenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,4-Dichlorobenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
trans-1,4-Dichloro-2-butene	ND	0.025	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Dichlorodifluoromethane (Freon 12)	ND	0.025	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,1-Dichloroethane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,2-Dichloroethane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,1-Dichloroethylene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
cis-1,2-Dichloroethylene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
trans-1,2-Dichloroethylene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,2-Dichloropropane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,3-Dichloropropane	ND	0.0063	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
2,2-Dichloropropane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,1-Dichloropropene	ND	0.025	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
cis-1,3-Dichloropropene	ND	0.0063	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
trans-1,3-Dichloropropene	ND	0.0063	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Diethyl Ether	ND	0.025	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: SP-2

Sampled: 2/15/2017 11:22

Sample ID: 17B0624-03

Sample Matrix: Wipe

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.0063	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,4-Dioxane	ND	0.63	µg/Wipe	1	V-16	SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Ethylbenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Hexachlorobutadiene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
2-Hexanone (MBK)	ND	0.13	µg/Wipe	1	L-04, V-05	SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Isopropylbenzene (Cumene)	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
p-Isopropyltoluene (p-Cymene)	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Methyl Acetate	ND	0.13	µg/Wipe	1	V-05	SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Methyl tert-Butyl Ether (MTBE)	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Methyl Cyclohexane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Methylene Chloride	ND	0.063	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
4-Methyl-2-pentanone (MIBK)	ND	0.13	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Naphthalene	ND	0.025	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
n-Propylbenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Styrene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,1,1,2-Tetrachloroethane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,1,2,2-Tetrachloroethane	ND	0.0063	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Tetrachloroethylene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Tetrahydrofuran	ND	0.13	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Toluene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,2,3-Trichlorobenzene	ND	0.063	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,2,4-Trichlorobenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,3,5-Trichlorobenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,1,1-Trichloroethane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,1,2-Trichloroethane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Trichloroethylene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Trichlorofluoromethane (Freon 11)	ND	0.025	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,2,3-Trichloropropane	ND	0.025	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,2,4-Trimethylbenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
1,3,5-Trimethylbenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Vinyl Chloride	ND	0.025	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
m+p Xylene	ND	0.025	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
o-Xylene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:10	EEH
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
1,2-Dichloroethane-d4		100	70-130					2/19/17 10:10	
Toluene-d8		99.2	70-130					2/19/17 10:10	
4-Bromofluorobenzene		95.9	70-130					2/19/17 10:10	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Sampled: 2/15/2017 11:22

Field Sample #: SP-2

Sample ID: 17B0624-04

Sample Matrix: Wipe

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	4.4	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 12:49	QNW
Arsenic	3.0	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 12:49	QNW
Beryllium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 12:49	QNW
Cadmium	46	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 12:49	QNW
Chromium	130	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 12:49	QNW
Copper	1500	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 12:49	QNW
Lead	74	2.5	µg/Wipe	1		SW-846 6010C/D Modified	2/21/17	2/22/17 12:49	QNW
Mercury	1.7	0.50	µg/Wipe	20		SW-846 7471B	2/21/17	2/22/17 10:39	TJK
Nickel	7700	12	µg/Wipe	5		SW-846 6010C-D	2/21/17	2/22/17 14:13	QNW
Selenium	ND	25	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 12:49	QNW
Silver	170	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 12:49	QNW
Thallium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 12:49	QNW
Zinc	9500	12	µg/Wipe	5	B-07, B	SW-846 6010C-D	2/21/17	2/22/17 14:13	QNW

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: SP-3

Sampled: 2/15/2017 10:57

Sample ID: 17B0624-05

Sample Matrix: Wipe

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.70	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Acrylonitrile	ND	0.070	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.0070	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Benzene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Bromobenzene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Bromochloromethane	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Bromodichloromethane	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Bromoform	ND	0.056	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Bromomethane	ND	0.028	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
2-Butanone (MEK)	ND	0.28	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
tert-Butyl Alcohol (TBA)	ND	0.28	µg/Wipe	1	V-05, V-16	SW-846 8260C	2/16/17	2/19/17 10:37	EEH
n-Butylbenzene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
sec-Butylbenzene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
tert-Butylbenzene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.0070	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Carbon Disulfide	ND	0.042	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Carbon Tetrachloride	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Chlorobenzene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Chlorodibromomethane	ND	0.0070	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Chloroethane	ND	0.028	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Chloroform	ND	0.028	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Chloromethane	ND	0.028	µg/Wipe	1	L-04, V-05	SW-846 8260C	2/16/17	2/19/17 10:37	EEH
2-Chlorotoluene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
4-Chlorotoluene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.070	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,2-Dibromoethane (EDB)	ND	0.0070	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Dibromomethane	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,2-Dichlorobenzene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,3-Dichlorobenzene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,4-Dichlorobenzene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
trans-1,4-Dichloro-2-butene	ND	0.028	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Dichlorodifluoromethane (Freon 12)	ND	0.028	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,1-Dichloroethane	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,2-Dichloroethane	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,1-Dichloroethylene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
cis-1,2-Dichloroethylene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
trans-1,2-Dichloroethylene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,2-Dichloropropane	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,3-Dichloropropane	ND	0.0070	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
2,2-Dichloropropane	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,1-Dichloropropene	ND	0.028	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
cis-1,3-Dichloropropene	ND	0.0070	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
trans-1,3-Dichloropropene	ND	0.0070	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Diethyl Ether	ND	0.028	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: SP-3

Sampled: 2/15/2017 10:57

Sample ID: 17B0624-05

Sample Matrix: Wipe

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.0070	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,4-Dioxane	ND	0.70	µg/Wipe	1	V-16	SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Ethylbenzene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Hexachlorobutadiene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
2-Hexanone (MBK)	ND	0.14	µg/Wipe	1	L-04, V-05	SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Isopropylbenzene (Cumene)	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
p-Isopropyltoluene (p-Cymene)	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Methyl Acetate	ND	0.14	µg/Wipe	1	V-05	SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Methyl tert-Butyl Ether (MTBE)	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Methyl Cyclohexane	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Methylene Chloride	ND	0.070	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
4-Methyl-2-pentanone (MIBK)	ND	0.14	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Naphthalene	ND	0.028	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
n-Propylbenzene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Styrene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,1,1,2-Tetrachloroethane	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,1,2,2-Tetrachloroethane	ND	0.0070	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Tetrachloroethylene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Tetrahydrofuran	ND	0.14	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Toluene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,2,3-Trichlorobenzene	ND	0.070	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,2,4-Trichlorobenzene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,3,5-Trichlorobenzene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,1,1-Trichloroethane	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,1,2-Trichloroethane	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Trichloroethylene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Trichlorofluoromethane (Freon 11)	ND	0.028	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,2,3-Trichloropropane	ND	0.028	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,2,4-Trimethylbenzene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
1,3,5-Trimethylbenzene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Vinyl Chloride	ND	0.028	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
m+p Xylene	ND	0.028	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
o-Xylene	ND	0.014	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 10:37	EEH
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
1,2-Dichloroethane-d4	99.8	70-130						2/19/17 10:37	
Toluene-d8	99.8	70-130						2/19/17 10:37	
4-Bromofluorobenzene	95.3	70-130						2/19/17 10:37	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Sampled: 2/15/2017 10:57

Field Sample #: SP-3

Sample ID: 17B0624-06

Sample Matrix: Wipe

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	16	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:30	QNW
Arsenic	6.6	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:30	QNW
Beryllium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:30	QNW
Cadmium	11000	12	µg/Wipe	5		SW-846 6010C-D	2/21/17	2/22/17 14:18	QNW
Chromium	27	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:30	QNW
Copper	98	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:30	QNW
Lead	93	2.5	µg/Wipe	1		SW-846 6010C/D Modified	2/21/17	2/22/17 13:30	QNW
Mercury	0.40	0.025	µg/Wipe	1		SW-846 7471B	2/21/17	2/22/17 10:40	TJK
Nickel	330	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:30	QNW
Selenium	ND	25	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:30	QNW
Silver	81	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:30	QNW
Thallium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:30	QNW
Zinc	18000	25	µg/Wipe	10	B-07, B	SW-846 6010C-D	2/21/17	2/22/17 14:55	QNW

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: SP-6

Sampled: 2/15/2017 13:55

Sample ID: 17B0624-07

Sample Matrix: Wipe

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.75	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Acrylonitrile	ND	0.075	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.0075	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Benzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Bromobenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Bromochloromethane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Bromodichloromethane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Bromoform	ND	0.060	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Bromomethane	ND	0.030	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
2-Butanone (MEK)	ND	0.30	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
tert-Butyl Alcohol (TBA)	ND	0.30	µg/Wipe	1	V-05, V-16	SW-846 8260C	2/16/17	2/19/17 11:04	EEH
n-Butylbenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
sec-Butylbenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
tert-Butylbenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.0075	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Carbon Disulfide	ND	0.045	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Carbon Tetrachloride	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Chlorobenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Chlorodibromomethane	ND	0.0075	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Chloroethane	ND	0.030	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Chloroform	ND	0.030	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Chloromethane	ND	0.030	µg/Wipe	1	L-04, V-05	SW-846 8260C	2/16/17	2/19/17 11:04	EEH
2-Chlorotoluene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
4-Chlorotoluene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.075	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,2-Dibromoethane (EDB)	ND	0.0075	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Dibromomethane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,2-Dichlorobenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,3-Dichlorobenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,4-Dichlorobenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
trans-1,4-Dichloro-2-butene	ND	0.030	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Dichlorodifluoromethane (Freon 12)	ND	0.030	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,1-Dichloroethane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,2-Dichloroethane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,1-Dichloroethylene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
cis-1,2-Dichloroethylene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
trans-1,2-Dichloroethylene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,2-Dichloropropane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,3-Dichloropropane	ND	0.0075	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
2,2-Dichloropropane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,1-Dichloropropene	ND	0.030	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
cis-1,3-Dichloropropene	ND	0.0075	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
trans-1,3-Dichloropropene	ND	0.0075	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Diethyl Ether	ND	0.030	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: SP-6

Sampled: 2/15/2017 13:55

Sample ID: 17B0624-07

Sample Matrix: Wipe

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.0075	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,4-Dioxane	ND	0.75	µg/Wipe	1	V-16	SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Ethylbenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Hexachlorobutadiene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
2-Hexanone (MBK)	ND	0.15	µg/Wipe	1	L-04, V-05	SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Isopropylbenzene (Cumene)	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
p-Isopropyltoluene (p-Cymene)	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Methyl Acetate	ND	0.15	µg/Wipe	1	V-05	SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Methyl tert-Butyl Ether (MTBE)	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Methyl Cyclohexane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Methylene Chloride	ND	0.075	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
4-Methyl-2-pentanone (MIBK)	ND	0.15	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Naphthalene	ND	0.030	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
n-Propylbenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Styrene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,1,1,2-Tetrachloroethane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,1,2,2-Tetrachloroethane	ND	0.0075	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Tetrachloroethylene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Tetrahydrofuran	ND	0.15	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Toluene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,2,3-Trichlorobenzene	ND	0.075	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,2,4-Trichlorobenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,3,5-Trichlorobenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,1,1-Trichloroethane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,1,2-Trichloroethane	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Trichloroethylene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Trichlorofluoromethane (Freon 11)	ND	0.030	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,2,3-Trichloropropane	ND	0.030	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,2,4-Trimethylbenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
1,3,5-Trimethylbenzene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Vinyl Chloride	ND	0.030	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
m+p Xylene	ND	0.030	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
o-Xylene	ND	0.015	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:04	EEH
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
1,2-Dichloroethane-d4		98.3	70-130					2/19/17 11:04	
Toluene-d8		99.5	70-130					2/19/17 11:04	
4-Bromofluorobenzene		93.9	70-130					2/19/17 11:04	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Sampled: 2/15/2017 13:55

Field Sample #: SP-6

Sample ID: 17B0624-08

Sample Matrix: Wipe

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	8.5	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:34	QNW
Arsenic	4.6	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:34	QNW
Beryllium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:34	QNW
Cadmium	82	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:34	QNW
Chromium	17	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:34	QNW
Copper	570	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:34	QNW
Lead	42	2.5	µg/Wipe	1		SW-846 6010C/D Modified	2/21/17	2/22/17 13:34	QNW
Mercury	0.38	0.025	µg/Wipe	1		SW-846 7471B	2/21/17	2/22/17 10:41	TJK
Nickel	44	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:34	QNW
Selenium	ND	25	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:34	QNW
Silver	160	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:34	QNW
Thallium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:34	QNW
Zinc	3800	12	µg/Wipe	5	B-07, B	SW-846 6010C-D	2/21/17	2/22/17 14:43	QNW

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: SP-7

Sampled: 2/15/2017 14:30

Sample ID: 17B0624-09

Sample Matrix: Wipe

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.65	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Acrylonitrile	ND	0.065	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.0065	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Benzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Bromobenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Bromochloromethane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Bromodichloromethane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Bromoform	ND	0.052	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Bromomethane	ND	0.026	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
2-Butanone (MEK)	ND	0.26	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
tert-Butyl Alcohol (TBA)	ND	0.26	µg/Wipe	1	V-05, V-16	SW-846 8260C	2/16/17	2/19/17 11:31	EEH
n-Butylbenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
sec-Butylbenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
tert-Butylbenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.0065	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Carbon Disulfide	ND	0.039	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Carbon Tetrachloride	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Chlorobenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Chlorodibromomethane	ND	0.0065	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Chloroethane	ND	0.026	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Chloroform	ND	0.026	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Chloromethane	ND	0.026	µg/Wipe	1	L-04, V-05	SW-846 8260C	2/16/17	2/19/17 11:31	EEH
2-Chlorotoluene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
4-Chlorotoluene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.065	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,2-Dibromoethane (EDB)	ND	0.0065	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Dibromomethane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,2-Dichlorobenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,3-Dichlorobenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,4-Dichlorobenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
trans-1,4-Dichloro-2-butene	ND	0.026	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Dichlorodifluoromethane (Freon 12)	ND	0.026	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,1-Dichloroethane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,2-Dichloroethane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,1-Dichloroethylene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
cis-1,2-Dichloroethylene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
trans-1,2-Dichloroethylene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,2-Dichloropropane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,3-Dichloropropane	ND	0.0065	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
2,2-Dichloropropane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,1-Dichloropropene	ND	0.026	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
cis-1,3-Dichloropropene	ND	0.0065	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
trans-1,3-Dichloropropene	ND	0.0065	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Diethyl Ether	ND	0.026	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: SP-7

Sampled: 2/15/2017 14:30

Sample ID: 17B0624-09

Sample Matrix: Wipe

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.0065	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,4-Dioxane	ND	0.65	µg/Wipe	1	V-16	SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Ethylbenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Hexachlorobutadiene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
2-Hexanone (MBK)	ND	0.13	µg/Wipe	1	L-04, V-05	SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Isopropylbenzene (Cumene)	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
p-Isopropyltoluene (p-Cymene)	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Methyl Acetate	ND	0.13	µg/Wipe	1	V-05	SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Methyl tert-Butyl Ether (MTBE)	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Methyl Cyclohexane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Methylene Chloride	ND	0.065	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
4-Methyl-2-pentanone (MIBK)	ND	0.13	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Naphthalene	ND	0.026	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
n-Propylbenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Styrene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,1,1,2-Tetrachloroethane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,1,2,2-Tetrachloroethane	ND	0.0065	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Tetrachloroethylene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Tetrahydrofuran	ND	0.13	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Toluene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,2,3-Trichlorobenzene	ND	0.065	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,2,4-Trichlorobenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,3,5-Trichlorobenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,1,1-Trichloroethane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,1,2-Trichloroethane	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Trichloroethylene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Trichlorofluoromethane (Freon 11)	ND	0.026	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,2,3-Trichloropropane	ND	0.026	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,2,4-Trimethylbenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
1,3,5-Trimethylbenzene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Vinyl Chloride	ND	0.026	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
m+p Xylene	ND	0.026	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
o-Xylene	ND	0.013	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:31	EEH
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
1,2-Dichloroethane-d4		98.7	70-130					2/19/17 11:31	
Toluene-d8		99.1	70-130					2/19/17 11:31	
4-Bromofluorobenzene		96.0	70-130					2/19/17 11:31	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: SP-8

Sampled: 2/15/2017 14:20

Sample ID: 17B0624-11

Sample Matrix: Wipe

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.54	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Acrylonitrile	ND	0.054	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.0054	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Benzene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Bromobenzene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Bromochloromethane	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Bromodichloromethane	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Bromoform	ND	0.043	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Bromomethane	ND	0.022	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
2-Butanone (MEK)	ND	0.22	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
tert-Butyl Alcohol (TBA)	ND	0.22	µg/Wipe	1	V-05, V-16	SW-846 8260C	2/16/17	2/19/17 11:58	EEH
n-Butylbenzene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
sec-Butylbenzene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
tert-Butylbenzene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.0054	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Carbon Disulfide	ND	0.033	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Carbon Tetrachloride	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Chlorobenzene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Chlorodibromomethane	ND	0.0054	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Chloroethane	ND	0.022	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Chloroform	ND	0.022	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Chloromethane	ND	0.022	µg/Wipe	1	L-04, V-05	SW-846 8260C	2/16/17	2/19/17 11:58	EEH
2-Chlorotoluene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
4-Chlorotoluene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.054	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,2-Dibromoethane (EDB)	ND	0.0054	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Dibromomethane	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,2-Dichlorobenzene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,3-Dichlorobenzene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,4-Dichlorobenzene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
trans-1,4-Dichloro-2-butene	ND	0.022	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Dichlorodifluoromethane (Freon 12)	ND	0.022	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,1-Dichloroethane	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,2-Dichloroethane	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,1-Dichloroethylene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
cis-1,2-Dichloroethylene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
trans-1,2-Dichloroethylene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,2-Dichloropropane	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,3-Dichloropropane	ND	0.0054	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
2,2-Dichloropropane	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,1-Dichloropropene	ND	0.022	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
cis-1,3-Dichloropropene	ND	0.0054	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
trans-1,3-Dichloropropene	ND	0.0054	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Diethyl Ether	ND	0.022	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: SP-8

Sampled: 2/15/2017 14:20

Sample ID: 17B0624-11

Sample Matrix: Wipe

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.0054	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,4-Dioxane	ND	0.54	µg/Wipe	1	V-16	SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Ethylbenzene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Hexachlorobutadiene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
2-Hexanone (MBK)	ND	0.11	µg/Wipe	1	L-04, V-05	SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Isopropylbenzene (Cumene)	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
p-Isopropyltoluene (p-Cymene)	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Methyl Acetate	ND	0.11	µg/Wipe	1	V-05	SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Methyl tert-Butyl Ether (MTBE)	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Methyl Cyclohexane	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Methylene Chloride	ND	0.054	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
4-Methyl-2-pentanone (MIBK)	ND	0.11	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Naphthalene	ND	0.022	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
n-Propylbenzene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Styrene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,1,1,2-Tetrachloroethane	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,1,2,2-Tetrachloroethane	ND	0.0054	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Tetrachloroethylene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Tetrahydrofuran	ND	0.11	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Toluene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,2,3-Trichlorobenzene	ND	0.054	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,2,4-Trichlorobenzene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,3,5-Trichlorobenzene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,1,1-Trichloroethane	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,1,2-Trichloroethane	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Trichloroethylene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Trichlorofluoromethane (Freon 11)	ND	0.022	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,2,3-Trichloropropane	ND	0.022	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,2,4-Trimethylbenzene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
1,3,5-Trimethylbenzene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Vinyl Chloride	ND	0.022	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
m+p Xylene	ND	0.022	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
o-Xylene	ND	0.011	µg/Wipe	1		SW-846 8260C	2/16/17	2/19/17 11:58	EEH
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
1,2-Dichloroethane-d4		98.1	70-130					2/19/17 11:58	
Toluene-d8		100	70-130					2/19/17 11:58	
4-Bromofluorobenzene		96.1	70-130					2/19/17 11:58	

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Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Sampled: 2/15/2017 14:20

Field Sample #: SP-8

Sample ID: 17B0624-12

Sample Matrix: Wipe

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:39	QNW
Arsenic	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:39	QNW
Beryllium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:39	QNW
Cadmium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:39	QNW
Chromium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:39	QNW
Copper	19	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:39	QNW
Lead	<2.5	2.5	µg/Wipe	1		SW-846 6010C/D Modified	2/21/17	2/22/17 13:39	QNW
Mercury	ND	0.025	µg/Wipe	1		SW-846 7471B	2/21/17	2/22/17 10:43	TJK
Nickel	9.4	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:39	QNW
Selenium	ND	25	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:39	QNW
Silver	12	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:39	QNW
Thallium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:39	QNW
Zinc	870	2.5	µg/Wipe	1	B-07, B	SW-846 6010C-D	2/21/17	2/22/17 13:39	QNW

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Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: SP-10

Sampled: 2/15/2017 12:30

Sample ID: 17B0624-13

Sample Matrix: Sludge

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	28	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Acrylonitrile	ND	2.8	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.28	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Benzene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Bromobenzene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Bromochloromethane	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Bromodichloromethane	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Bromoform	ND	1.1	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Bromomethane	ND	1.1	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
2-Butanone (MEK)	ND	11	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
tert-Butyl Alcohol (TBA)	ND	11	mg/Kg	1	V-16, V-05	SW-846 8260C	2/16/17	2/19/17 12:51	EEH
n-Butylbenzene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
sec-Butylbenzene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
tert-Butylbenzene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.28	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Carbon Disulfide	ND	1.7	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Carbon Tetrachloride	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Chlorobenzene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Chlorodibromomethane	ND	0.28	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Chloroethane	ND	1.1	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Chloroform	ND	1.1	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Chloromethane	ND	1.1	mg/Kg	1	V-05	SW-846 8260C	2/16/17	2/19/17 12:51	EEH
2-Chlorotoluene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
4-Chlorotoluene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.8	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,2-Dibromoethane (EDB)	ND	0.28	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Dibromomethane	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,2-Dichlorobenzene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,3-Dichlorobenzene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,4-Dichlorobenzene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
trans-1,4-Dichloro-2-butene	ND	1.1	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Dichlorodifluoromethane (Freon 12)	ND	1.1	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,1-Dichloroethane	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,2-Dichloroethane	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,1-Dichloroethylene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
cis-1,2-Dichloroethylene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
trans-1,2-Dichloroethylene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,2-Dichloropropane	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,3-Dichloropropane	ND	0.28	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
2,2-Dichloropropane	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,1-Dichloropropene	ND	1.1	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
cis-1,3-Dichloropropene	ND	0.28	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
trans-1,3-Dichloropropene	ND	0.28	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Diethyl Ether	ND	1.1	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH

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Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: SP-10

Sampled: 2/15/2017 12:30

Sample ID: 17B0624-13

Sample Matrix: Sludge

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.28	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,4-Dioxane	ND	28	mg/Kg	1	V-16	SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Ethylbenzene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Hexachlorobutadiene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
2-Hexanone (MBK)	ND	5.7	mg/Kg	1	L-04, V-05	SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Isopropylbenzene (Cumene)	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
p-Isopropyltoluene (p-Cymene)	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Methyl Acetate	ND	5.7	mg/Kg	1	V-05	SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Methyl tert-Butyl Ether (MTBE)	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Methyl Cyclohexane	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Methylene Chloride	ND	2.8	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
4-Methyl-2-pentanone (MIBK)	ND	5.7	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Naphthalene	ND	1.1	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
n-Propylbenzene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Styrene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,1,1,2-Tetrachloroethane	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,1,2,2-Tetrachloroethane	ND	0.28	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Tetrachloroethylene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Tetrahydrofuran	ND	5.7	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Toluene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,2,3-Trichlorobenzene	ND	2.8	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,2,4-Trichlorobenzene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,3,5-Trichlorobenzene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,1,1-Trichloroethane	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,1,2-Trichloroethane	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Trichloroethylene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Trichlorofluoromethane (Freon 11)	ND	1.1	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,2,3-Trichloropropane	ND	1.1	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,2,4-Trimethylbenzene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
1,3,5-Trimethylbenzene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Vinyl Chloride	ND	1.1	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
m+p Xylene	ND	1.1	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
o-Xylene	ND	0.57	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 12:51	EEH
Surrogates		% Recovery		Recovery Limits	Flag/Qual				
1,2-Dichloroethane-d4		102		70-130				2/19/17 12:51	
Toluene-d8		98.4		70-130				2/19/17 12:51	
4-Bromofluorobenzene		94.6		70-130				2/19/17 12:51	

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Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Sampled: 2/15/2017 12:30

Field Sample #: SP-10

Sample ID: 17B0624-14

Sample Matrix: Sludge

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	5.7	2.5	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:16	QNW
Arsenic	ND	2.5	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:16	QNW
Beryllium	ND	0.25	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:16	QNW
Cadmium	400	0.25	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:16	QNW
Chromium	72	0.50	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:16	QNW
Copper	500	0.50	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:16	QNW
Lead	320	0.75	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:16	QNW
Mercury	0.39	0.025	mg/Kg wet	1		SW-846 7471B	2/21/17	2/22/17 9:32	TJK
Nickel	110	0.50	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:16	QNW
Selenium	ND	5.0	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:16	QNW
Silver	24	0.50	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:16	QNW
Thallium	ND	2.5	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:16	QNW
Zinc	14000	5.0	mg/Kg wet	5		SW-846 6010C-D	2/21/17	2/22/17 12:31	QNW

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Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Sampled: 2/15/2017 12:30

Field Sample #: SP-10

Sample ID: 17B0624-14

Sample Matrix: Sludge

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Cyanide	2.6	0.43	mg/Kg	1		SW-846 9014	2/21/17	2/21/17 20:05	DJM

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Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: SP-11

Sampled: 2/15/2017 13:30

Sample ID: 17B0624-15

Sample Matrix: Sludge

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	39	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Acrylonitrile	ND	3.9	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.39	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Benzene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Bromobenzene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Bromochloromethane	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Bromodichloromethane	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Bromoform	ND	1.6	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Bromomethane	ND	1.6	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
2-Butanone (MEK)	ND	16	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
tert-Butyl Alcohol (TBA)	ND	16	mg/Kg	1	V-05, V-16	SW-846 8260C	2/16/17	2/19/17 13:18	EEH
n-Butylbenzene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
sec-Butylbenzene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
tert-Butylbenzene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.39	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Carbon Disulfide	ND	2.3	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Carbon Tetrachloride	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Chlorobenzene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Chlorodibromomethane	ND	0.39	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Chloroethane	ND	1.6	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Chloroform	ND	1.6	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Chloromethane	ND	1.6	mg/Kg	1	V-05	SW-846 8260C	2/16/17	2/19/17 13:18	EEH
2-Chlorotoluene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
4-Chlorotoluene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	3.9	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,2-Dibromoethane (EDB)	ND	0.39	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Dibromomethane	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,2-Dichlorobenzene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,3-Dichlorobenzene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,4-Dichlorobenzene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
trans-1,4-Dichloro-2-butene	ND	1.6	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Dichlorodifluoromethane (Freon 12)	ND	1.6	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,1-Dichloroethane	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,2-Dichloroethane	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,1-Dichloroethylene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
cis-1,2-Dichloroethylene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
trans-1,2-Dichloroethylene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,2-Dichloropropane	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,3-Dichloropropane	ND	0.39	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
2,2-Dichloropropane	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,1-Dichloropropene	ND	1.6	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
cis-1,3-Dichloropropene	ND	0.39	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
trans-1,3-Dichloropropene	ND	0.39	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Diethyl Ether	ND	1.6	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: SP-11

Sampled: 2/15/2017 13:30

Sample ID: 17B0624-15

Sample Matrix: Sludge

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.39	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,4-Dioxane	ND	39	mg/Kg	1	V-16	SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Ethylbenzene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Hexachlorobutadiene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
2-Hexanone (MBK)	ND	7.8	mg/Kg	1	L-04, V-05	SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Isopropylbenzene (Cumene)	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
p-Isopropyltoluene (p-Cymene)	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Methyl Acetate	ND	7.8	mg/Kg	1	V-05	SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Methyl tert-Butyl Ether (MTBE)	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Methyl Cyclohexane	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Methylene Chloride	ND	3.9	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
4-Methyl-2-pentanone (MIBK)	ND	7.8	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Naphthalene	ND	1.6	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
n-Propylbenzene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Styrene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,1,1,2-Tetrachloroethane	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,1,2,2-Tetrachloroethane	ND	0.39	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Tetrachloroethylene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Tetrahydrofuran	ND	7.8	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Toluene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,2,3-Trichlorobenzene	ND	3.9	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,2,4-Trichlorobenzene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,3,5-Trichlorobenzene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,1,1-Trichloroethane	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,1,2-Trichloroethane	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Trichloroethylene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Trichlorofluoromethane (Freon 11)	ND	1.6	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,2,3-Trichloropropane	ND	1.6	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,2,4-Trimethylbenzene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
1,3,5-Trimethylbenzene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Vinyl Chloride	ND	1.6	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
m+p Xylene	ND	1.6	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
o-Xylene	ND	0.78	mg/Kg	1		SW-846 8260C	2/16/17	2/19/17 13:18	EEH
Surrogates		% Recovery		Recovery Limits	Flag/Qual				
1,2-Dichloroethane-d4		101		70-130				2/19/17 13:18	
Toluene-d8		99.0		70-130				2/19/17 13:18	
4-Bromofluorobenzene		94.4		70-130				2/19/17 13:18	

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Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Sampled: 2/15/2017 13:30

Field Sample #: SP-11

Sample ID: 17B0624-16

Sample Matrix: Sludge

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	19	2.5	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:21	QNW
Arsenic	7.1	2.5	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:21	QNW
Beryllium	1.8	0.25	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:21	QNW
Cadmium	1600	0.25	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:21	QNW
Chromium	220	0.49	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:21	QNW
Copper	3300	0.49	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:21	QNW
Lead	210	0.74	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:21	QNW
Mercury	4.1	1.3	mg/Kg wet	50		SW-846 7471B	2/21/17	2/22/17 11:51	TJK
Nickel	520	0.49	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:21	QNW
Selenium	ND	4.9	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:21	QNW
Silver	72	0.49	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:21	QNW
Thallium	ND	2.5	mg/Kg wet	1		SW-846 6010C-D	2/21/17	2/22/17 11:21	QNW
Zinc	8700	4.9	mg/Kg wet	5		SW-846 6010C-D	2/21/17	2/22/17 12:39	QNW

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Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Sampled: 2/15/2017 13:30

Field Sample #: SP-11

Sample ID: 17B0624-16

Sample Matrix: Sludge

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Cyanide	4.3	0.41	mg/Kg	1		SW-846 9014	2/21/17	2/21/17 20:05	DJM

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Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: F-10

Sampled: 2/15/2017 12:30

Sample ID: 17B0624-17

Sample Matrix: Product/Solid

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	91	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Acrylonitrile	ND	9.1	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
tert-Amyl Methyl Ether (TAME)	ND	0.91	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Benzene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Bromobenzene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Bromochloromethane	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Bromodichloromethane	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Bromoform	ND	9.1	mg/Kg	1	RL-07	SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Bromomethane	ND	3.7	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
2-Butanone (MEK)	ND	37	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
tert-Butyl Alcohol (TBA)	ND	37	mg/Kg	1	V-05, V-16	SW-846 8260C	2/17/17	2/19/17 18:35	LBD
n-Butylbenzene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
sec-Butylbenzene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
tert-Butylbenzene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
tert-Butyl Ethyl Ether (TBEE)	ND	0.91	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Carbon Disulfide	ND	5.5	mg/Kg	1	RL-07	SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Carbon Tetrachloride	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Chlorobenzene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Chlorodibromomethane	ND	0.91	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Chloroethane	ND	3.7	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Chloroform	ND	3.7	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Chloromethane	ND	9.1	mg/Kg	1	RL-07	SW-846 8260C	2/17/17	2/19/17 18:35	LBD
2-Chlorotoluene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
4-Chlorotoluene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,2-Dibromo-3-chloropropane (DBCP)	ND	9.1	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,2-Dibromoethane (EDB)	ND	0.91	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Dibromomethane	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,2-Dichlorobenzene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,3-Dichlorobenzene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,4-Dichlorobenzene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
trans-1,4-Dichloro-2-butene	ND	3.7	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Dichlorodifluoromethane (Freon 12)	ND	3.7	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,1-Dichloroethane	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,2-Dichloroethane	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,1-Dichloroethylene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
cis-1,2-Dichloroethylene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
trans-1,2-Dichloroethylene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,2-Dichloropropane	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,3-Dichloropropane	ND	0.91	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
2,2-Dichloropropane	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,1-Dichloropropene	ND	3.7	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
cis-1,3-Dichloropropene	ND	0.91	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
trans-1,3-Dichloropropene	ND	0.91	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Diethyl Ether	ND	3.7	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD

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Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: F-10

Sampled: 2/15/2017 12:30

Sample ID: 17B0624-17

Sample Matrix: Product/Solid

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.91	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,4-Dioxane	ND	91	mg/Kg	1	V-16	SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Ethylbenzene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Hexachlorobutadiene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
2-Hexanone (MBK)	ND	18	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Isopropylbenzene (Cumene)	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
p-Isopropyltoluene (p-Cymene)	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Methyl Acetate	ND	18	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Methyl tert-Butyl Ether (MTBE)	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Methyl Cyclohexane	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Methylene Chloride	ND	9.1	mg/Kg	1	RL-07	SW-846 8260C	2/17/17	2/19/17 18:35	LBD
4-Methyl-2-pentanone (MIBK)	ND	18	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Naphthalene	ND	3.7	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
n-Propylbenzene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Styrene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,1,1,2-Tetrachloroethane	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,1,2,2-Tetrachloroethane	ND	0.91	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Tetrachloroethylene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Tetrahydrofuran	ND	18	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Toluene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,2,3-Trichlorobenzene	ND	9.1	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,2,4-Trichlorobenzene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,3,5-Trichlorobenzene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,1,1-Trichloroethane	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,1,2-Trichloroethane	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Trichloroethylene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Trichlorofluoromethane (Freon 11)	ND	3.7	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,2,3-Trichloropropane	ND	3.7	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,2,4-Trimethylbenzene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
1,3,5-Trimethylbenzene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Vinyl Chloride	ND	3.7	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
m+p Xylene	ND	3.7	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
o-Xylene	ND	1.8	mg/Kg	1		SW-846 8260C	2/17/17	2/19/17 18:35	LBD
Surrogates		% Recovery		Recovery Limits		Flag/Qual			
1,2-Dichloroethane-d4		103		70-130				2/19/17 18:35	
Toluene-d8		102		70-130				2/19/17 18:35	
4-Bromofluorobenzene		100		70-130				2/19/17 18:35	

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Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: F-10

Sampled: 2/15/2017 12:30

Sample ID: 17B0624-17

Sample Matrix: Product/Solid

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	17	9.0	mg/Kg	1		SW-846 6010C-D	2/22/17	2/22/17 18:43	SHN
Arsenic	ND	9.0	mg/Kg	1		SW-846 6010C-D	2/22/17	2/22/17 18:43	SHN
Beryllium	ND	0.90	mg/Kg	1		SW-846 6010C-D	2/22/17	2/22/17 18:43	SHN
Cadmium	290	0.90	mg/Kg	1		SW-846 6010C-D	2/22/17	2/22/17 18:43	SHN
Chromium	18	1.8	mg/Kg	1		SW-846 6010C-D	2/22/17	2/22/17 18:43	SHN
Copper	290	1.8	mg/Kg	1		SW-846 6010C-D	2/22/17	2/22/17 18:43	SHN
Lead	38	2.7	mg/Kg	1		SW-846 6010C-D	2/22/17	2/22/17 18:43	SHN
Nickel	59	1.8	mg/Kg	1		SW-846 6010C-D	2/22/17	2/22/17 18:43	SHN
Selenium	ND	18	mg/Kg	1		SW-846 6010C-D	2/22/17	2/22/17 18:43	SHN
Silver	48	1.8	mg/Kg	1		SW-846 6010C-D	2/22/17	2/22/17 18:43	SHN
Thallium	ND	9.0	mg/Kg	1		SW-846 6010C-D	2/22/17	2/22/17 18:43	SHN
Zinc	250	3.6	mg/Kg	1		SW-846 6010C-D	2/22/17	2/22/17 18:43	SHN

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Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Sampled: 2/15/2017 12:30

Field Sample #: F-10

Sample ID: 17B0624-17

Sample Matrix: Product/Solid

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Cyanide	1.9	0.91	mg/Kg	1		SW-846 9014	2/21/17	2/21/17 20:05	DJM

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Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: F-11

Sampled: 2/15/2017 13:30

Sample ID: 17B0624-18

Sample Matrix: Product/Solid

Sample Flags: RL-14

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	750	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Acrylonitrile	ND	75	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
tert-Amyl Methyl Ether (TAME)	ND	7.5	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Benzene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Bromobenzene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Bromochloromethane	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Bromodichloromethane	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Bromoform	ND	75	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Bromomethane	ND	30	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
2-Butanone (MEK)	ND	300	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
tert-Butyl Alcohol (TBA)	ND	300	mg/Kg	10	V-05, V-16	SW-846 8260C	2/17/17	2/19/17 19:05	LBD
n-Butylbenzene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
sec-Butylbenzene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
tert-Butylbenzene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
tert-Butyl Ethyl Ether (TBEE)	ND	7.5	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Carbon Disulfide	ND	45	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Carbon Tetrachloride	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Chlorobenzene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Chlorodibromomethane	ND	7.5	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Chloroethane	ND	30	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Chloroform	ND	30	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Chloromethane	ND	75	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
2-Chlorotoluene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
4-Chlorotoluene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,2-Dibromo-3-chloropropane (DBCP)	ND	75	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,2-Dibromoethane (EDB)	ND	7.5	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Dibromomethane	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,2-Dichlorobenzene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,3-Dichlorobenzene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,4-Dichlorobenzene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
trans-1,4-Dichloro-2-butene	ND	30	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Dichlorodifluoromethane (Freon 12)	ND	30	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,1-Dichloroethane	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,2-Dichloroethane	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,1-Dichloroethylene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
cis-1,2-Dichloroethylene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
trans-1,2-Dichloroethylene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,2-Dichloropropane	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,3-Dichloropropane	ND	7.5	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
2,2-Dichloropropane	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,1-Dichloropropene	ND	30	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
cis-1,3-Dichloropropene	ND	7.5	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
trans-1,3-Dichloropropene	ND	7.5	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Diethyl Ether	ND	30	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD

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Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Field Sample #: F-11

Sampled: 2/15/2017 13:30

Sample ID: 17B0624-18

Sample Matrix: Product/Solid

Sample Flags: RL-14

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	7.5	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,4-Dioxane	ND	750	mg/Kg	10	V-16	SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Ethylbenzene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Hexachlorobutadiene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
2-Hexanone (MBK)	ND	150	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Isopropylbenzene (Cumene)	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
p-Isopropyltoluene (p-Cymene)	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Methyl Acetate	ND	150	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Methyl tert-Butyl Ether (MTBE)	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Methyl Cyclohexane	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Methylene Chloride	ND	75	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
4-Methyl-2-pentanone (MIBK)	ND	150	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Naphthalene	ND	30	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
n-Propylbenzene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Styrene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,1,1,2-Tetrachloroethane	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,1,2,2-Tetrachloroethane	ND	7.5	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Tetrachloroethylene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Tetrahydrofuran	ND	150	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Toluene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,2,3-Trichlorobenzene	ND	75	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,2,4-Trichlorobenzene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,3,5-Trichlorobenzene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,1,1-Trichloroethane	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,1,2-Trichloroethane	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Trichloroethylene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Trichlorofluoromethane (Freon 11)	ND	30	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,2,3-Trichloropropane	ND	30	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,2,4-Trimethylbenzene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
1,3,5-Trimethylbenzene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Vinyl Chloride	ND	30	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
m+p Xylene	ND	30	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
o-Xylene	ND	15	mg/Kg	10		SW-846 8260C	2/17/17	2/19/17 19:05	LBD
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
1,2-Dichloroethane-d4		102	70-130					2/19/17 19:05	
Toluene-d8		101	70-130					2/19/17 19:05	
4-Bromofluorobenzene		96.2	70-130					2/19/17 19:05	

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Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Sampled: 2/15/2017 13:30

Field Sample #: F-11

Sample ID: 17B0624-18

Sample Matrix: Product/Solid

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	56	2.5	mg/Kg	1		SW-846 6010C-D	2/21/17	2/22/17 11:26	QNW
Arsenic	3.3	2.5	mg/Kg	1		SW-846 6010C-D	2/21/17	2/22/17 11:26	QNW
Beryllium	ND	0.25	mg/Kg	1		SW-846 6010C-D	2/21/17	2/22/17 11:26	QNW
Cadmium	230	0.25	mg/Kg	1		SW-846 6010C-D	2/21/17	2/22/17 11:26	QNW
Chromium	13	0.49	mg/Kg	1		SW-846 6010C-D	2/21/17	2/22/17 11:26	QNW
Copper	96	0.49	mg/Kg	1		SW-846 6010C-D	2/21/17	2/22/17 11:26	QNW
Lead	46	0.74	mg/Kg	1		SW-846 6010C-D	2/21/17	2/22/17 11:26	QNW
Mercury	0.47	0.12	mg/Kg	5		SW-846 7471B	2/21/17	2/22/17 11:50	TJK
Nickel	120	0.49	mg/Kg	1		SW-846 6010C-D	2/21/17	2/22/17 11:26	QNW
Selenium	ND	4.9	mg/Kg	1		SW-846 6010C-D	2/21/17	2/22/17 11:26	QNW
Silver	50	0.49	mg/Kg	1		SW-846 6010C-D	2/21/17	2/22/17 11:26	QNW
Thallium	ND	2.5	mg/Kg	1		SW-846 6010C-D	2/21/17	2/22/17 11:26	QNW
Zinc	260	0.99	mg/Kg	1		SW-846 6010C-D	2/21/17	2/22/17 11:26	QNW

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Project Location: Plainville, MA

Sample Description:

Work Order: 17B0624

Date Received: 2/15/2017

Sampled: 2/15/2017 13:30

Field Sample #: F-11

Sample ID: 17B0624-18

Sample Matrix: Product/Solid

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Cyanide	ND	1.1	mg/Kg	1		SW-846 9014	2/21/17	2/21/17 20:05	DJM

Sample Extraction Data

Prep Method: SW-846 3050B-SW-846 6010C/D Modified

Lab Number [Field ID]	Batch	Initial [Wipe]	Final [mL]	Date
17B0624-02 [SP-1]	B170817	1.00	50.0	02/21/17
17B0624-04 [SP-2]	B170817	1.00	50.0	02/21/17
17B0624-06 [SP-3]	B170817	1.00	50.0	02/21/17
17B0624-08 [SP-6]	B170817	1.00	50.0	02/21/17
17B0624-12 [SP-8]	B170817	1.00	50.0	02/21/17

Prep Method: SW-846 3051-SW-846 6010C-D

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
17B0624-18 [F-11]	B170899	1.01	50.0	02/21/17

Prep Method: SW-846 3050B-SW-846 6010C-D

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
17B0624-17 [F-10]	B171043	0.277	50.0	02/22/17

Prep Method: SW-846 3051-SW-846 6010C-D

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
17B0624-14 [SP-10]	B170900	1.00	50.0	02/21/17
17B0624-16 [SP-11]	B170900	1.01	50.0	02/21/17

Prep Method: SW-846 3050B-SW-846 6010C-D

Lab Number [Field ID]	Batch	Initial [Wipe]	Final [mL]	Date
17B0624-02 [SP-1]	B170817	1.00	50.0	02/21/17
17B0624-04 [SP-2]	B170817	1.00	50.0	02/21/17
17B0624-06 [SP-3]	B170817	1.00	50.0	02/21/17
17B0624-08 [SP-6]	B170817	1.00	50.0	02/21/17
17B0624-12 [SP-8]	B170817	1.00	50.0	02/21/17

Prep Method: SW-846 7471-SW-846 7471B

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
17B0624-18 [F-11]	B170902	0.604	50.0	02/21/17

Prep Method: SW-846 7471-SW-846 7471B

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
17B0624-14 [SP-10]	B170903	0.601	50.0	02/21/17
17B0624-16 [SP-11]	B170903	0.592	50.0	02/21/17

Prep Method: SW-846 7471-SW-846 7471B

Lab Number [Field ID]	Batch	Initial [Wipe]	Final [mL]	Date
17B0624-02 [SP-1]	B170816	0.200	50.0	02/21/17

Sample Extraction Data

Prep Method: SW-846 7471-SW-846 7471B

Lab Number [Field ID]	Batch	Initial [Wipe]	Final [mL]	Date
17B0624-04 [SP-2]	B170816	0.200	50.0	02/21/17
17B0624-06 [SP-3]	B170816	0.200	50.0	02/21/17
17B0624-08 [SP-6]	B170816	0.200	50.0	02/21/17
17B0624-12 [SP-8]	B170816	0.200	50.0	02/21/17

Prep Method: SW-846 5035-SW-846 8260C

Lab Number [Field ID]	Batch	Sample Amount(g)	Methanol Volume(mL)	Methanol Aliquot(mL)	Final Volume(mL)	Date
17B0624-13 [SP-10]	B170597	1.32	15.0	1	50	02/16/17
17B0624-15 [SP-11]	B170597	0.960	15.0	1	50	02/16/17

Prep Method: SW-846 5035-SW-846 8260C

Lab Number [Field ID]	Batch	Sample Amount(g)	Methanol Volume(mL)	Methanol Aliquot(mL)	Final Volume(mL)	Date
17B0624-17 [F-10]	B170714	0.410	15.0	1	50	02/17/17
17B0624-18 [F-11]	B170714	0.500	15.0	0.1	50	02/17/17

Prep Method: SW-846 5035-SW-846 8260C

Lab Number [Field ID]	Batch	Sample Amount(g)	Methanol Volume(mL)	Methanol Aliquot(mL)	Final Volume(mL)	Date
17B0624-01 [SP-1]	B170574	3.27	15.0	1	50	02/16/17
17B0624-03 [SP-2]	B170574	3.96	15.0	1	50	02/16/17
17B0624-05 [SP-3]	B170574	3.56	15.0	1	50	02/16/17
17B0624-07 [SP-6]	B170574	3.35	15.0	1	50	02/16/17
17B0624-09 [SP-7]	B170574	3.83	15.0	1	50	02/16/17
17B0624-11 [SP-8]	B170574	4.60	15.0	1	50	02/16/17

SW-846 9014

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
17B0624-14 [SP-10]	B170924	1.16	50.0	02/21/17
17B0624-16 [SP-11]	B170924	1.21	50.0	02/21/17
17B0624-17 [F-10]	B170924	0.552	50.0	02/21/17
17B0624-18 [F-11]	B170924	0.446	50.0	02/21/17

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B170574 - SW-846 5035

Blank (B170574-BLK1)

Prepared: 02/16/17 Analyzed: 02/19/17

Acetone	ND	0.17	µg/Wipe							
Acrylonitrile	ND	0.017	µg/Wipe							
tert-Amyl Methyl Ether (TAME)	ND	0.0017	µg/Wipe							
Benzene	ND	0.0033	µg/Wipe							
Bromobenzene	ND	0.0033	µg/Wipe							
Bromochloromethane	ND	0.0033	µg/Wipe							
Bromodichloromethane	ND	0.0033	µg/Wipe							
Bromoform	ND	0.0033	µg/Wipe							
Bromomethane	ND	0.0067	µg/Wipe							
2-Butanone (MEK)	ND	0.067	µg/Wipe							
tert-Butyl Alcohol (TBA)	ND	0.067	µg/Wipe							V-05, V-16
n-Butylbenzene	ND	0.0033	µg/Wipe							
sec-Butylbenzene	ND	0.0033	µg/Wipe							
tert-Butylbenzene	ND	0.0033	µg/Wipe							
tert-Butyl Ethyl Ether (TBEE)	ND	0.0017	µg/Wipe							
Carbon Disulfide	ND	0.010	µg/Wipe							
Carbon Tetrachloride	ND	0.0033	µg/Wipe							
Chlorobenzene	ND	0.0033	µg/Wipe							
Chlorodibromomethane	ND	0.0017	µg/Wipe							
Chloroethane	ND	0.0067	µg/Wipe							
Chloroform	ND	0.0067	µg/Wipe							
Chloromethane	ND	0.0067	µg/Wipe							L-04, V-05
2-Chlorotoluene	ND	0.0033	µg/Wipe							
4-Chlorotoluene	ND	0.0033	µg/Wipe							
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.017	µg/Wipe							
1,2-Dibromoethane (EDB)	ND	0.0017	µg/Wipe							
Dibromomethane	ND	0.0033	µg/Wipe							
1,2-Dichlorobenzene	ND	0.0033	µg/Wipe							
1,3-Dichlorobenzene	ND	0.0033	µg/Wipe							
1,4-Dichlorobenzene	ND	0.0033	µg/Wipe							
trans-1,4-Dichloro-2-butene	ND	0.0067	µg/Wipe							
Dichlorodifluoromethane (Freon 12)	ND	0.0067	µg/Wipe							
1,1-Dichloroethane	ND	0.0033	µg/Wipe							
1,2-Dichloroethane	ND	0.0033	µg/Wipe							
1,1-Dichloroethylene	ND	0.0033	µg/Wipe							
cis-1,2-Dichloroethylene	ND	0.0033	µg/Wipe							
trans-1,2-Dichloroethylene	ND	0.0033	µg/Wipe							
1,2-Dichloropropane	ND	0.0033	µg/Wipe							
1,3-Dichloropropane	ND	0.0017	µg/Wipe							
2,2-Dichloropropane	ND	0.0033	µg/Wipe							
1,1-Dichloropropene	ND	0.0067	µg/Wipe							
cis-1,3-Dichloropropene	ND	0.0017	µg/Wipe							
trans-1,3-Dichloropropene	ND	0.0017	µg/Wipe							
Diethyl Ether	ND	0.0067	µg/Wipe							
Diisopropyl Ether (DIPE)	ND	0.0017	µg/Wipe							
1,4-Dioxane	ND	0.17	µg/Wipe							V-16
Ethylbenzene	ND	0.0033	µg/Wipe							
Hexachlorobutadiene	ND	0.0033	µg/Wipe							
2-Hexanone (MBK)	ND	0.033	µg/Wipe							L-04, V-05
Isopropylbenzene (Cumene)	ND	0.0033	µg/Wipe							
p-Isopropyltoluene (p-Cymene)	ND	0.0033	µg/Wipe							
Methyl Acetate	ND	0.033	µg/Wipe							V-05

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B170574 - SW-846 5035

Blank (B170574-BLK1)

Prepared: 02/16/17 Analyzed: 02/19/17

Methyl tert-Butyl Ether (MTBE)	ND	0.0033	µg/Wipe							
Methyl Cyclohexane	ND	0.0033	µg/Wipe							
Methylene Chloride	ND	0.017	µg/Wipe							
4-Methyl-2-pentanone (MIBK)	ND	0.033	µg/Wipe							
Naphthalene	ND	0.0067	µg/Wipe							
n-Propylbenzene	ND	0.0033	µg/Wipe							
Styrene	ND	0.0033	µg/Wipe							
1,1,1,2-Tetrachloroethane	ND	0.0033	µg/Wipe							
1,1,2,2-Tetrachloroethane	ND	0.0017	µg/Wipe							
Tetrachloroethylene	ND	0.0033	µg/Wipe							
Tetrahydrofuran	ND	0.033	µg/Wipe							
Toluene	ND	0.0033	µg/Wipe							
1,2,3-Trichlorobenzene	ND	0.017	µg/Wipe							
1,2,4-Trichlorobenzene	ND	0.0033	µg/Wipe							
1,3,5-Trichlorobenzene	ND	0.0033	µg/Wipe							
1,1,1-Trichloroethane	ND	0.0033	µg/Wipe							
1,1,2-Trichloroethane	ND	0.0033	µg/Wipe							
Trichloroethylene	ND	0.0033	µg/Wipe							
Trichlorofluoromethane (Freon 11)	ND	0.0067	µg/Wipe							
1,2,3-Trichloropropane	ND	0.0067	µg/Wipe							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.0033	µg/Wipe							
1,2,4-Trimethylbenzene	ND	0.0033	µg/Wipe							
1,3,5-Trimethylbenzene	ND	0.0033	µg/Wipe							
Vinyl Chloride	ND	0.0067	µg/Wipe							
m+p Xylene	ND	0.0067	µg/Wipe							
o-Xylene	ND	0.0033	µg/Wipe							
Surrogate: 1,2-Dichloroethane-d4	0.0241		µg/Wipe	0.0250		96.4	70-130			
Surrogate: Toluene-d8	0.0247		µg/Wipe	0.0250		99.0	70-130			
Surrogate: 4-Bromofluorobenzene	0.0237		µg/Wipe	0.0250		94.8	70-130			

LCS (B170574-BS1)

Prepared: 02/16/17 Analyzed: 02/19/17

Acetone	0.0985	0.0038	µg/Wipe	0.113		86.9	70-160			†
Acrylonitrile	0.0109	0.00038	µg/Wipe	0.0113		96.6	70-130			
tert-Amyl Methyl Ether (TAME)	0.00952	0.000038	µg/Wipe	0.0113		84.0	70-130			
Benzene	0.0115	0.000076	µg/Wipe	0.0113		101	70-130			
Bromobenzene	0.0104	0.000076	µg/Wipe	0.0113		91.7	70-130			
Bromochloromethane	0.0107	0.000076	µg/Wipe	0.0113		94.0	70-130			
Bromodichloromethane	0.0108	0.000076	µg/Wipe	0.0113		95.5	70-130			
Bromoform	0.0102	0.000076	µg/Wipe	0.0113		90.0	70-130			
Bromomethane	0.00466	0.00015	µg/Wipe	0.0113		41.1	40-130			†
2-Butanone (MEK)	0.0832	0.0015	µg/Wipe	0.113		73.4	70-160			†
tert-Butyl Alcohol (TBA)	0.0875	0.0015	µg/Wipe	0.113		77.2	40-130		V-05, V-16	†
n-Butylbenzene	0.0120	0.000076	µg/Wipe	0.0113		106	70-130			
sec-Butylbenzene	0.0119	0.000076	µg/Wipe	0.0113		105	70-130			
tert-Butylbenzene	0.0112	0.000076	µg/Wipe	0.0113		98.4	70-160			†
tert-Butyl Ethyl Ether (TBEE)	0.00951	0.000038	µg/Wipe	0.0113		83.9	70-130			
Carbon Disulfide	0.0116	0.00023	µg/Wipe	0.0113		102	70-130			
Carbon Tetrachloride	0.0113	0.000076	µg/Wipe	0.0113		99.3	70-130			
Chlorobenzene	0.0114	0.000076	µg/Wipe	0.0113		100	70-130			
Chlorodibromomethane	0.0124	0.000038	µg/Wipe	0.0113		109	70-130			
Chloroethane	0.0110	0.00015	µg/Wipe	0.0113		97.0	70-130			
Chloroform	0.0102	0.00015	µg/Wipe	0.0113		89.9	70-130			

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B170574 - SW-846 5035										
LCS (B170574-BS1)										
					Prepared: 02/16/17 Analyzed: 02/19/17					
Chloromethane	0.00294	0.00015	µg/Wipe	0.0113		25.9	* 70-130			V-05, L-04
2-Chlorotoluene	0.00960	0.000076	µg/Wipe	0.0113		84.7	70-130			
4-Chlorotoluene	0.0103	0.000076	µg/Wipe	0.0113		91.3	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	0.00822	0.00038	µg/Wipe	0.0113		72.5	70-130			
1,2-Dibromoethane (EDB)	0.0110	0.000038	µg/Wipe	0.0113		97.4	70-130			
Dibromomethane	0.0112	0.000076	µg/Wipe	0.0113		99.1	70-130			
1,2-Dichlorobenzene	0.0115	0.000076	µg/Wipe	0.0113		101	70-130			
1,3-Dichlorobenzene	0.0113	0.000076	µg/Wipe	0.0113		100	70-130			
1,4-Dichlorobenzene	0.0114	0.000076	µg/Wipe	0.0113		100	70-130			
trans-1,4-Dichloro-2-butene	0.0114	0.00015	µg/Wipe	0.0113		101	70-130			
Dichlorodifluoromethane (Freon 12)	0.00881	0.00015	µg/Wipe	0.0113		77.7	40-160			†
1,1-Dichloroethane	0.0109	0.000076	µg/Wipe	0.0113		96.1	70-130			
1,2-Dichloroethane	0.00935	0.000076	µg/Wipe	0.0113		82.5	70-130			
1,1-Dichloroethylene	0.0133	0.000076	µg/Wipe	0.0113		118	70-130			
cis-1,2-Dichloroethylene	0.00977	0.000076	µg/Wipe	0.0113		86.2	70-130			
trans-1,2-Dichloroethylene	0.0117	0.000076	µg/Wipe	0.0113		103	70-130			
1,2-Dichloropropane	0.00945	0.000076	µg/Wipe	0.0113		83.4	70-130			
1,3-Dichloropropane	0.0104	0.000038	µg/Wipe	0.0113		91.9	70-130			
2,2-Dichloropropane	0.00980	0.000076	µg/Wipe	0.0113		86.5	70-130			
1,1-Dichloropropene	0.0112	0.00015	µg/Wipe	0.0113		98.5	70-130			
cis-1,3-Dichloropropene	0.00946	0.000038	µg/Wipe	0.0113		83.5	70-130			
trans-1,3-Dichloropropene	0.0104	0.000038	µg/Wipe	0.0113		92.2	70-130			
Diethyl Ether	0.0120	0.00015	µg/Wipe	0.0113		106	70-130			
Diisopropyl Ether (DIPE)	0.00860	0.000038	µg/Wipe	0.0113		75.9	70-130			
1,4-Dioxane	0.105	0.0038	µg/Wipe	0.113		92.4	40-160			V-16 †
Ethylbenzene	0.0109	0.000076	µg/Wipe	0.0113		96.5	70-130			
Hexachlorobutadiene	0.0114	0.000076	µg/Wipe	0.0113		100	70-160			
2-Hexanone (MBK)	0.0784	0.00076	µg/Wipe	0.113		69.2	* 70-160			L-04, V-05 †
Isopropylbenzene (Cumene)	0.0116	0.000076	µg/Wipe	0.0113		103	70-130			
p-Isopropyltoluene (p-Cymene)	0.0118	0.000076	µg/Wipe	0.0113		104	70-130			
Methyl tert-Butyl Ether (MTBE)	0.0103	0.000076	µg/Wipe	0.0113		91.2	70-130			
Methylene Chloride	0.0101	0.00038	µg/Wipe	0.0113		88.9	40-160			†
4-Methyl-2-pentanone (MIBK)	0.0807	0.00076	µg/Wipe	0.113		71.2	70-160			†
Naphthalene	0.0101	0.00015	µg/Wipe	0.0113		88.7	40-130			†
n-Propylbenzene	0.0112	0.000076	µg/Wipe	0.0113		99.1	70-130			
Styrene	0.0105	0.000076	µg/Wipe	0.0113		92.3	70-130			
1,1,1,2-Tetrachloroethane	0.0117	0.000076	µg/Wipe	0.0113		103	70-130			
1,1,2,2-Tetrachloroethane	0.0108	0.000038	µg/Wipe	0.0113		95.2	70-130			
Tetrachloroethylene	0.0108	0.000076	µg/Wipe	0.0113		95.7	70-130			
Tetrahydrofuran	0.00906	0.00076	µg/Wipe	0.0113		79.9	70-130			
Toluene	0.0106	0.000076	µg/Wipe	0.0113		93.8	70-130			
1,2,3-Trichlorobenzene	0.0107	0.00038	µg/Wipe	0.0113		94.5	70-130			
1,2,4-Trichlorobenzene	0.0111	0.000076	µg/Wipe	0.0113		97.7	70-130			
1,3,5-Trichlorobenzene	0.0113	0.000076	µg/Wipe	0.0113		100	70-130			
1,1,1-Trichloroethane	0.0105	0.000076	µg/Wipe	0.0113		92.7	70-130			
1,1,2-Trichloroethane	0.0113	0.000076	µg/Wipe	0.0113		99.9	70-130			
Trichloroethylene	0.0115	0.000076	µg/Wipe	0.0113		102	70-130			
Trichlorofluoromethane (Freon 11)	0.0127	0.00015	µg/Wipe	0.0113		112	70-130			
1,2,3-Trichloropropane	0.0106	0.00015	µg/Wipe	0.0113		93.7	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	0.0121	0.000076	µg/Wipe	0.0113		107	70-130			
1,2,4-Trimethylbenzene	0.0113	0.000076	µg/Wipe	0.0113		99.4	70-130			

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B170574 - SW-846 5035

LCS (B170574-BS1)

Prepared: 02/16/17 Analyzed: 02/19/17

1,3,5-Trimethylbenzene	0.0109	0.000076	µg/Wipe	0.0113		96.4	70-130			
Vinyl Chloride	0.0114	0.00015	µg/Wipe	0.0113		101	40-130			†
m+p Xylene	0.0215	0.00015	µg/Wipe	0.0227		94.8	70-130			
o-Xylene	0.0109	0.000076	µg/Wipe	0.0113		96.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0275		µg/Wipe	0.0283		97.0	70-130			
Surrogate: Toluene-d8	0.0281		µg/Wipe	0.0283		99.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.0279		µg/Wipe	0.0283		98.5	70-130			

LCS Dup (B170574-BSD1)

Prepared: 02/16/17 Analyzed: 02/19/17

Acetone	0.0955	0.0038	µg/Wipe	0.113		84.3	70-160	3.11	25	†
Acrylonitrile	0.0102	0.00038	µg/Wipe	0.0113		90.2	70-130	6.85	25	
tert-Amyl Methyl Ether (TAME)	0.00949	0.000038	µg/Wipe	0.0113		83.7	70-130	0.358	25	
Benzene	0.0114	0.000076	µg/Wipe	0.0113		101	70-130	0.593	25	
Bromobenzene	0.0106	0.000076	µg/Wipe	0.0113		93.7	70-130	2.16	25	
Bromochloromethane	0.0109	0.000076	µg/Wipe	0.0113		95.8	70-130	1.90	25	
Bromodichloromethane	0.0103	0.000076	µg/Wipe	0.0113		91.2	70-130	4.61	25	
Bromoform	0.0103	0.000076	µg/Wipe	0.0113		91.2	70-130	1.32	25	
Bromomethane	0.00589	0.00015	µg/Wipe	0.0113		52.0	40-130	23.4	25	†
2-Butanone (MEK)	0.0840	0.0015	µg/Wipe	0.113		74.1	70-160	0.949	25	†
tert-Butyl Alcohol (TBA)	0.0851	0.0015	µg/Wipe	0.113		75.1	40-130	2.81	25	V-05, V-16 †
n-Butylbenzene	0.0122	0.000076	µg/Wipe	0.0113		108	70-130	1.49	25	
sec-Butylbenzene	0.0120	0.000076	µg/Wipe	0.0113		106	70-130	0.950	25	
tert-Butylbenzene	0.0114	0.000076	µg/Wipe	0.0113		100	70-160	2.11	25	†
tert-Butyl Ethyl Ether (TBEE)	0.00959	0.000038	µg/Wipe	0.0113		84.6	70-130	0.831	25	
Carbon Disulfide	0.0116	0.00023	µg/Wipe	0.0113		102	70-130	0.00	25	
Carbon Tetrachloride	0.0111	0.000076	µg/Wipe	0.0113		98.1	70-130	1.22	25	
Chlorobenzene	0.0116	0.000076	µg/Wipe	0.0113		102	70-130	1.78	25	
Chlorodibromomethane	0.0121	0.000038	µg/Wipe	0.0113		107	70-130	1.95	25	
Chloroethane	0.0111	0.00015	µg/Wipe	0.0113		98.3	70-130	1.33	25	
Chloroform	0.0103	0.00015	µg/Wipe	0.0113		90.7	70-130	0.886	25	
Chloromethane	0.00313	0.00015	µg/Wipe	0.0113		27.6 *	70-130	6.36	25	L-04, V-05
2-Chlorotoluene	0.00971	0.000076	µg/Wipe	0.0113		85.7	70-130	1.17	25	
4-Chlorotoluene	0.0104	0.000076	µg/Wipe	0.0113		91.5	70-130	0.219	25	
1,2-Dibromo-3-chloropropane (DBCP)	0.00794	0.00038	µg/Wipe	0.0113		70.1	70-130	3.37	25	
1,2-Dibromoethane (EDB)	0.0109	0.000038	µg/Wipe	0.0113		96.6	70-130	0.825	25	
Dibromomethane	0.0113	0.000076	µg/Wipe	0.0113		99.8	70-130	0.704	25	
1,2-Dichlorobenzene	0.0116	0.000076	µg/Wipe	0.0113		103	70-130	1.28	25	
1,3-Dichlorobenzene	0.0115	0.000076	µg/Wipe	0.0113		101	70-130	1.19	25	
1,4-Dichlorobenzene	0.0114	0.000076	µg/Wipe	0.0113		101	70-130	0.496	25	
trans-1,4-Dichloro-2-butene	0.0119	0.00015	µg/Wipe	0.0113		105	70-130	4.26	25	
Dichlorodifluoromethane (Freon 12)	0.00862	0.00015	µg/Wipe	0.0113		76.1	40-160	2.08	25	†
1,1-Dichloroethane	0.0106	0.000076	µg/Wipe	0.0113		93.2	70-130	3.06	25	
1,2-Dichloroethane	0.00970	0.000076	µg/Wipe	0.0113		85.6	70-130	3.69	25	
1,1-Dichloroethylene	0.0132	0.000076	µg/Wipe	0.0113		117	70-130	0.769	25	
cis-1,2-Dichloroethylene	0.00985	0.000076	µg/Wipe	0.0113		86.9	70-130	0.809	25	
trans-1,2-Dichloroethylene	0.0118	0.000076	µg/Wipe	0.0113		104	70-130	1.06	25	
1,2-Dichloropropane	0.00942	0.000076	µg/Wipe	0.0113		83.1	70-130	0.360	25	
1,3-Dichloropropane	0.0107	0.000038	µg/Wipe	0.0113		94.6	70-130	2.90	25	
2,2-Dichloropropane	0.00962	0.000076	µg/Wipe	0.0113		84.9	70-130	1.87	25	
1,1-Dichloropropene	0.0109	0.00015	µg/Wipe	0.0113		95.9	70-130	2.67	25	
cis-1,3-Dichloropropene	0.00934	0.000038	µg/Wipe	0.0113		82.4	70-130	1.33	25	
trans-1,3-Dichloropropene	0.0105	0.000038	µg/Wipe	0.0113		93.0	70-130	0.864	25	

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B170574 - SW-846 5035

LCS Dup (B170574-BSD1)

Prepared: 02/16/17 Analyzed: 02/19/17

Diethyl Ether	0.0119	0.00015	µg/Wipe	0.0113		105	70-130	1.14	25	
Diisopropyl Ether (DIPE)	0.00877	0.000038	µg/Wipe	0.0113		77.4	70-130	1.96	25	
1,4-Dioxane	0.0919	0.0038	µg/Wipe	0.113		81.1	40-160	13.1	50	V-16 † ‡
Ethylbenzene	0.0113	0.000076	µg/Wipe	0.0113		100	70-130	3.56	25	
Hexachlorobutadiene	0.0113	0.000076	µg/Wipe	0.0113		99.7	70-160	0.600	25	
2-Hexanone (MBK)	0.0755	0.00076	µg/Wipe	0.113		66.7 *	70-160	3.68	25	L-04, V-05 †
Isopropylbenzene (Cumene)	0.0118	0.000076	µg/Wipe	0.0113		104	70-130	1.36	25	
p-Isopropyltoluene (p-Cymene)	0.0119	0.000076	µg/Wipe	0.0113		105	70-130	1.15	25	
Methyl tert-Butyl Ether (MTBE)	0.0102	0.000076	µg/Wipe	0.0113		89.8	70-130	1.55	25	
Methylene Chloride	0.0102	0.00038	µg/Wipe	0.0113		90.1	40-160	1.34	25	†
4-Methyl-2-pentanone (MIBK)	0.0793	0.00076	µg/Wipe	0.113		70.0	70-160	1.74	25	†
Naphthalene	0.00955	0.00015	µg/Wipe	0.0113		84.3	40-130	5.09	25	†
n-Propylbenzene	0.0115	0.000076	µg/Wipe	0.0113		101	70-130	2.29	25	
Styrene	0.0108	0.000076	µg/Wipe	0.0113		95.6	70-130	3.51	25	
1,1,1,2-Tetrachloroethane	0.0110	0.000076	µg/Wipe	0.0113		96.8	70-130	6.01	25	
1,1,2,2-Tetrachloroethane	0.0107	0.000038	µg/Wipe	0.0113		94.5	70-130	0.738	25	
Tetrachloroethylene	0.0108	0.000076	µg/Wipe	0.0113		95.0	70-130	0.734	25	
Tetrahydrofuran	0.00927	0.00076	µg/Wipe	0.0113		81.8	70-130	2.35	25	
Toluene	0.0110	0.000076	µg/Wipe	0.0113		96.8	70-130	3.15	25	
1,2,3-Trichlorobenzene	0.0105	0.00038	µg/Wipe	0.0113		92.3	70-130	2.36	25	
1,2,4-Trichlorobenzene	0.0113	0.000076	µg/Wipe	0.0113		99.4	70-130	1.72	25	
1,3,5-Trichlorobenzene	0.0112	0.000076	µg/Wipe	0.0113		98.6	70-130	1.51	25	
1,1,1-Trichloroethane	0.0105	0.000076	µg/Wipe	0.0113		92.9	70-130	0.216	25	
1,1,2-Trichloroethane	0.0116	0.000076	µg/Wipe	0.0113		102	70-130	2.28	25	
Trichloroethylene	0.0113	0.000076	µg/Wipe	0.0113		99.4	70-130	2.19	25	
Trichlorofluoromethane (Freon 11)	0.0123	0.00015	µg/Wipe	0.0113		108	70-130	3.72	25	
1,2,3-Trichloropropane	0.0105	0.00015	µg/Wipe	0.0113		92.7	70-130	1.07	25	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	0.0119	0.000076	µg/Wipe	0.0113		105	70-130	1.99	25	
1,2,4-Trimethylbenzene	0.0113	0.000076	µg/Wipe	0.0113		99.4	70-130	0.00	25	
1,3,5-Trimethylbenzene	0.0112	0.000076	µg/Wipe	0.0113		99.1	70-130	2.76	25	
Vinyl Chloride	0.0118	0.00015	µg/Wipe	0.0113		104	40-130	3.42	25	†
m+p Xylene	0.0218	0.00015	µg/Wipe	0.0227		96.0	70-130	1.21	25	
o-Xylene	0.0110	0.000076	µg/Wipe	0.0113		97.4	70-130	1.24	25	
Surrogate: 1,2-Dichloroethane-d4	0.0272		µg/Wipe	0.0283		96.1	70-130			
Surrogate: Toluene-d8	0.0281		µg/Wipe	0.0283		99.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.0281		µg/Wipe	0.0283		99.0	70-130			

Batch B170597 - SW-846 5035

Blank (B170597-BLK1)

Prepared: 02/16/17 Analyzed: 02/19/17

Acetone	ND	2.5	mg/Kg							
Acrylonitrile	ND	0.25	mg/Kg							
tert-Amyl Methyl Ether (TAME)	ND	0.025	mg/Kg							
Benzene	ND	0.050	mg/Kg							
Bromobenzene	ND	0.050	mg/Kg							
Bromochloromethane	ND	0.050	mg/Kg							
Bromodichloromethane	ND	0.050	mg/Kg							
Bromoform	ND	0.050	mg/Kg							
Bromomethane	ND	0.10	mg/Kg							
2-Butanone (MEK)	ND	1.0	mg/Kg							
tert-Butyl Alcohol (TBA)	ND	1.0	mg/Kg							
n-Butylbenzene	ND	0.050	mg/Kg							

V-05, V-16

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B170597 - SW-846 5035

Blank (B170597-BLK1)

Prepared: 02/16/17 Analyzed: 02/19/17

sec-Butylbenzene	ND	0.050	mg/Kg							
tert-Butylbenzene	ND	0.050	mg/Kg							
tert-Butyl Ethyl Ether (TBEE)	ND	0.025	mg/Kg							
Carbon Disulfide	ND	0.15	mg/Kg							
Carbon Tetrachloride	ND	0.050	mg/Kg							
Chlorobenzene	ND	0.050	mg/Kg							
Chlorodibromomethane	ND	0.025	mg/Kg							
Chloroethane	ND	0.10	mg/Kg							
Chloroform	ND	0.10	mg/Kg							
Chloromethane	ND	0.10	mg/Kg							V-05
2-Chlorotoluene	ND	0.050	mg/Kg							
4-Chlorotoluene	ND	0.050	mg/Kg							
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.25	mg/Kg							
1,2-Dibromoethane (EDB)	ND	0.025	mg/Kg							
Dibromomethane	ND	0.050	mg/Kg							
1,2-Dichlorobenzene	ND	0.050	mg/Kg							
1,3-Dichlorobenzene	ND	0.050	mg/Kg							
1,4-Dichlorobenzene	ND	0.050	mg/Kg							
trans-1,4-Dichloro-2-butene	ND	0.10	mg/Kg							
Dichlorodifluoromethane (Freon 12)	ND	0.10	mg/Kg							
1,1-Dichloroethane	ND	0.050	mg/Kg							
1,2-Dichloroethane	ND	0.050	mg/Kg							
1,1-Dichloroethylene	ND	0.050	mg/Kg							
cis-1,2-Dichloroethylene	ND	0.050	mg/Kg							
trans-1,2-Dichloroethylene	ND	0.050	mg/Kg							
1,2-Dichloropropane	ND	0.050	mg/Kg							
1,3-Dichloropropane	ND	0.025	mg/Kg							
2,2-Dichloropropane	ND	0.050	mg/Kg							
1,1-Dichloropropene	ND	0.10	mg/Kg							
cis-1,3-Dichloropropene	ND	0.025	mg/Kg							
trans-1,3-Dichloropropene	ND	0.025	mg/Kg							
Diethyl Ether	ND	0.10	mg/Kg							
Diisopropyl Ether (DIPE)	ND	0.025	mg/Kg							
1,4-Dioxane	ND	2.5	mg/Kg							V-16
Ethylbenzene	ND	0.050	mg/Kg							
Hexachlorobutadiene	ND	0.050	mg/Kg							
2-Hexanone (MBK)	ND	0.50	mg/Kg							L-04, V-05
Isopropylbenzene (Cumene)	ND	0.050	mg/Kg							
p-Isopropyltoluene (p-Cymene)	ND	0.050	mg/Kg							
Methyl Acetate	ND	0.50	mg/Kg							V-05
Methyl tert-Butyl Ether (MTBE)	ND	0.050	mg/Kg							
Methyl Cyclohexane	ND	0.050	mg/Kg							
Methylene Chloride	ND	0.25	mg/Kg							
4-Methyl-2-pentanone (MIBK)	ND	0.50	mg/Kg							
Naphthalene	ND	0.10	mg/Kg							
n-Propylbenzene	ND	0.050	mg/Kg							
Styrene	ND	0.050	mg/Kg							
1,1,1,2-Tetrachloroethane	ND	0.050	mg/Kg							
1,1,2,2-Tetrachloroethane	ND	0.025	mg/Kg							
Tetrachloroethylene	ND	0.050	mg/Kg							
Tetrahydrofuran	ND	0.50	mg/Kg							
Toluene	ND	0.050	mg/Kg							

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B170597 - SW-846 5035										
Blank (B170597-BLK1)										
Prepared: 02/16/17 Analyzed: 02/19/17										
1,2,3-Trichlorobenzene	ND	0.25	mg/Kg							
1,2,4-Trichlorobenzene	ND	0.050	mg/Kg							
1,3,5-Trichlorobenzene	ND	0.050	mg/Kg							
1,1,1-Trichloroethane	ND	0.050	mg/Kg							
1,1,2-Trichloroethane	ND	0.050	mg/Kg							
Trichloroethylene	ND	0.050	mg/Kg							
Trichlorofluoromethane (Freon 11)	ND	0.10	mg/Kg							
1,2,3-Trichloropropane	ND	0.10	mg/Kg							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.050	mg/Kg							
1,2,4-Trimethylbenzene	ND	0.050	mg/Kg							
1,3,5-Trimethylbenzene	ND	0.050	mg/Kg							
Vinyl Chloride	ND	0.10	mg/Kg							
m+p Xylene	ND	0.10	mg/Kg							
o-Xylene	ND	0.050	mg/Kg							
Surrogate: 1,2-Dichloroethane-d4	0.0241		mg/Kg	0.0250		96.4	70-130			
Surrogate: Toluene-d8	0.0247		mg/Kg	0.0250		99.0	70-130			
Surrogate: 4-Bromofluorobenzene	0.0237		mg/Kg	0.0250		94.8	70-130			
LCS (B170597-BS1)										
Prepared: 02/16/17 Analyzed: 02/19/17										
Acetone	0.0985	0.057	mg/Kg	0.113		86.9	70-160			†
Acrylonitrile	0.0109	0.0057	mg/Kg	0.0113		96.6	70-130			
tert-Amyl Methyl Ether (TAME)	0.00952	0.00057	mg/Kg	0.0113		84.0	70-130			
Benzene	0.0115	0.0011	mg/Kg	0.0113		101	70-130			
Bromobenzene	0.0104	0.0011	mg/Kg	0.0113		91.7	70-130			
Bromochloromethane	0.0107	0.0011	mg/Kg	0.0113		94.0	70-130			
Bromodichloromethane	0.0108	0.0011	mg/Kg	0.0113		95.5	70-130			
Bromoform	0.0102	0.0011	mg/Kg	0.0113		90.0	70-130			
Bromomethane	0.00466	0.0023	mg/Kg	0.0113		41.1	40-130			†
2-Butanone (MEK)	0.0832	0.023	mg/Kg	0.113		73.4	70-160			†
tert-Butyl Alcohol (TBA)	0.0875	0.023	mg/Kg	0.113		77.2	40-130			V-05, V-16 †
n-Butylbenzene	0.0120	0.0011	mg/Kg	0.0113		106	70-130			
sec-Butylbenzene	0.0119	0.0011	mg/Kg	0.0113		105	70-130			
tert-Butylbenzene	0.0112	0.0011	mg/Kg	0.0113		98.4	70-160			†
tert-Butyl Ethyl Ether (TBEE)	0.00951	0.00057	mg/Kg	0.0113		83.9	70-130			
Carbon Disulfide	0.0116	0.0034	mg/Kg	0.0113		102	70-130			
Carbon Tetrachloride	0.0113	0.0011	mg/Kg	0.0113		99.3	70-130			
Chlorobenzene	0.0114	0.0011	mg/Kg	0.0113		100	70-130			
Chlorodibromomethane	0.0124	0.00057	mg/Kg	0.0113		109	70-130			
Chloroethane	0.0110	0.0023	mg/Kg	0.0113		97.0	70-130			
Chloroform	0.0102	0.0023	mg/Kg	0.0113		89.9	70-130			
Chloromethane	0.00294	0.0023	mg/Kg	0.0113		25.9 *	70-130			V-05
2-Chlorotoluene	0.00960	0.0011	mg/Kg	0.0113		84.7	70-130			
4-Chlorotoluene	0.0103	0.0011	mg/Kg	0.0113		91.3	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	0.00822	0.0057	mg/Kg	0.0113		72.5	70-130			
1,2-Dibromoethane (EDB)	0.0110	0.00057	mg/Kg	0.0113		97.4	70-130			
Dibromomethane	0.0112	0.0011	mg/Kg	0.0113		99.1	70-130			
1,2-Dichlorobenzene	0.0115	0.0011	mg/Kg	0.0113		101	70-130			
1,3-Dichlorobenzene	0.0113	0.0011	mg/Kg	0.0113		100	70-130			
1,4-Dichlorobenzene	0.0114	0.0011	mg/Kg	0.0113		100	70-130			
trans-1,4-Dichloro-2-butene	0.0114	0.0023	mg/Kg	0.0113		101	70-130			
Dichlorodifluoromethane (Freon 12)	0.00881	0.0023	mg/Kg	0.0113		77.7	40-160			†
1,1-Dichloroethane	0.0109	0.0011	mg/Kg	0.0113		96.1	70-130			

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B170597 - SW-846 5035										
LCS (B170597-BS1)										
					Prepared: 02/16/17 Analyzed: 02/19/17					
1,2-Dichloroethane	0.00935	0.0011	mg/Kg	0.0113		82.5	70-130			
1,1-Dichloroethylene	0.0133	0.0011	mg/Kg	0.0113		118	70-130			
cis-1,2-Dichloroethylene	0.00977	0.0011	mg/Kg	0.0113		86.2	70-130			
trans-1,2-Dichloroethylene	0.0117	0.0011	mg/Kg	0.0113		103	70-130			
1,2-Dichloropropane	0.00945	0.0011	mg/Kg	0.0113		83.4	70-130			
1,3-Dichloropropane	0.0104	0.00057	mg/Kg	0.0113		91.9	70-130			
2,2-Dichloropropane	0.00980	0.0011	mg/Kg	0.0113		86.5	70-130			
1,1-Dichloropropene	0.0112	0.0023	mg/Kg	0.0113		98.5	70-130			
cis-1,3-Dichloropropene	0.00946	0.00057	mg/Kg	0.0113		83.5	70-130			
trans-1,3-Dichloropropene	0.0104	0.00057	mg/Kg	0.0113		92.2	70-130			
Diethyl Ether	0.0120	0.0023	mg/Kg	0.0113		106	70-130			
Diisopropyl Ether (DIPE)	0.00860	0.00057	mg/Kg	0.0113		75.9	70-130			
1,4-Dioxane	0.105	0.057	mg/Kg	0.113		92.4	40-160			V-16 †
Ethylbenzene	0.0109	0.0011	mg/Kg	0.0113		96.5	70-130			
Hexachlorobutadiene	0.0114	0.0011	mg/Kg	0.0113		100	70-160			
2-Hexanone (MBK)	0.0784	0.011	mg/Kg	0.113		69.2 *	70-160			L-04, V-05 †
Isopropylbenzene (Cumene)	0.0116	0.0011	mg/Kg	0.0113		103	70-130			
p-Isopropyltoluene (p-Cymene)	0.0118	0.0011	mg/Kg	0.0113		104	70-130			
Methyl tert-Butyl Ether (MTBE)	0.0103	0.0011	mg/Kg	0.0113		91.2	70-130			
Methylene Chloride	0.0101	0.0057	mg/Kg	0.0113		88.9	40-160			†
4-Methyl-2-pentanone (MIBK)	0.0807	0.011	mg/Kg	0.113		71.2	70-160			†
Naphthalene	0.0101	0.0023	mg/Kg	0.0113		88.7	40-130			†
n-Propylbenzene	0.0112	0.0011	mg/Kg	0.0113		99.1	70-130			
Styrene	0.0105	0.0011	mg/Kg	0.0113		92.3	70-130			
1,1,1,2-Tetrachloroethane	0.0117	0.0011	mg/Kg	0.0113		103	70-130			
1,1,2,2-Tetrachloroethane	0.0108	0.00057	mg/Kg	0.0113		95.2	70-130			
Tetrachloroethylene	0.0108	0.0011	mg/Kg	0.0113		95.7	70-130			
Tetrahydrofuran	0.00906	0.011	mg/Kg	0.0113		79.9	70-130			
Toluene	0.0106	0.0011	mg/Kg	0.0113		93.8	70-130			
1,2,3-Trichlorobenzene	0.0107	0.0057	mg/Kg	0.0113		94.5	70-130			
1,2,4-Trichlorobenzene	0.0111	0.0011	mg/Kg	0.0113		97.7	70-130			
1,3,5-Trichlorobenzene	0.0113	0.0011	mg/Kg	0.0113		100	70-130			
1,1,1-Trichloroethane	0.0105	0.0011	mg/Kg	0.0113		92.7	70-130			
1,1,2-Trichloroethane	0.0113	0.0011	mg/Kg	0.0113		99.9	70-130			
Trichloroethylene	0.0115	0.0011	mg/Kg	0.0113		102	70-130			
Trichlorofluoromethane (Freon 11)	0.0127	0.0023	mg/Kg	0.0113		112	70-130			
1,2,3-Trichloropropane	0.0106	0.0023	mg/Kg	0.0113		93.7	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	0.0121	0.0011	mg/Kg	0.0113		107	70-130			
1,2,4-Trimethylbenzene	0.0113	0.0011	mg/Kg	0.0113		99.4	70-130			
1,3,5-Trimethylbenzene	0.0109	0.0011	mg/Kg	0.0113		96.4	70-130			
Vinyl Chloride	0.0114	0.0023	mg/Kg	0.0113		101	40-130			†
m+p Xylene	0.0215	0.0023	mg/Kg	0.0227		94.8	70-130			
o-Xylene	0.0109	0.0011	mg/Kg	0.0113		96.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0275		mg/Kg	0.0283		97.0	70-130			
Surrogate: Toluene-d8	0.0281		mg/Kg	0.0283		99.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.0279		mg/Kg	0.0283		98.5	70-130			

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B170597 - SW-846 5035										
LCS Dup (B170597-BSD1)										
					Prepared: 02/16/17 Analyzed: 02/19/17					
Acetone	0.0955	0.057	mg/Kg	0.113		84.3	70-160	3.11	25	†
Acrylonitrile	0.0102	0.0057	mg/Kg	0.0113		90.2	70-130	6.85	25	
tert-Amyl Methyl Ether (TAME)	0.00949	0.00057	mg/Kg	0.0113		83.7	70-130	0.358	25	
Benzene	0.0114	0.0011	mg/Kg	0.0113		101	70-130	0.593	25	
Bromobenzene	0.0106	0.0011	mg/Kg	0.0113		93.7	70-130	2.16	25	
Bromochloromethane	0.0109	0.0011	mg/Kg	0.0113		95.8	70-130	1.90	25	
Bromodichloromethane	0.0103	0.0011	mg/Kg	0.0113		91.2	70-130	4.61	25	
Bromoform	0.0103	0.0011	mg/Kg	0.0113		91.2	70-130	1.32	25	
Bromomethane	0.00589	0.0023	mg/Kg	0.0113		52.0	40-130	23.4	25	†
2-Butanone (MEK)	0.0840	0.023	mg/Kg	0.113		74.1	70-160	0.949	25	†
tert-Butyl Alcohol (TBA)	0.0851	0.023	mg/Kg	0.113		75.1	40-130	2.81	25	V-05, V-16 †
n-Butylbenzene	0.0122	0.0011	mg/Kg	0.0113		108	70-130	1.49	25	
sec-Butylbenzene	0.0120	0.0011	mg/Kg	0.0113		106	70-130	0.950	25	
tert-Butylbenzene	0.0114	0.0011	mg/Kg	0.0113		100	70-160	2.11	25	†
tert-Butyl Ethyl Ether (TBEE)	0.00959	0.00057	mg/Kg	0.0113		84.6	70-130	0.831	25	
Carbon Disulfide	0.0116	0.0034	mg/Kg	0.0113		102	70-130	0.00	25	
Carbon Tetrachloride	0.0111	0.0011	mg/Kg	0.0113		98.1	70-130	1.22	25	
Chlorobenzene	0.0116	0.0011	mg/Kg	0.0113		102	70-130	1.78	25	
Chlorodibromomethane	0.0121	0.00057	mg/Kg	0.0113		107	70-130	1.95	25	
Chloroethane	0.0111	0.0023	mg/Kg	0.0113		98.3	70-130	1.33	25	
Chloroform	0.0103	0.0023	mg/Kg	0.0113		90.7	70-130	0.886	25	
Chloromethane	0.00313	0.0023	mg/Kg	0.0113		27.6 *	70-130	6.36	25	V-05
2-Chlorotoluene	0.00971	0.0011	mg/Kg	0.0113		85.7	70-130	1.17	25	
4-Chlorotoluene	0.0104	0.0011	mg/Kg	0.0113		91.5	70-130	0.219	25	
1,2-Dibromo-3-chloropropane (DBCP)	0.00794	0.0057	mg/Kg	0.0113		70.1	70-130	3.37	25	
1,2-Dibromoethane (EDB)	0.0109	0.00057	mg/Kg	0.0113		96.6	70-130	0.825	25	
Dibromomethane	0.0113	0.0011	mg/Kg	0.0113		99.8	70-130	0.704	25	
1,2-Dichlorobenzene	0.0116	0.0011	mg/Kg	0.0113		103	70-130	1.28	25	
1,3-Dichlorobenzene	0.0115	0.0011	mg/Kg	0.0113		101	70-130	1.19	25	
1,4-Dichlorobenzene	0.0114	0.0011	mg/Kg	0.0113		101	70-130	0.496	25	
trans-1,4-Dichloro-2-butene	0.0119	0.0023	mg/Kg	0.0113		105	70-130	4.26	25	
Dichlorodifluoromethane (Freon 12)	0.00862	0.0023	mg/Kg	0.0113		76.1	40-160	2.08	25	†
1,1-Dichloroethane	0.0106	0.0011	mg/Kg	0.0113		93.2	70-130	3.06	25	
1,2-Dichloroethane	0.00970	0.0011	mg/Kg	0.0113		85.6	70-130	3.69	25	
1,1-Dichloroethylene	0.0132	0.0011	mg/Kg	0.0113		117	70-130	0.769	25	
cis-1,2-Dichloroethylene	0.00985	0.0011	mg/Kg	0.0113		86.9	70-130	0.809	25	
trans-1,2-Dichloroethylene	0.0118	0.0011	mg/Kg	0.0113		104	70-130	1.06	25	
1,2-Dichloropropane	0.00942	0.0011	mg/Kg	0.0113		83.1	70-130	0.360	25	
1,3-Dichloropropane	0.0107	0.00057	mg/Kg	0.0113		94.6	70-130	2.90	25	
2,2-Dichloropropane	0.00962	0.0011	mg/Kg	0.0113		84.9	70-130	1.87	25	
1,1-Dichloropropene	0.0109	0.0023	mg/Kg	0.0113		95.9	70-130	2.67	25	
cis-1,3-Dichloropropene	0.00934	0.00057	mg/Kg	0.0113		82.4	70-130	1.33	25	
trans-1,3-Dichloropropene	0.0105	0.00057	mg/Kg	0.0113		93.0	70-130	0.864	25	
Diethyl Ether	0.0119	0.0023	mg/Kg	0.0113		105	70-130	1.14	25	
Diisopropyl Ether (DIPE)	0.00877	0.00057	mg/Kg	0.0113		77.4	70-130	1.96	25	
1,4-Dioxane	0.0919	0.057	mg/Kg	0.113		81.1	40-160	13.1	50	V-16 † ‡
Ethylbenzene	0.0113	0.0011	mg/Kg	0.0113		100	70-130	3.56	25	
Hexachlorobutadiene	0.0113	0.0011	mg/Kg	0.0113		99.7	70-160	0.600	25	
2-Hexanone (MBK)	0.0755	0.011	mg/Kg	0.113		66.7 *	70-160	3.68	25	L-04, V-05 †
Isopropylbenzene (Cumene)	0.0118	0.0011	mg/Kg	0.0113		104	70-130	1.36	25	
p-Isopropyltoluene (p-Cymene)	0.0119	0.0011	mg/Kg	0.0113		105	70-130	1.15	25	
Methyl tert-Butyl Ether (MTBE)	0.0102	0.0011	mg/Kg	0.0113		89.8	70-130	1.55	25	

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B170597 - SW-846 5035

LCS Dup (B170597-BSD1)

Prepared: 02/16/17 Analyzed: 02/19/17

Methylene Chloride	0.0102	0.0057	mg/Kg	0.0113		90.1	40-160	1.34	25	†
4-Methyl-2-pentanone (MIBK)	0.0793	0.011	mg/Kg	0.113		70.0	70-160	1.74	25	†
Naphthalene	0.00955	0.0023	mg/Kg	0.0113		84.3	40-130	5.09	25	†
n-Propylbenzene	0.0115	0.0011	mg/Kg	0.0113		101	70-130	2.29	25	
Styrene	0.0108	0.0011	mg/Kg	0.0113		95.6	70-130	3.51	25	
1,1,1,2-Tetrachloroethane	0.0110	0.0011	mg/Kg	0.0113		96.8	70-130	6.01	25	
1,1,2,2-Tetrachloroethane	0.0107	0.00057	mg/Kg	0.0113		94.5	70-130	0.738	25	
Tetrachloroethylene	0.0108	0.0011	mg/Kg	0.0113		95.0	70-130	0.734	25	
Tetrahydrofuran	0.00927	0.011	mg/Kg	0.0113		81.8	70-130	2.35	25	
Toluene	0.0110	0.0011	mg/Kg	0.0113		96.8	70-130	3.15	25	
1,2,3-Trichlorobenzene	0.0105	0.0057	mg/Kg	0.0113		92.3	70-130	2.36	25	
1,2,4-Trichlorobenzene	0.0113	0.0011	mg/Kg	0.0113		99.4	70-130	1.72	25	
1,3,5-Trichlorobenzene	0.0112	0.0011	mg/Kg	0.0113		98.6	70-130	1.51	25	
1,1,1-Trichloroethane	0.0105	0.0011	mg/Kg	0.0113		92.9	70-130	0.216	25	
1,1,2-Trichloroethane	0.0116	0.0011	mg/Kg	0.0113		102	70-130	2.28	25	
Trichloroethylene	0.0113	0.0011	mg/Kg	0.0113		99.4	70-130	2.19	25	
Trichlorofluoromethane (Freon 11)	0.0123	0.0023	mg/Kg	0.0113		108	70-130	3.72	25	
1,2,3-Trichloropropane	0.0105	0.0023	mg/Kg	0.0113		92.7	70-130	1.07	25	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	0.0119	0.0011	mg/Kg	0.0113		105	70-130	1.99	25	
1,2,4-Trimethylbenzene	0.0113	0.0011	mg/Kg	0.0113		99.4	70-130	0.00	25	
1,3,5-Trimethylbenzene	0.0112	0.0011	mg/Kg	0.0113		99.1	70-130	2.76	25	
Vinyl Chloride	0.0118	0.0023	mg/Kg	0.0113		104	40-130	3.42	25	†
m+p Xylene	0.0218	0.0023	mg/Kg	0.0227		96.0	70-130	1.21	25	
o-Xylene	0.0110	0.0011	mg/Kg	0.0113		97.4	70-130	1.24	25	
Surrogate: 1,2-Dichloroethane-d4	0.0272		mg/Kg	0.0283		96.1	70-130			
Surrogate: Toluene-d8	0.0281		mg/Kg	0.0283		99.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.0281		mg/Kg	0.0283		99.0	70-130			

Batch B170714 - SW-846 5035

Blank (B170714-BLK1)

Prepared: 02/17/17 Analyzed: 02/19/17

Acetone	ND	2.5	mg/Kg							
Acrylonitrile	ND	0.25	mg/Kg							
tert-Amyl Methyl Ether (TAME)	ND	0.025	mg/Kg							
Benzene	ND	0.050	mg/Kg							
Bromobenzene	ND	0.050	mg/Kg							
Bromochloromethane	ND	0.050	mg/Kg							
Bromodichloromethane	ND	0.050	mg/Kg							
Bromoform	ND	0.050	mg/Kg							
Bromomethane	ND	0.10	mg/Kg							
2-Butanone (MEK)	ND	1.0	mg/Kg							
tert-Butyl Alcohol (TBA)	ND	1.0	mg/Kg							V-05, V-16
n-Butylbenzene	ND	0.050	mg/Kg							
sec-Butylbenzene	ND	0.050	mg/Kg							
tert-Butylbenzene	ND	0.050	mg/Kg							
tert-Butyl Ethyl Ether (TBEE)	ND	0.025	mg/Kg							
Carbon Disulfide	ND	0.15	mg/Kg							
Carbon Tetrachloride	ND	0.050	mg/Kg							
Chlorobenzene	ND	0.050	mg/Kg							
Chlorodibromomethane	ND	0.025	mg/Kg							
Chloroethane	ND	0.10	mg/Kg							
Chloroform	ND	0.10	mg/Kg							

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B170714 - SW-846 5035

Blank (B170714-BLK1)

Prepared: 02/17/17 Analyzed: 02/19/17

Chloromethane	ND	0.10	mg/Kg							
2-Chlorotoluene	ND	0.050	mg/Kg							
4-Chlorotoluene	ND	0.050	mg/Kg							
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.25	mg/Kg							
1,2-Dibromoethane (EDB)	ND	0.025	mg/Kg							
Dibromomethane	ND	0.050	mg/Kg							
1,2-Dichlorobenzene	ND	0.050	mg/Kg							
1,3-Dichlorobenzene	ND	0.050	mg/Kg							
1,4-Dichlorobenzene	ND	0.050	mg/Kg							
trans-1,4-Dichloro-2-butene	ND	0.10	mg/Kg							
Dichlorodifluoromethane (Freon 12)	ND	0.10	mg/Kg							
1,1-Dichloroethane	ND	0.050	mg/Kg							
1,2-Dichloroethane	ND	0.050	mg/Kg							
1,1-Dichloroethylene	ND	0.050	mg/Kg							
cis-1,2-Dichloroethylene	ND	0.050	mg/Kg							
trans-1,2-Dichloroethylene	ND	0.050	mg/Kg							
1,2-Dichloropropane	ND	0.050	mg/Kg							
1,3-Dichloropropane	ND	0.025	mg/Kg							
2,2-Dichloropropane	ND	0.050	mg/Kg							
1,1-Dichloropropene	ND	0.10	mg/Kg							
cis-1,3-Dichloropropene	ND	0.025	mg/Kg							
trans-1,3-Dichloropropene	ND	0.025	mg/Kg							
Diethyl Ether	ND	0.10	mg/Kg							
Diisopropyl Ether (DIPE)	ND	0.025	mg/Kg							
1,4-Dioxane	ND	2.5	mg/Kg							
Ethylbenzene	ND	0.050	mg/Kg							
Hexachlorobutadiene	ND	0.050	mg/Kg							
2-Hexanone (MBK)	ND	0.50	mg/Kg							
Isopropylbenzene (Cumene)	ND	0.050	mg/Kg							
p-Isopropyltoluene (p-Cymene)	ND	0.050	mg/Kg							
Methyl Acetate	ND	0.50	mg/Kg							
Methyl tert-Butyl Ether (MTBE)	ND	0.050	mg/Kg							
Methyl Cyclohexane	ND	0.050	mg/Kg							
Methylene Chloride	ND	0.25	mg/Kg							
4-Methyl-2-pentanone (MIBK)	ND	0.50	mg/Kg							
Naphthalene	ND	0.10	mg/Kg							
n-Propylbenzene	ND	0.050	mg/Kg							
Styrene	ND	0.050	mg/Kg							
1,1,1,2-Tetrachloroethane	ND	0.050	mg/Kg							
1,1,2,2-Tetrachloroethane	ND	0.025	mg/Kg							
Tetrachloroethylene	ND	0.050	mg/Kg							
Tetrahydrofuran	ND	0.50	mg/Kg							
Toluene	ND	0.050	mg/Kg							
1,2,3-Trichlorobenzene	ND	0.25	mg/Kg							
1,2,4-Trichlorobenzene	ND	0.050	mg/Kg							
1,3,5-Trichlorobenzene	ND	0.050	mg/Kg							
1,1,1-Trichloroethane	ND	0.050	mg/Kg							
1,1,2-Trichloroethane	ND	0.050	mg/Kg							
Trichloroethylene	ND	0.050	mg/Kg							
Trichlorofluoromethane (Freon 11)	ND	0.10	mg/Kg							
1,2,3-Trichloropropane	ND	0.10	mg/Kg							

V-16

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B170714 - SW-846 5035

Blank (B170714-BLK1)

Prepared: 02/17/17 Analyzed: 02/19/17

1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.050	mg/Kg							
1,2,4-Trimethylbenzene	ND	0.050	mg/Kg							
1,3,5-Trimethylbenzene	ND	0.050	mg/Kg							
Vinyl Chloride	ND	0.10	mg/Kg							
m+p Xylene	ND	0.10	mg/Kg							
o-Xylene	ND	0.050	mg/Kg							
Surrogate: 1,2-Dichloroethane-d4	0.0265		mg/Kg	0.0250		106	70-130			
Surrogate: Toluene-d8	0.0254		mg/Kg	0.0250		102	70-130			
Surrogate: 4-Bromofluorobenzene	0.0252		mg/Kg	0.0250		101	70-130			

LCS (B170714-BS1)

Prepared: 02/17/17 Analyzed: 02/19/17

Acetone	0.0980	0.057	mg/Kg	0.113		86.4	70-160			†
Acrylonitrile	0.0113	0.0057	mg/Kg	0.0113		99.4	70-130			
tert-Amyl Methyl Ether (TAME)	0.0105	0.00057	mg/Kg	0.0113		92.4	70-130			
Benzene	0.0117	0.0011	mg/Kg	0.0113		103	70-130			
Bromobenzene	0.0110	0.0011	mg/Kg	0.0113		97.2	70-130			
Bromochloromethane	0.0126	0.0011	mg/Kg	0.0113		111	70-130			
Bromodichloromethane	0.0128	0.0011	mg/Kg	0.0113		113	70-130			
Bromoform	0.0112	0.0011	mg/Kg	0.0113		98.7	70-130			
Bromomethane	0.00636	0.0023	mg/Kg	0.0113		56.1	40-130		L-14	†
2-Butanone (MEK)	0.0997	0.023	mg/Kg	0.113		88.0	70-160			†
tert-Butyl Alcohol (TBA)	0.0687	0.023	mg/Kg	0.113		60.6	40-130		V-16, L-14, V-05	†
n-Butylbenzene	0.0121	0.0011	mg/Kg	0.0113		107	70-130			
sec-Butylbenzene	0.0122	0.0011	mg/Kg	0.0113		108	70-130			
tert-Butylbenzene	0.0116	0.0011	mg/Kg	0.0113		102	70-160			†
tert-Butyl Ethyl Ether (TBEE)	0.0109	0.00057	mg/Kg	0.0113		96.1	70-130			
Carbon Disulfide	0.0142	0.0034	mg/Kg	0.0113		125	70-130		V-20	
Carbon Tetrachloride	0.0114	0.0011	mg/Kg	0.0113		100	70-130			
Chlorobenzene	0.0112	0.0011	mg/Kg	0.0113		99.0	70-130			
Chlorodibromomethane	0.0126	0.00057	mg/Kg	0.0113		111	70-130			
Chloroethane	0.00961	0.0023	mg/Kg	0.0113		84.8	70-130			
Chloroform	0.0120	0.0023	mg/Kg	0.0113		106	70-130			
Chloromethane	0.00918	0.0023	mg/Kg	0.0113		81.0	70-130			
2-Chlorotoluene	0.0114	0.0011	mg/Kg	0.0113		101	70-130			
4-Chlorotoluene	0.0113	0.0011	mg/Kg	0.0113		99.5	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	0.0113	0.0057	mg/Kg	0.0113		99.5	70-130			
1,2-Dibromoethane (EDB)	0.0115	0.00057	mg/Kg	0.0113		102	70-130			
Dibromomethane	0.0125	0.0011	mg/Kg	0.0113		111	70-130			
1,2-Dichlorobenzene	0.0118	0.0011	mg/Kg	0.0113		104	70-130			
1,3-Dichlorobenzene	0.0122	0.0011	mg/Kg	0.0113		107	70-130			
1,4-Dichlorobenzene	0.0118	0.0011	mg/Kg	0.0113		104	70-130			
trans-1,4-Dichloro-2-butene	0.0109	0.0023	mg/Kg	0.0113		96.2	70-130			
Dichlorodifluoromethane (Freon 12)	0.00847	0.0023	mg/Kg	0.0113		74.7	40-160			†
1,1-Dichloroethane	0.0117	0.0011	mg/Kg	0.0113		103	70-130			
1,2-Dichloroethane	0.0123	0.0011	mg/Kg	0.0113		108	70-130			
1,1-Dichloroethylene	0.0113	0.0011	mg/Kg	0.0113		99.4	70-130			
cis-1,2-Dichloroethylene	0.0113	0.0011	mg/Kg	0.0113		99.5	70-130			
trans-1,2-Dichloroethylene	0.0132	0.0011	mg/Kg	0.0113		116	70-130			
1,2-Dichloropropane	0.0116	0.0011	mg/Kg	0.0113		102	70-130			
1,3-Dichloropropane	0.0114	0.00057	mg/Kg	0.0113		101	70-130			
2,2-Dichloropropane	0.0113	0.0011	mg/Kg	0.0113		99.6	70-130			
1,1-Dichloropropene	0.0115	0.0023	mg/Kg	0.0113		101	70-130			

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B170714 - SW-846 5035

LCS (B170714-BS1)

Prepared: 02/17/17 Analyzed: 02/19/17

cis-1,3-Dichloropropene	0.0110	0.00057	mg/Kg	0.0113		96.9	70-130			
trans-1,3-Dichloropropene	0.0118	0.00057	mg/Kg	0.0113		104	70-130			
Diethyl Ether	0.0113	0.0023	mg/Kg	0.0113		100	70-130			
Diisopropyl Ether (DIPE)	0.0111	0.00057	mg/Kg	0.0113		98.3	70-130			
1,4-Dioxane	0.0934	0.057	mg/Kg	0.113		82.4	40-160			V-16 †
Ethylbenzene	0.0110	0.0011	mg/Kg	0.0113		97.2	70-130			
Hexachlorobutadiene	0.0143	0.0011	mg/Kg	0.0113		126	70-160			
2-Hexanone (MBK)	0.101	0.011	mg/Kg	0.113		88.8	70-160			†
Isopropylbenzene (Cumene)	0.0115	0.0011	mg/Kg	0.0113		102	70-130			
p-Isopropyltoluene (p-Cymene)	0.0112	0.0011	mg/Kg	0.0113		98.7	70-130			
Methyl tert-Butyl Ether (MTBE)	0.0107	0.0011	mg/Kg	0.0113		94.6	70-130			
Methylene Chloride	0.0126	0.0057	mg/Kg	0.0113		111	40-160			V-20 †
4-Methyl-2-pentanone (MIBK)	0.102	0.011	mg/Kg	0.113		90.2	70-160			†
Naphthalene	0.00978	0.0023	mg/Kg	0.0113		86.3	40-130			†
n-Propylbenzene	0.0113	0.0011	mg/Kg	0.0113		99.5	70-130			
Styrene	0.0109	0.0011	mg/Kg	0.0113		96.6	70-130			
1,1,1,2-Tetrachloroethane	0.0108	0.0011	mg/Kg	0.0113		95.6	70-130			
1,1,2,2-Tetrachloroethane	0.0108	0.00057	mg/Kg	0.0113		95.1	70-130			
Tetrachloroethylene	0.0121	0.0011	mg/Kg	0.0113		107	70-130			
Tetrahydrofuran	0.0119	0.011	mg/Kg	0.0113		105	70-130			
Toluene	0.0118	0.0011	mg/Kg	0.0113		104	70-130			
1,2,3-Trichlorobenzene	0.0124	0.0057	mg/Kg	0.0113		109	70-130			
1,2,4-Trichlorobenzene	0.0120	0.0011	mg/Kg	0.0113		106	70-130			
1,3,5-Trichlorobenzene	0.0126	0.0011	mg/Kg	0.0113		111	70-130			
1,1,1-Trichloroethane	0.0112	0.0011	mg/Kg	0.0113		99.1	70-130			
1,1,2-Trichloroethane	0.0117	0.0011	mg/Kg	0.0113		104	70-130			
Trichloroethylene	0.0118	0.0011	mg/Kg	0.0113		104	70-130			
Trichlorofluoromethane (Freon 11)	0.0103	0.0023	mg/Kg	0.0113		91.3	70-130			
1,2,3-Trichloropropane	0.0104	0.0023	mg/Kg	0.0113		91.4	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	0.0109	0.0011	mg/Kg	0.0113		96.1	70-130			
1,2,4-Trimethylbenzene	0.0115	0.0011	mg/Kg	0.0113		101	70-130			
1,3,5-Trimethylbenzene	0.0105	0.0011	mg/Kg	0.0113		92.5	70-130			
Vinyl Chloride	0.00932	0.0023	mg/Kg	0.0113		82.2	40-130			†
m+p Xylene	0.0228	0.0023	mg/Kg	0.0227		101	70-130			
o-Xylene	0.0112	0.0011	mg/Kg	0.0113		98.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0294		mg/Kg	0.0283		104	70-130			
Surrogate: Toluene-d8	0.0291		mg/Kg	0.0283		103	70-130			
Surrogate: 4-Bromofluorobenzene	0.0280		mg/Kg	0.0283		99.0	70-130			

LCS Dup (B170714-BS1)

Prepared: 02/17/17 Analyzed: 02/19/17

Acetone	0.0963	0.057	mg/Kg	0.113		85.0	70-160	1.69	25	†
Acrylonitrile	0.0110	0.0057	mg/Kg	0.0113		97.0	70-130	2.44	25	
tert-Amyl Methyl Ether (TAME)	0.0105	0.00057	mg/Kg	0.0113		92.6	70-130	0.216	25	
Benzene	0.0120	0.0011	mg/Kg	0.0113		106	70-130	2.20	25	
Bromobenzene	0.0113	0.0011	mg/Kg	0.0113		100	70-130	2.94	25	
Bromochloromethane	0.0134	0.0011	mg/Kg	0.0113		118	70-130	5.67	25	
Bromodichloromethane	0.0128	0.0011	mg/Kg	0.0113		113	70-130	0.0884	25	
Bromoform	0.0112	0.0011	mg/Kg	0.0113		99.1	70-130	0.404	25	
Bromomethane	0.00772	0.0023	mg/Kg	0.0113		68.1	40-130	19.3	25	L-14 †
2-Butanone (MEK)	0.0990	0.023	mg/Kg	0.113		87.3	70-160	0.730	25	†
tert-Butyl Alcohol (TBA)	0.0668	0.023	mg/Kg	0.113		58.9	40-130	2.81	25	L-14, V-05, V-16 †
n-Butylbenzene	0.0124	0.0011	mg/Kg	0.0113		109	70-130	2.03	25	

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B170714 - SW-846 5035										
LCS Dup (B170714-BSD1)										
					Prepared: 02/17/17 Analyzed: 02/19/17					
sec-Butylbenzene	0.0123	0.0011	mg/Kg	0.0113		109	70-130	1.02	25	
tert-Butylbenzene	0.0118	0.0011	mg/Kg	0.0113		104	70-160	1.65	25	†
tert-Butyl Ethyl Ether (TBEE)	0.0110	0.00057	mg/Kg	0.0113		97.4	70-130	1.34	25	
Carbon Disulfide	0.0146	0.0034	mg/Kg	0.0113		129	70-130	3.15	25	V-20
Carbon Tetrachloride	0.0120	0.0011	mg/Kg	0.0113		106	70-130	5.33	25	
Chlorobenzene	0.0116	0.0011	mg/Kg	0.0113		103	70-130	3.67	25	
Chlorodibromomethane	0.0124	0.00057	mg/Kg	0.0113		109	70-130	1.54	25	
Chloroethane	0.0102	0.0023	mg/Kg	0.0113		89.7	70-130	5.62	25	
Chloroform	0.0124	0.0023	mg/Kg	0.0113		109	70-130	3.16	25	
Chloromethane	0.0102	0.0023	mg/Kg	0.0113		89.7	70-130	10.2	25	
2-Chlorotoluene	0.0118	0.0011	mg/Kg	0.0113		104	70-130	3.41	25	
4-Chlorotoluene	0.0117	0.0011	mg/Kg	0.0113		103	70-130	3.26	25	
1,2-Dibromo-3-chloropropane (DBCP)	0.0109	0.0057	mg/Kg	0.0113		96.2	70-130	3.37	25	
1,2-Dibromoethane (EDB)	0.0114	0.00057	mg/Kg	0.0113		101	70-130	0.887	25	
Dibromomethane	0.0124	0.0011	mg/Kg	0.0113		110	70-130	0.817	25	
1,2-Dichlorobenzene	0.0119	0.0011	mg/Kg	0.0113		105	70-130	0.575	25	
1,3-Dichlorobenzene	0.0122	0.0011	mg/Kg	0.0113		108	70-130	0.186	25	
1,4-Dichlorobenzene	0.0120	0.0011	mg/Kg	0.0113		106	70-130	1.52	25	
trans-1,4-Dichloro-2-butene	0.0103	0.0023	mg/Kg	0.0113		90.9	70-130	5.67	25	
Dichlorodifluoromethane (Freon 12)	0.00908	0.0023	mg/Kg	0.0113		80.1	40-160	6.98	25	†
1,1-Dichloroethane	0.0124	0.0011	mg/Kg	0.0113		109	70-130	6.04	25	
1,2-Dichloroethane	0.0123	0.0011	mg/Kg	0.0113		109	70-130	0.461	25	
1,1-Dichloroethylene	0.0116	0.0011	mg/Kg	0.0113		103	70-130	3.27	25	
cis-1,2-Dichloroethylene	0.0116	0.0011	mg/Kg	0.0113		102	70-130	2.58	25	
trans-1,2-Dichloroethylene	0.0139	0.0011	mg/Kg	0.0113		123	70-130	5.27	25	
1,2-Dichloropropane	0.0119	0.0011	mg/Kg	0.0113		105	70-130	2.79	25	
1,3-Dichloropropane	0.0111	0.00057	mg/Kg	0.0113		98.3	70-130	2.41	25	
2,2-Dichloropropane	0.0116	0.0011	mg/Kg	0.0113		103	70-130	2.87	25	
1,1-Dichloropropene	0.0122	0.0023	mg/Kg	0.0113		108	70-130	6.41	25	
cis-1,3-Dichloropropene	0.0113	0.00057	mg/Kg	0.0113		99.3	70-130	2.45	25	
trans-1,3-Dichloropropene	0.0114	0.00057	mg/Kg	0.0113		100	70-130	3.43	25	
Diethyl Ether	0.0113	0.0023	mg/Kg	0.0113		100	70-130	0.100	25	
Diisopropyl Ether (DIPE)	0.0113	0.00057	mg/Kg	0.0113		99.4	70-130	1.11	25	
1,4-Dioxane	0.0939	0.057	mg/Kg	0.113		82.9	40-160	0.593	50	V-16 † ‡
Ethylbenzene	0.0115	0.0011	mg/Kg	0.0113		102	70-130	4.43	25	
Hexachlorobutadiene	0.0150	0.0011	mg/Kg	0.0113		132	70-160	4.57	25	L-14
2-Hexanone (MBK)	0.0968	0.011	mg/Kg	0.113		85.4	70-160	3.85	25	†
Isopropylbenzene (Cumene)	0.0120	0.0011	mg/Kg	0.0113		106	70-130	3.85	25	
p-Isopropyltoluene (p-Cymene)	0.0113	0.0011	mg/Kg	0.0113		99.5	70-130	0.807	25	
Methyl tert-Butyl Ether (MTBE)	0.0109	0.0011	mg/Kg	0.0113		95.9	70-130	1.36	25	
Methylene Chloride	0.0128	0.0057	mg/Kg	0.0113		113	40-160	1.78	25	V-20 †
4-Methyl-2-pentanone (MIBK)	0.0966	0.011	mg/Kg	0.113		85.3	70-160	5.59	25	†
Naphthalene	0.00932	0.0023	mg/Kg	0.0113		82.2	40-130	4.87	25	†
n-Propylbenzene	0.0117	0.0011	mg/Kg	0.0113		103	70-130	3.65	25	
Styrene	0.0113	0.0011	mg/Kg	0.0113		100	70-130	3.46	25	
1,1,1,2-Tetrachloroethane	0.0113	0.0011	mg/Kg	0.0113		99.8	70-130	4.30	25	
1,1,2,2-Tetrachloroethane	0.0105	0.00057	mg/Kg	0.0113		92.4	70-130	2.88	25	
Tetrachloroethylene	0.0123	0.0011	mg/Kg	0.0113		109	70-130	1.67	25	
Tetrahydrofuran	0.0112	0.011	mg/Kg	0.0113		98.8	70-130	5.99	25	
Toluene	0.0120	0.0011	mg/Kg	0.0113		106	70-130	1.33	25	
1,2,3-Trichlorobenzene	0.0118	0.0057	mg/Kg	0.0113		104	70-130	5.08	25	
1,2,4-Trichlorobenzene	0.0120	0.0011	mg/Kg	0.0113		106	70-130	0.0941	25	

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B170714 - SW-846 5035										
LCS Dup (B170714-BSD1)										
					Prepared: 02/17/17 Analyzed: 02/19/17					
1,3,5-Trichlorobenzene	0.0126	0.0011	mg/Kg	0.0113		111	70-130	0.270	25	
1,1,1-Trichloroethane	0.0118	0.0011	mg/Kg	0.0113		104	70-130	4.73	25	
1,1,2-Trichloroethane	0.0117	0.0011	mg/Kg	0.0113		104	70-130	0.0965	25	
Trichloroethylene	0.0119	0.0011	mg/Kg	0.0113		105	70-130	0.382	25	
Trichlorofluoromethane (Freon 11)	0.0113	0.0023	mg/Kg	0.0113		99.5	70-130	8.60	25	
1,2,3-Trichloropropane	0.00957	0.0023	mg/Kg	0.0113		84.4	70-130	7.96	25	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	0.0115	0.0011	mg/Kg	0.0113		101	70-130	5.27	25	
1,2,4-Trimethylbenzene	0.0113	0.0011	mg/Kg	0.0113		100	70-130	1.19	25	
1,3,5-Trimethylbenzene	0.0107	0.0011	mg/Kg	0.0113		94.5	70-130	2.14	25	
Vinyl Chloride	0.00994	0.0023	mg/Kg	0.0113		87.7	40-130	6.47	25	†
m+p Xylene	0.0232	0.0023	mg/Kg	0.0227		102	70-130	1.72	25	
o-Xylene	0.0114	0.0011	mg/Kg	0.0113		100	70-130	2.11	25	
Surrogate: 1,2-Dichloroethane-d4	0.0301		mg/Kg	0.0283		106	70-130			
Surrogate: Toluene-d8	0.0287		mg/Kg	0.0283		101	70-130			
Surrogate: 4-Bromofluorobenzene	0.0285		mg/Kg	0.0283		101	70-130			

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B170816 - SW-846 7471										
Blank (B170816-BLK1) Prepared: 02/21/17 Analyzed: 02/22/17										
Mercury	ND	0.025	µg/Wipe							
LCS (B170816-BS1) Prepared: 02/21/17 Analyzed: 02/22/17										
Mercury	0.996	0.062	µg/Wipe	1.25		79.7	73.7-126.3			
LCS Dup (B170816-BSD1) Prepared: 02/21/17 Analyzed: 02/22/17										
Mercury	1.06	0.062	µg/Wipe	1.25		84.6	73.7-126.3	5.98	30	
Batch B170817 - SW-846 3050B										
Blank (B170817-BLK1) Prepared: 02/21/17 Analyzed: 02/22/17										
Antimony	ND	2.5	µg/Wipe							
Arsenic	ND	2.5	µg/Wipe							
Beryllium	ND	2.5	µg/Wipe							
Cadmium	ND	2.5	µg/Wipe							
Chromium	ND	2.5	µg/Wipe							
Copper	ND	2.5	µg/Wipe							
Lead	ND	2.5	µg/Wipe							
Nickel	ND	2.5	µg/Wipe							
Selenium	ND	25	µg/Wipe							
Silver	ND	2.5	µg/Wipe							
Thallium	ND	2.5	µg/Wipe							
Zinc	83	2.5	µg/Wipe							B
LCS (B170817-BS1) Prepared: 02/21/17 Analyzed: 02/22/17										
Antimony	69.2	2.5	µg/Wipe	44.2		157	0-210.3			
Arsenic	30.0	2.5	µg/Wipe	28.6		105	77.8-122.1			
Beryllium	37.9	2.5	µg/Wipe	33.8		112	82.3-117.7			
Cadmium	41.2	2.5	µg/Wipe	39.0		106	81.9-118.2			
Chromium	33.1	2.5	µg/Wipe	32.6		101	78.7-120.6			
Copper	31.4	2.5	µg/Wipe	28.3		111	80.4-119.6			
Lead	43.2	2.5	µg/Wipe	42.9		101	80-111			
Nickel	31.9	2.5	µg/Wipe	30.7		104	82.2-117.8			
Selenium	43.7	25	µg/Wipe	39.5		111	77.1-122.3			
Silver	28.2	2.5	µg/Wipe	27.2		104	74.3-125.4			
Thallium	97.5	2.5	µg/Wipe	89.2		109	78.2-121.6			
Zinc	185	2.5	µg/Wipe	99.2		186 *	79.7-120.8			B, L-06
LCS Dup (B170817-BSD1) Prepared: 02/21/17 Analyzed: 02/22/17										
Antimony	74.9	2.5	µg/Wipe	46.1		163	0-210.3	7.96	30	
Arsenic	31.6	2.5	µg/Wipe	29.8		106	77.8-122.1	5.27	30	
Beryllium	39.4	2.5	µg/Wipe	35.3		112	82.3-117.7	3.70	30	
Cadmium	42.9	2.5	µg/Wipe	40.7		106	81.9-118.2	4.24	30	
Chromium	34.3	2.5	µg/Wipe	34.0		101	78.7-120.6	3.60	30	
Copper	34.7	2.5	µg/Wipe	29.5		118	80.4-119.6	10.1	30	
Lead	47.1	2.5	µg/Wipe	44.7		105	80-111	8.74	13.1	
Nickel	33.5	2.5	µg/Wipe	32.0		104	82.2-117.8	4.85	30	
Selenium	48.0	25	µg/Wipe	41.2		116	77.1-122.3	9.18	30	
Silver	29.3	2.5	µg/Wipe	28.3		103	74.3-125.4	3.91	30	
Thallium	101	2.5	µg/Wipe	93.0		109	78.2-121.6	3.42	30	
Zinc	205	2.5	µg/Wipe	103		198 *	79.7-120.8	10.2	30	B, L-06

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B170817 - SW-846 3050B										
MRL Check (B170817-MRL1)										
				Prepared: 02/21/17 Analyzed: 02/22/17						
Lead	2.80	2.5	µg/Wipe	2.50		112	80-120			
Batch B170899 - SW-846 3051										
Blank (B170899-BLK1)										
				Prepared: 02/21/17 Analyzed: 02/22/17						
Antimony	ND	2.5	mg/Kg							
Arsenic	ND	2.5	mg/Kg							
Beryllium	ND	0.25	mg/Kg							
Cadmium	ND	0.25	mg/Kg							
Chromium	ND	0.50	mg/Kg							
Copper	ND	0.50	mg/Kg							
Lead	ND	0.75	mg/Kg							
Nickel	ND	0.50	mg/Kg							
Selenium	ND	5.0	mg/Kg							
Silver	ND	0.50	mg/Kg							
Thallium	ND	2.5	mg/Kg							
Zinc	ND	1.0	mg/Kg							
LCS (B170899-BS1)										
				Prepared: 02/21/17 Analyzed: 02/22/17						
Antimony	164	5.0	mg/Kg	88.2		186	0-210.3			
Arsenic	69.7	5.0	mg/Kg	57.0		122	77.8-122.1			
Beryllium	78.4	0.50	mg/Kg	67.5		116	82.3-117.7			L-07
Cadmium	83.4	0.50	mg/Kg	77.8		107	81.9-118.2			
Chromium	67.5	1.0	mg/Kg	65.0		104	78.7-120.6			
Copper	61.4	1.0	mg/Kg	56.4		109	80.4-119.6			
Lead	94.4	1.5	mg/Kg	85.6		110	82.4-117.8			
Nickel	66.8	1.0	mg/Kg	61.3		109	82.2-117.8			
Selenium	88.1	10	mg/Kg	78.9		112	77.1-122.3			
Silver	57.3	1.0	mg/Kg	54.2		106	74.3-125.4			
Thallium	194	5.0	mg/Kg	178		109	78.2-121.6			
Zinc	223	2.0	mg/Kg	198		112	79.7-120.8			
LCS Dup (B170899-BSD1)										
				Prepared: 02/21/17 Analyzed: 02/22/17						
Antimony	160	5.1	mg/Kg	88.2		181	0-210.3	2.68	30	
Arsenic	62.7	5.1	mg/Kg	57.0		110	77.8-122.1	10.7	30	
Beryllium	89.3	0.51	mg/Kg	67.5		132	* 82.3-117.7	13.0	30	L-07
Cadmium	84.4	0.51	mg/Kg	77.8		109	81.9-118.2	1.22	30	
Chromium	64.5	1.0	mg/Kg	65.0		99.2	78.7-120.6	4.60	30	
Copper	60.7	1.0	mg/Kg	56.4		108	80.4-119.6	1.19	30	
Lead	87.3	1.5	mg/Kg	85.6		102	82.4-117.8	7.84	30	
Nickel	64.2	1.0	mg/Kg	61.3		105	82.2-117.8	3.97	30	
Selenium	85.1	10	mg/Kg	78.9		108	77.1-122.3	3.51	30	
Silver	56.0	1.0	mg/Kg	54.2		103	74.3-125.4	2.39	30	
Thallium	192	5.1	mg/Kg	178		108	78.2-121.6	0.545	30	
Zinc	215	2.0	mg/Kg	198		108	79.7-120.8	3.67	30	

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B170899 - SW-846 3051										
MRL Check (B170899-MRL1)					Prepared: 02/21/17 Analyzed: 02/22/17					
Lead	0.698	0.74	mg/Kg	0.745		93.7	80-120			
Batch B170900 - SW-846 3051										
Blank (B170900-BLK1)					Prepared: 02/21/17 Analyzed: 02/22/17					
Antimony	ND	2.5	mg/Kg wet							
Arsenic	ND	2.5	mg/Kg wet							
Beryllium	ND	0.25	mg/Kg wet							
Cadmium	ND	0.25	mg/Kg wet							
Chromium	ND	0.50	mg/Kg wet							
Copper	ND	0.50	mg/Kg wet							
Lead	ND	0.75	mg/Kg wet							
Nickel	ND	0.50	mg/Kg wet							
Selenium	ND	5.0	mg/Kg wet							
Silver	ND	0.50	mg/Kg wet							
Thallium	ND	2.5	mg/Kg wet							
Zinc	ND	1.0	mg/Kg wet							
LCS (B170900-BS1)					Prepared: 02/21/17 Analyzed: 02/22/17					
Antimony	164	5.0	mg/Kg wet	88.2		186	0-210.3			
Arsenic	69.7	5.0	mg/Kg wet	57.0		122	77.8-122.1			
Beryllium	78.4	0.50	mg/Kg wet	67.5		116	82.3-117.7			
Cadmium	83.4	0.50	mg/Kg wet	77.8		107	81.9-118.2			
Chromium	67.5	1.0	mg/Kg wet	65.0		104	78.7-120.6			
Copper	61.4	1.0	mg/Kg wet	56.4		109	80.4-119.6			
Lead	94.4	1.5	mg/Kg wet	85.6		110	82.4-117.8			
Nickel	66.8	1.0	mg/Kg wet	61.3		109	82.2-117.8			
Selenium	88.1	10	mg/Kg wet	78.9		112	77.1-122.3			
Silver	57.3	1.0	mg/Kg wet	54.2		106	74.3-125.4			
Thallium	194	5.0	mg/Kg wet	178		109	78.2-121.6			
Zinc	223	2.0	mg/Kg wet	198		112	79.7-120.8			
LCS Dup (B170900-BSD1)					Prepared: 02/21/17 Analyzed: 02/22/17					
Antimony	160	5.1	mg/Kg wet	88.2		181	0-210.3	2.68	30	
Arsenic	62.7	5.1	mg/Kg wet	57.0		110	77.8-122.1	10.7	30	
Beryllium	89.3	0.51	mg/Kg wet	67.5		132 *	82.3-117.7	13.0	30	L-07
Cadmium	84.4	0.51	mg/Kg wet	77.8		109	81.9-118.2	1.22	30	
Chromium	64.5	1.0	mg/Kg wet	65.0		99.2	78.7-120.6	4.60	30	
Copper	60.7	1.0	mg/Kg wet	56.4		108	80.4-119.6	1.19	30	
Lead	87.3	1.5	mg/Kg wet	85.6		102	82.4-117.8	7.84	30	
Nickel	64.2	1.0	mg/Kg wet	61.3		105	82.2-117.8	3.97	30	
Selenium	85.1	10	mg/Kg wet	78.9		108	77.1-122.3	3.51	30	
Silver	56.0	1.0	mg/Kg wet	54.2		103	74.3-125.4	2.39	30	
Thallium	192	5.1	mg/Kg wet	178		108	78.2-121.6	0.545	30	
Zinc	215	2.0	mg/Kg wet	198		108	79.7-120.8	3.67	30	

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B170900 - SW-846 3051										
MRL Check (B170900-MRL1)					Prepared: 02/21/17 Analyzed: 02/22/17					
Lead	0.698	0.74	mg/Kg wet	0.745		93.7	80-120			
Batch B170902 - SW-846 7471										
Blank (B170902-BLK1)					Prepared: 02/21/17 Analyzed: 02/22/17					
Mercury	ND	0.025	mg/Kg							
LCS (B170902-BS1)					Prepared: 02/21/17 Analyzed: 02/22/17					
Mercury	11.8	1.9	mg/Kg	9.36		126	73.7-126.3			
LCS Dup (B170902-BSD1)					Prepared: 02/21/17 Analyzed: 02/22/17					
Mercury	9.24	1.9	mg/Kg	9.36		98.7	73.7-126.3	24.4	30	
Batch B170903 - SW-846 7471										
Blank (B170903-BLK1)					Prepared: 02/21/17 Analyzed: 02/22/17					
Mercury	ND	0.025	mg/Kg wet							
LCS (B170903-BS1)					Prepared: 02/21/17 Analyzed: 02/22/17					
Mercury	11.8	1.9	mg/Kg wet	9.36		126	73.7-126.3			
LCS Dup (B170903-BSD1)					Prepared: 02/21/17 Analyzed: 02/22/17					
Mercury	9.24	1.9	mg/Kg wet	9.36		98.7	73.7-126.3	24.4	30	
Batch B171043 - SW-846 3050B										
Blank (B171043-BLK1)					Prepared & Analyzed: 02/22/17					
Antimony	ND	2.5	mg/Kg							
Arsenic	ND	2.5	mg/Kg							
Beryllium	ND	0.25	mg/Kg							
Cadmium	ND	0.25	mg/Kg							
Chromium	ND	0.50	mg/Kg							
Copper	ND	0.50	mg/Kg							
Lead	ND	0.75	mg/Kg							
Nickel	ND	0.50	mg/Kg							
Selenium	ND	5.0	mg/Kg							
Silver	ND	0.50	mg/Kg							
Thallium	ND	2.5	mg/Kg							
Zinc	ND	1.0	mg/Kg							

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B171043 - SW-846 3050B										
LCS (B171043-BS1)										
Prepared & Analyzed: 02/22/17										
Antimony	134	4.9	mg/Kg	88.2		152	0-210.3			
Arsenic	50.6	4.9	mg/Kg	57.0		88.8	77.8-122.1			
Beryllium	65.8	0.49	mg/Kg	67.5		97.5	82.3-117.7			
Cadmium	68.0	0.49	mg/Kg	77.8		87.5	81.9-118.2			
Chromium	62.9	0.99	mg/Kg	65.0		96.8	78.7-120.6			
Copper	58.5	0.99	mg/Kg	56.4		104	80.4-119.6			
Lead	78.2	1.5	mg/Kg	85.6		91.4	82.4-117.8			
Nickel	54.2	0.99	mg/Kg	61.3		88.4	82.2-117.8			
Selenium	73.3	9.9	mg/Kg	78.9		93.0	77.1-122.3			
Silver	47.3	0.99	mg/Kg	54.2		87.3	74.3-125.4			
Thallium	157	4.9	mg/Kg	178		88.0	78.2-121.6			
Zinc	181	2.0	mg/Kg	198		91.2	79.7-120.8			
LCS Dup (B171043-BSD1)										
Prepared & Analyzed: 02/22/17										
Antimony	133	5.0	mg/Kg	88.2		151	0-210.3	0.297	30	
Arsenic	49.7	5.0	mg/Kg	57.0		87.1	77.8-122.1	1.87	30	
Beryllium	68.7	0.50	mg/Kg	67.5		102	82.3-117.7	4.37	30	
Cadmium	71.3	0.50	mg/Kg	77.8		91.7	81.9-118.2	4.73	30	
Chromium	63.6	1.0	mg/Kg	65.0		97.8	78.7-120.6	1.09	30	
Copper	59.1	1.0	mg/Kg	56.4		105	80.4-119.6	0.930	30	
Lead	75.1	1.5	mg/Kg	85.6		87.7	82.4-117.8	4.07	30	
Nickel	56.1	1.0	mg/Kg	61.3		91.6	82.2-117.8	3.50	30	
Selenium	73.1	10	mg/Kg	78.9		92.7	77.1-122.3	0.278	30	
Silver	47.5	1.0	mg/Kg	54.2		87.6	74.3-125.4	0.257	30	
Thallium	164	5.0	mg/Kg	178		92.0	78.2-121.6	4.50	30	
Zinc	181	2.0	mg/Kg	198		91.3	79.7-120.8	0.128	30	
MRL Check (B171043-MRL1)										
Prepared & Analyzed: 02/22/17										
Lead	0.999	0.70	mg/Kg	0.696		144	* 80-120			M-10

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QUALITY CONTROL

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B170924 - SW-846 9014										
Blank (B170924-BLK1)										
Prepared & Analyzed: 02/21/17										
Cyanide	ND	0.44	mg/Kg							
LCS (B170924-BS1)										
Prepared & Analyzed: 02/21/17										
Cyanide	58	2.4	mg/Kg	61.5		94.0	80-120			
LCS Dup (B170924-BSD1)										
Prepared & Analyzed: 02/21/17										
Cyanide	62	2.3	mg/Kg	61.0		102	80-120	7.10	20	

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit
DL	Method Detection Limit
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
B	Analyte is found in the associated blank as well as in the sample.
B-07	Data is not affected by elevated level in blank since sample result is >10x level found in the blank.
L-04	Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits. Reported value for this compound is likely to be biased on the low side.
L-06	Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits. Reported value for this compound is likely to be biased on the high side.
L-07	Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.
L-14	Compound classified by MA CAM as difficult with acceptable recoveries of 40-160%. Recovery does not meet 70-130% criteria but does meet difficult compound criteria.
M-10	The reporting limit verification for the AIHA lead program is outside of control limits for this element. Any reported result at or near the detection limit may be biased on the high side.
RL-07	Elevated reporting limit based on lowest point in calibration. MA CAM reporting limit not met.
RL-14	Elevated reporting limit due to foaming sample matrix. MA CAM reporting limit not met.
V-05	Continuing calibration did not meet method specifications and was biased on the low side for this compound. Increased uncertainty is associated with the reported value which is likely to be biased on the low side.
V-16	Response factor is less than method specified minimum acceptable value. Reduced precision and accuracy may be associated with reported result.
V-20	Continuing calibration did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 6010C/D Modified in Wipe	
Lead	ME,AIHA,CT
SW-846 6010C-D in Product/Solid	
Antimony	CT,NH,NY,ME,VA,NC
Arsenic	CT,NH,NY,ME,VA,NC
Beryllium	CT,NH,NY,ME,VA,NC
Cadmium	CT,NH,NY,ME,VA,NC
Chromium	CT,NH,NY,ME,VA,NC
Copper	CT,NH,NY,ME,VA,NC
Lead	CT,NH,NY,ME,VA,NC
Nickel	CT,NH,NY,ME,VA,NC
Selenium	CT,NH,NY,ME,VA,NC
Silver	CT,NH,NY,ME,VA,NC
Thallium	CT,NH,NY,ME,VA,NC
Zinc	CT,NH,NY,ME,VA,NC
SW-846 7471B in Product/Solid	
Mercury	CT,NH,NY,ME,NC,VA
SW-846 9014 in Product/Solid	
Cyanide	CT,ME,NC,NH,NY,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2005	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2017
CT	Connecticut Department of Public Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2017
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2018
RI	Rhode Island Department of Health	LAO00112	12/30/2017
NC	North Carolina Div. of Water Quality	652	12/31/2017
NJ	New Jersey DEP	MA007 NELAP	06/30/2017
FL	Florida Department of Health	E871027 NELAP	06/30/2017
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2017
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2017
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2017



Phone: 413-525-2332
 Fax: 413-525-6405
 Email: info@contestlabs.com
 www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
 East Longmeadow, MA 01028

Company Name: Rainbow Environmental
 Address: 100 Pearl St, Hartford, CT 06103
 Attention: Dale Cross
 Project Location: 36 Town on See Plainville MA
 Sampled By: Dale Cross

Telephone: 860-563-1664
 Project #: 08-2337AR
 Client PO#: _____

DATA DELIVERY (check all that apply)
 FAX EMAIL WEBSITE
 Email: dcross@rainbowlab.com
 Format: PDF EXCEL GIS OTHER
 "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
 Yes No (proposal date)

Con-Test Lab ID <small>(laboratory use only)</small>	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Composite	Grab	Matrix Code	Conc Data
1	SP-1		11:35		X	0	
2	SP-1		11:35		X	0	
3	SP-2		11:20		X	0	
4	SP-2		11:02		X	0	
5	SP-3		10:57		X	0	
6	SP-3		10:57		X	0	
7	SP-6		13:55		X	0	
8	SP-6		13:55		X	0	
9	SP-7		14:30		X	0	
10	SP-7		14:30		X	0	

ANALYSIS REQUESTED	1	2	3	4	5	6	7	8	9	10
Field Filtered										
Lab to Filter										
Preservation										
Container Code										
Dissolved Metals										
Field Filtered										
Lab to Filter										
Preservation										
Container Code										

Comments: **Media not received for sample SP-7 17B0624 Client notified 02/16/17-ALB.**

Relinquished by: (signature) Dale Cross Date/Time: 2/15/17
 Received by: (signature) Dale Cross Date/Time: 2/15/17
 Relinquished by: (signature) Dale Cross Date/Time: 6:45
 Received by: (signature) Dale Cross Date/Time: 6:45

Turnaround: 7-Day 10-Day Other 5 days
 RUSH: 24-Hr 48-Hr 72-Hr 14-Day
 Require lab approval

Detection Limit Requirements: _____
 Massachusetts: _____
 Connecticut: _____
 Other: _____

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
 H - High; M - Medium; L - Low; C - Clean; U - Unknown

Is your project MCP or RCP?
 MCP Form Required
 RCP Form Required
 MA State DW Form Required PWSID # _____

Accredited: **NELAC & AIHA-LAP, LLC**
 WBE/DBE Certified

39 Spruce St.
 East Longmeadow, MA. 01028
 P: 413-525-2332
 F: 413-525-6405
 www.contestlabs.com



Sample Receipt Checklist

CLIENT NAME: Ramball Env RECEIVED BY: JM DATE: 2/15/17

- 1) Was the chain(s) of custody relinquished and signed? Yes No No COC Incl.
- 2) Does the chain agree with the samples? Yes No
 If not, explain: see comments
- 3) Are all the samples in good condition? Yes No
 If not, explain: see comments
- 4) How were the samples received:
 On Ice Direct from Sampling Ambient In Cooler(s)
 Were the samples received in Temperature Compliance of (2-6°C)? Yes No N/A
 Temperature °C by Temp blank _____ Temperature °C by Temp gun 3.7 temp #2
- 5) Are there Dissolved samples for the lab to filter? Yes No
 Who was notified _____ Date _____ Time _____
- 6) Are there any RUSH or SHORT HOLDING TIME samples? Yes No
 Who was notified _____ Date _____ Time _____
- 7) Location where samples are stored: Login

Permission to subcontract samples? Yes No
 (Walk-in clients only) if not already approved
 Client Signature: _____
- 8) Do all samples have the proper Acid pH: Yes No N/A
- 9) Do all samples have the proper Base pH: Yes No N/A
- 10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes N/A

Containers received at Con-Test

	# of containers		# of containers
1 Liter Amber		16 oz amber	
500 mL Amber		8 oz amber/clear jar	
250 mL Amber (8oz amber)		4 oz amber/clear jar	8
1 Liter Plastic		2 oz amber/clear jar	
500 mL Plastic		Plastic Bag / Ziploc	
250 mL plastic		SOC Kit	
40 mL Vial - type listed below		Perchlorate Kit	
Colisure / bacteria bottle		Flashpoint bottle	
Dissolved Oxygen bottle		Other glass jar	
Encore		Other	14

- Client provided MeOH wipes for 8260 analysis
- No sample received for metals analysis on sample SP-7.
- Sludge sample SP-10 is leaking from the cap
- No date provided on any of the samples

40 mL vials: # HCl _____	# Methanol _____	Time and Date Frozen:
# Bisulfate _____	# DI Water _____	
# Thiosulfate _____	Unpreserved _____	
Doc# 277		

Login Sample Receipt Checklist**(Rejection Criteria Listing - Using Sample Acceptance Policy)****Any False statement will be brought to the attention of Client**

<u>Question</u>	<u>Answer (True/False)</u>		<u>Comment</u>
	T/F/NA		
1) The cooler's custody seal, if present, is intact.	N/A		
2) The cooler or samples do not appear to have been compromised or tampered with.	T		
3) Samples were received on ice.	T		
4) Cooler Temperature is acceptable.	T		
5) Cooler Temperature is recorded.	T		
6) COC is filled out in ink and legible.	T		
7) COC is filled out with all pertinent information.	T		
8) Field Sampler's name present on COC.	T		
9) There are no discrepancies between the sample IDs on the container and the COC.	T		
10) Samples are received within Holding Time.	T		
11) Sample containers have legible labels.	T		
12) Containers are not broken or leaking.	F		
13) Air Cassettes are not broken/open.	N/A		
14) Sample collection date/times are provided.	F		No date
15) Appropriate sample containers are used.	F		
16) Proper collection media used.	T		
17) No headspace sample bottles are completely filled.	N/A		
18) There is sufficient volume for all requested analyses, including any requested MS/MSDs.	T		
19) Trip blanks provided if applicable.	N/A		
20) VOA sample vials do not have head space or bubble is <6mm (1/4") in diameter.	N/A		
21) Samples do not require splitting or compositing.	T		

Doc #277 Rev. 4 August 2013

Who notified of False statements?

Log-In Technician Initials:

JM

Date/Time:

Date/Time:

2/15/17
1845

February 23, 2017

Dale Cross
Ramboll Environ US Corporation - Hartford, CT
100 Pearl Street, East Tower, Third Floor
Hartford, CT 06103

Project Location: 36 Taunton St., Plainville, MA
Client Job Number:
Project Number: 08-2337AR
Laboratory Work Order Number: 17B0751

Enclosed are results of analyses for samples received by the laboratory on February 17, 2017. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Aaron L. Benoit", with a horizontal line extending to the right from the end of the signature.

Aaron L. Benoit
Project Manager

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Ramboll Environ US Corporation - Hartford, CT
100 Pearl Street, East Tower, Third Floor
Hartford, CT 06103
ATTN: Dale Cross

REPORT DATE: 2/23/2017

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 08-2337AR

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 17B0751

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: 36 Taunton St., Plainville, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
SP-7	17B0751-01	Wipe		SW-846 6010C/D Modified SW-846 6010C-D SW-846 7471B	

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SW-846 6010C-D**Qualifications:****B**

Analyte is found in the associated blank as well as in the sample.

Analyte & Samples(s) Qualified:**Zinc**

17B0751-01[SP-7], B170817-BLK1, B170817-BS1, B170817-BSD1

B-07

Data is not affected by elevated level in blank since sample result is >10x level found in the blank.

Analyte & Samples(s) Qualified:**Zinc**

17B0751-01[SP-7]

L-06

Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits. Reported value for this compound is likely to be biased on the high side.

Analyte & Samples(s) Qualified:**Zinc**

B170817-BS1, B170817-BSD1

SW-846 6010C/D SW-846 6020A/B

For NC, Metals methods SW-846 6010D and SW-846 6020B are followed, and for all other states methods SW-846 6010C and SW-846 6020A are followed.

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington
Project Manager

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 36 Taunton St., Plainville, MA

Sample Description:

Work Order: 17B0751

Date Received: 2/17/2017

Field Sample #: SP-7

Sampled: 2/15/2017 14:30

Sample ID: 17B0751-01

Sample Matrix: Wipe

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:44	QNW
Arsenic	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:44	QNW
Beryllium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:44	QNW
Cadmium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:44	QNW
Chromium	6.0	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:44	QNW
Copper	36	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:44	QNW
Lead	<2.5	2.5	µg/Wipe	1		SW-846 6010C/D Modified	2/21/17	2/22/17 13:44	QNW
Mercury	0.052	0.025	µg/Wipe	1		SW-846 7471B	2/21/17	2/22/17 10:44	TJK
Nickel	7.7	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:44	QNW
Selenium	ND	25	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:44	QNW
Silver	44	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:44	QNW
Thallium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	2/21/17	2/22/17 13:44	QNW
Zinc	4000	12	µg/Wipe	5	B-07, B	SW-846 6010C-D	2/21/17	2/22/17 14:48	QNW

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Sample Extraction Data

Prep Method: SW-846 3050B-SW-846 6010C/D Modified

Lab Number [Field ID]	Batch	Initial [Wipe]	Final [mL]	Date
17B0751-01 [SP-7]	B170817	1.00	50.0	02/21/17

Prep Method: SW-846 3050B-SW-846 6010C-D

Lab Number [Field ID]	Batch	Initial [Wipe]	Final [mL]	Date
17B0751-01 [SP-7]	B170817	1.00	50.0	02/21/17

Prep Method: SW-846 7471-SW-846 7471B

Lab Number [Field ID]	Batch	Initial [Wipe]	Final [mL]	Date
17B0751-01 [SP-7]	B170816	0.200	50.0	02/21/17

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B170816 - SW-846 7471										
Blank (B170816-BLK1) Prepared: 02/21/17 Analyzed: 02/22/17										
Mercury	ND	0.025	µg/Wipe							
LCS (B170816-BS1) Prepared: 02/21/17 Analyzed: 02/22/17										
Mercury	0.996	0.062	µg/Wipe	1.25		79.7	73.7-126.3			
LCS Dup (B170816-BSD1) Prepared: 02/21/17 Analyzed: 02/22/17										
Mercury	1.06	0.062	µg/Wipe	1.25		84.6	73.7-126.3	5.98	30	
Batch B170817 - SW-846 3050B										
Blank (B170817-BLK1) Prepared: 02/21/17 Analyzed: 02/22/17										
Antimony	ND	2.5	µg/Wipe							
Arsenic	ND	2.5	µg/Wipe							
Beryllium	ND	2.5	µg/Wipe							
Cadmium	ND	2.5	µg/Wipe							
Chromium	ND	2.5	µg/Wipe							
Copper	ND	2.5	µg/Wipe							
Lead	ND	2.5	µg/Wipe							
Nickel	ND	2.5	µg/Wipe							
Selenium	ND	25	µg/Wipe							
Silver	ND	2.5	µg/Wipe							
Thallium	ND	2.5	µg/Wipe							
Zinc	83	2.5	µg/Wipe							B
LCS (B170817-BS1) Prepared: 02/21/17 Analyzed: 02/22/17										
Antimony	69.2	2.5	µg/Wipe	44.2		157	0-210.3			
Arsenic	30.0	2.5	µg/Wipe	28.6		105	77.8-122.1			
Beryllium	37.9	2.5	µg/Wipe	33.8		112	82.3-117.7			
Cadmium	41.2	2.5	µg/Wipe	39.0		106	81.9-118.2			
Chromium	33.1	2.5	µg/Wipe	32.6		101	78.7-120.6			
Copper	31.4	2.5	µg/Wipe	28.3		111	80.4-119.6			
Lead	43.2	2.5	µg/Wipe	42.9		101	80-111			
Nickel	31.9	2.5	µg/Wipe	30.7		104	82.2-117.8			
Selenium	43.7	25	µg/Wipe	39.5		111	77.1-122.3			
Silver	28.2	2.5	µg/Wipe	27.2		104	74.3-125.4			
Thallium	97.5	2.5	µg/Wipe	89.2		109	78.2-121.6			
Zinc	185	2.5	µg/Wipe	99.2		186 *	79.7-120.8			L-06, B
LCS Dup (B170817-BSD1) Prepared: 02/21/17 Analyzed: 02/22/17										
Antimony	74.9	2.5	µg/Wipe	46.1		163	0-210.3	7.96	30	
Arsenic	31.6	2.5	µg/Wipe	29.8		106	77.8-122.1	5.27	30	
Beryllium	39.4	2.5	µg/Wipe	35.3		112	82.3-117.7	3.70	30	
Cadmium	42.9	2.5	µg/Wipe	40.7		106	81.9-118.2	4.24	30	
Chromium	34.3	2.5	µg/Wipe	34.0		101	78.7-120.6	3.60	30	
Copper	34.7	2.5	µg/Wipe	29.5		118	80.4-119.6	10.1	30	
Lead	47.1	2.5	µg/Wipe	44.7		105	80-111	8.74	13.1	
Nickel	33.5	2.5	µg/Wipe	32.0		104	82.2-117.8	4.85	30	
Selenium	48.0	25	µg/Wipe	41.2		116	77.1-122.3	9.18	30	
Silver	29.3	2.5	µg/Wipe	28.3		103	74.3-125.4	3.91	30	
Thallium	101	2.5	µg/Wipe	93.0		109	78.2-121.6	3.42	30	
Zinc	205	2.5	µg/Wipe	103		198 *	79.7-120.8	10.2	30	L-06, B

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B170817 - SW-846 3050B

MRL Check (B170817-MRL1)

Prepared: 02/21/17 Analyzed: 02/22/17

Lead	2.80	2.5	µg/Wipe	2.50		112	80-120			
------	------	-----	---------	------	--	-----	--------	--	--	--

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit
DL	Method Detection Limit
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
B	Analyte is found in the associated blank as well as in the sample.
B-07	Data is not affected by elevated level in blank since sample result is >10x level found in the blank.
L-06	Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits. Reported value for this compound is likely to be biased on the high side.

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 6010C/D Modified in Wipe</i>	

Lead ME,AIHA,CT

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

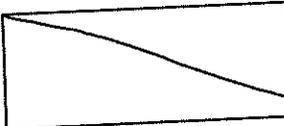
Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2005	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2017
CT	Connecticut Department of Public Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2017
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2018
RI	Rhode Island Department of Health	LAO00112	12/30/2017
NC	North Carolina Div. of Water Quality	652	12/31/2017
NJ	New Jersey DEP	MA007 NELAP	06/30/2017
FL	Florida Department of Health	E871027 NELAP	06/30/2017
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2017
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2017
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2017

39 Spruce St.
 East Longmeadow, MA. 01028
 P: 413-525-2332
 F: 413-525-6405
 www.contestlabs.com



Sample Receipt Checklist

CLIENT NAME: Ramboll Environ RECEIVED BY: EJB DATE: 2/17/17

- 1) Was the chain(s) of custody relinquished and signed? Yes No No COC Incl.
- 2) Does the chain agree with the samples? Yes No
- 3) Are all the samples in good condition? Yes No
- 4) How were the samples received:
 On Ice Direct from Sampling Ambient In Cooler(s)
 Were the samples received in Temperature Compliance of (2-6°C)? Yes No N/A
 Temperature °C by Temp blank _____ Temperature °C by Temp gun 3.2 °C #2
- 5) Are there Dissolved samples for the lab to filter? Yes No
- 6) Are there any RUSH or SHORT HOLDING TIME samples? Yes No
- 7) Location where samples are stored:  Permission to subcontract samples? Yes No
 (Walk-in clients only) if not already approved
 Client Signature: _____
- 8) Do all samples have the proper Acid pH: Yes No N/A
- 9) Do all samples have the proper Base pH: Yes No N/A
- 10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes N/A

Containers received at Con-Test

	# of containers		# of containers
1 Liter Amber		16 oz amber	
500 mL Amber		8 oz amber/clear jar	
250 mL Amber (8oz amber)		4 oz amber/clear jar	
1 Liter Plastic		2 oz amber/clear jar	2
500 mL Plastic		Plastic Bag / Ziploc	
250 mL plastic		SOC Kit	
40 mL Vial - type listed below		Perchlorate Kit	
Colisure / bacteria bottle		Flashpoint bottle	
Dissolved Oxygen bottle		Other glass jar	
Encore		Other	2

40 mL vials: # HCl _____ # Methanol _____
 # Bisulfate _____ # DI Water _____
 # Thiosulfate _____ Unpreserved _____
 Time and Date Frozen: _____

Page 2 of 2

Login Sample Receipt Checklist**(Rejection Criteria Listing - Using Sample Acceptance Policy)****Any False statement will be brought to the attention of Client**

<u>Question</u>	<u>Answer (True/False)</u>		<u>Comment</u>
	T/F/NA		
1) The cooler's custody seal, if present, is intact.	NA		
2) The cooler or samples do not appear to have been compromised or tampered with.	T		
3) Samples were received on ice.	T		
4) Cooler Temperature is acceptable.	T		
5) Cooler Temperature is recorded.	T		
6) COC is filled out in ink and legible.	T		
7) COC is filled out with all pertinent information.	T		
8) Field Sampler's name present on COC.	T		
9) There are no discrepancies between the sample IDs on the container and the COC.	T		
10) Samples are received within Holding Time.	T		
11) Sample containers have legible labels.	T		
12) Containers are not broken or leaking.	T		
13) Air Cassettes are not broken/open.	NA		
14) Sample collection date/times are provided.	F		No dates provided
15) Appropriate sample containers are used.	T		
16) Proper collection media used.	T		
17) No headspace sample bottles are completely filled.	NA		
18) There is sufficient volume for all requested analyses, including any requested MS/MSDs.	T		
19) Trip blanks provided if applicable.	NA		
20) VOA sample vials do not have head space or bubble is <6mm (1/4") in diameter.	NA		
21) Samples do not require splitting or compositing.	T		

Doc #277 Rev. 4 August 2013

Who notified of False statements?
Log-In Technician Initials: ESB

Date/Time:

Date/Time: 2/17/17 1610



EMSL Analytical, Inc.

200 Route 130 North, Cinnaminson, NJ 08077

Phone: (856) 303-2500 Fax: (856) 858-4571 Email: EnvChemistry2@emsl.com

Attn:

Dale Cross
Ramboll Environ US Corporation
100 Pearl Street
East Tower, Third Floor
Hartford, CT 06103

2/27/2017

Phone: (860) 503-1660
Fax: (860) 241-0620

The following analytical report covers the analysis performed on samples submitted to EMSL Analytical, Inc. on 2/17/2017. The results are tabulated on the attached data pages for the following client designated project:

36 Tamta Street, Plainville, MA

The reference number for these samples is EMSL Order #011701286. Please use this reference when calling about these samples. If you have any questions, please do not hesitate to contact me at (856) 303-2500.

Approved By:

Phillip Worby, Chemistry Laboratory Manager



The test results contained within this report meet the requirements of NELAP and/or the specific certification program that is applicable, unless otherwise noted.
NELAP Certifications: NJ 03036, NY 10872, PA 68-00367, CA ELAP 187

The samples associated with this report were received in good condition unless otherwise noted. This report relates only to those items tested as received by the laboratory. The QC data associated with the sample results meet the recovery and precision requirements established by the NELAP, unless specifically indicated. All results for soil samples are reported on a dry weight basis, unless otherwise noted. This report may not be reproduced except in full and without written approval by EMSL Analytical, Inc.

**EMSL Analytical, Inc.**

200 Route 130 North, Cinnaminson, NJ 08077

Phone/Fax: (856) 303-2500 / (856) 858-4571

<http://www.EMSL.com>EnvChemistry2@emsl.com

EMSL Order: 011701286

CustomerID: ENVR78

CustomerPO:

ProjectID:

Attn: **Dale Cross**
Ramboll Environ US Corporation
100 Pearl Street
East Tower, Third Floor
Hartford, CT 06103

Phone: (860) 503-1660
 Fax: (860) 241-0620
 Received: 02/17/17 9:20 AM

Project: 36 Tamta Street, Plainville, MA

Analytical Results

Client Sample Description SP-1 **Collected:** 2/16/2017 **Lab ID:** 0001

Method	Parameter	Result	RL	Units	Prep Date	Analyst	Analysis Date	Analyst
9014	Total Cyanide	ND	0.50	µg/100 cm ²	2/27/2017	MM	2/27/2017	MM

Client Sample Description SP-2 **Collected:** 2/16/2017 **Lab ID:** 0002

Method	Parameter	Result	RL	Units	Prep Date	Analyst	Analysis Date	Analyst
9014	Total Cyanide	2.4	0.50	µg/100 cm ²	2/27/2017	MM	2/27/2017	MM

Client Sample Description SP-3 **Collected:** 2/16/2017 **Lab ID:** 0003

Method	Parameter	Result	RL	Units	Prep Date	Analyst	Analysis Date	Analyst
9014	Total Cyanide	6.2	0.50	µg/100 cm ²	2/27/2017	MM	2/27/2017	MM

Client Sample Description SP-6 **Collected:** 2/16/2017 **Lab ID:** 0004

Method	Parameter	Result	RL	Units	Prep Date	Analyst	Analysis Date	Analyst
9014	Total Cyanide	140	2.5	µg/100 cm ²	2/27/2017	MM	2/27/2017	MM

Client Sample Description SP-7 **Collected:** 2/16/2017 **Lab ID:** 0005

Method	Parameter	Result	RL	Units	Prep Date	Analyst	Analysis Date	Analyst
9014	Total Cyanide	ND	0.50	µg/100 cm ²	2/27/2017	MM	2/27/2017	MM

Client Sample Description SP-8 **Collected:** 2/16/2017 **Lab ID:** 0006

Method	Parameter	Result	RL	Units	Prep Date	Analyst	Analysis Date	Analyst
9014	Total Cyanide	ND	0.50	µg/100 cm ²	2/27/2017	MM	2/27/2017	MM

Definitions:

ND - indicates that the analyte was not detected at the reporting limit

RL - Reporting Limit (Analytical)



EMSL Analytical, Inc.

200 Route 130 North, Cinnaminson, NJ 08077

Phone: (856) 303-2500 Fax: (856) 858-4571 Email: EnvChemistry2@emsl.com

Attn:

Dale Cross
Ramboll Environ US Corporation
100 Pearl Street
East Tower, Third Floor
Hartford, CT 06103

4/20/2017

Phone: (860) 503-1660
Fax: (860) 241-0620

The following analytical report covers the analysis performed on samples submitted to EMSL Analytical, Inc. on 4/18/2017. The results are tabulated on the attached data pages for the following client designated project:

36 Taunton St

The reference number for these samples is EMSL Order #011702919. Please use this reference when calling about these samples. If you have any questions, please do not hesitate to contact me at (856) 303-2500.

Approved By:

Phillip Worby, Environmental Chemistry
Laboratory Director



The test results contained within this report meet the requirements of NELAP and/or the specific certification program that is applicable, unless otherwise noted.
NELAP Certifications: NJ 03036, NY 10872, PA 68-00367, CA ELAP 1877

The samples associated with this report were received in good condition unless otherwise noted. This report relates only to those items tested as received by the laboratory. The QC data associated with the sample results meet the recovery and precision requirements established by the NELAP, unless specifically indicated. All results for soil samples are reported on a dry weight basis, unless otherwise noted. This report may not be reproduced except in full and without written approval by EMSL Analytical, Inc.

**EMSL Analytical, Inc.**

200 Route 130 North, Cinnaminson, NJ 08077

Phone/Fax: (856) 303-2500 / (856) 858-4571

<http://www.EMSL.com>EnvChemistry2@emsl.com

EMSL Order: 011702919

CustomerID: ENVR78

CustomerPO:

ProjectID:

Attn: **Dale Cross**
Ramboll Environ US Corporation
100 Pearl Street
East Tower, Third Floor
Hartford, CT 06103

Phone: (860) 503-1660
 Fax: (860) 241-0620
 Received: 04/18/17 9:10 AM

Project: 36 Taunton St

Analytical Results**Client Sample Description** SP-12**Collected:** 4/13/2017**Lab ID:** 011702919-0001

Method	Parameter	Result	RL	Units	Prep Date	Analyst	Analysis Date	Analyst
9014	Total Cyanide	ND	0.50	µg/100 cm ²	4/20/2017	XY	4/20/2017	XY

Wipes were not supplied by the client for QC samples. Aqueous QC samples were used and met control limits.

Definitions:

ND - indicates that the analyte was not detected at the reporting limit

RL - Reporting Limit (Analytical)

April 25, 2017

Dale Cross
Ramboll Environ US Corporation - Hartford, CT
100 Pearl Street, East Tower, Third Floor
Hartford, CT 06103

Project Location: 36 Taunton St.
Client Job Number:
Project Number: 08-2337AR
Laboratory Work Order Number: 17D0727

Enclosed are results of analyses for samples received by the laboratory on April 18, 2017. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Aaron L. Benoit", with a horizontal line extending to the right from the end of the signature.

Aaron L. Benoit
Project Manager

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Ramboll Environ US Corporation - Hartford, CT
 100 Pearl Street, East Tower, Third Floor
 Hartford, CT 06103
 ATTN: Dale Cross

REPORT DATE: 4/25/2017

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 08-2337AR

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 17D0727

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: 36 Taunton St.

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
SP-12	17D0727-01	Wipe		SW-846 6010C/D Modified SW-846 6010C-D SW-846 7471B	
RF-10-1	17D0727-02	Product/Solid		SW-846 8260C SW-846 9045C	

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SW-846 6010C-D**Qualifications:****B**

Analyte is found in the associated blank as well as in the sample.

Analyte & Samples(s) Qualified:**Zinc**

17D0727-01[SP-12], B174925-BLK1, B174925-BS1, B174925-BSD1

L-06

Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits. Reported value for this compound is likely to be biased on the high side.

Analyte & Samples(s) Qualified:**Zinc**

17D0727-01[SP-12], B174925-BS1, B174925-BSD1

SW-846 8260C**Qualifications:****L-04**

Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits. Reported value for this compound is likely to be biased on the low side.

Analyte & Samples(s) Qualified:**Chloromethane**

17D0727-01[SP-12], B174966-BLK1, B174966-BS1, B174966-BSD1

SW-846 9045C**Qualifications:****H-01**

Recommended sample holding time was exceeded, but analysis was performed before 2X the allowable holding time.

Analyte & Samples(s) Qualified:**pH**

17D0727-02[RF-10-1]

SW-846 6010C/D SW-846 6020A/B

For NC, Metals methods SW-846 6010D and SW-846 6020B are followed, and for all other states methods SW-846 6010C and SW-846 6020A are followed.

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington
Project Manager

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 36 Taunton St.

Sample Description:

Work Order: 17D0727

Date Received: 4/18/2017

Field Sample #: SP-12

Sampled: 4/18/2017 10:30

Sample ID: 17D0727-01

Sample Matrix: Wipe

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	11	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Acrylonitrile	ND	1.1	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.11	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Benzene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Bromobenzene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Bromochloromethane	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Bromodichloromethane	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Bromoform	ND	0.46	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Bromomethane	ND	1.1	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
2-Butanone (MEK)	ND	4.6	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
tert-Butyl Alcohol (TBA)	ND	4.6	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
n-Butylbenzene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
sec-Butylbenzene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
tert-Butylbenzene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.11	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Carbon Disulfide	ND	0.69	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Carbon Tetrachloride	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Chlorobenzene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Chlorodibromomethane	ND	0.11	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Chloroethane	ND	0.46	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Chloroform	ND	0.46	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Chloromethane	ND	0.46	mg/Kg	1	L-04	SW-846 8260C	4/20/17	4/22/17 2:29	EEH
2-Chlorotoluene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
4-Chlorotoluene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	1.1	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,2-Dibromoethane (EDB)	ND	0.11	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Dibromomethane	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,2-Dichlorobenzene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,3-Dichlorobenzene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,4-Dichlorobenzene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
trans-1,4-Dichloro-2-butene	ND	0.46	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Dichlorodifluoromethane (Freon 12)	ND	0.46	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,1-Dichloroethane	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,2-Dichloroethane	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,1-Dichloroethylene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
cis-1,2-Dichloroethylene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
trans-1,2-Dichloroethylene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,2-Dichloropropane	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,3-Dichloropropane	ND	0.11	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
2,2-Dichloropropane	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,1-Dichloropropene	ND	0.46	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
cis-1,3-Dichloropropene	ND	0.11	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
trans-1,3-Dichloropropene	ND	0.11	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Diethyl Ether	ND	0.46	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 36 Taunton St.

Sample Description:

Work Order: 17D0727

Date Received: 4/18/2017

Field Sample #: SP-12

Sampled: 4/18/2017 10:30

Sample ID: 17D0727-01

Sample Matrix: Wipe

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.11	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,4-Dioxane	ND	11	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Ethylbenzene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Hexachlorobutadiene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
2-Hexanone (MBK)	ND	2.3	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Isopropylbenzene (Cumene)	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
p-Isopropyltoluene (p-Cymene)	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Methyl Acetate	ND	2.3	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Methyl tert-Butyl Ether (MTBE)	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Methyl Cyclohexane	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Methylene Chloride	ND	1.1	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
4-Methyl-2-pentanone (MIBK)	ND	2.3	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Naphthalene	ND	1.1	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
n-Propylbenzene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Styrene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,1,1,2-Tetrachloroethane	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,1,2,2-Tetrachloroethane	ND	0.11	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Tetrachloroethylene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Tetrahydrofuran	ND	2.3	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Toluene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,2,3-Trichlorobenzene	ND	1.1	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,2,4-Trichlorobenzene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,3,5-Trichlorobenzene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,1,1-Trichloroethane	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,1,2-Trichloroethane	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Trichloroethylene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Trichlorofluoromethane (Freon 11)	ND	0.46	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,2,3-Trichloropropane	ND	0.46	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,2,4-Trimethylbenzene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
1,3,5-Trimethylbenzene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Vinyl Chloride	ND	0.46	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
m+p Xylene	ND	0.46	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
o-Xylene	ND	0.23	mg/Kg	1		SW-846 8260C	4/20/17	4/22/17 2:29	EEH
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
1,2-Dichloroethane-d4		102	70-130					4/22/17 2:29	
Toluene-d8		102	70-130					4/22/17 2:29	
4-Bromofluorobenzene		101	70-130					4/22/17 2:29	

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Project Location: 36 Taunton St.

Sample Description:

Work Order: 17D0727

Date Received: 4/18/2017

Field Sample #: SP-12

Sampled: 4/18/2017 10:30

Sample ID: 17D0727-01

Sample Matrix: Wipe

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	2.5	µg/Wipe	1		SW-846 6010C-D	4/20/17	4/20/17 20:46	SHN
Arsenic	ND	2.5	µg/Wipe	1		SW-846 6010C-D	4/20/17	4/20/17 20:46	SHN
Beryllium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	4/20/17	4/20/17 20:46	SHN
Cadmium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	4/20/17	4/20/17 20:46	SHN
Chromium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	4/20/17	4/20/17 20:46	SHN
Copper	ND	2.5	µg/Wipe	1		SW-846 6010C-D	4/20/17	4/20/17 20:46	SHN
Lead	<2.5	2.5	µg/Wipe	1		SW-846 6010C/D Modified	4/20/17	4/20/17 20:46	SHN
Mercury	ND	0.025	µg/Wipe	1		SW-846 7471B	4/20/17	4/21/17 12:43	TJK
Nickel	ND	2.5	µg/Wipe	1		SW-846 6010C-D	4/20/17	4/20/17 20:46	SHN
Selenium	ND	25	µg/Wipe	1		SW-846 6010C-D	4/20/17	4/20/17 20:46	SHN
Silver	ND	2.5	µg/Wipe	1		SW-846 6010C-D	4/20/17	4/20/17 20:46	SHN
Thallium	ND	2.5	µg/Wipe	1		SW-846 6010C-D	4/20/17	4/20/17 20:46	SHN
Zinc	65	2.5	µg/Wipe	1	B, L-06	SW-846 6010C-D	4/20/17	4/20/17 20:46	SHN

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Project Location: 36 Taunton St.

Sample Description:

Work Order: 17D0727

Date Received: 4/18/2017

Field Sample #: RF-10-1

Sampled: 4/18/2017 10:45

Sample ID: 17D0727-02

Sample Matrix: Product/Solid

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
pH @22.4°C	3.6		pH Units	1	H-01	SW-846 9045C	4/20/17	4/20/17 8:45	LL

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Sample Extraction Data

Prep Method: SW-846 3050B-SW-846 6010C/D Modified

Lab Number [Field ID]	Batch	Initial [Wipe]	Final [mL]	Date
17D0727-01 [SP-12]	B174925	1.00	50.0	04/20/17

Prep Method: SW-846 3050B-SW-846 6010C-D

Lab Number [Field ID]	Batch	Initial [Wipe]	Final [mL]	Date
17D0727-01 [SP-12]	B174925	1.00	50.0	04/20/17

Prep Method: SW-846 7471-SW-846 7471B

Lab Number [Field ID]	Batch	Initial [Wipe]	Final [mL]	Date
17D0727-01 [SP-12]	B174935	0.200	50.0	04/20/17

Prep Method: SW-846 5035-SW-846 8260C

Lab Number [Field ID]	Batch	Sample Amount(g)	Methanol Volume(mL)	Methanol Aliquot(mL)	Final Volume(mL)	Date
17D0727-01 [SP-12]	B174966	3.27	15.0	1	50	04/20/17

SW-846 9045C

Lab Number [Field ID]	Batch	Initial [g]	Date
17D0727-02 [RF-10-1]	B174933	20.0	04/20/17

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B174966 - SW-846 5035

Blank (B174966-BLK1)

Prepared: 04/20/17 Analyzed: 04/22/17

Acetone	ND	2.5	mg/Kg							
Acrylonitrile	ND	0.25	mg/Kg							
tert-Amyl Methyl Ether (TAME)	ND	0.025	mg/Kg							
Benzene	ND	0.050	mg/Kg							
Bromobenzene	ND	0.050	mg/Kg							
Bromochloromethane	ND	0.050	mg/Kg							
Bromodichloromethane	ND	0.050	mg/Kg							
Bromoform	ND	0.050	mg/Kg							
Bromomethane	ND	0.10	mg/Kg							
2-Butanone (MEK)	ND	1.0	mg/Kg							
tert-Butyl Alcohol (TBA)	ND	1.0	mg/Kg							
n-Butylbenzene	ND	0.050	mg/Kg							
sec-Butylbenzene	ND	0.050	mg/Kg							
tert-Butylbenzene	ND	0.050	mg/Kg							
tert-Butyl Ethyl Ether (TBEE)	ND	0.025	mg/Kg							
Carbon Disulfide	ND	0.15	mg/Kg							
Carbon Tetrachloride	ND	0.050	mg/Kg							
Chlorobenzene	ND	0.050	mg/Kg							
Chlorodibromomethane	ND	0.025	mg/Kg							
Chloroethane	ND	0.10	mg/Kg							
Chloroform	ND	0.10	mg/Kg							
Chloromethane	ND	0.10	mg/Kg							L-04
2-Chlorotoluene	ND	0.050	mg/Kg							
4-Chlorotoluene	ND	0.050	mg/Kg							
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.25	mg/Kg							
1,2-Dibromoethane (EDB)	ND	0.025	mg/Kg							
Dibromomethane	ND	0.050	mg/Kg							
1,2-Dichlorobenzene	ND	0.050	mg/Kg							
1,3-Dichlorobenzene	ND	0.050	mg/Kg							
1,4-Dichlorobenzene	ND	0.050	mg/Kg							
trans-1,4-Dichloro-2-butene	ND	0.10	mg/Kg							
Dichlorodifluoromethane (Freon 12)	ND	0.10	mg/Kg							
1,1-Dichloroethane	ND	0.050	mg/Kg							
1,2-Dichloroethane	ND	0.050	mg/Kg							
1,1-Dichloroethylene	ND	0.050	mg/Kg							
cis-1,2-Dichloroethylene	ND	0.050	mg/Kg							
trans-1,2-Dichloroethylene	ND	0.050	mg/Kg							
1,2-Dichloropropane	ND	0.050	mg/Kg							
1,3-Dichloropropane	ND	0.025	mg/Kg							
2,2-Dichloropropane	ND	0.050	mg/Kg							
1,1-Dichloropropene	ND	0.10	mg/Kg							
cis-1,3-Dichloropropene	ND	0.025	mg/Kg							
trans-1,3-Dichloropropene	ND	0.025	mg/Kg							
Diethyl Ether	ND	0.10	mg/Kg							
Diisopropyl Ether (DIPE)	ND	0.025	mg/Kg							
1,4-Dioxane	ND	2.5	mg/Kg							
Ethylbenzene	ND	0.050	mg/Kg							
Hexachlorobutadiene	ND	0.050	mg/Kg							
2-Hexanone (MBK)	ND	0.50	mg/Kg							
Isopropylbenzene (Cumene)	ND	0.050	mg/Kg							
p-Isopropyltoluene (p-Cymene)	ND	0.050	mg/Kg							
Methyl Acetate	ND	0.50	mg/Kg							

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B174966 - SW-846 5035

Blank (B174966-BLK1)

Prepared: 04/20/17 Analyzed: 04/22/17

Methyl tert-Butyl Ether (MTBE)	ND	0.050	mg/Kg							
Methyl Cyclohexane	ND	0.050	mg/Kg							
Methylene Chloride	ND	0.25	mg/Kg							
4-Methyl-2-pentanone (MIBK)	ND	0.50	mg/Kg							
Naphthalene	ND	0.10	mg/Kg							
n-Propylbenzene	ND	0.050	mg/Kg							
Styrene	ND	0.050	mg/Kg							
1,1,1,2-Tetrachloroethane	ND	0.050	mg/Kg							
1,1,2,2-Tetrachloroethane	ND	0.025	mg/Kg							
Tetrachloroethylene	ND	0.050	mg/Kg							
Tetrahydrofuran	ND	0.50	mg/Kg							
Toluene	ND	0.050	mg/Kg							
1,2,3-Trichlorobenzene	ND	0.25	mg/Kg							
1,2,4-Trichlorobenzene	ND	0.050	mg/Kg							
1,3,5-Trichlorobenzene	ND	0.050	mg/Kg							
1,1,1-Trichloroethane	ND	0.050	mg/Kg							
1,1,2-Trichloroethane	ND	0.050	mg/Kg							
Trichloroethylene	ND	0.050	mg/Kg							
Trichlorofluoromethane (Freon 11)	ND	0.10	mg/Kg							
1,2,3-Trichloropropane	ND	0.10	mg/Kg							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.050	mg/Kg							
1,2,4-Trimethylbenzene	ND	0.050	mg/Kg							
1,3,5-Trimethylbenzene	ND	0.050	mg/Kg							
Vinyl Chloride	ND	0.10	mg/Kg							
m+p Xylene	ND	0.10	mg/Kg							
o-Xylene	ND	0.050	mg/Kg							
Surrogate: 1,2-Dichloroethane-d4	0.0250		mg/Kg	0.0250		99.8	70-130			
Surrogate: Toluene-d8	0.0245		mg/Kg	0.0250		98.1	70-130			
Surrogate: 4-Bromofluorobenzene	0.0247		mg/Kg	0.0250		98.7	70-130			

LCS (B174966-BS1)

Prepared: 04/20/17 Analyzed: 04/22/17

Acetone	0.115	0.057	mg/Kg	0.113		102	70-160			†
Acrylonitrile	0.0106	0.0057	mg/Kg	0.0113		93.5	70-130			
tert-Amyl Methyl Ether (TAME)	0.0101	0.00057	mg/Kg	0.0113		89.5	70-130			
Benzene	0.0103	0.0011	mg/Kg	0.0113		90.8	70-130			
Bromobenzene	0.0106	0.0011	mg/Kg	0.0113		93.6	70-130			
Bromochloromethane	0.0107	0.0011	mg/Kg	0.0113		94.3	70-130			
Bromodichloromethane	0.0106	0.0011	mg/Kg	0.0113		93.1	70-130			
Bromoform	0.0104	0.0011	mg/Kg	0.0113		92.2	70-130			
Bromomethane	0.00536	0.0023	mg/Kg	0.0113		47.3	40-130			†
2-Butanone (MEK)	0.104	0.023	mg/Kg	0.113		92.0	70-160			†
tert-Butyl Alcohol (TBA)	0.0938	0.023	mg/Kg	0.113		82.8	40-130			†
n-Butylbenzene	0.0118	0.0011	mg/Kg	0.0113		104	70-130			
sec-Butylbenzene	0.0112	0.0011	mg/Kg	0.0113		98.7	70-130			
tert-Butylbenzene	0.0110	0.0011	mg/Kg	0.0113		96.9	70-160			†
tert-Butyl Ethyl Ether (TBEE)	0.0104	0.00057	mg/Kg	0.0113		92.0	70-130			
Carbon Disulfide	0.0136	0.0034	mg/Kg	0.0113		120	70-130			
Carbon Tetrachloride	0.0109	0.0011	mg/Kg	0.0113		96.0	70-130			
Chlorobenzene	0.0106	0.0011	mg/Kg	0.0113		93.3	70-130			
Chlorodibromomethane	0.0105	0.00057	mg/Kg	0.0113		92.5	70-130			
Chloroethane	0.0103	0.0023	mg/Kg	0.0113		91.1	70-130			
Chloroform	0.0107	0.0023	mg/Kg	0.0113		94.5	70-130			

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B174966 - SW-846 5035										
LCS (B174966-BS1)										
					Prepared: 04/20/17 Analyzed: 04/22/17					
Chloromethane	0.00570	0.0023	mg/Kg	0.0113		50.3	* 70-130			L-04
2-Chlorotoluene	0.00923	0.0011	mg/Kg	0.0113		81.4	70-130			
4-Chlorotoluene	0.0104	0.0011	mg/Kg	0.0113		92.2	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	0.0129	0.0057	mg/Kg	0.0113		114	70-130			
1,2-Dibromoethane (EDB)	0.0106	0.00057	mg/Kg	0.0113		93.7	70-130			
Dibromomethane	0.0105	0.0011	mg/Kg	0.0113		92.9	70-130			
1,2-Dichlorobenzene	0.0107	0.0011	mg/Kg	0.0113		94.4	70-130			
1,3-Dichlorobenzene	0.0108	0.0011	mg/Kg	0.0113		95.2	70-130			
1,4-Dichlorobenzene	0.0101	0.0011	mg/Kg	0.0113		89.4	70-130			
trans-1,4-Dichloro-2-butene	0.0112	0.0023	mg/Kg	0.0113		99.2	70-130			
Dichlorodifluoromethane (Freon 12)	0.00721	0.0023	mg/Kg	0.0113		63.6	40-160			†
1,1-Dichloroethane	0.0114	0.0011	mg/Kg	0.0113		101	70-130			
1,2-Dichloroethane	0.0100	0.0011	mg/Kg	0.0113		88.6	70-130			
1,1-Dichloroethylene	0.0103	0.0011	mg/Kg	0.0113		90.9	70-130			
cis-1,2-Dichloroethylene	0.0105	0.0011	mg/Kg	0.0113		92.6	70-130			
trans-1,2-Dichloroethylene	0.0106	0.0011	mg/Kg	0.0113		93.8	70-130			
1,2-Dichloropropane	0.00964	0.0011	mg/Kg	0.0113		85.1	70-130			
1,3-Dichloropropane	0.00970	0.00057	mg/Kg	0.0113		85.6	70-130			
2,2-Dichloropropane	0.0107	0.0011	mg/Kg	0.0113		94.1	70-130			
1,1-Dichloropropene	0.0107	0.0023	mg/Kg	0.0113		94.2	70-130			
cis-1,3-Dichloropropene	0.00980	0.00057	mg/Kg	0.0113		86.5	70-130			
trans-1,3-Dichloropropene	0.0117	0.00057	mg/Kg	0.0113		103	70-130			
Diethyl Ether	0.0101	0.0023	mg/Kg	0.0113		89.3	70-130			
Diisopropyl Ether (DIPE)	0.0108	0.00057	mg/Kg	0.0113		95.1	70-130			
1,4-Dioxane	0.140	0.057	mg/Kg	0.113		123	40-160			†
Ethylbenzene	0.0108	0.0011	mg/Kg	0.0113		95.4	70-130			
Hexachlorobutadiene	0.0119	0.0011	mg/Kg	0.0113		105	70-160			†
2-Hexanone (MBK)	0.107	0.011	mg/Kg	0.113		94.8	70-160			†
Isopropylbenzene (Cumene)	0.0114	0.0011	mg/Kg	0.0113		100	70-130			
p-Isopropyltoluene (p-Cymene)	0.0114	0.0011	mg/Kg	0.0113		100	70-130			
Methyl Acetate	0.00754	0.011	mg/Kg	0.0113		66.5	60-130			
Methyl tert-Butyl Ether (MTBE)	0.0108	0.0011	mg/Kg	0.0113		95.4	70-130			
Methyl Cyclohexane	0.0106	0.0011	mg/Kg	0.0113		93.5	70-130			
Methylene Chloride	0.0110	0.0057	mg/Kg	0.0113		97.5	40-160			†
4-Methyl-2-pentanone (MIBK)	0.104	0.011	mg/Kg	0.113		91.6	70-160			†
Naphthalene	0.0110	0.0023	mg/Kg	0.0113		97.2	40-130			†
n-Propylbenzene	0.0110	0.0011	mg/Kg	0.0113		96.9	70-130			
Styrene	0.0106	0.0011	mg/Kg	0.0113		93.1	70-130			
1,1,1,2-Tetrachloroethane	0.0109	0.0011	mg/Kg	0.0113		95.8	70-130			
1,1,1,2,2-Tetrachloroethane	0.0109	0.00057	mg/Kg	0.0113		96.3	70-130			
Tetrachloroethylene	0.0110	0.0011	mg/Kg	0.0113		97.3	70-130			
Tetrahydrofuran	0.0108	0.011	mg/Kg	0.0113		95.5	70-130			
Toluene	0.0106	0.0011	mg/Kg	0.0113		93.6	70-130			
1,2,3-Trichlorobenzene	0.0122	0.0057	mg/Kg	0.0113		108	70-130			
1,2,4-Trichlorobenzene	0.0110	0.0011	mg/Kg	0.0113		96.9	70-130			
1,3,5-Trichlorobenzene	0.0114	0.0011	mg/Kg	0.0113		101	70-130			
1,1,1-Trichloroethane	0.0109	0.0011	mg/Kg	0.0113		96.6	70-130			
1,1,2-Trichloroethane	0.0108	0.0011	mg/Kg	0.0113		95.0	70-130			
Trichloroethylene	0.0108	0.0011	mg/Kg	0.0113		94.9	70-130			
Trichlorofluoromethane (Freon 11)	0.0101	0.0023	mg/Kg	0.0113		88.9	70-130			
1,2,3-Trichloropropane	0.0106	0.0023	mg/Kg	0.0113		93.7	70-130			

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B174966 - SW-846 5035

LCS (B174966-BS1)

Prepared: 04/20/17 Analyzed: 04/22/17

1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	0.00984	0.0011	mg/Kg	0.0113		86.8	70-130			
1,2,4-Trimethylbenzene	0.0104	0.0011	mg/Kg	0.0113		92.2	70-130			
1,3,5-Trimethylbenzene	0.0107	0.0011	mg/Kg	0.0113		94.6	70-130			
Vinyl Chloride	0.00962	0.0023	mg/Kg	0.0113		84.9	40-130			†
m+p Xylene	0.0215	0.0023	mg/Kg	0.0227		95.0	70-130			
o-Xylene	0.0107	0.0011	mg/Kg	0.0113		94.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0290		mg/Kg	0.0283		102	70-130			
Surrogate: Toluene-d8	0.0281		mg/Kg	0.0283		99.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.0286		mg/Kg	0.0283		101	70-130			

LCS Dup (B174966-BSD1)

Prepared: 04/20/17 Analyzed: 04/22/17

Acetone	0.109	0.057	mg/Kg	0.113		96.6	70-160	5.13	25	†
Acrylonitrile	0.0104	0.0057	mg/Kg	0.0113		91.5	70-130	2.16	25	
tert-Amyl Methyl Ether (TAME)	0.00929	0.00057	mg/Kg	0.0113		82.0	70-130	8.75	25	
Benzene	0.0101	0.0011	mg/Kg	0.0113		89.5	70-130	1.44	25	
Bromobenzene	0.0108	0.0011	mg/Kg	0.0113		95.3	70-130	1.80	25	
Bromochloromethane	0.0103	0.0011	mg/Kg	0.0113		90.7	70-130	3.89	25	
Bromodichloromethane	0.0105	0.0011	mg/Kg	0.0113		92.8	70-130	0.323	25	
Bromoform	0.0107	0.0011	mg/Kg	0.0113		94.6	70-130	2.57	25	
Bromomethane	0.00589	0.0023	mg/Kg	0.0113		52.0	40-130	9.47	25	†
2-Butanone (MEK)	0.0947	0.023	mg/Kg	0.113		83.6	70-160	9.56	25	†
tert-Butyl Alcohol (TBA)	0.0881	0.023	mg/Kg	0.113		77.8	40-130	6.24	25	†
n-Butylbenzene	0.0119	0.0011	mg/Kg	0.0113		105	70-130	1.05	25	
sec-Butylbenzene	0.0113	0.0011	mg/Kg	0.0113		99.5	70-130	0.807	25	
tert-Butylbenzene	0.0108	0.0011	mg/Kg	0.0113		95.2	70-160	1.77	25	†
tert-Butyl Ethyl Ether (TBEE)	0.00989	0.00057	mg/Kg	0.0113		87.3	70-130	5.24	25	
Carbon Disulfide	0.0132	0.0034	mg/Kg	0.0113		117	70-130	3.12	25	
Carbon Tetrachloride	0.0107	0.0011	mg/Kg	0.0113		94.6	70-130	1.47	25	
Chlorobenzene	0.0105	0.0011	mg/Kg	0.0113		92.4	70-130	0.969	25	
Chlorodibromomethane	0.0103	0.00057	mg/Kg	0.0113		90.8	70-130	1.85	25	
Chloroethane	0.00964	0.0023	mg/Kg	0.0113		85.1	70-130	6.81	25	
Chloroform	0.0103	0.0023	mg/Kg	0.0113		90.6	70-130	4.21	25	
Chloromethane	0.00619	0.0023	mg/Kg	0.0113		54.6 *	70-130	8.20	25	L-04
2-Chlorotoluene	0.00937	0.0011	mg/Kg	0.0113		82.7	70-130	1.58	25	
4-Chlorotoluene	0.0105	0.0011	mg/Kg	0.0113		92.6	70-130	0.433	25	
1,2-Dibromo-3-chloropropane (DBCP)	0.0124	0.0057	mg/Kg	0.0113		109	70-130	3.95	25	
1,2-Dibromoethane (EDB)	0.0103	0.00057	mg/Kg	0.0113		91.3	70-130	2.59	25	
Dibromomethane	0.0108	0.0011	mg/Kg	0.0113		95.0	70-130	2.24	25	
1,2-Dichlorobenzene	0.0108	0.0011	mg/Kg	0.0113		95.4	70-130	1.05	25	
1,3-Dichlorobenzene	0.0107	0.0011	mg/Kg	0.0113		94.8	70-130	0.421	25	
1,4-Dichlorobenzene	0.0102	0.0011	mg/Kg	0.0113		90.1	70-130	0.780	25	
trans-1,4-Dichloro-2-butene	0.0115	0.0023	mg/Kg	0.0113		102	70-130	2.39	25	
Dichlorodifluoromethane (Freon 12)	0.00703	0.0023	mg/Kg	0.0113		62.0	40-160	2.55	25	†
1,1-Dichloroethane	0.0110	0.0011	mg/Kg	0.0113		97.1	70-130	3.74	25	
1,2-Dichloroethane	0.00981	0.0011	mg/Kg	0.0113		86.6	70-130	2.28	25	
1,1-Dichloroethylene	0.00992	0.0011	mg/Kg	0.0113		87.5	70-130	3.81	25	
cis-1,2-Dichloroethylene	0.0101	0.0011	mg/Kg	0.0113		89.1	70-130	3.85	25	
trans-1,2-Dichloroethylene	0.0101	0.0011	mg/Kg	0.0113		89.0	70-130	5.25	25	
1,2-Dichloropropane	0.00967	0.0011	mg/Kg	0.0113		85.3	70-130	0.235	25	
1,3-Dichloropropane	0.00984	0.00057	mg/Kg	0.0113		86.8	70-130	1.39	25	
2,2-Dichloropropane	0.0102	0.0011	mg/Kg	0.0113		90.4	70-130	4.01	25	
1,1-Dichloropropene	0.0101	0.0023	mg/Kg	0.0113		89.5	70-130	5.12	25	

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B174966 - SW-846 5035										
LCS Dup (B174966-BSD1)										
					Prepared: 04/20/17 Analyzed: 04/22/17					
cis-1,3-Dichloropropene	0.00950	0.00057	mg/Kg	0.0113		83.8	70-130	3.17	25	
trans-1,3-Dichloropropene	0.0115	0.00057	mg/Kg	0.0113		102	70-130	1.46	25	
Diethyl Ether	0.00997	0.0023	mg/Kg	0.0113		88.0	70-130	1.47	25	
Diisopropyl Ether (DIPE)	0.0100	0.00057	mg/Kg	0.0113		88.3	70-130	7.42	25	
1,4-Dioxane	0.128	0.057	mg/Kg	0.113		113	40-160	8.33	50	† ‡
Ethylbenzene	0.0109	0.0011	mg/Kg	0.0113		96.4	70-130	1.04	25	
Hexachlorobutadiene	0.0123	0.0011	mg/Kg	0.0113		109	70-160	2.99	25	
2-Hexanone (MBK)	0.101	0.011	mg/Kg	0.113		88.8	70-160	6.51	25	†
Isopropylbenzene (Cumene)	0.0113	0.0011	mg/Kg	0.0113		100	70-130	0.499	25	
p-Isopropyltoluene (p-Cymene)	0.0110	0.0011	mg/Kg	0.0113		97.4	70-130	2.83	25	
Methyl Acetate	0.00704	0.011	mg/Kg	0.0113		62.1	60-130	6.84	25	
Methyl tert-Butyl Ether (MTBE)	0.0103	0.0011	mg/Kg	0.0113		90.7	70-130	5.05	25	
Methyl Cyclohexane	0.0107	0.0011	mg/Kg	0.0113		94.1	70-130	0.640	25	
Methylene Chloride	0.0109	0.0057	mg/Kg	0.0113		96.6	40-160	0.927	25	†
4-Methyl-2-pentanone (MIBK)	0.101	0.011	mg/Kg	0.113		88.9	70-160	3.01	25	†
Naphthalene	0.0104	0.0023	mg/Kg	0.0113		92.2	40-130	5.28	25	†
n-Propylbenzene	0.0110	0.0011	mg/Kg	0.0113		97.4	70-130	0.515	25	
Styrene	0.0107	0.0011	mg/Kg	0.0113		94.6	70-130	1.60	25	
1,1,1,2-Tetrachloroethane	0.0109	0.0011	mg/Kg	0.0113		96.6	70-130	0.832	25	
1,1,2,2-Tetrachloroethane	0.0110	0.00057	mg/Kg	0.0113		97.1	70-130	0.827	25	
Tetrachloroethylene	0.0110	0.0011	mg/Kg	0.0113		97.2	70-130	0.103	25	
Tetrahydrofuran	0.0104	0.011	mg/Kg	0.0113		91.6	70-130	4.17	25	
Toluene	0.0105	0.0011	mg/Kg	0.0113		92.7	70-130	0.966	25	
1,2,3-Trichlorobenzene	0.0113	0.0057	mg/Kg	0.0113		100	70-130	7.32	25	
1,2,4-Trichlorobenzene	0.0109	0.0011	mg/Kg	0.0113		96.3	70-130	0.621	25	
1,3,5-Trichlorobenzene	0.0115	0.0011	mg/Kg	0.0113		102	70-130	0.989	25	
1,1,1-Trichloroethane	0.0107	0.0011	mg/Kg	0.0113		94.7	70-130	1.99	25	
1,1,2-Trichloroethane	0.0105	0.0011	mg/Kg	0.0113		92.5	70-130	2.67	25	
Trichloroethylene	0.0108	0.0011	mg/Kg	0.0113		95.5	70-130	0.630	25	
Trichlorofluoromethane (Freon 11)	0.00963	0.0023	mg/Kg	0.0113		85.0	70-130	4.49	25	
1,2,3-Trichloropropane	0.0106	0.0023	mg/Kg	0.0113		93.3	70-130	0.428	25	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	0.00947	0.0011	mg/Kg	0.0113		83.6	70-130	3.76	25	
1,2,4-Trimethylbenzene	0.0103	0.0011	mg/Kg	0.0113		91.0	70-130	1.31	25	
1,3,5-Trimethylbenzene	0.0110	0.0011	mg/Kg	0.0113		96.8	70-130	2.30	25	
Vinyl Chloride	0.00966	0.0023	mg/Kg	0.0113		85.2	40-130	0.353	25	†
m+p Xylene	0.0215	0.0023	mg/Kg	0.0227		94.8	70-130	0.158	25	
o-Xylene	0.0109	0.0011	mg/Kg	0.0113		96.2	70-130	1.47	25	
Surrogate: 1,2-Dichloroethane-d4	0.0285		mg/Kg	0.0283		101	70-130			
Surrogate: Toluene-d8	0.0287		mg/Kg	0.0283		101	70-130			
Surrogate: 4-Bromofluorobenzene	0.0290		mg/Kg	0.0283		102	70-130			

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B174925 - SW-846 3050B										
Blank (B174925-BLK1)										
Prepared & Analyzed: 04/20/17										
Antimony	ND	2.5	µg/Wipe							
Arsenic	ND	2.5	µg/Wipe							
Beryllium	ND	2.5	µg/Wipe							
Cadmium	ND	2.5	µg/Wipe							
Chromium	ND	2.5	µg/Wipe							
Copper	ND	2.5	µg/Wipe							
Lead	ND	2.5	µg/Wipe							
Nickel	ND	2.5	µg/Wipe							
Selenium	ND	25	µg/Wipe							
Silver	ND	2.5	µg/Wipe							
Thallium	ND	2.5	µg/Wipe							
Zinc	82	2.5	µg/Wipe							B
LCS (B174925-BS1)										
Prepared & Analyzed: 04/20/17										
Antimony	63.2	2.5	µg/Wipe	43.1		147	0-210.3			
Arsenic	28.5	2.5	µg/Wipe	27.8		102	77.8-122.1			
Beryllium	31.9	2.5	µg/Wipe	33.0		96.7	82.3-117.7			
Cadmium	36.0	2.5	µg/Wipe	38.0		94.9	81.9-118.2			
Chromium	30.2	2.5	µg/Wipe	31.7		95.3	78.7-120.6			
Copper	30.5	2.5	µg/Wipe	27.5		111	80.4-119.6			
Lead	39.5	2.5	µg/Wipe	41.8		94.5	80-111			
Nickel	29.3	2.5	µg/Wipe	29.9		97.8	82.2-117.8			
Selenium	39.1	25	µg/Wipe	38.5		102	77.1-122.3			
Silver	24.7	2.5	µg/Wipe	26.5		93.2	74.3-125.4			
Thallium	84.8	2.5	µg/Wipe	86.9		97.6	78.2-121.6			
Zinc	164	2.5	µg/Wipe	96.7		170	* 79.7-120.8			L-06, B
LCS Dup (B174925-BSD1)										
Prepared & Analyzed: 04/20/17										
Antimony	63.2	2.5	µg/Wipe	44.0		144	0-210.3	0.0510	30	
Arsenic	28.7	2.5	µg/Wipe	28.4		101	77.8-122.1	0.556	30	
Beryllium	34.4	2.5	µg/Wipe	33.6		102	82.3-117.7	7.61	30	
Cadmium	37.7	2.5	µg/Wipe	38.8		97.4	81.9-118.2	4.64	30	
Chromium	30.6	2.5	µg/Wipe	32.4		94.4	78.7-120.6	1.04	30	
Copper	30.8	2.5	µg/Wipe	28.1		109	80.4-119.6	0.754	30	
Lead	38.2	2.5	µg/Wipe	42.7		89.5	80-111	3.39	13.1	
Nickel	29.4	2.5	µg/Wipe	30.5		96.3	82.2-117.8	0.479	30	
Selenium	38.6	25	µg/Wipe	39.3		98.2	77.1-122.3	1.40	30	
Silver	25.6	2.5	µg/Wipe	27.0		94.8	74.3-125.4	3.79	30	
Thallium	88.3	2.5	µg/Wipe	88.7		99.5	78.2-121.6	4.00	30	
Zinc	165	2.5	µg/Wipe	98.7		167	* 79.7-120.8	0.562	30	L-06, B
MRL Check (B174925-MRL1)										
Prepared & Analyzed: 04/20/17										
Lead	2.24	2.5	µg/Wipe	2.50		89.5	80-120			

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B174935 - SW-846 7471										
Blank (B174935-BLK1)										
					Prepared: 04/20/17 Analyzed: 04/21/17					
Mercury	ND	0.025	µg/Wipe							
LCS (B174935-BS1)										
					Prepared: 04/20/17 Analyzed: 04/21/17					
Mercury	0.227	0.012	µg/Wipe	0.250		90.8	73.7-126.3			
LCS Dup (B174935-BSD1)										
					Prepared: 04/20/17 Analyzed: 04/21/17					
Mercury	0.219	0.012	µg/Wipe	0.250		87.4	73.7-126.3	3.83	30	

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QUALITY CONTROL

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B174933 - SW-846 9045C

LCS (B174933-BS1)

Prepared & Analyzed: 04/20/17

pH	6.02		pH Units	6.00		100	98.4-110			
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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit
DL	Method Detection Limit
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
B	Analyte is found in the associated blank as well as in the sample.
H-01	Recommended sample holding time was exceeded, but analysis was performed before 2X the allowable holding time.
L-04	Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits. Reported value for this compound is likely to be biased on the low side.
L-06	Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits. Reported value for this compound is likely to be biased on the high side.

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 6010C/D Modified in Wipe</i>	

Lead ME,AIHA,CT

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2005	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2017
CT	Connecticut Department of Public Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2018
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2018
RI	Rhode Island Department of Health	LAO00112	12/30/2017
NC	North Carolina Div. of Water Quality	652	12/31/2017
NJ	New Jersey DEP	MA007 NELAP	06/30/2017
FL	Florida Department of Health	E871027 NELAP	06/30/2017
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2017
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2017
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2017

39 Spruce St.
 East Longmeadow, MA. 01028
 P: 413-525-2332
 F: 413-525-6405
 www.contestlabs.com



Sample Receipt Checklist

CLIENT NAME: Bamboll Env. RECEIVED BY: JM DATE: 4/18/17

- 1) Was the chain(s) of custody relinquished and signed? Yes No No COC Incl.
- 2) Does the chain agree with the samples? Yes No
 If not, explain: _____
- 3) Are all the samples in good condition? Yes No
 If not, explain: _____

4) How were the samples received:
 On Ice Direct from Sampling _____ Ambient _____ In Cooler(s)
 Were the samples received in Temperature Compliance of (2-6°C)? Yes No N/A
 Temperature °C by Temp blank _____ # _____ Temperature °C by Temp gun 3.6 # 7

- 5) Are there Dissolved samples for the lab to filter? Yes No
 Who was notified _____ Date _____ Time _____
- 6) Are there any RUSH or SHORT HOLDING TIME samples? Yes No
 Who was notified David Date 4/18/17 Time 1800

7) Location where samples are stored: Login
 Permission to subcontract samples? Yes No
 (Walk-in clients only) if not already approved
 Client Signature: _____

- 8) Do all samples have the proper Acid pH: Yes No N/A
- 9) Do all samples have the proper Base pH: Yes No N/A
- 10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes N/A

Containers received at Con-Test

	# of containers			# of containers
1 Liter Amber			16 oz amber	
500 mL Amber			8 oz amber/clear jar	
250 mL Amber (8oz amber)			4 oz amber/clear jar	1
1 Liter Plastic			2 oz amber/clear jar	1
500 mL Plastic			Plastic Bag / Ziploc	
250 mL plastic			SOC Kit	
40 mL Vial - type listed below			Perchlorate Kit	
Colisure / bacteria bottle			Flashpoint bottle	
Dissolved Oxygen bottle			Other glass jar	
Encore			Other	2

40 mL vials: # HCl _____ # Methanol _____	Time and Date Frozen:
Doc# 277 # Bisulfate _____ # DI Water _____	
Rev. 4 August 2013 # Thiosulfate _____ Unpreserved _____	

Login Sample Receipt Checklist

(Rejection Criteria Listing - Using Sample Acceptance Policy)

Any False statement will be brought to the attention of Client

<u>Question</u>	<u>Answer (True/False)</u>		<u>Comment</u>
	T	F/NA	
1) The cooler's custody seal, if present, is intact.		N/A	
2) The cooler or samples do not appear to have been compromised or tampered with.	T		
3) Samples were received on ice.	T		
4) Cooler Temperature is acceptable.	T		
5) Cooler Temperature is recorded.	T		
6) COC is filled out in ink and legible.	T		
7) COC is filled out with all pertinent information.	T		
8) Field Sampler's name present on COC.	T		
9) There are no discrepancies between the sample IDs on the container and the COC.	T		
10) Samples are received within Holding Time.	T		
11) Sample containers have legible labels.	T		
12) Containers are not broken or leaking.	T		
13) Air Cassettes are not broken/open.		N/A	
14) Sample collection date/times are provided.	T		
15) Appropriate sample containers are used.	T		
16) Proper collection media used.	T		
17) No headspace sample bottles are completely filled.		N/A	
18) There is sufficient volume for all requested analyses, including any requested MS/MSDs.	T		
19) Trip blanks provided if applicable.		N/A	
20) VOA sample vials do not have head space or bubble is <6mm (1/4") in diameter.		N/A	
21) Samples do not require splitting or compositing.	T		

Doc #277 Rev. 4 August 2013

Who notified of False statements?

Log-In Technician Initials:

JM

Date/Time:

Date/Time:

4/18/17
1745

Attachment 5: BASF Preapproved Disposal and Recycling Facilities

Hazardous Waste Disposal:

See attached "BASF Approved Facility List – US (2016 Update)"

Other Non-Hazardous Wastes:

Provided below is a list of facilities previously utilized for BASF Plainville, MA facility. Use of these facilities is not mandatory, and is provided for informational purposes only. BASF must pre-approve all disposal facilities prior to shipment of waste for offsite disposal.

Disposal of Non Hazardous Waste (General):

Waste Management Turnkey Landfill
90 Rochester Neck Rd.
Rochester, NH 03839

Disposal of Asbestos Containing Waste:

Waste Management Turnkey Landfill
90 Rochester Neck Rd.
Rochester, NH 03839

Waste Management Crossroads Landfill
357 Mercer Rd.
Norridgewock, ME 04957

Disposal of Construction/Demolition Debris:

Barry Brothers Disposal
Newton, MA

Disposal of Universal and Electronic Waste (bulbs, batteries, ballasts, etc):

AERC Recycling Solutions Inc.
2591 Mitchell Avenue
Allentown, PA 18103

Disposal of Scrap Metal:

Allied Recycling
Walpole, MA

Attachment 6: Acknowledgement of Inquiry

ACKNOWLEDGEMENT OF INQUIRY

Date:

BASF Corporation
100 Park Avenue
Florham Park, NJ 07932
Attention: William B. Barelski

To whom it may concern:

We, _____ (Company Name), acknowledge receipt of your **Inquiry**:
_____ on _____, and expect to take the following action:

_____ We will submit our quotation by your required date of _____.

_____ We are unable to submit our quotation by the date you require. We can quote, however,
no later than _____. Please advise us if this is acceptable.

_____ We are unable to quote your requirements in this instance because

Please List the individuals attending the bid walk. Individuals should come prepared with proper
PPE including but not limited to closed toe shoes, hard hats and safety glasses.

Very truly yours,

Company: _____

Phone: _____

By: _____

ONE OF THE REQUIREMENTS FOR YOUR BID BEING ACCEPTED IS THE COMPLETION AND RETURN
OF THIS FORM UPON RECEIPT OF REQUEST FOR QUOTATION VIA E-Mail at:
william.barelski@basf.com

Attachment 7: Contractor Pre-Qualification Safety Questionnaire

Contractor Pre-Qualification Safety Questionnaire

Contractor is requested to provide the information provided below, and to verify it is a member in good standing of the BASF-approved Avetta (formerly Pacific Industrial Classification System [PICS]) health and safety program, by providing its Avetta (PICs) ID Number: _____

I. Contractor Information

Contractor Name _____
Street Address _____
City, State, Zip Code _____
Telephone _____ Fax _____
Date Completed _____

II. Workers Compensation Insurance Information

Please obtain from your Insurance Agent or State Fund your Experience Modification Rate for the last three rating periods.

	Policy Year	Experience Modification Rate (EMR)
Most Recent Year	_____	_____
1 Year Previous	_____	_____
2 Years Previous	_____	_____

III. OSHA Information

A. Furnish a copy of your OSHA 200 Log for the last three (3) years.

Most Recent Year _____
1 Year Previous _____
2 Years Previous _____

B. Referencing your OSHA 200 Log for the last three (3) years. Complete the following:

	2014	2015	2016
Total number of injury/illness related fatalities	_____	_____	_____
Total number of injury/illness with lost workdays	_____	_____	_____
Total number of injury/illness without lost workdays	_____	_____	_____
Total hours worked	_____	_____	_____

END OF SAFETY QUESTIONNAIRE

BASF RFP No. PLVL 817
BASF Corporation Facility, Plainville, MA

Attachment 8: Bid Form

Attachment 8 - Bid Form

Scope Item	Detail	Lump Sum Value	Estimated quantity provided by BASF associated with Scope Item	Key Assumptions Requested as part of Bid	Unit Rates Requested as part of Bid
A	Implementation of Temporary Site Security Improvements and Temporary Work Spaces, and Project Management		Approximate location of temporary fencing shown on Figure 3 of RFP	_____ of weeks are estimated to complete Scope Item A	\$ _____/week, should work continue beyond ____ weeks identified to complete Scope Item A
B	Asbestos Abatement		Estimated quantities identified in Section 3.2 and Attachment 2 of RFP	n/a	\$ _____/SF for asbestos beyond estimated quantities \$ _____/LF for asbestos beyond estimated quantities
C	Removal and Off-Site Disposal/Recycling of Miscellaneous Hazardous, Nonhazardous, Universal and General Building Refuse Waste and Debris		Estimated quantities identified in Attachment 2 of RFP	n/a	n/a
D	Decommissioning and Off-Site Disposal of Aboveground Process Piping, Utilities, Ventilation Systems, and Appurtenances		Estimate not provided by BASF	n/a	n/a
E	Removal and Management of Certain Existing Building Envelopes		Estimate not provided by BASF	n/a	n/a
F	Removal and Management of Certain Existing Concrete Slabs		Approximately 95,000 SF	n/a	n/a
G	Removal and Management of Certain Existing Concrete Foundations		Approximately 1,600 linear feet of foundations around Buildings 8/10, as shown on Figure 5 of RFP	n/a	\$ _____/LF concrete
H	Decommissioning and Off-Site Disposal of Belowground Process Piping and Utilities		unknown, but likely minimal	n/a	\$ _____/LF piping
I	Removal of Sump Pits		7 sumps, total square footage estimated at 1,000 square feet, ranging from 1 to 8 feet in depth, as shown on Figure 5 of RFP	n/a	n/a
J	Removal of Ferrous Metal Debris		Approximately 100,000 SF	n/a	n/a
K	Rototilling Compost and Hydroseeding		Approximately 100,000 SF	n/a	\$ _____/SF for compost/hydroseeding
L	Final Housekeeping Activities		See Scope Item 3.12 in RFP	_____ of days are estimated to complete Scope Item L	\$ _____/day, should work continue beyond ____ days identified to complete Scope Item L
M	Installation of Permanent Fencing		See Scope Item 3.13 and Figure 2 in RFP	n/a	\$ _____/LF for fencing
n/a	Bonding		n/a	n/a	n/a
n/a	Mobilization/Demobilization		n/a	n/a	n/a
	TOTAL				
n/a	Estimated Contractor Credit for Scrap Metal Recovery				

Attachment 9: BASF Terms & Conditions

Environmental Short Form Fixed Price Construction Agreement

THIS CONTRACT (the "Agreement") is made and effective as of this ____ day of _____, 20____, (the "Effective Date") by and between BASF Corporation, a Delaware corporation ("BASF") with an address of 100 Park Avenue, Florham Park, New Jersey 07932 and _____, a _____ corporation, ("CONTRACTOR") with an address of _____.

WITNESSETH:

BASF and CONTRACTOR hereby agree as follows:

ARTICLE 1

DESCRIPTION OF WORK – TIME FOR PERFORMANCE

1.1 CONTRACTOR shall furnish all required material, labor, supervision, equipment, tools and other incidentals to perform the following work (the "Work"):

Any provisions in this Agreement which may appear to give BASF the right to direct CONTRACTOR as to the details of doing the Work covered herein or to exercise a measure of control over the Work shall be deemed to mean that CONTRACTOR shall follow the desires of BASF in the results of the Work only. Any portion of the Work involving the dismantlement or removal of property (including the purposeful or inadvertent removal or release of materials) shall also include the disposal by CONTRACTOR of such property including any waste materials used, generated or released by CONTRACTOR or anyone for whom CONTRACTOR is responsible and clean up and restoration (if specified by BASF) by CONTRACTOR of that portion of the property which is dismantled or removed.

1.2 The following contract documents (the "Contract Documents") are hereby incorporated into this Agreement by reference:

The Contract Documents shall be considered as complementary and the Work or materials called for in one and not mentioned or shown in another shall be of like effect as if called for and shown in each provided that in the event of a conflict or discrepancy between a drawing and any other technical document (including any specification) the drawing shall prevail. In the event of conflict in the Contract Documents or a discrepancy between them and existing conditions at the job site or a discrepancy with applicable laws, CONTRACTOR shall immediately bring this to the attention of BASF and BASF shall determine the appropriate course of action. Any work performed by CONTRACTOR prior to BASF's said determination shall be done at CONTRACTOR's sole risk and expense and CONTRACTOR shall at its sole expense make all corrections required by BASF as a result of such work.

1.3 CONTRACTOR shall perform the Work required by the Contract Documents in accordance with the terms of this Agreement and the Contract Documents. CONTRACTOR will provide all expertise, supervision, labor, materials, tools,

equipment, machinery, vehicles, surplus materials, temporary structures, protective fences, scaffolding, stagings, towers, forms and similar articles and structures, unloading, hauling, taxes, insurance, subcontracted items and all other things used or necessary, unless herein provided, to perform and complete the Work in conformance with this Agreement.

1.4 CONTRACTOR shall promptly proceed with the Work upon BASF's notice to proceed and complete the Work by _____.

Within ten (10) days from the Effective Date, CONTRACTOR shall prepare and submit for BASF's approval, a detailed schedule for the Work (the "Schedule"). The Schedule shall provide for an orderly progression of the Work to completion within the time specified above, and shall include: (a) the time required to prepare and approve shop drawings; (b) the time required to fabricate, order and deliver materials and equipment and (c) the time required to install and complete the Work and the various portions thereof. The Schedule shall set forth milestone stages and dates, as well as completion date(s). The Schedule shall be revised by CONTRACTOR and BASF and at appropriate intervals as required by the conditions of the Work, changes in the Work or design and/or any time extensions or as otherwise requested by BASF. TIME IS OF THE ESSENCE IN THE COMMENCEMENT, PROSECUTION AND CONSTRUCTION OF THE WORK. CONTRACTOR shall be responsible for all damages to BASF arising from any delay of CONTRACTOR, its subcontractors and/or its suppliers in performing or completing the Work in accordance with the Schedule and the Contract Documents.

1.5 Unless CONTRACTOR has already done so, CONTRACTOR shall submit to BASF within ten (10) days following the Effective Date and in accordance with BASF's Code of Accounts, a material and labor breakdown of the contract price.

ARTICLE 2 PERFORMANCE OF WORK

2.1 CONTRACTOR agrees to have at the job site at all times during the course of the Work the following: (a) a competent and qualified representative having the responsibility for the general supervision of the Work and full authority to represent CONTRACTOR in all matters pertaining to this Agreement and (b) such number of technical, supervisory and administrative personnel as are required to insure the efficient prosecution and completion of the Work in accordance with this Agreement.

2.2 BASF shall make available to CONTRACTOR without charge and at such location or locations to be designated by _____

BASF, the following utilities:

2.3 CONTRACTOR shall confine its operations at the job site to limits prescribed by BASF and shall not unreasonably encumber the premises or interrupt BASF's operations.

2.4 The Work shall be executed in the best workmanlike manner by qualified, careful and efficient workers in strict conformity with the best practices of the industry and in accordance with the safety rules and regulations in effect at the job site. A copy of said rules and regulations shall be provided to CONTRACTOR by BASF.

2.5 All Work shall be performed in accordance with plans and specifications approved by BASF provided that BASF shall assume no responsibility by reason of such approval and CONTRACTOR shall remain solely responsible for the accuracy and completeness of all such plans and specifications. BASF shall, however, be responsible for the accuracy and completeness of all plans and specifications prepared by BASF (or its authorized representatives) and furnished to CONTRACTOR hereunder.

2.6 CONTRACTOR shall:

(a) Keep the premises clean and free from waste material and rubbish.

(b) Upon request, furnish BASF with a copy of unpriced purchase orders and contracts covering materials, services and equipment to be purchased and furnished by CONTRACTOR for the Work, such purchase orders and contracts to clearly indicate the respective shipping dates promised by the vendors specified therein.

(c) Furnish BASF with two (2) copies of the following: vendors' equipment drawings, operating and maintenance instructions, and spare parts lists for material purchased by CONTRACTOR.

(d) Unless otherwise requested by BASF, obtain assignable warranties on materials and equipment purchased by CONTRACTOR at least equal to the warranties regularly provided by the manufacturer and assign such warranties to BASF.

(e) Furnish all labor and transportation and other personnel under CONTRACTOR's control with numbered identification as may be requested by BASF and require the utilization thereof by such labor and personnel.

(f) Submit to BASF written reports of the progress of the Work at such intervals as may be requested.

(g) Unless otherwise directed or approved by BASF in writing, perform all Work on the basis of a forty (40) hour week.

(h) Upon final completion of the Work, turn over the Work to BASF in good order, promptly remove from the premises all of CONTRACTOR's tools, machinery, equipment, facilities and surplus materials and supplies and deliver to BASF all materials, tools, machinery, equipment, facilities and supplies furnished by BASF and not incorporated or consumed in the Work in the same condition in which they were received, reasonable wear and tear and damage by the elements

excepted.

(i) At the completion of the Work, remove all of CONTRACTOR's tools, vehicles, equipment, machinery, surplus materials, debris and rubbish from and around the project site provided that prior to such removal CONTRACTOR shall perform any and all decontamination required by BASF and/or all applicable laws, orders, rules and regulations. Also, CONTRACTOR shall remove all waste from the project site and transport and dispose of it in full compliance with all applicable federal, state and local laws, orders, rules and regulations and at such disposal facilities as shall be approved by BASF in writing. Approval or disapproval by BASF of disposal facilities shall be for the sole benefit of BASF and no such approval or disapproval shall, or shall be deemed to, make BASF in any way liable with respect to such facility.

(j) In performing the Work, CONTRACTOR shall take necessary precautions for the safety of its employees and shall comply with all applicable laws, orders, rules and regulations including without limitation all applicable provisions of federal, state and local safety laws. CONTRACTOR shall erect and properly maintain as required by the conditions and progress of the Work necessary safeguards for the protection of its employees and the general public. CONTRACTOR shall have no responsibility for the elimination or abatement of safety hazards created or otherwise resulting from Work at the project site carried on by other persons or firms directly employed by BASF as separate contractors or by BASF's employees and agents. BASF shall cause any such separate contractors, employees and/or agents to abide by and fully adhere to all applicable provisions of federal, state and local safety laws and regulations and to comply with all reasonable requests of CONTRACTOR for the elimination or abatement of any such safety hazard at the project site. If the laws, rules or regulations in the state in which the Work is to be performed require that CONTRACTOR and/or its subcontractors be licensed, then CONTRACTOR agrees to submit evidence to BASF that it and/or its subcontractors are properly licensed in accordance with the laws, rules and regulations in such state.

(k) Prior to any excavation, dismantlement or removal being performed at a project site, CONTRACTOR shall inquire at state, local or municipal agencies and the offices of any public utilities or utilities protection service, concerning the location of aboveground and underground public utilities, where the information is not available from BASF. If any such utilities are disturbed, it shall be CONTRACTOR's responsibility to be sure that all such service pipes or lines are properly capped, blanked off or terminated, if and to the extent appropriate, in such a manner as to protect such services or personnel from injury or damage.

(l) CONTRACTOR will maintain all samples for sixty (60) calendar days from the later of a) the date the samples were taken, or b) the date an analysis of the samples was performed. After such sixty (60) day period, at BASF's direction, such samples will be returned to BASF or such samples will be properly disposed of with BASF paying CONTRACTOR for all reasonable and necessary charges and expenses associated with such disposal. Prior to the disposal of any sample taken hereunder, CONTRACTOR will advise BASF of the cost and expense of disposal of the same.

2.7 Title to all Work installed shall be in BASF but risk of loss of all material and equipment not properly installed and appropriately protected by CONTRACTOR shall remain in

CONTRACTOR.

2.8 All materials and equipment furnished to CONTRACTOR by BASF shall be unloaded and stored at the plant site by CONTRACTOR and shall remain BASF's property. CONTRACTOR shall be solely responsible for all such materials and equipment until they are accepted by BASF as a part of the completed Work or are returned to BASF.

2.9 CONTRACTOR shall provide all necessary labor and equipment for testing in a satisfactory manner, all Work performed and materials supplied by CONTRACTOR, its subcontractors and vendors.

2.10 CONTRACTOR represents that it is thoroughly familiar with all specifications, bills of material, drawings and documents, the site of the Work, its surroundings and local conditions, and that it has special qualifications for prosecuting the Work to completion in accordance with this Agreement. CONTRACTOR shall make all necessary measurements at the site.

(a) CONTRACTOR hereby represents to BASF that CONTRACTOR, its subcontractors, and their respective employees, agents and representatives, are skilled and experienced in the Work and services contemplated by this Agreement (including, without limitation, the clean up, dismantlement, removal and disposal of used chemical manufacturing facilities, equipment and property containing chemicals or other materials which are or may be hazardous or potentially hazardous to health or the environment), that they have the capability and expertise of supervising and performing the Work in a safe, efficient, and workmanlike manner in accordance with all applicable laws, orders, rules, regulations and standards (including, but not limited to, those applicable federal, state and local laws, orders, rules and regulations pertaining to solid wastes, emissions to the atmosphere, and the discharge of water), that they have the highest degree of capability and expertise as other such professionals performing the type of work contemplated by this Agreement on a national basis and that BASF may and shall be deemed to have so relied upon such superior knowledge, skills, expertise and experience with respect to the Work. CONTRACTOR further warrants that it is familiar with all applicable national industry standards and practices and all legal requirements with respect to the Work including any licensing requirements and that CONTRACTOR shall perform and complete the Work in accordance therewith and shall properly perform all cleaning of any contaminated property which may be required in accordance with such standards, practices and legal requirements.

(b) CONTRACTOR acknowledges that it will, prior to commencement of Work, make a thorough inspection of the project site. By executing this Agreement, CONTRACTOR acknowledges that it has been informed of the possibility that discharges, releases or emissions of hazardous substances may occur on the project site during the progress of the Work and that chemical contamination and/or residues may be encountered during the performance of the Work. CONTRACTOR recognizes and assumes the risk and agrees to inform its employees, subcontractors and invitees of such risk and of the potential safety, health and environmental hazards involved in the performance of the Work and to properly protect them against such risk and hazards. Prior to commencing work at any project site, CONTRACTOR will make any and all examinations and tests that it deems necessary to determine the difficulties and hazards incident to

the performance of the Work whether arising from the location of the Work, proximity of work to adjacent facilities, conditions of the project site, equipment, tanks, building and other structures or otherwise and will determine to CONTRACTOR's satisfaction the nature and extent of all such difficulties and hazards. Unless otherwise prohibited by BASF, CONTRACTOR specifically acknowledges that it has been advised of the danger of using "cutting torch" or maintaining open flames on any of the project sites. CONTRACTOR agrees to advise the BASF's Representative prior to using any such cutting torch and prior to maintaining any open flame on a project site. Notwithstanding such notification of BASF's Representative, all uses of cutting torches and the maintenance of any open flame by CONTRACTOR, its employees, agents or subcontractors or any other person under contract to or the control of CONTRACTOR shall be at the sole risk of CONTRACTOR.

(c) CONTRACTOR hereby fully releases and hereafter will fully release BASF from any and all claims or liabilities, known or unknown, arising directly or indirectly at any time from conditions actually encountered by CONTRACTOR in the course of the Work or because of any variance between such actual conditions and those believed to exist by CONTRACTOR prior to commencing the Work. The indemnification of BASF by CONTRACTOR set forth in **Article 9** includes claims and liabilities involving the existence of any hazardous substances at the project site whether suffered by CONTRACTOR, its officers, employees or agents or any third party (including subcontractors).

2.11 All tracings, drawings, bills of material, specifications and other documents prepared by CONTRACTOR must be approved in writing by BASF, shall automatically become BASF's property and shall be delivered to BASF upon completion of the Work or at any other time upon BASF's demand provided that BASF shall assume no responsibility by reason of such approval and CONTRACTOR shall remain solely responsible for the accuracy and completeness of all such plans and specifications. BASF shall however be responsible for the accuracy and completeness of all plans and specifications prepared by BASF (or its authorized representatives) and furnished to CONTRACTOR hereunder.

2.12 BASF may from time to time by written order change any and all tracings, drawings, bills of material, specifications, issue additional instructions, require the performance of additional Work or reduce the scope or amount of Work.

2.13 No substitutions of materials or changes to specifications shall be made by CONTRACTOR without the prior written approval of BASF.

2.14 CONTRACTOR shall, immediately upon demand of BASF, remove all Work and materials which do not conform to the Agreement and all such nonconforming work and materials shall be promptly replaced and re-executed by CONTRACTOR at its expense. CONTRACTOR shall also bear the expense of making good the Work of others or existing property of BASF, which is damaged or destroyed by such removal or re-execution.

ARTICLE 3 BASF'S RESPONSIBILITIES

3.1 Upon reasonable notice from CONTRACTOR, BASF shall be responsible for locating underground facilities known to BASF before CONTRACTOR commences any excavation at

the project site. CONTRACTOR shall be responsible for the protection of those facilities located by BASF, those facilities which would be evident based on a physical inspection of the project site and those facilities of which CONTRACTOR is advised under **Section 2.6(k)** and for any damages to such facilities resulting from its operations. CONTRACTOR, however, shall not be held responsible for damage to underground facilities which are not located by BASF or of which CONTRACTOR is not advised under **Section 2.6(k)** and which would not be evident based on a physical inspection of the project site.

3.2 Although BASF may not hold clear title to the material which is the subject of the Work, BASF warrants that it has the authority to direct CONTRACTOR to take the actions requested by BASF and that it will be responsible for compensating CONTRACTOR for the services CONTRACTOR performs hereunder. In those instances where BASF does hold clear title to the material which is the subject of the Work, BASF shall approve and execute those manifests, if any, which may be necessary or appropriate in order to facilitate the transportation and disposal of the subject material.

3.3 BASF shall use reasonable efforts to advise CONTRACTOR of any special hazards or risks of which BASF is aware which are involved in the excavation, dismantlement and/or removal of any material which is the subject matter of any Work. Such information shall include but is not limited to any relevant notification of substantial risk given by BASF pursuant to the Toxic Substances Control Act. However, BASF has expressly warned and hereby does warn CONTRACTOR that the project site at which Work may be conducted and equipment and materials associated therewith, may contain hazardous substances or hazardous wastes which are or may become (by chemical reaction or otherwise) hazardous to life, health or the environment either prior to, during or subsequent to the completion of any or all phases of the Work. Cleaning of such property by CONTRACTOR or by one or more third parties may be necessary or legally required prior to any dismantling, handling, transportation, use or disposal of the same. No additional specific warning shall be deemed to limit the foregoing general warning and if any additional specific warning is believed or found to be inadequate or insufficient, then all of the terms and conditions herein set forth shall still apply even if the inadequacy or insufficiency of any such additional specific warning was caused by or resulted from the negligence of BASF, its employees, agents or representatives.

ARTICLE 4 COMPENSATION AND PAYMENT

4.1 In consideration of CONTRACTOR's complete discharge of its obligations and of its performance of the Work, BASF shall pay to CONTRACTOR as compensation the sum of _____ Dollars (\$ _____). Payment of said sum shall be made in the following manner:

(a) In monthly progress payment(s), within _____ (_____) days from BASF's receipt of each of CONTRACTOR's invoices. Such progress payments shall be in a form to be prescribed by BASF and accompanied by such supporting documentation required by BASF. The amount of each installment shall be based upon the percentage of the total Work installed during the immediately preceding calendar month as determined by CONTRACTOR and agreed to by BASF provided that BASF may retain from each such progress payment(s) all sums permitted to be retained by BASF

pursuant to **Section 4.1(d)**. In addition, BASF shall retain _____ % of the gross amount of each such progress payment until payment is made as provided in **Section 4.1(b) and (c)**.

(b) Upon substantial completion of the Work in accordance with the following procedures: When CONTRACTOR believes that the Work is substantially complete, it shall prepare and submit to BASF a statement (in a format acceptable to BASF) which specifies the date of substantial completion, lists those items of Work to be completed or corrected, specifies the estimated cost thereof and specifies all outstanding claims against CONTRACTOR and all indebtedness of CONTRACTOR with respect to the Work as of the date of substantial completion specified in said statement. Additionally, CONTRACTOR shall provide BASF with a breakdown of all of CONTRACTOR's compensation for the Work into the following categories:

1. Dismantling - e.g. M&E, piping, etc.
2. Pre-abatement expenses - e.g. asbestos survey
3. Asbestos removal
4. Demolition – the actual knocking down of a structure
5. Debris removal & disposal – carting away the rubble
6. Land improvement – e.g. filling holes, planting seed, etc.
7. Hazardous waste removal

(i) This information shall be provided separately for each building identified in the Purchase Requisition incorporated into **Exhibit F**. BASF may require CONTRACTOR to provide a breakdown of CONTRACTOR's compensation into additional categories. Such breakdown of costs is an express condition precedent to CONTRACTOR's receipt of payment.

(ii) BASF shall respond in writing to the content of said statement within thirty (30) days of receipt thereof. CONTRACTOR shall submit an invoice to BASF in the amount of all sums retained by BASF except for any sum that may be necessary to settle any claims that BASF may have against CONTRACTOR and such sums as are retained by BASF pursuant to Section 4.1(d) and except for an additional sum equal to twice the estimated cost of performing or completing any corrective and incomplete Work and punch-list items, such additional sum to be agreed upon by BASF and CONTRACTOR. BASF agrees to pay the amount of such invoice within thirty (30) days from the date thereof.

(c) Within thirty (30) days from final completion of the Work, its acceptance by BASF or the fulfillment by CONTRACTOR of all of its other obligations under this Agreement, whichever occurs last, CONTRACTOR shall submit an invoice to BASF. BASF shall pay to CONTRACTOR an amount equal to the unpaid balance of CONTRACTOR's compensation less any sums that BASF may retain under the other provisions of this Agreement and less any sum that may be necessary to settle any claims that BASF may have against CONTRACTOR. As another condition of final payment, CONTRACTOR shall furnish to BASF the affidavit provided in **Exhibit A**.

(d) BASF may decline to approve CONTRACTOR's request for any payment in whole or in part and/or may decline to make a payment because of evidence

of:

- (1) defective work or material;
- (2) claims filed or evidence indicating probable filing or making of claims;
- (3) failure of CONTRACTOR to make payments to its subcontractors or to suppliers for labor, services, materials or equipment;
- (4) unrepaired damage by CONTRACTOR to the work of other subcontractors;
- (5) unsatisfactory prosecution of the Work;
- (6) erroneous estimates by CONTRACTOR of the value of the Work performed;
- (7) unauthorized deviations from the Contract Documents;
- (8) any other failure of CONTRACTOR to perform pursuant to the Agreement; or
- (9) incorrect invoice or lack of supporting documentation.

When, as and if all the above grounds for declining approval are removed, payment shall be made for amounts withheld.

4.2 Any applicable sales, use, excise tax or other governmental charges are deemed to be included in the price and any such tax or governmental charges shall therefore not be added to the stated price. Where applicable, CONTRACTOR agrees to apply for any exemptions which either may be available to CONTRACTOR or which can be passed through from BASF to CONTRACTOR. BASF shall provide CONTRACTOR with a properly completed exemption certificate for any tax from which BASF claims exemption. If any such exemptions are obtained, the contract sum set forth in **Article 4** shall be reduced in the proportionate amount of the exemption realized. CONTRACTOR assumes full responsibility for State Unemployment Tax, Medicare Tax, FICA (Social Security), Withholding Taxes (Federal, State and Local), payment of income taxes, and all other taxes or charges imposed by Federal, State or Local governments or governmental agencies with respect to the Work. Taxes upon income, profit or capital gains of CONTRACTOR shall be the responsibility of CONTRACTOR.

4.3 Any additional Work beyond the scope described in **Article 1** and any additions, modifications or deletions made to the plans and specifications and authorized by BASF in accordance with **Article 2** shall either be performed by CONTRACTOR or shall be allowed by CONTRACTOR as a credit on the basis set forth in one of the following paragraphs as to be selected by BASF.

- (1) An agreed upon fixed price.
- (2) A time and materials basis as set forth in **Exhibit G**.
- (3) Unit prices as set forth in **Exhibit H**.

4.4 BASF shall not be obligated to pay CONTRACTOR for any additional Work performed pursuant to this **Article 4** unless BASF has issued either a written Field Change Order signed by BASF or BASF's formal Purchase Change Order showing the basis on which payment is to be made prior to the commencement of such Work. Field Change Orders shall be invoiced separately, shall (except for fixed price and unit price work) be subject to audit by BASF and shall be paid as follows:

- (1) **Fixed Price Field Change Orders:** Upon completion and acceptance of the Work by BASF, the amount due CONTRACTOR shall be paid without retention

within 30 days after receipt of invoice. No partial invoices shall be submitted.

- (2) **Cost Plus and Unit Price Field Change Orders:** Monthly payments shall be made to CONTRACTOR without retention for actual Work completed and accepted by BASF. Invoices must be accompanied by supporting documents approved daily by BASF.

4.5 CONTRACTOR agrees that each Fixed Price Field Change Order and Purchase Change Order shall set forth the full compensation for the change in the Work or additional Work covered by such Field Change Order or Purchase Change Order and CONTRACTOR shall not thereafter make (and hereby waives) any further claim against BASF based on or resulting from such change in the Work or such additional Work. Subject to **Section 4.6**, CONTRACTOR agrees that only material changes will require an adjustment in compensation and/or the Schedule.

4.6 IF CONTRACTOR, WITHOUT ANY FAULT OR NEGLIGENCE ON ITS OWN PART, IS DELAYED IN THE COMPLETION OF THE WORK BY REASON OF: FAILURE TO ACT, DIRECTION, ORDER, NEGLIGENCE, DELAY OR DEFAULT OF BASF OR ANY OTHER CONTRACTOR EMPLOYED ON THE PROJECT; CHANGES IN THE WORK, FIRE, LIGHTNING, EARTHQUAKE, ENEMY ACTION, ACT OF GOD OR SIMILAR CATASTROPHE; GOVERNMENT RESTRICTIONS IN RESPECT TO MATERIALS OR LABOR; OR AN INDUSTRY-WIDE STRIKE BEYOND CONTRACTOR'S REASONABLE CONTROL, CONTRACTOR AS ITS SOLE REMEDY SHALL BE ENTITLED TO A REASONABLE EXTENSION OF TIME ONLY. NOTWITHSTANDING ANYTHING TO THE CONTRARY IN THE CONTRACT DOCUMENTS, CONTRACTOR SHALL NOT BE ENTITLED TO AN EXTENSION OF TIME UNLESS A WRITTEN NOTICE OF DELAY SHALL HAVE BEEN DELIVERED TO BASF WITHIN SEVENTY TWO (72) HOURS AFTER COMMENCEMENT OF THE CLAIMED DELAY. CONTRACTOR EXPRESSLY AGREES NOT TO MAKE AND HEREBY WAIVES ANY CLAIM FOR DAMAGES INCLUDING BUT NOT LIMITED TO THOSE RESULTING FROM INCREASED LABOR OR MATERIAL COSTS ON ACCOUNT OF ANY DELAY, DISRUPTION, OBSTRUCTION OR HINDRANCE FOR ANY CAUSE WHATSOEVER WHETHER OR NOT FORESEEABLE AND WHETHER OR NOT ANTICIPATED INCLUDING BUT NOT LIMITED TO THE AFOREDESCRIBED CAUSES AND AGREES THAT THE SOLE RIGHT AND REMEDY THEREFOR SHALL BE AN EXTENSION OF TIME PROVIDED THE REQUISITE CONDITION AS TO WRITTEN CLAIM HAS BEEN MET. CONTRACTOR REPRESENTS THAT IT HAS INCLUDED IN ITS COMPENSATION THE COST OF IMPACTS DUE TO ANY AND ALL DELAYS AND DISRUPTIONS (INCLUDING DELAYS AND DISRUPTIONS RESULTING FROM CHANGES IN THE WORK) THAT MAY OCCUR ON THE PROJECT.

4.7 All provisions of this **Article 4** shall survive expiration or termination (for any cause) of this Agreement and shall not be affected thereby.

ARTICLE 5 LIENS

5.1 Where not precluded by law, CONTRACTOR hereby agrees to waive and relinquish all liens and claims of liens that it or its subcontractors or suppliers now have or may hereafter have upon BASF's land and all buildings, structures and

facilities located thereon, for Work performed and materials furnished pursuant to this Agreement.

5.2 CONTRACTOR also warrants that all bills and lawful claims of all of its subcontractors and materialmen which it may incur as the result of the performance of this Agreement shall be satisfied.

5.3 CONTRACTOR agrees that if any liens are filed against BASF as the result of CONTRACTOR's actual or alleged acts or omissions in operating under this Agreement, CONTRACTOR shall at its sole expense cause the same to be discharged within ten (10) days from the date on which BASF notifies CONTRACTOR of such filing and that CONTRACTOR shall indemnify and hold harmless BASF against any and all such claims or liens. If CONTRACTOR fails to cause such claims or liens to be discharged within said ten (10) day period, then without limiting any other rights or remedies of BASF if any monies are owed to CONTRACTOR by BASF under this Agreement, BASF may use such monies in order to discharge such claims or liens and CONTRACTOR hereby waives all rights which it may have against BASF arising as the result thereof.

5.4 If at any time during the progress of the Work CONTRACTOR shall fail to discharge any debt, actual or alleged, for labor, materials, supplies, services or other things furnished in connection with its performance of this Agreement by that date on which payment of such debt is due, BASF may refuse to make any further payments to CONTRACTOR until satisfactory evidence has been furnished that such debt has been discharged. If such evidence is not furnished within ten (10) days after BASF's written demand therefor, BASF may discharge such indebtedness and deduct the amount thereof from any payment then or thereafter due CONTRACTOR, and CONTRACTOR hereby waives all rights which it may have against BASF arising as the result of such action taken by BASF.

5.5 All provisions of this **Article 5** shall survive expiration or termination (for any cause) of this Agreement and shall not be affected thereby.

ARTICLE 6 INSURANCE

6.1 As of the Effective Date and prior to CONTRACTOR or any of its employees or anyone for whose acts it may be liable entering onto BASF's premises, CONTRACTOR shall purchase and maintain insurance policies issued by a company or companies that are authorized to do business in the jurisdiction in which the Work is being performed and that maintain a financial strength rating with A.M Best or similar rating agency of A/VIII and shall provide limits of liability of not less than the following:

(1) Workers' Compensation, disability benefits and other similar employee benefit acts that are applicable to the Work performed and in conformance with the statutory requirements of the jurisdiction where the Work is to be performed or where CONTRACTOR's employees are located.

(2) Employer's Liability insurance for claims for bodily injury, occupational sickness or disease or death of CONTRACTOR's employees:

\$1,000,000 each accident for bodily injury by accident;
\$1,000,000 each employee for bodily injury by disease; and

\$1,000,000 policy limit for bodily injury by disease.

(3) Commercial General Liability insurance for claims or damages for bodily injury or death of any person other than CONTRACTOR's employees; damage or destruction of tangible property other than to the Work performed; personal and advertising injury; Products/Completed Operations; Independent Contractor's Liability; and Contractual Liability coverage:

Bodily Injury, Property Damage, Personal and Advertising Injury:

\$10,000,000 Each Occurrence; and

Products/ Completed Operations:

\$10,000,000 Each Occurrence.

(4) Commercial Automobile Liability insurance for all owned, hired, leased and non-owned automobiles for claims or damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle:

Bodily Injury & Property Damage:

\$5,000,000 Each Person; \$5,000,000 Each Occurrence Combined Single Limit.

CONTRACTOR's automobile liability insurance policy must include coverage for contractual liability.

(5) Pollution Liability or Environmental Liability with limits of liability of not less than \$5,000,000 per occurrence covering liability for bodily injury and property damage arising from the release, discharge, escape, dispersal or emission of pollutants, whether gradual or sudden, and includes coverage for the costs and expense associated with clean-up, testing, monitoring and treatment of the pollutants. Coverage for Microbial Matter (mold) or pathogens must be included.

(6) If any of the Work includes performance of engineering or design services or other work performed by a licensed professional, then Professional Errors and Omissions Liability insurance with limits of liability of not less than \$5,000,000 each claim and \$10,000,000 in the aggregate.

6.2 CONTRACTOR may achieve the policy limits required by **Section 6.1** through policies that are placed as primary, excess or umbrella policies. Any excess or umbrella policy must be materially as broad as the underlying policies.

6.3 CONTRACTOR shall keep the policies required by **Section 6.1** in effect until after final completion of the Services except that the products/completed operations coverage, Professional Errors and Omissions Liability insurance, Pollution Liability and any other claims-made coverage shall be kept in effect either through renewal of the insurance policy or purchasing of an Extended Reporting Period for at least six (6) years after final completion of the Work or the expiration of the applicable statute of limitations for tort actions or defect claims, whichever is later. Any retroactive date in the policies required by **Section 6.1** must be prior to the Effective Date. Coverage afforded under the policies shall not be canceled, be materially altered or be allowed to expire without being renewed until at least thirty (30) days written notice has been given to BASF.

6.4 Except to the extent precluded by applicable law, CONTRACTOR agrees that the policies required by **Section 6.1** (with the exception of Workers' Compensation, Employer's

Liability and Professional Errors and Omissions) shall name BASF, its subsidiaries, affiliates, officers, directors and employees as additional insureds.

6.5 All insurance coverages required by **Section 6.1** whether written as primary, excess or umbrella coverage shall be primary and non-contributing as respects to any and all insurance maintained by BASF and shall contain an amendment or endorsement acknowledging that any and all insurance of BASF, whether written as primary, excess or umbrella, is excess to all insurance maintained by CONTRACTOR and will not contribute with CONTRACTOR's insurance.

6.6 All insurance coverage required by **Section 6.1** shall be written by insurance companies and on forms satisfactory to BASF.

6.7 With respect to all insurance coverages required by **Section 6.1**, CONTRACTOR hereby releases and waives all rights of subrogation against BASF possessed by CONTRACTOR's insurers and CONTRACTOR hereby represents to BASF that it is authorized to make such release and waiver under CONTRACTOR's policies of insurance.

6.8 CONTRACTOR shall secure, pay for and maintain property insurance necessary for protection against loss of owned, borrowed or rented machinery, equipment and tools including any tools owned by employees and any tools, equipment, staging, scaffolding, towers and/or forms owned, borrowed or rented by CONTRACTOR that are utilized in the performance of the Work but not incorporated in the permanent improvements. The requirement to secure and maintain such insurance is solely for the benefit of CONTRACTOR. Failure of CONTRACTOR to secure such insurance or to maintain adequate levels of coverage shall not obligate BASF its agents and employees for any losses and BASF and its agents and employees shall have no such liability.

6.9 CONTRACTOR shall cause each of its subcontractors to provide insurance of the same coverages and minimum limits of liability as set forth in **Section 6.1**.

6.10 The terms of coverage required by **Section 6.1** shall be evidenced by certificates of insurance reflecting the required insurance coverages which shall be freely available to BASF and subject to audit and verification by BASF upon demand during normal business hours.

ARTICLE 7 GUARANTEE

7.1 CONTRACTOR guarantees that all Work performed hereunder by CONTRACTOR and its subcontractors shall be in accordance with this Agreement. All materials supplied by CONTRACTOR shall be new and first grade and fit for the purpose intended. CONTRACTOR further guarantees that all Work and materials supplied by CONTRACTOR or its subcontractors shall be free from all defects for a period of one (1) year from the date of final acceptance of the Work by BASF. CONTRACTOR, at its sole expense, shall re-perform all Work that fails to meet this guarantee and shall remedy all such defects which appear prior to the end of said one (1) year period. If CONTRACTOR fails to replace such Work or materials or correct such defects within a fair and reasonable period following BASF's notice thereof to CONTRACTOR, BASF shall have the right to replace and correct the same at CONTRACTOR's sole expense. In addition, any cost or

damage incurred by BASF in connection with the foregoing may be deducted from CONTRACTOR's compensation then or thereafter to become due. Neither the failure of BASF during the progress of the Work or at its completion to discover or reject Work or materials which are not in accordance with this Agreement, nor any payment made hereunder, nor any occupancy of the premises by BASF or use by BASF of any or all of the Work shall constitute a waiver of any of BASF's rights under this **Article 7**.

ARTICLE 8 COOPERATION WITH BASF AND OTHERS

8.1 Before starting operations and from time to time as Work progresses, CONTRACTOR shall examine the work performed by others and shall promptly notify BASF in writing if any condition exists that may prevent CONTRACTOR from obtaining satisfactory results in its Work. If CONTRACTOR starts Work without giving such notice, such shall be deemed to constitute an acceptance by CONTRACTOR of all preceding and existing work and all existing working conditions.

8.2 CONTRACTOR shall actively coordinate performance of the Work with work of BASF and other contractors. CONTRACTOR shall conduct its operations so as not to interfere with the performance of work by BASF and others and so as to preserve good relations with them. CONTRACTOR shall promptly remove from the Work site any employee BASF finds objectionable. The resolution of any conflict with other contractors or with other work being performed on BASF's premises shall be as directed by BASF.

8.3 BASF conducts its business in accordance with the principles of sustainable development and complies with internationally recognized fundamental environmental, labor and social standards. BASF has described and set forth its understanding and implementation of these standards in its Values and Principles, its corporate Code of Conduct and its Code of Conduct for procurement (collectively the "**Standards**" and available through BASF's corporate website at www.basf.com). The Standards are critical to BASF's basis of conducting its own business and to any business transaction with others of which BASF is a party. CONTRACTOR will comply with the Standards or its own environmental, labor and social standards that are materially similar to the Standards and shall require that its subcontractors and materialmen, of any tier, observe the applicable standards.

8.4 CONTRACTOR shall at all times, to the extent they apply, comply with the rules, regulations, policies and guidelines which are established by BASF and made available to CONTRACTOR relating to: (i) the provision of services at the BASF facility(ies) at which the Work is or will be performed and (ii) the provision of any products and/or the performance of Work for BASF generally and which are not related to the provision of services on BASF premises or at a particular BASF facility (collectively, the "**BASF Requirements**"). BASF Requirements may include, among other things, rules and regulations with respect to safety, health, environment, security and orderly operation, BASF's contractor management requirements and protection of BASF's confidential business information. BASF may amend or add to the BASF Requirements from time to time as it deems appropriate. BASF will make available to CONTRACTOR the current BASF Requirements and any amended or additional BASF Requirements.

8.5 BASF, on behalf of itself and certain of its affiliated

entities, is engaged in a Supplier Diversity Initiative and encourages the use of CDSs (as defined below) by its suppliers, contractors and other vendors as allowed by law. Unless otherwise agreed in writing, CONTRACTOR shall endeavor to use commercially reasonable efforts to encourage CDSs to bid for, and to use CDSs in, any supply or subcontract opportunities that may arise as a direct result of and in connection with this Agreement as allowed by law. Upon request by BASF, CONTRACTOR shall report such use by CONTRACTOR of CDSs in connection with this Agreement to BASF within thirty (30) days after the end of each calendar quarter. BASF may ask CONTRACTOR to complete questionnaires or related forms to report CONTRACTOR's use of CDSs. Certified Diverse Supplier ("CDS") shall mean a supplier that has been certified by the US Small Business Administration or another mutually acceptable qualified independent third party agency that provides certification with respect to diverse businesses.

ARTICLE 9 INDEMNIFICATION

9.1 EXCEPT TO THE EXTENT PRECLUDED BY APPLICABLE LAW, CONTRACTOR SHALL BE RESPONSIBLE FOR AND SHALL INDEMNIFY, DEFEND AND HOLD HARMLESS BASF, ITS OFFICERS, AGENTS AND EMPLOYEES, PARENTS, SUBSIDIARIES, AFFILIATES AND SUCCESSORS AND ASSIGNS FROM AND AGAINST:

(1) ANY AND ALL CLAIMS, DEMANDS, SUITS, ACTIONS, LIABILITIES, LIENS, LOSSES, FINES OR PENALTIES WHETHER CIVIL OR CRIMINAL, DAMAGES AND EXPENSES OF EVERY KIND AND CHARACTER WHATSOEVER, ACTUAL OR ASSERTED, INCLUDING WITHOUT LIMITATION THE AMOUNT OF ANY JUDGMENT, PENALTY, INTEREST, COURT COSTS AND LEGAL FEES INCURRED IN CONNECTION WITH SAME, OR THE DEFENSE THEREOF (COLLECTIVELY "**CLAIMS**"), FOR OR IN CONNECTION WITH, DIRECTLY OR INDIRECTLY, CONTRACTOR'S, ITS SUBCONTRACTORS' OR ANY OF THEIR RESPECTIVE OFFICERS', EMPLOYEES', AGENTS' OR REPRESENTATIVES' ACTUAL OR ASSERTED VIOLATION OF LAWS, REGULATIONS, ORDINANCES OR OTHER RULES OF ANY GOVERNMENTAL OR QUASI-GOVERNMENTAL BODY OR AGENCY, INCLUDING BUT NOT LIMITED TO ACTUAL OR ALLEGED FAILURE TO PAY TAXES OR OTHER GOVERNMENTAL FEES OR CHARGES.

(2) ANY AND ALL CLAIMS ARISING OUT OF OR IN ANY WAY OCCURRING DIRECTLY OR INDIRECTLY IN CONNECTION WITH (a) CONTRACTOR'S OR ITS AGENTS, INVITEES TO THE SITE OR SUBCONTRACTORS GROSS NEGLIGENCE OR INTENTIONAL CONDUCT IN THE PERFORMANCE OF THE WORK AND/OR (b) CONTRACTOR'S BREACH OF THE AGREEMENT.

(3) EXCEPT TO THE EXTENT OF BASF'S NEGLIGENCE OR LEGAL FAULT, ANY AND ALL CLAIMS WHETHER IN NEGLIGENCE, STRICT LIABILITY, OTHER TORT, CONTRACT OR OTHERWISE, FOR OR IN CONNECTION WITH LOSS OF LIFE, BODILY OR PERSONAL INJURY (INCLUDING EMPLOYEES OF CONTRACTOR, CONTRACTOR'S SUBCONTRACTORS, BASF AND OF ANY THIRD PARTY), DAMAGE TO PROPERTY (INCLUDING PROPERTY OF CONTRACTOR, BASF OR ANY THIRD PARTY), AND WITHOUT LIMITATION BY ENUMERATION ALL OTHER CLAIMS OR DEMANDS OF EVERY CHARACTER WHATSOEVER DIRECTLY OR

INDIRECTLY ARISING OUT OF OR INCIDENT TO OR IN CONNECTION WITH OR RESULTING FROM (a) THE ACTIVITIES OF CONTRACTOR, ITS AGENTS, SERVANTS AND EMPLOYEES OR ITS SUBCONTRACTORS AND THEIR AGENTS, SERVANTS AND EMPLOYEES OR CONTRACTOR'S INVITEES TO THE SITE OR IN CONNECTION WITH THE WORK TO BE PERFORMED, SERVICES TO BE RENDERED OR MATERIALS TO BE FURNISHED UNDER THIS AGREEMENT AND (b) **CONTRACTORS', ITS AGENTS', SERVANTS' AND EMPLOYEES' OR ITS SUBCONTRACTORS' AND THEIR AGENTS', SERVANTS' AND EMPLOYEES' OR THE INVITEES TO THE SITE BY CONTRACTOR, SOLE OR CONCURRENT NEGLIGENCE ACTS OR OMISSIONS, WRONGFUL ACTS OR OMISSIONS OR BREACH OF THIS AGREEMENT.**

9.2 TO THE FULLEST EXTENT ALLOWED BY APPLICABLE LAW, IN ADDITION TO THE INDEMNITIES OTHERWISE PROVIDED HEREIN, CONTRACTOR SHALL BE RESPONSIBLE FOR AND SHALL INDEMNIFY, DEFEND AND HOLD HARMLESS BASF, ITS OFFICERS, AGENTS AND EMPLOYEES, PARENTS, SUBSIDIARIES, AFFILIATES, SUCCESSORS AND ASSIGNS, SUBCONTRACTORS AND ANY OTHER THIRD PARTY AT THE PLANT, FROM AND AGAINST ANY AND ALL CLAIMS RELATED TO ANY INJURY INCLUDING DEATH OF ANY EMPLOYEE OF CONTRACTOR OR ANY EMPLOYEE OF CONTRACTOR'S AGENTS OR SUBCONTRACTORS OF ANY TIER ARISING OUT OF OR IN ANY WAY OCCURRING DIRECTLY OR INDIRECTLY IN CONNECTION WITH THE WORK INCLUDING ANY SUCH CLAIMS CAUSED BY THE NEGLIGENCE OF BASF OR ITS RESPECTIVE OFFICERS, EMPLOYEES, AGENTS OR REPRESENTATIVES, SUBCONTRACTORS OR ANY THIRD PARTY LOCATED ON A SITE.

9.3 CONTRACTOR AGREES THAT UPON NOTICE BY BASF IT WILL IMMEDIATELY INVESTIGATE, HANDLE, RESPOND TO, PROVIDE DEFENSE FOR AND DEFEND ANY CLAIM, DEMAND OR ACTION AT ITS SOLE EXPENSE AND WILL BEAR ALL OTHER COSTS AND EXPENSES RELATED THERETO.

9.4 BASF's entitlement under the foregoing indemnification may be deducted from CONTRACTOR's compensation then due or thereafter to become due, in addition to any other remedies that BASF may have.

9.5 To the fullest extent allowed by applicable law, CONTRACTOR hereby releases BASF from any and all Claims related to any cause incurred in any way related to this Agreement or the use of or access to the site or any condition of BASF's premises including without limitation any and all Claims caused by the sole negligence or willful misconduct of BASF or its officers, agents or employees. All property of CONTRACTOR kept or stored at the site shall be so kept and stored at the risk of CONTRACTOR only and CONTRACTOR shall hold BASF harmless from any claim arising out of damage to such property.

9.6 Notwithstanding anything to the contrary contained in this **Article 9**, CONTRACTOR will not be required to indemnify, hold harmless or defend a party including a third party against a claim caused by the negligence or fault, the breach or violation of a statute, ordinance, governmental regulation, standard or rule or the breach of contract of the indemnitee, its agent or employee or any third party under the

control or supervision of the indemnitee other than the indemnitor or its agent, employee or subcontractor of any tier.

ARTICLE 10 ROYALTIES AND PATENTS

10.1 CONTRACTOR shall pay all license fees and royalties and shall indemnify and hold harmless BASF and anyone directly or indirectly employed by BASF from and against all claims, liabilities, damages, losses, and expenses (including attorney's fees and court and consultant costs) arising out of any infringement of intellectual property rights pertaining to any invention, design, process, product or device not specified in the Contract Documents and used in the performance of the Work or incorporated into the Work and shall defend all such claims in connection with any alleged infringement of such rights.

10.2 CONTRACTOR agrees to obtain and hereby grants to BASF an irrevocable, royalty free, non-exclusive license under all intellectual property rights now or during the term of this Agreement, owned or controlled by CONTRACTOR, its subcontractors and vendors, with respect to the Work and any part thereof to the extent necessary for the operation, maintenance, repair, or alteration (other than improvements affecting basic design) of the Work or any part thereof designed, specified or provided by CONTRACTOR under this Agreement.

ARTICLE 11 PROPRIETARY INFORMATION

11.1 CONTRACTOR acknowledges and agrees that any and all information emanating from BASF's business (BASF's business being deemed to include the business of BASF's divisions and subsidiaries) in any form including any compilation of otherwise public information is "**Confidential and Proprietary Information**" and CONTRACTOR agrees that it shall not, during or after the term of this Agreement permit the duplication, use or disclosure of any such Confidential and Proprietary Information to any person unless such duplication, use or disclosure is specifically authorized by BASF in writing. CONTRACTOR shall be responsible for any unauthorized disclosure made by any of its employees, servants or agents and shall take all reasonable precautions to prevent such disclosures. CONTRACTOR shall not use photographs of the Project or the Work nor use the name, trademarks or trade names (whether registered or not) of BASF in publicity releases or advertising, news reports or in any other manner including customer lists without securing the prior written approval of BASF. CONTRACTOR and its subcontractors and suppliers shall not advertise the Project or their presence at the Project by any means or media including signs at the site without the prior approval of BASF. No photographs of any portion of BASF's premises including but not limited to the Work or equipment shall be taken by CONTRACTOR or any subcontractor without BASF's written permission. The reports, recommendations, specifications, drawings, technical data, sketches, electronic and magnetic storage media and any information contained therein furnished by CONTRACTOR in connection with its performance under this Agreement shall become the property of BASF. The documents, materials and information referred to above, to be furnished by CONTRACTOR, shall be for BASF's use solely in connection with the licensing, construction, operation, maintenance, repair, replacement and modification of the Project.

11.2 Neither CONTRACTOR nor any subcontractor, supplier or other person or organization performing or furnishing any of the Work shall have or acquire any title to or ownership rights in any of the drawings, specifications or other documents (or copies thereof) supplied or prepared by BASF and they shall not reuse any of them on extensions of the Project or any other project without written approval, verification and adaptation by BASF. All Contract Documents provided to CONTRACTOR by BASF as well as modifications, alternations, copies, extracts or derivatives of the Contract Documents containing Confidential and Proprietary Information prepared or made by CONTRACTOR, subcontractor or other person or organization performing or furnishing any of the Work shall be promptly delivered to BASF upon completion of the Work or termination of this Agreement, whichever occurs first.

11.3 CONTRACTOR may only refer to or publicly disclose its business relationship with BASF with the prior written consent of BASF.

ARTICLE 12 DEFAULT

12.1 If CONTRACTOR at any time: (a) fails to supply the labor, materials, equipment, supervision and other things required of it in sufficient quantities and of required quality to perform the Work with the skill, conformity, promptness and diligence required hereunder or (b) causes interference, stoppage or delay to the Project or any activity necessary to complete the Project or (c) becomes insolvent or (d) fails to properly pay subcontractors and/or suppliers or (e) fails in the performance or observance of any of the covenants, conditions, or other terms of the Contract Documents, then in any such event, each of which shall constitute a default hereunder, BASF shall, after giving CONTRACTOR notice of default and forty-eight (48) hours within which to cure, have the right to exercise any one or more of the following remedies:

(a) require that CONTRACTOR utilize at its own expense overtime labor (including Saturday and Sunday work) and additional shifts as necessary to overcome the consequences of any delay attributable to CONTRACTOR's default;

(b) attempt to remedy the default by whatever means BASF may deem necessary or appropriate including but not limited to correcting, furnishing, performing or otherwise completing the Work or any part thereof by itself or through others (utilizing where appropriate any materials and equipment previously purchased for that purpose by CONTRACTOR) and deducting the cost thereof (plus an allowance for administrative burden equal to fifteen percent (15%) of such costs) from any monies due or to become due to CONTRACTOR hereunder;

(c) after giving CONTRACTOR an additional forty-eight (48) hours' notice (at any time following the expiration of the initial forty-eight (48) hours' notice and curative period), terminate this Agreement in accordance with **Section 13.1**; or

(d) recover from CONTRACTOR all losses, damages, expenses, penalties and fines and all reasonable attorneys' fees suffered or incurred by BASF by reason of or as a result of CONTRACTOR's default.

12.2 The foregoing remedies shall be considered separate

and cumulative and shall be in addition to every other remedy given hereunder or under the Contract Documents, or now or hereafter existing at law or in equity. CONTRACTOR's guarantors, surety, or sureties agree to be bound to BASF with respect to such remedies.

ARTICLE 13 TERMINATION

13.1 If CONTRACTOR at any time defaults in the discharge or performance of any of the obligations or conditions as provided in **Article 12**, BASF may at its option terminate all Work and without thereby waiving any rights or remedies against CONTRACTOR, enter upon the Work site and take possession of the Work, all materials, tools, equipment, facilities and supplies of CONTRACTOR, for the purpose of completing the Work and securing to BASF payment of its costs (plus an allowance for administrative burden equal to fifteen percent (15%) thereof) and other damages. In case of such termination CONTRACTOR shall not be entitled to receive any further payments under this Agreement until the Work is completed at which time CONTRACTOR shall be paid for all Work completed to BASF's satisfaction prior to the date of such termination less any excess cost to BASF of completing the Work. To the extent that the cost to BASF of completing the Work exceeds the compensation due CONTRACTOR under this Agreement, CONTRACTOR shall reimburse BASF for such cost.

13.2 BASF may at any time terminate this Agreement without cause and in such event BASF shall pay to CONTRACTOR in full settlement of all claims by it hereunder that proportion of the total compensation determined pursuant to **Article 4** which the then completed Work bears to the entire Work to be performed under this Agreement as mutually determined by BASF and CONTRACTOR less all payments previously made to CONTRACTOR and less all amounts withheld by BASF or paid by BASF to third parties pursuant to the provisions of this Agreement. Termination shall be effective upon receipt of written notice of termination by CONTRACTOR (unless a different effective date of termination is stated in such written notice) and CONTRACTOR shall promptly thereafter discontinue the Work.

ARTICLE 14 COMPLIANCE WITH LAWS

14.1 BASF shall procure all necessary permits, licenses and approvals of plans and specifications required to be obtained in the name of BASF. CONTRACTOR shall procure all necessary permits, licenses and approvals not required to be in the name of BASF. CONTRACTOR shall comply with all applicable Federal, State and Local laws, rules, regulations and orders.

14.2 CONTRACTOR shall furnish BASF, prior to the first delivery, CONTRACTOR's current Material Safety Data Sheets or Safety Data Sheets and other literature pertaining to the hazards associated with any products supplied as part of the Work and the precautions which should be observed with respect thereto. CONTRACTOR shall promptly furnish BASF copies of any revisions to any of the same during the term of this Agreement and for one (1) year following such term.

ARTICLE 15 RECORDS, ACCOUNTING, INSPECTION

15.1 CONTRACTOR shall keep full and detailed records

and accounts related to its performance under this Agreement. CONTRACTOR's records shall include but not be limited to accounting records (hard copy, as well as computer readable data if it can be made available), written policies and procedures; subcontract files (including proposals of successful and unsuccessful bidders, bid recaps, etc.); original estimates; estimating work sheets, correspondence; change order files (including documentation covering negotiated settlements); backcharge logs and supporting documentation; general ledger entries detailing cash and trade discounts earned, insurance rebates and dividends; and any other supporting evidence deemed necessary by BASF to substantiate charges, expenses or costs related to this Agreement. Accounting records shall be kept in accordance with the accounting procedures and requirements of BASF which procedures shall be and are hereby deemed to be a part of this Agreement. The records and accounts shall be open for inspection and copying by a BASF representative from time to time for a period of three (3) years after the completion of any Work and CONTRACTOR shall retain such records and accounts for such period and shall provide such representative full access to the same. During such three (3) year period, BASF reserves the right to inspect and CONTRACTOR shall provide BASF full access to any other CONTRACTOR records that relate in any way to such Work. Under no circumstances shall BASF be required to consider any claim submitted by CONTRACTOR unless and until such records and accounts are made available to BASF in their entirety for review and use in evaluation of the claim.

ARTICLE 16 DIFFERING SITE CONDITIONS

16.1 CONTRACTOR shall use its best efforts to properly identify all site conditions prior to the commencement of Work. CONTRACTOR shall promptly within a reasonable time after it has knowledge of the following conditions notify BASF of:

(a) physical, structural, subsurface, soil or other conditions uncovered, revealed or discovered, at the site materially differing from those suggested, indicated, reflected or referred to in this Agreement or which were provided or represented to CONTRACTOR and would not have been suggested, indicated or inferred from the physical inspection of the Project site required hereunder; or

(b) physical, structural, subsurface, soil or other conditions at the site materially differing from those ordinarily encountered and generally recognized as inherent in Work of the character provided for in this Agreement and not suggested, indicated, reflected or referred to in this Agreement or which were provided or represented to CONTRACTOR and would not have been suggested, indicated or inferred from the physical inspection of the project site required hereunder.

16.2 If the differing site conditions would materially alter the scope or nature of the Work, upon receipt of written notice by BASF, of "changed" conditions, the parties shall agree, if appropriate, to revise the Work in accordance with **Article 4**. In the alternative, BASF may elect to terminate this Agreement as it relates to all or any part of any remaining Work with respect to the Project site.

16.3 If the differing site conditions would materially alter the scope or nature of the Work, CONTRACTOR shall not be required to continue performance of the Work upon notification to BASF of such differing site conditions as provided in this **Article 16** and CONTRACTOR shall not be required to resume

performance until the terms of this **Article 16** are met.

ARTICLE 17 RCRA COMPLIANCE

17.1 Except when caused by CONTRACTOR's negligence or wrongful conduct, nothing contained within this Agreement shall be construed or interpreted as requiring CONTRACTOR to assume the status of a generator or a treatment, storage or disposal facility as those terms appear within the Resource Conservation and Recovery Act, 42 USCA, Section 6901. et seq., as amended, (hereinafter referred to as "**RCRA**"), Comprehensive Environmental Response Compensation and Liability Act, 42 USCA, Section 9601. et seq., as amended (hereinafter referred to as "**CERCLA**"), or within any state statute governing the treatment, storage and disposal of solid or hazardous waste (hereinafter collectively referred to as "**Regulations**"). However, CONTRACTOR warrants and represents that all Work and services performed under this Agreement shall fully comply with all federal, state and local environmental laws and regulations including but not limited to those listed above.

17.2 If BASF requests CONTRACTOR's assistance, CONTRACTOR, as requested and directed by BASF, will provide the following at BASF's expense:

(a) perform analytical testing to assist BASF in the proper characterization of any waste material for manifest preparation;

(b) identify potential transporters and disposal facilities which may be used in the transportation and disposal of any wastes collected;

(c) enter into subcontract or purchase order arrangements with transporters and/or disposal facilities selected by CONTRACTOR and approved by BASF;

(d) prior to disposal of any materials provide BASF with all information requested in **Exhibits B, C and D** required to be signed by BASF regarding waste characterization, disposal site and haulers; and

(e) prepare manifests for BASF's approval and execution.

17.3 CONTRACTOR acknowledges that the waste may be defined as hazardous materials under Department of Transportation ("**DOT**") regulations or under the RCRA regulations or other federal, state or local laws, regulations, rules or ordinances. A hazardous waste manifest (the "**Manifest**") shall be given to CONTRACTOR for each shipment of the waste materials. CONTRACTOR shall, upon pickup of the waste materials, sign and date the Manifest, acknowledging receipt of the waste materials and shall give one copy to BASF. CONTRACTOR shall keep the Manifest with the waste materials until disposal is complete. CONTRACTOR's invoice shall have attached thereto one copy of each Manifest signed and dated by an appropriate representative of the disposal site acknowledging receipt and proper disposal of waste materials at the disposal site.

17.4 If the disposal site approved by BASF becomes unsuitable for disposal hereunder either because its operation is unlawful or for any other reason as solely determined by BASF, then the parties shall use their best efforts to find another disposal site which shall be incorporated herein by

written amendment hereto.

17.5 CONTRACTOR shall transport the waste directly to the disposal site and shall not dispose of the waste materials other than at an approved disposal site without the prior written consent of BASF. Except as is otherwise agreed in writing, CONTRACTOR shall not reclaim any substance or ingredients contained in the waste for any purpose whatsoever. CONTRACTOR shall not transfer possession of the waste to any third party without BASF's prior written consent.

17.6 Upon notice by BASF, CONTRACTOR shall remove the waste from BASF's premises. Loading and unloading of disposal vehicles by CONTRACTOR shall be performed in strict accordance with all applicable laws and regulations including without limitation those promulgated by DOT and the Occupational Safety and Health Administration. Disposal vehicles shall meet the requirements of all applicable laws and regulations including without limitation those promulgated by DOT. CONTRACTOR shall ensure that all employees of CONTRACTOR are given adequate safety instructions and equipped with adequate safety equipment for the handling of the waste.

17.7 In the event of an accidental spill, release or discharge of the waste, CONTRACTOR shall, with due diligence, take all steps required by all pertinent federal, state and local laws and regulations, including, but not limited to 40 C.F.R §§ 263.30 to 263.31, Title 49 C.F.R. and 42 U.S.C. §§ 9601 to 9657. CONTRACTOR shall also promptly notify BASF stating all details of the discharge. CONTRACTOR shall only permit appropriate personnel within its company to make public statements or issue press releases regarding the accidental discharge and shall, on all occasions, consult with BASF's Public Affairs Department before making any public statements or issuing any press releases which would identify BASF by name.

17.8 Upon commencement of loading of the waste by CONTRACTOR, title to the waste shall be vested in CONTRACTOR and CONTRACTOR shall be fully and solely responsible and liable for their further handling and disposition.

17.9 BASF shall have an unfettered right to inspect CONTRACTOR's facilities, equipment and records at the site associated with all waste generated at the site at any time without prior notice to CONTRACTOR, and to inspect such facilities, equipment and other records located other than at the site upon reasonable notice. Additionally, CONTRACTOR agrees to provide BASF, within thirty (30) calendar days of request, copies of any records associated with the handling, storage, transportation, or disposal of any waste generated at the site, including, but not limited to, manifests, tax statements, billing statements and weight records.

ARTICLE 18 MISCELLANEOUS PROVISIONS

18.1 CONTRACTOR shall not enter into any subcontract for performance of any part of the Work without the prior written approval (including, in the case of time and material subcontracts, the prior written approval of all charges and fees associated therewith) of BASF. No such approval shall relieve CONTRACTOR from any of its obligations pursuant to this Agreement and CONTRACTOR shall continue to be fully responsible to BASF for all portions of the Work whether or not subcontracted by it. CONTRACTOR agrees to bind each of its subcontractors to the provisions of this Agreement unless

otherwise authorized by BASF in writing. CONTRACTOR hereby assigns to BASF each subcontract and purchase agreement for a portion of the Work provided, however, that this assignment shall become effective only upon written notice of acceptance of the assignment delivered to CONTRACTOR and the subcontractor or supplier by BASF. The assignment shall be subject to the prior rights of surety, if any, obligated under a bond relating to the Agreement.

18.2 CONTRACTOR shall not assign this Agreement in whole or in part or any monies to become due hereunder without the prior written consent thereto of BASF. Any purported assignment without such prior consent shall be void and of no effect.

18.3 Except as otherwise provided, this Agreement shall inure to and be binding upon the heirs, executors, administrators, successors and assigns of the parties hereto. BASF may assign or otherwise transfer all or part of its rights, duties and/or obligations under this Agreement to any person or entity controlling BASF, controlled by BASF or under common control with BASF at any time during the term providing BASF furnishes CONTRACTOR with advance written notice thereof.

18.4 Except as otherwise specified in this Agreement, all notices, requests or other communications required to be given under this Agreement shall be in writing, shall be directed to the attention of the undersigned representative of BASF or CONTRACTOR (as the case may be), and shall be deemed to have been sufficiently given if delivered by hand or deposited in the United States mail, postage prepaid, to the respective address of BASF or CONTRACTOR first above written or to such other address or addresses as may be specified from time to time by written notice given by either of the parties hereto the other.

18.5 CONTRACTOR and its subcontractors certify that at all times while CONTRACTOR's employees are on BASF's premises, CONTRACTOR and its subcontractors shall be in compliance with the Drug Free Workplace Act of 1988, as it may be amended, (which shall be deemed to apply to all services performed hereunder) and any governmental laws or regulations regarding substance abuse. CONTRACTOR and its subcontractors will take all action: (i) necessary to comply with such requirements, and (ii) BASF reasonably deems necessary to prevent substance abuse or its influence on CONTRACTOR's and subcontractor's employees while on BASF's premises.

18.6 This Agreement constitutes the entire agreement between CONTRACTOR and BASF relating to the subject matter hereof, and there are no previous or contemporary representations or warranties of BASF or CONTRACTOR not set forth herein.

18.7 Except as specifically provided herein, no modification or waiver of this Agreement or any term hereof shall be binding on either party unless made in writing and executed by an authorized representative of BASF and CONTRACTOR.

18.8 No waiver of any right under this Agreement shall affect the right of the party waiving the same to thereafter exercise such right or any other right similar thereto.

18.9 No modification, waiver, termination, discharge or cancellation of this Agreement or any term hereof shall impair the right of either party hereto with respect to any liability

whether or not liquidated of the other party therefor accrued.

18.10 All rights and remedies of BASF specified in this Agreement are in addition to BASF's other rights and remedies under the law, whether in contract or in tort.

18.11 CONTRACTOR shall remain an independent CONTRACTOR and shall have no power nor shall CONTRACTOR represent that CONTRACTOR has any power to bind BASF or to assume or to create any obligation expressed or implied on behalf of BASF.

18.12 If any clause or provision of the Agreement shall be held by final judgment of a court of competent jurisdiction to be illegal, invalid or unenforceable, then it is the intention of the parties that the remainder of this Agreement shall not be affected thereby and in lieu of each clause or provision of this Agreement that is illegal, invalid or unenforceable, there shall be added as a part of this Agreement a clause or provision as similar in terms to such illegal, invalid or unenforceable clause or provision as may be possible without being illegal, invalid or unenforceable. If such reformation cannot be accomplished, the offending provision shall be stricken and the remainder of this Agreement shall remain in full force and effect; provided, however, that if such offending provision cannot be reformed without resulting in a material change in the contractual relationship between the parties; thereby depriving either or both of the parties of the benefit of the fundamental economic bargain herein provided, this Agreement shall become voidable upon demand of the party whose economic interests are thus impaired.

18.13 CONTRACTOR warrants its compliance with Executive Order 11246 as amended, with related orders, and with the Fair Labor Standards Act of 1938, as amended.

18.14 Except to the extent otherwise provided herein, this Agreement shall be governed by and construed in accordance with the internal laws of the state in which the Work is to be performed, excluding the choice of law provisions of such. The parties exclude this agreement from the application of the United Nations Convention on Contracts for the International Sale of Goods and its conflicts of laws rules, if otherwise applicable.

18.15 It is specifically understood that BASF is an Equal Opportunity Employer and CONTRACTOR certifies that CONTRACTOR complies with the Fair Labor Standard Act of 1938, as amended. CONTRACTOR agrees that, if this is construed to be a subcontract within the meaning of the Rules and Regulations approved by the United States Secretary of Labor pursuant to Executive Order 11246, as amended, the Vietnam Era Veterans Readjustment Act of 1974, as amended, or the Rehabilitation Act of 1973, as amended, or of the regulations issued pursuant to Executive Order 11625, the provisions of the applicable regulations as well as the Equal Opportunity and Nondiscrimination provision of Section 202 of Executive Order 11246 shall be incorporated herein by reference and shall be binding upon CONTRACTOR as part of this Agreement.

18.16 Whenever examples, of the terms "including," "inclusive of," or words of like import are used under this Agreement, they are used to provide illustrations only of the meaning of general provisions, and such examples and illustrations do not define or limit the meaning of such general provisions. Whenever the terms "subcontractor," "material suppliers," or "vendors" are used, these terms shall mean all

such persons regardless of their tier of relationship to CONTRACTOR.

18.17 Other Agreement terms or clarifications are set forth in **Exhibit E** and are incorporated herein.

18.18 CONTRACTOR hereby warrants CONTRACTOR has not and will not, directly or indirectly, enter into any agreement, participate in a collusion or otherwise take any action in restraint of free or competitive bidding, including, but not limited to, any offer or promise of future employment or business opportunity by or for any contractor or subcontractor, or any personnel of BASF or its contractor's or subcontractor's associated with BASF procurement or this transaction.

18.19 If CONTRACTOR has reasonable grounds to believe that a BASF or CONTRACTOR employee, subcontractor or subcontractor employee, directly or indirectly, solicited, accepted or attempted to accept any money, fee, gratuity, offer or promise of future employment or business opportunity, or thing of value of any kind for the purpose of improperly obtaining or rewarding favorable treatment in connection with a contract or subcontract associated with BASF, CONTRACTOR shall promptly report in detail the possible misconduct to BASF's Corporate Security Department or BASF's confidential Compliance Hotline at 1-800-241-1280.

18.20 CONTRACTOR agrees that any claims against BASF, irrespective of an alleged breach by BASF of the Agreement, shall be based nonetheless upon the Agreement and the contract sum set forth in **Article 4** and shall in no event be based upon an asserted fair and reasonable value of the Work performed.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

BASF Corporation

By: _____

By: _____

EXHIBIT A

WAIVER OF LIEN AND AFFIDAVIT OF PAYMENT

CONTRACT

KNOW ALL MEN BY THESE PRESENTS:

That for and in consideration of BASF Corporation ("**BASF**"), making payment of the retention amount held by BASF under the said Agreement to ("**CONTRACTOR**"), CONTRACTOR does hereby:

1. Represent and warrant that:
 - a. CONTRACTOR has paid in full or otherwise satisfied all obligations for all materials and equipment furnished, for all work, labor and services performed, and for all known indebtedness and claims against CONTRACTOR for damages arising in any manner in connection with the performance of the said Agreement for which BASF or its property might in any way be held responsible;
 - b. There is no sum due or to become due to any CONTRACTOR, subcontractor, laborer or supplier in connection with the performance of the said Agreement;
2. CONTRACTOR acknowledges that this affidavit is made in order to induce BASF to make final payment due CONTRACTOR under said Agreement with the knowledge that BASF will rely on the truth of the statements made by CONTRACTOR herein.
3. To the extent not precluded by law, CONTRACTOR waives and relinquishes any and all claims or rights of lien it may have against BASF or any land, building structure or other property owned by BASF on account of any labor, services, materials, equipment or supplies furnished in connection with the said Agreement;
4. CONTRACTOR agrees to defend, indemnify and save BASF harmless from all liens, claims or demands for labor, services, materials, equipment or supplies furnished in connection with the said Agreement by the undersigned, its subcontractors, suppliers, employees or agents, including but not limited to, the payment to BASF upon demand of all costs and expenses (including attorney's fees) incurred by BASF in the defense, release or settlement of any such lien, claim or demand.

IN WITNESS WHEREOF, the undersigned has caused this WAIVER OF LIEN AND AFFIDAVIT OF PAYMENT to be executed by its duly authorized representative on this day of , 20 .

CONTRACTOR:

By _____

Print Name _____

Title _____

Subscribed and sworn to before me this day of , 20 .

Notary Public

EXHIBIT B

WASTE CHARACTERIZATION REPORT

Page 1 of 3

Proper Shipping Name/Description of Materials:

DOT Identification Number: UN or NA

DOT Hazard Class

DOT Label(s) Required (Non-Bulk):

Hazardous Substance(s):

Reportable Quantity:

EPA Hazardous Waste Number:

DOT Hazardous Class Number: (For EPA Annual Report)

Other Labels

Packaging Specifications:

Bill of Lading/Hazardous Waste Manifest - Proper Description:

Placard Required:

Carrier(s) Routing and EPA I.D. Number(s):

Agreement Rates or Other Agreement Price:

BASF Premises to Which Agreement Pertains:

Treatment or Disposal (check appropriate box)

Type of Treatment or Disposal:

Note: Waste profile or characterization report may be attached if required by CONTRACTOR. A sample of such a report, which may vary depending on the treatment or disposal facility, is attached.

EXHIBIT B

**WASTE CHARACTERIZATION REPORT
PAGE 2 OF 3**

Generator Information

Date Submitted:

Generator Name:

Facility Address:

Contact:

Title:

Facility Telephone Number: ()

Facsimile Telephone Number: : ()

EPA ID Number:

Reference No.:

Transporter No.

Billing Information (if other than generator address)

Billing Company:

Billing Address:

Waste Stream Information

How Waste is Generated:

Waste Stream Name:

Description:

Process Primary SIC Code (if available):

Annual Volume (Gallons)

Environmental Response Guide #

Drums? Bulk? Vac Tanker? Cubic Yard Boxes?

*If drums indicate number of: # Liq # PS # NPS Rags # RCRA Empties

DOT Shipping Name:

UN/NA Number: DOT Hazard Class:

EPA Hazardous Waste Number(s):

For Internal Use Only: (Do Not Write In This Section)

Prequalification Type: Status: Approved/Rejected

Prequalification No.: Initial:

Technical Rep: Date:

Comments:

EXHIBIT B

**WASTE CHARACTERIZATION REPORT
PAGE 3 OF 3**

CHEMICAL CONSTITUENTS OF WASTE STREAM (Account for 100%)

%	%
%	%
%	%
%	%

PHYSICAL PROPERTIES OF WASTE STREAM

Physical State @ 700°F: Liquid: Semi-Solid: Solids:
Phase/Layering: None: Bilayered: Percent Liquid: Percent Solid:
Flash Point: °F Viscosity @ 700°F: Low: Med: High:

ANALYTICAL INFORMATION

BTU/Lb: Pumpable: Yes No
Percent Chlorides: Percent Water: Percent Water:
pH:
Density (Lb/Gal):

SPECIAL HANDLING PROCEDURES:

DOES THE WASTE MATERIAL CONTAIN ANY:

Halogenated Aromatics (e.g. PCG's, PBB's):	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Reactive Sulfide/Cyanides:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Phosphorus Compounds:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Infectious/Etiologic Agents:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
NIOSH Human-positive Carcinogens:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Cyclic Nitrogen Compounds (e.g. pyridine):	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Radioactive Material:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Polycyclic Organics:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Any (Other) Michigan Critical Material:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Aromatic Amines:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Pesticides:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Rodenticides:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Fungicides:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Ureas or Thioureas:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Phenols:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Quinones:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Asbestos:	Yes <input type="checkbox"/>	No <input type="checkbox"/>

EXHIBIT C

TREATMENT/DISPOSAL SITE INFORMATION

Page 1 of 1 pages

Name of Site

Site Owner or Operator

Location

Applicable Federal, State and/or Local Law, and/or Agencies

Permit, License Operating Under or Registration

EPA Identification Number(s)

EXHIBIT D

HAULER INFORMATION

Page 1 of 1 pages

TYPE OF CARRIER (Circle One) COMMON CARRIER CONTRACT CARRIER

INTERSTATE:

ICC Certificate No.

Sub. No.

INTRASTATE:

PUC Certificate No.

Sub. No.

EPA IDENTIFICATION NO.

EXHIBIT E

OTHER AGREEMENT TERMS OR CLARIFICATIONS

Page 1 of 1 pages

EXHIBIT F
PURCHASE REQUISTION

EXHIBIT G

TIME AND MATERIALS BASIS FOR EXTRA WORK

EXHIBIT H

UNIT PRICES