Site Management Plan

Brownfield Cleanup Program
Tecumseh Phase III Business Park
NYSDEC Site Nos. C915199 through C915199J
Lackawanna, New York

November 2013 0071-012-322

Prepared By:

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SITE MANAGEMENT PLAN
TECUMSEH PHASE III BUSINESS PARK

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1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

1.1 Introduction

This document is a required element of the remedial program for the New York State Brownfield Cleanup Program (BCP) Sites within and collectively comprising the property referred to as the "Tecumseh Phase III Business Park," located in City of Lackawanna, Erie County, New York (see Figures 1 through 3). These BCP Sites, listed below by name and New York State Department of Environmental Conservation (NYSDEC) Site Number, were remediated or are slated to undergo remediation in accordance with Brownfield Cleanup Agreement (BCA) Index No. B9-0696-05-06(C), which was executed on March 14, 2007 and amended on August 20, 2012:

Site Name:	**NYSDEC Site Number:**
Site III-1	C915199
Site III-2	C915199B
Site III-3	C915199C
Site III-4	C915199D
Site III-5	C915199E
Site III-6	C915199F
Site III-7	C915199G
Site III-8	C915199H
Site III-9	C915199I
Site III-10	C915199J

This SMP has been prepared in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010, and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the Institutional Controls (ICs) and Engineering Controls (ECs) that are required by the Environmental Easement(s) governing the above-listed BCP Sites.

1.1.1 Background

Tecumseh Redevelopment Inc. (Tecumseh) submitted an application to the NYSDEC dated May 20, 2005 requesting a BCA for the approximate 150-acre Phase III Business Park property. The NYSDEC deemed Tecumseh's application complete, and assigned the Phase III Business Park as Site Number C915199. Tecumseh subsequently entered into the BCA with the NYSDEC on May 14, 2007, which required the company to investigate and remediate contaminated media within the Phase III Business Park.

Upon substantial completion of the Remedial Investigation activities described later in this document, Tecumseh prepared a letter to the NYSDEC dated December 22, 2011 requesting division of the Phase III Business Park into 10 sub-parcels to stimulate sale and redevelopment of more manageable sized properties and promote "green remediation" by coordinating final remedial measures (i.e., cover placement) with associated sub-parcel build-out. The NYSDEC agreed to Tecumseh's request and, in August 2012, the original BCA for Site C915199 was amended to cover Site III-1, with separate BCAs issued and executed for the remaining nine BCP Sites (i.e., Sites III-2 through III-10; C915199B through C915199J, respectively). It was further determined that individual Decision Documents, Remedial Action Work Plans (RAWPs), Final Engineering Reports (FERs), and Certificates of Completion would be prepared for each of the 10 BCP Sites, with a common Site Management Plan (SMP) and Environmental Easement prepared to cover all of the BCP Sites within the Phase III Business Park[1].

1.1.2 Site Location and Description

The overall boundaries of the Controlled Property as well as the boundaries of the individual Sites contained therein are more fully described in the survey metes and bounds descriptions (see Appendix A). The Controlled Property is identified as part of tax parcel number 141.11-1-50 on the Erie County Tax Map, and is comprised of an approximate 150-acre area bounded by Gateway Metroport Ship Canal and property owned by Gateway Trade Center site to the north; the South Buffalo Railroad Company to the south; Tecumseh Phase

[1] For clarity and in recognition of the intent of this SMP to address post-remedial requirements applicable to all of the sub-parcels within the Phase III Business Park, the term "Controlled Property" hereafter refers to the collective group of BCP Sites comprising the Phase III Business Park, with the term "Site" used to reference the individual BCP sub-parcels.

II Business Park and the South Return Water Trench (SRWT) to the east; and other Tecumseh property to the west (see Figure 2). The Controlled Property is transected by Smokes Creek, which is specifically excluded from the BCP.

1.1.3 Purpose and Organization

After completion of the remedial work described in the Site-specific RAWPs, some contamination will remain in the subsurface, which is hereafter referred to as 'remaining contamination." This SMP was prepared to manage remaining contamination on the Controlled Property until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. All reports associated with the Controlled Property can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

Engineering Controls (ECs) have been incorporated into the remedy to control exposure to remaining contamination during the use of the Controlled Property to ensure protection of public health and the environment. The Environmental Easement granted to the NYSDEC, and recorded with the Erie County Clerk, will require compliance with this SMP and all ECs and ICs placed on the Controlled Property. One Environmental Easement exists for the Controlled Property and a separate Environmental Easement exists for Sites III-7/III-8. The ICs place restrictions on use of the Controlled Property, and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This SMP specifies the methods necessary to ensure compliance with all ECs and ICs required by the Environmental Easement for contamination that remains on the Controlled Property. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination on the Controlled Property after completion of the Remedial Action, including: (1) implementation and management of all Engineering and Institutional Controls; (2) media monitoring; (3) operation and maintenance of all treatment, collection, containment, or recovery systems; (4) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports (PRRs); and (5) defining criteria for termination of any remaining treatment system operations.

To address these needs, this SMP includes three plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Monitoring

Plan for implementation of required Monitoring; (3) an Operation and Maintenance Plan for implementation of remedial collection, containment, treatment, and recovery systems (including, where appropriate, preparation of an Operation and Maintenance Manual for complex systems). To the extent these requirements are generic to the Controlled Property they are incorporated within the body of this SMP. Site-specific requirements (e.g., groundwater monitoring; operation and maintenance of ongoing active remediation systems, etc.) are incorporated in Appendix H for Sites where remedial work is substantially complete. Remaining Site-specific requirements will be added or modified by addenda as the remedial work progresses on those Sites.

This SMP also includes a description of Periodic Review Reports for the submittal of data, information, recommendations, and certifications to NYSDEC.

It is important to note that:

- This SMP details the specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which are grounds for revocation of the Certificate of Completion (COC).
- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375, and the BCA (Index # B9-0696-05-06(C); Site #C915199) for the Controlled Property, and thereby subject to applicable penalties.

1.1.4 Revisions

Revisions to this SMP will be proposed in writing to the NYSDEC's project manager. In accordance with the Environmental Easement for the Controlled Property, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.2 Site Background

1.2.1 Site History

The approximate 150-acre Controlled Property formerly housed several facilities used in Bethlehem Steel Corporation's (BSC's) steel manufacturing processes. These included a basic oxygen furnace (BOF) plant; an open hearth and furnace building; a sinter plant;

finishing mills; mould warming; rail servicing; and electrical substations. Fifteen historic solid waste management units (SWMUs P-17 and P-19 through P-32) are present on the Controlled Property. BSC performed assessments for these SWMUs during a Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) and subsequent RCRA Facility Investigation (RFI). Based on the findings, USEPA Region II issued "No Further Action" determination for the identified SWMUs within the Controlled Property.

The Controlled Property contains few structural remnants and other features associated with historic integrated steel-making facilities. These presently include remaining buildings of the former Water Quality Control Station (WQCS) No. 3, the Electrical Department building, remnants of former overhead coke gas and active natural gas conveyance lines on the northern side of the property, access roads, electrical power lines, and railroad tracks. Immediately east of the Controlled Property boundary is a man-made drainage channel designated as the SRWT that begins near WQCS No. 3 and flows south to Smokes Creek (see Figure 2). Historically and currently, the trench collects and discharges groundwater and storm water to Smokes Creek under active SPDES Permit No. NY-0269310. There are no active outfalls into the SRWT from the Controlled Property.

The BCP application for the Controlled Property was submitted May 20, 2005 and approved January 9, 2007. The Remedial Investigation/Alternatives Analysis Report (RI/AAR) Work Plan, revised July 2008, identified characterization requirements to be completed pursuant to the BCP and NYSDEC DER-10 guidance. Remedial Investigation (RI) activities on the eastern portion of the Controlled Property were initiated in August 2008. At that time, the western side of the Controlled Property was slated to be carved out and redeveloped as a latter phase of a wind energy construction project. However, the planned developer was unable to fulfill its responsibilities and Tecumseh elected to resume obligations for this portion of the Controlled Property under the original BCA. Supplemental RI activities addressing the western portion of the Controlled Property were therefore undertaken in late 2009 through early 2010, with some additional investigation work to delineate arsenic-impacted areas completed in April 2012. The RI/AA Report was submitted to NYSDEC in September 2011, revised and resubmitted in December 2011, and finalized in July 2012. The RI/AA Report recommended remediation of hotspot slag/fill and localized saturated slag/fill (smear zone) and isolated groundwater (affecting only certain

Sites), with cover placement recommended as the final remedial measure for all areas of the Controlled Property.

1.2.2 Geologic Conditions

The United States Department of Agriculture Soil Survey of Erie County, New York indicates that the Controlled Property is covered by surface soil classified as Urban Land; soil consisting of paved, foreign, or disturbed soils. Subsurface lithology observed during test pit excavation generally consisted of a soil/fill unit comprised of non-cohesive coal and coke fines; slag; cindery ash and brick; concrete; gravel; silt; reddish silt (precipitator dust); and sand, all of which are ubiquitous on the Controlled Property. Boring logs from monitoring wells constructed on the Controlled Property indicate that the thickness of the soil/fill unit ranges from approximately four feet (west side) to 12 feet (east side). Below the soil/fill unit is a native silty clay or clayey silt layer; a peat layer was noted at some test pits immediately below the soil/fill unit. The clay/silt/peat layers are underlain by Dolomitic limestone with shale bedding. This bedrock was encountered at 52 feet below ground surface (fbgs) along the western perimeter of the Controlled Property.

Historically, due to the proximity of Lake Erie and municipal supplied water, groundwater in the area has not been developed for industrial, agricultural, or public supply purposes. There is a deed restriction that prohibits the use of groundwater on the 1,100-acre Tecumseh property; consequently, no groundwater supply wells are present on the Controlled Property.

Static depth to groundwater measurements from existing and newly installed wells/piezometers were performed on January 29, 2010 and repeated on December 2, 2011, indicating depths to groundwater between 6.8 and 11.4 feet below top of riser. Figure 4 is an isopotential map prepared from the January 29, 2010 groundwater elevations. Examination of the isopotential map indicates that shallow groundwater generally flows toward the minor water bodies of the Controlled Property (e.g., Smokes Creek and the SRWT) in conjunction with a westerly component (northwest portion of the Controlled Property) toward major water body Lake Erie. The SRWT is in hydraulic connection with the shallow groundwater on the Controlled Property and flows south into Smokes Creek, which then flows westerly ultimately discharging into Lake Erie. In addition, a small groundwater divide is present at the northwest corner of the Controlled Property, which has been substantiated by the RCRA

Facility Investigation as well as the off-site Benzol Plant Interim Corrective Measures (ICM) work. This divide has created a southerly groundwater flow component from the Benzol Plant area onto the Controlled Property, which is substantiated by groundwater concentrations of Benzol Plant constituents within wells MWN-19A and MWN-30A.

1.3 Summary of Remedial Investigation Findings

A Remedial Investigation (RI) was performed to characterize the nature and extent of contamination on the Controlled Property. The results of the RI are described in detail in the following report:

- Remedial Investigation/Alternatives Analysis Report (RI/AAR), Phase III Business Park Area, Tecumseh Redevelopment Inc., Lackawanna, New York prepared by TurnKey Environmental Restoration, LLC, Revised July 2012.

Generally, the RI determined that conditions were consistent with the historic use of the Controlled Property for steel-making and finishing operations, with the widespread presence of fill material containing non-cohesive coal and coke fines; slag; cindery ash and brick; concrete; gravel; silt; reddish silt (precipitator dust); and sand, all of which are ubiquitous on the Controlled Property. Soil/fill concentrations, where identified above 6NYCRR Part 375 commercial-use soil cleanup objectives (SCOs), varied according to the type and nature of the constituents. Specifically, elevated concentrations of petroleum volatile organic compounds (VOCs) were observed at one test pit location where field evidence of impact was observed (e.g., odor, sheen, and elevated PID). Base-neutral semi-volatiles (i.e., PAHs) were detected at several locations above commercial SCOs; however, total SVOC concentrations were reported at less than 500 parts per million (ppm), which was deemed a site-specific SCO based on NYSDEC CP-51 guidance for non-residential sites where a cover system will be employed. Certain metals (arsenic, mercury, cyanide, and lead) were detected above commercial SCOs at several locations.

Groundwater impacts are present in monitoring wells immediately south of SMWU P-11 (Benzol Plant Tank Storage Area). The constituents detected (benzene, toluene, and xylene) are the same as those detected in the influent to the CMS SWMU P-11 treatment system but at significantly lower concentrations. Weathered petroleum impacts (i.e., oily sheen, odor, elevated PID) are evident in the saturated zone within the vicinity of the Steel

Winds II power poles along the north boundary of the Controlled Property. In the vicinity of the former Tar Pump House, oil/tar was observed within the saturated zone.

The RI findings indicate that, as would be expected based on the relatively low solubility of the constituents prevalent in the soil/fill matrix, groundwater is generally not impacted by constituents of concern.

Below is a summary of conditions on the Controlled Property when the RI was performed in 2008-2010. Tables 1A (Phase III) and 1B (Phase IIIA) summarize the soil/fill concentrations detected during the RI with a comparison to Part 375 restricted-commercial SCOs; Tables 2A (Phase III) and 2B (Phase IIIA) summarize the groundwater concentrations detected during the RI with a comparison to Class GA groundwater quality standards and guidance values (GWQS/GVs).

Soil/Fill

The initial Controlled Property soil/fill investigation involved excavation of 86 test pits; a total of 53 surface soil/fill samples (typically collected from 0-2 feet below grade), 8 subsurface soil samples, and 1 waste characterization sample were collected from those test pit locations during the RI. In addition, three surface soil/sediment samples were collected from the bottom of the former Slabbing Mill Return Water Trench. The subsequent investigation on the western portion of the Controlled Property involved excavation of 58 test pits, with a total of 28 surface soil/fill samples and 13 subsurface soil/fill samples. For clarification purposes and to avoid numbering overlap with the earlier test pits on the eastern side of the Controlled Property, the western area of the site was internally designated as "Phase IIIA" and test pits were labeled as "BPA-3A-#." Supplemental test pits not proposed in the RI Work Plan were excavated in the vicinity of test pits: BP3A-TP-8 (5), BP3A-TP-44 (16), BP3A-TP-53 (10), BP3-TP-54 (1), BP3-TP-55 (1), and BP3A-TP-58 (6) to further investigate areas with field evidence of impact. On September 21, 2011, TurnKey excavated an additional test pit (deemed BPA3-TP-62A) between test pits BPA3-TP-61 and BPA3-TP-62 at the request of NYSDEC because of the sheen observed on the groundwater table (7 fbgs) and the proximity to Smokes Creek.

Key observations and findings from the soil/fill investigation for the Controlled Property are listed below:

- Base-neutral SVOCs (i.e., PAHs) were detected above the SCOs at several test pit locations across the Controlled Property. However, total SVOC concentrations were reported at less than 500 parts per million, which NYSDEC's CP-51 Soil Cleanup Policy (October 2010) has provided as an alternative SCO (i.e., in lieu of individual SCOs) for soils where end use of the site will be for non-residential purposes and where a cover (1 foot of clean soil, building and/or pavement) and Site Management Plan will be implemented.
- Arsenic was also detected above the commercial SCO of 16 mg/kg at several test pit locations. Arsenic is a ubiquitous metal with urban background soils in New York State frequently containing concentrations in excess of the commercial SCO, particularly at active and former industrial properties characterized by historic slag fill deposition and coal burning, such as that which occurred on the subject property. Accordingly, comparison of the arsenic data to site-specific background or average concentrations is considered appropriate. To determine the site background concentration, all arsenic data for the Controlled Property was tabulated and the 95% upper confidence limit (95% UCL) on the mean was calculated. Based on this analysis and further discussions with the NYSDEC, a site-specific SCO of 118 ppm was established as the screening criteria for arsenic hotspot identification. The following four test pit areas exceeded this site-specific SCO: BPA3-TP-28 (130 ppm), BPA3A-TP-6 (123 ppm), BPA3A-TP-33 (132 ppm), and BPA3A-TP-37 (121 ppm). The supplemental test pit investigation surrounding these four test pit locations undertaken in February 2012 provided a more definitive delineation of these areas.
- Field observation of potential subsurface impact by petroleum was recorded at certain test pit locations. However, with the exception of test pit BPA-3A-TP-53, samples from the associated depth intervals yielded VOC concentrations below commercial SCOs and SVOC concentrations at levels consistent with those found across the Controlled Property, suggesting that the observations are representative of residual, weathered organics that do not constitute a remaining source area.
- Oil/tar soaked fill, moderate odor, and sheen on the fill and water table (approximately 7 fbgs) were noted during excavation of test pit BPA-3A-TP-44 located south of the Tar Pump House.
- Mercury and cyanide were identified at elevated levels in shallow fill at BPA-3A-TP-47, BPA-3A-TP-49 and BPA-3A-SS-49 (i.e., proximate to the former gas holder). In addition, bluish staining was observed at BPA-3A-TP-47 and BPA-3A-SS-49. These findings suggest potential localized shallow releases from historic gas holder instrumentation and/or purifier box waste.
- The observation of apparent red paint at BPA-3-TP-42 (0.5 to 1 fbgs) was substantiated by the detection of elevated lead in the associated sample.

- Two borings in the soaking pit building did not indicate the presence of asbestos (although refusal was encountered at one of the locations, allowing for collection and laboratory analysis of only one subsurface sample). Notwithstanding the potential for subsurface ACM in this area, the borings indicate a thick concrete layer is present at grade, mitigating potential for exposure. Based on review of historic drawings, it is possible that the historic concrete-lined tunnel beneath the building foundation contains asbestos material.

Site-Related Groundwater

The groundwater investigation findings indicate that, as would be expected based on the relatively low solubility of the constituents prevalent in the soil/fill matrix, groundwater is not significantly impacted by COPCs except for:

- Weathered petroleum impacts evident in the right-of-way of the Steel Winds II Project within the shallow groundwater saturated zone at a depth of approximately 6.5 fbgs. The petroleum impacts were observed in test pits BP3-TP-2 and BP3-Supp-TP-1, TP-4, TP-5, TP-7, TP-10, TP-11, and TP-12.
- The petroleum-impacted area near monitoring wells MWN-19A and MWN-30A. Review of the isopotential map presented as Figure 4 indicates that these impacts as well as the impacted soils near the water table (i.e., smear zone) are likely the result of shallow groundwater migration/fluctuation from off-site SWMU P-11 (Benzol Plant Tank Storage Area) within the CMS Area. Both of these monitoring wells are located within the area of visually observed soil/fill impact in BPA-3A-TP-53, as described above, and contain similar parameters.

Site-Related Soil Vapor Intrusion

Based on the Qualitative Human Health Exposure Assessment (Section 6.0 of the RI/AAR), it appears that the sub-slab vapor intrusion pathway does not pose a risk under the current or reasonably-anticipated future use scenario.

1.4 Summary of Remedial Actions

Table 3 summarizes the remedial actions performed or to be performed on the Controlled Property by Site. Completed and proposed remedial actions are described within the Site-specific appendices (H-1 through H-10), which will be modified via addenda as the work progresses. The following Remedial Actions are common to all Sites:

1. Execution and recording of an Environmental Easement to restrict land use to commercial or industrial applications and prevent future exposure to any contamination remaining at the Site.
2. Development and implementation of a Site Management Plan for long term management of remaining contamination as required by the Environmental Easement, which includes plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance and (4) reporting.

1.4.1 Removal of Contaminated Materials from the Site

1.4.1.1 Excavated Materials

Details on the removal of contaminated materials are presented within the Site-specific appendices. Figure 5 shows the approximate extent of these planned and completed excavations.

1.4.2 Backfill Materials

With NYSDEC concurrence, completed excavations will be backfilled with: steel slag under Beneficial Use Determination (BUD) #555-9-15; bioremediated soil/fill; and/or non-impacted slag/fill generated from the on-site excavation work. Backfill material will be placed into the excavation and compacted/tracked with the excavator/backhoe bucket in 2-foot lifts.

1.4.3 Site-Related Treatment Systems

The treatment systems to be installed on the Controlled Property are described within the Site-specific appendices.

1.4.4 Remaining Contamination

The remedial work conducted on the Controlled Property has removed or will remove all known "source area" soil/fill (i.e., petroleum- and metal-impacted soil/fill); treated weathered petroleum-impacted saturated soil/fill in-situ; and remediated isolated groundwater impacts.

The remaining soil/fill is generally characterized by widespread exceedance of the Part 375 unrestricted-use SCOs for several ubiquitous constituents. Specifically, nearly all samples collected during the RI exhibited exceedance of the commercial SCOs for

polyaromatic hydrocarbons (PAHs), as well as arsenic, chromium, lead, and mercury. Other constituents remaining above unrestricted-use SCOs in select areas of the Controlled Property include PCBs (Aroclors 1248, 1254, and 1260) and inorganic compounds (i.e., cadmium, manganese, and zinc). It is not possible to quantify with any certainty areas that do not exceed one or more of the unrestricted-use SCO criteria; therefore, it is assumed that the entire 150-acre Controlled Property is impacted above the unrestricted-use SCOs to the approximate native soil depth of 12 fbgs.

Remaining soil/fill and groundwater contamination is described further within the Site-specific appendices.

2.0 ENGINEERING & INSTITUTIONAL CONTROL PLAN

2.1 Introduction

2.1.1 General

Since remaining contaminated soil/fill and groundwater exists beneath the Controlled Property, Engineering Controls and Institutional Controls (EC/ICs) are required to protect human health and the environment. This Engineering and Institutional Control Plan describes the procedures for the implementation and management of all EC/ICs at the Controlled Property. The EC/IC Plan is one component of the SMP and is subject to revision by NYSDEC.

2.1.2 Purpose

The EC/IC Plan provides:

- A description of all EC/ICs on the Controlled Property.
- The basic implementation and intended role of each EC/IC.
- A description of the key components of the ICs set forth in the Environmental Easement.
- A description of the features to be evaluated during each required inspection and periodic review.
- A description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of the Excavation Work Plan for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the Controlled Property.
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the remedy, as determined by the NYSDEC.

2.2 Engineering Controls

The engineering control common to the Controlled Property is the cover system described below. Other engineering controls (e.g., vapor barriers, sub-slab depressurization systems) specific to the Sites are described in Appendix H.

2.2.1 Cover System

Exposure to remaining contamination in soil/fill will be prevented by a cover system placed over the Controlled Property. The cover system will be placed following measures to address hotspots and saturated soil/groundwater impact (where present). Ideally the cover system will be placed as each Site is redeveloped, but will otherwise be required before sunset of the NYSDEC Brownfield Cleanup Program to avoid forfeit of BCP tax credits. This cover system will be comprised of a minimum of 12 inches of clean soil, stone, or NYSDEC-approved materials, with a demarcation layer (i.e., geotextile fabric, orange poly netting, or similar non-degradable visual demarcation) in all areas that are not paved or covered by concrete or structures. The cover system will be placed to address remaining non-mobile, ubiquitous contaminants (e.g., metals, polyaromatic hydrocarbons, etc.) during the redevelopment stage and prior to occupancy. Paved areas (i.e., buildings, roadways, parking lots) will be covered by asphalt pavement or concrete at least 6 inches thick. The final soil cover shall meet the specifications presented in the Excavation Work Plan (see Appendix B, Section 4.0).

The Excavation Work Plan contained in Appendix B outlines the procedures required to be implemented in the event the cover system is breached, penetrated, or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of this cover are provided in the Monitoring Plan included in Section 4 of this SMP.

2.2.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered complete when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the Decision Document. The framework for determining when remedial processes are complete is provided in Section 6.6 of NYSDEC DER-10.

The cover system is a permanent control, and the quality and integrity of the system will be inspected at defined, regular intervals in perpetuity.

2.3 Institutional Controls

A series of Institutional Controls is required to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination and precluding groundwater use for potable purposes; and, (3) limit the use and development of the Controlled Property to commercial/industrial type uses only. Adherence to these Institutional Controls is required by the Environmental Easement and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Environmental Easement and this SMP by the Grantor and the Grantor's successors and assigns.
- All Engineering Controls must be operated and maintained as specified in this SMP.
- All Engineering Controls on the Controlled Property must be inspected at a frequency and in a manner defined in the SMP.
- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP.
- Data and information pertinent to site management of the Controlled Property must be reported at the frequency and in a manner defined in this SMP.

Institutional Controls identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement.

The Controlled Property has a series of site-wide Institutional Controls in the form of restrictions. Adherence to these Institutional Controls is required by the Environmental Easement. Restrictions for the Controlled Property:

- Allow the use and development of the Controlled Property for commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- Restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH;
- Requires compliance with the Department approved Site Management Plan; and
- Requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8(h)(3.)

Additional Site-specific restrictions (if any) are presented in Appendix H.

2.3.1 Excavation Work Plan

The Controlled Property will be remediated for restricted-commercial/industrial use. Any future intrusive work that will penetrate the soil cover or cap, or encounter or disturb the remaining contamination, including any modifications or repairs to the existing cover system, will be performed in compliance with the Excavation Work Plan (EWP) included as Appendix B. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared for the Controlled Property. Appendix C includes a sample HASP that is in current compliance with DER-10, 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State, and local regulations. Based on future changes to State and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and re-submitted with the notification described in Section 1.2 of the EWP. Any intrusive construction work will be performed in compliance with the EWP, HASP, and CAMP, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (see Section 5.0).

The Site Owners and associated parties preparing the remedial documents for submittal to the State, and parties performing this work, are completely responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of excavation de-water, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations (such as building foundations and bridge footings). The Site Owner will ensure that Site development activities will not interfere with, or otherwise impair or compromise, the engineering controls described in this SMP.

2.4 Inspections and Notifications

2.4.1 Inspections

A comprehensive inspection of the Controlled Property will be conducted annually, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether Engineering Controls continue to perform as designed.
- If these controls continue to be protective of human health and the environment.
- Compliance with requirements of this SMP and the Environmental Easement.
- Achievement of remedial performance criteria.
- Sampling and analysis of appropriate media during monitoring events.
- If Site records are complete and up to date.
- Changes, or needed changes, to the remedial or monitoring system.

Inspections will be conducted in accordance with the procedures set forth in Section 3.0, Site Monitoring Plan. Reporting requirements are outlined in Section 5.3, Periodic Review Report.

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the affected area of the Controlled Property will be conducted by a Qualified Environmental Professional (QEP) as defined in NYSDEC DER-10 within five days of the event to verify the effectiveness of the EC/ICs implemented.

2.4.2 Notifications

Notifications will be submitted by the Site Owner to the NYSDEC as needed for the following reasons:

- 60-day advance notice of any proposed changes in use that are required under the terms of the BCA, 6NYCRR Part 375, and/or Environmental Conservation Law. This shall include planned expansions onto any undeveloped portion of the Site that is not already covered with 12 inches of approved cover material.
- 15-day advance notice of any proposed ground-intrusive activities pursuant to the EWP.

- Notice within 48 hours of any damage or defect to the foundations structures that reduces or has the potential to reduce the effectiveness of other Engineering Controls and likewise any action to be taken to mitigate the damage or defect.
- Notice within 48 hours of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of Engineering Controls in place at the Site, including a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the ECs.

Any change in the ownership of any Site within the Controlled Property or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of the BCA, and all approved work plans and reports, including this SMP.
- Within 15 days after the transfer of all or part of the Site, the new owner's name, contact representative, and contact information will be confirmed in writing.

2.5 Contingency Plan

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions. These conditions are addressed in the Emergency Response Plan (ERP) included as Attachment C-1 to the HASP. This Contingency Plan, a summary of the ERP, describes potential emergencies that may occur at the Site; procedures for responding to those emergencies; roles and responsibilities during emergency response; and training all workers must receive in order to follow emergency procedures. This Contingency Plan also describes the provisions this Site has made to coordinate its emergency response planning with other contractors on-site and with off-site emergency response organizations.

2.5.1 Emergency Telephone Numbers

In the event of any environmentally related situation or unplanned occurrence requiring assistance, the affected Site Owner or Owner's representative(s) should contact the

appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to the QEP. These emergency contact lists must be maintained in an easily accessible location at the Site. Site-specific contacts will be included in Appendix H.

Table 4: Emergency Contact Numbers

Medical, Fire, and Police:	911
One Call Center:	(800) 272-4480 (3-day notice required for utility mark out)
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362

Table 5: Contact Numbers

Thomas H. Forbes, P.E. Qualified Environmental Professional (QEP)	Work: (716) 856-0599 Mobile: (716) 864-1730
Thomas H. Forbes, P.E. Site Safety and Health Officer (SSHO)	Work: (716) 856-0599 Mobile: (716) 864-1730
Richard L. Dubisz Alternate SSHO	Work: (716) 856-0635 Mobile: (716) 998-4334

* Note: Contact numbers subject to change and should be updated as necessary

2.5.2 Map and Directions to Nearest Health Facility

Location: 1951 Hamburg Turnpike, Lackawanna, New York 14218

Nearest Hospital Name: Mercy Hospital

Hospital Location: 565 Abbott Road, Buffalo, NY 14220

Hospital Telephone: (716) 826-7000

Directions to the Hospital (see Figure 6):

1. From the Buffalo Crushed Stone site access drive (or Gate 2); turn left onto the Hamburg Turnpike (Route 5).

2. Proceed east on Hamburg Turnpike (Route 5) to the Tifft Street exit; turn right onto Tifft Street.
3. Take Tifft Street east crossing South Park Avenue and McKinley Parkway. Bear left on Edgewood Avenue.
4. Turn right onto Abbott Road and Mercy Hospital will be on right hand side. Follow signs to emergency room (ER).

Total Distance: 5 miles

Total Estimated Time: 10 minutes

2.5.3 Response Procedures

As appropriate, the fire department and other emergency response group will be immediately notified of the emergency. Table 4 provides the emergency telephone numbers.

3.0 SITE MONITORING PLAN

3.1 Introduction

3.1.1 General

The Site Monitoring Plan describes the measures for evaluating the performance and effectiveness of: the remedy to reduce or mitigate contamination on the Controlled Property; the cover system; and all affected media. Monitoring of other Engineering Controls is described in Section 4.0, Operation, Monitoring, and Maintenance Plan. The Site Monitoring Plan may only be revised with the approval of NYSDEC.

3.1.2 Purpose and Schedule

The Monitoring Plans presented within the Site-specific appendices describe the methods to be used for:

- Sampling and analysis of applicable Site media.
- Assessing compliance with applicable NYSDEC standards, criteria and guidance, particularly ambient groundwater standards and Part 375 SCOs for soil.
- Assessing achievement of the remedial performance criteria.
- Evaluating Site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment.
- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, the Monitoring Plans provide information on:

- Sampling locations, protocol, and frequency.
- Information on all designed monitoring systems (e.g., well logs).
- Analytical sampling program requirements.
- Reporting requirements.
- Quality assurance/quality control (QA/QC) requirements.
- Inspection and maintenance requirements for monitoring wells.
- Monitoring well decommissioning procedures.
- Annual inspection and periodic certification.

3.2 Cover System Monitoring

The cover system is common to the Controlled Property and is therefore discussed herein. All other monitored systems are discussed within the Site-specific appendices.

Annual visual inspection and maintenance (e.g., filling in ruts with approved cover materials, re-vegetation of soil covered areas, pothole repair, etc.) of the cover systems will be required to assure cover integrity and prevent exposure to underlying soil/fill.

3.3 Annual Inspection

Inspections of the Controlled Property will be performed on a regular schedule at a minimum of once per year. Inspections will also be performed after all severe weather conditions that may affect Engineering Controls or monitoring devices. During these inspections, an inspection form will be completed (Appendix F). The form will compile sufficient information to assess the following:

- Compliance with all ICs, including usage restrictions.
- An evaluation of the condition and continued effectiveness of ECs.
- General conditions at the time of the inspection.
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection.
- Compliance with permits and schedules included in the Operation and Maintenance Plan.
- Confirm that required records are up to date.

4.0 OPERATION & MAINTENANCE PLAN

The remedy for the Controlled Property does not rely on mechanical systems to protect public health and the environment. Therefore, the operation and maintenance (O&M) of such components is not included in the body of this SMP. To the extent that certain Sites require reliance upon such systems, the system descriptions and O&M requirements are included in Appendix H.

Information on non-mechanical Engineering Controls (i.e., cover system) is provided in Section 3.0 - Engineering and Institutional Control Plan.

5.0 INSPECTIONS, REPORTING & CERTIFICATIONS

5.1 Site Inspections

5.1.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the Section 3.0 of this SMP. At a minimum, inspections will be conducted annually across the Controlled Property. Inspections of the cover system will also be conducted whenever a severe condition has taken place, such as erosion or a flooding event.

5.1.2 Inspection Forms

Appendix F includes a generic form for recording cover system inspections and the annual inspection of the Controlled Property. Site-specific IC/EC inspection forms will be mailed by the Department with its standard 45-day notice. A common entity (e.g., Business Park Association) will complete a separate IC/EC inspection form for each Site and include these as an attachment to the Periodic Review Report discussed in Section 5.3.

All applicable inspection forms and system maintenance reports, generated during the reporting period, will be provided in electronic format in the Periodic Review Report described in Section 5.3.

5.1.3 Evaluation of Records & Reporting

The results of the inspections and monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective;
- The Site Monitoring Plan is being implemented;
- Operation and maintenance activities are being conducted properly; and, based on the above items;
- The remedy, including Site-specific remedial measures, continues to be protective of public health and the environment and is performing as designed in the Site-specific RAWPs and FERs.

5.2 Certification of Engineering and Institutional Controls

After the last inspection of the reporting period, a Professional Engineer (P.E.) licensed to practice in New York State or a QEP[2] will complete an IC/EC certification form for each of the Sites having received COCs. The IC/EC forms, which will be signed by the P.E. and the Site Owner or its representative, will include the following certification:

For each institutional or engineering control identified for the Site, I certify that all of the following statements are true:

- The inspection of the Site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;
- The institutional control and/or engineering control employed at this Site is unchanged from the date the control was put in place, or last approved by the Department;
- Nothing has occurred that would impair the ability of the control to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with any Site management plan for this control;
- Access to the Site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;
- If a financial assurance mechanism is required under the oversight document for the Site, the mechanism remains valid and sufficient for the intended purpose under the document;
- Use of the Site is compliant with the environmental easement;
- The engineering control systems are performing as designed and are effective;
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the Site remedial program and generally accepted engineering practices; and
- The information presented in this report is accurate and complete.
- I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A"

[2] A Qualified Environmental Professional other than a licensed Professional Engineer (P.E.) may complete the certification if the engineering controls are limited to non-mechanical systems. Active groundwater remediation systems, soil vapor extraction systems, etc. require P.E. certification.

misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner or Owner's Designated Site Representative] (and if the site consists of multiple properties): [and I have been authorized and designated by all site owners to sign this certification] for the site.

For Sites that the Department has determined do not represent a significant threat to public health or the environment, but where contaminants in groundwater exceed drinking water standards, the following should also be included:

- No new information has come to my attention, including groundwater monitoring data from wells located at the Site boundary, if any, to indicate that the assumptions made in the qualitative exposure assessment of off-site contamination are no longer valid; and

Every five years the following certification will be added:

- The assumptions made in the qualitative exposure assessment remain valid.

The signed certifications will be included in the common Periodic Review Report described below.

5.3 Periodic Review Report

A Site-wide Periodic Review Report (PRR) covering all Sites in the Controlled Property for which COCs were issued will be submitted to the Department every year, beginning 16 months after the first COC is issued. A common entity (e.g., Business Park Association) will be designated as the responsible entity for receiving PRR notices; coordinating and arranging for the above-described inspections and certifications; and preparing the PRR deliverables. The report will be prepared in accordance with NYSDEC DER-10 and submitted within 45 days of the end of each certification period. Media sampling results will also incorporated into the PRR. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for each Site;
- Results of the required annual inspections and severe condition inspections, if applicable;
- All applicable inspection forms and other records generated during the reporting period in electronic format;

- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends;
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format;
- An evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the Site-specific Decision Documents;
  - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
  - Any new conclusions or observations regarding Site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;
  - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
  - The overall performance and effectiveness of the remedy.
- A performance summary for all treatment systems at the Site during the calendar year, including information such as:
  - The number of days the system was run for the reporting period;
  - The average, high, and low flows per day;
  - The contaminant mass removed;
  - A description of breakdowns and/or repairs along with an explanation for any significant downtime;
  - A description of the resolution of performance problems;
  - A summary of the performance, effluent and/or effectiveness monitoring; and
  - Comments, conclusions, and recommendations based on data evaluation.

The PRR will be submitted, in hard-copy format, to the NYSDEC Central Office and Region 9 Office, and in electronic format to NYSDEC Central Office, Region 9 Office, and the NYSDOH Bureau of Environmental Exposure Investigation.

5.4 Corrective Measures Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, a Corrective Measures Plan will be submitted to the NYSDEC by the Site Owner or its representative for approval. This Plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Plan until it is approved by the NYSDEC.

TABLES

TABLE 1A

SUMMARY OF RI SOIL/FILL ANALYTICAL DATA (PHASE III)

SITE MANAGEMENT PLAN

Phase III Business Park
Lackawanna, New York

Parameter [1]	Commercial SCOs [2] (ppm)	Sample Location																																								
		BPA-3-TP-1 (0-2')	BPA-3-TP-2 (0-2')	BPA-3-TP-2 (2-4')	BPA-3-TP-3 (3-6')	BPA-3-TP-5 (0-2')	BPA-3-TP-6 (0-2')	BPA-3-TP-6 (2-6')	BPA-3-TP-7 (0-2')	BPA-3-TP-9 (0-2')	BPA-3-TP-12 (0-2')	BPA-3-TP-13 (0-2')	BPA-3-TP-16 (0-2')	BPA-3-TP-17 (0-2')	BPA-3-TP-20 (0-2')	BPA-3-TP-22 (0-2')	BPA-3-TP-23 (0-2')	BPA-3-TP-25 (3-7')	BPA-3-TP-26 (0-1')	BPA-3-TP-28 (0-2')	BPA-3-TP-30 (0-2')	BPA-3-TP-31 (0-2')	BPA-3-TP-32 (0-2')	BPA-3-TP-34 (0-4')	BPA-3-TP-36 (0-2')	BPA-3-TP-37 (0-2')	BPA-3-TP-38 (0-2')	BPA-3-TP-40 (0-2')	BPA-3-TP-42 (0-2')	BPA-3-TP-42 (waste)	BPA-3-TP-43 (0-2')	BPA-3-TP-45 (0-2')	BPA-3-TP-47 (0-2')	BPA-3-TP-48 (0-2')	BPA-3-TP-49 (0-2')	BPA-3-TP-50 (0-2')	BPA-3-TP-51 (0-2')	BPA-3-TP-51 (2-9')	BPA-3-TP-54 (Sat Soil)	BPA-3-TP-54 (0-2')	BPA-3-TP-56 (0-2')	BPA-3-TP-58 (0-2')	BPA-3-TP-59 (0-2')	BPA-3-TP-60 (0-2')	BPA-3-TP-62 (0-2')
Volatile Organic Compounds (VOCs) - mg/kg [3]																																									
Acetone	**500**	--	--	ND	ND	--	ND	ND	0.094	--	--	--	--	--	0.006 J	--	--	--	--	--	--	--	--	--	--	--	--	0.5	--	--	--	--	--	0.023 BJ	--	--	0.017 BJ	0.008 BJ	--	--	--	--	--
Benzene	**44**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	ND	--	--	--	--	--	ND	--	--	--	9E-04 J	--	ND	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--	--
2-Butanone (MEK)	**500**	--	--	ND	ND	--	ND	ND	0.013 J	--	--	--	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	0.032 J	--	--	--	--	--	ND	--	--	ND	ND	--	--	--	--	--
Carbon disulfide	**--**	--	--	ND	ND	--	ND	ND	ND	--	--	--	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	--	0.002 BJ	--	--	0.002 J	0.002 J	--	--	--	--	--
Ethylbenzene	**390**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	ND	--	--	--	--	--	ND	--	--	--	ND	--	ND	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--	--
Isopropylbenzene (Cumene)	**--**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	ND	--	--	--	--	--	ND	--	--	--	ND	--	0.012 J	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--	--
Methylcyclohexane	**--**	--	--	ND	ND	--	ND	ND	ND	--	--	--	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	0.017 J	--	--	--	--	--	ND	--	--	ND	ND	--	--	--	--	--
Methylene chloride	**500**	--	--	0.002 J	0.006	--	ND	ND	0.012	--	--	--	--	--	0.014	--	--	--	--	--	--	--	--	--	--	--	--	--	0.057	--	--	--	--	--	0.013 BJ	--	--	0.019 J	0.015 B	--	--	--	--	--
Toluene	**500**	--	ND	ND	ND	ND	ND	0.002 J	ND	ND	0.004 J	--	--	--	ND	0.00029 J	0.003 J	--	--	--	--	--	0.0004 J	--	--	--	ND	--	ND	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--	--
Total Xylene	**500**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	ND	--	--	--	--	--	ND	--	--	--	ND	--	0.021 J	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--	--
o-Xylenes	**500**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	ND	--	--	--	--	--	ND	--	--	--	ND	--	0.01 J	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--	--
m&p-Xylene	**500**	--	ND	0.002 J	0.002 J	ND	ND	ND	0.002 J	ND	ND	--	--	--	ND	ND	ND	--	--	--	--	--	ND	--	--	--	ND	--	0.01 J	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--	--
n-Propylbenzene	**500**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	ND	--	--	--	--	--	ND	--	--	--	ND	--	0.016 J	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--	--
p-Cymene (p-isopropyltoluene)	**--**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	ND	--	--	--	--	--	ND	--	--	--	ND	--	0.094	--	--	--	--	--	ND	--	--	0.006 J	ND	--	ND	--	--	--
1,2,4-Trimethylbenzene	**190**	--	ND	0.001 J	0.001 J	ND	ND	ND	0.001 J	ND	ND	--	--	--	ND	ND	0.009 J	--	--	--	--	--	ND	--	--	--	9E-04 J	--	0.68	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--	--
1,3,5-Trimethylbenzene	**190**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	ND	--	--	--	--	--	ND	--	--	--	ND	--	0.53	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--	--
sec-Butylbenzene	**500**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	ND	--	--	--	--	--	ND	--	--	--	ND	--	0.085	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--	--
tert-Butylbenzene	**500**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	ND	--	--	--	--	--	ND	--	--	--	ND	--	0.014 J	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--	--
Semi-Volatile Organic Compounds (SVOCs) - mg/kg [3]																																									
Acenaphthene	**500**	2.8 J	ND	--	1.2 J	0.93 J	0.082 J	--	--	ND	ND	ND	ND	ND	0.11 J	0.79 J	0.17 J	0.32 J	0.22 J	ND	ND	1.8	0.037 J	0.099 J	ND	0.18 J	ND	ND	ND	ND	0.1 J	0.048 J	0.44 J	0.082 J	ND	ND	ND	--	ND	ND	ND	ND	ND	ND
Acenaphthylene	**500**	1.5 J	0.45 J	--	3.3 J	4.4	0.6 J	--	--	0.98 J	ND	0.39 J	ND	0.09 J	0.47 J	1.4 J	0.88 J	0.19 J	0.18 J	0.4 J	0.15 J	0.29 J	0.15 J	0.72 J	ND	4.7	0.16 J	ND	0.26 J	0.16 J	0.057 J	0.069 J	0.13 J	1.4	0.64 J	0.2 J	ND	0.16 J	--	ND	0.85 J	1.8 J	0.29 J	0.22 J	0.29 J
Acetophenone	**--**	ND	ND	--	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.6	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND
Anthracene	**500**	11 J	0.86 J	--	6.5 J	8.9	0.62 J	--	--	0.72 J	0.17 J	0.52 J	2 J	0.092 J	0.64 J	3.2	1	0.8 J	0.51 J	0.57 J	0.17 J	7.3	0.17 J	0.82 J	ND	2.4	0.15 J	ND	0.19 J	0.11 J	0.047 J	0.28 J	0.1 J	1.7	0.52 J	0.3 J	0.16 J	0.17 J	--	ND	0.41 J	1.5 J	0.17 J	0.2 J	0.26 J
Benzo(a)anthracene	**5.6**	**23**	3 J	--	**12**	**25**	2.9	--	--	2.1	0.88 J	1.7 J	**37 J**	0.36 J	1.8	**7**	4.1	2.1	1.5 J	1.7 J	1.2 J	**18**	0.8 J	3.6	0.92 J	**12**	0.62 J	0.6 J	0.87 J	0.45 J	0.28 J	1.3	0.58 J	**9.2**	2.8	1	0.65 J	0.91 J	--	0.34 J	1.6 J	**5.9**	1.1 J	1.2	1.2 J
Benzo(b)fluoranthene	**5.6**	**22**	4.4	--	**11**	**25**	4.4	--	--	4.2	1 J	2.5 J	**65**	0.69 J	2.8	**10**	**9.2**	3.1	1.7 J	2.1 J	1.7 J	**20**	1.4	**5.9**	1.6 J	**17**	0.91 J	1.2	1.7	1.1	0.58 J	1.4	0.96	**9.6**	4	1.4	0.75 J	1.2	--	0.24 J	2.1 J	**7.1**	1.8 J	2	1.4 J
Benzo(k)fluoranthene	**56**	10 J	1.4 J	--	5.1 J	7.9	1.8 J	--	--	1.6 J	0.44 J	0.97 J	26 J	0.29 J	1.1	2.4	3.6	0.84 J	0.64 J	0.88 J	1 J	8.4	0.58 J	1.3 J	0.65 J	4.9	0.36 J	0.48 J	0.69 J	0.43 J	0.18 J	0.57 J	0.36 J	4.4	1.9	0.36 J	0.31 J	0.56 J	--	0.19 J	0.96 J	3.1 J	0.44 J	0.85 J	1 J
Benzo(g,h,i)perylene	**500**	14 J	3 J	--	7.6	15	3.9	--	--	3.8	0.86 J	1.2 J	57	0.34 J	0.69 J	1.9	2.9	0.7 J	1.3 J	1.7 J	0.96 J	4.8	0.44 J	1.7 J	0.85 J	12	0.33 J	0.66 J	0.81 J	0.36 J	0.26 J	0.92 J	0.64 J	4.5	2.2	0.85 J	0.48 J	0.92 J	--	0.28 J	2 J	5.9	1.1 J	0.88 J	1.3 J
Benzo(a)pyrene	**1**	**18 J**	**2.7 J**	--	**9.5**	**20**	**3.6**	--	--	**3.2**	0.83 J	**1.6 J**	**57**	0.44 J	**1.8**	**6.5**	**6.4**	**2**	**1.4 J**	**1.8 J**	**1.4 J**	**15**	0.89 J	**3.9**	**1.2 J**	**13**	0.71 J	1	**1.1**	0.67 J	0.34	**1.2**	0.77 J	**7.3**	**3.1**	0.91 J	0.63 J	1 J	--	0.22 J	**1.9 J**	**6.4**	**1.2 J**	**1.3**	**1.4 J**
Biphenyl	**--**	ND	ND	--	0.39 J	0.28 J	ND	--	--	ND	ND	ND	ND	ND	ND	ND	0.088 J	ND	ND	ND	ND	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.09 J	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	**--**	ND	ND	--	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND
4-Chloroaniline	**--**	ND	ND	--	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	0.72 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND
Carbazole	**--**	--	--	--	2.9	--	--	--	--	--	--	--	--	--	0.2 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	--	0.1 J	--	--	--	--	--	--	--	--
Chrysene	**56**	23 B	3.3 BJ	--	10 B	21 B	3.1 B	--	--	2.8 B	1.2 BJ	2.7 BJ	44 B	0.4 BJ	1.9 B	6.5 B	4.1 B	2 B	1.6 BJ	2 BJ	1.4 BJ	15 B	0.87 BJ	3.5 B	1.4 BJ	10 B	0.66 BJ	0.8 BJ	1.1 B	0.61 BJ	0.5 BJ	1.2 B	0.6 BJ	7.8 B	2.8 B	1.1 B	1 BJ	0.8 BJ	--	0.56 BJ	2 BJ	5.8 B	1.6 BJ	1.2 B	1.6 BJ
Dibenzo(a,h)anthracene	**0.56**	**4.4 J**	**0.85 J**	--	**2.2 J**	**3.8 J**	**0.73 J**	--	--	**0.94 J**	ND	0.35 J	**12 J**	0.073 J	0.22 J	**0.7 J**	**0.74 J**	0.22 J	ND	0.46 J	ND	**1.6**	0.12 J	0.56 J	0.27 J	**3 J**	0.1 J	0.069 J	0.22 J	0.12 J	0.084 J	0.25 J	0.15 J	**1.3**	**0.59 J**	0.25 J	ND	0.2 J	--	ND	0.46 J	**1.4 J**	0.31 J	0.2 J	0.35 J
Dibenzofuran	**--**	3.3 J	ND	--	2.8 J	3 J	0.15 J	--	--	0.1 J	ND	ND	ND	ND	0.24 J	1.1 J	0.43 J	0.22 J	ND	ND	ND	1.2	0.039 J	0.2 J	ND	0.44 J	0.052 J	ND	0.048 J	0.043 J	ND	0.059 J	ND	0.71 J	0.086 J	0.12 J	ND	0.11 J	--	ND	ND	0.2 J	ND	ND	ND
Fluoranthene	**500**	50 B	3.1 J	--	27	66	5.8	--	--	1.9 J	1.5 J	2.9 J	42	0.52 J	3.8	16	9.8	4.4	2.1 J	3 J	1.5 J	26 D	1.5	6.4	1 J	19	1	0.65 J	1.4	0.76 J	0.71 J	2.5	0.84 J	17	4	2.3	0.87 J	1.5	--	0.35 J	2.7 J	11	1.5 J	2.9	2.3 J
Fluorene	**500**	4 J	ND	--	5.7 J	6	0.16 J	--	--	0.083 J	ND	ND	ND	ND	0.18 J	1.7 J	0.47 J	0.3 J	0.17 J	ND	ND	2.1	0.046 J	0.27 J	ND	0.32 J	ND	ND	ND	ND	ND	0.11 J	ND	0.78 J	0.11 J	0.056 J	ND	0.075 J	--	ND	ND	0.35 J	ND	0.04 J	ND
Indeno(1,2,3-cd)pyrene	**5.6**	**12 J**	2.3 J	--	**6.7**	**13**	2.9	--	--	2.9	0.75 J	1 J	**47**	0.24 J	0.72 J	2.1	3	0.7 J	1.1 J	1.4 J	0.92 J	5.1	0.43 J	1.6 J	0.79 J	**11**	0.35 J	0.56 J	0.73 J	0.35 J	0.22 J	0.76 J	0.54 J	4.4	2	0.74 J	0.41 J	0.9 J	--	0.21 J	1.6 J	5.2	1 J	0.8 J	1.1 J
Isophorone	**--**	ND	ND	--	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.8	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	**--**	1.1 J	0.81 J	--	1.8 J	0.84 J	0.085 J	--	--	0.16 J	ND	ND	ND	ND	0.11 J	0.27 J	0.4 J	0.36 J	ND	ND	ND	0.28 J	0.044 J	0.18 J	ND	0.53 J	0.24 J	ND	0.13 J	0.17 J	ND	ND	ND	0.33 J	0.044 J	0.05 J	ND	0.11 J	--	ND	ND	ND	ND	ND	ND
Naphthalene	**500**	ND	0.23 J	--	2.7 J	1.9 J	0.19 J	--	--	0.17 J	ND	ND	ND	0.079 J	0.1 J	0.29 J	0.92 J	0.27 J	ND	ND	ND	0.36 J	ND	0.2 J	ND	0.63 J	0.14 J	ND	ND	0.16 J	0.036 J	ND	ND	0.74 J	0.11 J	0.16 J	ND	0.064 J	--	ND	ND	ND	ND	0.044 J	ND
N-Nitroso-di-n-propylamine	**--**	ND	ND	--	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.076 J	--	ND	ND	ND	ND	ND	ND
Phenanthrene	**500**	32 B	0.8 BJ	--	27 B	44 B	2.4 B	--	--	0.7 BJ	0.69 BJ	2 BJ	10 BJ	0.23 J	2.3	12	3.4	3	1.5 BJ	1.6 BJ	0.6 BJ	21	0.64 J	3	0.5 BJ	4.5 B	0.46 J	0.18 J	0.57 J	0.31 J	0.36 J	1.6	0.35 J	9.4	1.4	1.5	0.5 BJ	0.58 J	--	0.41 BJ	0.98 J	4.4	0.6 BJ	0.62 J	0.8 BJ
Pyrene	**500**	37 B	6.6	--	19	45	5.1	--	--	2.2 B	1.2 J	3 J	44	0.4 J	2.8	11	7.9	3.1	1.8 J	2.4 J	1.2 J	25	1.2	4.9	0.97 J	17	0.89 J	0.59 J	1.1	0.66 J	0.45 J	1.9	0.64 J	13	3.5	1.7	0.83 J	1.2	--	0.43 J	2.5 J	9	1.4 J	2.6	1.9 J
PCBs - mg/kg [3]																																									
Aroclor 1248	**1**	--	--	0.013 J	0.01 J	ND	--	--	--	--	--	--	--	--	ND	--	0.012 J	--	ND	ND	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	0.84	ND	--	--	ND	--	--	--	--	--
Aroclor 1254	**1**	--	--	0.051	0.11	ND	--	--	--	--	--	--	--	--	ND	--	0.032	--	ND	ND	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	0.9	0.12	--	--	ND	--	--	--	--	--
Aroclor 1260	**1**	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	ND	--	0.03	0.046	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	0.43	0.019	--	--	ND	--	--	--	--	--
Aroclor 1262	**1**	--	--	0.03	0.017 J	0.034 J	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	--	--	ND	--	--	--	--	--
Inorganic Compounds - mg/kg																																									
Aluminum	**--**	--	--	--	11400	--	--	--	--	--	--	--	--	--	11800 *	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	12600	--	--	--	--	--	--	--	--	--
Arsenic	**16**	8.8	**19.7**	--	**45**	**17.1**	12.7	--	--	**27.3**	**99.2 E**	10.9 E	7.3 E	5.7 E	**20.2 E**	**17.2 E**	15.6 E	6.6 E	**45.4 E**	**130 E**	**21.6**	**44.5 E**	**27.6 E**	**64 E**	11.1	**53 E**	**32.3 E**	ND	**22.7**	--	6.5	11.1	10.8	**18.4**	11.2	7.2	**48.9**	--	--	4.7	**34**	9.1	**19.9**	9.7	**22.1**
Barium	**10000**	--	--	--	140	--	--	--	--	--	--	--	--	--	132 N*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	73.2	--	--	--	--	--	--	--	--	--
Beryllium	**590**	--	--	--	1.5	--	--	--	--	--	--	--	--	--	1.4 *	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.6	--	--	--	--	--	--	--	--	--
Cadmium	**9.3**	1.8	2	--	1.5	0.92	3.1	--	--	3.4	2.8	2	0.56	1.5 *	4.9 *	1.7 *	0.33 *	1.6 *	1	1.9	0.82	2.4 *	2 *	4 *	1.6	0.73	2.8 *	0.52	0.59	--	1.4	1.9	ND	0.38	0.5	ND	2.4 E	--	--	4.3 E	0.94	1.2	2.3 E	0.3	1.2 E
Calcium	**--**	--	--	--	52300	--	--	--	--	--	--	--	--	--	########	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	250000	--	--	--	--	--	--	--	--	--
Chromium [5]	**1900**	423	110	--	30.6	124	69.1	--	--	35.9	60.8 EN	134 EN	397 EN	212 N*	129 N*	109 N*	37.7 N*	28.3 N*	95.4 EN	216 EN	56 EN	122 N*	482 N*	109 N*	118 EN	96.2 EN	53.5 N*	731 N	146 NJ	--	537 N	536 N	234	243	104	520	97.9	--	--	314	48.4	93.8	453	96.6	304
Cobalt	**--**	--	--	--	4.6	--	--	--	--	--	--	--	--	--	6.5 *	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.8	--	--	--	--	--	--	--	--	--
Copper	**270**	--	--	--	80	--	--	--	--	--	--	--	--	--	77.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	43	--	--	--	--	--	--	--	--	--
Iron	**--**	--	--	--	48400	--	--	--	--	--	--	--	--	--	37900 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	116000	--	--	--	--	--	--	--	--	--
Lead	**1000**	184	231	--	144	120	925	--	--	381	287 EN*	259 EN*	80 EN*	**1140**	843 J	156	54.6	80.7	156 EN*	178 EN*	89 EN	244	61.1	283	121 EN	94.3 EN*	209	15 *	**4550 J***	--	173 *	224 *	262	158	554	96.8 N	267 N	--	--	549 N	39.1	59.9	**1120 N**	170	114 N
Magnesium	**--**	--	--	--	7070	--	--	--	--	--	--	--	--	--	9110 *	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	30500	--	--	--	--	--	--	--	--	--
Manganese	**10000**	--	--	--	2220	--	--	--	--	--	--	--	--	--	**21200 J***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**18900**	--	--	--	--	--	--	--	--	--
Nickel	**310**	--	--	--	14.6	--	--	--	--	--	--	--	--	--	19.2 EN	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	21.6	--	--	--	--	--	--	--	--	--
Potassium	**--**	--	--	--	1200	--	--	--	--	--	--	--	--	--	1180 *	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	697	--	--	--	--	--	--	--	--	--
Mercury	**2.8**	0.303	0.118	--	0.189	0.555	0.261	--	--	0.303	0.057	0.522	0.278	0.31 N	0.917 N	2 N	0.19 N	57.1 N	0.081	0.077	0.136	0.14 N	0.057 N	2.5 N	0.055	0.083	0.093 N	ND	0.072	--	0.089	0.878	1.3	0.246	1.4	0.453	0.11	--	--	0.165	0.031	0.053	0.217	0.209	0.209
Silver	**1500**	--	--	--	ND	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	--	--	--	--	--
Sodium	**--**	--	--	--	462	--	--	--	--	--	--	--	--	--	324 *	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	279	--	--	--	--	--	--	--	--	--
Vanadium	**--**	--	--	--	24.5	--	--	--	--	--	--	--	--	--	84.6 N*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	470	--	--	--	--	--	--	--	--	--
Zinc	**10000**	--	--	--	323	--	--	--	--	--	--	--	--	--	284 EJ	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	100	--	--	--	--	--	--	--	--	--
Cyanide	**27**	ND	ND	--	--	ND	ND	--	--	ND	ND	ND	2	ND	--	ND	ND	2.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.2	ND	--	2.3	ND	ND	ND	ND	--	ND	--	--	ND	ND	ND	ND	ND	ND
General Chemestry																																									
pH		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flashpoint		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	>176	--	--	--	--	--	--	--	--	--

TABLE 1A

SUMMARY OF RI SOIL/FILL ANALYTICAL DATA (PHASE III)

SITE MANAGEMENT PLAN

Phase III Business Park
Lackawanna, New York

Parameter [1]	Commercial SCOs [2] (ppm)	Sample Locations																										
		BPA-3-TP-64 (0-2')	BPA-3-TP-65 (0-2')	BPA-3-TP-67 (0-4')	BPA-3-TP-69 (0-2')	BPA-3-TP-70 (0-2')	BPA-3-TP-71 (0-2')	BPA-3-TP-74 (2-8')	BPA-3-TP-75 (0-2')	BPA-3-TP-76 (2-7')	BPA-3-TP-77 (0-2')	BPA-3-TP-79 (0-2')	BPA-3-TP-80 (0-2')	BPA-3-TP-80 (2-7')	BPA-3-TP-81 (0-2')	BPA-3-TP-82 (0-2')	BPA-3-TP-83 (0-2')	BPA-3-TP-84 (0-2')	BPA-3-TP-85 (0-2')	BPA-3-TP-86 (0-2')	Surface Samples: East Trench	Surface Samples: Middle Trench	Surface Samples: West Trench	Blind [5]	Blind 2 [5]	Blind 3 [5]	Blind 4 [5]
Volatile Organic Compounds (VOCs) - mg/kg [3]																												
Acetone	**500**	--	--	--	0.043 J	--	--	--	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.02 BJ	--
Benzene	**44**	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	0.021	ND	ND	ND	--	--	--	ND	--	ND	--
2-Butanone (MEK)	**500**	--	--	--	0.015 J	--	--	--	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--
Carbon disulfide	**--**	--	--	--	0.003 J	--	--	--	0.002 J	--	0.002 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.003 J	--
Ethylbenzene	**390**	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	0.012	--	--	--	ND	--	ND	--
Isopropylbenzene (Cumene)	**--**	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	--	--	--	ND	--	ND	--
Methylcyclohexane	**--**	--	--	--	ND	--	--	--	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--
Methylene chloride	**500**	--	--	--	0.015 B	--	--	--	0.01 B	--	0.005 B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.012 B	--
Toluene	**500**	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	0.012	ND	0.0052 J	0.012	--	--	--	0.0005 J	--	ND	--
Total Xylene	**500**	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	0.093	--	--	--	ND	--	ND	--
o-Xylenes	**500**	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	0.019	--	--	--	ND	--	ND	--
m&p-Xylene	**500**	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	0.074 [1]	--	--	--	ND	--	ND	--
n-Propylbenzene	**500**	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	--	--	--	ND	--	ND	--
p-Cymene (p-isopropyltoluene)	**--**	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	--	--	--	ND	--	ND	--
1,2,4-Trimethylbenzene	**190**	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	0.013	--	--	--	ND	--	ND	--
1,3,5-Trimethylbenzene	**190**	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	--	--	--	ND	--	ND	--
sec-Butylbenzene	**500**	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	--	--	--	ND	--	ND	--
tert-Butylbenzene	**500**	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	--	--	--	ND	--	ND	--
Semi-Volatile Organic Compounds (SVOCs) - mg																												
Acenaphthene	**500**	ND	ND	5.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.092 J	0.26 J	ND	ND	ND	ND	6.1	0.12 J	0.11 J	0.039 J	0.059 J	ND	ND
Acenaphthylene	**500**	ND	ND	0.3 J	0.22 J	0.22 J	0.5 J	ND	ND	ND	0.18 J	ND	0.61 J	ND	0.98	1.2	0.34 J	ND	0.26 J	0.25 J	1.1	0.92 J	1.5	0.12 J	0.08 J	0.24 J	0.63 J
Acetophenone	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	**500**	0.15 J	ND	11	0.27 J	0.38 J	0.48 J	ND	0.17 J	0.2 J	0.43 J	ND	0.7 J	ND	0.61	1.6	0.25 J	0.16 J	0.23 J	0.18 J	13	0.78 J	1.1	0.21 J	0.17 J	0.3 J	0.75 J
Benzo(a)anthracene	**5.6**	0.72 J	0.23 J	**21**	1.2 J	1.6 J	2.3 J	0.43 J	0.96 J	1 J	2.1 J	0.11 J	2.8 J	0.7 J	3.9	**9.2**	1.6 J	0.84 J	1.1 J	1.2 J	**16**	2.6	3	0.92 J	0.93 J	1.3	4.6
Benzo(b)fluoranthene	**5.6**	0.93 J	0.31 J	**20**	1.2 J	1.9 J	2.7 J	0.42 J	1 J	1.1 J	2.2 J	0.26 J	3.2 J	0.8 J	5.6	**11**	1.9 J	1.2 J	1.8 J	1.4 J	**25**	5.3	**6.3**	1.9	1.3	1.4 J	4.6
Benzo(k)fluoranthene	**56**	0.4 J	ND	5.2	0.59 J	0.86 J	1.2 J	0.24 J	0.52 J	0.43 J	0.96 J	0.077 J	1.1 J	0.39 J	1.6	4.4	0.88 J	0.47 J	0.85 J	0.54 J	11	2.6	2.6	0.47 J	0.47 J	0.59 J	2 J
Benzo(g,h,i)perylene	**500**	0.62 J	0.25 J	7.8	1 J	1.8 J	2.1 J	0.38 J	0.79 J	0.6 J	1.5 J	0.11 J	1.8 J	0.47 J	2.2	5.3	1.2 J	0.63 J	0.96 J	1 J	5.9	1.5	1.8	0.51 J	0.73 J	0.85 J	2.5 J
Benzo(a)pyrene	**1**	0.66 J	0.2 J	**15**	**1.2 J**	**1.6 J**	**2.3 J**	0.34 J	0.86 J	0.89 J	**1.9 J**	0.055 J	**2.8 J**	0.67 J	**4.1**	**9**	**1.8 J**	0.84 J	**1.2 J**	**1.2 J**	**19**	**4**	**4.3**	**1.1**	0.95 J	0.97	**3.8**
Biphenyl	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.47 J	ND	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	**--**	--	--	--	ND	--	--	--	ND	--	0.22 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.13 J	--
Chrysene	**56**	1.2 BJ	0.5 BJ	18 B	1.4 BJ	1.8 BJ	2.6 BJ	0.82 BJ	1.3 BJ	1.1 BJ	2.2 BJ	0.3 BJ	3.1 BJ	1 BJ	3.8 B	8.6	1.8 BJ	1.2 BJ	1.8 BJ	1.3 BJ	15	2.8	3	0.99 B	1.2 B	1.3 B	4.2 B
Dibenzo(a,h)anthracene	**0.56**	0.19 J	ND	**3.1 J**	0.32 J	0.45 J	**0.62 J**	ND	0.28 J	0.2 J	0.5 J	ND	**0.6 J**	0.16 J	**0.68 J**	**1.6**	0.36 J	ND	0.3 J	ND	**1.8**	0.45 J	0.49 J	0.15 J	0.2 J	0.25 J	**0.77 J**
Dibenzofuran	**--**	ND	ND	3.3 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1 J	0.16 J	ND	ND	ND	ND	4.6	0.085 J	0.23 J	0.04 J	ND	0.14 J	ND
Fluoranthene	**500**	0.76 J	0.22 J	45	1.8 J	2.6 J	3.8 J	0.58 J	1.3 J	1.6 J	3.1 J	0.22 J	5.1	1.1 J	7.2	16	2.3 J	1.2 J	1.7 J	1.4 J	12	7	8.5	1.7	1.8 J	2.8	7.8
Fluorene	**500**	ND	ND	6.2	ND	ND	ND	ND	ND	ND	ND	ND	0.16 J	ND	0.19 J	0.34 J	ND	ND	ND	ND	8.2	0.15 J	0.44 J	0.047 J	0.059 J	0.08 J	ND
Indeno(1,2,3-cd)pyrene	**5.6**	0.51 J	0.19 J	**7.9**	0.94 J	1.4 J	1.8 J	0.32 J	0.71 J	0.65 J	1.4 J	0.11 J	1.9 J	0.45 J	2.3	5.2	1.2 J	0.53 J	0.94 J	0.92 J	**5.9**	1.5	1.7	0.49 J	0.6 J	0.78 J	2.3 J
Isophorone	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	**--**	ND	ND	0.75 J	ND	ND	ND	ND	ND	ND	0.16 J	ND	ND	ND	0.076 J	0.097 J	ND	ND	ND	ND	3.1	0.087 J	0.13 J	0.046 J	ND	0.06 J	ND
Naphthalene	**500**	ND	ND	1.2 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.092 J	0.13 J	ND	ND	ND	ND	4.9	0.12 J	0.33 J	ND	0.038 J	0.17 J	ND
N-Nitroso-di-n-propylamine	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	**500**	0.3 BJ	ND	41	1.2 J	1.4 J	1.6 J	0.38 J	0.58 J	0.6 J	1.8 J	0.089 J	2.5 J	1 J	2.6	5.3	0.76 BJ	0.66 BJ	0.74 BJ	0.62 BJ	7.1	2.5	4.2	0.72 J	0.9 J	2	2.8 J
Pyrene	**500**	0.74 J	0.24 J	29	1.7 J	2.4 J	3.4 J	0.5 J	1.3 J	1 J	2.6 J	0.11 J	4.1	0.94 J	5.4	13	1.9 J	1.1 J	1.6 J	1.3 J	22	3.8	4.3	1.2	1.4	2	6.8
PCBs - mg/kg [3]																												
Aroclor 1248	**1**	--	--	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	ND	--
Aroclor 1254	**1**	--	--	0.31	0.07 J	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	0.12	ND	0.02 J	--	--	0.14	--
Aroclor 1260	**1**	--	--	0.1	0.11 J	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	0.023	0.0061 J	0.017 J	--	--	ND	--
Aroclor 1262	**1**	--	--	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--
Inorganic Compounds - mg/kg																												
Aluminum	**--**	--	--	--	7610	--	--	--	8310	--	8150	--	--	--	--	--	--	--	--	--	--	--	--	--	--	12300	--
Arsenic	**16**	6.3	**18.9**	**26 EN***	13 EN*	**33 EN***	**24.8 EN***	14.8 EN*	10 EN*	12.3 EN*	**63.2 EN***	**21 EN***	**25.6 EN***	**25.7 EN***	**48.5**	**79**	9.7 E	11.7 E	**16.8 E**	**33 E**	**24.3**	**143**	**29.1**	**25.8 E**	11.9	9.9	**18 EN***
Barium	**10000**	--	--	--	100	--	--	--	66.2	--	109	--	--	--	--	--	--	--	--	--	--	--	--	--	--	75.7	--
Beryllium	**590**	--	--	--	0.96	--	--	--	0.45	--	1.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.1	--
Cadmium	**9.3**	1.7 E	1.2 E	**20.8 N***	1.1 N*	3.8 N*	**10.8 N***	1 N*	0.71 N*	0.51 N*	2.8 N*	1.1 N*	1.7 N*	0.69 N*	0.5	1.6	0.42	0.3	2.2	2.8	0.52	1.2	0.59	1.2 *	3.2	ND	0.95 N*
Calcium	**--**	--	--	--	114000	--	--	--	43500	--	54500	--	--	--	--	--	--	--	--	--	--	--	--	--	--	237000	--
Chromium [5]	**1900**	270	585	159 N*	685 N*	115 N*	217 N*	60.7 N*	192 N*	10.2 N*	144 N*	54.6 N*	125 N*	141 N*	52.1	106	219 EN	517 EN	113 EN	92.9 EN	510	130	101	385 N*	254 N	424	65.9 N*
Cobalt	**--**	--	--	--	4.1	--	--	--	4.7	--	5.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.8	--
Copper	**270**	--	--	--	**302**	--	--	--	**406**	--	200	--	--	--	--	--	--	--	--	--	--	--	--	--	--	29.4	--
Iron	**--**	--	--	--	81600	--	--	--	50700	--	56900	--	--	--	--	--	--	--	--	--	--	--	--	--	--	111000	--
Lead	**1000**	110 N	49.5 N	**1200 E***	113 E*	191 E*	862 E*	88.2 E*	78.7 E*	53.3 E*	302 E*	224 E*	763 E*	80.4 E*	119	201	58 EN*	165 EN*	417 EN*	446 EN*	119	139	132	81 EN*	960 *	60 N	140 E*
Magnesium	**--**	--	--	--	17500	--	--	--	8360	--	9600	--	--	--	--	--	--	--	--	--	--	--	--	--	--	28600	--
Manganese	**10000**	--	--	--	**28000**	--	--	--	6460	--	4910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**15500**	--
Nickel	**310**	--	--	--	25.4	--	--	--	18.1	--	22.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	10.1	--
Potassium	**--**	--	--	--	457	--	--	--	740	--	741	--	--	--	--	--	--	--	--	--	--	--	--	--	--	625	--
Mercury	**2.8**	0.033	0.029	1.6	0.247	0.339	0.95	0.423	0.159	0.026	0.11	**4.8**	0.284	0.105	0.123	0.131	0.372	0.075	0.053	0.14	0.533	0.149	0.176	0.05	0.801	0.774	0.314
Silver	**1500**	--	--	--	0.61	--	--	--	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--
Sodium	**--**	--	--	--	251	--	--	--	ND	--	249	--	--	--	--	--	--	--	--	--	--	--	--	--	--	367	--
Vanadium	**--**	--	--	--	410	--	--	--	97.1	--	69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	347	--
Zinc	**10000**	--	--	--	98.3	--	--	--	144	--	357	--	--	--	--	--	--	--	--	--	--	--	--	--	--	62.5	--
Cyanide	**27**	ND	ND	ND	ND	ND	ND	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.8	3.3 J	ND	1.1	25.6	1.2	ND	ND	--	ND
General Chemestry																												
pH		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.52	10.9	10.2	8.82	--	--	--	--	--	--	--
Flashpoint		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
1. Only those parameters detected at a minimum of 1 sample location presented in table; all other compounds non-detect.
2. Values per NYSDEC Part 375 Soil Cleanup Objectives (June 2006)
3. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparison to SCOs.
4. The total Chromium SCO was determined by adding the hexavalent and trivalent Chromium SCOs.
5. Blind collected from BPA-3-TP-32, Blind 2 collected from BPA-3-TP-42, Blind 3 collected from BPA-3-TP-50, Blind 4 collected from BPA-3-TP-

Definitions:
ND = Parameter not detected above laboratory detection limit.
NA = Sample not analyzed for parameter.
"--" = No SCO available.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
b = Analyte detected in associated blank as well as in the sample; possible external contamination.
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
* = Indicates the spike or duplicate analysis is not within the quality control limits.
D = All compounds were identified in an analyisis at the secondary dilution factor.
N = Indicates spike sample recovery is not within the quality control limits.
P = Detected concentrations between the two GC columns is greater than 25%; lower value is reported & flagged
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
E = Identifies compounds whose concentrations exceed the calibration range of the Instrument for that specific analysis.

BOLD = result exceeds SCO.

TABLE 1B

SUMMARY OF RI SOIL/FILL ANALYTICAL DATA (PHASE IIIA)

SITE MANAGEMENT PLAN

Phase IIIA Business Park
Lackawanna, New York

PARAMETER [1]	Commercial SCOs [2] (ppm)	Sample Location																							
		BPA-3A-TP-1 (0-2)	BPA-3A-TP-2 (0-2)	BPA-3A-TP-3 (2-6)	BPA-3A-TP-4 (0-2)	BPA-3A-TP-6 (0-2)	BPA-3A-TP-8 (5-8)	BPA-3A-TP-14 (4-6)	BPA-3A-TP-17 (3-6)	BPA-3A-TP-18	BPA-3A-TP-19	BPA-3A-TP-22 (0-2)	BPA-3A-TP-24 (0-2)	BPA-3A-TP-25 (3-5)	BPA-3A-TP-26 (0-2)	BPA-3A-TP-27 (0-2)	BPA-3A-TP-28 (0-2)	BPA-3A-TP-29 (0-2)	BPA-3A-TP-30 (2-5)	BPA-3A-TP-31 (3-5)	BPA-3A-TP-32 (0-2)	BPA-3A-TP-33 (0-2)	BPA-3A-TP-34 (0-2)	BPA-3A-TP-35 (0-2)	BPA-3A-TP-37 (0-2)
Volatile Organic Compounds (VOCs) - mg/kg [3]																									
1,2,4-Trimethylbenzene	**190**	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND
1,3,5-Trimethylbenzene	**190**	--	--	--	--	--	ND	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND
2-Butanone (MEK)	**500**	--	--	--	--	--	0.51 W,D,J	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND
p-Cymene	**--**	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND
Acetone	**500**	--	--	--	--	--	ND	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND
Benzene	**44**	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND
Chlorobenzene	**500**	--	--	--	--	--	ND	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND
Cyclohexane	**--**	--	--	--	--	--	ND	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND
Ethylbenzene	**390**	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND
Isopropylbenzene	**--**	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND
Methylcyclohexane	**--**	--	--	--	--	--	0.061 W,D,J	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND
Methylene chloride	**500**	--	--	--	--	--	0.066 W,D,J	0.048 B	0.041 B	--	0.055 B	--	--	--	--	--	--	--	--	--	--	--	--	--	ND
m-Xylene & p-Xylene	**500**	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND
n-Butylbenzene	**--**	--	--	--	--	--	0.12 W,D,J	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND
n-Propylbenzene	**500**	--	--	--	--	--	0.063 W,D,J	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND
o-Xylene	**500**	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND
sec-Butylbenzene	**500**	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND
Toluene	**500**	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	0.00066 J
Total Xylenes	**500**	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND
Semi-Volatile Organic Compounds (SVOCs) - mg\kg [3]																									
2-Methylnaphthalene	**--**	ND	ND	ND	ND	ND	32 D	ND	ND	ND	ND	0.64 D,J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	**500**	ND	ND	ND	ND	ND	ND	ND	2.3 D,J	ND	ND	1.8 D,J	ND	ND	ND	ND	ND	ND	ND	0.3 D,J	ND	ND	ND	3.2 D,J	ND
Acenaphthylene	**500**	ND	ND	ND	ND	0.56 D,J	ND	5.8 D,J	ND	ND	ND	0.39 D,J	ND	ND	2.1 DJ	ND	2.4 D,J	1.3 D,J	ND	0.36 D,J	ND	0.73 D,J	ND		1.2 D,J
Anthracene	**100**	3.3 T,D,J	0.42 D,J	0.37 D,J	ND	0.81 D,J	ND	4 D,J	5.4 D	ND	ND	6.4 D	ND	ND	3.4 DJ	ND	ND	1.1 DJ	ND	0.91 D,J	2 D,J	0.85 D,J	3.2 D,J	7.6 D,J	0.41 D,J
Benzo(a)anthracene	**5.6**	**7.7 T,D,J**	1.6 D,J	1.8 D,J	4.1 T,D,J	2.5 D,J	0.4 D,J	**29 D**	**9.9 D**	0.018 J	1.2 D,J	**10 D**	0.8 D,J	0.17 D,J	**15 D**	0.38 D,J	3.2 D,J	**6 D**	ND	2.8 D	**8.2 D,J**	5.3 D	**11 DJ**	**27 D**	3.7 D,J
Benzo(a)pyrene	**1**	**6 T,D,J**	**1.5 D,J**	**2 D,J**	**4.4 T,D,J**	**2.2 D,J**	0.29 D,J	**29 D**	**8.1 D**	0.018 J	**1.4 D,J**	**8.1 D**	0.85 D,J	0.16 D,J	**13 D**	0.34 D,J	**6.2 D,J**	**6.2 D**	ND	**3.1 D**	**8.4 D,J**	**5.8 D**	**10 DJ**	**25 D**	**5.9 D**
Benzo(b)fluoranthene	**5.6**	**6.6 T,D,J**	1.8 D,J	2.5 D,J	5.3 T,D,J	4 D ID4	0.48 D,J	**34 D**	**9.4 D**	0.033 J	2.5 D,J	**11 D**	1.4 D,I4,J	0.22 D,J	**14 D**	0.43 D,J	**6.1 D,J**	**7.2 D**	ND	3.9 D	**8.4 D,J**	**6.9 D**	**18 D,J,ID4**	**28 D**	**7.9 D**
Benzo(ghi)perylene	**500**	4.1 T,D,J	1 D,J	1.7 D,J	4.5 T,D,J	1.9 D,J	0.26 D,J	26 D	5.2 D	0.02 J	1.3 D,J	5.6 D	0.7 D,J	0.16 D,J	9.1 DJ	0.26 D,J	5.9 D,J	4.7 D	ND	3.1 D	5.5 D,J	4.3 D	ND	14 D,J	4.3 D
Benzo(k)fluoranthene	**56**	3.9 T,D,J	0.66 D,J	0.84 D,J	3.2 T,D,J	ND	0.21 D,J	14 D	3.6 D,J	ND	0.82 D,J	3.9 D,J	ND	0.065 D,J	5.3 DJ	0.16 D,J	2.2 D,J	2.4 D,J	ND	1.4 D,J	5.4 D,J	3.9 D	ND	14 D,J	2.5 D,J
Biphenyl	**--**	ND	ND	ND	ND	ND	3.1 D	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	**--**	ND	ND	ND	ND	ND	0.62 D,J,B	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	**--**	--	--	--	--	--	--	--	1.6 DJ	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND
Chrysene	**56**	6.9 T,D,J	1.5 D,J	17 D,J	4.1 T,D,J	2.5 D,J	0.54 D,J	30 D	8.3 D	0.027 J	1.3 D,J	9.9 D	0.96 D,J	0.12 D,J	12 D	0.36 D,J	3.3 D,J	5.4 D	ND	2.9 D	7.8 D,J	5.2 D	12 D,J	24 D	3.8 D,J
Dibenzo(a,h)anthracene	**0.56**	ND	0.28 D,J	0.44 D,J	ND	0.45 D,J	0.075 D,J	**5.9 D,J**	1.1 D,J	ND	ND	**1.5 DJ**	ND	ND	ND	ND	ND	ND	ND	ND	1.2 D,J	ND	ND	ND	**1.4 D,J**
Dibenzofuran	**--**	ND	ND	ND	ND	ND	ND	ND	0.98 D,J	ND	ND	1.9 DJ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	**500**	15 T,D,J	3.3 D,J	2.6 D,J	6.8 T,D,J	5.2 D	1.1 D	38 D	26 D	0.018 J	1.4 D,J	23 D	1.2 D,J	0.19 D,J	32 D	0.5 D,J	2.6 D,J	9.4 D	ND	6.6 D	18 D	9.5 D	26 D,J	58 D	3.6 D,J,B
Fluorene	**500**	ND	ND	ND	ND	ND	6.6 D	ND	2.1 D,J	ND	ND	2.9 D,J	ND	ND	1.1 DJ	ND	ND	ND	ND	0.23 D,J	ND	ND	ND	3 D,J	ND
Indeno(1,2,3-cd)pyrene	**5.6**	3.5 T,D,J	0.93 D,J	1.5 D,J	3.6 T,D,J	1.6 D,J	0.24 D,J	**23 D**	4.9 D	ND	1.3 D,J	**5.8 D**	0.66 D,J	0.14 D,J	**8.1 DJ**	0.21 D,J	4.2 D,J	4.4 D	ND	2.5 D	4.7 D,J	4 D	**6.3 D,J**	**14 D,J**	4.1 D
Naphthalene	**500**	ND	ND	0.53 D,J	ND	ND	5.4 D	ND	ND	ND	ND	0.63 DJ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.52 D,J	
Phenanthrene	**500**	13 T,D,J	2 D,J	1.6 D,J	3.3 T,D,J	2.5 DJ	16 D	9.3 D,J	21 D	0.021 J	ND	23 D	0.39 D,J	0.088 D,J	15 D	0.2 D,J	ND	3 D,J	ND	3.5 D	7.2 D,J	4.7 D	16 D,J	31 D	0.81 D,J,B
Pyrene	**500**	12 T,D,J	2.8 D,J	2.2 D,J	5.7 T,D,J	4.8 D	1.1 D	ND	20 D	0.014 J	1.3 D,J	16 D	1 D,J	0.17 D,J	26 D	0.43 D,J	3.4 D,J	8.1 D	0.089 D,J	5.3 D	14 D	7.8 D	20 D,J	42 D	3.6 D,J,B
TCL Polychlorinated Biphenyls (PCBs) - mg\kg [3]																									
Aroclor 1242	**1**	--	--	--	--	--	--	--	ND	--	ND	--	--	--	--	--	ND	0.037	ND	ND	0.13 D	--	--	--	ND
Aroclor 1248	**1**	--	--	--	--	--	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--	ND
Aroclor 1260	**1**	--	--	--	--	--	--	--	ND	--	ND	--	--	--	--	--	0.028 J	0.25	ND	0.25	**1.5 D**	--	--	--	ND
Inorganic Compounds - mg\kg																									
Aluminum, Total	**--**	--	--	--	--	--	--	--	7890 J	--	7410 J	--	--	--	--	--	--	--	--	--	--	--	--	--	5780 J
Arsenic, Total	**16**	**57.8**	**31.7**	**17.6**	7.5	**123**	**38.9**	**25.1**	**26.7**	ND	10	**79.3**	**19.3**	10.9	**25.5**	6.1	**21.7**	10	5.4	**24.5**	**18.7**	**132**	15.4	**20.6**	**121**
Barium, Total	**400**	--	--	--	--	--	--	--	109 J	--	93.9 J	--	--	--	--	--	--	--	--	--	--	--	--	--	99.3 J
Cadmium, Total	**9.3**	4.12	1.64	2.03	1.06	1.73	3.59	0.941	1.3	ND	0.999	5.98	2.43	ND	4.07	0.268	2.14	1.06	0.992	7.32	7.75	**14.4**	2.59	**30.9**	1.72
Calcium, Total	**--**	--	--	--	--	--	--	--	30100 J,B1,B	--	25300 J,B1,B	--	--	--	--	--	--	--	--	--	--	--	--	--	35300 J
Chromium, Total [4]	**1900**	148 J	372 J	234 J	91.2 J	52.8 J	22.6 J	125 J	75.8 J	18.1 J	20.7 J	125 J	29.9 J	30.8 J	34.9 J	56 J	19.7 J	108 J	195 J	33.4 J	125 J	203 J	49.2 J	145 J	17.9 J
Cobalt, Total	**--**	--	--	--	--	--	--	--	7 J	--	4.27 J	--	--	--	--	--	--	--	--	--	--	--	--	--	6.91 J
Copper, Total	**270**	--	--	--	--	--	--	--	72.1 J	--	39 J	--	--	--	--	--	--	--	--	--	--	--	--	--	29.6 J
Iron, Total	**--**	--	--	--	--	--	--	--	46700 J	--	20600 J	--	--	--	--	--	--	--	--	--	--	--	--	--	212000 D,J
Lead, Total	**1000**	316	229	232	251	130	176	44.7 J	118 J	ND	75.4 J	500 J	201 J	26 J	268	28.2	138	169	101	355	488	823	332	484	59
Magnesium, Total	**--**	--	--	--	--	--	--	--	3570 J	--	3360 J	--	--	--	--	--	--	--	--	--	--	--	--	--	2090 J
Manganese, Total	**10000**	--	--	--	--	--	--	--	3740 B1,D,B	--	1580 B1,B	--	--	--	--	--	--	--	--	--	--	--	--	--	1930
Nickel, Total	**310**	--	--	--	--	--	--	--	20.3 J	--	14.5 J	--	--	--	--	--	--	--	--	--	--	--	--	--	8.78 J
Potassium, Total	**--**	--	--	--	--	--	--	--	1330 J	--	520 J	--	--	--	--	--	--	--	--	--	--	--	--	--	591 J
Sodium, Total	**--**	--	--	--	--	--	--	--	515 J	--	241 J	--	--	--	--	--	--	--	--	--	--	--	--	--	165 J
Thallium, Total	**--**	--	--	--	--	--	--	--	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	14.1
Vanadium, Total	**--**	--	--	--	--	--	--	--	52.6 J	--	21.5 J	--	--	--	--	--	--	--	--	--	--	--	--	--	49.1 J
Zinc, Total	**10000**	--	--	--	--	--	--	--	307 J	--	185 J	--	--	--	--	--	--	--	--	--	--	--	--	--	93.6 J
Mercury, Total	**2.8**	1.31 D	0.0736	1.58 D	0.102	2.07 D	0.0717	0.11	2.78	ND	0.13	0.235	0.0467	0.0269	0.422	ND	0.0905	0.121	0.105	0.102	**3.32 D**	0.169	0.355	0.403	0.0254
Cyanide	**27**	--	--	--	--	--	--	--	2.1 J	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND
General Chemestry Parameters																									
pH, Leachable		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC draft Part 375 Soil Cleanup Objectives (June 2006)
3. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparison to SCOs.
4. The total Chromium SCO was determined by adding the hexavalent and trivalent Chromium SCOs.
5. Blind 1 collected from BPA-3A-TP-25, Blind 2 collected from BPA-3A-TP-49, Blind 3 collected from BPA-3A-TP-55

Definitions:

ND = Parameter not detected above laboratory detection limit.
"--" = No SCO available/Sample not analyzed for parameter.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
D = All compounds were identified in an analyisis at the secondary dilution factor.
R = The data is unusable.

BOLD = result exceeds SCO.

TABLE 1B

SUMMARY OF RI SOIL/FILL ANALYTICAL DATA (PHASE IIIA)

SITE MANAGEMENT PLAN

Phase IIIA Business Park
Lackawanna, New York

PARAMETER [1]	Commercial SCOs [2] (ppm)	Sample Locations																				
		BPA-3A-TP-40 (0-2)	BPA-3A-TP-44 (7-8)	BPA-3A-TP-45 (0-2)	BPA-3A-TP-46 (0-2)	BPA-3A-TP-47 (0-2)	BPA-3A-TP-48 (0-2)	BPA-3A-SS-49	BPA-3A-TP-49 (0-2)	BPA-3A-TP-49 (5-7)	BPA-3A-TP-50 (0-2)	BPA-3A-TP-51 (0-2)	BPA-3A-TP-52 (0-2)	BPA-3A-TP-53 (5-7)	BPA-3A-TP-54 (0-2)	BPA-3A-TP-55 (0-2)	BPA-3A-TP-56 (0-2)	BPA-3A-TP-57 (0-2)	BPA-3A-TP-58 (5-6)	Blind 1 [5]	Blind 2 [5]	Blind 3 [5]
Volatile Organic Compounds (VOCs) - mg/kg [3]																						
1,2,4-Trimethylbenzene	**190**	--	1.8 D,W1,N1	--	--	--	--	--	--	--	ND	ND	0.0015 J	**360 W1**	0.0022 J	0.0034 J	0.0018 J	ND	ND	ND	--	0.0026 J
1,3,5-Trimethylbenzene	**190**	--	0.41 D,W1,N1	--	--	--	--	--	--	--	--	ND	--	**280 W1**	--	0.0094 J	--	--	--	--	--	0.00065 J
2-Butanone (MEK)	**500**	--	ND	--	--	--	--	--	--	--	--	ND	--	ND	--	0.0077 J	--	--	--	--	--	0.0078 J
p-Cymene	**--**	--	0.33 D,W1,N1	--	--	--	--	--	--	--	ND	ND	ND	0.81 W1	ND	ND	ND	ND	ND	ND	--	ND
Acetone	**500**	--	ND	--	--	--	--	--	--	--	--	ND	--	ND	--	0.051 J	--	--	--	--	--	0.048 J
Benzene	**44**	--	0.93 D,W1,N1	--	--	--	--	--	--	--	ND	ND	ND	**490 W1**	ND	ND	ND	ND	ND	ND	--	ND
Chlorobenzene	**500**	--	ND	--	--	--	--	--	--	--	--	ND	--	0.09 W1,J	--	ND	--	--	--	--	--	ND
Cyclohexane	**--**	--	0.69 D,W1,N1	--	--	--	--	--	--	--	--	ND	--	0.37 W1	--	ND	--	--	--	--	--	ND
Ethylbenzene	**390**	--	0.19 D,W1,N1	--	--	--	--	--	--	--	ND	ND	ND	100	ND	ND	ND	ND	ND	ND	--	ND
Isopropylbenzene	**--**	--	0.31 D,W1,N1	--	--	--	--	--	--	--	ND	ND	ND	4.4 W1	ND	ND	ND	ND	ND	ND	--	ND
Methylcyclohexane	**--**	--	1.7 D,W1,N1	--	--	--	--	--	--	--	--	ND	--	2.2 W1	--	ND	--	--	--	--	--	ND
Methylene chloride	**500**	--	ND	--	--	--	--	--	--	--	--	6.3 B	--	ND	--	ND	--	--	--	--	--	ND
m-Xylene & p-Xylene	**500**	--	0.62 D,W1,N1	--	--	--	--	--	--	--	ND	ND	0.0016 J	**820 W1**	0.0023 J	0.0032 J	0.002 J	ND	ND	ND	--	0.0026 J
n-Butylbenzene	**--**	--	0.87 D,W1,N1	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND
n-Propylbenzene	**500**	--	0.46 D,W1,N1	--	--	--	--	--	--	--	ND	ND	ND	1.6 W1	ND	ND	ND	ND	ND	ND	--	ND
o-Xylene	**500**	--	0.38 D,W1,N1	--	--	--	--	--	--	--	ND	ND	ND	87 W1	ND	0.00081	ND	ND	ND	ND	--	ND
sec-Butylbenzene	**500**	--	0.27 D,W1,N1	--	--	--	--	--	--	--	ND	ND	ND	0.82 W1	ND	ND	ND	ND	ND	ND	--	ND
Toluene	**500**	--	ND	--	--	--	--	--	--	--	ND	ND	ND	47 W1	0.00094 J	ND	0.00085 J	ND	ND	ND	--	0.00066 J
Total Xylenes	**500**	--	1 D,W1,N1	--	--	--	--	--	--	--	ND	ND	0.0016 J	**910 W1**	0.0023 J	0.004 J	0.002 J	ND	ND	ND	--	0.0026 J
Semi-Volatile Organic Compounds (SVOCs) - mg\kg [3]																						
2-Methylnaphthalene	**--**	ND	65 T,D,J	ND	ND	ND	ND	ND	ND	--	ND	0.8 D,J	ND	73 T,D	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	**500**	ND	ND	ND	ND	ND	ND	ND	0.4 D,J	--	ND	ND	ND	29 T,D	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	**500**	ND	ND	0.39	ND	ND	0.25 D,J	6 T,D,J	ND	--	0.46 D,J	0.33 D,J	0.28 D,J	7.9 T,D	ND	ND	ND	1.1 D,J	ND	ND	ND	ND
Anthracene	**100**	ND	ND	0.74 D,J	0.12 D,J	ND	0.29 D,J	ND	1.1 D,J	--	0.35 D,J	1.9 D,J	0.52 D,J	6.9 T,D	0.15 D,J	0.016 J	ND	1.1 D,J	0.026 J	ND	1.5 D,J	ND
Benzo(a)anthracene	**5.6**	0.56 D,J	ND	2.8 D	1.2 D,J	**6.4 D,J**	1.5 D,J	**8.6 T,D,J**	4.5 D	--	2 D,J	**9.6 D**	1.4 D,J	**7.9 T,D,J**	1 D,J	0.29	1.9 D,J	5.1 D	0.065 J	0.14 D,J	4.7 D,J	0.12 J
Benzo(a)pyrene	**1**	0.62 D,J	ND	**2.9 D**	**1.1 D,J**	**4.9 D,J**	**1.4 D,J**	ND	**4.2 D,J**	--	**2.2 D,J**	**7.8 D**	**1.2 D,J**	**4.2 T,D,J**	**1.1 D,J**	0.45	**2.9 D**	**4.5 D**	0.046 J	0.15 D,J	**4.3 D,J**	0.2 J
Benzo(b)fluoranthene	**5.6**	1.2 D,J	ND	3.4 D	1.4 D,J	**7.9 D,J**	1.9 D,J	**12 T,D,J**	**6 D**	--	2.6 D,J	**10 D**	1.4 D,J	**5.9 T,D,J**	1.6 D,J	0.54	3.4 D	**5.8 D**	0.049 J	0.22 D,J	**5.9 D,J**	0.3
Benzo(ghi)perylene	**500**	0.55 D,J	ND	2.1 D	0.73 D,J	4.7 D,J	1.1 D,J	5.8 T,D,J	4.5 D	--	1.8 D,J	5.5 D	0.83 D,J	2.4 T,D,J	0.99 D,J	0.46	2.9 D	3.2 D	0.031 J	0.18 D,J	4.6 D,J	0.22
Benzo(k)fluoranthene	**56**	1.2 D,J	ND	1.4 D,J	0.55 D,J	3.5 D,J	0.71 D,J	4.5 T,D,J	2.3 D,J	--	1.5 D,J	3.2 D,J	0.47 D,J	2.9 T,D,J	0.58 D,J	0.23	1.1 D,J	2 D	0.029 J	0.062 D,J	3.1 D,J	0.058 J
Biphenyl	**--**	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	7.5 T,D,J	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	**--**	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	**--**	--	ND	--	--	--	--	--	--	--	--	0.54 D,J	--	ND	--	0.013 J	--	--	--	--	--	ND
Chrysene	**56**	0.62 D,J	ND	2.5 D	1.1 D,J	7.1 D,J	1.4 D,J	10 T,D,J	4.1 D,J	--	2.4 D,J	8.9 D	1.3 D,J	6.3 T,D,J	1.3 D,J	0.34	2.1 D	5.1 D	0.074 J	0.15 D,J	4.8 D,J	0.18 J
Dibenzo(a,h)anthracene	**0.56**	ND	ND	**0.67**	ND	ND	0.29 D,J	ND	**1.2 D,J**	--	ND	**1.4 D,J**	0.25 D,J	ND	ND	0.092 J	**0.66 D,J**	**0.81 D,J**	ND	ND	ND	0.061 J
Dibenzofuran	**--**	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	0.71 D,J	0.2 D,J	15 T,D,J	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	**500**	0.84 D,J,B	18 T,D,J,B	5.1 D	1.8 D,J	11 D,J	2.3 D	17 T,D,J	6.7 D	--	3 D,J	16 D	3.3 D	22	1.3 D,J	0.38	2.1 D	13 D,B	0.11 J	0.18 D,J	7.9 D,J	0.2 J
Fluorene	**500**	ND	ND	0.23 D,J	ND	ND	ND	ND	0.49 D,J	--	ND	ND	0.27 D,J	ND	ND	ND	ND	0.27 D,J	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	**5.6**	0.47 D,J	ND	1.9 D,J	0.61 D,J	4 D,J	1 D,J	**5.8 T,D,J**	3.9 D,J	--	1.5 D,J	4.6 D	0.72 D,J	ND	0.87 D,J	0.35	2.5 D	2.9	0.026 J	0.14 D,J	3.8 D,J	0.18 J
Naphthalene	**500**	ND	ND	ND	ND	ND	ND	ND	0.77 D,J	--	ND	ND	ND	**890 T,D,J,E**	ND	ND	ND	0.16 D,J	ND	ND	ND	ND
Phenanthrene	**500**	0.25 D,J,B	98 T,D,J,B	3	0.66 D,J	10 D,J	1.2 D,J	12 T,D,J	5.1 D	--	1.6 D,J	8.3 D	1.9 D,J	34 T,D	0.56 D,J	0.14 J	0.6 D,J	5 D,B	0.065 J	ND	6.8 D,J	0.084 J
Pyrene	**500**	0.67 D,J,B	93 T,D,J,B	4.1	1.5 D,J	7.9 D,J	1.9 D	11 T,D,J	5.8 D	--	2.5 D,J	12 D	2.8 D	15 T,D,J	1.4 D,J	0.34	1.9 D,J	9.7 D,B	0.097 J	0.15 D,J	6.9	0.17 J
TCL Polychlorinated Biphenyls (PCBs) - mg\kg [3]																						
Aroclor 1242	**1**	--	ND	--	--	--	--	--	--	--	--	ND	--	--	--	ND	--	--	--	--	--	ND
Aroclor 1248	**1**	--	ND	--	--	--	--	--	--	--	--	ND	--	--	--	0.015 J	--	--	--	--	--	0.015 J
Aroclor 1260	**1**	--	ND	--	--	--	--	--	--	--	--	ND	--	--	--	0.018 J	--	--	--	--	--	0.018 J
Inorganic Compounds - mg\kg																						
Aluminum, Total	**--**	--	5500 J	--	--	--	--	--	--	16000 J	--	4120 J	--	2690 J	--	3270 J	--	--	--	--	--	3360 J
Arsenic, Total	**16**	**38**	9.7	**45.4 J**	**62.9 J**	**19.8 J**	**30 J**	**38.2 J**	**26.3 J**	8.3 J	9.4 J	11.2	**31.7 J**	**39.3**	**27.2 J**	7.4	12.5 J	**35.3**	2.3 J	13	**25 J**	4.6
Barium, Total	**400**	--	66.6 J	131 J	159 J	36.8 J	138 J	84.8 J	118 J	25.4 J	--	66.9 J	--	101 J	--	19.5 J	--	--	--	--	70.9	21 J
Cadmium, Total	**9.3**	1.41	0.474	1.86	ND	ND	0.557	2.1	4.13	ND	ND	ND	0.491 J	0.44	7.21 J	0.914	6.93 J	ND	ND	ND	5.87	1.32
Calcium, Total	**--**	--	48400 J	--	--	--	--	--	--	131000 J	--	38700 J	--	1850 J	--	261000	--	--	--	--	--	210000 D,J
Chromium, Total [4]	**1900**	590 J	192 J	101 J	13.7 J	19.5 J	25.8 J	48.4 J	42.1 J	13.3 J	7.67 J	7.43 J	13.5 J	6.91 J	356 J	178 J	260 J	7.75 J	1.84 J	28.9 J	56.2 J	256 J
Cobalt, Total	**--**	--	3.64 J	--	--	--	--	--	--	3.72 J	--	3.84 J	--	6.02 J	--	4.85 J	--	--	--	--	--	4.48 J
Copper, Total	**270**	--	36 J	--	--	--	--	--	--	17.7 J	--	26.1 J	--	34.9 J	--	33.6 J	--	--	--	--	--	48 J
Iron, Total	**--**	--	47300 J	--	--	--	--	--	--	25800 J	--	23400 J	--	43800 J	--	34200 J	--	--	--	--	--	45700 B1,J
Lead, Total	**1000**	76.3 J	62.6 J	104 J	158 J	33.1 J	78.5 J	151 J	289 J	27.8 J	75.1 J	49.8 J	41.7 J	218 J	438 J	101 J	605 J	11.9 J	4.4 J	24.3 J	314 J	101 J
Magnesium, Total	**--**	--	7160 J	--	--	--	--	--	--	271000 D,J	--	8250 J	--	654 J	--	151000 D,J	--	--	--	--	--	136000 D,J
Manganese, Total	**10000**	--	7210 D	--	--	--	--	--	--	357 J	--	346	--	469	--	6540 D	--	--	--	--	--	7090 D
Nickel, Total	**310**	--	10.9 J	--	--	--	--	--	--	ND	--	9.15 J	--	14.9 J	--	42.5 J	--	--	--	--	--	50 J
Potassium, Total	**--**	--	454 J	--	--	--	--	--	--	161 J	--	722 J	--	500 J	--	242 J	--	--	--	--	--	220 J
Sodium, Total	**--**	--	ND	--	--	--	--	--	--	ND	--	ND	--	222 J	--	193 J	--	--	--	--	--	ND
Thallium, Total	**--**	--	ND	--	--	--	--	--	--	ND	--	ND	--	ND	--	ND	--	--	--	--	--	ND
Vanadium, Total	**--**	--	67.6 J	--	--	--	--	--	--	34.3 J	--	11.7 J	--	16.3 J	--	71.3 J	--	--	--	--	--	122
Zinc, Total	**10000**	--	109 J	--	--	--	--	--	--	80.2 J	--	69.5 J	--	158 J	--	218 J	--	--	--	--	--	30 J
Mercury, Total	**2.8**	0.0464	0.188	0.264	0.0721	**575 D**	0.301	**304 D**	**6.98 D**	ND	0.772	0.334	ND	0.0481	1.16 D	0.0817	0.806	ND	ND	0.0325	**8.23 D**	0.0897 J
Cyanide	**27**	--	ND	ND	ND	**119 D,J**	ND	**628 D,J**	**41**	--	--	ND	--	ND	--	1.6 J	--	--	--	--	**40.9 J**	ND
General Chemestry Parameters																						
pH, Leachable		--	--	--	--	--	--	--	--	10 HFT	--	--	--	--	--	--	--	--	--	--	--	--

TABLE 2A

SUMMARY OF RI GROUNDWATER ANALYTICAL DATA (PHASE III)

SITE MANAGEMENT PLAN

Phase III Business Park
Lackawanna, New York

PARAMETER[1]	GWQS [2]	MWN-56A		MWN-57A		MWN-10		MWN-58A		MWN-59A		MWN-60A		MWS-34A		MWS-33A		MWS-30A		MWS-35A		Blind Duplicate[4]		Trip Blank		Equipment Blank	
Field Measurements [3] ***:***																											
Sample No.	--	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	NA	NA	NA	NA
pH (units)	**6.5 - 8.5**	8.14	8.13	7.25	7.31	**10.00**	**10.00**	7.71	7.71	7.55	7.60	8.28	8.29	7.07	7.16	6.73	**6.28**	7.69	7.74	**11.30**	**11.19**	**11.30**	**11.19**	NA	NA	NA	NA
Temperature (^{o}C)	**NA**	10.6	10.6	10.3	10.8	10.4	10.6	10.3	9.3	9.1	8.8	9.6	9.6	7.9	8.9	1.9	5.9	7.6	7.3	8.2	7.7	8.2	7.7	NA	NA	NA	NA
Sp. Conductance (uS)	**NA**	18610	18520	4192	4010	1873	1869	412.4	411.5	704.3	700.8	614.8	619.0	933.6	902.4	1031	947.7	834.7	836.7	544.6	482.4	544.6	482.4	NA	NA	NA	NA
Turbidity (NTU)	**NA**	11.20	8.08	34.10	22.80	3.44	2.88	31.30	22.60	24.40	11.10	5.57	4.54	25.80	19.50	43.20	38.20	13.00	6.84	37.50	22.70	37.50	22.70	NA	NA	NA	NA
DO (ppm)	**NA**	1.21	1.10	1.78	1.40	1.35	1.42	1.61	1.91	1.78	1.96	1.33	1.63	1.31	1.09	7.07	3.29	2.09	2.47	1.50	1.39	1.50	1.39	NA	NA	NA	NA
Eh (mV)	**NA**	-182	-173	-105	-109	-191	-195	-128	-120	-142	-142	-197	-189	-119	-118	-44	0	-36	-61	-169	--161	-169	--161	NA	NA	NA	NA
Inorganic Compounds (mg/L):																											
Aluminum - Total	**--**	--		--		--		--		--		--		--		--		--		1.5		1.48		--		ND	
Arsenic - Total	**0.025**	ND		ND		ND		0.0164		ND		ND		0.0168		ND		ND		0.016		0.0187		--		ND	
Barium - Total	**1**	--		--		--		--		--		--		--		--		--		0.0534		0.0533		--		ND	
Calcium - Total	**--**	--		--		--		--		--		--		--		--		--		83.5		84.4		--		ND	
Chromium - Total	**0.05**	ND		ND		ND		ND		ND		ND		ND		ND		ND		0.0102		0.0099		--		ND	
Iron - Total	**0.3**	--		--		--		--		--		--		--		--		--		**2.49**		**2.62**		--		ND	
Lead - Total	**0.025**	ND		0.0054		ND		ND		ND		ND		ND		ND		ND		0.0114		0.0113		--		ND	
Magnesium - Total	**35***	--		--		--		--		--		--		--		--		--		2.41		2.49		--		ND	
Manganese - Total	**0.3**	--		--		--		--		--		--		--		--		--		0.21		0.194		--		ND	
Potassium - Total	**--**	--		--		--		--		--		--		--		--		--		15.8		15.9		--		ND	
Sodium - Total	**20**	--		--		--		--		--		--		--		--		--		10.6		10.6		--		ND	
Vanadium - Total	**--**	--		--		--		--		--		--		--		--		--		0.0079		0.0082		--		ND	
Zinc - Total	**2***	--		--		--		--		--		--		--		--		--		0.017		0.0179		--		ND	
Volatile Organic Compounds (ug/L):																											
Acetone	**50***	--		--		--		--		--		--		--		--		--		ND		11		--		ND	
Benzene	**1**	0.054 J		0.045 J		ND		ND		ND		0.034 J		0.035 J		ND		ND		ND		ND		0.041 J		ND	
Methyl-t-Butyl Ether (MTBE)	**10**	ND		0.15 J		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
m-Xylene & p-Xylene	**10**	ND		ND		ND		ND		ND		ND		0.085 J		ND		ND		ND		ND		0.09 J		ND	
Toluene	**5**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		0.16 J		ND	
Xylenes, total	**15**	ND		ND		ND		ND		ND		ND		0.085 J		ND		ND		ND		ND		0.09 J		ND	

TABLE 2A

SUMMARY OF RI GROUNDWATER ANALYTICAL DATA (PHASE III)

SITE MANAGEMENT PLAN

Phase III Business Park
Lackawanna, New York

PARAMETER[1]	GWQS [2]	MWN-56A	MWN-57A	MWN-10	MWN-58A	MWN-59A	MWN-60A	MWS-34A	MWS-33A	MWS-30A	MWS-35A	Blind Duplicate[4]	Trip Blank	Equipment Blank
Semi-Volatile Organic Compounds (ug/L):														
4-Nitroaniline	**--**	ND	ND	ND	ND	ND	ND	1.7 J	ND	ND	ND	ND	--	ND
Acenaphthene	**20**	ND	1.6 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND
Acetophenone	**--**	ND	ND	ND	ND	ND	ND	0.96 J	ND	ND	ND	ND	--	ND
Benzo(a)anthracene	**0.002***	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.22 J	ND	--	ND
Benzo(a)pyrene	**0.002***	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.032 J	0.24 J	--	ND
Benzo(b)fluoranthene	**0.002***	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.32 J	0.26 J	--	ND
Benzo(ghi)perylene	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.34 J	0.29 J	--	ND
Diethyl phthalate	**50***	ND	ND	ND	ND	ND	ND	0.25 J	ND	ND	0.27 J	ND	--	ND
Di-n-butyl phthalate	**50***	0.29 BJ	0.4 BJ	0.42 BJ	ND	0.3 BJ	ND	0.53 J	0.57 J	ND	0.29 J	0.29 J	--	ND
Fluoranthene	**50***	ND	0.68 J	ND	ND	ND	0.23 J	0.29 J	ND	ND	0.31 J	0.23 J	--	ND
Fluorene	**50***	ND	ND	ND	ND	ND	ND	0.5 J	ND	ND	ND	ND	--	ND
Indeno(1,2,3-cd)pyrene	**0.002***	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.24 J	0.21 J	--	ND
Naphthalene	**10***	ND	0.36 J	ND	ND	ND	ND	ND	0.21 J	ND	0.22 J	ND	--	ND
Phenanthrene	**50***	ND	0.61 J	ND	ND	ND	0.74 J	0.47 J	ND	ND	0.33 J	0.33 J	--	ND
Phenol	**1****	ND	ND	ND	ND	ND	ND	ND	ND	ND	**21**	**22**	--	ND
Pyrene	**50***	ND	0.53 J	ND	ND	ND	0.21 J	ND	ND	ND	0.34 J	0.27 J	--	ND

Notes:

1. Only those compounds detected above the method detection limit at a minimum of one sample location are reported in this table.
2. NYSDEC Class "GA" Groundwater Quality Standards/GuIdance Values (GWQS/GV) as per 6 NYCRR Part 703.
3. Field measurements were collected immediately before and after groundwater sample collection.
4. Blind Duplicate sample collected from MWN-35A.

Definitions:

J = Estimated Value; result is less than the sample quantitation limit but greater than zero.
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
NA = Not available
ND = Indicates parameter was not detected above laboratory reporting limit.
* = The Guidance Value was used where a Standard has not been established.
** = The general standard of 1.0 ug/L for phenolic compounds was used.

BOLD = Result exceeds the GWQS/GV.

TABLE 2B

SUMMARY OF RI GROUNDWATER ANALYTICAL DATA (PHASE IIIA)

SITE MANAGEMENT PLAN

Phase III Business Park
Lackawanna, New York

PARAMETER[1]	GWQS[2]	MWS-04		MWS-31A		MWN-61A		MWN-62D		MWN-19B		MWN-19A		MWN-30A		Blind Duplicate[3]		Trip Blank		Equipment Blank	
Field Measurements [4]***:***																					
Sample No.	--	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	NA	NA	NA	NA
pH (units)	**6.5 - 8.5**	**9.57**	**9.90**	**9.37**	**9.41**	7.67	7.65	**6.47**	6.51	**5.89**	**5.81**	6.55	**6.49**	7.74	7.75	6.55	**6.49**	NA	NA	NA	NA
Temperature (^{o}C)	**NA**	10.5	10.1	8.7	9.0	9.5	9.4	10.4	9.2	12.0	11.5	10.8	9.2	10.0	8.7	10.8	9.2	NA	NA	NA	NA
Sp. Conductance (uS)	**NA**	506.5	537.5	539.2	547	625.9	623.8	1633	1625	1077	1050	1187	1205	1619	1674	1187	1205	NA	NA	NA	NA
Turbidity (NTU)	**NA**	33.50	25	>1000	361	21	11.20	47.20	13.30	128.00	91.40	14.60	7.91	56.40	83.90	14.60	7.91	NA	NA	NA	NA
Eh (mV)	**NA**	-121	-149	-64	-63	-145	-136	-85	-92	-51	-0	-98	-100	-269	-258	-98	-100	NA	NA	NA	NA
Inorganic Compounds (mg/L):																					
Aluminum - Total	--	-		-		-		-		-		ND		-		ND		NA		ND	
Arsenic - Total	**0.025**	0.0225		**0.0334**		ND		ND		0.0141		ND		ND		ND		NA		ND	
Barium - Total	**1**	-		-		-		-		-		0.204		-		0.208		NA		ND	
Cadmium - Total	**0.005**	ND		ND		ND		ND		ND		ND		ND		ND		NA		ND	
Calcium - Total	--	-		-		-		-		-		87.1		-		88.9		NA		ND	
Chromium - Total	**0.05**	ND		0.0147		ND		ND		ND		ND		0.0598		ND		NA		ND	
Iron - Total	**0.3**	-		-		-		-		-		**13.1**		-		**13.3**		NA		ND	
Lead - Total	**0.025**	ND		0.0213		ND		ND		ND		ND		ND		ND		NA		ND	
Magnesium - Total	**35***	-		-		-		-		-		24.7		-		25.1		NA		ND	
Manganese - Total	**0.3**	-		-		-		-		-		**0.523**		-		**0.533**		NA		ND	
Potassium - Total	--	-		-		-		-		-		5.9 J		-		6.03 J		NA		ND	
Sodium - Total	**20**	-		-		-		-		-		**117**		-		**120**		NA		ND	
Vanadium - Total	--	-		-		-		-		-		ND		-		ND		NA		ND	
Zinc - Total	**2***	-		-		-		-		-		ND		-		ND		NA		0.0116	
Mercury - Total	**0.0007**	ND		ND		ND		ND		ND		ND		ND		ND		NA		ND	
Cyanide - Total	**0.2**	-		-		-		-		-		0.0217		-		0.0278		NA		ND	
Soluble Inorganic Compounds (mg/L):																					
Arsenic	**0.025**	NA		0.0208		NA		NA		ND		NA		ND		NA		NA		NA	
Volatile Organic Compounds (ug/L):																					
1,2,4-Trimethylbenzene	**5**	0.76 D,J,NJ		ND		ND		0.94 NJ		ND D		**22**		**190 D,NJ**		**23**		ND		ND	
1,3,5 - Trimethylbenzene	**5**	ND		ND		ND		0.34 NJ		ND D		**9.5**		ND		**10**		ND		ND	
Benzene	**1**	ND UJ		ND		ND		ND		ND D		**990 D**		**7600 D,NJ**		**1100 D**		0.56 J		ND	
Chlorobenzene	**5**	-		-		-		-		-		ND		-		0.42 J		ND		ND	
Cyclohexane	--	-		-		-		-		-		0.96 J		-		1.1		ND		ND	
Ethylbenzene	**5**	ND UJ		ND		ND		0.17 J,NJ		ND D		**9.9**		**170 D,NJ**		**10**		ND		ND	
Isopropylbenzene	**5**	ND UJ		ND		ND		ND		ND D		2		ND		2.3		ND		ND	
Methyl-t-Butyl Ether (MTBE)	**10**	ND UJ		ND		ND		0.33 J,NJ		ND D		0.5 J		ND		0.54 J		ND		ND	
Methylcyclohexane	--	-		-		-		-		-		0.61 J		-		0.65 J		ND		ND	
m-Xylene & p-Xylene	**10**	1.2 D,J,NJ		ND		7 D,J,NJ		1 NJ		ND D		**36**		**220 D,NJ**		**37**		ND		ND	
o-Xylene	**5**	ND		ND		ND		0.3 NJ		ND D		**11**		**200 D,NJ**		**12**		ND		ND	
Toluene	**5**	1.1 D,J,NJ		ND		**6 D,J,NJ**		0.23 NJ		ND D		2.3		**130 D,NJ**		2.4		ND		ND	
Xylenes, total	**15**	1.2 D,J,NJ		ND		7 D,J,NJ		0.13 NJ		ND D		**47**		**420 D,NJ**		**48**		ND		ND	

TABLE 2B

SUMMARY OF RI GROUNDWATER ANALYTICAL DATA (PHASE IIIA)

SITE MANAGEMENT PLAN

Phase III Business Park
Lackawanna, New York

PARAMETER[1]	GWQS[2]	MWS-04	MWS-31A	MWN-61A	MWN-62D	MWN-19B	MWN-19A	MWN-30A	Blind Duplicate[3]	Trip Blank	Equipment Blank
Semi-Volatile Organic Compounds (ug/L):											
2-Methylnaphthalene	--	1.8 J	ND	63 D	ND	ND	ND	110 D,J	ND	NA	ND
3-3'-Dichlorobenzidine	**5**	ND L4 UJ	ND L4 UJ	ND L4 UJ	ND L4 UJ	ND L4 UJ	ND L4 UJ	ND L4 UJ	ND L4 UJ	ND L4	ND L4 UJ
4-Nitroaniline	--	ND L4	ND L4 UJ	ND L4 UJ	ND L4 UJ	ND L4 UJ	ND L4	ND L4 UJ	ND L4 UJ	ND L4	ND L4 UJ
Acenaphthene	**20**	0.58 J	ND	18 D,J	ND	ND	1.5 J	17 D,J	1.5 J	NA	ND
Acenaphthylene	--	2.3 J	ND	18 D,J	ND	ND	ND	35 D,J	0.41 J	NA	ND
Acetophenone	--	ND	ND	ND	ND	ND	1.5 J	ND	1.7 J	NA	ND
Anthracene	**50**	ND	ND	7.2 D,J	ND	ND	ND	ND	ND	NA	ND
Benzo(a)anthracene	**0.002***	ND	ND	**2 D,J**	ND	ND	ND	**18 D,J**	ND	NA	ND
Biphenyl	**5**	ND	ND	**13 D,J**	ND	ND	ND	ND	ND	NA	ND
Bis(2-ethylhexyl) phthalate	**5**	2.3 J	2.5 J	ND	ND	**6.7**	ND	ND	1.8 J	NA	ND
Carbazole	--	9.1	ND	37 D	ND	ND	ND	ND	ND	NA	ND
Chrysene	**0.002**	ND	**0.33 J**	ND	ND	ND	ND	**16 D,J**	ND	NA	ND
Dibenzofuran	--	1.8 J	ND	39 D,J	ND	ND	ND	42 D,J	ND	NA	ND
Fluoranthene	**50***	ND	ND	12 D,J	ND	ND	ND	44 D,J	ND	NA	ND
Fluorene	**50***	2.6 J	ND	37 D	ND	ND	ND	ND	ND	NA	ND
Naphthalene	**10***	**34**	ND	**290 D**	ND	ND	ND	**2200 D,J**	ND	NA	1.3 J
Phenanthrene	**50***	2.6 J	ND	**62 D**	ND	0.54 J	ND	**110 D,J**	ND	NA	ND
Phenol	**1****	ND	ND	ND	ND	ND	**32**	ND	**33**	NA	ND
Pyrene	**50***	ND	ND	7.4 D,J	ND	ND	ND	18 D,J	ND	NA	ND

Notes:
1. Only those compounds detected above the method detection limit at a minimum of one sample location are reported in this table.
2. NYSDEC Class "GA" Groundwater Quality Standards/Guidance Values (GWQS/GV) as per 6 NYCRR Part 703.
3. Blind Duplicate and Matrix Spike/Matrix SpikeDuplicate (MS/MSD) analysis performed on groundwater sample collected from MWN-19A.
4. Field measurements were collected immediately before and after groundwater sample collection.

Definitions:
J = Estimated Value; result is less than the sample quantitation limit but greater than zero.
D = Sample required dillution due foaming or high concentration of target analyte(s).
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
NA = Not available
ND = Indicates parameter was not detected above laboratory reporting limit.
ND L4 = Poor recovery of laboratory control sample and or laboratory control sample dup, recovery was below the acceptance limits. A low bias to sample results required SVOCs to be re-analyzed.
* = The Guidance Value was used where a Standard has not been established.
** = The general standard of 1.0 ug/L for phenolic compounds was used.

BOLD = Result exceeds the GWQS/GV.

TABLE 3

SUMMARY OF PLANNED AND COMPLETED REMEDIAL ACTIONS BY SITE

SITE MANAGEMENT PLAN

Phase III Business Park
Lackawanna, New York

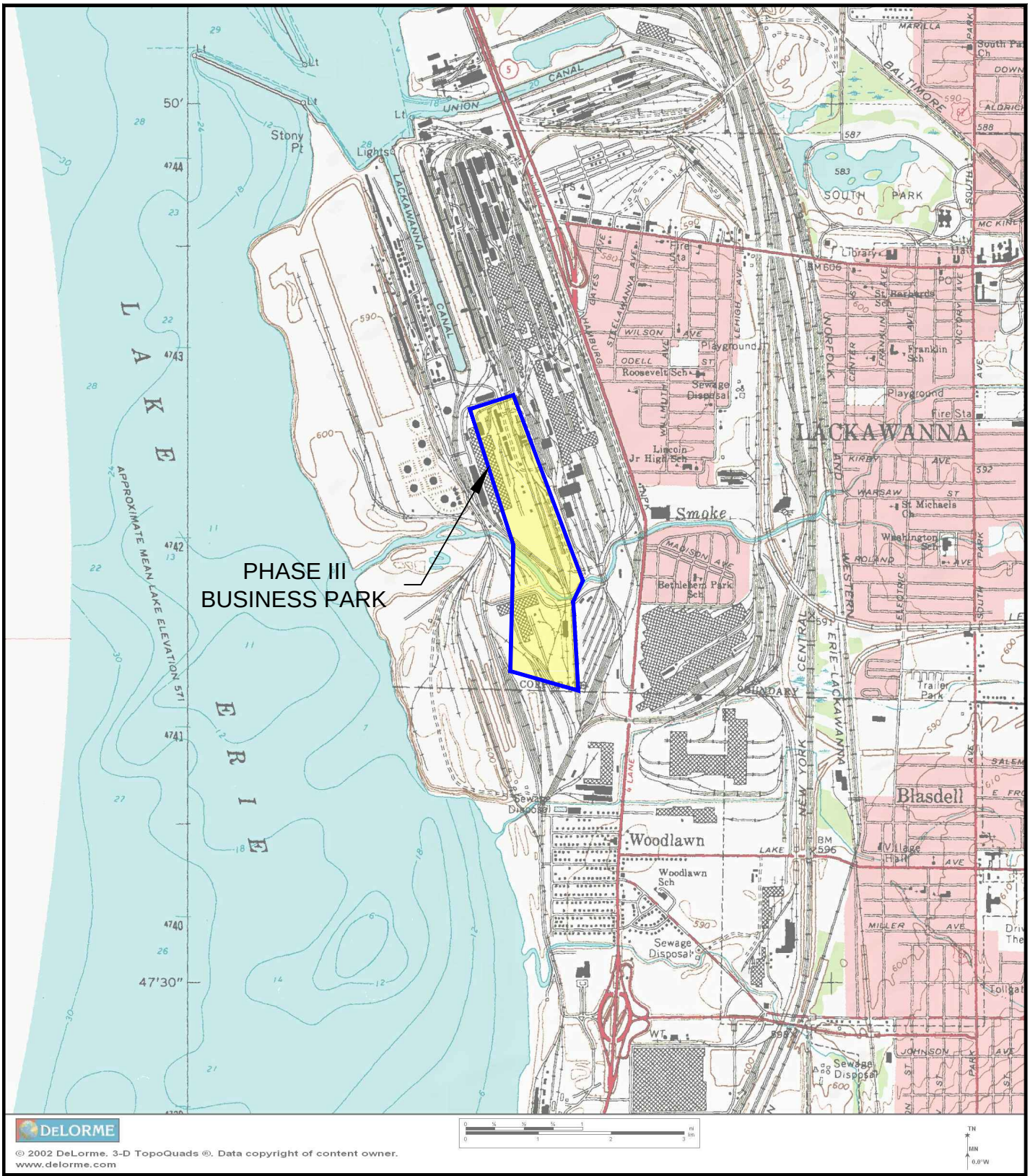
Sub-Parcel	BCP Site No.	Acreage	Remedial Work [1]	Monitoring Wells	Piezometers	Post-Remedial Groundwater Monitoring Program [2]
No Remedial Actions Planned						
III-1	C915199	15.03	No areas of impact identified; sub-parcel currently covered and leased for lumber yard operations.	MWS-30A, -33A	None	None
III-2	C915199B	10.92	No areas of impact identified	MWS-35A	None	TBD
Planned Remedial Actions						
III-3	C915199C	9.18	Installation of a 2-foot cover system over 15' by 850' area of suspected asbestos containing material landfill for use as a biotreatment pad or other DEC-approved unoccupied use.	None	None	TBD
III-4	C915199D	16.12	Hotspot C (Former Slabbing Mill Return Water Trench): excavation and off-site disposal of an estimated 250 CY of arsenic-impacted soil/fill. Hotspot H (test pit BPA3A-TP-6): excavation and off-site disposal of an estimated 90 CY of arsenic-impacted soil/fill.	MWS-04, -31A, -34A	None	TBD
III-5	C915199E	11.69	Constructed bioremediation pad atop former BOF Plant foundation. The area was cleared of brush and the foundation was lined with approx. 3 inches of BUD-approved steel slag (BUD No. 555-9-15) to provide a base for tilling equipment.	MWN-58A	P-38S, -39S	TBD
III-6	C915199F	10.89	Hotspot A (test pit BPA3-TP-42): excavation and off-site disposal of an estimated 20 CY of lead-impacted soil/fill.	MWN-59A, -60A	None	TBD
III-9	C915199I	13.97	Direct injection of a biological amendment product to accelerate aerobic or anaerobic bioremediation of the aromatic VOCs. Delivery points will be equally spaced in a grid pattern across the approximate 200-foot by 460-foot area and deliver product via high-capacity hydraulic injection pump between 5 and 18 fbgs. Installation of two new overburden groundwater wells to provide additional downgradient groundwater quality and elevation data.	MWN-56A, -57A	None	TBD
III-10	C915199J	17.24	Hotspot B (test pit BPA3A-TP-47 & 49): excavation and off-site disposal of an estimated 2,500 CY of mercury- and cyanide-impacted soil/fill. Hotspot D (test pit BPA3A-TP-44): excavation of an estimated 5,800 CY of petroleum-impacted soil/fill followed by on-site treatment at the bioremediation pad on Sub-Parcel III-6. Hotspot H (test pit BPA3A-TP-37): excavation and off-site disposal of an estimated 45 CY of arsenic-impacted soil/fill. Installation of 4 extraction wells along the northwestern boundary and connection via force main to the existing SWMU P-11 (CMS Benzol Plant Tank Storage Area) ICM groundwater collection and treatment system.	MWN-19A/B, -30A, -62D	None	TBD
Completed Remedial Actions						
III-7	C915199G	39.23	Excavated arsenic-impacted soil/fill from Hotspots F (test pit BPA3-TP-28) and G (test pit BPA3A-TP-33) and disposed 361.34 tons at Chautauqua County Landfill, Ellery, NY. Excavated approx. 2,640 tons of petroleum-impacted slag/fill surrounding Boring B-11 and transported slag/fill to the bioremediation pad on Sub-Parcel III-6 for treatment in summer 2013. Backfilled with overlying clean slag/fill and graded. Excavated black viscous non-soil material intermingled with slag within subgrade concrete chamber and disposed 794.85 tons at Chautauqua County Landfill, Ellery, NY.	MWN-10, -61A	P-46S, -58S, -59S, -60S	Post-remedial sampling results indicate no impact to on-site groundwater; therefore, no long-term groundwater sampling is warranted.
III-8	C915199H	5.92	See Sub-parcel III-7 description	None	None	No long-term groundwater sampling required.

Notes:
1. All Sub-parcels to receive a minimum 1 foot of NYSDEC-approved clean cover material or 6 inches structural cover (pavement, building, etc.) in addition to listed remedial work.
2. TBD - To be determined pending implementation of final remedial measures.

FIGURES

F:\CAD\TurnKey\Tecumseh Redevelopment\Brownfield Cleanup Program (BCP)\Phase III Parcel\Site Management Plan\Figure 1; Site Location and Vicinity Map.dwg

FIGURE 1



TURNKEY ENVIRONMENTAL RESTORATION, LLC

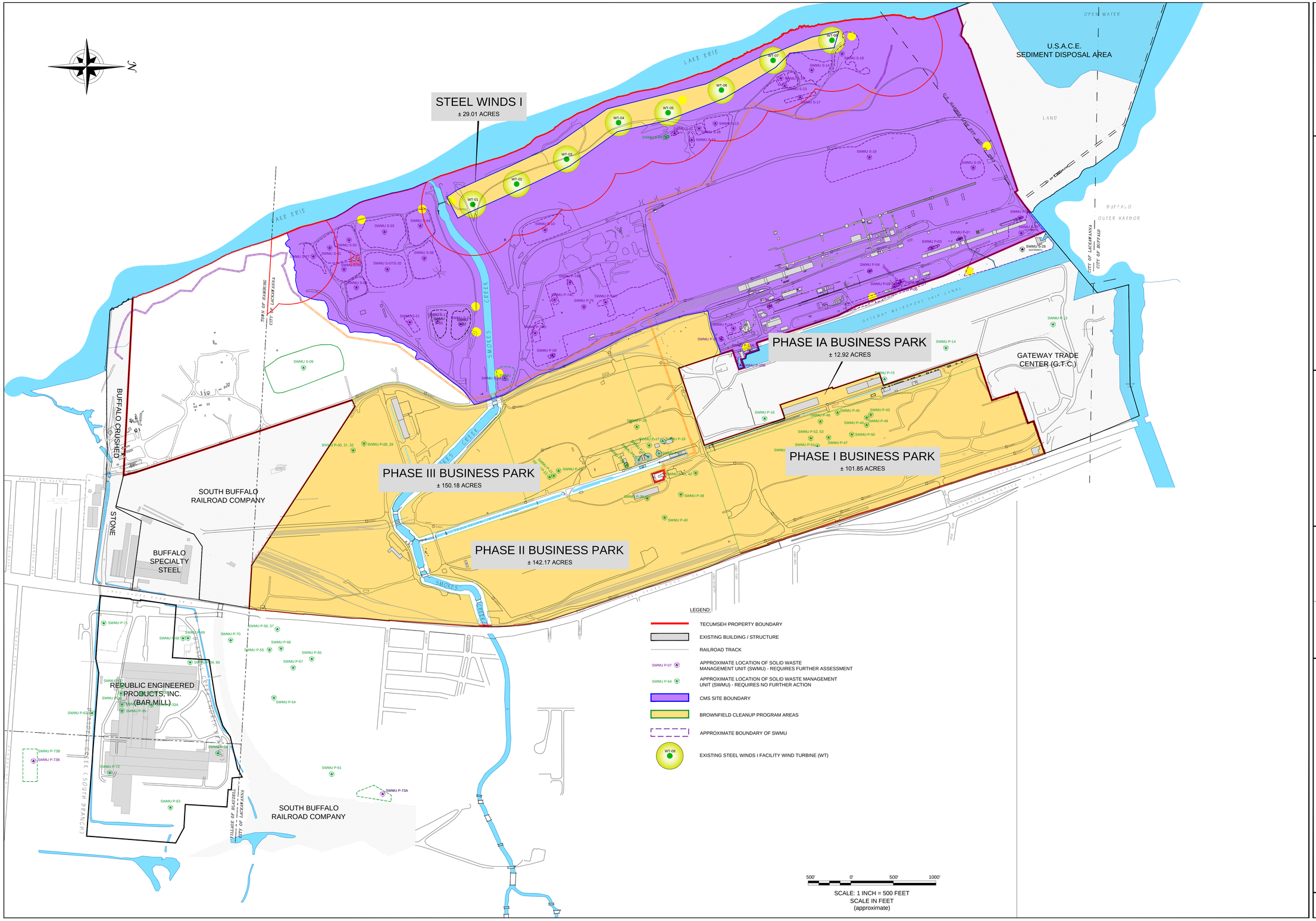
2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

SITE LOCATION & VICINITY MAP

SITE MANAGEMENT PLAN

PHASE III BUSINESS PARK
LACKAWANNA, NEW YORK

PROJECT NO.:	0071-012-322
DATE:	MAY 2012
DRAFTED BY:	JCT



TurnKey Environmental Restoration, LLC

2558 HAMBURG TURNPIKE
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BUFFALO, NY 14218
(716) 856-0635

JOB NO.: 0071-012-322

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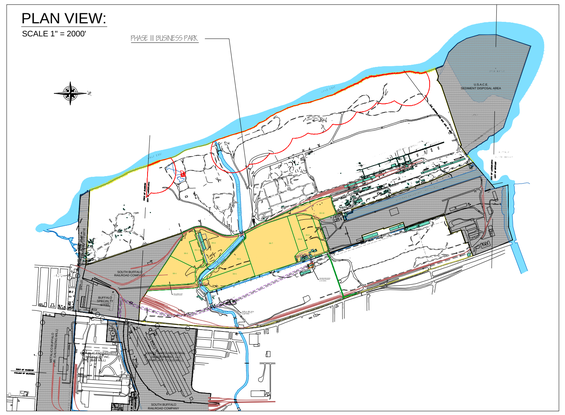
SITE PLAN
SITE MANAGEMENT PLAN
PHASE III BUSINESS PARK
LACKAWANNA, NEW YORK

FIGURE 2

F:\CAD\Turnkey\Tecumseh Redevelopment\Brownfield Cleanup Program (BCP)\Phase III Parcel\Site Management Plan\Figure 3- Site Delineation Map.dwg

PLAN VIEW:
SCALE 1" = 2000'



PHASE III BUSINESS PARK
± 150.18 ACRES

SMOKES CREEK

SOUTH RETURN WATER TRENCH

III-1
III-2
III-3
III-4
III-5
III-6
III-7
III-8
III-9
III-10

NDS LUMBER YARD
LICENSED PARCEL

WELDED TUBE USA FACILITY

LEGEND:

- TECUMSEH PROPERTY BOUNDARY
- EXISTING BUILDING / STRUCTURE
- PHASE III BUSINESS PARK BOUNDARY
- APPROXIMATE BOUNDARY OF LICENSED PARCEL WITHIN SITE BOUNDARY
- RAILROAD TRACK
- PLANNED EAST HARBOR RAIL LEAD RELOCATION
- PLANNED EAST HARBOR RAIL LEAD RELOCATION UTILITY EASEMENT
- STEEL WINDS I FACILITY ABOVE-GROUND ELECTRIC UTILITY
- STEEL WINDS I FACILITY BURIED ELECTRIC UTILITY (ABANDONED IN-PLACE)
- STEEL WINDS II ABOVE GROUND ELECTRICAL EASEMENT
- STEEL WINDS II BURIED ELECTRICAL EASEMENT

N

180' 0' 180' 360'

SCALE: 1 INCH = 180 FEET
SCALE IN FEET
(approximate)

TURNKEY ENVIRONMENTAL RESTORATION, LLC
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(716) 856-0635

JOB NO.: 0071-012-322

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SEAL

SITE DELINEATION MAP

SITE MANAGEMENT PLAN
PHASE III BUSINESS PARK
LACKAWANNA, NEW YORK

FIGURE 3

F:\CAD\Turnkey\Tecumseh Redevelopment\Brownfield Cleanup Program_BCP\Phase III Recall\Site Management Plan\Figure 4_Shallow Groundwater - Isopotential Map (January 23 2015).dwg

SWMU S-11
SWMU S-11
VHC
SWMU S-22
VHC
VHC
MWS-10B
MWS-10
MWS-22A
MW-11
MWS-22B
MWS-25A
MWS-25B
MWS-23A
MWS-23B
MWS-20A
MWS-20B
SMOKES CREEK
P-37S
MWN-17A
MWN-17B
SWMU P-07D
SWMU P-08
COKE OVEN LINE
MWN-40A
576.5
MWN-62D
MWN-19A
MWN-19B
MWN-30A
577.7
SWMU S-09
MWS-24B
MWS-24A
(obstruction @ 9 flogs)
P-36S
MWN-44A
SWMU S-24
MWN-24B
MWN-24A
576.6
MWS-03
574.2
SG-02
570.8
P-60S
P-59S
P-58S
III-10
III-9
III-8
III-7
III-6
III-5
III-4
III-3
III-2
III-1
MWN-57A
577.8
SWMU P-20
MWN-61A
577.5
MWN-10
577.5
MWS-34A
576.8
MWS-34B
573.8
MWS-35A
576.6
SWMU P-28, 29
SWMU P-30, 31, 32
SWMU P-17
SWMU P-19
MWN - 56A
577.5
SWMU P-27
SWMU P-24
SWMU P-25
SWMU P-26
SG-05
575.2
MWN-64A
SWMU P-23
SWMU P-21
SWMU P-22
P-46S
P-47S
P-48S
P-50S
WELDED TUBE USA FACILITY
MWN-59A
577.3
MWS-33A
576.2
MWS-30A
577.0
MWN-60A
577.1
MWN-58A
577.0
P-39S
P-38S
P-40S
SG-03
570.9
SG-04
575.0
SOUTH RETURN WATER TRENCH
AUTO PARKING
FULL LIFT TRACKS
1 HIGHWAY
2 HIGHWAY
5 HIGHWAY
7 HIGHWAY
NIAGARA MOHAWK R.O.W.
BROWN'S TS EASEMENT

LEGEND:

- TECUMSEH PROPERTY BOUNDARY
- EXISTING BUILDING / STRUCTURE
- PHASE III BUSINESS PARK AREA BOUNDARY
- RAILROAD TRACK
- SWMU P-64 — APPROXIMATE LOCATION OF SOLID WASTE MANAGEMENT UNIT (SWMU) - REQUIRES NO FURTHER ACTION
- SWMU S-22 — APPROXIMATE LOCATION OF SOLID WASTE MANAGEMENT UNIT (SWMU) - REQUIRES FURTHER ACTION
- P-58S — PIEZOMETER
- MWN-15A — FILL UNIT MONITORING WELL
- SG-03 — STAFF GAUGE
- MWN-15B — SAND UNIT MONITORING WELL
- MWN-15D — BEDROCK UNIT MONITORING WELL
- MWN-19B — MISCELLANEOUS UNIT MONITORING WELL
- 578 — GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER DIVIDE
- GROUNDWATER FLOW DIRECTION

NOTES:

1. Building locations are based on historical surveys and maps, all locations should be considered approximate.
2. All buildings known to exist on site since 1944 are shown, some buildings were expanded or demolished following 1944, maximum building extents are shown.

N

170' 0' 170' 340'

SCALE: 1 INCH = 170 FEET
SCALE IN FEET
(approximate)

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JOB NO.: 0071-012-322

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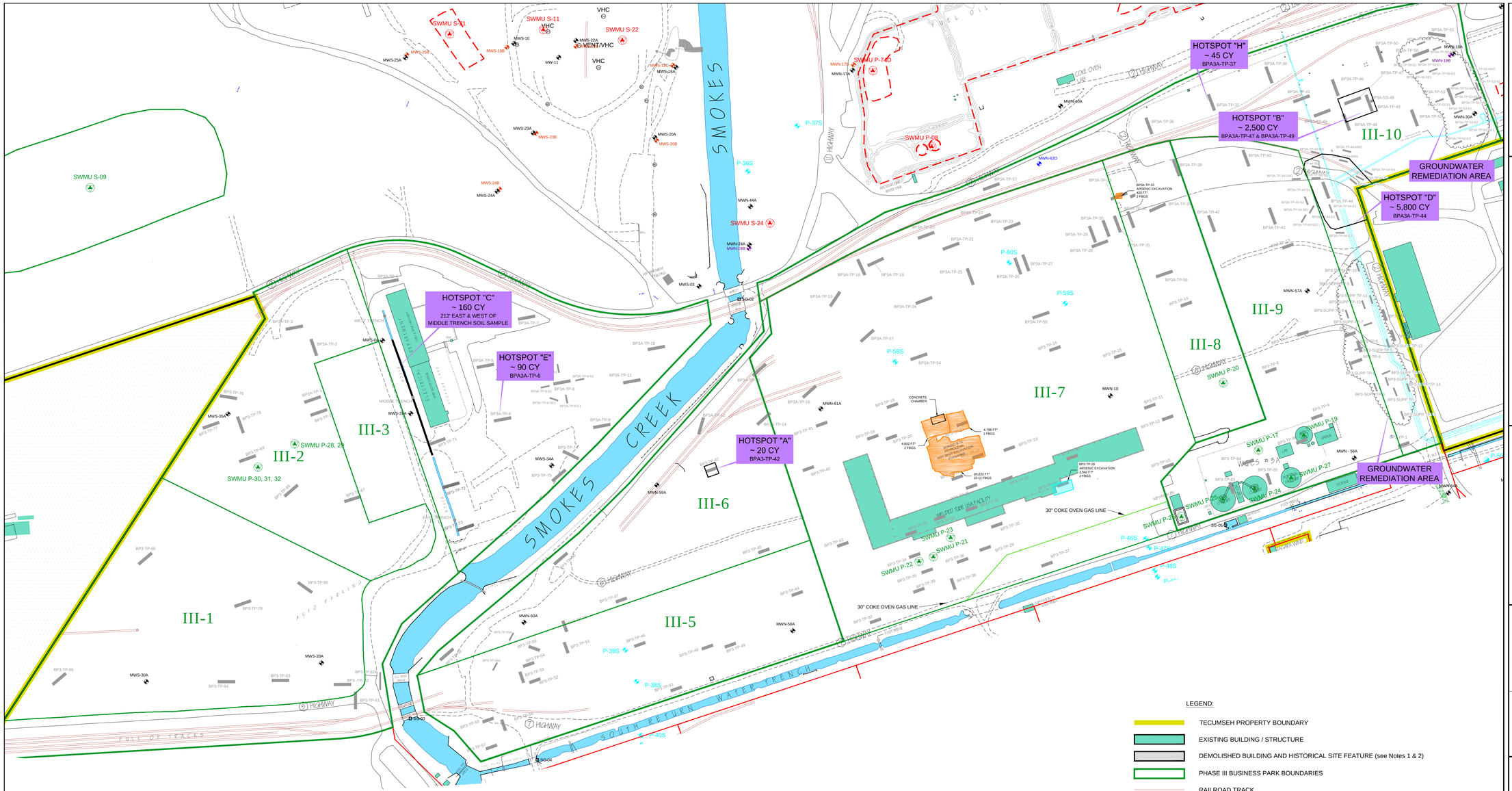
SHALLOW GROUNDWATER ISOPOTENTIAL MAP FOR 01/29/10

SITE MANAGEMENT PLAN
PHASE III BUSINESS PARK
LACKAWANNA, NEW YORK

FIGURE 4



LEGEND:

- TECUMSEH PROPERTY BOUNDARY
- EXISTING BUILDING / STRUCTURE
- DEMOLISHED BUILDING AND HISTORICAL SITE FEATURE (see Notes 1 & 2)
- PHASE III BUSINESS PARK BOUNDARIES
- RAILROAD TRACK
- HOT SPOT AREAS TO BE EXCAVATED
- COMPLETED REMEDIAL EXCAVATIONS
- SWMU P-64 — APPROXIMATE LOCATION OF SOLID WASTE MANAGEMENT UNIT (SWMU) - REQUIRES NO FURTHER ACTION
- SWMU S-22 — APPROXIMATE LOCATION OF SOLID WASTE MANAGEMENT UNIT (SWMU) - REQUIRES FURTHER ACTION
- P-58S — PIEZOMETER
- SG-03 — STAFF GAUGE
- MWN-15A — FILL UNIT MONITORING WELL
- MWN-15B — SAND UNIT MONITORING WELL
- MWN-15D — BEDROCK UNIT MONITORING WELL
- MWN-19B — MISCELLANEOUS UNIT MONITORING WELL
- BP3-TP-40 — PHASE III BUSINESS PARK TEST PIT LOCATION
- BP3-TP-72 — PHASE III BUSINESS PARK TEST PIT LOCATION (NOT COLLECTED)
- BP3A-TP-17 — PHASE IIIA BUSINESS PARK TEST PIT LOCATION
- TP-44-51 — DELINEATION TEST PIT LOCATION

170' 0' 170' 340'

SCALE: 1 INCH = 170 FEET
SCALE IN FEET
(approximate)

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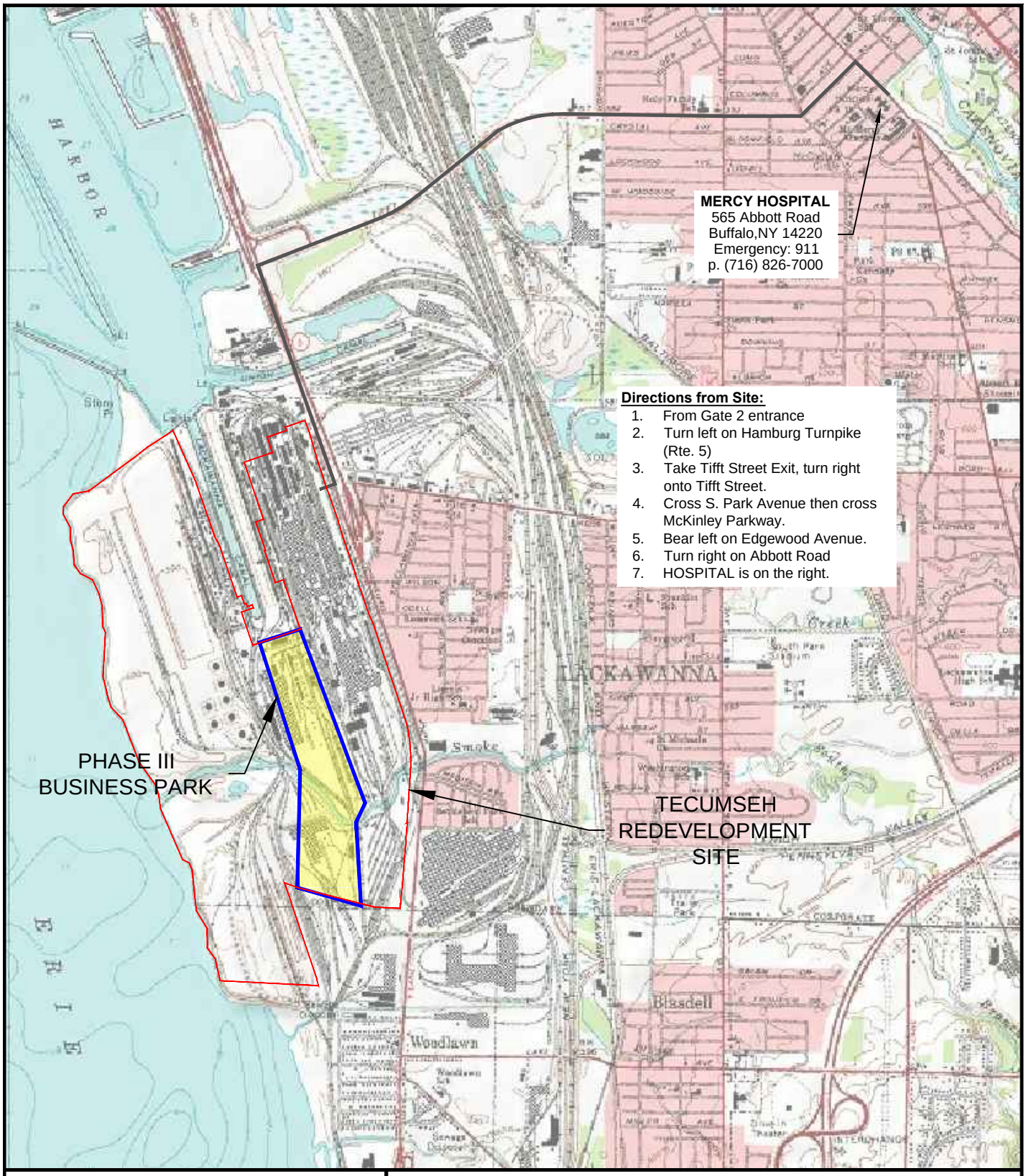
REMEDIAL MEASURES [COMPLETED & PLANNED]

SITE MANAGEMENT PLAN
PHASE III BUSINESS PARK
LACKAWANNA, NEW YORK

FIGURE 5

F:\CAD\TurnKey\Tecumseh Redevelopment\Brownfield Cleanup Program (BCP)\Phase III Parcel\Site Management Plan\Figure 6; Hospital Route Map.dwg

FIGURE 6



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(716) 856-0635

PROJECT NO.: 0071-012-322

DATE: MAY 2013

DRAFTED BY: JCT

HOSPITAL ROUTE MAP

SITE MANAGEMENT PLAN

PHASE III BUSINESS PARK
LACKAWANNA, NEW YORK

APPENDIX A

METES AND BOUNDS / ENVIRONMENTAL EASEMENT

APPENDIX A-1

METES AND BOUNDS DESCRIPTION FOR THE CONTROLLED PROPERTY

ENGINEERING / INSTITUTIONAL CONTROLS

- COVER SYSTEM THE COVER SYSTEM IS A PERMANENT CONTROL. PROCEDURES FOR THE INSPECTION AND MAINTENANCE OF THIS COVER ARE PROVIDED IN THE MONITORING PLAN IN SECTION 4 OF THE SITE MANAGEMENT PLAN (SMP).
- COMPLIANCE WITH THE ENVIRONMENTAL EASEMENT AND THE SMP BY THE GRANTOR AND THE GRANTOR'S SUCCESSORS AND ASSIGNS;
- ALL ENGINEERING CONTROLS MUST BE OPERATED AND MAINTAINED AS SPECIFIED IN THE SMP;
- ALL ENGINEERING CONTROLS ON THE CONTROLLED PROPERTY MUST BE INSPECTED AT A FREQUENCY AND IN A MANNER DEFINED IN THE SMP;
- GROUNDWATER, SOIL VAPOR AND OTHER ENVIRONMENTAL OR PUBLIC HEALTH MONITORING MUST BE PERFORMED AS DEFINED IN THE SMP;
- DATA AND INFORMATION PERTINENT TO SITE MANAGEMENT OF THE CONTROLLED PROPERTY MUST BE REPORTED AT THE FREQUENCY AND IN A MANNER DEFINED IN THE SMP;
- THE USE AND DEVELOPMENT OF THE SITE IS LIMITED TO COMMERCIAL AND INDUSTRIAL USES ONLY AS DESCRIBED IN 6NYCRR PART 375-1.8(G) (2) (III) & (IV).
- THE PROPERTY MAY NOT BE USED FOR A HIGHER LEVEL OF USE, SUCH AS RESTRICTED RESIDENTIAL USE WITHOUT ADDITIONAL REMEDIATION AND AMENDMENT OF THE ENVIRONMENTAL EASEMENT AS APPROVED BY THE NYSDEC;
- ALL FUTURE ACTIVITIES ON THE PROPERTY THAT WILL DISTURB REMAINING CONTAMINATED MATERIAL MUST BE CONDUCTED IN ACCORDANCE WITH THE SMP;
- THE USE OF THE GROUNDWATER UNDERLYING THE PROPERTY IS PROHIBITED WITHOUT TREATMENT RENDERING IT SAFE FOR INTENDED USE;
- THE SITE OWNER OR REMEDIAL PARTY WILL SUBMIT TO NYSDEC A WRITTEN STATEMENT THAT CERTIFIES, UNDER PENALTY OF PERJURY, THAT: (1) CONTROLS EMPLOYED AT THE CONTROLLED PROPERTY ARE UNCHANGED FROM THE PREVIOUS CERTIFICATION OR THAT ANY CHANGES TO THE CONTROLS WERE APPROVED BY THE NYSDEC; AND, (2) NOTHING HAS OCCURRED THAT IMPAIRS THE ABILITY OF THE CONTROLS TO PROTECT PUBLIC HEALTH AND ENVIRONMENT OR THAT CONSTITUTE A VIOLATION OR FAILURE TO COMPLY WITH THE SMP.

ENVIRONMENTAL EASEMENT DESCRIPTION FOR BUSINESS PARK PHASE III, PARCEL A TITLE No. 1213-25117 (AMENDED)

ALL THAT TRACT OR PARCEL OF LAND SITUATE IN THE CITY OF LACKAWANNA, COUNTY OF ERIE AND STATE OF NEW YORK, BEING PART OF LOTS 15, 16 AND 17 OF THE OGDEN GORE TRACT AND PART OF LOT 23, TOWNSHIP 10, RANGE 8 OF THE BUFFALO CREEK RESERVATION AND MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS:

COMMENCING AT THE INTERSECTION OF THE WESTERLY HIGHWAY BOUNDARY OF THE HAMBURG TURNPIKE (ALSO KNOWN AS STATE ROUTE NO. 5) AS APPROPRIATED BY THE PEOPLE OF THE STATE OF NEW YORK AS SHOWN ON MAP NO. 1, PARCEL 1 AND RECORDED IN THE ERIE COUNTY CLERK'S OFFICE IN LIBER 5650 OF DEEDS AT PAGE 404 AND THE MUNICIPAL BOUNDARY LINE BETWEEN THE CITY OF LACKAWANNA (TO THE NORTH) AND THE TOWN OF HAMBURG (TO THE SOUTH). SAID POINT ALSO BEING IN THE NORTHERLY LINE OF LANDS CONVEYED TO THE SOUTH BUFFALO RAILWAY COMPANY BY DEED RECORDED IN THE ERIE COUNTY CLERK'S OFFICE IN LIBER 10119 OF DEEDS AT PAGE 131; THENCE WESTERLY ALONG THE MUNICIPAL BOUNDARY LINE AND THE NORTHERLY LINE OF SAID SOUTH BUFFALO RAILWAY COMPANY'S LAND A DISTANCE OF 507.02 FEET TO A POINT; THENCE NORTHWESTERLY CONTINUING ALONG SAID SOUTH BUFFALO RAIL COMPANY'S LAND, A DISTANCE OF 386.48 FEET TO THE PRINCIPAL POINT OF BEGINNING; RUNNING THENCE NORTHWESTERLY AND CONTINUING ALONG SAID SOUTH BUFFALO RAILWAY COMPANY'S LAND, A DISTANCE OF 1834.83 FEET TO A POINT TO AN ANGLE POINT THEREIN; THENCE SOUTHWESTERLY AND CONTINUING ALONG SAID SOUTH BUFFALO RAILWAY COMPANY'S LAND, A DISTANCE OF 100.14 FEET TO THE APPROXIMATE CENTER LINE OF AN IMPROVED ACCESS ROAD; THENCE NORTHWESTERLY ALONG THE APPROXIMATE CENTER LINE OF SAID ROAD N 24° 58' 39" W, A DISTANCE OF 310.20 FEET TO THE POINT OF CURVATURE OF A NON-TANGENT CURVE, CONCAVE TO THE EAST, HAVING A RADIUS OF 512.16 FEET, A CENTRAL ANGLE OF 50° 17' 25" AND A CHORD OF 435.25 FEET BEARING N 00° 30' 26" W; THENCE NORTHWESTERLY ALONG SAID CURVE, CURVING TO THE RIGHT, A DISTANCE OF 449.54 FEET TO A POINT OF TANGENCY; THENCE NORTHEASTERLY CONTINUING ALONG SAID ROAD N 25° 18' 46" E A DISTANCE OF 288.35 FEET TO THE POINT OF CURVATURE OF A NON-TANGENT CURVE, CONCAVE TO THE WEST, HAVING A RADIUS OF 706.88 FEET, A CENTRAL ANGLE OF 41° 48' 30" AND A CHORD OF 504.43 FEET BEARING N 08° 08' 26" E; THENCE NORTHEASTERLY ALONG SAID CURVE, CURVING TO THE LEFT, A DISTANCE OF 515.80 FEET TO A POINT OF TANGENCY; THENCE NORTHWESTERLY CONTINUING ALONG SAID ROAD N 18° 37' 00" W, A DISTANCE OF 107.01 FEET TO A POINT APPROXIMATELY 25 FEET SOUTH FROM THE EXISTING SOUTHERLY TOP OF HIGH BANK OF SMOKES CREEK; THENCE EASTERLY AND SOUTHERLY CONTINUING, APPROXIMATELY 25 FEET SOUTH FROM THE EXISTING SOUTHERLY TOP OF HIGH BANK OF SMOKES CREEK THE FOLLOWING 8 COURSES AND DISTANCES:
N 82° 08' 06" E, A DISTANCE OF 87.56 FEET;
S 46° 24' 39" E, A DISTANCE OF 578.56 FEET;
S 44° 24' 55" E, A DISTANCE OF 252.36 FEET;
S 41° 49' 05" E, A DISTANCE OF 663.40 FEET;
S 64° 08' 06" E, A DISTANCE OF 154.89 FEET;
N 80° 39' 39" E, A DISTANCE OF 228.31 FEET TO THE POINT OF CURVATURE OF A TANGENT CURVE, CONCAVE TO THE WEST, HAVING A RADIUS OF 518.00 FEET;
THENCE SOUTHWESTERLY ALONG SAID CURVE, CURVING TO THE RIGHT, A DISTANCE OF 168.84 FEET TO A POINT OF TANGENCY; THENCE S 03° 25' 27" E A DISTANCE OF 1284.41 FEET TO THE PRINCIPAL POINT OF BEGINNING, CONTAINING 51.40 ACRES OF LAND, MORE OR LESS.

SCHEDULE B, SECTION 2: CHICAGO TITLE INSURANCE COMPANY COMMITMENT FOR TITLE INSURANCE TITLE NO. 1213-25117 (AMENDED):

EXCEPTION NUMBER:

6. AIRSPACE AND EASEMENT RIGHTS SET FORTH IN MEMORANDUM OF LEASE TO BQ ENERGY, LLC RECORDED IN LIBER 11145 AT PAGE 2422 ON MAY 21, 2008; ALSO RE-PURCHASE RIGHTS AND EASEMENT SET FORTH IN DEED TO BQ ENERGY, LLC RECORDED IN LIBER 11145 OF DEEDS AT PAGE 2733 ON MAY 21, 2008. LIBER 11145 OF DEEDS AT PAGE 2422, (DOES NOT AFFECT PREMISES)
7. EASEMENT GRANTED TO GREAT LAKES INDUSTRIAL DEVELOPMENT, LLC RECORDED IN LIBER 11194 OF DEEDS AT PAGE 6243, ON DECEMBER 22, 2010 (UNABLE TO PLOT)
8. EASEMENT GRANTED TO NATIONAL FUEL GAS DISTRIBUTION CORPORATION IN LIBER 11220 OF DEEDS AT PAGE 2359 ON MARCH 28, 2012 (DOES NOT AFFECT PREMISES)
9. EASEMENT GRANTED TO ERIE WIND, LLC IN LIBER 11204 OF DEEDS AT PAGE 4545 ON JUNE 13, 2011, CORRECTED IN LIBER 11214 OF DEEDS AT PAGE 4899 ON DECEMBER 23, 2011 AND LIBER 11216 OF DEEDS AT PAGE 7305 ON FEBRUARY 1, 2012 (PLOTTED HEREON)
12. EASEMENT GRANTED TO NIAGARA MOHAWK POWER CORPORATION AND VERIZON NEW YORK, LLC. RECORD IN LIBER 11228 OF DEEDS AT PAGE 3555 ON AUGUST 21, 2012. (PLOTTED HEREON)
13. EASEMENT GRANTED TO NIAGARA MOHAWK POWER CORPORATION RECORDED IN LIBER 11242 OF DEEDS AT PAGE 6455 ON MARCH 27, 2013. (DOES NOT AFFECT PREMISES)
14. EASEMENT GRANTED TO NATIONAL FUEL GAS DISTRIBUTION CORPORATION RECORDED IN LIBER 11242 OF DEEDS AT PAGE 7560 ON MARCH 28, 2013. (UNABLE TO PLOT)
15. EASEMENT GRANTED TO TECUMSEH REDEVELOPMENT, INC. AND KB BUSINESS PARK REDEVELOPMENT, LLC RECORDED IN LIBER 11232 OF DEEDS AT PAGE 2542 ON OCTOBER 29, 2012. (PLOTTED HEREON)
16. AGREEMENT FOR MAINTENANCE OF ROAD BETWEEN TECUMSEH REDEVELOPMENT INC. AND KB BUSINESS PARK REDEVELOPMENT, LLC RECORDED IN LIBER 11232 OF DEEDS AT PAGE 2566, ON OCTOBER 29, 2012. (PLOTTED HEREON)
17. EASEMENT GRANTED TO TECUMSEH REDEVELOPMENT, INC. AND KB BUSINESS PARK REDEVELOPMENT, LLC RECORDED IN LIBER 11232 OF DEEDS AT PAGE 2597 AND IN LIBER 11232 OF DEEDS AT PAGE 2621 AND LIBER 11232 OF DEEDS AT PAGE 2653 ALL ON OCTOBER 29, 2012. (PLOTTED HEREON)
18. EASEMENT GRANTED TO TECUMSEH REDEVELOPMENT, INC. AND WELDED TUBE USA REALTY, LLC RECORDED IN LIBER 11244 OF DEEDS AT PAGE 7853 ON APRIL 26, 2013. (DOES NOT AFFECT PREMISES)

ENVIRONMENTAL EASEMENT AREA ACCESS

THE DEC OR THEIR AGENT MAY ACCESS THE ENVIRONMENTAL EASEMENT AREA AS SHOWN HEREON THROUGH ANY EXISTING STREET ACCESS OR BUILDING INGRESS/EGRESS ACCESS POINT

GENERAL NOTES:

1. HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83), WESTERN ZONE, US SURVEY FEET.
2. MONUMENTS ACQUIRED:
   NGS MONUMENT "LEHR" PID: AE2177
   NORTHING: 1030094.885
   EASTING: 1076447.880
   SITE CONTROL MONUMENT PIN WITH ALUMINUM CAP "BSP2"
   NORTHING: 1024721.330
   EASTING: 1076610.356
3. BUFFALO CREEK RESERVATION & OGDEN GORE TRACT INFORMATION IS SHOWN IN ITS APPROXIMATE LOCATION FROM MAPS FILED IN THE ERIE COUNTY CLERK'S OFFICE.
4. REFER TO NEW YORK STATE DEPARTMENT OF TRANSPORTATION APPROPRIATION MAPS FOR MAP DISTANCES & BEARINGS.
5. SANITARY MANHOLES ARE SHOWN IN THEIR APPROXIMATE LOCATIONS FROM PLANS PROVIDED BY OTHERS.
6. PROPERTY CORNERS TO BE STAKED AT A LATER DATE.
7. BCP SITE No. #### = PARCEL DESIGNATION
8. REFERENCE MAPS: MAP PREPARED BY KREHBIEL ASSOCIATES, A-834, DATED 6/17/94, MAP PREPARED BY BERGMANN ASSOCIATES 10/16/00 AND MAP NO. 303, PARCEL 303 OF THE HAMBURG TURNPIKE ARTERIAL HIGHWAY, DATED APRIL 15, 1960, PREPARED BY THE NEW YORK STATE DEPARTMENT OF PUBLIC WORKS.
9. THIS SURVEY HAS BEEN REVISED WITH THE BENEFIT OF TITLE REPORT NO. 1213-25117 (AMENDED), AS PREPARED BY CHICAGO TITLE INSURANCE COMPANY, DATED SEPTEMBER 4, 2013.

THIS PROPERTY IS SUBJECT TO AN ENVIRONMENTAL EASEMENT HELD BY THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION PURSUANT TO TITLE 36 OF ARTICLE 71 OF THE NEW YORK ENVIRONMENTAL CONSERVATION LAW.

THE ENGINEERING AND INSTITUTIONAL CONTROLS FOR THIS EASEMENT ARE SET FORTH IN THE SITE MANAGEMENT PLAN (SMP). A COPY OF THE SMP MUST BE OBTAINED BY ANY PARTY WITH AN INTEREST IN THE PROPERTY. THE SMP CAN BE OBTAINED FROM THE NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION, DIVISION OF ENVIRONMENTAL REMEDIATION, SITE CONTROL SECTION, 625 BROADWAY, ALBANY, NY 12233 OR AT DERWEB@GW.DEC.STATE.NY.US.

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO ANY SURVEY DRAWING, DESIGN, SPECIFICATION, PLAN OR REPORT IS A VIOLATION OF SECTION 7209, PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

Legend:

WENDEL JOB NUMBER 41107

AC. = ACRES	CONC. = CONCRETE	DIST. = DISTANCE	EX. = EXISTING	MS. = MEASURED	℄ = PROPERTY LINE	STA. = STATION	W/ = WITH	OVERHEAD WIRES
APPROX. = APPROXIMATE	COR. = CORNER	E. = EAST	FNC. = FENCE	MW = MONITORING WELL	PP = POWER POLE	SMH = SANITARY MANHOLE	WD. = WOOD	EDGE OF VEGETATION/WOODS
AVE. = AVENUE	C.T.V. = CABLE TV BOX	ELEV. = ELEVATION	GLM = GAS LINE MARKER	N = NORTH	R = RADIUS	T.M.# = TAX MAP NUMBER	W.F. = WOODFRAME	EDGE OF ROADWAY
BIT. = BITUMINOUS	℄ = CENTERLINE	E/B = ELECTRICAL JUNCTION BOX	L = LIBER	NTS = NOT TO SCALE	RD. = ROAD	T/B = TELEPHONE JUNCTION BOX		PROPERTY LINES
CB = CATCH BASIN	D. = DEED	ESMT. = EASEMENT	LS = LIFT STATION	O/H = OVERHEAD	S = SOUTH	W = WEST	APPROXIMATE LOCATION LOT LINE	SUB-PARCELS
CH. = CHAIN	DIA. = DIAMETER		MH = MANHOLE	O/L = ON LINE	ST. = STREET		SANITARY SEWER LINE	FENCE (TYPE NOTED)
			MP. = MAP	P = PAGE				

ENVIRONMENTAL EASEMENT DESCRIPTION FOR BUSINESS PARK PHASE III, PARCEL B TITLE No. 1213-25117 (AMENDED)

ALL THAT TRACT OR PARCEL OF LAND SITUATE IN THE CITY OF LACKAWANNA, COUNTY OF ERIE AND STATE OF NEW YORK BEING PART OF LOTS NOS. 18, 19 AND 20 OF THE OGDEN GORE TRACT AND PART OF LOT NO. 24, TOWNSHIP 10, RANGE 8 OF THE BUFFALO CREEK RESERVATION, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF LANDS CONVEYED TO GATEWAY TRADE CENTER INC. BY DEED RECORDED IN THE ERIE COUNTY CLERK'S OFFICE IN LIBER 10886 OF DEEDS AT PAGE 1064; RUNNING THENCE NORTHERLY ALONG THE SOUTHERLY LINE OF SAID LANDS SO CONVEYED TO GATEWAY TRADE CENTER, INC. BY DEED AFORESAID, A DISTANCE OF 930.64 FEET TO A POINT THEREIN; THENCE S 18° 20' 36" E, A DISTANCE OF 3515.71 FEET TO A POINT, APPROXIMATELY 25 FEET NORTH FROM THE EXISTING NORTHERLY TOP OF THE HIGH BANK OF SMOKES CREEK; THENCE WESTERLY AND NORTHERLY APPROXIMATELY 25 FEET NORTH FROM THE EXISTING NORTHERLY TOP OF THE HIGH BANK OF SAID SMOKES CREEK, THE FOLLOWING 8 COURSES AND DISTANCES:
S 48° 54' 49" W, A DISTANCE OF 140.81 FEET;
S 32° 40' 10" W, A DISTANCE OF 122.80 FEET;
S 78° 47' 59" W, A DISTANCE OF 128.86 FEET;
N 49° 35' 08" W, A DISTANCE OF 112.15 FEET;
N 39° 56' 33" W, A DISTANCE OF 635.45 FEET;
N 44° 32' 31" W, A DISTANCE OF 243.09 FEET;
N 48° 25' 27" W, A DISTANCE OF 710.19 FEET;
S 82° 08' 06" W, A DISTANCE OF 169.65 FEET TO THE APPROXIMATE CENTER LINE OF AN IMPROVED ACCESS ROAD; THENCE NORTHERLY ALONG THE APPROXIMATE CENTER LINE OF SAID IMPROVED ACCESS ROAD, THE FOLLOWING 11 COURSES AND DISTANCES:
N 18° 37' 00" W, A DISTANCE OF 43.20 FEET;
N 29° 52' 05" W, A DISTANCE OF 465.91 FEET;
N 18° 10' 50" W, A DISTANCE OF 270.79 FEET;
N 24° 11' 01" W, A DISTANCE OF 362.77 FEET;
N 26° 06' 35" W, A DISTANCE OF 243.92 FEET;
N 28° 29' 29" W, A DISTANCE OF 228.39 FEET;
N 23° 10' 20" W, A DISTANCE OF 205.04 FEET;
N 18° 20' 44" W, A DISTANCE OF 542.77 FEET;
N 10° 35' 36" W, A DISTANCE OF 279.16 FEET;
N 79° 52' 42" E, A DISTANCE OF 202.46 FEET;
N 68° 32' 54" E, A DISTANCE OF 326.23 FEET TO A POINT IN THE WESTERLY LINE OF LANDS SO CONVEYED TO GATEWAY TRADE CENTER, INC. BY DEED AFORESAID; THENCE SOUTHERLY ALONG THE WESTERLY LINE OF SAID LANDS SO CONVEYED TO GATEWAY TRADE CENTER, INC. BY DEED AFORESAID, A DISTANCE OF 528.60 FEET TO THE SOUTHWEST CORNER THEREOF AND THE PRINCIPAL POINT OF BEGINNING, CONTAINING 53.78 ACRES OF LAND, MORE OR LESS.

EXCEPTING FROM THE ABOVE DESCRIBED PREMISES THOSE PORTIONS CONVEYED TO:

A: KB BUSINESS PARK REDEVELOPMENT, LLC RECORDED IN LIBER 11232 OF DEEDS AT PAGE 2531 ON OCTOBER 29, 2012

B: WELDED TUBE USA REALITY, LLC RECORDED IN LIBER 11232 OF DEEDS AT PAGE 2695 ON OCTOBER 29, 2012.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

PREPARED BY THE CONSULTANT

wendel
140 John James Audubon Pkwy, Suite 201
Buffalo, NY 14228
www.wendelcompanies.com
p:716.688.0766 f:716.625.6825
Audubon Architecture, Engineering, Surveying & Landscape Architecture P.C., A Wendel Company

MAP OF
2303 HAMBURG TURNPIKE
BCA BOUNDARIES & PLANNED SUB-PARCELS
BROWNFIELD CLEAN-UP PROGRAM
BUSINESS PARK PHASE III

TO
THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SITUATE IN PARTS OF
LOTS 15,16,17,18,19,20, OF THE OGDEN GORE TRACT AND
PART OF LOTS 23 & 24 OF THE BUFFALO CREEK RESERVATION,
TOWNSHIP 10, RANGE 8 OF THE HOLLAND LAND COMPANY'S SURVEY
CITY OF LACKAWANNA COUNTY OF ERIE
STATE OF NEW YORK
T.M.# PART OF 141.11-1-50

200' 100' 50' 0' 200' 400' 600'
1 INCH = 200 FEET 1:2400

I HEREBY CERTIFY TO (1) THE PEOPLE OF THE STATE OF NEW YORK ACTING THROUGH THEIR COMMISSIONER OF THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, (2) TECUMSEH REDEVLOPMENT INC., (3) CHICAGO TITLE INSURANCE COMPANY, THAT THIS IS AN ACCURATE SURVEY MAP UNDER MY DIRECTION OF AN ACTUAL SURVEY, AND THAT THE SURVEY WAS PERFORMED IN ACCORDANCE TO THE STANDARDS AND PROCEDURES ADOPTED BY THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, SEPTEMBER 14, 2012. FIELD SURVEY COMPLETED JUNE 12, 2012

CHRISTOPHER J. SCOTT, LAND SURVEYOR #050708 DATE

BRIAN S. SMITH, CST 3, SURVEY DRAFTER DATE

SHEET 1 of 1

SITE NUMBERS:

APPENDIX A-2

ENVIRONMENTAL EASEMENT AND METES AND BOUNDS DESCRIPTION FOR SITE III-7 (C915199G) & SITE III-8 (C915199H)

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 6th day of November, 2013, between Owner(s) Welded Tube USA Realty, LLC, having an office at 2537 Hamburg Turnpike, Lackawanna, County of Erie, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of 2537 and 2539 (formerly 1951) Hamburg Turnpike in the City of Lackawanna, County of Erie and State of New York, known and designated on the tax map of the County Clerk of Erie as tax map parcel numbers: Section 141.15 Block 1 Lots 1 and 2 (formerly part of Section 141.11 Block 1 Lot 1.11), being the same as that property conveyed to Grantor by deed dated October 23, 2012 and recorded October 29, 2012 in the Erie County Clerk's Office in Liber 11232 and Page 2695. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 45.15 +/- acres, and is hereinafter more fully described in the Land Title Survey dated October 21, 2013, prepared by Wendel, which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Brownfield Cleanup Agreement IndexNumber: B9-0696-05-06(C), amended August 20, 2012, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement")

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv);

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

(4) The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Erie County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential or Restricted Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i) and (ii), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved b the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5 the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a

defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:

Site Number: C915199G and C915199H
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the

recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

Welded Tube USA Realty, LLC:

By: _____

Print Name: BARRY SONSHINE

Title: EXECUTIVE CHAIRMAN Date: OCT. 29-13

Grantor's Acknowledgment

PROVINCE ONTARIO
~~STATE~~ OF ~~NEW YORK~~)
GRS) ss:
~~COUNTY OF~~)
GRS

On the 29th day of OCTOBER in the year 20 13, before me, the undersigned, personally appeared BARRY SCRIMGE personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Notary Public - ~~State of New York~~ ONTARIO
PROVINCE GRS

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: _____

Robert W. Schick, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the 6th day of November, in the year 2013, before me, the undersigned, personally appeared Robert W. Schick, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public - State of New York

David J. Chiusano
Notary Public, State of New York
No. 01CH5032146
Qualified in Schenectady County
Commission Expires August 22, 2014

SCHEDULE "A" PROPERTY DESCRIPTION

Parcel A:

BEING part of the piece or parcel of land made by KB Business Redevelopment LLC to Welded Tube USA Realty, LLC by quit claim deed dated October 23, 2012 recorded October 29, 2012 in Liber 11232 of Deeds at page 2695 in the Erie County Clerk's Office.

ALL THAT TRACT OR PARCEL OF LAND situate in the City of Lackawanna, County of Erie and State of New York being part of Lot No. 18 of the Ogden Gore Tract and part of Lot No. 24, Township 10, Range 8 of the Holland Land Company's Survey, and being BCP Site No. C915199G as shown on a survey of the Tecumseh Redevelopment, Inc., Business Park Phase III, Parcel "B" dated June 7, 2012, and made by Wendel, described as follows:

COMMENCING at the intersection of the westerly highway boundary of the Hamburg Turnpike (aka State Route No. 5) as appropriated by the State of New York by Notice of Appropriation recorded in the Erie County Clerk's Office in Liber 5650 of Deeds at page 404 and being Parcel No. 1 as shown on Map No. 1 and the municipal boundary line of the City of Lackawanna (to the North) and the Town of Hamburg (to the South), said point of intersection also being in the northerly line of lands conveyed to the South Buffalo Railroad Company by deed recorded in the Erie County Clerk's Office in Liber 10119 of deeds at page 131; thence N 22° 36' 14" W a distance of 2158.13 feet to the southeast corner of said Business Park Phase III, Parcel "B", said southeast corner being approximately 25 feet north from the existing northerly top of the high bank of Smokes Creek and in the westerly line of the South Return Water Trench; thence N 18° 20' 36" W along the easterly line of said Business Park Phase III, Parcel "B", said easterly line also being the westerly line of the aforesaid South Return Water Trench, a distance of 1327.70 feet to the principal point of beginning, said principal point of beginning being the southeast corner of BCP Site No. C915199G; running thence S 71° 39' 24" W a distance of 1036.13 feet to a point;

Thence N 48° 09' 58" W, a distance of 113.54 feet to a point;

Thence S 82° 08' 06" W, a distance of 124.50 feet to a point on the approximate center line of railroad tracks;

Thence along the approximate center line of said railroad tracks the following 5 courses and distances:

(1) N 27° 51' 58" W, a distance of 325.00 feet to a point;

(2) N 26° 40' 17" W, a distance of 130.00 feet to a point;

(3) N 22° 56' 38" W, a distance of 120.00 feet to a point;

(4) N 20° 21' 28" W, a distance of 138.87 feet to a point and

(5) N 18° 20' 36" W, a distance of 550.00 feet to the northwest corner of BCP Site No. C915199G;

Thence N 71° 41' 32" E, a distance of 1033.00 feet to a point;

Thence S 48° 01' 09" E, a distance of 180.00 feet to a point;

Thence N 71° 41' 32" E, a distance of 180.00 feet to a point in the easterly line of said Business Park Phase III, Parcel "B", said easterly line also being the westerly line of the South Return Water Trench;

Thence S 18° 20' 36" E along said easterly line of said Business Park Phase III, Parcel "B", said easterly line also being the westerly line of the aforesaid South Return Water Trench, a distance of 1221.54 feet to the principal point of beginning.

Parcel B:

BEING part of the piece or parcel of land made by KB Business Redevelopment LLC to Welded Tube USA Realty, LLC by quit claim deed dated October 23, 2012 recorded October 29, 2012 in Liber 11232 of Deeds at page 2695 in the Erie County Clerk's Office.

ALL THAT TRACT OR PARCEL OF LAND situate in the City of Lackawanna, County of Erie and State of New York being part of Lots Nos. 18, 19 & 20 of the Ogden Gore Tract and part of Lot No. 24, Township 10, Range 8 of the Holland Land Company's Survey, and being BCP Site No. C915199H as shown on a survey of the Tecumseh Redevelopment, Inc., Business Park Phase III, Parcel "B" dated June 7, 2012 and made by Wendel, described as follows:

COMMENCING at the intersection of the westerly highway boundary of the Hamburg Turnpike (aka State Route No. 5) as appropriated by the State of New York by Notice of Appropriation recorded in the Erie County Clerk's Office in Liber 5650 of Deeds at page 404 and being Parcel No. 1 as shown on Map No. 1 and the municipal boundary line of the City of Lackawanna (to the North) and the Town of Hamburg (to the South), said point of intersection also being in the northerly line of lands conveyed to the South Buffalo Railroad Company by deed recorded in the Erie County Clerk's Office in Liber 10119 of deeds at page 131; thence N 22° 36' 14" W a distance of 2158.13 feet to the southeast corner of said Business Park Phase III, Parcel "B", said southeast corner being approximately 25 feet north from the existing northerly top of the high bank of Smokes Creek and in the westerly line of the South Return Water Trench; thence N 18° 20' 36" W along the easterly line of said Business Park Phase III, Parcel "B", said easterly line also being the westerly line of the aforesaid South Return Water Trench, a distance of 2705.74 feet to a point therein; thence S 71° 39' 24" W and at right angles to the last described course, a distance of 269.12 feet to the principal point of beginning, said principal point of beginning being the southeast corner of BCP Site No. C915199H; thence S 71° 41' 32" W, a distance of 1033.00 feet to a point in the approximate center line of a railroad track;

Thence N 18° 20' 36" W and along the approximate center line of said railroad tracks, a distance of 155.42 feet to a point

Thence continuing N 12° 54' 26" W and along the approximate center line of said railroad tracks, a distance of 95.00 feet to the northwesterly corner of BCP Site Number C915199H;

Thence N 71° 41' 32" E, a distance of 1024 feet to a point;

Thence S 18° 20' 36" E, a distance of 250.00 feet to the principal point of beginning.

Total Site: 45.15 +/- acres

[10/12]

THE ENGINEERING AND INSTITUTIONAL CONTROLS FOR THIS EASEMENT ARE SET FORTH IN THE SITE MANAGEMENT PLAN (SMP). A COPY OF THE SMP MUST BE OBTAINED BY ANY PARTY WITH AN INTEREST IN THE PROPERTY. THE SMP CAN BE OBTAINED FROM THE NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION, DIVISION OF ENVIRONMENTAL REMEDIATION, SITE CONTROL SECTION, 625 BROADWAY, ALBANY, NY 12233 OR AT DERWEB@GW.DEC.STATE.NY.US.

GENERAL NOTES:

1. HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83), WESTERN ZONE, US SURVEY FEET.
2. MONUMENTS ACQUIRED:
   NGS MONUMENT "LEHR" PID: AE2177
   NORTHING: 1030094.885
   EASTING: 1076447.880

   SITE CONTROL MONUMENT PIN WITH ALUMINUM CAP "BSP2"
   NORTHING: 1024721.330
   EASTING: 1076610.356
3. BUFFALO CREEK RESERVATION & OGDEN GORE TRACT INFORMATION IS SHOWN IN ITS APPROXIMATE LOCATION FROM MAPS FILED IN THE ERIE COUNTY CLERKS OFFICE.
4. REFER TO NEW YORK STATE DEPARTMENT OF TRANSPORTATION APPROPRIATION MAPS FOR MAP DISTANCES & BEARINGS.
5. THIS SURVEY WAS PREPARED WITH THE BENEFIT OF A TITLE REPORT, PREPARED BY CHICAGO TITLE INSURANCE COMPANY, NO. 1313-25142, DATED JULY 2, 2013 AND AMENDED OCTOBER 8, 2013
6. SANITARY MANHOLES ARE SHOWN IN THEIR APPROXIMATE LOCATIONS FROM PLANS PROVIDED BY OTHERS.
7. BCP SITE NO. #### = PARCEL DESIGNATION
8. REFERENCE MAPS:
   MAP PREPARED BY BERGMANN ASSOCIATES 10/16/00, MAP NO. 303, PARCEL 303 OF THE HAMBURG TURNPIKE ARTERIAL HIGHWAY, DATED APRIL 15, 1960, PREPARED BY THE NEW YORK STATE DEPARTMENT OF PUBLIC WORKS AND BUSINESS PARK PHASE I, PREPARED BY WENDEL, JUNE 7, 2012, PROJECT NO. 411107

THIS PROPERTY IS SUBJECT TO AN ENVIRONMENTAL EASEMENT HELD BY THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION PURSUANT TO TITLE 36 OF ARTICLE 71 OF THE NEW YORK ENVIRONMENTAL CONSERVATION LAW.

SCHEDULE B, SECTION 2: CHICAGO TITLE INSURANCE COMPANY COMMITMENT FOR TITLE INSURANCE:

EXCEPTION NO.:

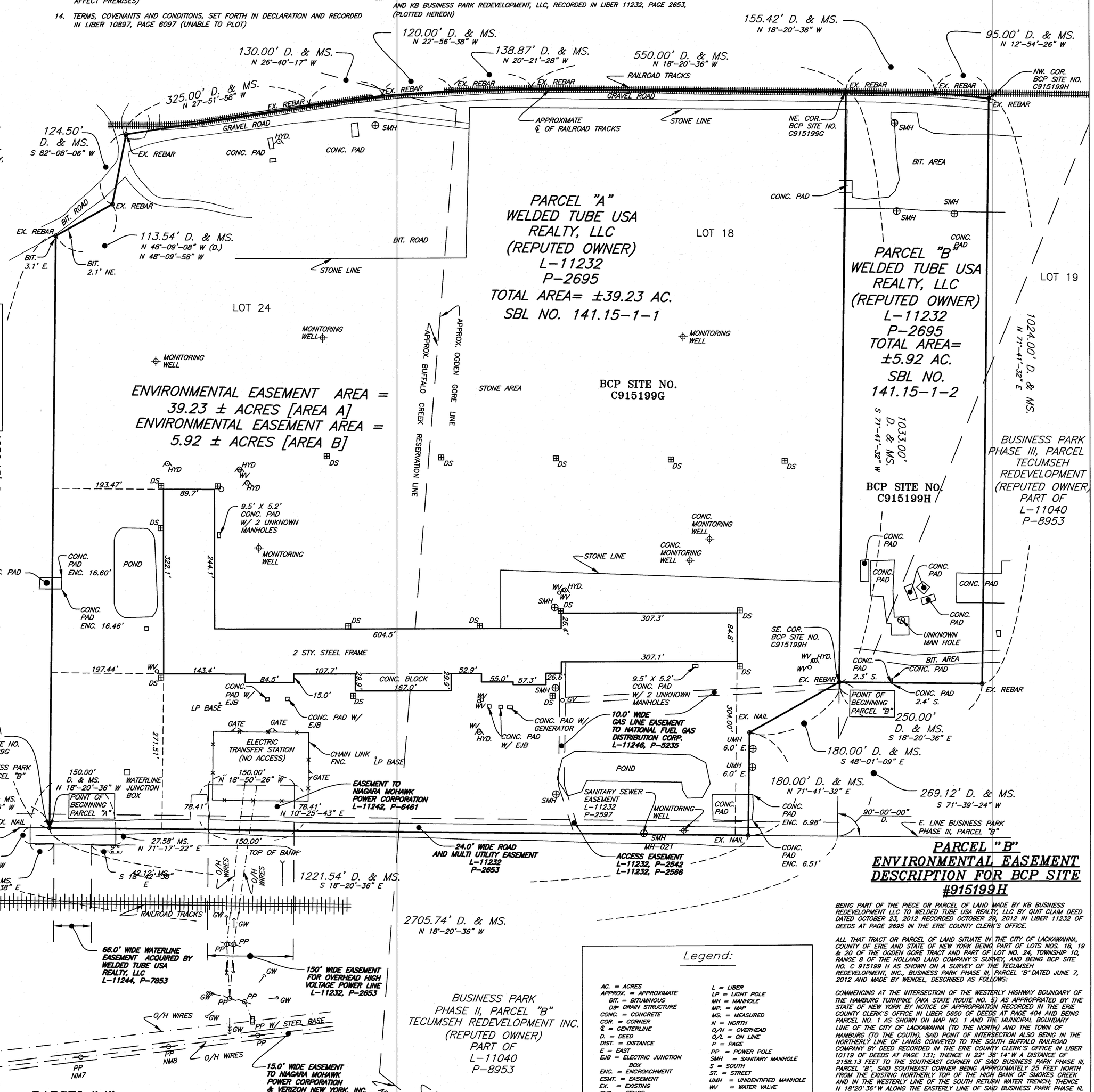
10. AIRSPACE AND EASEMENT RIGHTS SET FORTH IN MEMORANDUM OF LEASE TO BQ ENERGY, LLC, RECORDED IN LIBER 11145, PAGE 2422, AND RE-PURCHASED RIGHTS AND EASEMENTS SET FORTH IN DEED TO BQ ENERGY, LLC RECORDED IN LIBER 11145, PAGE 2733 (DOES NOT AFFECT PREMISES)

    NOTES: NON DISTURBANCE AGREEMENT BETWEEN TECUMSEH REDEVELOPMENT, INC. WITH BQ ENERGY, LLC, AND NIAGARA WIND POWER, LLC, RECORDED IN LIBER 11196, PAGE 544
11. EASEMENT TO NATIONAL FUEL GAS DISTRIBUTION CORPORATION, RECORDED IN LIBER 11220, PAGE 2359 (DOES NOT AFFECT PREMISES)
12. EASEMENTS FOR ACCESS, INGRESS AND EGRESS TO ERIE WIND, LLC, RECORDED IN LIBER 11204, PAGE 4545, CORRECTED IN LIBER 11214, PAGE 4899 AND LIBER 11216 PAGE 7305 (DOES NOT AFFECT PREMISES)
13. PUBLIC AND PRIVATE RIGHTS OF OTHERS TO THE BED AND WATERS OF SMOKES CREEK INCLUDING ANY REGULATORY STATUTES AFFECTING THE SAME. (DOES NOT AFFECT PREMISES)
14. TERMS, COVENANTS AND CONDITIONS, SET FORTH IN DECLARATION AND RECORDED IN LIBER 10897, PAGE 6097 (UNABLE TO PLOT)
15. TERMS, COVENANTS AND CONDITIONS, SET FORTH IN DECLARATION AND RECORDED IN LIBER 10897, PAGE 6053, (UNABLE TO PLOT)
16. TERMS, COVENANTS AND CONDITIONS, SET FORTH IN DECLARATION AND RECORDED IN LIBER 10897, PAGE 6075, (UNABLE TO PLOT)
17. EASEMENT TO NIAGARA MOHAWK POWER CORPORATION AND VERIZON NEW YORK, INC., RECORDED IN LIBER 11228, PAGE 3555, (DOES NOT AFFECT PREMISES)
18. EASEMENT FOR ACCESS BETWEEN TECUMSEH REDEVELOPMENT, INC. AND KB BUSINESS PARK REDEVELOPMENT, LLC, RECORDED IN LIBER 11232, PAGE 2542, (PLOTTED HEREON)
19. AGREEMENT FOR ACCESS BETWEEN TECUMSEH REDEVELOPMENT, INC. AND KB BUSINESS PARK REDEVELOPMENT, LLC, RECORDED IN LIBER 11232, PAGE 2566
20. EASEMENT FOR SANITARY SEWER LINE BETWEEN TECUMSEH REDEVELOPMENT, INC. AND KB BUSINESS PARK REDEVELOPMENT, LLC., RECORDED IN LIBER 11232, PAGE 2597, (PLOTTED HEREON)
21. AGREEMENT FOR SANITARY SEWER LINE BETWEEN TECUMSEH REDEVELOPMENT, INC. AND KB BUSINESS PARK REDEVELOPMENT, LLC, RECORDED IN LIBER 11232, PAGE 2621 (THIS AGREEMENT IS FOR THE MAINTENANCE OF EXCEPTION NUMBER 20)
22. EASEMENT AGREEMENT FOR UTILITY PURPOSES BETWEEN TECUMSEH REDEVELOPMENT, INC. AND KB BUSINESS PARK REDEVELOPMENT, LLC, RECORDED IN LIBER 11232, PAGE 2653, (PLOTTED HEREON)
23. EASEMENT TO NIAGARA MOHAWK POWER CORPORATION RECORDED IN LIBER 11242, PAGE 6461, (PLOTTED HEREON)
24. EASEMENT TO NATIONAL FUEL GAS DISTRIBUTION CORPORATION, RECORDED IN LIBER 11246, PAGE 5235, (PLOTTED HEREON)
25. WATERLINE EASEMENT AGREEMENT BETWEEN TECUMSEH REDEVELOPMENT INC., AND WELDED TUBE USA REALTY, LLC., RECORDED IN LIBER 11244, PAGE 7853, (PARTIALLY SHOWN HEREON)

TRUE NORTH AT THE 78°35' MERIDIAN OF WEST LONGITUDE

ENVIRONMENTAL EASEMENT AREA ACCESS

THE DEC OR THEIR AGENT MAY ACCESS THE ENVIRONMENTAL EASEMENT AREA AS SHOWN HEREON THROUGH ANY EXISTING STREET ACCESS OR BUILDING INGRESS/EGRESS ACCESS POINT



Legend:

AC. = ACRES	L = LIBER
APPROX. = APPROXIMATE	LP = LIGHT POLE
BIT. = BITUMINOUS	MH = MANHOLE
DS = DRAIN STRUCTURE	MP. = MAP
CONC. = CONCRETE	MS. = MEASURED
COR. = CORNER	N = NORTH
℄ = CENTERLINE	O/H = OVERHEAD
D. = DEED	O/L = ON LINE
DIST. = DISTANCE	P = PAGE
E = EAST	PP = POWER POLE
EJB = ELECTRIC JUNCTION BOX	SMH = SANITARY MANHOLE
ENC. = ENCROACHMENT	S = SOUTH
ESMT. = EASEMENT	ST. = STREET
EX. = EXISTING	UMH = UNIDENTIFIED MANHOLE
FNC. = FENCE	WV = WATER VALVE
GW = GUY WIRE	W. = WEST
HYD. = HYDRANT	W/ = WITH
IP. = IRON PIPE/	

PROPERTY LINES

RAILROAD TRACKS

PARCEL "A" ENVIRONMENTAL EASEMENT DESCRIPTION FOR BCP SITE #C915199G

BEING PART OF THE PIECE OR PARCEL OF LAND MADE BY KB BUSINESS REDEVELOPMENT LLC TO WELDED TUBE USA REALTY, LLC BY QUIT CLAIM DEED DATED OCTOBER 23, 2012 RECORDED OCTOBER 29, 2012 IN LIBER 11232 OF DEEDS AT PAGE 2695 IN THE ERIE COUNTY CLERK'S OFFICE.

ALL THAT TRACT OR PARCEL OF LAND SITUATE IN THE CITY OF LACKAWANNA, COUNTY OF ERIE AND STATE OF NEW YORK BEING PART OF LOT NO. 18 OF THE OGDEN GORE TRACT AND PART OF LOT NO. 24, TOWNSHIP 10, RANGE 8 OF THE HOLLAND LAND COMPANY'S SURVEY, AND BEING BCP SITE NO. C 915199 G AS SHOWN ON A SURVEY OF THE TECUMSEH REDEVELOPMENT, INC., BUSINESS PARK PHASE III, PARCEL "B" DATED JUNE 7, 2012 AND MADE BY WENDEL, DESCRIBED AS FOLLOWS:

COMMENCING AT THE INTERSECTION OF THE WESTERLY HIGHWAY BOUNDARY OF THE HAMBURG TURNPIKE (AKA STATE ROUTE NO. 5) AS APPROPRIATED BY THE STATE OF NEW YORK BY NOTICE OF APPROPRIATION RECORDED IN THE ERIE COUNTY CLERK'S OFFICE IN LIBER 5650 OF DEEDS AT PAGE 404 AND BEING PARCEL NO. 1 AS SHOWN ON MAP NO. 1 AND THE MUNICIPAL BOUNDARY LINE OF THE CITY OF LACKAWANNA (TO THE NORTH) AND THE TOWN OF HAMBURG (TO THE SOUTH), SAID POINT OF INTERSECTION ALSO BEING IN THE NORTHERLY LINE OF LANDS CONVEYED TO THE SOUTH BUFFALO RAILROAD COMPANY BY DEED RECORDED IN THE ERIE COUNTY CLERK'S OFFICE IN LIBER 10119 OF DEEDS AT PAGE 131: THENCE N 22° 36' 14" W A DISTANCE OF 2158.13 FEET TO THE SOUTHEAST CORNER OF SAID BUSINESS PARK PHASE III, PARCEL "B", SAID SOUTHEAST CORNER BEING APPROXIMATELY 25 FEET NORTH FROM THE EXISTING NORTHERLY TOP OF THE HIGH BANK OF SMOKES CREEK AND IN THE WESTERLY LINE OF THE SOUTH RETURN WATER TRENCH; THENCE N 18° 20' 36" W ALONG THE EASTERLY LINE OF SAID BUSINESS PARK PHASE III, PARCEL "B", SAID EASTERLY LINE ALSO BEING THE WESTERLY LINE OF THE AFORESAID SOUTH RETURN WATER TRENCH, A DISTANCE OF 1327.70 FEET TO THE PRINCIPAL POINT OF BEGINNING, SAID PRINCIPAL POINT OF BEGINNING BEING THE SOUTHEAST CORNER OF BCP SITE NO. C 915199G; RUNNING THENCE S 71° 39' 24" W A DISTANCE OF 1036.13 FEET TO A POINT;

THENCE N 48° 09' 58" W (N 48°-09-08 W DEED), A DISTANCE OF 113.54 FEET TO A POINT;

THENCE S 82° 08' 06" W, A DISTANCE OF 124.50 FEET TO A POINT ON THE APPROXIMATE CENTER LINE OF RAILROAD TRACKS;

THENCE ALONG THE APPROXIMATE CENTER LINE OF SAID RAILROAD TRACKS THE FOLLOWING 5 COURSES AND DISTANCES:

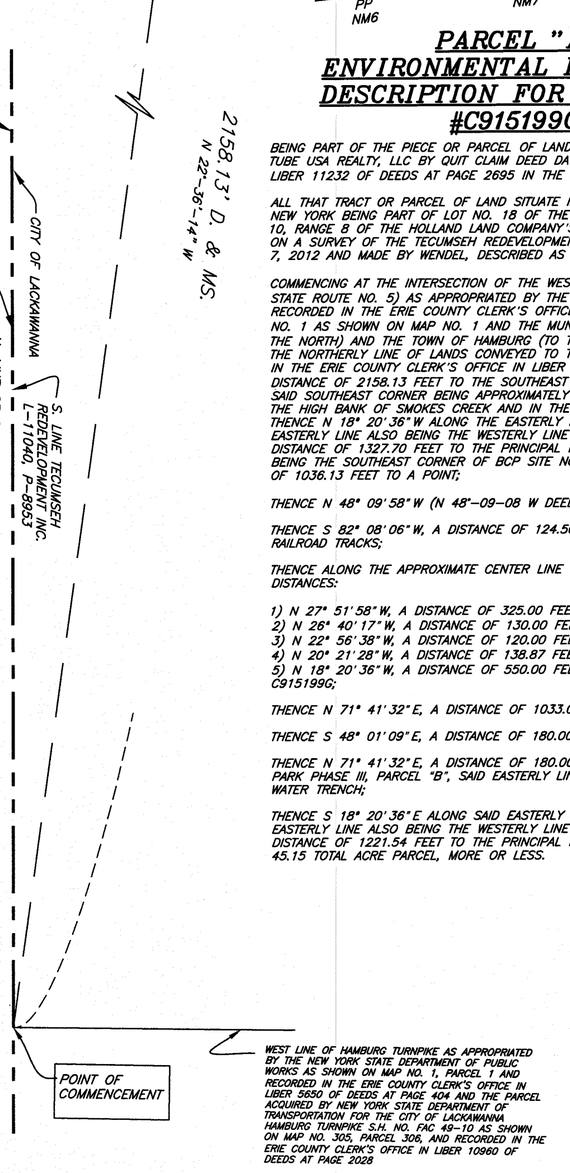
1) N 27° 51' 58" W, A DISTANCE OF 325.00 FEET TO A POINT;
2) N 26° 40' 17" W, A DISTANCE OF 130.00 FEET TO A POINT;
3) N 22° 56' 38" W, A DISTANCE OF 120.00 FEET TO A POINT;
4) N 20° 21' 28" W, A DISTANCE OF 138.87 FEET TO A POINT AND
5) N 18° 20' 36" W, A DISTANCE OF 550.00 FEET TO THE NORTHWEST CORNER OF BCP SITE NUMBER C915199G;

THENCE N 71° 41' 32" E, A DISTANCE OF 1033.00 FEET TO A POINT;

THENCE S 48° 01' 09" E, A DISTANCE OF 180.00 FEET TO A POINT;

THENCE N 71° 41' 32" E, A DISTANCE OF 180.00 FEET TO A POINT IN THE EASTERLY LINE OF SAID BUSINESS PARK PHASE III, PARCEL "B", SAID EASTERLY LINE ALSO BEING THE WESTERLY LINE OF THE SOUTH RETURN WATER TRENCH;

THENCE S 18° 20' 36" E ALONG SAID EASTERLY LINE OF SAID BUSINESS PARK PHASE III, PARCEL "B", SAID EASTERLY LINE ALSO BEING THE WESTERLY LINE OF THE AFORESAID SOUTH RETURN WATER TRENCH, A DISTANCE OF 1221.54 FEET TO THE PRINCIPAL POINT OF BEGINNING; BEING 39.23 ACRES OF LAND, OF A 45.15 TOTAL ACRE PARCEL, MORE OR LESS.



HAMBURG TURNPIKE (WIDTH VARIES)
(ALSO KNOWN AS STATE ROUTE NO. 5)

NOTES:

- ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MAP MARKED WITH THE SIGNATURE AND AN ORIGINAL OF THE LAND SURVEYOR'S SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES.
- UNAUTHORIZED ALTERATION OR ADDITION TO ANY SURVEY DRAWING, DESIGN, SPECIFICATION, PLAN OR REPORT IS A VIOLATION OF SECTION 7209, PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.
- THIS PROPERTY IS SUBJECT TO AN ENVIRONMENTAL EASEMENT HELD BY THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION PURSUANT TO TITLE 36 OF ARTICLE 71 OF THE NEW YORK ENVIRONMENTAL CONSERVATION LAW

STATE OF NEW YORK · MARSHALL D. WILSON · No. 050192 · LICENSED LAND SURVEYOR

REVISION NO.	DATE	DESCRIPTION	DRAWN	CHECK
1	9/5/2013	REVISED SCHEDULE B, NUMBER 25	BSS	MDW
2	10/1/2013	INCLUDED NYSDEC COMMENTS	BSS	MDW
3	10/18/2013	INCLUDED NYSDEC COMMENTS	BSS	MDW

PROJECT NUMBER 457602

DRAWING NAME: XVE-WELDED TUN=BE-02 SITE

ENGINEERING / INSTITUTIONAL CONTROLS

- COVER SYSTEM THE COVER SYSTEM IS A PERMANENT CONTROL. PROCEDURES FOR THE INSPECTION AND MAINTENANCE OF THIS COVER ARE PROVIDED IN THE MONITORING PLAN IN SECTION 4 OF THE SITE MANAGEMENT PLAN (SMP).
- COMPLIANCE WITH THE ENVIRONMENTAL EASEMENT AND THE SMP BY THE GRANTOR AND THE GRANTOR'S SUCCESSORS AND ASSIGNS;
- ALL ENGINEERING CONTROLS MUST BE OPERATED AND MAINTAINED AS SPECIFIED IN THE SMP;
- ALL ENGINEERING CONTROLS ON THE CONTROLLED PROPERTY MUST BE INSPECTED AT A FREQUENCY AND IN A MANNER DEFINED IN THE SMP;
- GROUNDWATER, SOIL VAPOR AND OTHER ENVIRONMENTAL OR PUBLIC HEALTH MONITORING MUST BE PERFORMED AS DEFINED IN THE SMP;
- DATA AND INFORMATION PERTINENT TO SITE MANAGEMENT OF THE CONTROLLED PROPERTY MUST BE REPORTED AT THE FREQUENCY AND IN A MANNER DEFINED IN THE SMP;
- THE USE AND DEVELOPMENT OF THE SITE IS LIMITED TO COMMERCIAL AND INDUSTRIAL USES ONLY AS DESCRIBED IN 6NYCRR PART 375-1.8(G)(2)(III) & (IV).
- THE PROPERTY MAY NOT BE USED FOR A HIGHER LEVEL OF USE, SUCH AS RESTRICTED RESIDENTIAL USE WITHOUT ADDITIONAL REMEDIATION AND AMENDMENT OF THE ENVIRONMENTAL EASEMENT AS APPROVED BY THE NYSDEC;
- ALL FUTURE ACTIVITIES ON THE PROPERTY THAT WILL DISTURB REMAINING CONTAMINATED MATERIAL MUST BE CONDUCTED IN ACCORDANCE WITH THE SMP;
- THE USE OF THE GROUNDWATER UNDERLYING THE PROPERTY IS PROHIBITED WITHOUT TREATMENT RENDERING IT SAFE FOR INTENDED USE;
- THE SITE OWNER OR REMEDIAL PARTY WILL SUBMIT TO NYSDEC A WRITTEN STATEMENT THAT CERTIFIES, UNDER PENALTY OF PERJURY, THAT: (1) CONTROLS EMPLOYED AT THE CONTROLLED PROPERTY ARE UNCHANGED FROM THE PREVIOUS CERTIFICATION OR THAT ANY CHANGES TO THE CONTROLS WERE APPROVED BY THE NYSDEC; AND, (2) NOTHING HAS OCCURRED THAT IMPAIRS THE ABILITY OF THE CONTROLS TO PROTECT PUBLIC HEALTH AND ENVIRONMENT OR THAT CONSTITUTE A VIOLATION OR FAILURE TO COMPLY WITH THE SMP.

PARCEL "B" ENVIRONMENTAL EASEMENT DESCRIPTION FOR BCP SITE #915199H

BEING PART OF THE PIECE OR PARCEL OF LAND MADE BY KB BUSINESS REDEVELOPMENT LLC TO WELDED TUBE USA REALTY, LLC BY QUIT CLAIM DEED DATED OCTOBER 23, 2012 RECORDED OCTOBER 29, 2012 IN LIBER 11232 OF DEEDS AT PAGE 2695 IN THE ERIE COUNTY CLERK'S OFFICE.

ALL THAT TRACT OR PARCEL OF LAND SITUATE IN THE CITY OF LACKAWANNA, COUNTY OF ERIE AND STATE OF NEW YORK BEING PART OF LOTS NOS. 18, 19 & 20 OF THE OGDEN GORE TRACT AND PART OF LOT NO. 24, TOWNSHIP 10, RANGE 8 OF THE HOLLAND LAND COMPANY'S SURVEY, AND BEING BCP SITE NO. C 915199 H AS SHOWN ON A SURVEY OF THE TECUMSEH REDEVELOPMENT, INC., BUSINESS PARK PHASE III, PARCEL "B" DATED JUNE 7, 2012 AND MADE BY WENDEL, DESCRIBED AS FOLLOWS:

COMMENCING AT THE INTERSECTION OF THE WESTERLY HIGHWAY BOUNDARY OF THE HAMBURG TURNPIKE (AKA STATE ROUTE NO. 5) AS APPROPRIATED BY THE STATE OF NEW YORK BY NOTICE OF APPROPRIATION RECORDED IN THE ERIE COUNTY CLERK'S OFFICE IN LIBER 5650 OF DEEDS AT PAGE 404 AND BEING PARCEL NO. 1 AS SHOWN ON MAP NO. 1 AND THE MUNICIPAL BOUNDARY LINE OF THE CITY OF LACKAWANNA (TO THE NORTH) AND THE TOWN OF HAMBURG (TO THE COUTH), SAID POINT OF INTERSECTION ALSO BEING IN THE NORTHERLY LINE OF LANDS CONVEYED TO THE SOUTH BUFFALO RAILROAD COMPANY BY DEED RECORDED IN THE ERIE COUNTY CLERK'S OFFICE IN LIBER 10119 OF DEEDS AT PAGE 131; THENCE N 22° 36' 14" W A DISTANCE OF 2158.13 FEET TO THE SOUTHEAST CORNER OF SAID BUSINESS PARK PHASE III, PARCEL "B", SAID SOUTHEAST CORNER BEING APPROXIMATELY 25 FEET NORTH FROM THE EXISTING NORTHERLY TOP OF THE HIGH BANK OF SMOKES CREEK AND IN THE WESTERLY LINE OF THE SOUTH RETURN WATER TRENCH; THENCE N 18°20'36" W ALONG THE EASTERLY LINE OF SAID BUSINESS PARK PHASE III, PARCEL "B", SAID EASTERLY LINE ALSO BEING THE WESTERLY LINE OF THE AFORESAID SOUTH RETURN WATER TRENCH, A DISTANCE OF 2705.74 FEET TO A POINT THEREIN; THENCE S 71° 39' 24" W AND AT RIGHT ANGLES TO THE LAST DESCRIBED COURSE, A DISTANCE OF 269.12 FEET TO THE PRINCIPAL POINT OF BEGINNING, SAID PRINCIPAL POINT OF BEGINNING BEING THE SOUTHEAST CORNER OF BCP SITE NO. C 915199H; THENCE S 71° 41' 32" W, A DISTANCE OF 1033.00 FEET TO A POINT IN THE APPROXIMATE CENTER LINE OF A RAILROAD TRACK;

THENCE N 18° 20' 36" W AND ALONG THE APPROXIMATE CENTER LINE OF SAID RAILROAD TRACKS, A DISTANCE OF 155.42 FEET TO A POINT

THENCE CONTINUING N 12° 54' 26" W AND ALONG THE APPROXIMATE CENTER LINE OF SAID RAILROAD TRACKS, A DISTANCE OF 95.00 FEET TO THE NORTHWESTERLY CORNER OF BCP SITE NUMBER C915199H;

THENCE N 71° 41' 32" E (N 71°-41'-32" W DEED), A DISTANCE OF 1024.00 FEET TO A POINT;

THENCE S 18° 20' 36" E, A DISTANCE OF 250.00 FEET TO THE PRINCIPAL POINT OF BEGINNING; BEING 5.92 ACRES OF LAND, OF A 45.15 TOTAL ACRE PARCEL, MORE OR LESS.

TOGETHER WITH THE BENEFITS AND SUBJECT TO THE BURDENS OF THE FOLLOWING EASEMENTS:

1) ACCESS EASEMENT BETWEEN TECUMSEH REDEVELOPMENT, INC. AND KB BUSINESS PARK REDEVELOPMENT, LLC, DATED AS OF OCTOBER 22, 2012 AND RECORDED OCTOBER 29, 2012 IN LIBER 11232 OF DEEDS AT PAGE 2542.
2) ACCESS AGREEMENT BETWEEN TECUMSEH REDEVELOPMENT, INC. AND KB BUSINESS PARK REDEVELOPMENT, LLC, DATED AS OF OCTOBER 22, 2012 AND RECORDED OCTOBER 29, 2012 IN LIBER 11232 OF DEEDS AT PAGE 2566.
3) SANITARY SEWER LINE EASEMENT BETWEEN TECUMSEH REDEVELOPMENT, INC. AND KB BUSINESS PARK REDEVELOPMENT, LLC, DATED OF OCTOBER 22, 2012 AND RECORDED OCTOBER 29, 2012 IN LIBER 11232 OF DEEDS AT PAGE 2597.
4) SANITARY SEWER LINE AGREEMENT BETWEEN TECUMSEH REDEVELOPMENT, INC. AND KB BUSINESS PARK REDEVELOPMENT, LLC, DATED OF OCTOBER 22, 2012 AND RECORDED OCTOBER 29, 2012 IN LIBER 11232 OF DEEDS AT PAGE 2621.
5) EASEMENT AGREEMENT FOR UTILITIES BETWEEN TECUMSEH REDEVELOPMENT, INC. AND KB BUSINESS PARK REDEVELOPMENT, LLC, DATED AS OF OCTOBER 22, 2012 AND RECORDED OCTOBER 29, 2012 IN LIBER 11232 OF DEEDS AT PAGE 2653.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

PREPARED BY CONSULTANT

wendel
140 John James Audubon Pkwy, Suite 201
Buffalo, NY 14228
www.wendelcompanies.com
p:716.688.0766 f:716.625.6825
ARCHITECTURE • ENGINEERING • PLANNING
ENERGY SERVICES • CONSTRUCTION MANAGEMENT

PREPARED FOR- WELDED TUBE USA REALTY, LLC
BEING PART OF LANDS OF TECUMSEH REDEVELOPMENT INC., BUSINESS PARK PHASE III, PARCEL B
BROWNFIELD CLEANUP ENVIRONMENTAL EASEMENT
1951 HAMBURG TURNPIKE, CITY OF LACKAWANNA, STATE OF NEW YORK
WITH THE CURRENT ADDRESS OF 2537 AND 2539 HAMBURG TURNPIKE LACKAWANNA, NEW YORK
THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION SITE NUMBERS C915199G & C915199H
SITUATE IN PARTS OF LOTS 18, 19 & 20 OF THE OGDEN GORE TRACT AND PART OF LOT 24 OF THE BUFFALO CREEK RESERVATION, TOWNSHIP 10, RANGE 8 OF THE HOLLAND LAND COMPANY'S SURVEY
CITY OF LACKAWANNA, COUNTY OF ERIE, STATE OF NEW YORK

FORMER TAX IDENTIFICATION NO.: 141.11-1-1.11
NEW TAX IDENTIFICATION NUMBERS: 141.15-1-1 & 141.15-1-2

1 inch = 100 Feet
1:1200

100' 50' 25' 0' 100' 200'
30.48 0 30.48 60.96
METERS

I HEREBY CERTIFY (1) TO THE PEOPLE OF THE STATE OF NEW YORK, ACTING THROUGH THEIR COMMISSIONER OF THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, (2) OWNERS: WELDED TUBE USA REALITY, LLC AND (3) CHICAGO TITLE INSURANCE COMPANY THAT THIS IS AN ACCURATE SURVEY MAP PREPARED UNDER MY DIRECTION, FROM AN ACTUAL SURVEY, PERFORMED IN ACCORDANCE TO THE STANDARDS AND PROCEDURES ADOPTED BY THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, SEPTEMBER 14, 2012 FIELD SURVEY COMPLETED JUNE 16, 2013.

Marshall D. Wilson — 10/21/13
MARSHALL D. WILSON, LAND SURVEYOR #050192 — DATE

Brian S. Smith — 10/21/13
BRIAN S. SMITH, CST 3 SURVEY DRAFTER — DATE

SHEET 1 OF 1

SITE III-7 TECUMSEH PHASE III BUSINESS PARK, SITE NUMBERS C915199G & C915199H

APPENDIX A-3

ENVIRONMENTAL EASEMENT FOR THE REMAINING SITES

(Currently under development)

APPENDIX B

EXCAVATION WORK PLAN

BROWNFIELD CLEANUP PROGRAM

APPENDIX B
EXCAVATION WORK PLAN

TECUMSEH PHASE III BUSINESS PARK
NYSDEC SITE NUMBERS: C915199 through C915199J
LACKAWANNA, NEW YORK

November 2013 0071-012-322

Prepared By:

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

EXCAVATION WORK PLAN
TECUMSEH PHASE III BUSINESS PARK

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EXCAVATION WORK PLAN
TECUMSEH PHASE III BUSINESS PARK

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Figure 2	Site Delineation Map

APPENDICES

Appendix B-1	SPDES General Permit GP-0-10-001 and NOI
Appendix B-2	Erosion and Sediment Controls
Appendix B-3	NYSDOH's Generic Community Air Monitoring Plan Fugitive Dust and Particulate Monitoring

1.0 INTRODUCTION

1.1 Purpose and Scope

This document is a required element of the remedial program for the New York State Brownfield Cleanup Program (BCP) Sites within and collectively comprising the property referred to as the "Tecumseh Phase III Business Park," located in City of Lackawanna, Erie County, New York (hereinafter referred to as the "Controlled Property") under the New York State (NYS) Brownfield Cleanup Program (BCP) administered by New York State Department of Environmental Conservation (NYSDEC). The Controlled Property is located west of the Tecumseh Phase II Business Park, east of other Tecumseh property, north of lands owned by South Buffalo Railroad Company, and south of the Gateway Metroport Ship Canal and land currently owned by Gateway Trade Center (see Figures 1 and 2). As shown on Figure 2, the Controlled Property collectively includes Sites III-1 through III-10 (C915199 through C915199J).

This Excavation Work Plan (EWP) has been prepared by TurnKey Environmental Restoration, LLC (TurnKey) in accordance with NYSDEC Program Policy DER-10 (Ref. 1). An Interim EWP was followed during all ground intrusive activities conducted during preparation work (e.g., excavation for utility lines, grading work performed in advance of cover placement, etc.) as remedial measures proceeded toward final cleanup and issuance of the Certificate of Completion (COC). In accordance with DER-10 Section 6.1(b)2, the Interim EWP was modified for post-remedial use and has been incorporated into this Excavation Work Plan component of the SMP.

1.2 Notification

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the Site Owner or their representative will notify the NYSDEC. Currently, this notification will be made to:

Mr. Maurice Moore
Engineering Geologist I
NYSDEC – Region 9
270 Michigan Avenue
Buffalo, NY 14203-2999

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent; plans for re-grading, intrusive elements or utilities to be installed below the soil cover; estimated volumes of contaminated soil to be excavated; and any work that may impact an existing engineering control. Appropriate locations for staging and stockpiling of non-impacted and impacted (if encountered) soil/fill materials will also be identified.
- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling.
- A schedule for the work, detailing the start and completion of all intrusive work.
- A summary of the applicable components of this EWP.
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120.
- A copy of the contractor's health and safety plan, in electronic format, if it differs from the Site-Wide Health and Safety Plan (HASP).
- Identification of disposal facilities for potential waste streams.
- Identification of sources of any anticipated backfill, along with all required analytical testing results.

2.0 SCREENING, SEGREGATION AND STOCKPILING

Requirements for screening, segregation, and stockpiling of excavated soil/fill materials are presented below. As further discussed in Section 3.0, all soil and fill excavated from the Site is to be treated as regulated contaminated material regardless of field evidence of impact. If any such material is removed from the Site, it must be transported by a licensed hauler and either treated or disposed at a permitted facility in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations or reused, with NYSDEC pre-approval subject to a 6 NYCRR Part 360 Beneficial Use Determination (BUD), at another regulated cleanup site having an Environmental Easement and Site Management Plan.

2.1 Soil Screening and Segregation Methods

Visual, olfactory, and/or instrument (photoionization detector or equivalent)-based, soil screening will be performed by a qualified environmental professional (QEP), as defined by NYSDEC in DER-10 Section 1.3(b)49, or a person under their supervision, during all intrusive activities, as necessary.

Non-impacted soil/fill may be replaced in the excavation or reused on-site in accordance with Section 3.4. If field evidence of potentially impacted soil/fill is encountered during intrusive work, the NYSDEC Project Manager will be contacted and the contractor will be directed to stockpile the material on polyethylene sheeting in an accessible location near the impacted area. The location of staged materials will be coordinated with the Site Owner, but will remain within the same Site as the source to avoid administrative issues associated with import/export of these materials among differing BCP Sites. Field evidence of impact is defined as having readily identifiable visual or olfactory signs of contamination, including product, tars, or elevated photoionization detector (PID) readings (i.e., sustained readings >5 ppm). All impacted soil/fill removal work will be directed by an experienced QEP. Removal and stockpiling will continue until visually impacted soil/fill is removed from the limits of the planned excavation or NYSDEC agrees that no further removal of soil/fill is required. If the impact extends beyond the proposed limits of the excavation the Site Owner will be consulted and a plan for delineation and remediation of the remaining impacted material will be developed.

2.2 Stockpile Methods

Excavated soil/fill will be segregated, based on field screening and its status at the time of the excavation work, into material that can be reused as cover (i.e., if cover soil or slag has been placed), non-impacted material that can be returned to the subsurface, and impacted material that requires treatment or off-site disposal. A continuous berm and/or silt fence will be placed around soil/fill stockpiles. Hay bales will be used as needed near catch basins, surface waters, and other discharge points. Stockpiles will be covered at all times with appropriately anchored tarps or poly sheeting. Stockpiles will be routinely inspected at a minimum once each week and after every storm event. Damaged tarp covers will be promptly replaced.

Results of inspections will be recorded in a logbook, maintained with the Site Owner or the Owner's representative, and made available for inspection by NYSDEC.

3.0 EXCAVATION, TRANSPORT, DISPOSAL, AND REUSE

3.1 Materials Excavation and Load Out

A QEP, or person under their supervision, will monitor all intrusive work and the excavation and load-out of all excavated material. The Site Owner and its contractors are responsible for safe execution of all intrusive and other work performed under this EWP; however, any entity performing intrusive work on the Site is required to abide by the requirements identified herein. The QEP will investigate the presence of utilities and easements on the Site and determine whether they pose a risk or impediment to the planned work under this EWP.

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State (NYSDOT), local, and all other applicable transportation requirements.

Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-site soil tracking. The QEP will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during intrusive excavation activities. If truck tires will be in contact with impacted materials and/or ground conditions result in mud carryout on vehicles a truck wash will be operated on-site. Truck wash waters will be collected and disposed off-site in an appropriate manner. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

3.2 Material Transport Off-Site

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the Site will be secured with tight-fitting covers; loose-fitting canvas-type truck covers are prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Truck transport routes will be pre-determined for wastes designated as hazardous and requiring off-site transport to a secure landfill (RCRA Subtitle C facility) or other RCRA-

permitted Treatment Storage and Disposal Facility (TSDF). The truck transport route to the nearest Subtitle C facility from the Controlled Property is as follows:

To Model City Landfill, 4746 Model City Rd., Model City, NY

- From the Site, turn left (north) onto Route 5
- Exit onto I-190 north
- Take Exit 25A/RT 265
- Turn left on RT 265
- Turn right onto Upper Mountain Rd.
- Turn left onto Indian Hill Rd.
- End at 4746 Model City Rd.

All trucks loaded with Site materials will exit the vicinity of the Site using only approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport. If an alternate RCRA Subtitle C facility or TSDF is employed the corresponding truck transport route shall be provided to the NYSDEC for approval.

Trucks will be prohibited from stopping and idling in the neighborhood outside the Site. Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials. Queuing of trucks will be performed on-site in order to minimize off-site disturbance; off-site queuing will be prohibited.

3.3 Materials Disposal Off-Site

All soil/fill/solid waste excavated and removed from the Site will be considered contaminated, regulated material to be transported and treated or disposed at a permitted facility in accordance with all local, State (including 6NYCRR Part 360), and Federal regulations. If alternate off-site disposal of soil/fill from this Site is proposed (e.g., at another regulated brownfield site), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-site management of materials from this Site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal

facility (i.e., hazardous waste facility, solid waste landfill, permitted petroleum treatment facility, C/D recycling facility, etc.), if appropriate. The disposal documentation submitted to NYSDEC will include: a summary of disposal quantities, waste profiles, test results, facility acceptance letters, manifests, bills of lading, and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a municipal solid waste per 6NYCRR Part 360-1.2. Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

3.4 Materials Reuse On-Site

3.4.1 Soil/Fill

On-site reuse of soil/fill material, including slag material, is acceptable provided that the material does not exhibit visual or olfactory evidence of contamination and PID measurements of the atmosphere at the soil/fill interface do not exceed 5 parts per million (ppm) above background. The QEP will ensure that procedures defined for materials reuse are followed and that unacceptable material does not remain on-site. On-site material, including historic fill, that is acceptable for re-use on-site will be placed below the engineered cover demarcation layer or impervious surface (if in place at the time of excavation), and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

3.4.2 Petroleum-Impacted Soil/Fill

Petroleum-impacted soil/fill suitable for on-site bioremediation (e.g., materials impacted by non-tarry petroleum hydrocarbons) may be transported, with NYSDEC approval, to a designated portion of the Tecumseh property (specifically one of the Business Parks) for biotreatment. Qualitative assessment of treatment performance will be made based on field assessment of visual and olfactory conditions, with the goal of eliminating gross impacts. Once the soil/fill is considered treated, confirmatory samples will be collected at a frequency of no less than one per 1,000 cubic yards of treated soil/fill. The samples will be analyzed for USEPA Target Compound List (TCL) volatile organic compounds (VOCs) and base-neutral semi-volatile organic compounds (SVOCs) and compared to restricted

(Industrial) health-based SCOs consistent with other on-site soil/fill materials. Once the samples meet these SCOs, the treated soil/fill will be removed and preferably transferred back to the original Site as subgrade material, with NYSDEC approval; bioremediated soils will not be considered suitable for use as cover soil. No bioremediated soil/fill will be transported off-site unless deemed necessary due to poor treatment response. In such instance the material will be disposed, with NYSDEC approval, in accordance with Section 3.3.

3.4.3 Debris

Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site will not be reused on-site without prior NYSDEC approval.

3.5 Fluids Management

All liquids to be removed from the Site, including excavation dewatering and truck wash water, will be verified to be visually free of any product, non-aqueous phase liquid, odor, or other visual indications of impact. In such instance it may be acceptable to discharge such water back to subgrade with prior NYSDEC approval. Generated water exhibiting signs of impact will not be recharged back to the land surface or subsurface of the Site unless treated to render it acceptable for discharge as approved by the NYSDEC.

Water generated during large-scale construction activities proposed for discharge to surface waters (i.e., a local pond, stream, or river) will require a NY State Pollutant Discharge Elimination System (SPDES) permit.

4.0 BACKFILL AND RESTORATION

4.1 Cover Materials

A minimum of 12 inches of NYSDEC-approved cover material (e.g., vegetated soil, stone, or Beneficial Use Determination [BUD]-approved steel slag), where appropriate, will be placed over any unpaved areas of the Site as a component of the final remedy. The upper 6 inches of any soil cover must be of suitable quality to support vegetation. In general, this would be well-graded topsoil with a pH of 5.5 to 7.6, a minimum organic content of 2.5%, and a soluble salt content not greater than 500 ppm. Vegetation must be comprised of grasses or other plantings sufficiently dense to prevent wind and surface water erosion. All imported cover must also meet the criteria identified in Section 4.2.

After the completion of soil removal and any other invasive activities, the cover system will be restored in a manner that complies with the Site Management Plan (SMP) and Final Engineering Report (FER). The demarcation layer will be replaced to provide a visual reference to the top of the remaining in-place material. A change in the type of cover system that existed prior to the excavation (e.g., a soil cover is replaced by asphalt) constitutes a modification of the cover element of the remedy, and a figure showing the modified surface will be included in the subsequent Periodic Review Report (PRR) and in any updates to the SMP.

4.2 Backfill from Off-Site Sources

The criteria under which off-site material may be imported for use as backfill are presented below.

- **Off-Site Soil/Fill:** Off-site soil/fill may be used as backfill provided that it originates from: 1) an NYSDEC-approved borrow site; or 2) a known source having no evidence of disposal or releases of hazardous substances, hazardous, toxic or radioactive wastes, or petroleum. In both instances the imported soil must be tested and demonstrated to meet the criteria shown on Table B-1 in accordance with Appendix 5 of DER-10. In addition, no off-site materials meeting the definition of a solid waste as defined in 6 NYCRR, Part 360-1.2 (a) shall be used as backfill. The criteria presented in Table 1 represent the lesser of the Commercial Soil Cleanup Objectives (SCOs) or levels protective of groundwater quality as published in 6NYCRR Part 375-6.7(d)(c) and 375-6.8.

- **Other Off-Site Material:** Certain material may be imported as backfill, without chemical testing, provided it contains less than 10% (by weight) material that would pass through a size 80 sieve: 1) Rock or stone, consisting of virgin material from a permitted mine or quarry; 2) steel slag under BUD #555-9-152; 3) Recycled concrete, brick, or asphalt from a NYSDEC-registered or permitted C&D debris processing facility (as specified in Section 360-16.1 of 6 NYCRR Part 360) that conforms to Section 304 of the New York State Department of Transportation Standard Specifications Construction and Materials Volume 1 (2002). As stated in Section 360-16.4(b)(2), the facility may only accept recognizable, uncontaminated, non-pulverized C&D debris or C&D debris from other authorized C&D processing facilities. According to Section 360-16.2(c), "uncontaminated" means C&D debris that is not mixed or commingled with other solid waste at the point of generation, processing, or disposal, and that is not contaminated with spills of a petroleum product, hazardous waste, or industrial waste.

As indicated above, off-site borrow soils shall be tested to assure conformance with the criteria identified on Table B-1. A tiered approach based on the volume of impacted soil/fill being excavated will be used to determine the frequency of characterization sampling in accordance with DER-10 or as pre-approved by the NYSDEC.

Grab samples will be collected for VOC analysis. For all other required analyses, a minimum of four grab samples will be collected to form a single composite sample. Approximately equal aliquots of the grab samples will be composited in the field using a stainless steel trowel and bowl. The trowel and bowl shall be decontaminated with a non-phosphate detergent (e.g., Alconox®) and potable water wash solution followed by a distilled water rinse between sampling locations. The soil/fill samples will be analyzed for USEPA Target Compound List (TCL) VOCs, TCL SVOCs, pesticides, and PCBs, as well as select metals[1] and cyanide in accordance with USEPA SW-846 Methodology by a NYSDOH ELAP-certified laboratory. Analytical results will be compared to Table 1 criteria and provided to the NYSDEC as part of the approval process and reported in the PRR. Analytical results must be maintained on file for review in support of the periodic Institutional and Engineering Control (IC/EC) certification required as part of the final SMP.

[1] Metals shall include those regulated under 6NYCRR Part 375-6.8, which presently include: arsenic; barium; beryllium; cadmium; chromium (total and hexavalent forms); copper; lead; manganese; mercury; nickel; selenium; silver; and zinc.

Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Solid waste will not be imported onto the Site.

All materials proposed for import onto the Site will be approved by the QEP and in compliance with the provisions of this EWP prior to receipt at the Site. Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

4.3 Backfill from On-Site Sources

On-site soil/fill may be used as subgrade backfill beneath existing approved cover provided that it does not exhibit field evidence of impact. Soil/fill that is bioremediated on-site, or within another designated and approved area within the Tecumseh Business Parks, may be similarly used as subgrade backfill provided that it meets the treatment criteria discussed in Section 3.4.2 and is approved for use by the NYSDEC. Backfill material will be compacted with the excavator/backhoe bucket in maximum 2-foot lifts to minimize settling.

5.0 MONITORING AND INSPECTIONS

5.1 Stormwater Pollution Prevention

If construction activities disturb more than 1 acre of land, the Federal Water Pollution Control Act (as amended, 33 U.S.C. 1251 et. seq.) and the New York State Environmental Conservation Law (Article 17, Titles 7 and 8, and Article 70) would apply.

With some exceptions, operators of construction activities and property development that will result in the disturbance of one or more acres of land must obtain coverage under SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-10-001, expires 01/28/15) prior to the commencement of soil disturbance. (In the case of a remediation site, such as the Controlled Property, soil disturbances associated with remedial activities are exempt from State-issued permits (6NYCRR 375-1.12); however, functional equivalent approvals, mitigation, and compliance measures are required). Also requiring a permit are construction activities disturbing less than 1 acre if they are part of a larger common plan of development or sale with a planned disturbance of equal to or greater than 1 acre, or activities that are designated by the NYSDEC. The NYSDEC can require a permit for construction activities disturbing less than 1 acre based on the potential for contribution to a violation of a water quality standard or for significant contribution of pollutants to waters of the United States.

To obtain coverage under the General Permit, the operator of a construction activity must file a completed Notice of Intent (NOI) with the NYSDEC. Submitting a NOI is an affirmation that a Stormwater Pollution Prevention Plan (SWPPP) has been prepared for the site and will be implemented prior to the commencement of construction activities. Coverage under the General Permit will begin either 5 or 60 business days after receipt of a completed NOI by the NYSDEC. Appendix B-1 includes the NOI application form and SPDES General Permit GP-0-10-001.

For smaller disturbances not subject to SPDES General Permit requirements, erosion controls must be installed as necessary to mitigate impacted stormwater and sediment runoff. These controls (which may include silt fencing around stockpiles, berms, and hay bale checks) will be required in areas of disturbance proximate to surface water bodies and drainage structures, and will also be required if disturbances occur in areas where the surrounding slag/fill is not sufficiently permeable to allow re-infiltration. Erosion and

sediment controls shall be installed in accordance with the standards and specifications presented in Appendix B-2.

The controls will be installed and inspected once a week and after every storm event. All necessary repairs shall be made immediately. Accumulated sediments will be removed as required to keep the controls functional. All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Results of inspections will be recorded in a logbook, maintained by the Site Owner or Owner's representative, and made available for inspection by NYSDEC.

5.2 Contingency Plan

If underground tanks or other previously unidentified contaminant sources are found during intrusive activities, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment, and surrounding soils as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a comprehensive list of analytes (RCRA metals, TCL VOCs, SVOCs, and PCBs, and cyanide), unless the Site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval.

Identification of unknown or unexpected contaminated media identified by screening during intrusive activities will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline.

5.3 Community Air Monitoring Plan

As detailed in Appendix B-3, the following criteria shall also be adhered to during intrusive activities for the protection of the nearby community.

5.3.1 Organic Vapor Community Air Monitoring:

Community air monitoring will be performed at the downwind perimeter of the exclusion zone on a continuous basis during intrusive activities performed outdoors that may be reasonably expected to potentially release organic vapors, or when sustained readings are detected in the work zone (i.e., proximate to the source of the intrusive activity). Otherwise, the monitoring will be performed on an hourly basis. A PID, or other equipment suitable to the types of contaminants known or suspected to be present, capable of calculating 15-minute running average concentrations will be used. All air monitoring equipment will be calibrated at least daily and an upwind concentration will be taken at least daily to establish background conditions. The 15-minute average concentrations will be compared to the levels specified below.

- If the 15-minute ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone exceeds 5 ppm above background, work activities will be halted and monitoring continued. If the organic vapor decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If the ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone persists at levels above 5 ppm over background but less than 25 ppm, activities must be halted, the source of vapors identified, corrective actions to abate the emissions taken, and monitoring continued. After these steps, work activities can resume provided that: the organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest off-site potential receptor or residential or commercial structure, whichever is less (but in no case less than 20 feet), is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the exclusion zone, work activities must be shut down and the following activities will be performed:
  - All Emergency Response Contacts as listed in the HASP (Ref. 2) and the Emergency Response Plan (an appendix to the HASP) will be advised.
  - The local police authorities will immediately be contacted by the Site Health and Safety Officer and advised of the situation.
  - Air monitoring will be continued at ½ the distance from the exclusion zone to the nearest receptor.

All readings will be recorded and will be available for NYSDEC and NYSDOH personnel to review.

5.3.2 Explosive Vapor Community Air Monitoring

Explosive vapor community air monitoring will be performed at the downwind perimeter of the site on a continuous basis whenever sustained atmospheric concentrations of greater than 10% of the LEL are recorded in the exclusion zone. If sustained atmospheric concentrations of greater than 10% LEL are recorded at the downwind site perimeter, the local Fire Department will be contacted.

5.3.3 Airborne Particulate Community Air Monitoring

Respirable (PM-10) particulate monitoring will be performed on a continuous basis at the upwind and downwind perimeter of the exclusion zone. The monitoring will be performed using real-time monitoring equipment capable of measuring PM-10 and integrating over a period of 15-minutes for comparison to the airborne particulate action levels. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities. All readings will be recorded and will be available for NYSDEC and NYSDOH review. Readings will be interpreted as follows:

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (ug/m^3) greater than the background (upwind perimeter) reading for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression provided that the downwind PM-10 particulate levels do not exceed 150 ug/m^3 above the upwind level and that visible dust is not migrating from the work area.

If after implementation of dust suppression techniques, downwind PM-10 levels are greater than 150 ug/m^3 above the upwind level, work activities must be stopped and dust suppression controls re-evaluated. Work can resume provided that supplemental dust suppression measures and/or other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 ug/m^3 of the upwind level and in preventing visible dust migration.

Air sampling stations will be located based on generally prevailing wind conditions. These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

5.4 Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors off-site. Specific odor control methods to be used on a routine basis are described below. If nuisance odors are identified at the Site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the associated Site Owner, and any measures that are implemented will be documented.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and (f) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

5.5 Dust Control Plan

Particulate monitoring will be performed along the downwind perimeter of the Site during subgrade excavation, grading, and handling activities in accordance with the requirements for community air monitoring at remediation sites as established by the NYSDOH and NYSDEC. Accordingly, it follows procedures and practices outlined under DER-10 Appendix 1A (NYSDOH's Generic Community Air Monitoring Plan) and Appendix 1B (Fugitive Dust and Particulate Monitoring) both included as Appendix B-3.

Dust suppression techniques will be employed as necessary to mitigate fugitive dust from non-vegetated or disturbed soil/fill during post-remediation construction and redevelopment.

A dust suppression plan that addresses dust management during intrusive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.
- Hauling materials in properly tarped containers or vehicles.
- Restricting vehicle speeds on-site.
- Covering or proof-rolling excavated areas and materials after excavation activity ceases.
- Reducing the excavation size and/or number of excavations.

All reasonable attempts will be made to keep visible and/or fugitive dust to a minimum.

5.6 Other Nuisances

A plan will be developed and used by the contractor for all remedial work to ensure compliance with local noise control ordinances. At a minimum, this shall include limiting construction to typical daylight work hours.

6.0 REFERENCES

1. New York State Department of Environmental Conservation. *DEC Program Policy DER-10/Technical Guidance for Site Investigation and Remediation.* May 3, 2010.
2. TurnKey Environmental Restoration, LLC in affiliation with Benchmark Environmental Engineering & Science, PLLC, *Site-Wide Health and Safety Plan (HASP). Tecumseh Redevelopment Site, Lackawanna, NY*. April 2010.

TABLES

TABLE B-1

CRITERIA FOR IMPORTED SOILS

Site Management Plan
Phase III Business Park
Lackawanna, New York

Parameter	Cover Soil Criteria[1]
Volatile Organic Compounds (mg/kg)	
1,1,1-Trichloroethane	0.68
1,1-Dichloroethane	0.27
1,1-Dichloroethene	0.33
1,2-Dichlorobenzene	1.1
1,2-Dichloroethane	0.02
1,2-Dichloroethene(cis)	0.25
1,2-Dichloroethene(trans)	0.19
1,3-Dichlorobenzene	2.4
1,4-Dichlorobenzene	1.8
1,4-Dioxane	0.1
Acetone	0.05
Benzene	0.06
Butylbenzene	12
Carbon tetrachloride	0.76
Chlorobenzene	1.1
Chloroform	0.37
Ethylbenzene	1
Hexachlorobenzene	3.2
Methyl ethyl ketone	0.12
Methyl tert-butyl ether	0.93
Methylene chloride	0.05
Propylbenzene-n	3.9
Sec-Butylbenzene	11
Tert-Butylbenzene	5.9
Tetrachloroethene	1.3
Toluene	0.7
Trichloroethene	0.47

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE B-1

CRITERIA FOR IMPORTED SOILS

Site Management Plan
Phase III Business Park
Lackawanna, New York

Parameter	Cover Soil Criteria[1]
Volatile Organic Compounds (mg/kg)	
Trimethylbenzene-1,2,4	3.6
Trimethylbenzene-1,3,5	8.4
Vinyl chloride	0.02
Xylene (mixed)	1.6
Semi-Volatile Organic Compounds (mg/kg)	
Acenaphthene	98
Acenaphthylene	107
Anthracene	500
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1.7
Benzo(g,h,i)perylene	500
Benzo(k)fluoranthene	1.7
Chrysene	1
Dibenz(a,h)anthracene	0.56
Fluoranthene	500
Fluorene	386
Indeno(1,2,3-cd)pyrene	5.6
m-Cresol(s)	0.33
Naphthalene	12
o-Cresol(s)	0.33
p-Cresol(s)	0.33
Pentachlorophenol	0.8
Phenanthrene	500
Phenol	0.33
Pyrene	500

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE B-1

CRITERIA FOR IMPORTED SOILS

Site Management Plan
Phase III Business Park
Lackawanna, New York

Parameter	Cover Soil Criteria[1]
Metals (mg/kg)	
Arsenic	16
Barium	400
Beryllium	47
Cadmium	7.5
Chromium, Hexavalent[2]	19
Chromium, Trivalent[2]	1500
Copper	270
Cyanide	27
Lead	450
Manganese	2000
Mercury (total)	0.73
Nickel	130
Selenium	4
Silver	8.3
Zinc	2480
PCBs/Pesticides (mg/kg)	
2,4,5-TP Acid (Silvex)	3.8
4,4'-DDE	17
4,4'-DDT	47
4,4'-DDD	14
Aldrin	0.19
Alpha-BHC	0.002
Beta-BHC	0.009
Chlordane (alpha)	2.9
Delta-BHC	0.25
Dibenzofuran	210
Dieldrin	0.1
Endosulfan I	102

TABLE B-1

CRITERIA FOR IMPORTED SOILS

Site Management Plan
Phase III Business Park
Lackawanna, New York

Parameter	Cover Soil Criteria[1]
PCBs/Pesticides (mg/kg)	
Endosulfan II	102
Endosulfan sulfate	200
Endrin	0.06
Heptachlor	0.38
Lindane	0.1
Polychlorinated biphenyls	1

Notes:

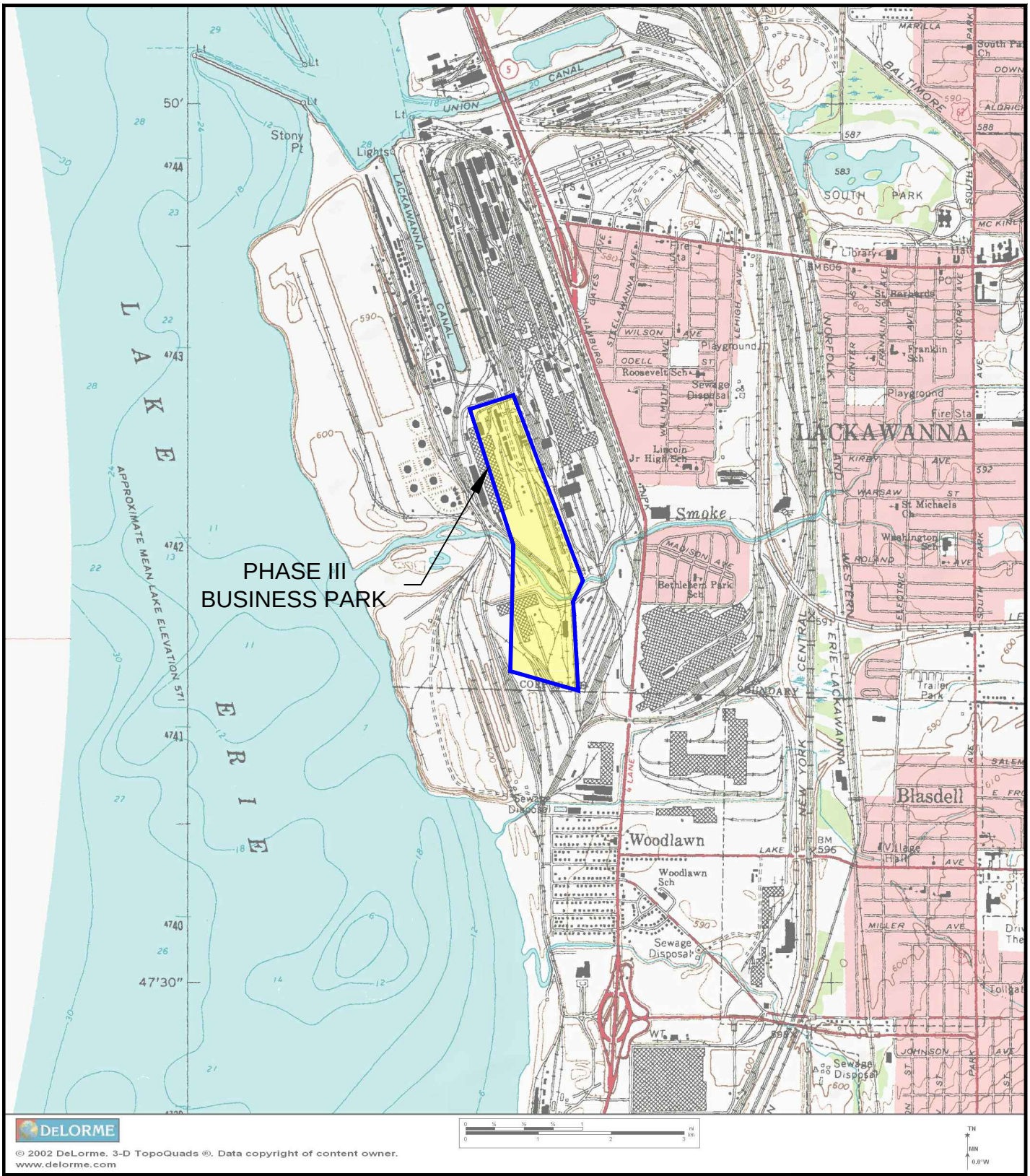
[1] Soil criteria are lesser of concentrations protective of groundwater or commercial health-based soil cleanup objectives per 6 NYCRR 375-6.8(b).

[2] The SCO for Hexavalent or Trivalent Chromium is considered to be met if the analysis for the total species of this contaminant is below the specific SCO for Hexavalent Chromium.

FIGURES

F:\CAD\TurnKey\Tecumseh Redevelopment\Brownfield Cleanup Program (BCP)\Phase III Parcel\Site Management Plan\Figure 1; Site Location and Vicinity Map.dwg

FIGURE 1



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TurnKey Environmental Restoration, LLC
2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: 0071-012-322

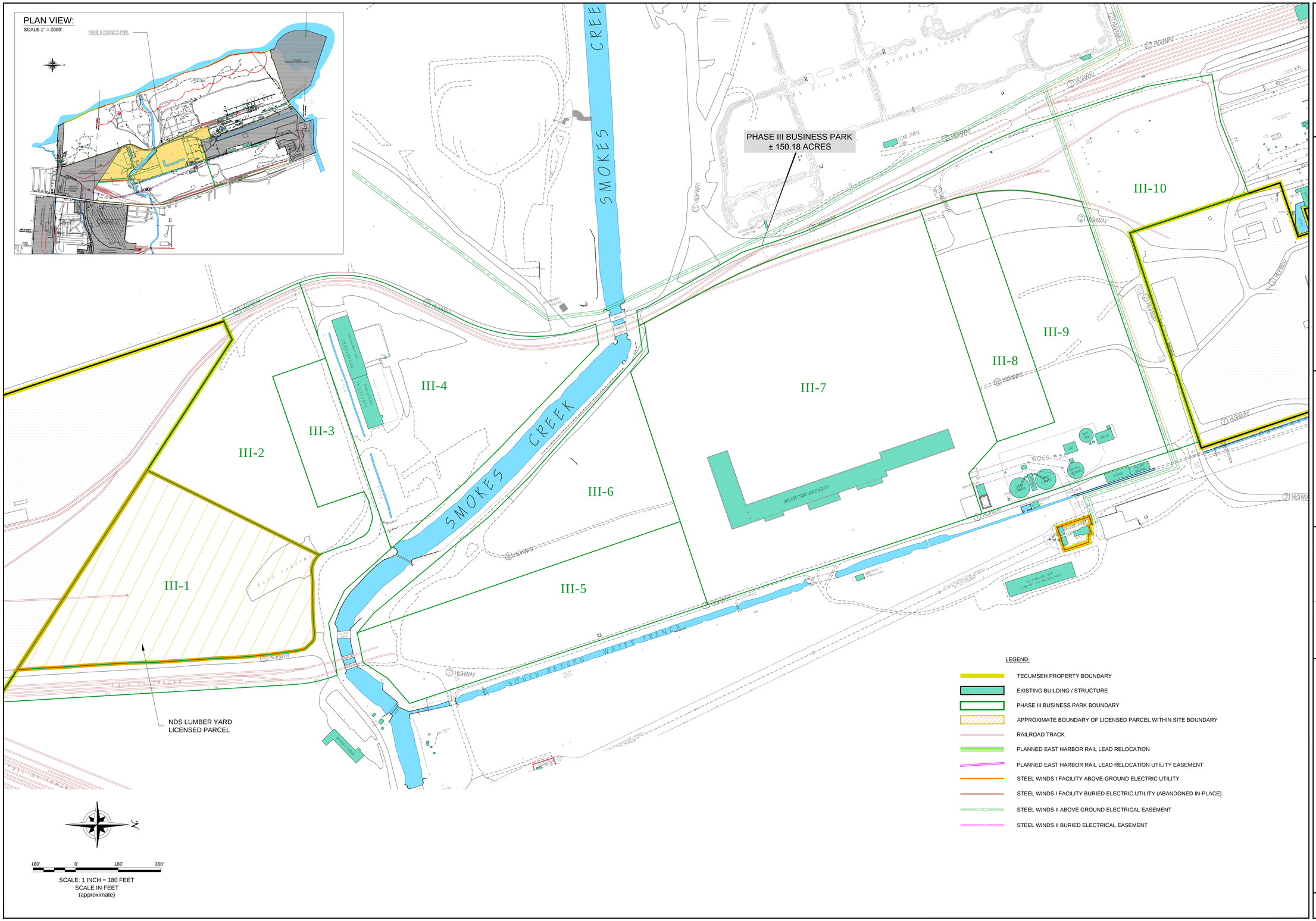
DATE: MAY 2012

DRAFTED BY: JCT

SITE LOCATION & VICINITY MAP

SITE MANAGEMENT PLAN

PHASE III BUSINESS PARK
LACKAWANNA, NEW YORK



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JOB NO.: 0071-012-322

REVISIONS

NO.	BY	DATE	REMARKS

SEAL

DRAWN BY: BCH (Rev. HAA)
DATE: MAY 2013
CHECKED BY:
APPROVED BY:

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SITE DELINEATION MAP

SITE MANAGEMENT PLAN
PHASE III BUSINESS PARK
LACKAWANNA, NEW YORK

FIGURE 2

APPENDIX B-1

SPDES GENERAL PERMIT GP-0-10-001
NOTICE OF INTENT

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

from

CONSTRUCTION ACTIVITY

Permit No. GP-0-10-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70
of the Environmental Conservation Law

Effective Date: January 29, 2010 Expiration Date: January 28, 2015

William R. Adriance
Chief Permit Administrator

William R. Adriance — January 28, 2010
Authorized Signature — Date

Address: NYS DEC
Div. Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York's *State Pollutant Discharge Elimination System ("SPDES")* is a NPDES-approved program with permits issued in accordance with the *Environmental Conservation Law ("ECL").*

This general permit ("permit") is issued pursuant to Article 17, Titles 7, 8 and Article 70 of the ECL. An *owner or operator* may obtain coverage under this permit by submitting a Notice of Intent ("NOI") to the Department. Copies of this permit and the NOI for New York are available by calling (518) 402-8109 or at any New York State Department of Environmental Conservation ("the Department") regional office (see Appendix G).They are also available on the Department's website at:

http://www.dec.ny.gov/

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a point source and therefore, pursuant to Article 17-0505 of the ECL, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. They cannot wait until there is an actual *discharge* from the construction site to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES

FROM CONSTRUCTION ACTIVITIES

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Part I. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application - This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land.

B. Maintaining Water Quality - It shall be a violation of this permit and the *ECL* for any *discharge* to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

C. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph D. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater discharges from *construction activities*.

(Part I. C)

3. Notwithstanding paragraphs C.1 and C.2 above, the following non-stormwater *discharges* may be authorized by this permit: discharges from fire fighting activities; fire hydrant flushings; waters to which cleansers or other components have not been added that are used to wash vehicles or control dust in accordance with the SWPPP, routine external building washdown which does not use detergents; pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; uncontaminated groundwater or spring water; uncontaminated discharges from construction site de-watering operations; and foundation or footing drains where flows are not contaminated with process materials such as solvents. For those entities required to obtain coverage under this permit, and who discharge as noted in this paragraph, and with the exception of flows from fire fighting activities, these discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with water quality standards in Part I.B.

D. <u>Activities Which Are Ineligible for Coverage Under This General Permit</u> - All of the following are **<u>not</u>** authorized by this permit:

1. *Discharges* after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharges* that are mixed with sources of non-stormwater other than those expressly authorized under subsection C.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII, subparagraph K of this permit;

4. *Discharges* from *construction activities* that adversely affect a listed, or proposed to be listed, endangered or threatened species, or its critical habitat;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects that:

    a. are tributary to waters of the state classified as AA or AA-s; and

(Part I. D. 6)

b. disturb one or more acres of land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey for the County in which the disturbance will occur.

7. *Construction activities* for linear transportation projects and linear utility projects that:
   a. are tributary to waters of the state classified as AA or AA-s; and

   b. disturb two or more acres of land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey for the County in which the disturbance will occur.

8. *Construction activities* that adversely affect a property that is listed or is eligible for listing on the State or National Register of Historic Places (Note: includes Archeological sites), unless there are written agreements in place with the NYS Office of Parks, Recreation and Historic Preservation (OPRHP) or other governmental agencies to mitigate the effects, or there are local land use approvals evidencing the same.

Part II. OBTAINING PERMIT COVERAGE

A. Notice of Intent (NOI) Submittal

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a *regulated, traditional land use control MS4* must first develop a SWPPP in accordance with all applicable requirements of this permit and then submit a completed NOI form to the address below in order to be authorized to *discharge* under this permit. The NOI form shall be one which is associated with this permit, signed in accordance with Part VII.H. of this permit.

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first develop a SWPPP in accordance with all applicable requirements of this permit and then have its SWPPP reviewed and accepted by the *MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the "MS4 SWPPP Acceptance" form signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4*, or by a duly authorized representative of that person, and then submit that form along with the NOI to the address referenced under "Notice of Intent (NOI) Submittal".

(Part II. A.2)

This requirement does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.E. (Change of Owner or Operator).

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

B. <u>Permit Authorization</u>

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied <u>all</u> of the following criteria:

    a. project review pursuant to the State Environmental Quality Review Act (SEQRA) have been satisfied, when SEQRA is applicable,

    b. where required, all necessary Department permits subject to the *Uniform Procedures Act (UPA)* (see 6 NYCRR Part 621) have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits must submit a preliminary SWPPP to the appropriate DEC Regional Office in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

    c. the final SWPPP has been prepared, and

    d. an NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.B.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

(Part II. B. 3)

a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:

i. Five (5) business days from the date the Department receives a complete NOI for *construction activities* with a SWPPP that has been prepared in conformance with the technical standards referenced in Parts III.B.1, 2 and/or 3, or

ii. Sixty (60) business days from the date the Department receives a complete NOI for *construction activities* with a SWPPP that has not been prepared in conformance with the technical standards referenced in Parts III.B.1, 2 or 3.

b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

i. Five (5) business days from the date the Department receives a complete NOI and signed "MS4 SWPPP Acceptance" form,

4. The Department may suspend or deny an *owner's or operator's* coverage under this permit if the Department determines that the SWPPP does not meet the permit requirements.

5. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department.

C. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination (NOT) has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-10-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form and inspection reports at the construction site until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department.

(Part II. C. 2)

The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the MS4 (provided the MS4 is not the *owner or operator* of the construction activity). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

    a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

    b. In areas where soil disturbance activity has been temporarily or permanently ceased, temporary and/or permanent soil stabilization measures shall be installed and/or implemented within seven (7) days from the date the soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control.

    c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

    d. The *owner or operator* shall install any additional site specific practices needed to protect water quality.

    e. The *owner or operator* shall include the requirements above in their SWPPP.

4. The Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements.

(Part II. C)

5. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4,* the *owner or operator* shall notify the *MS4* in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *MS4* prior to commencing construction of the post-construction stormwater management practice.

D. Permit Coverage for Discharges Authorized Under GP-0-08-001

1. Upon renewal of SPDES General Permit for Stormwater Discharges from Construction Activity (Permit No. GP-0-08-001), a*n owner or operator* of *construction activity* with coverage under GP-0-08-001, as of the effective date of GP-0-10-001, shall be authorized to *discharge* in accordance with GP-0-10-001 unless otherwise notified by the Department.

E. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.A.1.. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

   Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or operator* was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*.

(Part III. A)

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the pollutants in stormwater discharges and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP:

    a. whenever the current provisions prove to be ineffective in minimizing pollutants in stormwater *discharges* from the site;

    b. whenever there is a change in design, construction, or operation at the construction site that has or could have an effect on the discharge of pollutants; and

    c. to address issues or deficiencies identified during an inspection by the *qualified inspector*, the Department or other regulatory authority.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP.

(Part III. A. 6)

The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

> "I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings. "

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the construction site. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

8. The SWPPP must include documentation supporting the determination of permit eligibility with regard to Part I.D.8. (Historic Places or Archeological Resource). At a minimum, the supporting documentation shall include the following:

(Part III. A. 8)

a. Information on whether the stormwater discharge or *construction activities* would have an effect on a property (historic or archeological resource) that is listed or eligible for listing on the State or National Register of Historic Places;

b. Results of historic resources screening determinations conducted. Information regarding the location of historic places listed, or eligible for listing, on the State or National Registers of Historic Places and areas of archeological sensitivity that may indicate the need for a survey can be obtained online by viewing the New York State Office of Parks, Recreation and Historic Places (OPRHP) online resources located on their web site at: http://nysparks.state.ny.us/shpo/online-tools/ (using The Geographic Information System for Archeology and National Register). OPRHP can also be contacted at: NYS OPRHP, State Historic Preservation Office, Peebles Island Resources Center, P.O. Box 189, Waterford, NY 12188-0189, phone: 518-237-8643;

c. A description of measures necessary to avoid or minimize adverse impacts on places listed, or eligible for listing, on the State or National Register of Historic Places. If the *owner or operator* fails to describe and implement such measures, the stormwater *discharge* is ineligible for coverage under this permit; and

d. Where adverse effects may occur, any written agreements in place with OPRHP or other governmental agency to mitigate those effects, or local land use approvals evidencing the same.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control. Where erosion and sediment control practices are not designed in conformance with this technical standard, the *owner or operator* must demonstrate equivalence to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

    a. Background information about the scope of the project, including the location, type and size of project;

(Part III. B. 1)

b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s), wetlands and drainage patterns that could be affected by the construction activity; existing and final slopes; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater discharge(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of construction activities, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each construction activity that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of final stabilization;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

(Part III. B. 1)

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6., to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection schedule shall be in accordance with the requirements in the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a pollutant source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the construction site; and

l. Identification of any elements of the design that are not in conformance with the requirements in the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is equivalent to the technical standards.

2. Post-construction stormwater management practice component - All construction projects identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the most current version of the technical standard, New York State Stormwater Management Design Manual ("Design Manual"). If the Design Manual is revised during the term of this permit, an *owner or operator* must begin using the revised version of the Design Manual to prepare their SWPPP six (6) months from the final revision date of the Design Manual.

   Where post-construction stormwater management practices are not designed in conformance with this technical standard, the *owner or operator* must demonstrate equivalence to the technical standard.

   At a minimum, the post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project;

(Part III. B. 2)

b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. The dimensions, material specifications and installation details for each post-construction stormwater management practice;

d. Identification of any elements of the design that are not in conformance with the Design Manual. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is equivalent to the technical standards;

e. A hydrologic and hydraulic analysis for all structural components of the stormwater management control system;

f. A detailed summary (including calculations) of the sizing criteria that was used to design all post-construction stormwater management practices. At a minimum, the summary shall address the required design criteria from the applicable chapter of the Design Manual; including the identification of and justification for any deviations from the Design Manual, and identification of any design criteria that are not required based on the design criteria or waiver criteria included in the Design Manual; and

g. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.g. above.

(Part III. C)

C. <u>Required SWPPP Components by Project Type</u> - Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3.

Part IV. <u>INSPECTION AND MAINTENANCE REQUIREMENTS</u>

A. <u>General Construction Site Inspection and Maintenance Requirements</u>

1. The *owner or operator* must ensure that all erosion and sediment control practices and all post-construction stormwater management practices identified in the SWPPP are maintained in effective operating condition at all times.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York, or protect the public health and safety and/or the environment.

B. <u>Owner or Operator Maintenance Inspection Requirements</u>

1. The *owner or operator* shall inspect, in accordance with the requirements in the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, the erosion and sediment controls identified in the SWPPP to ensure that they are being maintained in effective operating condition at all times.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the *owner or operator* can stop conducting the maintenance inspections. The *owner or operator* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *owner or operator* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* <u>and</u> all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

(Part IV. C)

C. <u>Qualified Inspector Inspection Requirements</u> - The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- Licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- Registered Landscape Architect, or
- Someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, <u>with the exception of</u>:

    a. the construction of a single family residential subdivision with 25% or less impervious cover at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is <u>not</u> located in one of the watersheds listed in Appendix C and <u>not</u> directly discharging to one of the 303(d) segments listed in Appendix E;

    b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is <u>not</u> located in one of the watersheds listed in Appendix C and <u>not</u> directly discharging to one of the 303(d) segments listed in Appendix E;

    c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

    d. construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

    a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

(Part IV. C. 2)

b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.C.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the Regional Office stormwater contact person (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the MS4 (provided the MS4 is not the *owner or operator* of the construction activity) in writing prior to reducing the frequency of inspections.

d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the Regional Office stormwater contact person (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the MS4 (provided the MS4 is not the *owner or operator* of the construction activity). in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization*, and all temporary, structural erosion and sediment control measures have been removed*;* and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.A.1..

(Part IV. C. 3)

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization*, all points of discharge to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site, and all points of discharge from the construction site.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

    a. Date and time of inspection;

    b. Name and title of person(s) performing inspection;

    c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

    d. A description of the condition of the runoff at all points of discharge from the construction site. This shall include identification of any *discharges* of sediment from the construction site. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

    e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

    f. Identification of all erosion and sediment control practices that need repair or maintenance;

    g. Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

    h. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s); and

k. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.C.2., the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.A.1. The NOT form shall be one which is associated with this general permit, signed in accordance with Part VII.H.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

(Part V. A. 2)

a. Total project completion - All construction activity identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.E.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the NOT, certify that all disturbed areas have achieved *final stabilization;* and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall also have the MS4 sign the "MS4 Acceptance" statement on the NOT. The *owner or operator* shall have the principal executive officer, ranking elected official, or duly authorized representative from the *regulated, traditional land use control MS4*, sign the "MS4 Acceptance" statement. The MS4 official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The MS4 can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector's* final site inspection certification(s) required in Part V.3.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

(Part V. A. 5)

a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has modified their deed of record to include a deed covenant that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, college, university), or government agency or authority, the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION OF RECORDS

A. Record Retention - The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the site achieves *final stabilization*. This period may be extended by the Department, in its sole discretion, at any time upon written notification.

B. Addresses - With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.A.1), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate Department Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply - The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied.

(Part VII. A)

The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

B. Continuation of the Expired General Permit - This permit expires five (5) years from the effective date. However, coverage may be obtained under the expired general permit, which will continue in force and effect, until a new general permit is issued. Unless otherwise notified by the Department in writing, an *owner or operator* seeking authorization under the new general permit must submit a new NOI in accordance with the terms of such new general permit.

C. Enforcement - Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense - It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate - The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to minimize or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information - The *owner or operator* shall make available to the Department for review and copying or furnish to the Department within five (5) business days of receipt of a Department request for such information, any information requested for the purpose of determining compliance with this permit. This can include, but is not limited to, the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form, executed maintenance agreement, and inspection reports. Failure to provide information requested by the Department within the request timeframe shall be a violation of this permit.

The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review the NOI, SWPPP or inspection reports. Copying of documents will be done at the requester's expense.

G. Other Information - When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any other report, or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s)

changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or impervious area), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. <u>Signatory Requirements</u>

1. All NOIs and NOTs shall be signed as follows:

    a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

        i. a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

        ii. the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

    b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

    c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

        i. the chief executive officer of the agency, or

(Part VII. H. 1. c)

ii. a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described in Part VII.H.1.;

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

   c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. <u>Property Rights</u> - The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity.*

J. <u>Severability</u> - The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

(Part VII. K)
K. <u>Denial of Coverage Under This Permit</u>

1. At its sole discretion, the Department may require any *owner or operator* authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the *owner or operator* to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from *owner or operator* receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Regional Water Engineer, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. Any *owner or operator* authorized by this permit may request to be excluded from the coverage under this permit by applying for an individual permit or another general permit. In such cases, the *owner or operator* shall submit an individual application or an alternative general permit application in accordance with the requirements of this general permit, 40 CFR 122.26(c)(1)(ii) and 6 NYCRR Part 621, with reasons supporting the request, to the Department at the address for the appropriate Department Office (see addresses in Appendix F).The request may be granted by issuance of an individual permit or another general permit at the discretion of the Department.

3. When an individual SPDES permit is issued to a discharger authorized to discharge under a general SPDES permit for the same discharge(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. <u>Proper Operation and Maintenance</u> - The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. <u>Inspection and Entry</u> - The *owner or operator* shall allow the Department or an authorized representative of EPA, the State, or, in the case of a construction site which discharges through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

(Part VII. M)

1. Enter upon the *owner's or operator's* premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment).

N. Permit Actions - At the Department's sole discretion, this permit may, at any time, be modified, suspended, revoked, or renewed. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions - Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with *construction activity* covered by this permit, the *owner or operator* of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports – Article 17 of the ECL provides for a civil penalty of $37,500 per day per violation of this permit. Articles 175 and 210 of the New York State Penal Law provide for a criminal penalty of a fine and/or imprisonment for falsifying forms and reports required by this permit.

R. Other Permits – Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A

Definitions

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "Construction Activity(ies)" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a construction site by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a construction site to a separate storm sewer system and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or point source.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 authorizing a category of discharges.

Groundwater - means waters in the saturated zone. The saturated zone is a subsurface zone in

which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct construction activities are occurring, or will occur, under one plan. The term "plan" in "larger common plan of development or sale" is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) application, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that construction activities may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same "common plan" is not concurrently being disturbed.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

i. Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State*;*
ii. Designed or used for collecting or conveying stormwater;
iii. Which is not a *combined sewer*; and
iv. Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from construction activity.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the construction activity is occurring; and/or an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in Parts 700 et seq of this Title.

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics in order to prepare a SWPPP that conforms to the Department's technical standard. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is required to gain coverage under New York State DEC's SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s).

Routine Maintenance Activity - means construction activity that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Stream bank restoration projects (does not include the placement of spoil material),
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that makes the transition between the road shoulder and the ditch or embankment,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or embankment,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface or underground waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet water quality standards, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for point source discharges, load allocations (LAs) for nonpoint sources, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* will be responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B

Required SWPPP Components by Project Type

Table 1
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C and not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other agricultural building, silo, stock yard or pen.

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Bike paths and trails
- Sidewalk construction projects that are not part of a road/ highway construction or reconstruction project
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics
- Spoil areas that will be covered with vegetation
- Land clearing and grading for the purposes of creating vegetated open space (i.e. recreational parks, lawns, meadows, fields), excluding projects that *alter hydrology from pre to post development* conditions
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of less than five acres and construction activities that include the construction or reconstruction of impervious area

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

- All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land.

Table 2
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other agricultural building(e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional, includes hospitals, prisons, schools and colleges
- Industrial facilities, includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's and water treatment plants
- Office complexes
- Sports complexes
- Racetracks, includes racetracks with earthen (dirt) surface
- Road construction or reconstruction
- Parking lot construction or reconstruction
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover*, and constructed as part of an over-head electric transmission line project , wind-power project, cell tower project, oil or gas well drilling project or other linear utility project
- All other construction activities that include the construction or reconstruction of *impervious area* and *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C

Watersheds Where Enhanced Phosphorus Removal Standards Are Required

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4

Figure 1 - New York City Watershed East of the Hudson

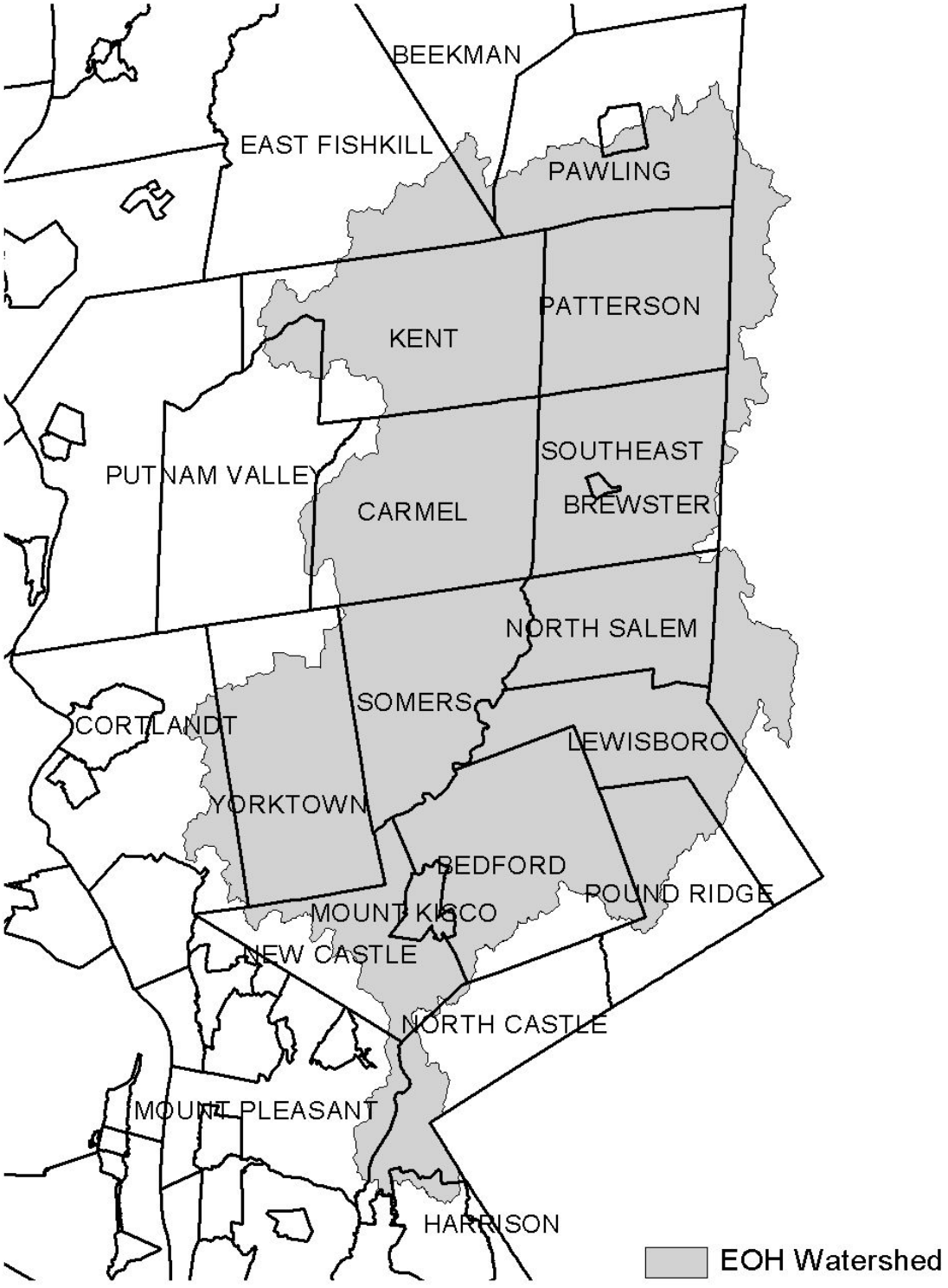
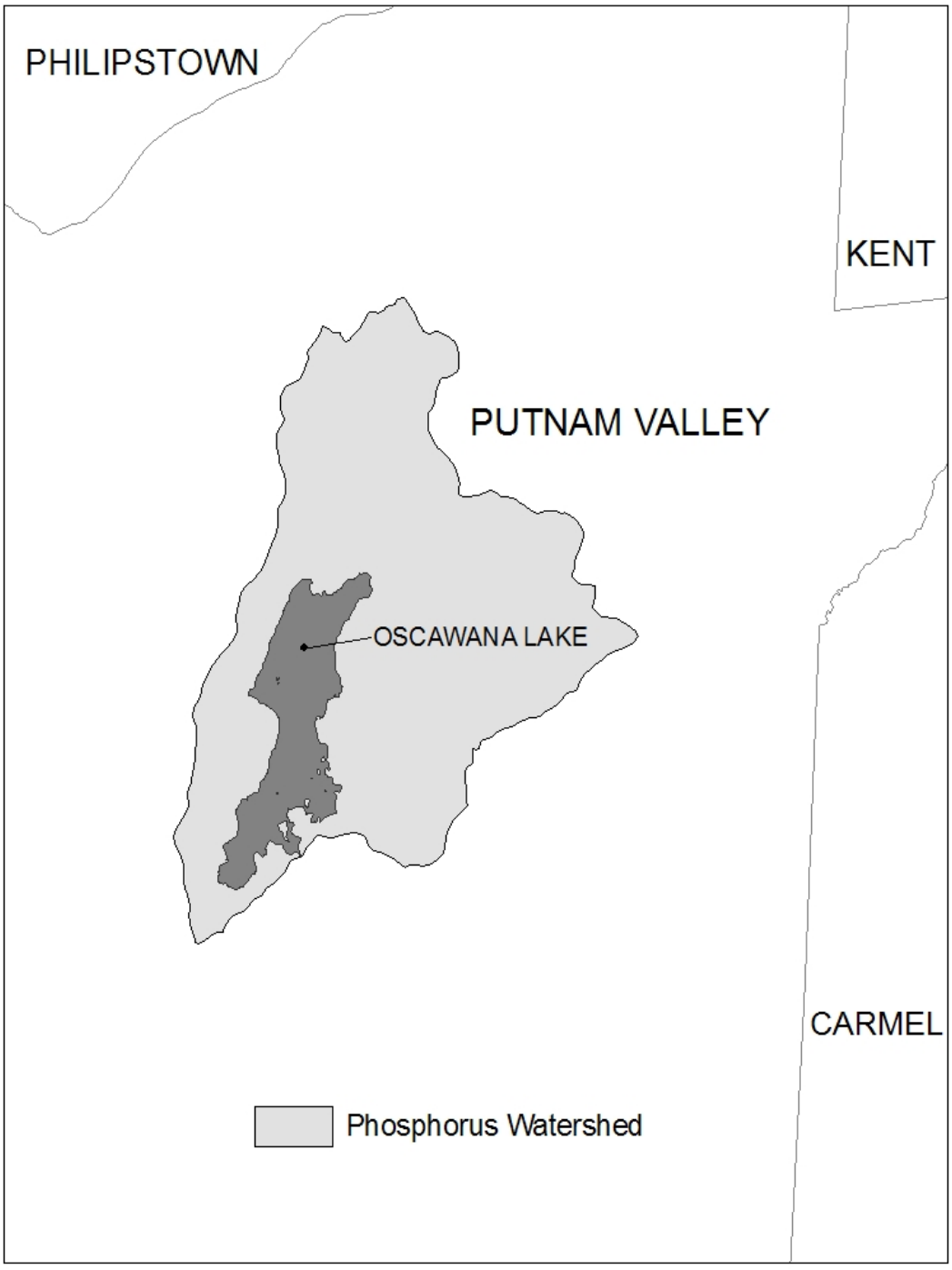


Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

Figure 4 - Oscawana Lake Watershed



APPENDIX D

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C

APPENDIX E

List of 303(d) segments impaired by pollutants related to construction activity (e.g. silt, sediment or nutrients). *Owners or operators* of single family home and single family residential subdivision construction activities that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the most current version of the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

COUNTY	WATERBODY
Albany	Ann Lee (Shakers) Pond, Stump Pond
Albany	Basic Creek Reservoir
Bronx	Van Cortlandt Lake
Broome	Whitney Point Lake/Reservoir
Broome	Beaver Lake
Broome	White Birch Lake
Chautauqua	Chautauqua Lake, North
Chautauqua	Chautauqua Lake, South
Chautauqua	Bear Lake
Chautauqua	Chadakoin River and tribs
Chautauqua	Lower Cassadaga Lake
Chautauqua	Middle Cassadaga Lake
Chautauqua	Findley Lake
Clinton	Great Chazy River, Lower, Main Stem
Columbia	Kinderhook Lake
Columbia	Robinson Pond
Dutchess	Hillside Lake
Dutchess	Wappinger Lakes
Dutchess	Fall Kill and tribs
Dutchess	Rudd Pond
Erie	Rush Creek and tribs
Erie	Ellicott Creek, Lower, and tribs
Erie	Beeman Creek and tribs
Erie	Murder Creek, Lower, and tribs
Erie	South Branch Smoke Cr, Lower, and tribs
Erie	Little Sister Creek, Lower, and tribs
Essex	Lake George (primary county listed as Warren)
Genesee	Black Creek, Upper, and minor tribs
Genesee	Tonawanda Creek, Middle, Main Stem
Genesee	Tonawanda Creek, Upper, and minor tribs
Genesee	Little Tonawanda Creek, Lower, and tribs
Genesee	Oak Orchard Creek, Upper, and tribs
Genesee	Bowen Brook and tribs
Genesee	Bigelow Creek and tribs
Greene	Schoharie Reservoir
Greene	Sleepy Hollow Lake
Herkimer	Steele Creek tribs
Kings	Hendrix Creek
Lewis	Mill Creek/South Branch and tribs
Livingston	Conesus Lake
Livingston	Jaycox Creek and tribs
Livingston	Mill Creek and minor tribs
Monroe	Genesee River, Lower, Main Stem
Monroe	Genesee River, Middle, Main Stem
Monroe	Black Creek, Lower, and minor tribs
Monroe	Buck Pond
Monroe	Long Pond
Monroe	Cranberry Pond
Monroe	Mill Creek and tribs
Monroe	Shipbuilders Creek and tribs
Monroe	Minor tribs to Irondequoit Bay
Monroe	Thomas Creek/White Brook and tribs
Nassau	Glen Cove Creek, Lower, and tribs
Nassau	LI Tribs (fresh) to East Bay
Nassau	East Meadow Brook, Upper, and tribs
Nassau	Hempstead Bay
Nassau	Hempstead Lake
Nassau	Grant Park Pond
Niagara	Bergholtz Creek and tribs
Oneida	Ballou, Nail Creeks
Onondaga	Ley Creek and tribs
Onondaga	Onondaga Creek, Lower and tribs
Onondaga	Onondaga creek, Middle and tribs
Onondaga	Onondaga Creek, Upper, and minor tribs
Onondaga	Harbor Brook, Lower, and tribs
Onondaga	Ninemile Creek, Lower, and tribs
Onondaga	Minor tribs to Onondaga Lake
Ontario	Honeoye Lake
Ontario	Hemlock Lake Outlet and minor tribs
Ontario	Great Brook and minor tribs
Oswego	Lake Neatahwanta
Putnam	Oscawana Lake
Putnam	Lake Carmel
Queens	Jamaica Bay, Eastern, and tribs (Queens)
Queens	Bergen Basin
Queens	Shellbank Basin
Rensselaer	Snyders Lake
Richmond	Grasmere, Arbutus and Wolfes Lakes
Saratoga	Dwaas Kill and tribs
Saratoga	Tribs to Lake Lonely
Saratoga	Lake Lonely
Saratoga	Schuyler Creek and tribs
Schenectady	Collins Lake

APPENDIX E

List of 303(d) segments impaired by pollutants related to construction activity, cont'd.

COUNTY	WATERBODY	COUNTY	WATERBODY
Schoharie	Engleville Pond		
Schoharie	Summit Lake		
St. Lawrence	Black Lake Outlet/Black Lake		
Steuben	Lake Salubria		
Steuben	Smith Pond		
Suffolk	Millers Pond		
Suffolk	Mattituck (Marratooka) Pond		
Suffolk	Tidal tribs to West Moriches Bay		
Suffolk	Canaan Lake		
Suffolk	Lake Ronkonkoma		
Tompkins	Cayuga Lake, Southern End		
Tompkins	Owasco Inlet, Upper, and tribs		
Ulster	Ashokan Reservoir		
Ulster	Esopus Creek, Upper, and minor tribs		
Warren	Lake George		
Warren	Tribs to L.George, Village of L George		
Warren	Huddle/Finkle Brooks and tribs		
Warren	Indian Brook and tribs		
Warren	Hague Brook and tribs		
Washington	Tribs to L.George, East Shore of Lake George		
Washington	Cossayuna Lake		
Wayne	Port Bay		
Wayne	Marbletown Creek and tribs		
Westchester	Peach Lake		
Westchester	Mamaroneck River, Lower		
Westchester	Mamaroneck River, Upper, and minor tribs		
Westchester	Sheldrake River and tribs		
Westchester	Blind Brook, Lower		
Westchester	Blind Brook, Upper, and tribs		
Westchester	Lake Lincolndale		
Westchester	Lake Meahaugh		
Wyoming	Java Lake		
Wyoming	Silver Lake		

Note: The list above identifies those waters from the final New York State "2008 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy", dated May 26, 2008, that are impaired by silt, sediment or nutrients.

APPENDIX F

LIST OF NYS DEC REGIONAL OFFICES

Region	COVERING THE FOLLOWING COUNTIES:	DIVISION OF ENVIRONMENTAL PERMITS (DEP) PERMIT ADMINISTRATORS	DIVISION OF WATER (DOW) WATER (SPDES) PROGRAM
1	NASSAU AND SUFFOLK	50 CIRCLE ROAD STONY BROOK, NY 11790 TEL. (631) 444-0365	50 CIRCLE ROAD STONY BROOK, NY 11790-3409 TEL. (631) 444-0405
2	BRONX, KINGS, NEW YORK, QUEENS AND RICHMOND	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4997	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4933
3	DUTCHESS, ORANGE, PUTNAM, ROCKLAND, SULLIVAN, ULSTER AND WESTCHESTER	21 SOUTH PUTT CORNERS ROAD NEW PALTZ, NY 12561-1696 TEL. (845) 256-3059	100 HILLSIDE AVENUE, SUITE 1W WHITE PLAINS, NY 10603 TEL. (914) 428 - 2505
4	ALBANY, COLUMBIA, DELAWARE, GREENE, MONTGOMERY, OTSEGO, RENSSELAER, SCHENECTADY AND SCHOHARIE	1150 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2069	1130 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2045
5	CLINTON, ESSEX, FRANKLIN, FULTON, HAMILTON, SARATOGA, WARREN AND WASHINGTON	1115 STATE ROUTE 86, PO BOX 296 RAY BROOK, NY 12977-0296 TEL. (518) 897-1234	232 GOLF COURSE ROAD, PO BOX 220 WARRENSBURG, NY 12885-0220 TEL. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROAD AVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVE. BUFFALO, NY 14203-2999 TEL. (716) 851-7070

1358331598

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR _____
(for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-10-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-
RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

Owner/Operator Contact Person First Name

Owner/Operator Mailing Address

City

State Zip -

Phone (Owner/Operator) - -

Fax (Owner/Operator) - -

Email (Owner/Operator)

FED TAX ID - (not required for individuals)

Project Site Information

Project/Site Name

Street Address (NOT P.O. BOX)

Side of Street
○ **North** ○ **South** ○ **East** ○ **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)

State N Y Zip - County DEC Region

Name of Nearest Cross Street

Distance to Nearest Cross Street (Feet)

Project In Relation to Cross Street
○ **North** ○ **South** ○ **East** ○ **West**

Tax Map Numbers
Section-Block-Parcel

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site in NYTM Units. To do this you **must** go to the NYSDEC Stormwater Interactive Map on the DEC website at:

www.dec.ny.gov/imsmaps/stormwater/viewer.htm

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located your project site, go to the tool boxes on the top and choose "i"(identify). Then click on the center of your site and a new window containing the X, Y coordinates in UTM will pop up. Transcribe these coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)

Y Coordinates (Northing) 4

2. What is the nature of this construction project?

○ **New Construction**

○ **Redevelopment with increase in imperviousness**

○ **Redevelopment with no increase in imperviousness**

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- ○ FOREST
- ○ PASTURE/OPEN LAND
- ○ CULTIVATED LAND
- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY
- ○ PARKING LOT
- ○ OTHER

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION — Number of Lots
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ MUNICIPAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY (water, sewer, gas, etc.)
- ○ PARKING LOT
- ○ CLEARING/GRADING ONLY
- ○ DEMOLITION, NO REDEVELOPMENT
- ○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
- ○ OTHER

***note: for gas well drilling, non-high volume hydraulic fractured wells only**

4. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law ? ○ **Yes** ○ **No**

5. Is this a project which does not require coverage under the General Permit (e.g. Project done under an Individual SPDES Permit, or department approved remediation)? ○ **Yes** ○ **No**

6. Is this property owned by a state authority, state agency, federal government or local government? ○ **Yes** ○ **No**

7. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area. Round to the nearest tenth of an acre.

Total Site Acreage	**Acreage To Be Disturbed**	**Existing Impervious Area Within Disturbed**	**Future Impervious Area Within Disturbed**
.	.	.	.

8. Do you plan to disturb more than 5 acres of soil at any one time? ○ **Yes** ○ **No**

9. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	**B**	**C**	**D**
%	%	%	%

10. Is this a phased project? ○ Yes ○ No

11. Enter the planned start and end dates of the disturbance activities

Start Date __/__/____ - End Date __/__/____

12. Identify the nearest, natural, surface waterbody(ies) to which construction site runoff will discharge.

Name

12a. Type of waterbody identified in Question 12?

- ○ Wetland / State Jurisdiction On Site (Answer 12b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 12b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ○ Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

12b. How was the wetland identified?

- ○ Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

13. Has the surface waterbody(ies) in question 12 been identified as a 303(d) segment in Appendix E of GP-0-10-001? ○ Yes ○ No

14. Is this project located in one of the Watersheds identified in Appendix C of GP-0-10-001? ○ Yes ○ No

15. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? **If no, skip question 16.** ○ Yes ○ No

16. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? **If Yes, what is the acreage to be disturbed?** ◯ **Yes** ◯ **No**

.

17. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ◯ **Yes** ◯ **No**

18. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ◯ **Yes** ◯ **No** ◯ **Unknown**

19. What is the name of the municipality/entity that owns the separate storm sewer system?

20. Does any runoff from the site enter a sewer classified as a Combined Sewer? ◯ **Yes** ◯ **No** ◯ **Unknown**

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book) ? ◯ **Yes** ◯ **No**

22. Does this construction activity require the development of a SWPPP that includes Water Quality and Quantity Control components (Post-Construction Stormwater Management Practices) **(If No, skip questions 23 and 27-35)** ◯ **Yes** ◯ **No**

23. Have the Water Quality and Quantity Control components of the SWPPP been developed in comformance with the current NYS Stormwater Management Design Manual ? ◯ **Yes** ◯ **No**

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ○ **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer

Contact Name (Last, Space, First)

Mailing Address

City

State Zip -

Phone - - Fax - -

Email

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-10-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name **MI**

Last Name

Signature

Date / /

25. Has a construction sequence schedule for the planned management practices been prepared? ○ Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ○ Check Dams
- ○ Construction Road Stabilization
- ○ Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ○ Silt Fence
- ○ Stabilized Construction Entrance
- ○ Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ○ Mulching
- ○ Protecting Vegetation
- ○ Recreation Area Improvement
- ○ Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ○ Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

Water Quality and Quantity Control

Important: Completion of Questions 27-35 is not required if response to Question 22 is No.

Post-Construction Stormwater Management Practices

27. Indicate **all** Stormwater Management Practice(s) that will be installed/constructed on this site:

Ponds
- ○ **Micropool Extended Detention (P-1)**
- ○ **Wet Pond (P-2)**
- ○ **Wet Extended Detention (P-3)**
- ○ **Multiple Pond System (P-4)**
- ○ **Pocket Pond (P-5)**

Filtering
- ○ **Surface Sand Filter (F-1)**
- ○ **Underground Sand Filter (F-2)**
- ○ **Perimeter Sand Filter (F-3)**
- ○ **Organic Filter (F-4)**
- ○ **Bioretention (F-5)**
- ○ **Other**

Alternative Practice
- ○ **Rain Garden**
- ○ **Cistern**
- ○ **Green Roof**
- ○ **Stormwater Planters**
- ○ **Permeable Paving (Modular Block)**

Wetlands
- ○ **Shallow Wetland (W-1)**
- ○ **Extended Detention Wetland (W-2)**
- ○ **Pond/Wetland System (W-3)**
- ○ **Pocket Wetland (W-4)**

Infiltration
- ○ **Infiltration Trench (I-1)**
- ○ **Infiltration Basin (I-2)**
- ○ **Dry Well (I-3)**
- ○ **Underground Infiltration System**

Open Channels
- ○ **Dry Swale (O-1)**
- ○ **Wet Swale (O-2)**

Verified Proprietary Practice
- ○ **Hydrodynamic**
- ○ **Wet Vault**
- ○ **Media Filter**

28. Describe other stormwater management practices not listed above or explain any deviations from the technical standards.

29. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ○ **Yes** ○ **No**

If Yes, Identify the entity responsible for the long term Operation and Maintenance

30. Provide the total water quality volume required and the total provided for the site.

WQv Required ☐☐☐.☐☐☐ **acre-feet**

WQv Provided ☐☐☐.☐☐☐ **acre-feet**

31. Provide the following Unified Stormwater Sizing Criteria for the site.

Total Channel Protection Storage Volume (CPv) - Extended detention of post-developed 1 year, 24 hour storm event

CPv Required ☐☐☐.☐☐☐ **acre-feet**

CPv Provided ☐☐☐.☐☐☐ **acre-feet**

31a. The need to provide for channel protection has been waived because:

○ **Site discharges directly to fourth order stream or larger**

Total Overbank Flood Control Criteria (Qp) - Peak discharge rate for the 10 year storm

Pre-Development ☐☐☐.☐☐☐ **CFS**

Post-development ☐☐☐.☐☐☐ **CFS**

Total Extreme Flood Control Criteria (Qf) - Peak discharge rate for the 100 year storm

Pre-Development ☐☐☐.☐☐☐ **CFS**

Post-development ☐☐☐.☐☐☐ **CFS**

31b. The need to provide for flood control has been waived because:

○ **Site discharges directly to fourth order stream or larger**

○ **Downstream analysis reveals that flood control is not required**

IMPORTANT: For questions 31 and 32, impervious area should be calculated considering the project site and all offsite areas that drain to the post-construction stormwater management practice(s). (Total Drainage Area = Project Site + Offsite areas)

32. Pre-Construction Impervious Area - As a percent of the Total Drainage Area enter the percentage of the existing impervious areas before construction begins. ☐☐☐%

33. Post-Construction Impervious Area - As a percent of the Total Drainage Area, enter the percentage of the future impervious areas that will be created/remain on the site after completion of construction. ☐☐☐%

34. Indicate the total number of post-construction stormwater management practices to be installed/constructed. ☐☐

35. Provide the total number of stormwater discharge points from the site. (include discharges to either surface waters or to separate storm sewer systems) ☐☐

36. Identify other DEC permits that are required for this project.

DEC Permits

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Other SPDES
- ○ Solid Waste
- ○ None
- ○ Other
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15

37. Does this project require a US Army Corps of Engineers Wetland Permit? ○ **Yes** ○ **No**
If Yes, Indicate Size of Impact. [ ][ ][ ][ ][ ].[ ]

38. Is this project subject to the requirements of a regulated, traditional land use control MS4? ○ **Yes** ○ **No**
(If No, skip question 39)

39. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ○ **Yes** ○ **No**

40. If this NOI is being submitted for the purpose of continuing coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. NYR[ ][ ][ ][ ][ ][ ]

Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name **MI**

Print Last Name

Owner/Operator Signature

Date [ ][ ] / [ ][ ] / [ ][ ][ ][ ]

APPENDIX B-2

EROSION AND SEDIMENT CONTROLS

New York State
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water

New York State Standards and Specifications for Erosion and Sediment Control

August 2005

New York State
Department of Environmental Conservation

George E. Pataki, Governor

STANDARD AND SPECIFICATIONS FOR TEMPORARY CRITICAL AREA PLANTINGS

Definition

Providing erosion control protection to a critical area for an interim period. A critical area is any disturbed, denuded slope subject to erosion.

Purpose

To provide temporary erosion and sediment control. Temporary control is achieved by covering all bare ground areas that exist as a result of construction or a natural event.

Conditions Where Practice Applies

Temporary seedings may be necessary on construction sites to protect an area, or section, where final grading is complete, when preparing for winter work shutdown, or to provide cover when permanent seedings are likely to fail due to mid-summer heat and drought. The intent is to provide temporary protective cover during temporary shutdown of construction and/or while waiting for optimal planting time.

Criteria

Water management practices must be installed as appropriate for site conditions. The area must be rough graded and slopes physically stable. Large debris and rocks are usually removed. Seedbed must be seeded within 24 hours of disturbance or scarification of the soil surface will be necessary prior to seeding.

Fertilizer or lime are not typically used for temporary seedings.

IF: Spring or summer or early fall, then seed the area with ryegrass (annual or perennial) at 30 lbs. per acre (Approximately 0.7 lb./1000 sq. ft. or use 1 lb./1000 sq. ft.).
IF: Late fall or early winter, then seed Certified 'Aroostook' winter rye (cereal rye) at 100 lbs. per acre (2.5 lbs./1000 sq. ft.).

Any seeding method may be used that will provide uniform application of seed to the area and result in relatively good soil to seed contact.

Mulch the area with hay or straw at 2 tons/acre (approx. 90 lbs./1000 sq. ft. or 2 bales). Quality of hay or straw mulch allowable will be determined based on long term use and visual concerns. Mulch anchoring will be required where wind or areas of concentrated water are of concern. Wood fiber hydromulch or other sprayable products approved for erosion control (nylon web or mesh) may be used if applied according to manufacturers' specification. Caution is advised when using nylon or other synthetic products. They may be difficult to remove prior to final seeding.

STANDARD AND SPECIFICATIONS FOR MULCHING

Definition

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface.

Purpose

The primary purpose is to provide initial erosion control while a seeding or shrub planting is establishing. Mulch will conserve moisture and modify the surface soil temperature and reduce fluctuation of both. Mulch will prevent soil surface crusting and aid in weed control. Mulch is also used alone for temporary stabilization in non-growing months.

Conditions Where Practice Applies

On soils subject to erosion and on new seedings and shrub plantings. Mulch is useful on soils with low infiltration rates by retarding runoff.

Criteria

Site preparation prior to mulching requires the installation of necessary erosion control or water management practices and drainage systems.

Slope, grade and smooth the site to fit needs of selected mulch products.

Remove all undesirable stones and other debris to meet the needs of the anticipated land use and maintenance required.

Apply mulch after soil amendments and planting is accomplished or simultaneously if hydroseeding is used.

Select appropriate mulch material and application rate or material needs. Determine local availability.

Select appropriate mulch anchoring material.

NOTE: The best combination for grass/legume establishment is straw (cereal grain) mulch applied at 2 ton/ acre (90 lbs./1000sq.ft.) and anchored with wood fiber mulch (hydromulch) at 500 – 750 lbs./acre (11 – 17 lbs./1000 sq. ft.). The wood fiber mulch must be applied through a hydroseeder immediately after mulching.

Table 3.7
Guide to Mulch Materials, Rates, and Uses

Mulch Material	Quality Standards	per 1000 Sq. Ft.	per Acre	Depth of Application	Remarks
Wood chips or shavings	Air-dried. Free of objectionable coarse material	500-900 lbs.	10-20 tons	2-7”	Used primarily around shrub and tree plantings and recreation trails to inhibit weed competition. Resistant to wind blowing. Decomposes slowly.
Wood fiber cellulose (partly digested wood fibers)	Made from natural wood usually with green dye and dispersing agent	50 lbs.	2,000 lbs.	—	Apply with hydromulcher. No tie down required. Less erosion control provided than 2 tons of hay or straw.
Gravel, Crushed Stone or Slag	Washed; Size 2B or 3A—1 1/2”	9 cu. yds.	405 cu. yds.	3”	Excellent mulch for short slopes and around plants and ornamentals. Use 2B where subject to traffic. (Approximately 2,000 lbs./cu. yd.). Frequently used over filter fabric for better weed control.
Hay or Straw	Air-dried; free of undesirable seeds & coarse materials	90-100 lbs. 2-3 bales	2 tons (100-120 bales)	cover about 90% surface	Use small grain straw where mulch is maintained for more than three months. Subject to wind blowing unless anchored. Most commonly used mulching material. Provides the best micro-environment for germinating seeds.
Jute twisted yarn	Undyed, unbleached plain weave. Warp 78 ends/yd., Weft 41 ends/ yd. 60-90 lbs./roll	48” x 50 yds. or 48” x 75 yds.	—	—	Use without additional mulch. Tie down as per manufacturers specifications. Good for center line of concentrated water flow.
Excelsior wood fiber mats	Interlocking web of excelsior fibers with photodegradable plastic netting	8” x 100” 2-sided plastic, 48” x 180” 1-sided plastic	—	—	Use without additional mulch. Excellent for seeding establishment. Tie down as per manufacturers specifications. Approximately 72 lbs./roll for excelsior with plastic on both sides. Use two sided plastic for centerline of waterways.
Compost	Up to 3” pieces, moderately to highly stable	3-9 cu. yds.	134-402 cu. yds.	1-3”	Coarser textured mulches may be more effective in reducing weed growth and wind erosion.
Straw or coconut fiber, or combination	Photodegradable plastic net on one or two sides	Most are 6.5 ft. x 3.5 ft.	81 rolls	—	Designed to tolerate higher velocity water flow, centerlines of waterways, 60 sq. yds. per roll.

Table 3.8
Mulch Anchoring Guide

Anchoring Method or Material	Kind of Mulch to be Anchored	How to Apply
1. Peg and Twine	Hay or straw	After mulching, divide areas into blocks approximately 1 sq. yd. in size. Drive 4-6 pegs per block to within 2" to 3" of soil surface. Secure mulch to surface by stretching twine between pegs in criss-cross pattern on each block. Secure twine around each peg with 2 or more tight turns. Drive pegs flush with soil. Driving stakes into ground tightens the twine.
2. Mulch netting	Hay or straw	Staple the light-weight paper, jute, wood fiber, or plastic nettings to soil surface according to manufacturer's recommendations. Should be biodegradable. Most products are not suitable for foot traffic.
3. Wood cellulose fiber	Hay or straw	Apply with hydroseeder immediately after mulching. Use 500 lbs. wood fiber per acre. Some products contain an adhesive material ("tackifier"), possibly advantageous.
4. Mulch anchoring tool	Hay or straw	Apply mulch and pull a mulch anchoring tool (blunt, straight discs) over mulch as near to the contour as possible. Mulch material should be "tucked" into soil surface about 3".
5. Tackifier	Hay or straw	Mix and apply polymeric and gum tackifiers according to manufacturer's instructions. Avoid application during rain. A 24-hour curing period and a soil temperature higher than 45^0 Fahrenheit are required.

STANDARD AND SPECIFICATIONS FOR TEMPORARY SWALE

Definition

A temporary excavated drainage way.

Purpose

The purpose of a temporary swale is to prevent runoff from entering disturbed areas by intercepting and diverting it to a stabilized outlet or to intercept sediment laden water and divert it to a sediment trapping device.

Conditions Where Practice Applies

Temporary swales are constructed:

1. to divert flows from entering a disturbed area.

2. intermittently across disturbed areas to shorten overland flow distances.

3. to direct sediment laden water along the base of slopes to a trapping device.

4. to transport offsite flows across disturbed areas such as rights-of-way.

Swales collecting runoff from disturbed areas shall remain in place until the disturbed areas are permanently stabilized.

Design Criteria

See Figure 5A.2 on page 5A.5 for details.

	Swale A	Swale B
Drainage Area	<5 Ac	5-10 Ac
Bottom Width of Flow Channel	4 ft	6 ft
Depth of Flow Channel	1 ft	1 ft
Side Slopes	2:1 or flatter	2:1 or flatter
Grade	0.5% Min. 20% Max.	0.5% Min. 20% Max.

For drainage areas larger than 10 acres, refer to the Standard and Specification for Waterways on page 5B.11.

Stabilization

Stabilization of the swale shall be completed within 7 days of installation in accordance with the appropriate standard and specifications for vegetative stabilization or stabilization with mulch as determined by the time of year. The flow channel shall be stabilized as per the following criteria:

Type of Treatment	Channel Grade[1]	Flow Channel A (<5 Ac.)	Flow Channel B (5-10 Ac)
1	0.5-3.0%	Seed & Straw Mulch	Seed & Straw Mulch
2	3.1-5.0%	Seed & Straw Mulch	Seed and cover with RECP, Sod, or lined with plastic or 2 in. stone
3	5.1-8.0%	Seed and cover with RECP, Sod, or line with plastic or 2 in. stone	Line with 4-8 in. or stone or Recycled Concrete Equivalent[2] or geotextile
4	8.1-20%	Line with 4-8 in. stone or Recycled Concrete Equivalent[2] or geotextile	Site Specific Engineering Design

[1] In highly erodible soils, as defined by the local approving agency, refer to the next higher slope grade for type of stabilization.
[2] Recycled Concrete Equivalent shall be concrete broken into the required size, and shall contain no steel reinforcement.

Outlet

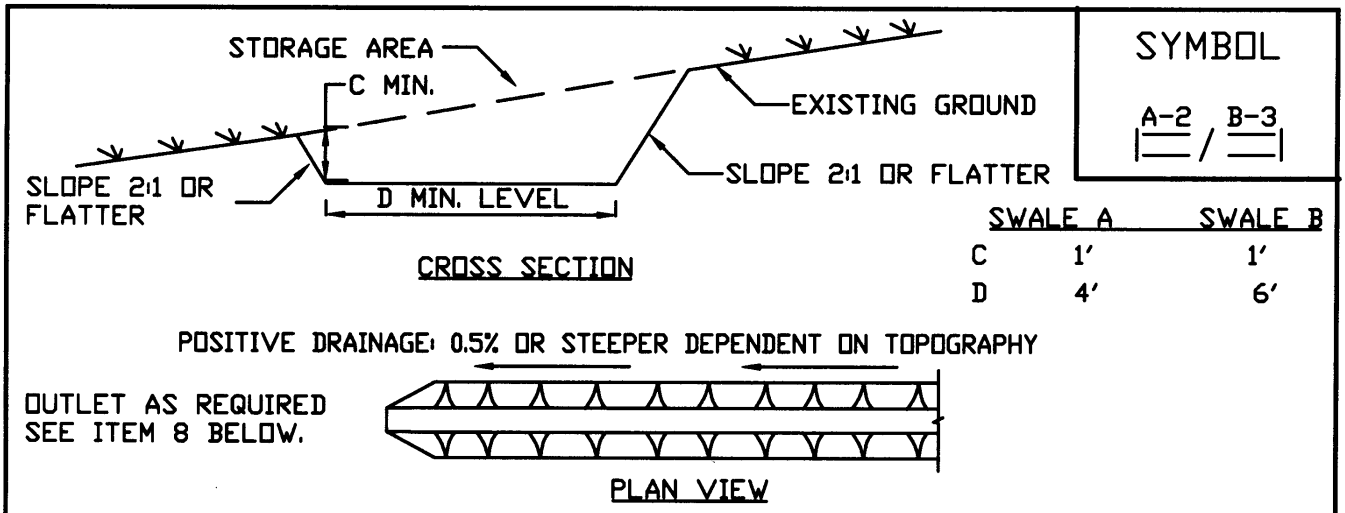
Swale shall have an outlet that functions with a minimum of erosion, and dissipates runoff velocity prior to discharge off the site.

Runoff shall be conveyed to a sediment trapping device such as a sediment trap or sediment basin until the drainage area above the swale is adequately stabilized.

The on-site location may need to be adjusted to meet field conditions in order to utilize the most suitable outlet condition.

If a swale is used to divert clean water flows from entering a disturbed area, a sediment trapping device may not be needed.

Figure 5A.2
Temporary Swale



CONSTRUCTION SPECIFICATIONS

1. ALL TEMPORARY SWALES SHALL HAVE UNINTERUPTED POSITIVE GRADE TO AN OUTLET.
2. DIVERTED RUNOFF FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. DIVERTED RUNOFF FROM AN UNDISTURBED AREA SHALL OUTLET DIRECTLY INTO AN UNDISTURBED STABILIZED AREA AT NON-EROSIVE VELOCITY.
4. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE SWALE.
5. THE SWALE SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
6. FILLS SHALL BE COMPACTED BY EARTH MOVING EQUIPMENT.
7. ALL EARTH REMOVED AND NOT NEEDED FOR CONSTRUCTION SHALL BE PLACED SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE SWALE.
8. STABILIZATION SHALL BE AS PER THE FLOW CHANNEL STABILIZATION CHART BELOW:

TYPE OF TREATMENT	CHANNEL GRADE	A(5 AC. OR LESS)	B(5 AC -10AC)
1	0.5-3.0%	SEED AND STRAW MULCH	SEED AND STRAW MULCH
2	3.1-5.0%	SEED AND STRAW MULCH	SEED AND COVER USING RECP
3	5.1-8.0%	SEED AND COVER WITH RECP	LINED WITH 4-8" RIP-RAP OR GEOTEXTILE
4	8.1-20.%	LINED WITH 4-8" RIP-RAP OR GEOTEXTILE	ENGINEERED DESIGN

9. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

TEMPORARY SWALE

STANDARD AND SPECIFICATIONS FOR PERIMETER DIKE/SWALE

Definition

A temporary ridge of soil excavated from an adjoining swale located along the perimeter of the site or disturbed area.

Purpose

The purpose of a perimeter dike/swale is to prevent off site storm runoff from entering a disturbed area and to prevent sediment laden storm runoff from leaving the construction site or disturbed area.

Conditions Where Practice Applies

Perimeter dike/swale is constructed to divert flows from entering a disturbed area, or along tops of slopes to prevent flows from eroding the slope, or along base of slopes to direct sediment laden flows to a trapping device.

The perimeter dike/swale shall remain in place until the disturbed areas are permanently stabilized.

Design Criteria

See Figure 5A.3 on page 5A.8 for details.

The perimeter dike/swale shall not be constructed outside the property lines without obtaining legal easements from affected adjacent property owners. A design is not required for perimeter dike/swale. The following criteria shall be used:

Drainage area – Less than 2 acres (for drainage areas larger than 2 acres but less than 10 acres, see earth dike or temporary swale; for drainage areas larger than 10 acres, see standard and specifications for diversion).

Height – 18 inches minimum from bottom of swale to top of dike evenly divided between dike height and swale depth.

Bottom width of dike – 2 feet minimum.

Width of swale – 2 feet minimum.

Grade – Dependent upon topography, but shall have positive drainage (sufficient grade to drain) to an adequate outlet. Maximum allowable grade not to exceed 8 percent.

Stabilization – The disturbed area of the dike and swale shall be stabilized within 7 days of installation, in accordance with the standard and specifications for temporary swales.

Outlet

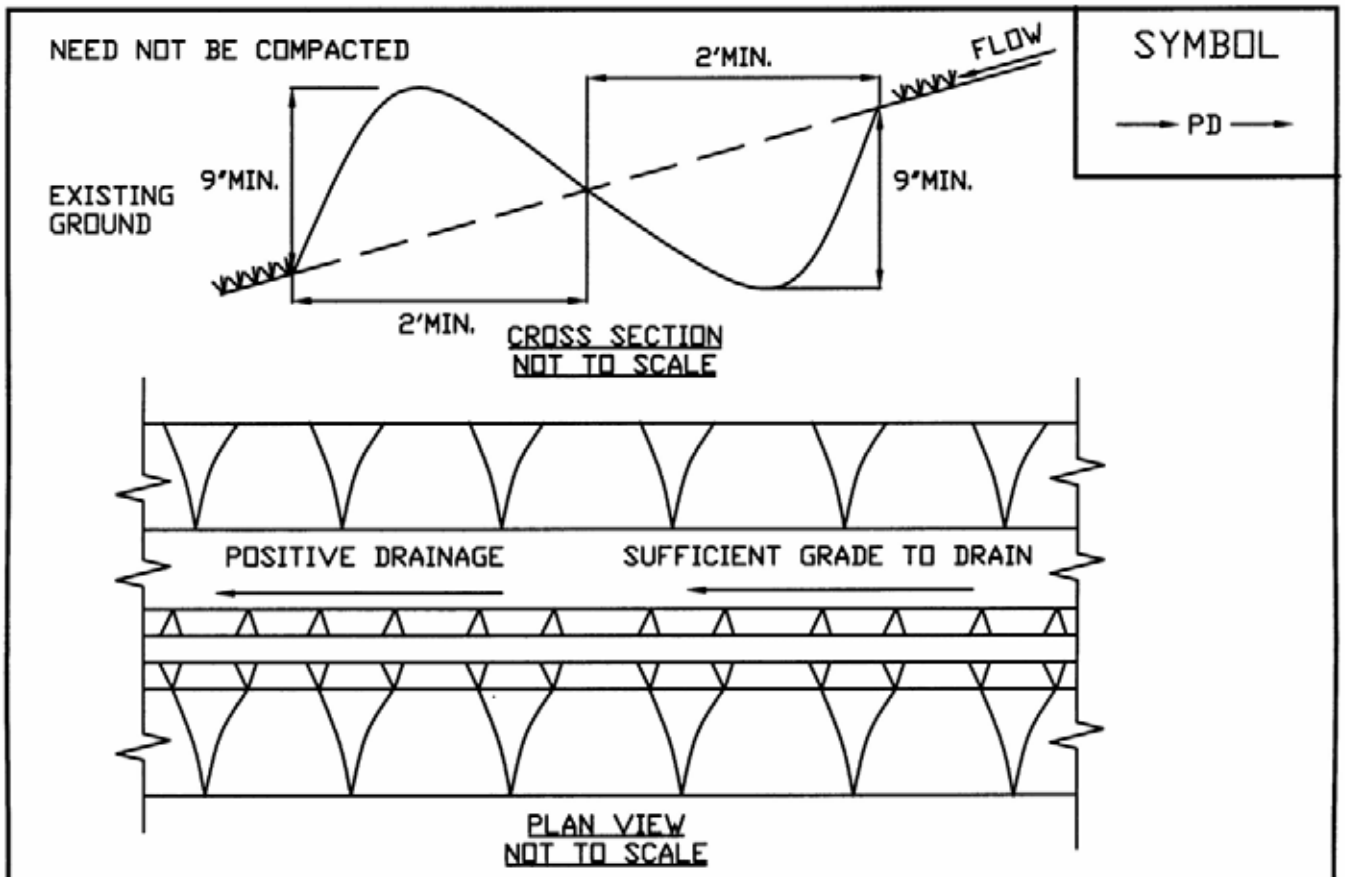
1. Perimeter dike/swale shall have a stabilized outlet.

2. Diverted runoff from a protected or stabilized upland area shall outlet directly onto an undisturbed stabilized area.

3. Diverted runoff from a disturbed or exposed upland area shall be conveyed to a sediment trapping device such as a sediment trap, sediment basin, or to an area protected by any of these practices.

4. The on-site location may need to be adjusted to meet field conditions in order to utilize the most suitable outlet.

Figure 5A.3
Perimeter Dike/Swale



CONSTRUCTION SPECIFICATIONS

1. ALL PERIMETER DIKE/SWALE SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET.
2. DIVERTED RUNOFF FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. DIVERTED RUNOFF FROM AN UNDISTURBED AREA SHALL OUTLET INTO AN UNDISTURBED STABILIZED AREA AT NON-EROSION VELOCITY.
4. THE SWALE SHALL BE EXCAVATED OR SHAPED TO LINE GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED IN THE STANDARD.
5. STABILIZATION OF THE AREA DISTURBED BY THE DIKE AND SWALE SHALL BE DONE IN ACCORDANCE WITH THE STANDARD AND SPECIFICATIONS FOR TEMPORARY SEEDING AND MULCHING, AND SHALL BE DONE WITHIN 10 DAYS.
6. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

MAX. DRAINAGE AREA LIMIT: 2 ACRES

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

PERIMETER DIKE OR SWALE

STANDARD AND SPECIFICATIONS FOR STRAW BALE DIKE

Definition

A temporary barrier of straw, or similar material, used to intercept sediment laden runoff from small drainage areas of disturbed soil.

Purpose

The purpose of a bale dike is to reduce runoff velocity and effect deposition of the transported sediment load. Straw bale dikes have an estimated design life of three (3) months.

Conditions Where Practice Applies

The straw bale dike is used where:

1. No other practice is feasible.
2. There is no concentration of water in a channel or other drainage way above the barrier.
3. Erosion would occur in the form of sheet erosion.
4. Length of slope above the straw bale dike does not exceed these limits.

Constructed Slope	Percent Slope	Slope Length (ft.)
2:1	50	25
3:1	33	50
4:1	25	75

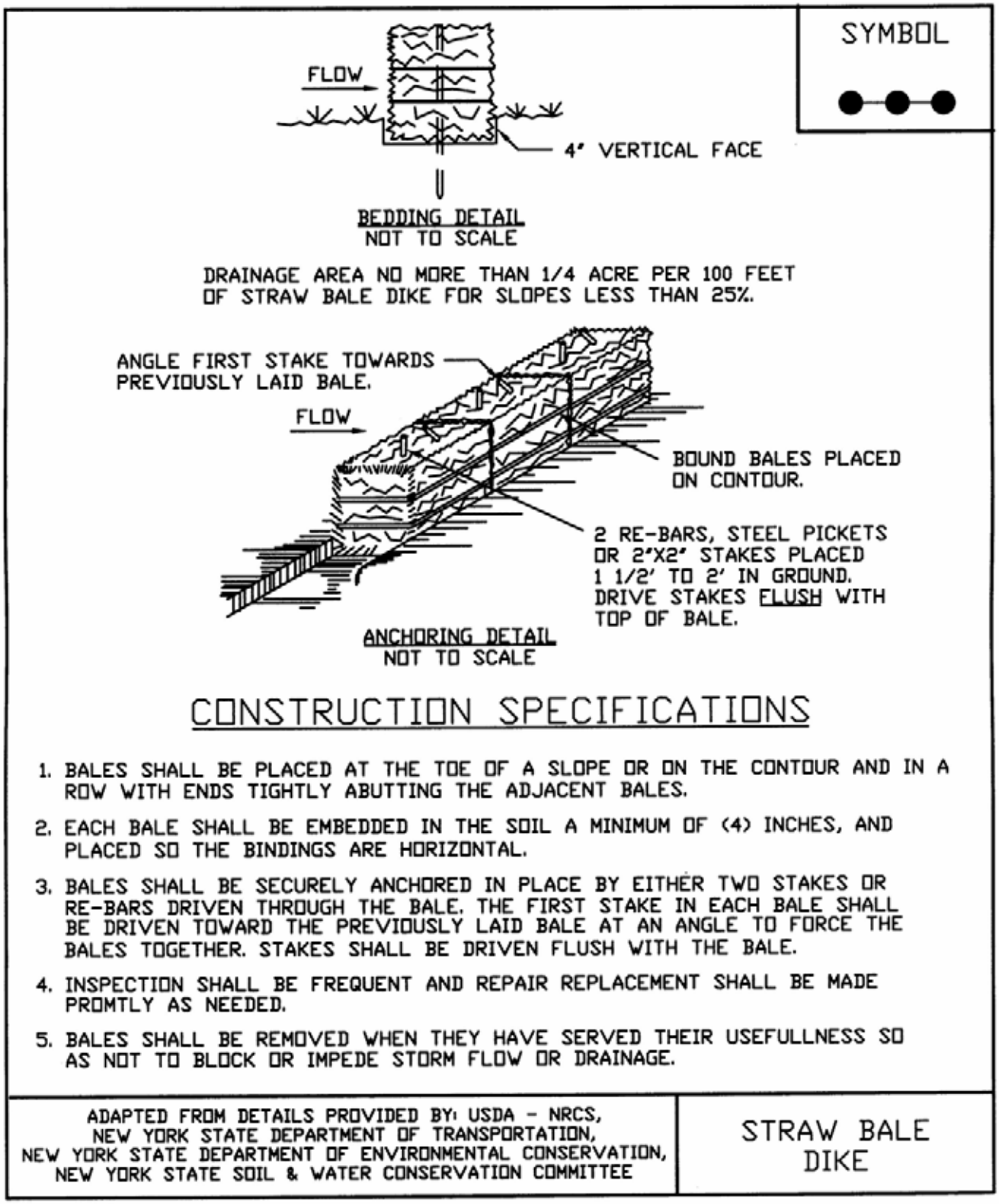
Where slope gradient changes through the drainage area, steepness refers to the steepest slope section contributing to the straw bale dike.

The practice may also be used for a single family lot if the slope is less than 15 percent. The contributing drainage areas in this instance shall be less than one quarter of an acre per 100 feet of fence and the length of slope above the dike shall be less than 200 feet.

Design Criteria

The above table is adequate, in general, for a one-inch rainfall event. Larger storms could cause failure of this practice. Use of this practice in sensitive areas for longer than one month should be specifically designed to store expected runoff. All bales shall be placed on the contour with cut edge of bale adhering to the ground. See Figure 5A.7 on page 5A.18 or details.

Figure 5A.7
Straw Bale Dike



STANDARD AND SPECIFICATIONS FOR SILT FENCE

Definition

A temporary barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil.

Purpose

The purpose of a silt fence is to reduce runoff velocity and effect deposition of transported sediment load. Limits imposed by ultraviolet stability of the fabric will dictate the maximum period the silt fence may be used (approximately one year).

Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope lengths contributing runoff to a silt fence placed on a slope are:

Slope Steepness	Maximum Length (ft.)
2:1	25
3:1	50
4:1	75
5:1 or flatter	100

2. Maximum drainage area for overland flow to a silt fence shall not exceed ¼ acre per 100 feet of fence, with maximum ponding depth of 1.5 feet behind the fence; and

3. Erosion would occur in the form of sheet erosion; and

4. There is no concentration of water flowing to the barrier.

Design Criteria

Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff. All silt fences shall be placed as close to the areas as possible, but at least 10 feet from the toe of a slope to allow for maintenance and roll down. The area beyond the fence must be undisturbed or stabilized.

Sensitive areas to be protected by silt fence may need to be reinforced by using heavy wire fencing for added support to prevent collapse.

Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. A detail of the silt fence shall be shown on the plan. See Figure 5A.8 on page 5A.21 for details.

Criteria for Silt Fence Materials

1. Silt Fence Fabric: The fabric shall meet the following specifications unless otherwise approved by the appropriate erosion and sediment control plan approval authority. Such approval shall not constitute statewide acceptance.

Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	90	ASTM D1682
Elongation at Failure (%)	50	ASTM D1682

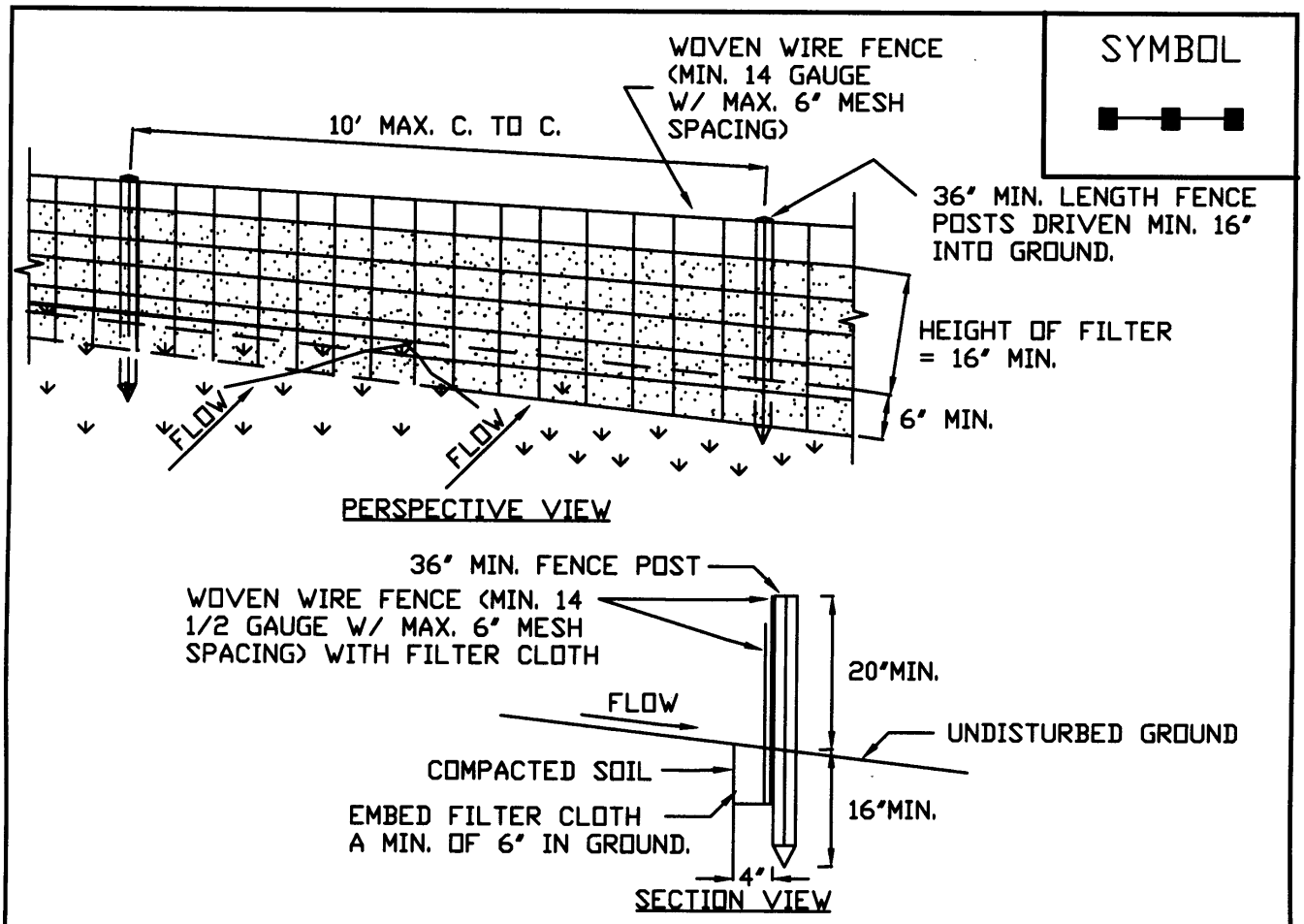
Mullen Burst Strength (PSI)	190	ASTM D3786
Puncture Strength (lbs)	40	ASTM D751 (modified)
Slurry Flow Rate (gal/min/sf)	0.3	
Equivalent Opening Size	40-80	US Std Sieve CW-02215
Ultraviolet Radiation Stability (%)	90	ASTM G-26

2. Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood with a minimum cross sectional area of 3.0 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot.

3. Wire Fence (for fabricated units): Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.

4. Prefabricated Units: Envirofence, Geofab, or approved equal, may be used in lieu of the above method providing the unit is installed per details shown in Figure 5A.8.

Figure 5A.8
Silt Fence



CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	SILT FENCE

STANDARD AND SPECIFICATIONS FOR SEDIMENT TRAP

Definition

A temporary sediment control device formed by excavation and/or embankment to intercept sediment laden runoff and retain the sediment.

Purpose

The purpose of the structure is to intercept sediment-laden runoff and trap the sediment in order to protect drainage ways, properties, and rights-of-way below the sediment trap from sedimentation.

Conditions Where Practice Applies

A sediment trap is usually installed in a drainage way, at a storm drain inlet, or other points of collection from a disturbed area.

Sediment traps should be used to artificially break up the natural drainage area into smaller sections where a larger device (sediment basin) would be less effective.

Design Criteria

If any of the design criteria presented here cannot be met, see Standard and Specification for Sediment Basin on page 5A.49.

Drainage Area

The drainage area for sediment traps shall be in accordance with the specific type of sediment trap used (Type I through V).

Location

Sediment traps shall be located so that they can be installed prior to grading or filling in the drainage area they are to protect. Traps must not be located any closer than 20 feet from a proposed building foundation if the trap is to function during building construction. Locate traps to obtain maximum storage benefit from the terrain and for ease of cleanout and disposal of the trapped sediment.

Trap Size

The volume of a sediment trap as measured at the elevation of the crest of the outlet shall be at least 3,600 cubic feet per acre of drainage area. The volume of a constructed trap shall be calculated using standard mathematical procedures. The volume of a natural sediment trap may be approximated by the equation: Volume (cu.ft.) = 0.4 x surface area (sq.ft.) x maximum depth (ft.).

Trap Cleanout

Sediment shall be removed and the trap restored to the original dimensions when the sediment has accumulated to ½ of the design depth of the trap. Sediment removed from the trap shall be deposited in a protected area and in such a manner that it will not erode.

Embankment

All embankments for sediment traps shall not exceed five (5) feet in height as measured at the low point of the original ground along the centerline of the embankment. Embankments shall have a minimum four (4) foot wide top and side slopes of 2:1 or flatter. The embankment shall be compacted by traversing with equipment while it is being constructed. The embankment shall be stabilized with seed and mulch as soon as it is completed

The elevation of the top of any dike directing water to any sediment trap will equal or exceed the maximum height of the outlet structure along the entire length of the trap.

Excavation

All excavation operations shall be carried out in such a manner that erosion and water pollution shall be minimal. Excavated portions of sediment traps shall have 1:1 or flatter slopes.

Outlet

The outlet shall be designed, constructed, and maintained in such a manner that sediment does not leave the trap and that erosion at or below the outlet does not occur.

Sediment traps must outlet onto stabilized (preferable undisturbed) ground, into a watercourse, stabilized channel, or into a storm drain system. Distance between inlet and outlet should be maximized to the longest length practicable.

Trap Details Needed on Erosion and Sediment Control Plans

Each trap shall be delineated on the plans in such a manner that it will not be confused with any other features. Each trap on a plan shall indicate all the information necessary to properly construct and maintain the structure. If the drawings are such that this information cannot be delineated on the drawings, then a table shall be developed. If a table is developed, then each trap on a plan shall have a number and the numbers shall be consecutive.

The following information shall be shown for each trap in a summary table format on the plans.

1. Trap number
2. Type of trap
3. Drainage area
4. Storage required
5. Storage provided (if applicable)
6. Outlet length or pipe sizes
7. Storage depth below outlet or cleanout elevation
8. Embankment height and elevation (if applicable)

Type of Sediment Traps

There are five (5) specific types of sediment traps which vary according to their function, location, or drainage area.

I. Pipe Outlet Sediment Trap
II. Grass Outlet Sediment Trap
III. Catch Basin Sediment Trap
IV. Stone Outlet Sediment Trap
V. Riprap Outlet Sediment Trap

I. Pipe Outlet Sediment Trap

A Pipe Outlet Sediment Trap consists of a trap formed by embankment or excavation. The outlet for the trap is through a perforated riser and a pipe through the embankment. The outlet pipe and riser shall be made of steel, corrugated metal or other suitable material. The top of the embankment shall be at least 1 ½ feet above the crest of the riser. The top 2/3 of the riser shall be perforated with one (1) inch nominal diameter holes or slits spaced six (6) inches vertically and horizontally placed in the concave portion of the corrugated pipe.

No holes or slits will be allowed within six (6) inches of the top of the horizontal barrel. All pipe connections shall be watertight. The riser shall be wrapped with ½ to ¼ inch hardware cloth wire then wrapped with filter cloth with a sieve size between #40-80 and secured with strapping or connecting band at the top and bottom of the cloth. The cloth shall cover an area at least six (6) inches above the highest hole and six (6) inches below the lowest hole. The top of the riser pipe shall not be covered with filter cloth. The riser shall have a base with sufficient weight to prevent flotation of the riser. Two approved bases are:

1. A concrete base 12 in. thick with the riser embedded 9 in. into the concrete base, or

2. One quarter inch, minimum, thick steel plate attached to the riser by a continuous weld around the circumference of the riser to form a watertight connection. The plate shall have 2.5 feet of stone, gravel, or earth placed on it to prevent flotation. In either case, each side of the square base measurement shall be the riser diameter plus 24 inches.

Pipe outlet sediment traps shall be limited to a five (5) acre maximum drainage area. Pipe outlet sediment traps may be interchangeable in the field with stone outlet or riprap sediment traps provided that these sediment traps are constructed in accordance with the detail and specifications for that trap.

Select pipe diameter from the following table:

Minimum Sizes

Barrel Diameter[1] (in.)	Riser Diameter[1] (in.)	Maximum Drainage Area (ac.)
12	15	1
15	18	2
18	21	3
21	24	4
21	27	5

[1] Barrel diameter may be same size as riser diameter.

See details for Pipe Outlet Sediment Trap ST-I in Figure 5A.16 (1) and 5A.16 (2) on pages 5A.38 and 5A.39.

II. Grass Outlet Sediment Trap

A Grass Outlet Sediment Trap consists of a trap formed by excavating the earth to create a holding area. The trap has a discharge point over natural existing grass. The outlet crest width (feet) shall be equal to four (4) times the drainage area (acres) with a minimum width of four (4) feet. The outlet shall be free of any restrictions to flow. The outlet lip must remain undisturbed and level. The volume of this trap shall be computed at the elevation of the crest of the outlet. Grass outlet sediment traps shall be limited to a five (5) acre maximum drainage area.

See details for Grass Outlet Sediment Trap ST-II in Figure 5A.17 on page 5A.40.

III. Catch Basin Sediment Trap

A Catch Basin Sediment Trap consists of a basin formed by excavation on natural ground that discharges through an opening in a storm drain inlet structure. This opening can either be the inlet opening or a temporary opening made by omitting bricks or blocks in the inlet.

A yard drain inlet or an inlet in the median strip of a dual highway could use the inlet opening for the type outlet. The trap should be out of the roadway so as not to interfere with future compaction or construction. Placing the trap on the opposite side of the opening and diverting water from the roadway to the trap is one means of doing this. Catch basin sediment traps shall be limited to a three (3) acre maximum drainage area. The volume of this trap is measured at the elevation of the crest of the outlet (invert of the inlet opening).

See details for Catch Basin Sediment Trap ST-III in Figure 5A.18 on page 5A.41.

IV. Stone Outlet Sediment Trap

A Stone Outlet Sediment Trap consists of a trap formed by an embankment or excavation. The outlet of this trap is over a stone section placed on level ground. The minimum length (feet) of the outlet shall be equal to four (4) times the drainage area (acres).

Required storage shall be 3,600 cubic feet per acre of drainage area.

The outlet crest (top of stone in weir section) shall be level, at least one (1) foot below top of embankment and no more than one (1) foot above ground beneath the outlet. Stone used in the outlet shall be small riprap (4 in. x 8 in.). To provide more efficient trapping effect, a layer of filter cloth should be embedded one (1) foot back into the upstream face of the outlet stone or a one (1) foot thick layer of two (2) inch or finer aggregate shall be placed on the upstream face of the outlet.

Stone Outlet Sediment Traps may be interchangeable in the field with pipe or riprap outlet sediment traps provided they are constructed in accordance with the detail and specifications for those traps. Stone outlet sediment traps shall be limited to a five (5) acre maximum drainage area.

See details for Stone Outlet Sediment Trap ST-IV in Figure 5A.19 on page 5A.42.

V. Riprap Outlet Sediment Trap

A Riprap Outlet Sediment Trap consists of a trap formed by an excavation and embankment. The outlet for this trap shall be through a partially excavated channel lined with riprap. This outlet channel shall discharge onto a stabilized area or to a stable watercourse. The riprap outlet sediment trap may be used for drainage areas of up to a maximum of 15 acres.

Design Criteria for Riprap Outlet Sediment Trap

1. The total contributing drainage area (disturbed or undisturbed either on or off the developing property) shall not exceed 15 acres.
2. The storage needs for this trap shall be computed using 3600 cubic feet of required storage for each acre of drainage area. The storage volume provided can be figured by computing the volume of storage area available behind the outlet structure up to an elevation of one (1) foot below the level weir crest.
3. The maximum height of embankment shall not exceed five (5) feet.
4. The elevation of the top of any dike directing water to a riprap outlet sediment trap will equal or exceed the minimum elevation of the embankment along the entire length of this trap.

Riprap Outlet Sediment Trap ST-V
(for Stone Lined Channel)

Contributing Drainage Area (ac.)	Depth of Channel (a) (ft.)	Length of Weir (b) (ft.)
1	1.5	4.0
2	1.5	5.0
3	1.5	6.0
4	1.5	10.0
5	1.5	12.0
6	1.5	14.0
7	1.5	16.0
8	2.0	10.0
9	2.0	10.0
10	2.0	12.0
11	2.0	14.0
12	2.0	14.0
13	2.0	16.0
14	2.0	16.0
15	2.0	18.0

See details for Riprap Outlet Sediment Trap ST-V on Figures 5A.20(1) and 5A.20(2) on pages 5A.43 and 5A.44.

Optional Dewatering Methods

Optional dewatering devices may be designed for use with sediment traps. Included are two methods, which may be used. See Figure 5A.21 on page 5A.45 for details.

Figure 5A.16(1)
Pipe Outlet Sediment Trap: ST-I

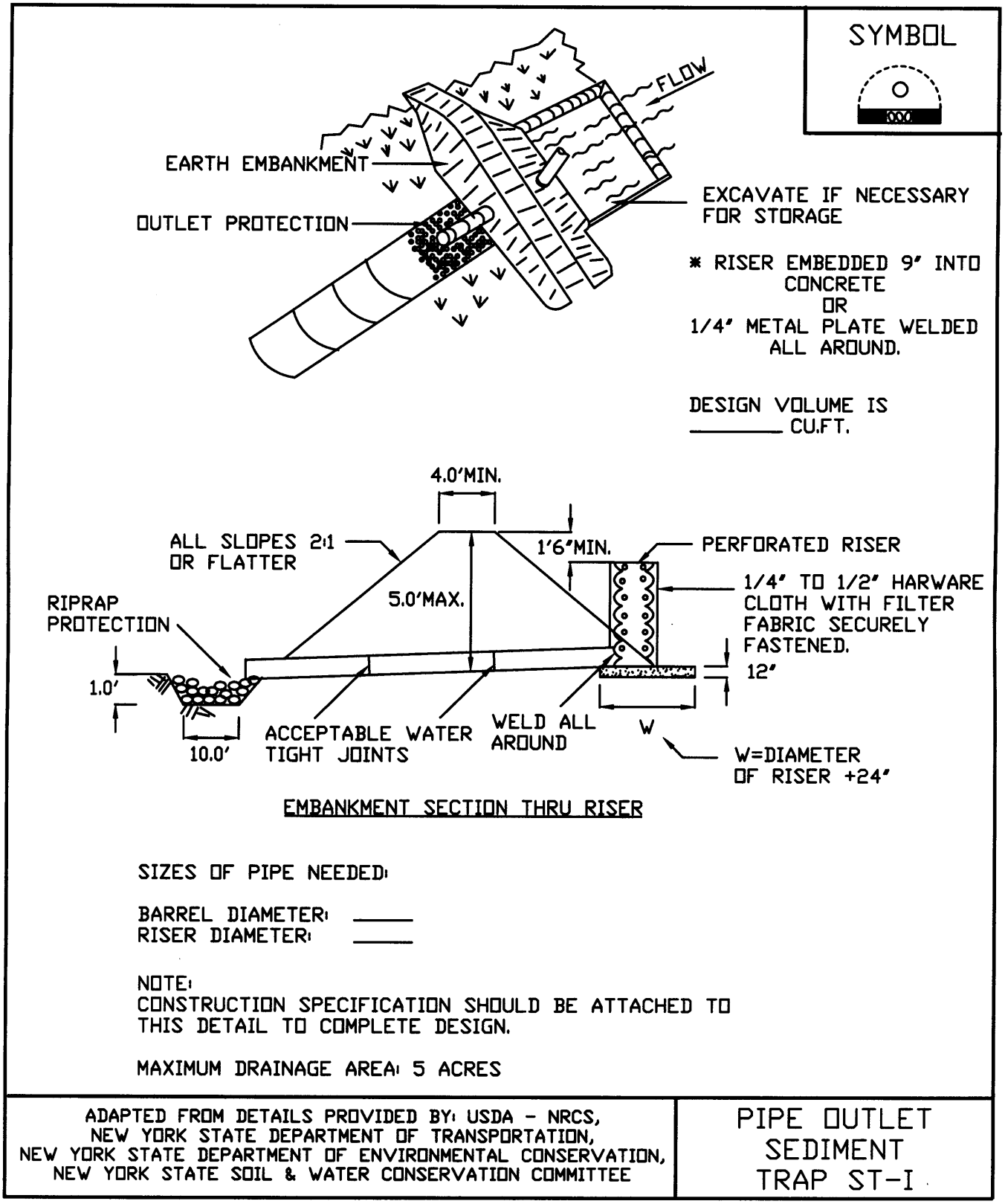


Figure 5A.16(2)
Pipe Outlet Sediment Trap: ST-I—Construction Specifications

SYMBOL

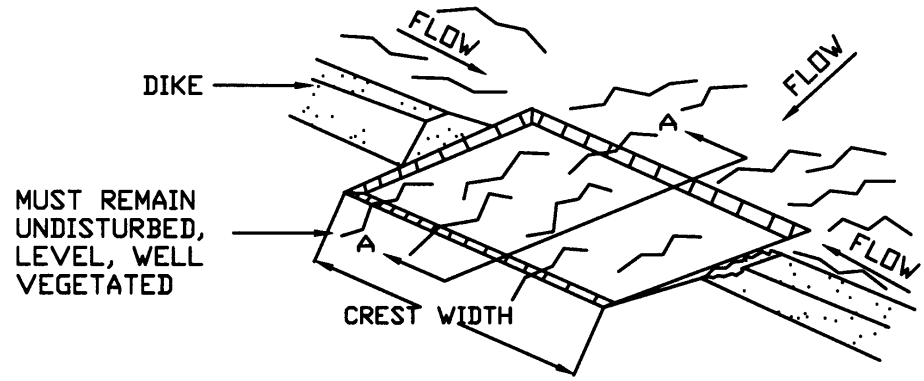
CONSTRUCTION SPECIFICATIONS

1. AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS OR OTHER WOODY VEGETATION AS WELL AS OVER-SIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
3. VOLUME OF SEDIMENT STORAGE SHALL BE 3600 CUBIC FEET PER ACRE OF CONTRIBUTORY DRAINAGE.
4. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND STABILIZED.
5. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
6. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND SEDIMENT ARE CONTROLLED.
7. THE STRUCTURE SHALL BE REMOVED AND AREA STABILIZED WHEN THE DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
8. ALL FILL SLOPES SHALL BE 2:1 OR FLATTER; CUT SLOPES 1:1 OR FLATTER.
9. ALL PIPE CONNECTIONS SHALL BE WATERTIGHT.
10. THE TOP 2/3 OF THE RISER SHALL BE PERFORATED WITH ONE (1) INCH DIAMETER HOLES OR SLITS SPACED SIX (6) INCHES VERTICALLY AND HORIZONTALLY AND PLACED IN THE CONCAVE PORTION OF PIPE. NO HOLES WILL BE ALLOWED WITHIN SIX (6) INCHES OF THE HORIZONTAL BARREL.
11. THE RISER SHALL BE WRAPPED WITH 1/4 TO 1/2 INCH HARDWARE CLOTH WIRE THEN WRAPPED WITH FILTER CLOTH (HAVING AN EQUIVALENT SIEVE SIZE OF 40-80). THE FILTER CLOTH SHALL EXTEND SIX (6) INCHES ABOVE THE HIGHEST HOLE AND SIX (6) INCHES BELOW THE LOWEST HOLE. WHERE ENDS OF THE FILTER CLOTH COME TOGETHER, THEY SHALL BE OVER-LAPPED, FOLDED AND STAPLED TO PREVENT BYPASS.
12. STRAPS OR CONNECTING BANDS SHALL BE USED TO HOLD THE FILTER CLOTH AND WIRE FABRIC IN PLACE. THEY SHALL BE PLACED AT THE TOP AND BOTTOM OF THE CLOTH.
13. FILL MATERIAL AROUND THE PIPE SPILLWAY SHALL BE HAND COMPACTED IN FOUR (4) INCH LAYERS. A MINIMUM OF TWO (2) FEET OF HAND COMPACTED BACKFILL SHALL BE PLACED OVER THE PIPE SPILLWAY BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT.
14. THE RISER SHALL BE ANCHORED WITH EITHER A CONCRETE BASE OR STEEL PLATE BASE TO PREVENT FLOTATION. FOR CONCRETE BASED THE DEPTH SHALL BE TWELVE (12) INCHES WITH THE RISER EMBEDDED NINE (9) INCHES. A 1/4 INCH MINIMUM THICKNESS STEEL PLATE SHALL BE ATTACHED TO THE RISER BY A CONTINUOUS WELD AROUND THE BOTTOM TO FORM A WATERTIGHT CONNECTION AND THEN PLACE TWO (2) FEET OF STONE, GRAVEL, OR TAMPED EARTH ON THE PLATE.

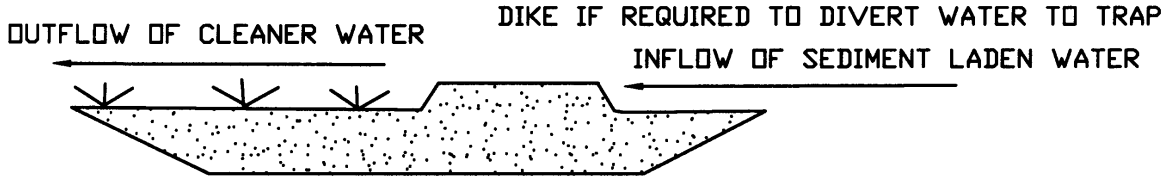
ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

PIPE OUTLET
SEDIMENT TRAP
ST-I

Figure 5A.17
Grass Outlet Sediment Trap: ST-II



SYMBOL



CREST WIDTH (FT)=4xDRAINAGE AREA (ACRES)

SECTION A - A
EXCAVATED GRASS OUTLET SEDIMENT TRAP

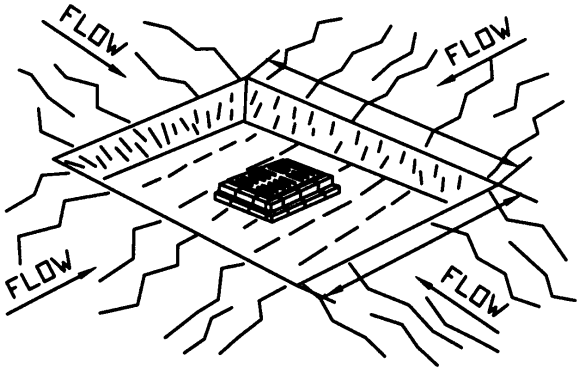
CONSTRUCTION SPECIFICATIONS

1. VOLUME OF SEDIMENT STORAGE SHALL BE 3600 CUBIC FEET PER ACRE OF CONTRIBUTORY DRAINAGE AREA.
2. MINIMUM CREST WIDTH SHALL BE 4 x DRAINAGE AREA
3. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND STABILIZED.
4. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
5. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND SEDIMENT ARE CONTROLLED.
6. THE SEDIMENT TRAP SHALL BE REMOVED AND AREA STABILIZED WHEN THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
7. ALL CUT SLOPES SHALL BE 1:1 OR FLATTER.

MAXIMUM DRAINAGE AREA: 5 ACRES

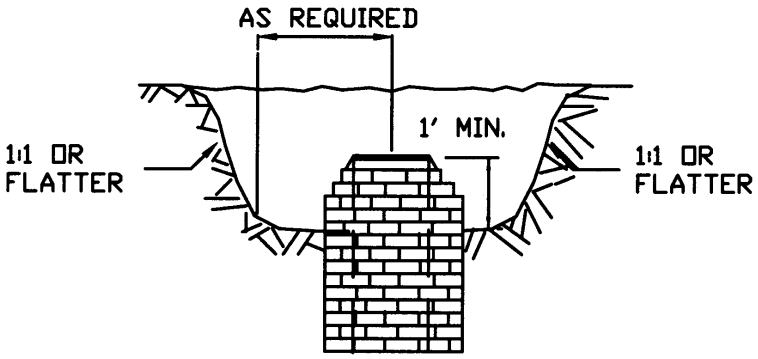
ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	GRASS OUTLET SEDIMENT TRAP ST-II

Figure 5A.18
Catch Basin Sediment Trap: ST-III



SYMBOL

YARD DRAIN



CROSS SECTION

CONSTRUCTION SPECIFICATIONS

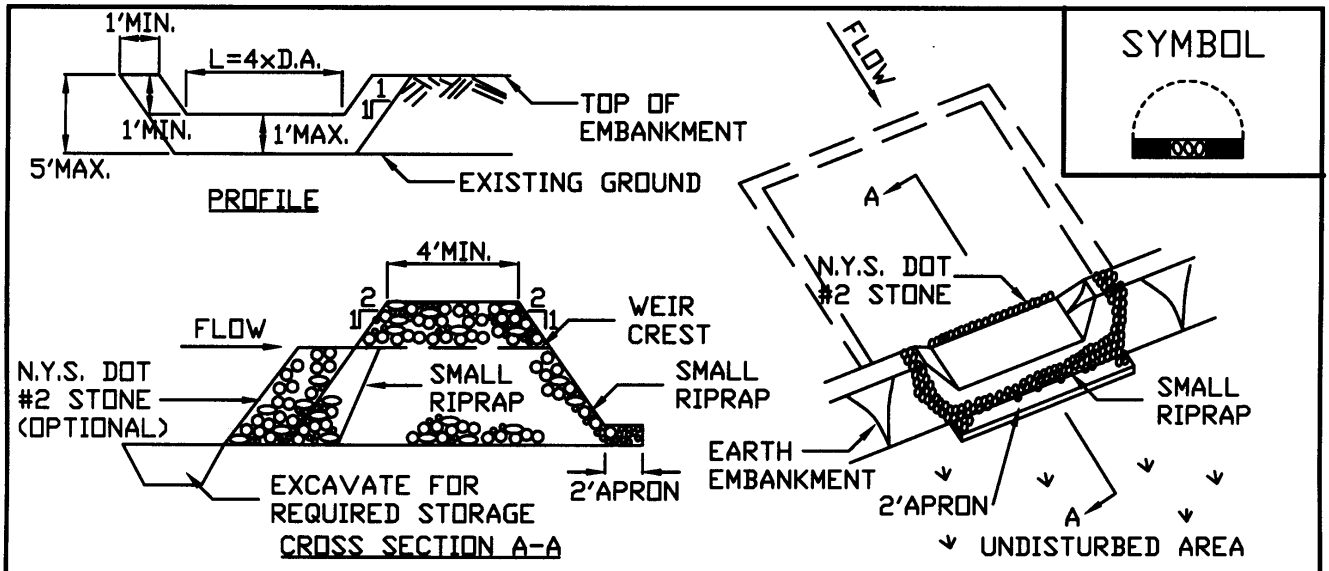
1. SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND STABILIZED.
2. THE VOLUME OF SEDIMENT STORAGE SHALL BE 3600 CUBIC FEET PER ACRE OF CONTRIBUTORY DRAINAGE.
3. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
4. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND SEDIMENT ARE CONTROLLED.
5. THE SEDIMENT TRAP SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE CONSTRUCTED DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
6. ALL CUT SLOPES SHALL BE 1:1 OR FLATTER.

MAXIMUM DRAINAGE AREA: 3 ACRES

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

CATCH BASIN
SEDIMENT TRAP
ST-III

Figure 5A.19
Stone Outlet Sediment Trap: ST-IV



OPTION: A ONE FOOT LAYER OF N.Y.S. DOT #2 STONE MAY BE PLACED ON THE UPSTREAM SIDE OF THE RIPRAP INPLACE OF THE EMBEDDED FILTER CLOTH.

CONSTRUCTION SPECIFICATIONS

1. AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS AND OTHER WOODY VEGETATION AS WELL AS OVER-SIZED STONES, ROCKS, ORGANIC MATERIAL OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
3. ALL CUT AND FILL SLOPES SHALL BE 2:1 OR FLATTER.
4. THE STONE USED IN THE OUTLET SHALL BE SMALL RIPRAP 4"-8" ALONG WITH A 1' THICKNESS OF 2" AGGREGATE PLACED ON THE UP-GRADE SIDE ON THE SMALL RIPRAP OR EMBEDDED FILTER CLOTH IN THE RIPRAP.
5. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. IT SHALL BE PLACED ON SITE AND STABILIZED.
6. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
7. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND SEDIMENT ARE CONTROLLED.
8. THE STRUCTURE SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

MAXIMUM DRAINAGE AREA 5 ACRES

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	STONE OUTLET SEDIMENT TRAP ST-IV

Figure 5A.20(1)
Riprap Outlet Sediment Trap: ST-V

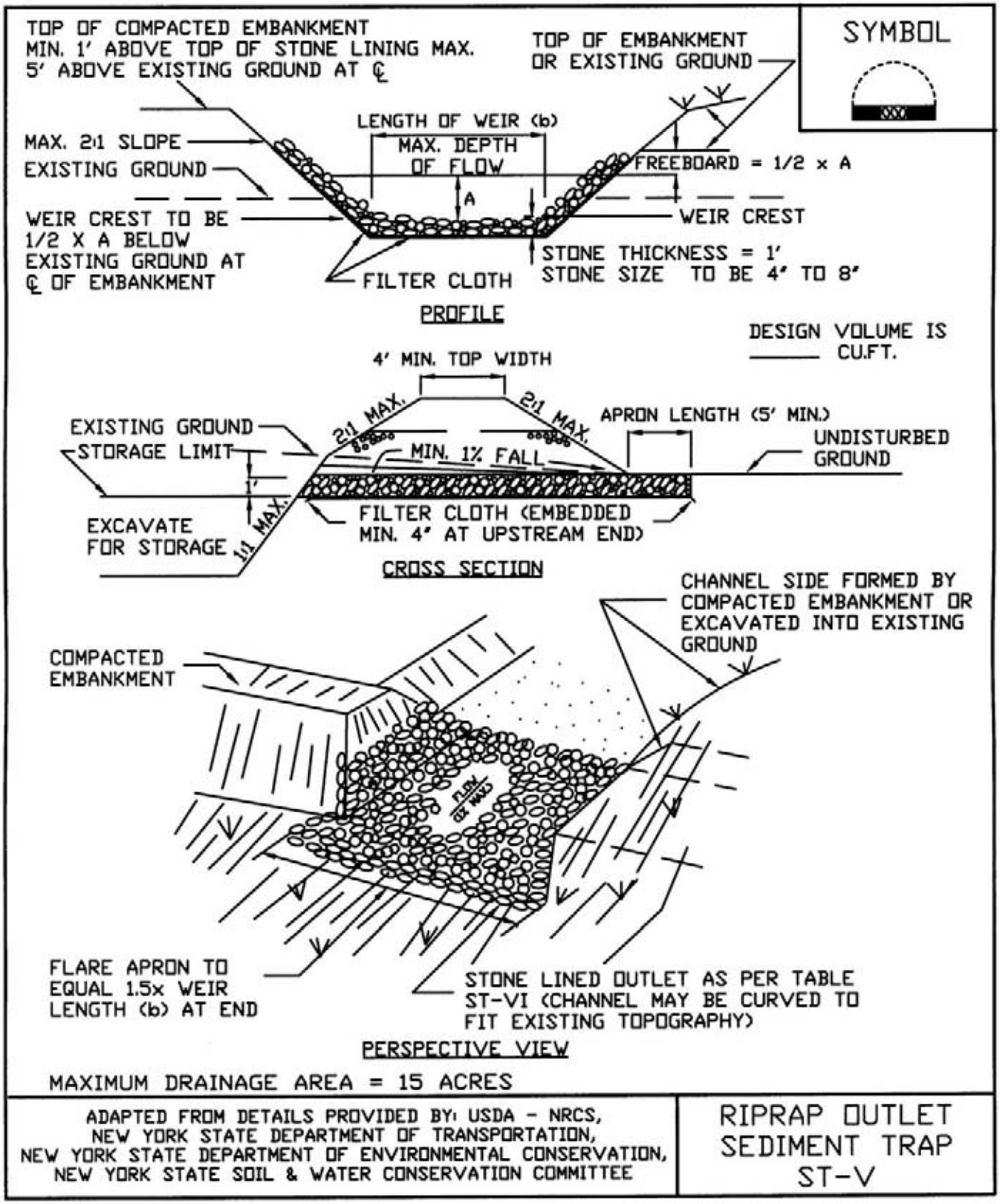


Figure 5A.202)
Riprap Outlet Sediment Trap: ST-V—Construction Specifications

SYMBOL

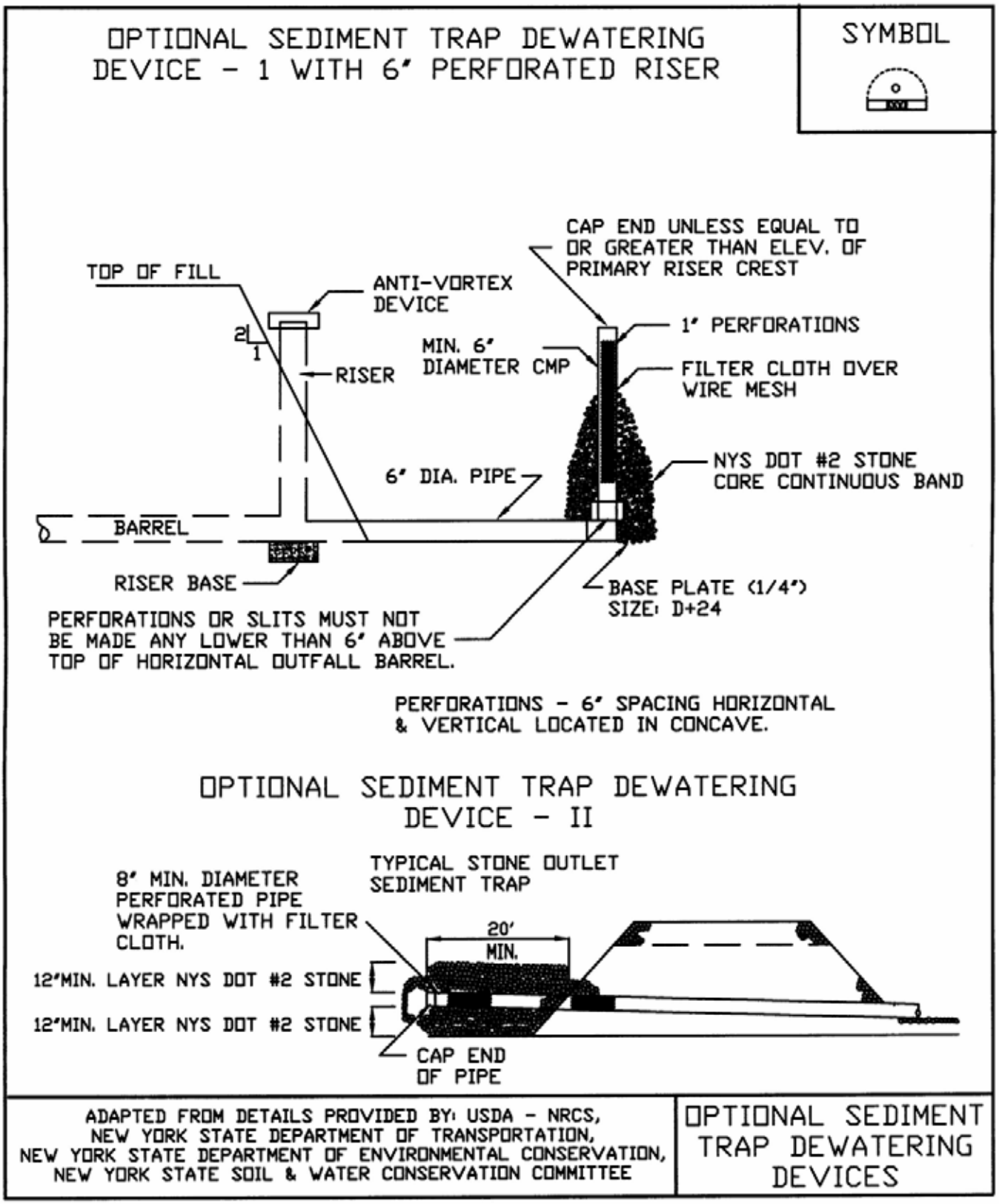
CONSTRUCTION SPECIFICATIONS

1. THE AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS OR OTHER WOODY VEGETATION AS WELL AS OVER-SIZED STONES, ROCKS, ORGANIC MATERIAL OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED. MAXIMUM HEIGHT OF OF EMBANKMENT SHALL BE FIVE (5) FEET, MEASURED AT CENTERLINE OF EMBANKMENT.
3. ALL FILL SLOPES SHALL BE 2:1 OR FLATTER, CUT SLOPES 1:1 OR FLATTER.
4. ELEVATION OF THE TOP OF ANY DIKE DIRECTING WATER INTO TRAP MUST EQUAL OR EXCEED THE HEIGHT OF EMBANKMENT.
5. STORAGE AREA PROVIDED SHALL BE FIGURED BY COMPUTING THE VOLUME AVAILABLE BEHIND THE OUTLET CHANNEL UP TO AN ELEVATION OF ONE (1) FOOT BELOW THE LEVEL WEIR CREST.
6. FILTER CLOTH SHALL BE PLACED OVER THE BOTTOM AND SIDES OF THE OUTLET CHANNEL PRIOR TO PLACEMENT OF STONE. SECTIONS OF FABRIC MUST OVERLAP AT LEAST ONE (1) FOOT WITH SECTION NEAREST THE ENTRANCE PLACED ON TOP. FABRIC SHALL BE EMBEDDED AT LEAST SIX (6) INCHES INTO EXISTING GROUND AT ENTRANCE OUTLET CHANNEL.
7. STONE USED IN THE OUTLET CHANNEL SHALL BE FOUR (4) TO EIGHT (8) INCH RIPRAP. TO PROVIDE A FILTERING EFFECT, A LAYER OF FILTER CLOTH SHALL BE EMBEDDED ONE (1) FOOT WITH SECTION NEAREST ENTRANCE PLACED ON TOP. FABRIC SHALL BE EMBEDDED AT LEAST SIX (6) INCHES INTO EXISTING GROUND AT ENTRANCE OF OUTLET CHANNEL.
8. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
9. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRED AS NEEDED.
10. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE MINIMIZED.
11. THE STRUCTURE SHALL BE REMOVED AND THE AREA STABILIZED WHEN DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
12. DRAINAGE AREA FOR THIS PRACTICE IS LIMITED TO 15 ACRES OR LESS.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

RIPRAP OUTLET
SEDIMENT TRAP
ST-V

Figure 5A.21
Optional Sediment Trap Dewatering Devices



APPENDIX B-3

NYSDOH'S GENERIC COMMUNITY AIR MONITORING PLAN
FUGITIVE DUST AND PARTICULATE MONITORING

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix 1B
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50° C (14 to 122° F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

APPENDIX C

EXAMPLE
HEALTH & SAFETY PLAN (HASP)
&
COMMUNITY AIR MONITORING PLAN (CAMP)

Site-Wide Health and Safety Plan (HASP)

Tecumseh Redevelopment BCP Sites
Lackawanna, New York

April 2010
Revised July 2013

0071-012-322

Prepared By:

TurnKey Environmental Restoration, LLC

Benchmark Environmental Engineering & Science, PLLC

2558 Hamburg Turnpike, Suite 300, Buffalo, New York | phone: (716) 856-0599 | fax: (716) 856-0583

TECUMSEH REDEVELOPMENT SITE
SITE-WIDE HEALTH AND SAFETY PLAN

ACKNOWLEDGEMENT

Plan Reviewed by (initial):

Corporate Health and Safety Director: _____

Project Manager: _____

Designated Site Safety and Health Officer: _____

Acknowledgement:
I acknowledge that I have reviewed the information contained in this site-specific Health and Safety Plan, and understand the hazards associated with performance of the field activities described herein. I agree to comply with the requirements of this plan.

NAME (PRINT)	SIGNATURE	DATE

TECUMSEH REDEVELOPMENT BCP SITES
SITE-WIDE HEALTH AND SAFETY PLAN

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TECUMSEH REDEVELOPMENT BCP SITES
SITE-WIDE HEALTH AND SAFETY PLAN

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TECUMSEH REDEVELOPMENT BCP SITES
SITE-WIDE HEALTH AND SAFETY PLAN

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1.0 INTRODUCTION

1.1 General

In accordance with OSHA requirements contained in 29 CFR 1910.120, this Health and Safety Plan (HASP) describes the specific health and safety practices and procedures to be employed by TurnKey Environmental Restoration, LLC and Benchmark Environmental Engineering & Science, PLLC employees (referred to jointly hereafter as "TurnKey-Benchmark") during Brownfield Cleanup Program (BCP) activities on the Tecumseh Redevelopment Site (former Bethlehem Steel Lackawanna Works), located in the City of Lackawanna, New York. This HASP presents procedures for TurnKey-Benchmark employees who will be involved with investigation and remedial field activities; it does not cover the activities of other contractors, subcontractors, or other individuals on the Site. These firms will be required to develop and enforce their own HASPs as discussed in Section 2.0. TurnKey-Benchmark accepts no responsibility for the health and safety of contractor, subcontractor, or other personnel.

This HASP presents information on known Site health and safety hazards using available historical information, and identifies the equipment, materials, and procedures that will be used to eliminate or control these hazards. Environmental monitoring will be performed during the course of field activities to provide real-time data for on-going assessment of potential hazards.

1.2 Background

Tecumseh Redevelopment Inc. (Tecumseh) owns approximately 1,100 acres of land at 1951 Hamburg Turnpike, approximately 2 miles south of the City of Buffalo (see Figure 1). The majority of Tecumseh's property is located in the City of Lackawanna (the City), with portions of the property extending into the Town of Hamburg. Tecumseh's property is bordered by: NY State Route 5 (Hamburg Turnpike) on the east; Lake Erie to the west and northwest; and other industrial properties to the south and the northeast. Figure 2 provides an overview of the Tecumseh Property, including major leased or licensed parcels, and adjacent parcels owned by others.

The Tecumseh property is located on a portion of the Site of the former Bethlehem Steel Corporation (BSC) Lackawanna Works in a primarily industrial area. The property was

formerly used for the production of steel, coke, and related products by Bethlehem Steel Corporation (BSC). According to the Real Estate Records, in 1937, Bethlehem Steel Company owned the subject Site. In 1964, Bethlehem Steel Company merged into Bethlehem Steel Corporation. Steel production on the property was discontinued in 1983 and the coke ovens ceased activity in 2000. Tecumseh acquired the property, along with other BSC assets, out of bankruptcy in 2003.

A Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) of the entire former Bethlehem Steel Lackawanna Works was initiated by BSC under an Administrative Order issued by the United States Environmental Protection Agency (USEPA) in 1990. Tecumseh completed the RFI in January 2005. In September 2006, USEPA approved the RFI and terminated Bethlehem Steel's (and in turn Tecumseh's) obligation under the 1990 Administrative Order. Tecumseh has entered into an Order on Consent with the New York State Department of Environmental Conservation (NYSDEC) to undertake a corrective measures study (CMS) at certain solid waste management units (SWMUs) primarily on the western slag fill and coke manufacturing portion of the property.

Outside of the CMS Area, Tecumseh designated five parcels for redevelopment under the New York State Brownfield Cleanup Program (BCP). These include: The Phase I, IA, II, and III Business Park, which are at various points of investigation and cleanup under the BCP and are slated for commercial/industrial redevelopment, and the Steel Winds Site, which was remediated under the BCP and redeveloped as a commercial wind farm.

This Site-Wide Health and Safety Plan (HASP) applies to the Business Park Sites under the BCP.

1.3 Known and Suspected Environmental Conditions

The Phase I, IA, II, and III Business Parks were formerly used to house portions of BSC's steelmaking operations. The slag and other industrial fill materials contain highly variable and sometimes elevated concentrations of metals, as well as semi-volatile and volatile organic compounds (SVOCs and VOCs). In addition, groundwater in contact with the soil/fill materials described above may exhibit elevated concentrations of corresponding soluble COPCs (e.g., BTEX) in groundwater.

1.4 Parameters of Interest

Constituents of potential concern (COPCs) at the BCP Sites include:

- **Volatile Organic Compounds (VOCs)** – VOCs present at elevated concentration may include benzene, toluene, ethylbenzene, and xylene (i.e., BTEX). These VOCs are typically associated with storage and handling of petroleum products such as gasoline.
- **Semi-Volatile Organic Compounds (SVOCs) –** SVOCs present at elevated concentrations may include base-neutral semi-volatile organic compounds (SVOCs) from oils, greases, and fuels associated with the operation of locomotive engines, steel mills, petroleum bulk storage, and other historic steel manufacturing operations. Specifically, polycyclic aromatic hydrocarbons (PAHs), which are byproducts of incomplete combustion and impurities in petroleum products. Although PAHs are commonly found in urban soil environments, they may be present at the Site at concentrations that are elevated compared to typical "background" levels. Naphthalene is a natural component of fossil fuels such as petroleum and coal; it is also formed when natural products such as wood or tobacco are burned.
- **Polychlorinated Biphenyls (PCBs)** – The potential impact of surface and subsurface soils by PCBs in discrete areas associated with former substations, rail yards, and hydraulic pump houses.
- **Inorganic Compounds** – Inorganic COPCs potentially present at elevated concentrations due to steel making activities may include arsenic, cadmium, chromium, lead, and mercury. Several of these parameters are components of coke and slag which are prevalent in the planned work area.

In addition, groundwater in contact with the soil/fill materials described above may exhibit elevated concentrations of corresponding soluble COPCs (e.g., BTEX).

1.5 Overview of BCP Activities

TurnKey-Benchmark personnel will be on-site to observe BCP investigation and remedial activities. General field activities to be completed are described below. Detailed BCP activities are more fully described in the individual work plans for each property.

1. **Soil/Fill Excavation:** TurnKey-Benchmark will monitor all soil/fill excavations (e.g., wind turbine foundation excavation, test pit investigations) and related activities to visually inspect soil/fill for evidence of contamination.

2. **Soil/Fill Documentation Sampling:** TurnKey-Benchmark will collect surface and subsurface soil/fill documentation samples following excavation.
3. **Surface Water Management:** During excavation, surface water and/or perched groundwater infiltration may occur. TurnKey-Benchmark will direct the contractor to collect and characterize the surface water for proper disposal.
4. **Subgrade Work:** Significant grading may be required before implementation of remedial measures (e.g., cover system placement).
5. **Cover Soil Placement:** A soil cover system will be placed over select portions of the Site to reduce potential contact with impacted soil/fill. TurnKey-Benchmark will oversee installation of the cover system.
6. **Groundwater Monitoring Well Installation and Sampling:** TurnKey-Benchmark will install groundwater monitoring wells and collect samples for the long-term groundwater monitoring program.
7. **Groundwater Remediation:** TurnKey-Benchmark personnel will oversee the potential groundwater remediation at the Site, which may include installation of treatment (ORC/HRC) filter socks in groundwater monitoring wells.

2.0 ORGANIZATIONAL STRUCTURE

This chapter of the HASP describes the lines of authority, responsibility, and communication as they pertain to health and safety functions at the BCP Sites. The purpose of this chapter is to identify the personnel who impact the development and implementation of the HASP and to describe their roles and responsibilities. This chapter also identifies other contractors and subcontractors involved in work operations, and establishes the lines of communications among them for health and safety matters. The organizational structure described in this chapter is consistent with the requirements of 29 CFR 1910.120(b)(2). This section will be reviewed by the Project Manager and updated as necessary to reflect the current organizational structure at the BCP Sites.

2.1 Roles and Responsibilities

All Turnkey-Benchmark personnel on the Site must comply with the minimum requirements of this HASP. The specific responsibilities and authority of management, safety, and health, and other personnel on this site are detailed in the following paragraphs.

2.1.1 Corporate Health and Safety Director

The TurnKey-Benchmark Corporate Health and Safety Director is ***Mr. Michael M. Yount, CESCO.*** The Corporate Health and Safety Director responsible for developing and implementing the Health and Safety program and policies for Benchmark Environmental Engineering & Science, PLLC and TurnKey Environmental Restoration, LLC, and consulting with corporate management to ensure adequate resources are available to properly implement these programs and policies. The Corporate Health and Safety Director coordinates TurnKey-Benchmark's Health and Safety training and medical monitoring programs and assists project management and field staff in developing site-specific health and safety plans.

2.1.2 Project Manager

The Project Manager for these Sites is ***Thomas H. Forbes, P.E.*** The Project Manager has the responsibility and authority to direct all TurnKey-Benchmark work operations at the site. The Project Manager coordinates safety and health functions with the

Site Safety and Health Officer, and bears ultimate responsibility for proper implementation of this HASP. He may delegate authority to expedite and facilitate any application of the program, including modifications to the overall project approach as necessary to circumvent unsafe work conditions. Specific duties of the Project Manager include:

- Preparing and coordinating the site work plan.
- Providing TurnKey-Benchmark workers with work assignments and overseeing their performance.
- Coordinating health and safety efforts with the Site Safety and Health Officer (SSHO).
- Reviewing the emergency response coordination plan to assure its effectiveness.
- Serving as the primary liaison with site contractors and the property owner.

2.1.3 Site Safety and Health Officer

The Site Safety and Health Officer (SSHO) for this site is ***Mr. Richard L. Dubisz***. The qualified alternate SSHO is ***Mr. Thomas Behrendt.*** The SSHO reports to the Project Manager. The SSHO is on-site or readily accessible to the site during all work operations and has the authority to halt site work if unsafe conditions are detected. The specific responsibilities of the SSHO are:

- Managing the safety and health functions for TurnKey-Benchmark personnel on the site.
- Serving as the point of contact for safety and health matters.
- Ensuring that TurnKey-Benchmark field personnel working on the site have received proper training (per 29 CFR Part 1910.120(e)), that they have obtained medical clearance to wear respiratory protection (per 29 CFR Part 1910.134), and that they are properly trained in the selection, use and maintenance of personal protective equipment, including qualitative respirator fit testing.
- Performing or overseeing site monitoring as required by the HASP.
- Assisting in the preparation and review of the HASP
- Maintaining site-specific safety and health records as described in this HASP
- Coordinating with the Project Manager, Site Workers, and Contractor's SSHO as necessary for safety and health efforts.

2.1.4 Site Workers

Site workers are responsible for: complying with this HASP or a more stringent HASP, if appropriate (i.e., Contractor and Subcontractor's HASP); using proper PPE; reporting unsafe acts and conditions to the SSHO; and following the safety and health instructions of the Project Manager and SSHO.

2.1.5 Other Site Personnel

Other site personnel who will have health and safety responsibilities will include the Remedial Contractor, who will be responsible for developing, implementing, and enforcing a Health and Safety Plan equally stringent or more stringent than TurnKey-Benchmark's HASP. TurnKey-Benchmark assumes no responsibility for the health and safety of anyone outside its direct employ. Each Contractor's HASP shall cover all non-TurnKey/ Benchmark site personnel. Each Contractor shall assign a SSHO who will coordinate with TurnKey-Benchmark's SSHO as necessary to ensure effective lines of communication and consistency between contingency plans.

In addition to TurnKey-Benchmark and Contractor personnel, other individuals who may have responsibilities in the work zone include subcontractors and governmental agencies performing site inspection work (i.e., the New York State Department of Environmental Conservation). The Contractor shall be responsible for ensuring that these individuals have received OSHA-required training (29 CFR 1910.120(e)), including initial, refresher and site-specific training, and shall be responsible for the safety and health of these individuals while they are on-site.

3.0 HAZARD EVALUATION

Due to the presence of certain contaminants at the BCP Sites, the possibility exists that workers will be exposed to hazardous substances during field activities. The principal points of exposure would be through direct contact with and incidental ingestion of soil/fill, and through the inhalation of contaminated particles or vapors, during test pit completion, monitoring well installation, and soil/fill excavation. In addition, the use of heavy construction equipment (e.g., dozer) will also present conditions for potential physical injury to workers. Further, since work will be performed outdoors, the potential exists for heat/cold stress to impact workers, especially those wearing protective equipment and clothing. Adherence to the medical evaluations, worker training relative to chemical hazards, safe work practices, proper personal protection, environmental monitoring, establishment work zones and site control, appropriate decontamination procedures and contingency planning outlined herein will reduce the potential for chemical exposures and physical injuries.

3.1 Chemical Hazards

As discussed in Section 1.3, historic activities related to the former steel-manufacturing operations and facilities have resulted in elevated concentrations of VOCs, SVOCs, PCBs, and inorganic compounds in soil/fill and groundwater. Table 1 identifies maximum concentrations of COPCs detected throughout the Tecumseh property. Table 2 lists exposure limits for airborne concentrations of the COPCs identified in Section 1.4 of this HASP. Brief descriptions of the toxicology of the prevalent constituents of potential concern and related health and safety guidance and criteria are provided below.

- **Arsenic (CAS #7440-38-2)** is a naturally occurring element and is usually found combined with one or more elements, such as oxygen or sulfur. Inhalation is a more important exposure route than ingestion. First phase exposure symptoms include nausea, vomiting, diarrhea and pain in the stomach. Prolonged contact is corrosive to the skin and mucus membranes. Arsenic is considered a Group A human carcinogen by the USEPA. Exposure via inhalation is associated with an increased risk of lung cancer. Exposure via the oral route is associated with an increased risk of skin cancer.
- **Benzene (CAS #71-43-2)** poisoning occurs most commonly through inhalation of the vapor; however, benzene can also penetrate the skin and poison in that way. Locally, benzene has a comparatively strong irritating effect, producing

erythema and burning and, in more severe cases, edema and blistering. Exposure to high concentrations of the vapor (i.e., 3,000 ppm or higher) may result in acute poisoning characterized by the narcotic action of benzene on the central nervous system. In acute poisoning, symptoms include confusion, dizziness, tightening of the leg muscles, and pressure over the forehead. Chronic exposure to benzene (i.e., long-term exposure to concentrations of 100 ppm or less) may lead to damage of the blood-forming system. Benzene is very flammable when exposed to heat or flame and can react vigorously with oxidizing materials.

- **Cadmium** is a natural element and is usually combined with one or more elements, such as oxygen, chloride, or sulfur. Breathing high levels of cadmium severely damages the lungs and can cause death. Ingestion of high levels of cadmium severely irritates the stomach, leading to vomiting and diarrhea. Long term exposure to lower levels of cadmium leads to a buildup of this substance in the kidneys and possible kidney disease. Other potential long term effects are lung damage and fragile bones. Cadmium is suspected to be a human carcinogen.
- **Chromium (CAS #7440-47-3)** is used in the production of stainless steel, chrome plated metals, and batteries. Two forms of chromium, hexavalent (CR+6) and trivalent (CR+3) are toxic. Hexavalent chromium is an irritant and corrosive to the skin and mucus membranes. Chromium is a potential occupational carcinogen. Acute exposures to dust may cause coughing, wheezing, headaches, pain and fever.
- **Ethylbenzene (CAS #100-41-4)** is a component of automobile gasoline. Over-exposure may cause kidney, skin liver and/or respiratory disease. Signs of exposure may include dermatitis, irritation of the eyes and mucus membranes, headache. Narcosis and coma may result in more severe cases.
- **Lead (CAS #7439-92-1)** can affect almost every organ and system in our bodies. The most sensitive is the central nervous system, particularly in children. Lead also damages kidneys and the immune system. The effects are the same whether it is breathed or swallowed. Lead may decrease reaction time, cause weakness in fingers, wrists, or ankles, and possibly affect memory. Lead may cause anemia.
- **Mercury (CAS #7439-97-6)** is used in industrial applications for the production of caustic and chlorine, and in electrical control equipment and apparatus. Over-exposure to mercury may cause coughing, chest pains, bronchitis, pneumonia, indecision, headaches, fatigue, and salivation. Mercury is a skin and eye irritant.
- **Naphthalene (CAS #91-20-3)** is a white solid with a strong smell; is also called mothballs, moth flakes, white tar, and tar camphor. Naphthalene is a natural component of fossil fuels such as petroleum and coal; it is also formed when natural products such as wood or tobacco are burned. Acute exposure to naphthalene can cause systemic reactions, including nausea, headache,

diaphoresis, hematuria, fever, anemia, liver damage, vomiting, convulsions, and coma. Acute exposure can also cause eye irritation, confusion, excitement, malaise, abdominal pain, irritation to the bladder, profuse sweating, jaundice, hematopoietic, hemoglobinuria, renal shutdown, and dermatitis. Exposure to a large amount of naphthalene can cause red blood cells to be damaged or destroyed, a condition called hemolytic anemia, which leads to fatigue, lack of appetite, restlessness, and a pale appearance. Poisoning may occur by ingestion of large doses, skin and/or eye contact, inhalation, or skin absorption.

- **Polycyclic Aromatic Hydrocarbons (PAHs)** are formed as a result of the pyrolysis and incomplete combustion of organic matter such as fossil fuel. PAH aerosols formed during the combustion process disperse throughout the atmosphere, resulting in the deposition of PAH condensate in soil, water and on vegetation. In addition, several products formed from petroleum processing operations (e.g., roofing materials and asphalt) also contain elevated levels of PAHs. Hence, these compounds are widely dispersed in the environment. PAHs are characterized by a molecular structure containing three or more fused, unsaturated carbon rings. Seven of the PAHs are classified by USEPA as probable human carcinogens (USEPA Class B2). These are: benzo(a)pyrene; benzo(a)anthracene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenzo(a,h)anthracene; and indeno(1,2,3-cd)pyrene. The primary route of exposure to PAHs is through incidental ingestion and inhalation of contaminated particulates. PAHs are characterized by an organic odor, and exist as oily liquids in pure form. Acute exposure symptoms may include acne-type blemishes in areas of the skin exposed to sunlight.
- **Polychlorinated Biphenyls (PCBs)** are associated with former substations, rail yards, and hydraulic pump houses on the Site. PCBs can be absorbed into the body by inhalation of its aerosol, through the skin, and by ingestion. Repeated or prolonged contact with skin may cause dermatitis. PCBs may have effects on the liver. Animal tests show that PCBs possibly cause toxic effects in human reproduction. In the food chain, bioaccumulation takes place, specifically in aquatic organisms. A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C.
- **Toluene (CAS #108-88-3)** is a common component of paint thinners and automobile fuel. Acute exposure predominantly results in central nervous system depression. Symptoms include headache, dizziness, fatigue, muscular weakness, drowsiness, and coordination loss. Repeated exposures may cause removal of lipids from the skin, resulting in dry, fissured dermatitis.
- **Xylenes (o, m, and p) (CAS #95-47-6, 108-38-3, and 106-42-3)** are colorless, flammable liquids present in paint thinners and fuels. Acute exposure may cause central nervous system depression, resulting in headache, dizziness, fatigue,

muscular weakness, drowsiness, and coordination loss. Repeated exposures may also cause removal of lipids from the skin, producing dry, fissured dermatitis. Exposure of high concentrations of vapor may cause eye irritation and damage, as well as irritation of the mucus membranes.

With respect to the anticipated BCP activities discussed in Section 1.5, possible routes of exposure to the above-mentioned contaminants are presented in Table 3. The use of proper respiratory equipment, as outlined in Section 7.0 of this HASP, will minimize the potential for exposure to airborne contamination. Exposure to contaminants through dermal and other routes will also be minimized through the use of protective clothing (Section 7.0), safe work practices (Section 6.0), and proper decontamination procedures (Section 12.0).

3.2 Physical Hazards

BCP investigation and remedial activities at the Tecumseh site may present the following physical hazards:

- The potential for physical injury during heavy construction equipment use, such as grading equipment, excavators, and tandem trucks.
- The potential for heat/cold stress to employees during the summer/winter months (see Section 10.0).
- The potential for slip and fall injuries due to rough, uneven terrain and/or open excavations.

These hazards represent only some of the possible means of injury that may be present during investigation and remedial activities at the Site. Since it is impossible to list all potential sources of injury, it shall be the responsibility of each individual to exercise proper care and caution during all phases of the work.

4.0 TRAINING

4.1 Site Workers

All personnel performing investigation and remedial activities at the Site (such as, but not limited to, equipment operators, general laborers, and supervisors) and who may be exposed to hazardous substances, health hazards, or safety hazards and their supervisors/managers responsible for the Site shall receive training in accordance with 29 CFR 1910.120(e) before they are permitted to engage in operations in the exclusion zone or contaminant reduction zone. This training includes an initial 40-hour Hazardous Waste Site Worker Protection Course, an 8-hour Annual Refresher Course subsequent to the initial 40-hour training, and 3 days of actual field experience under the direct supervision of a trained, experienced supervisor. Additional site-specific training shall also be provided by the SSHO prior to the start of field activities. A description of topics to be covered by this training is provided below.

4.1.1 Initial and Refresher Training

Initial and refresher training is conducted by a qualified instructor as specified under OSHA 29 CFR 1910.120(e)(5), and is specifically designed to meet the requirements of OSHA 29 CFR 1910.120(e)(3) and 1910.120(e)(8). The training covers, as a minimum, the following topics:

- OSHA HAZWOPER regulations.
- Site safety and hazard recognition, including chemical and physical hazards.
- Medical monitoring requirements.
- Air monitoring, permissible exposure limits, and respiratory protection level classifications.
- Appropriate use of personal protective equipment (PPE), including chemical compatibility and respiratory equipment selection and use.
- Work practices to minimize risk.
- Work zones and site control.
- Safe use of engineering controls and equipment.
- Decontamination procedures.
- Emergency response and escape.

- Confined space entry procedures.
- Heat and cold stress monitoring.
- Elements of a Health and Safety Plan.
- Spill containment.

Initial training also incorporates workshops for PPE and respiratory equipment use (Levels A, B and C), and respirator fit testing. Records and certification received from the course instructor documenting each employee's successful completion of the training identified above are maintained on file at TurnKey-Benchmark's Buffalo, NY office. Contractors and Subcontractors are required to provide similar documentation of training for all their personnel who will be involved in on-site work activities.

Any employee who has not been certified as having received health and safety training in conformance with 29 CFR 1910.120(e) is prohibited from working in the exclusion and contamination reduction zones, or to engage in any on-site work activities that may involve exposure to hazardous substances or wastes.

4.1.2 Site Training

Site workers are given a copy of the HASP and provided a site-specific briefing prior to the commencement of work to ensure that employees are familiar with the HASP and the information and requirements it contains. The site briefing shall be provided by the SSHO prior to initiating field activities and shall include:

- Names of personnel and alternates responsible for site safety and health.
- Safety, health and other hazards present on the Site.
- The Site lay-out including work zones and places of refuge.
- The emergency communications system and emergency evacuation procedures.
- Use of PPE.
- Work practices by which the employee can minimize risks from hazards.
- Safe use of engineering controls and equipment on the site.
- Medical surveillance, including recognition of symptoms and signs of over-exposure as described in Chapter 5 of this HASP.
- Decontamination procedures as detailed in Chapter 12 of this HASP.
- The emergency response plan as detailed in Chapter 15 of this HASP.
- Confined space entry procedures, if required, as detailed in Chapter 13 of this HASP.

- The spill containment program as detailed in Chapter 9 of this HASP.
- Site control as detailed in Chapter 11 of this HASP.

Supplemental health and safety briefings will also be conducted by the SSHO on an as-needed basis during the course of the work. Supplemental briefings are provided as necessary to notify employees of any changes to this HASP as a result of information gathered during ongoing site characterization and analysis. Conditions for which the SSHO may schedule additional briefings include, but are not limited to: a change in Site conditions (i.e., based on monitoring results); changes in the work schedule/plan; newly discovered hazards; and safety incidents occurring during Site work.

4.2 Supervisor Training

On-site safety and health personnel who are directly responsible for or who supervise the safety and health of workers engaged in hazardous waste operations (i.e., SSHO) shall receive, in addition to the appropriate level of worker training described in Section 4.1, above, 8 additional hours of specialized supervisory training, in compliance with 29 CFR 1910.120(e)(4).

4.3 Emergency Response Training

Emergency response training is addressed in Appendix A of this HASP, Emergency Response Plan.

4.4 Site Visitors

Each Contractor's SSHO will provide a site-specific briefing to all site visitors and other non-TurnKey/Benchmark personnel who enter the Site beyond the site entry point. The site-specific briefing will provide information about site hazards, the site layout including work zones and places of refuge, the emergency communications system and emergency evacuation procedures, and other pertinent safety and health requirements as appropriate.

Site visitors will not be permitted to enter the exclusion zone or contaminant reduction zones unless they have received the level of training required for site workers as described in Section 4.1.

5.0 MEDICAL MONITORING

Medical monitoring examinations are provided to TurnKey-Benchmark employees as stipulated under 29 CFR Part 1910.120(f). These exams include initial employment, annual and employment termination physicals for all TurnKey-Benchmark employees involved in hazardous waste site field operations. Post-exposure examinations are also provided for employees who may have been injured; received a health impairment; developed signs or symptoms of over-exposure to hazardous substances; or were accidentally exposed to substances at concentrations above the permissible exposure limits without necessary personal protective equipment. Such exams are performed as soon as possible following development of symptoms or the known exposure event.

Medical evaluations are performed by Health Works WNY, an occupational health care provider under contract with TurnKey-Benchmark. Health Works WNY's local facility is located at 1900 Ridge Road, West Seneca, New York 14224. The facility can be reached at (716) 823-5050 to schedule routine appointments or post-exposure examinations.

Medical evaluations are conducted according to the TurnKey-Benchmark Medical Monitoring Program and include an evaluation of the workers' ability to use respiratory protective equipment. The purpose of the medical evaluation is to determine an employee's fitness for duty on hazardous waste sites; and to establish baseline medical data. The examinations include:

- Occupational/medical history review.
- Physical exam, including vital sign measurement.
- Spirometry testing.
- Eyesight testing.
- Audio testing (minimum baseline and exit, annual for employees routinely exposed to greater than 85db).
- EKG (for employees >40 yrs age or as medical conditions dictate).
- Chest X-ray (baseline and exit, and every 5 years).
- Blood biochemistry (including blood count, white cell differential count, serum multiplastic screening).
- Medical certification of physical requirements (i.e., sight, musculoskeletal, cardiovascular) for safe job performance and to wear respiratory protection equipment.

In conformance with OSHA regulations, TurnKey-Benchmark will maintain and

preserve medical records for a period of 30 years following termination of employment. Employees are provided a copy of the physician's post-exam report, and have access to their medical records and analyses.

6.0 SAFE WORK PRACTICES

All TurnKey-Benchmark employees shall conform to the following safe work practices during all on-site work activities conducted within the exclusion and contamination reduction zones:

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth contact is strictly prohibited.
- The hands and face must be thoroughly washed upon leaving the work area and prior to engaging in any activity indicated above.
- Respiratory protective equipment and clothing must be worn by all personnel entering the site as required by the HASP or as modified by the site safety officer. Excessive facial hair (i.e., beards, long mustaches, or sideburns) that interferes with the satisfactory respirator-to-face seal is prohibited.
- Contact with surfaces/materials either suspected or known to be contaminated will be avoided to minimize the potential for transfer to personnel, cross contamination and need for decontamination.
- Medicine and alcohol can synergize the effects of exposure to toxic chemicals. Due to possible contraindications, use of prescribed drugs should be reviewed with the TurnKey-Benchmark occupational physician. Alcoholic beverage and illegal drug intake are strictly forbidden during the workday.
- All personnel shall be familiar with standard operating safety procedures and additional instructions contained in this Health and Safety Plan.
- On-site personnel shall use the "buddy" system. No one may work alone (i.e., out of earshot or visual contact with other workers) in the exclusion zone.
- Personnel and equipment in the contaminated area shall be minimized, consistent with effective site operations.
- All employees have the obligation to immediately report and if possible, correct unsafe work conditions.
- Use of contact lenses on-site will not be permitted. Spectacle kits for insertion into full-face respirators will be provided for TurnKey-Benchmark employees, as requested and required.

The recommended specific safety practices for working around the contractor's equipment (e.g., backhoes, bulldozers, excavators, etc.) are as follows:

- Although the Contractor and subcontractors are responsible for their equipment and safe operation of the site, TurnKey-Benchmark personnel are also

responsible for their own safety.

- Subsurface work will not be initiated without first clearing underground utility services.
- Heavy equipment should not be operated within 20 feet of overhead wires. This distance may be increased if windy conditions are anticipated or if lines carry high voltage. The site should also be sufficiently clear to ensure the project staff can move around the heavy machinery safely.
- Care should be taken to avoid overhead wires when moving heavy-equipment from location to location.
- Hard hats, safety boots, and safety glasses should be worn at all times in the vicinity of heavy equipment. Hearing protection is also recommended.
- The work site should be kept neat. This will prevent personnel from tripping and will allow for fast emergency exit from the site.
- Proper lighting must be provided when working at night.
- Construction activities should be discontinued during an electrical storm or severe weather conditions.
- The presence of combustible gases should be checked before igniting any open flame.
- Personnel shall stand upwind of any construction operation when not immediately involved in sampling/logging/observing activities.
- Personnel will not approach the edge of an unsecured trench/excavation closer than 2 feet.

7.0 PERSONAL PROTECTIVE EQUIPMENT

7.1 Equipment Selection

Personal protective equipment (PPE) will be donned when work activities may result in exposure to physical or chemical hazards beyond acceptable limits, and when such exposure can be mitigated through appropriate PPE. The selection of PPE will be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the Site, the task-specific conditions and duration, and the hazards and potential hazards identified at the site.

Equipment designed to protect the body against contact with known or suspect chemical hazards are grouped into four categories according to the degree of protection afforded. These categories designated A through D consistent with USEPA Level of Protection designation, are:

- **Level A:** Should be selected when the highest level of respiratory, skin and eye protection is needed.
- **Level B:** Should be selected when the highest level of respiratory protection is needed, but a lesser level of skin protection is required. Level B protection is the minimum level recommended on initial site entries until the hazards have been further defined by on-site studies. Level B (or Level A) is also necessary for oxygen-deficient atmospheres.
- **Level C:** Should be selected when the types of airborne substances are known, the concentrations have been measured, and the criteria for using air-purifying respirators are met. In atmospheres where no airborne contaminants are present, Level C provides dermal protection only.
- **Level D:** Should not be worn on any site with elevated respiratory or skin hazards. This is generally a work uniform providing minimal protection.

OSHA requires the use of certain PPE under conditions where an immediate danger to life and health (IDLH) may be present. Specifically, OSHA 29 CFR 1910.120(g)(3)(iii) requires use of a positive pressure self-contained breathing apparatus, or positive pressure air-line respirator equipped with an escape air supply when chemical exposure levels present a substantial possibility of immediate serious injury, illness or death, or impair the ability to escape. Similarly, OSHA 29 CFR 1910.120(g)(3)(iv) requires donning totally encapsulating chemical protective suits (with a protection level equivalent to Level A protection) in

conditions where skin absorption of a hazardous substance may result in a substantial possibility of immediate serious illness, injury or death, or impair the ability to escape.

In situations where the types of chemicals, concentrations, and possibilities of contact are unknown, the appropriate level of protection must be selected based on professional experience and judgment until the hazards can be further characterized. The individual components of clothing and equipment must be assembled into a full protective ensemble to protect the worker from site-specific hazards, while at the same time minimizing hazards and drawbacks of the personal protective gear itself. Ensemble components are detailed below for levels A/B, C, and D protection.

7.2 Protection Ensembles

7.2.1 Level A/B Protection Ensemble

Level A/B ensembles include similar respiratory protection, however Level A provides a higher degree of dermal protection than Level B. Use of Level A over Level B is determined by: comparing the concentrations of identified substances in the air with skin toxicity data, and assessing the effect of the substance (by its measured air concentrations or splash potential) on the small area of the head and neck unprotected by Level B clothing.

The recommended PPE for level A/B is:

- Pressure-demand, full-face piece self-contained breathing apparatus (MSHA/-NIOSH approved) or pressure-demand supplied-air respirator with escape self-contained breathing apparatus (SCBA).
- Chemical-resistant clothing. For Level A, clothing consists of totally-encapsulating chemical resistant suit. Level B incorporates hooded one-or two-piece chemical splash suit.
- Inner and outer chemical resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

7.2.2 Level C Protection Ensemble

Level C protection is distinguished from Level B by the equipment used to protect the respiratory system, assuming the same type of chemical-resistant clothing is used. The main selection criterion for Level C is that conditions permit wearing an air-purifying device. The device (when required) must be an air-purifying respirator (MSHA/NIOSH approved) equipped with filter cartridges. Cartridges must be able to remove the substances encountered. Respiratory protection will be used only with proper fitting, training, and the approval of a qualified individual. In addition, an air-purifying respirator can be used only if: oxygen content of the atmosphere is at least 19.5% in volume; substances are identified and concentrations measured; substances have adequate warning properties; the individual passes a qualitative fit-test for the mask; and an appropriate cartridge/canister is used, and its service limit concentration is not exceeded.

Recommended PPE for Level C conditions includes:

- Full-face piece, air-purifying respirator equipped with MSHA and NIOSH approved organic vapor/acid gas/dust/mist combination cartridges or as designated by the SSHO.
- Chemical-resistant clothing (hooded, one or two-piece chemical splash suit or disposable chemical-resistant one-piece suit).
- Inner and outer chemical-resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

An air-monitoring program is part of all response operations when atmospheric contamination is known or suspected. It is particularly important that the air be monitored thoroughly when personnel are wearing air-purifying respirators. Continual surveillance using direct-reading instruments is needed to detect any changes in air quality necessitating a higher level of respiratory protection.

7.2.3 Level D Protection Ensemble

As indicated above, Level D protection is primarily a work uniform. It can be worn in areas where only boots can be contaminated, where there are no inhalable toxic substances and where the atmospheric contains at least 19.5% oxygen.

Recommended PPE for Level D includes:

- Coveralls.
- Safety boots/shoes.
- Safety glasses or chemical splash goggles.
- Hardhat.
- Optional gloves; escape mask; face shield.

7.2.4 Recommended Level of Protection for Site Tasks

Based on current information regarding both the contaminants suspected to be present at the Site and the various tasks that are included in the investigation and remedial activities, the minimum required Levels of Protection for these tasks shall be as identified in Table 4.

8.0 EXPOSURE MONITORING

8.1 General

Based on the results of historic sample analysis and the nature of the proposed work activities at the Site, the possibility exists that organic vapors and/or particulates may be released to the air during intrusive construction activities. Ambient breathing zone concentrations may at times, exceed the permissible exposure limits (PELs) established by OSHA for the individual compounds (see Table 2), in which case respiratory protection will be required. Respiratory and dermal protection may be modified (upgraded or downgraded) by the SSHO based upon real-time field monitoring data.

8.1.1 On-Site Work Zone Monitoring

TurnKey-Benchmark personnel will conduct routine, real-time air monitoring during all intrusive construction phases such as excavation, backfilling, drilling, etc. The work area will be monitored at regular intervals using a photo-ionization detector (PID), combustible gas meter and a particulate meter. Observed values will be recorded and maintained as part of the permanent field record.

Additional air monitoring measurements may be made by TurnKey-Benchmark personnel to verify field conditions during subcontractor oversight activities. Monitoring instruments will be protected from surface contamination during use. Additional monitoring instruments may be added if the situations or conditions change. Monitoring instruments will be calibrated in accordance with manufacturer's instructions before use.

8.1.2 Off-Site Community Air Monitoring

In addition to on-site monitoring within the work zone(s), monitoring at the down-wind portion of the Site perimeter will be conducted. This will provide a real-time method for determination of substantial vapor and/or particulate releases to the surrounding community as a result of ground intrusive investigation work.

Ground intrusive activities are defined by NYSDOH Appendix 1A Generic Community Air Monitoring Plan (Reference 4) and attached as Appendix C. Ground intrusive activities include soil/waste excavation and handling, test pitting or trenching, and

the installation of soil borings or monitoring wells. Non-intrusive activities include the collection of soil and sediment samples or the collection of groundwater samples from existing wells. Continuous monitoring is required for ground intrusive activities and periodic monitoring is required for non-intrusive activities. Periodic monitoring consists of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring while bailing a well, and taking a reading prior to leaving a sampling location. This may be upgraded to continuous if the sampling location is in close proximity to individuals not involved in the site activity (i.e., on a curb of a busy street). The action levels below will be used during periodic monitoring. This will provide a real-time method for determination of substantial vapor and/or particulate releases to the surrounding community because of site investigation work.

8.2 Monitoring Action Levels

8.2.1 On-Site Work Zone Action Levels

The PID, explosimeter, or other appropriate instrument(s), will be used by TurnKey-Benchmark personnel to monitor organic vapor concentrations as specified in this HASP. In addition, fugitive dust/particulate concentrations will be monitored during major soil intrusion using a real-time particulate monitor as specified in this plan. In the absence of such monitoring, appropriate respiratory protection for particulates shall be donned. Sustained readings obtained in the breathing zone may be interpreted (with regard to other site conditions) as follows for TurnKey-Benchmark personnel:

- Total atmospheric concentrations of unidentified vapors or gases ranging from 0 to 1 ppm above background on the PID) - Continue operations under Level D (see Appendix A).
- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings from >1 ppm to 5 ppm above background on the PID (vapors not suspected of containing high levels of chemicals toxic to the skin) - Continue operations under Level C (see Appendix A).
- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings of >5 ppm to 50 ppm above background on the PID - Continue operations under Level B (see Attachment 1), re-evaluate and alter (if possible) construction methods to achieve lower vapor concentrations.

- Total atmospheric concentrations of unidentified vapors or gases above 50 ppm on the PID - Discontinue operations and exit the work zone immediately.

The explosimeter will be used to monitor levels of both combustible gases and oxygen during RD activities involving deep excavation, if required. Action levels based on the instrument readings shall be as follows:

- Less than 10% LEL - Continue engineering operations with caution.
- 10-25% LEL - Continuous monitoring with extreme caution, determine source/cause of elevated reading.
- Greater than 25% LEL - Explosion hazard, evaluate source and leave the Work Zone.
- 19.5-21% oxygen - Proceed with extreme caution; attempt to determine potential source of oxygen displacement.
- Less than 19.5% oxygen - Leave work zone immediately.
- 21-25% oxygen - Continue engineering operations with caution.
- Greater than 25% oxygen - Fire hazard potential, leave Work Zone immediately.

The particulate monitor will be used to monitor respirable dust concentrations during all intrusive activities and during handling of site soil/fill. Action levels based on the instrument readings shall be as follows:

- Less than 50 $\mu g/m^3$ - Continue field operations.
- 50-150 $\mu g/m^3$ - Don dust/particulate mask or equivalent
- Greater than 150 $\mu g/m^3$ - Don dust/particulate mask or equivalent. Initiate engineering controls to reduce respirable dust concentration (i.e., wetting of excavated soils or tools at discretion of SSHO).

Readings with the organic vapor analyzer, combustible gas meter, and particulate monitor will be recorded and documented on the appropriate Project Field Forms. All instruments will be calibrated before use on a daily basis and the procedure will be documented on the appropriate Project Field Forms.

8.2.2 Community Air Monitoring Action Levels

In addition to the action levels prescribed in Section 8.2.1 for Benchmark personnel on-site, the following criteria shall also be adhered to for the protection of downwind receptors consistent with NYSDOH requirements (Appendix C):

- **ORGANIC VAPOR PERIMETER MONITORING:**
  - If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone exceeds 5 ppm above background, work activities will be halted and monitoring continued. If the sustained organic vapor decreases below 5 ppm over background, work activities can resume but more frequent intervals of monitoring, as directed by the SSHO, must be conducted.
  - If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone are greater than 5 ppm over background but less than 25 ppm, activities can resume provided that: the organic vapor level 200 feet downwind of the working site or half the distance to the nearest off-site residential or commercial structure, whichever is less, is below 5 ppm over background; and more frequent intervals of monitoring, as directed by the SSHO, are conducted.
  - If the sustained organic vapor level is above 25 ppm at the perimeter of the exclusion zone, the SSHO must be notified and work activities shut down. The SSHO will determine when re-entry of the exclusion zone is possible and will implement downwind air monitoring to ensure vapor emissions do not impact the nearest off-site residential or commercial structure at levels exceeding those specified in the ***Organic Vapor Contingency Monitoring Plan*** below. All readings will be recorded and will be available for New York State Department of Environmental Conservation (NYSDEC) and Department of Health (NYSDOH) personnel to review.

- **ORGANIC VAPOR CONTINGENCY MONITORING PLAN:**
  - If the sustained organic vapor level is greater than 5 ppm over background 200 feet downwind from the work area or half the distance to the nearest off-site residential or commercial property, whichever is less, all work activities must be halted.
  - If, following the cessation of the work activities or as the result of an emergency, sustained organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest off-site residential or commercial property from the work area, then the air quality must be

monitored within 20 feet of the perimeter of the nearest off-site residential or commercial structure (20-foot zone).

- If efforts to abate the emission source are unsuccessful and if sustained organic vapor levels approach or exceed 5 ppm above background within the 20-foot zone for more than 30 minutes, or are sustained at levels greater than 10 ppm above background for longer than one minute, then the ***Major Vapor Emission Response Plan*** (see below) will automatically be placed into effect.

o ***Major Vapor Emission Response Plan*:**

Upon activation, the following activities will be undertaken:

1. All Emergency Response Contacts as listed in this Health and Safety Plan and the Emergency Response Plan (Appendix A) will be advised.
2. The local police authorities will immediately be contacted by the SSHO and advised of the situation.
3. Frequent air monitoring will be conducted at 30-minute intervals within the 20-foot zone. If two sustained successive readings below action levels are measured, air monitoring may be halted or modified by the SSHO.

The following personnel are to be notified in the listed sequence in the event that a Major Vapor Emission Plan is activated:

Responsible Person	Contact	Phone Number
SSHO	Police	911
SSHO	State Emergency Response Hotline	(800) 457-7362

Additional emergency numbers are listed in the Emergency Response Plan included as Appendix A.

o **EXPLOSIVE VAPORS:**

- Sustained atmospheric concentrations of greater than 10% LEL in the work area - Initiate combustible gas monitoring at the downwind portion of the Site perimeter.
- Sustained atmospheric concentrations of greater than 10% LEL at the downwind Site perimeter – Halt work and contact local Fire Department.

- **Airborne Particulate Community Air Monitoring**

Respirable (PM-10) particulate monitoring will be performed on a continuous basis at the upwind and downwind perimeter of the exclusion zone. The monitoring will be performed using real-time monitoring equipment capable of measuring PM-10 and integrating over a period of 15-minutes for comparison to the airborne particulate action levels. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities. All readings will be recorded and will be available for NYSDEC and NYSDOH review. Readings will be interpreted as follows:

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter ($\mu g/m^3$) greater than the background (upwind perimeter) reading for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression provided that the downwind PM-10 particulate levels do not exceed 150 $\mu g/m^3$ above the upwind level and that visible dust is not migrating from the work area.
- If, after implementation of dust suppression techniques downwind PM-10 levels are greater than 150 $\mu g/m^3$ above the upwind level, work activities must be stopped and dust suppression controls re-evaluated. Work can resume provided that supplemental dust suppression measures and/or other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 $\mu g/m^3$ of the upwind level and in preventing visible dust migration.

Pertinent emergency response information including the telephone number of the Fire Department is included in the Emergency Response Plan (Appendix A).

9.0 SPILL RELEASE/RESPONSE

This chapter of the HASP describes the potential for and procedures related to spills or releases of known or suspected petroleum and/or hazardous substances on the Site. The purpose of this Section of the HASP is to plan appropriate response, control, counter-measures and reporting, consistent with OSHA requirements in 29 CFR 1910.120(b)(4)(ii)(J) and (j)(1)(viii). The spill containment program addresses the following elements:

- Potential hazardous material spills and available controls.
- Initial notification and evaluation.
- Spill response.
- Post-spill evaluation.

9.1 Potential Spills and Available Controls

An evaluation was conducted to determine the potential for hazardous material and oil/petroleum spills at this site. For the purpose of this evaluation, hazardous materials posing a significant spill potential are considered to be:

- CERCLA Hazardous Substances as identified in 40 CFR Part 302, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).
- Extremely Hazardous Substances as identified in 40 CFR Part 355, Appendix A, where such materials pose the potential for release in excess of their corresponding RQ.
- Hazardous Chemicals as defined under Section 311(e) of the Emergency Planning and Community Right-To-Know Act of 1986, where such chemicals are present or will be stored in excess of 10,000 lbs.
- Toxic Chemicals as defined in 40 CFR Part 372, where such chemicals are present or will be stored in excess of 10,000 lbs.
- Chemicals regulated under 6NYCRR Part 597, where such materials pose the potential for release in excess of their corresponding RQ.

Oil/petroleum products are considered to pose a significant spill potential whenever the following situations occur:

- The potential for a "harmful quantity" of oil (including petroleum and non-petroleum-based fuels and lubricants) to reach navigable waters of the U.S. exists (40 CFR Part 112.4). Harmful quantities are considered by USEPA to be volumes

that could form a visible sheen on the water or violate applicable water quality standards.

- The potential for any amount of petroleum to reach any waters of NY State, including groundwater, exists. Petroleum, as defined by NY State in 6NYCRR Part 612, is a petroleum-based heat source, energy source, or engine lubricant/maintenance fluid.
- The potential for any release, to soil or water, of petroleum from a bulk storage facility regulated under 6NYCRR Part 612. A regulated petroleum storage facility is defined by NY State as a site having stationary tank(s) and intra-facility piping, fixtures and related equipment with an aggregate storage volume of 1,100 gallons or greater.

The evaluation indicates that, based on site history and decommissioning records, a hazardous material spill and/or a petroleum product spill is not likely to occur during Remedial efforts.

9.2 Initial Spill Notification and Evaluation

Any worker who discovers a hazardous substance or oil/petroleum spill will immediately notify the Project Manager and SSHO. The worker will, to the best of his/her ability, report the material involved, the location of the spill, the estimated quantity of material spilled, the direction/flow of the spill material, related fire/explosion incidents, if any, and any associated injuries. The Emergency Response Plan presented as Appendix A of this HASP will immediately be implemented if an emergency release has occurred.

Following initial report of a spill, the Project Manager will make an evaluation as to whether the release exceeds RQ levels. If an RQ level is exceeded, the Project Manager will notify the site owner and NYSDEC at 1-800-457-7362 within 2 hours of spill discovery. The Project Manager will also determine what additional agencies (e.g., USEPA) are to be contacted regarding the release, and will follow-up with written reports as required by the applicable regulations.

9.3 Spill Response

For all spill situations, the following general response guidelines will apply:

- Only those personnel involved in overseeing or performing containment operations will be allowed within the spill area. If necessary, the area will be

roped, ribboned, or otherwise blocked off to prevent unauthorized access.

- Appropriate PPE, as specified by the SSHO, will be donned before entering the spill area.
- Ignition points will be extinguished/removed if fire or explosion hazards exist.
- Surrounding reactive materials will be removed.
- Drains or drainage in the spill area will be blocked to prevent inflow of spilled materials or applied materials.

For minor spills, the Contractor will maintain a Spill Control and Containment Kit in the Field Office or other readily accessible storage location. The kit will consist of, at a minimum, a 50 lb. bag of "speedy dry" granular absorbent material, absorbent pads, shovels, empty 5-gallon pails and an empty open-top 55-gallon drum. Spilled materials will be absorbed, and shoveled into a 55-gallon drum for proper disposal (NYSDEC approval will be secured for on-site treatment of the impacted soils/absorbent materials, if applicable). Impacted soils will be hand-excavated to the point that no visible signs of contamination remains, and will be drummed with the absorbent.

In the event of a major release or a release that threatens surface water, a spill response contractor will be called to the site. The response contractor may use heavy equipment (i.e., excavator, backhoe, etc.) to berm the soils surrounding the spill site or create diversion trenching to mitigate overland migration or release to navigable waters. Where feasible, pumps will be used to transfer free liquid to storage containers. Spill control/cleanup contractors in the Western New York area that may be contacted for assistance include:

- The Environmental Service Group of NY, Inc.: (716) 695-6720
- Op-Tech: (716) 873-7680
- Environmental Products and Services, Inc.: (716) 447-4700

9.4 Post-Spill Evaluation

If a reportable quantity of hazardous material or oil/petroleum is spilled as determined by the Project Manager, a written report will be prepared as indicated in Section 9.2. The report will identify the root cause of the spill, type and amount of material released, date/time of release, response actions, agencies notified and/or involved in cleanup, and

procedures to be implemented to avoid repeat incidents. In addition, all re-useable spill cleanup and containment materials will be decontaminated, and spill kit supplies/disposable items will be replenished.

10.0 HEAT/COLD STRESS MONITORING

Since some of the work activities at the Site will be scheduled for both the summer and winter months, measures will be taken to minimize heat/cold stress to TurnKey-Benchmark employees. The SSHO and/or his or her designee will be responsible for monitoring TurnKey-Benchmark field personnel for symptoms of heat/cold stress.

10.1 Heat Stress Monitoring

Personal protective equipment may place an employee at risk of developing heat stress, a common and potentially serious illnesses often encountered at construction, landfill, waste disposal, industrial or other unsheltered sites. The potential for heat stress is dependent on a number of factors, including environmental conditions, clothing, workload, physical conditioning, and age. Personal protective equipment may severely reduce the body's normal ability to maintain temperature equilibrium (via evaporation and convection), and require increased energy expenditure due to its bulk and weight.

Proper training and preventive measures will mitigate the potential for serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illness. To avoid heat stress, the following steps should be taken:

- Adjust work schedules.
- Modify work/rest schedules according to monitoring requirements.
- Mandate work slowdowns as needed.
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat (i.e., eight fluid ounces must be ingested for approximately every 1 lb of weight lost). The normal thirst mechanism is not sensitive enough to ensure that enough water will be consumed to replace lost perspiration. When heavy sweating occurs, workers should be encouraged to drink more.
- Train workers to recognize the symptoms of heat related illness.

Heat-Related Illness - Symptoms:

- Heat rash may result from continuous exposure to heat or humid air.
- Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include: muscle spasms; pain in the hands, feet, and abdomen.
- Heat exhaustion occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include: pale, cool, moist skin; heavy sweating; dizziness; nausea; fainting.
- Heat stroke is the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Competent medical help must be obtained. Signs and symptoms are: red, hot, usually dry skin; lack of or reduced perspiration; nausea; dizziness and confusion; strong, rapid pulse; coma.

The monitoring of personnel wearing protective clothing should commence when the ambient temperature is 70 degrees Fahrenheit or above. For monitoring the body's recuperative ability to excess heat, one or more of the following techniques should be used as a screening mechanism.

- Heart rate may be measured by the radial pulse for 30 seconds as early as possible in the resting period. The rate at the beginning of the rest period should not exceed 100 beats per minute. If the rate is higher, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest periods stay the same. If the pulse rate is 100 beats per minute at the beginning of the nest rest period, the following work cycle should be further shortened by 33%.
- Body temperature may be measured orally with a clinical thermometer as early as possible in the resting period. Oral temperature at the beginning of the rest period should not exceed 99.6 degrees Fahrenheit. If it does, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest period remains the same. However, if the oral temperature exceeds 99.6 degrees Fahrenheit at the beginning of the next period, the work cycle may be further shortened by 33%. Oral temperature should be measured at the end of the rest period to make sure that it has dropped below 99.6 degrees Fahrenheit. No TurnKey-Benchmark employee will be permitted to continue wearing semi-permeable or impermeable garments when his/her oral temperature exceeds 100.6 degrees Fahrenheit.

10.2 Cold Stress Monitoring

Exposure to cold conditions may result in frostbite or hypothermia, each of which progresses in stages as shown below.

- **Frostbite** occurs when body tissue (usually on the extremities) begins to freeze. The three states of frostbite are:

  1) **Frost nip** - This is the first stage of the freezing process. It is characterized by a whitened area of skin, along with a slight burning or painful sensation. Treatment consists of removing the victim from the cold conditions; removal of boots and gloves; soaking the injured part in warm water (102 to 108 degrees Fahrenheit); and drinking a warm beverage. Do not rub skin to generate friction/ heat.

  2) **Superficial Frostbite** - This is the second stage of the freezing process. It is characterized by a whitish gray area of tissue, which will be firm to the touch but will yield little pain. The treatment is identical for Frost nip.

  3) **Deep Frostbite** - In this final stage of the freezing process the affected tissue will be cold, numb and hard and will yield little to no pain. Treatment is identical to that for Frost nip.

- **Hypothermia** is a serious cold stress condition occurring when the body loses heat at a rate faster than it is produced. If untreated, hypothermia may be fatal. The stages of hypothermia may not be clearly defined or visible at first, but generally include:

  1) Shivering
  2) Apathy (i.e., a change to an indifferent or uncaring mood)
  3) Unconsciousness
  4) Bodily freezing

  Employees exhibiting signs of hypothermia should be treated by medical professionals. Steps that can be taken while awaiting help include:

  1) Remove the victim from the cold environment and remove wet or frozen clothing. (Do this carefully as frostbite may have started.)
  2) Perform active re-warming with hot liquids for drinking (Note: do not give the victim any liquid containing alcohol or caffeine) and a warm water bath (102 to 108 degrees Fahrenheit).
  3) Perform passive re-warming with a blanket or jacket wrapped around

the victim.

In any potential cold stress situation, it is the responsibility of the Site Health and Safety Officer to encourage the following:

- Education of workers to recognize the symptoms of frostbite and hypothermia.
- Workers should dress warmly, with more layers of thin clothing as opposed to one thick layer.
- Personnel should remain active and keep moving.
- Personnel should be allowed to take shelter in a heated area, as necessary.
- Personnel should drink warm liquids (no caffeine or alcohol if hypothermia has set in).
- For monitoring the body's recuperation from excess cold, oral temperature recordings should occur:
    - At the Site Safety Technicians discretion when suspicion is based on changes in a worker's performance or mental status.
    - At a workers request.
    - As a screening measure, two times per shift, under unusually hazardous conditions (e.g., wind chill less than 20 degrees Fahrenheit or wind chill less than 30 degrees Fahrenheit with precipitation).
    - As a screening measure whenever anyone worker on site develops hypothermia.

Any person developing moderate hypothermia (a core body temperature of 92 degrees Fahrenheit) will not be allowed to return to work for 48 hours without the recommendation of a qualified medical doctor.

11.0 WORK ZONES AND SITE CONTROL

Work zones around the areas designated for construction activities will be established on a daily basis and communicated to all employees and other site users by the SSHO. It shall be each Contractor's SSHO's responsibility to ensure that all site workers are aware of the work zone boundaries and to enforce proper procedures in each area. The zones will include:

- Exclusion Zone ("Hot Zone"): The area where contaminated materials may be exposed, excavated, or handled and all areas where contaminated equipment or personnel may travel. The zone will be delineated by flagging tape. All personnel entering the Exclusion Zone must wear the prescribed level of personal protective equipment identified in Section 7.
- Contamination Reduction Zone: The zone where decontamination of personnel and equipment takes place. Any potentially contaminated clothing, equipment, and samples must remain in the Contamination Reduction Zone until decontaminated.
- Support Zone: The part of the site that is considered non-contaminated or "clean." Support equipment will be located in this zone, and personnel may wear normal work clothes within this zone.

In the absence of other task-specific work zone boundaries established by the SSHO, the following boundaries will apply to all investigation and construction activities involving disruption or handling of site soils or groundwater:

- Exclusion Zone: 50 foot radius from the outer limit of the sampling/construction activity.
- Contaminant Reduction Zone: 100 foot radius from the outer limit of the sampling/construction activity.
- Support Zone: Areas outside the Contaminant Reduction Zone.

Access of non-essential personnel to the Exclusion and Contamination Reduction Zones will be strictly controlled by the SSHO. Only personnel who are essential to the completion of the task will be allowed access to these areas if they are wearing the prescribed level of protection. Entrance of all personnel must be approved by the SSHO.

The SSHO will maintain a Health and Safety Logbook containing the names of TurnKey-Benchmark workers and their level of protection. The zone boundaries may be

changed by the SSHO as environmental conditions warrant, and to respond to the necessary changes in work locations on-site.

12.0 DECONTAMINATION

12.1 Decontamination for TurnKey-Benchmark Employees

The degree of decontamination required is a function of a particular task and the environment within which it occurs. The following decontamination procedure will remain flexible, thereby allowing the decontamination crew to respond appropriately to the changing environmental conditions that may arise at the site. All TurnKey-Benchmark personnel on-site shall follow the procedure below, or the Contractor's procedure (if applicable), whichever is more stringent.

Station 1 - Equipment Drop: Deposit visibly contaminated (if any) re-useable equipment used in the contamination reduction and exclusion zones (tools, containers, monitoring instruments, radios, clipboards, etc.) on plastic sheeting.

Station 2 - Boots and Gloves Wash and Rinse: Scrub outer boots and outer gloves.

Station 3 - Tape, Outer Boot, and Glove Removal: Remove tape, outer boots, and gloves. Deposit tape and gloves in waste disposal container.

Station 4 - Canister or Mask Change: If worker leaves exclusive zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot cover donned, and worker returns to duty.

Station 5 - Outer Garment/Face Piece Removal: Protective suit removed and deposited in separate container provided by Contractor. Face piece or goggles are removed if used. Avoid touching face with fingers. Face piece and/or goggles deposited on plastic sheet. Hard hat removed and placed on plastic sheet.

Station 6 - Inner Glove Removal: Inner gloves are the last personal protective equipment to be removed. Avoid touching the outside of the gloves with bare fingers. Dispose of these gloves in waste disposal container.

Following PPE removal, personnel shall wash hands, face, and forearms with absorbent wipes. If field activities proceed for six consecutive months or longer, shower facilities will be provided for worker use in accordance with OSHA 29 CFR 1910.120(n).

12.2 Decontamination for Medical Emergencies

In the event of a minor, non-life threatening injury, personnel should follow the decontamination procedures as defined, and then administer first-aid.

In the event of a major injury or other serious medical concern (e.g., heat stroke), immediate first-aid is to be administered and the victim transported to the hospital in lieu of further decontamination efforts unless exposure to a site contaminant would be considered "Immediately Dangerous to Life or Health."

12.3 Decontamination of Field Equipment

Decontamination of heavy equipment will be conducted by the Contractor in accordance with his approved Health and Safety Plan in the Contamination Reduction Zone. As a minimum, this will include manually removing heavy soil contamination, followed by steam cleaning on an impermeable pad.

Decontamination of all tools used for sample collection purposes will be conducted by TurnKey-Benchmark personnel. It is expected that all tools will be constructed of nonporous, nonabsorbent materials (i.e., metal), which will aid in the decontamination effort. Any tool or part of a tool made of porous, absorbent material (i.e., wood) will be placed into suitable containers and prepared for disposal.

Decontamination of bailers, split-spoons, spatula knives, and other tools used for environmental sampling and examination shall be as follows:

- Disassemble the equipment.
- Wash with water to remove all visible foreign matter.
- Wash with detergent.
- Rinse all parts with distilled-deionized water.
- Allow to air dry.
- Wrap all parts in aluminum foil or polyethylene.

13.0 CONFINED SPACE ENTRY

OSHA 29 CFR 1910.146 identifies a confined space as a space that is large enough and so configured that an employee can physically enter and do assigned work, has limited or restricted means for entry and exit, and is not intended for continuous employee occupancy. Confined spaces include, but are not limited to, trenches, storage tanks, process vessels, pits, sewers, tunnels, underground utility vaults, pipelines, sumps, wells, and excavations.

Confined space entry by TurnKey-Benchmark employees is not anticipated to be necessary to complete the investigation and remedial activities identified in Section 2.0. In the event that the scope of work changes or confined space entry appears necessary, the Project Manager will be consulted to determine if feasible engineering alternatives to confined space entry can be implemented. If confined space entry by TurnKey-Benchmark employees cannot be avoided through reasonable engineering measures, task-specific confined space entry procedures will be developed and a confined-space entry permit will be issued through TurnKey-Benchmark's corporate Health and Safety Director. TurnKey-Benchmark employees shall not enter a confined space without these procedures and permits in place.

14.0 FIRE PREVENTION AND PROTECTION

14.1 General Approach

Recommended practices and standards of the National Fire Protection Association (NFPA) and other applicable regulations will be followed in the development and application of Project Fire Protection Programs. When required by regulatory authorities, the project management will prepare and submit a Fire Protection Plan for the approval of the contracting officers, authorized representative or other designated official. Essential considerations for the Fire Protection Plan will include:

- Proper site preparation and safe storage of combustible and flammable materials.
- Availability of coordination with private and public fire authorities.
- Adequate job-site fire protection and inspections for fire prevention.
- Adequate indoctrination and training of employees.

14.2 Equipment and Requirements

Fire extinguishers will be provided by each Contractor and are required on all heavy equipment and in each field trailer. Fire extinguishers will be inspected, serviced, and maintained in accordance with the manufacturer's instructions. As a minimum, all extinguishers shall be checked monthly and weighed semi-annually, and recharged if necessary. Recharge or replacement shall be mandatory immediately after each use.

14.3 Flammable and Combustible Substances

All storage, handling, or use of flammable and combustible substances will be under the supervision of qualified persons. All tanks, containers and pumping equipment, whether portable or stationary, used for the storage and handling of flammable and combustible liquids, will meet the recommendations of the NFPA.

14.4 Hot Work

If the scope of work necessitates welding or blowtorch operation, the hot work permit presented in Appendix B will be completed by the SSHO and reviewed/issued by the Project Manager.

15.0 EMERGENCY INFORMATION

In accordance with OSHA 29 CFR Part 1910, an Emergency Response Plan is attached to this HASP as Appendix A. The hospital route map is presented as Figure A-1.

16.0 REFERENCES

1. New York State Department of Health. 2002. *Generic Community Air Monitoring Plan, Appendix 1A, DER-10 Technical Guidance for Site Investigation and Remediation.* May 2010.

TABLES

TABLE 1

CONSTITUENTS OF POTENTIAL CONCERN

Site-Wide Health and Safety Plan
Tecumseh Redevelopment BCP Sites
Lackawanna, New York

Parameter[1]	CAS No.	Maximum Detected Concentration [2]			
		Groundwater [3] (mg/L)	Surface Soil/Fill (mg/kg)	Sub-Surface Soil/Fill (mg/kg)	LNAPL (mg/kg)
Volatile Organic Compounds (VOCs):					
Benzene	71-43-2	570	0.0047	2800	14,000
Ethylbenzene	100-41-4	25	*Note 4*	170	4,600
Toluene	108-88-3	77	0.001	1700	5,700
Xylene, Total	1330-20-7	390	0.0017	1100	31,000
Polycyclic Aromatic Hydrocarbons (PAHs):					
Acenaphthene	83-32-9	0.36	*Note 4*	*Note 4*	400
Acenaphthylene	208-96-8	0.09	*Note 4*	*Note 4*	570
Anthracene	120-12-7	0.27	0.23	*Note 4*	240
Benz(a)anthracene	56-55-3	0.28	0.7	*Note 4*	27
Benzo(a)pyrene	50-32-8	0.23	0.56	*Note 4*	ND
Benzo(b)fluoranthene	205-99-2	0.069	0.86	*Note 4*	12
Benzo(ghi)perylene	191-24-2	0.033	0.35	*Note 4*	ND
Benzo(k)fluoranthene	207-08-9	0.071	0.38	*Note 4*	ND
Chrysene	218-01-9	0.26	0.67	*Note 4*	17
Dibenz(ah)anthracene	53-70-3	0.022	0.08	*Note 4*	ND
Fluoranthene	206-44-0	0.76	1.3	*Note 4*	200
Fluorene	86-73-7	1.7	*Note 4*	*Note 4*	9,600
Indeno(1,2,3-cd)pyrene	193-39-5	0.04	0.36	*Note 4*	ND
Naphthalene	91-20-3	280	0.29	1100	49,000
Phenanthrene	85-01-8	0.94	0.87	*Note 4*	800
Pyrene	129-00-0	0.41	0.87	*Note 4*	220
Inorganic Compounds:					
Arsenic	7440-38-2	70.6	30.5	17.7	28.2
Cadmium	7440-43-9	20.6	9.7	3.7	0.03
Chromium	7440-47-3	306	1190	508	1.7
Lead	7439-92-1	26.3	160	224	0.34
Mercury	7439-97-6	0.22	4.2	0.99	ND
Polychlorinated Biphenyls (PCBs):					
Aroclor 1242	53469-21-9	*Note 4*	*Note 4*	*Note 4*	2
Aroclor 1260	11096-82-5	*Note 4*	*Note 4*	*Note 4*	3.3

Notes:

1. Constituents were identified as parameters of interest during the RFI for the Benzol Plant Tank Storage Area (SWMU P-11).
2. Maximum detected concentrations as presented in the Final RFI Report for the Benzol Plant Tank Storage Area (SWMU P-11).
3. Groundwater analytical data collected from the Coke Oven Area of the Former Bethlehem Steel Lackawanna Coke Division Site.
4. Compounds with a detection frequency greater than 5% and a maximum concentration greater than the screening criteria were retained as potential parameters of interest during the RFI (Reference 1).

Acronyms:

NA = Not analyzed.
ND = Parameter not detected above method detection limits.

TABLE 2

TOXICITY DATA FOR CONSTITUENTS OF POTENTIAL CONCERN

Site-Wide Health and Safety Plan
Tecumseh Redevelopment BCP Sites
Lackawanna, New York

Parameter	Synonyms	CAS No.	Code	Concentration Limits [1]		
				PEL	TLV	IDLH
Volatile Organic Compounds (VOCs): ppm						
Benzene	Benzol, Phenyl hydride	71-43-2	Ca	1	0.5	500
Ethylbenzene	Ethylbenzol, Phenylethane	100-41-4	*none*	100	100	800
Toluene	Methyl benzene, Methyl benzol	108-88-3	C-300	200	50	500
Xylene, Total	o-, m-, p-isomers	1330-20-7	*none*	100	100	900
Polycyclic Aromatic Hydrocarbons (PAHs) [2] : ppm						
Acenaphthene	*none*	83-32-9	*none*	--	--	--
Acenaphthylene	*none*	208-96-8	*none*	--	--	--
Anthracene	*none*	120-12-7	*none*	--	--	--
Benz(a)anthracene	*none*	56-55-3	*none*	--	--	--
Benzo(a)pyrene	*none*	50-32-8	*none*	--	--	--
Benzo(b)fluoranthene	*none*	205-99-2	*none*	--	--	--
Benzo(ghi)perylene	*none*	191-24-2	*none*	--	--	--
Benzo(k)fluoranthene	*none*	207-08-9	*none*	--	--	--
Chrysene	*none*	218-01-9	*none*	--	--	--
Dibenz(ah)anthracene	*none*	53-70-3	*none*	--	--	--
Fluoranthene	*none*	206-44-0	*none*	--	--	--
Fluorene	*none*	86-73-7	*none*	--	--	--
Indeno(1,2,3-cd)pyrene	*none*	193-39-5	*none*	--	--	--
Naphthalene	Naphthalin, Tar camphor, White tar	91-20-3	*none*	10	10	250
Phenanthrene	*none*	85-01-8	*none*	--	--	--
Pyrene	*none*	129-00-0	*none*	--	--	--
Polychlorinated Inorganic Compounds: mg/m [3]						
Aroclor 1242	Chlorodiphenyl, 42% chlorine	53469-21-9	Ca	--	--	--
Aroclor 1260	Chlorodiphenyl, 60% chlorine	11096-82-5	*none*	--	--	--
Inorganic Compounds: mg/m [3]						
Arsenic	*none*	7440-38-2	Ca	0.01	0.01	5
Cadmium	*none*	7440-43-9	Ca	0.005	0.01	9
Chromium	*none*	7440-47-3	*none*	1	0.5	250
Lead	*none*	7439-92-1	*none*	0.05	0.15	100
Mercury	*none*	7439-97-6	C-0.1	0.1	0.05	10

Notes:

1. Concentration limits as reported by NIOSH Pocket Guide to Chemical Hazards, February 2004 (NIOSH Publication No. 97-140, fourth printing with changes and updates).
2. Individual parameters listed are those most commonly detected at steel/coke manufacturing sites.
3. " -- " = concentration limit not available; exposure should be minimized to the extent feasible through appropriate engineering controls & PPE.

Explanation:

Ca = NIOSH considers constituent to be a potential occupational carcinogen.
C-## = Ceiling Level equals the maximum exposure concentration allowable during the work day.
IDLH = Immediately Dangerous to Life or Health.
ND indicates that an IDLH has not as yet been determined.
TLV = Threshold Limit Value, established by American Conference of Industrial Hygienists (ACGIH), equals the maximum exposure concentration allowable for 8 hours/day @ 40 hours/week.
TLVs are the amounts of chemicals in the air that almost all healthy adult workers are predicted to be able to tolerate without adverse effects. There are three types.
TLV-TWA (TLV-Time-Weighted Average) which is averaged over the normal eight-hour day/forty-hour work week. (Most TLVs.)
TLV-STEL or Short Term Exposure Limits are 15 minute exposures that should not be exceeded for even an instant. It is not a stand alone value but is accompanied by the TLV-TWA.
It indicates a higher exposure that can be tolerated for a short time without adverse effect as long as the total time weighted average is not exceded.
TLV-C or Ceiling limits are the concentration that should not be exceeded during any part of the working exposure.
Unless the initials "STEL" or "C" appear in the Code column, the TLV value should be considered to be the eight-hour TLV-TWA.
PEL = Permissible Exposure Limit, established by OSHA, equals the maximium exposure conconcentration allowable for 8 hours per day @ 40 hours per week

TABLE 3

POTENTIAL ROUTES OF EXPOSURE TO CONSTITUENTS OF POTENTIAL CONCERN

Site-Wide Health and Safety Plan
Tecumseh Redevelopment BCP Sites
Lackawanna, New York

Activity [1]	Direct Contact with Soil/Fill	Inhalation of Vapors or Dust	Direct Contact with Groundwater
1. Soil/Fill Excavation	x	x	
2. Soil/Fill Documentation Sampling	x	x	
3. Surface Water Management			x
4. Slag/Fill Subgrade Preparation	x	x	
5. Cover Soil Placement	x	x	
6. Groundwater Monitoring Well Installation/Sampling	x	x	x
7. Groundwater Remediation	x	x	x

Notes:
1. Activity as described in Section 1.5 of the Health and Safety Plan.

TABLE 4

REQUIRED LEVELS OF PROTECTION
FOR BCP INVESTIGATION AND REMEDIAL ACTIVITIES

Site-Wide Health and Safety Plan
Tecumseh Redevelopment BCP Sites
Lackawanna, New York

Activity	Respiratory Protection [1]	Clothing	Gloves [2]	Boots [2, 3]	Other Required PPE/Modifications [2, 4]
1. Soil/Fill Excavation	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L	outer: L inner: STSS	HH SGSS
2. Soil/Fill Documentation Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L	outer: L inner: STSS	HH SGSS
3. Surface Water Management	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
4. Slag/Fill Subgrade Preparation	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L	outer: L inner: STSS	HH SGSS
5. Cover Soil Placement	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L	outer: L inner: STSS	HH SGSS
6. Groundwater Monitoring Well Installation/Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
7. Groundwater Remediation	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L	outer: L inner: STSS	HH SGSS

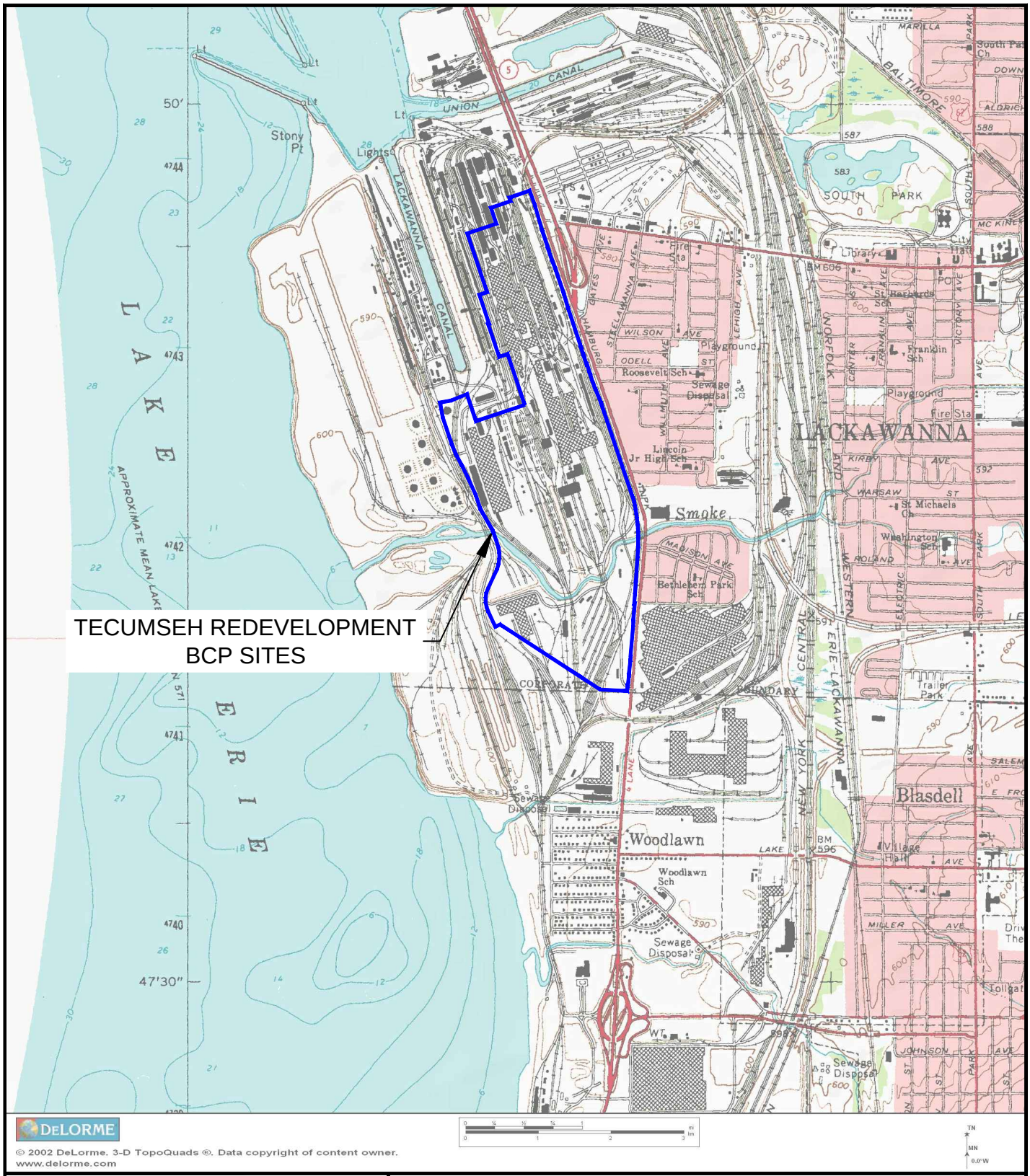
Notes:

1. Respiratory equipment shall conform to guidelines presented in Section 7.0 of this HASP. The Level C requirement is an air-purifying respirator equiped with organic compound/acid gas/dust cartridge.
2. HH = hardhat; L= Latex; L/N = latex inner glove, nitrile outer glove; N = Nitrile; S = Saranex; SG = safety glasses; SGSS = safety glasses with sideshields; STSS = steel toe safety shoes.
3. Latex outer boot (or approved overboot) required whenever contact with contaminated materials may occur. SSHO may downgrade to STSS (steel-toed safety shoes) if contact will be limited to cover/replacement soils.
4. Dust masks shall be donned as directed by the SSHO (site safety and health officer) or site safety technician whenever potentially contaminated airborne particulates (i.e., dust) are present in significant amounts in the breathing zone. Goggles may be substituted with safety glasses w/side-shields whenever contact with contaminated liquids is not anticipated.

FIGURES

F:\CAD\TurnKey\Tecumseh Redevelopment\Brownfield Cleanup Program (BCP)\Site-Wide HASP\Figure 1; Site Location and Vicinity Map.dwg

FIGURE 1



TURNKEY ENVIRONMENTAL RESTORATION, LLC
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BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: 0071-012-322

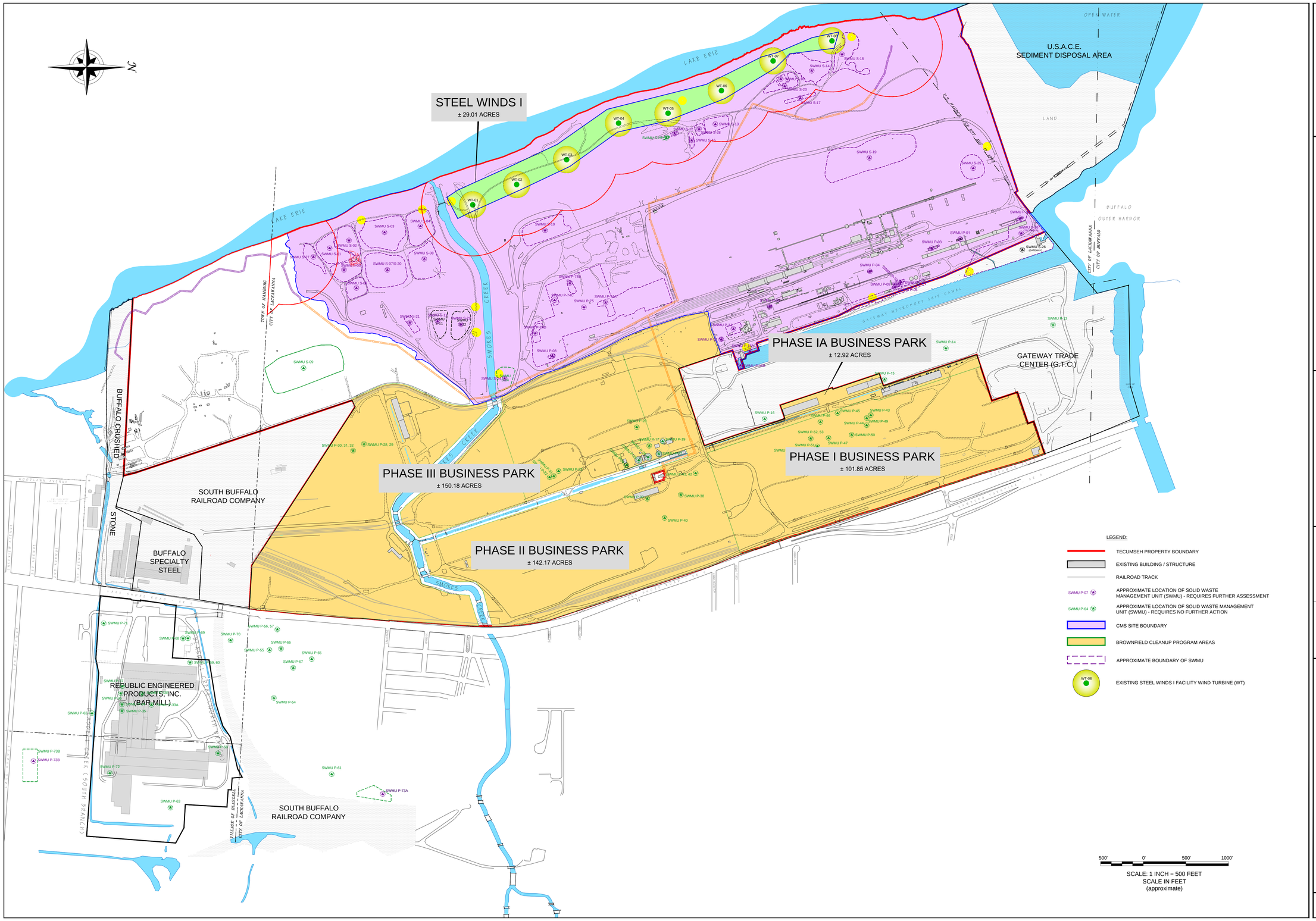
DATE: JULY 2013

DRAFTED BY: BLR

SITE LOCATION & VICINITY MAP

SITE-WIDE HEALTH AND SAFETY PLAN

TECUMSEH REDEVELOPMENT BCP SITES
LACKAWANNA, NEW YORK



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JOB NO.: 0071-012-322

REVISIONS

NO.	BY	DATE	REMARKS

SEAL

DRAWN BY: BLR
DATE: JULY 2013
CHECKED BY:
APPROVED BY:

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SITE PLAN

SITE-WIDE HEALTH AND SAFETY PLAN
TECUMSEH REDEVELOPMENT BCP SITES
LACKAWANNA, NEW YORK

FIGURE 2

APPENDIX A

EMERGENCY RESPONSE PLAN

EMERGENCY RESPONSE PLAN
for
BROWNFIELD CLEANUP PROGRAM

TECUMSEH REDEVELOPMENT BCP SITES
LACKAWANNA, NEW YORK

April 2010 0071-012-322
Revised July 2013

TECUMSEH REDEVELOPMENT BCP SITES
SITE-WIDE HEALTH AND SAFETY PLAN
APPENDIX A: EMERGENCY RESPONSE PLAN

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Figure A-1 Hospital Route Map

1.0 GENERAL

This report presents the site-specific Emergency Response Plan (ERP) referenced in the Site-Wide Health and Safety Plan (HASP) prepared for BCP investigation and remedial activities conducted at the Tecumseh Redevelopment BCP Sites (former Bethlehem Steel Lackawanna Works), Lackawanna, New York. This appendix of the Site-Wide HASP describes potential emergencies that may occur at the Site; procedures for responding to those emergencies; roles and responsibilities during emergency response; and training all workers must receive in order to follow emergency procedures. This ERP also describes the provisions this Site has made to coordinate its emergency response planning with other contractors on-site and with off-site emergency response organizations.

This ERP is consistent with the requirements of 29 CFR 1910.120(l) and provides the following site-specific information:

- Pre-emergency planning.
- Personnel roles, lines of authority, and communication.
- Emergency recognition and prevention.
- Safe distances and places of refuge.
- Evacuation routes and procedures.
- Decontamination procedures.
- Emergency medical treatment and first aid.
- Emergency alerting and response procedures.
- Critique of response and follow-up.
- Emergency personal protective equipment (PPE) and equipment.

2.0 PRE-EMERGENCY PLANNING

This Site has been evaluated for potential emergency occurrences, based on site hazards, the required work tasks, the site topography, and prevailing weather conditions. The results of that evaluation indicate the potential for the following site emergencies to occur at the locations indicated.

Type of Emergency:

1. Medical, due to physical injury
2. Fire

Source of Emergency:

1. Slip/trip/fall
2. Fire

Location of Source:

1. Non-specific

3.0 ON-SITE EMERGENCY RESPONSE EQUIPMENT

Emergency procedures may require specialized equipment to facilitate worker rescue, contamination control and reduction, or post-emergency clean up. Emergency response equipment available on the Site is listed below. The equipment inventory and storage locations are based on the potential emergencies described above. This equipment inventory is designed to meet on-site emergency response needs and any specialized equipment needs that off-site responders might require because of the hazards at this Site but not ordinarily stocked.

Any additional personal protective equipment (PPE) required and stocked for emergency response is also listed in below. During an emergency, the Emergency Response Coordinator (ERC) is responsible for specifying the level of PPE required for emergency response. At a minimum, PPE used by emergency responders will comply with Section 7.0, Personal Protective Equipment, of this HASP. Emergency response equipment is inspected at regular intervals and maintained in good working order. The equipment inventory is replenished as necessary to maintain response capabilities.

Emergency Equipment	Quantity	Location
Spill Response Kit	2	Benzol Yard ICM Treatment Building; Wastewater Treatment Plant Garage (Phase III parcel)
First Aid Kit	3	Site Vehicle; Benzol Yard ICM Treatment Building; Field Office in Coke Oven Office Building
Chemical Fire Extinguisher	2 (minimum)	All heavy equipment and Site Vehicle

Emergency PPE	Quantity	Location
Full-face respirator	1 for each worker	Site Vehicle
Chemical-resistant suits	4 (minimum)	Site Vehicle

4.0 EMERGENCY PLANNING MAPS

An area-specific map of the Tecumseh Redevelopment Site will be developed on a daily basis during performance of field activities. The map will be marked to identify critical on-site emergency planning information, including: emergency evacuation routes, a place of refuge, an assembly point, and the locations of key site emergency equipment. Site zone boundaries will be shown to alert responders to known areas of contamination. There are no major topographical features; however, the direction of prevailing winds/weather conditions that could affect emergency response planning are also marked on the map. The map will be posted at site-designated place of refuge and inside the TurnKey personnel field vehicle.

5.0 EMERGENCY CONTACTS

The following identifies the emergency contacts for this ERP.

Emergency Telephone Numbers:

Project Manager: ***Thomas H. Forbes, P.E.***
Work: (716) 856-0599
Mobile: (716) 864-1730

Corporate Health and Safety Director: ***Michael M. Yount, CESCO***
Work: (716) 856-0599
Mobile: (716) 983-3143

Site Safety and Health Officer (SSHO): ***Richard L. Dubisz***
Work: (716) 856-0635
Mobile: (716) 998-4334

Alternate SSHO: ***Thomas A. Behrendt***
Work: (716) 856-0635
Mobile: (716) 818-8358

MERCY HOSPITAL (ER):	(716) 826-7000
FIRE:	911
AMBULANCE:	911
BUFFALO POLICE:	911
STATE EMERGENCY RESPONSE HOTLINE:	(800) 457-7362
NATIONAL RESPONSE HOTLINE:	(800) 424-8802
NYSDOH:	(716) 847-4385
NYSDEC:	(716) 851-7220
NYSDEC 24-HOUR SPILL HOTLINE:	(800) 457-7252

The Site location is:
Tecumseh Redevelopment Inc.
1951 Hamburg Turnpike
Lackawanna, New York 14218
Site Phone Number: (Insert Cell Phone or Field Trailer): _____

6.0 EMERGENCY ALERTING & EVACUATION

Internal emergency communication systems are used to alert workers to danger, convey safety information, and maintain site control. Any effective system can be employed. Two-way radio headsets or field telephones are often used when work teams are far from the command post. Hand signals and air-horn blasts are also commonly used. Every system must have a backup. It shall be the responsibility of each contractor's SSHO to ensure an adequate method of internal communication is understood by all personnel entering the site. Unless all personnel are otherwise informed, the following signals shall be used.

1) Emergency signals by portable air horn, siren, or whistle: two short blasts, personal injury; continuous blast, emergency requiring site evacuation.

2) Visual signals: hand gripping throat, out of air/cannot breathe; hands on top of head, need assistance; thumbs up, affirmative/everything is OK; thumbs down, no/negative; grip partner's wrist or waist, leave area immediately.

If evacuation notice is given, site workers leave the worksite with their respective buddies, if possible, by way of the nearest exit. Emergency decontamination procedures detailed in Section 12.0 of the HASP are followed to the extent practical without compromising the safety and health of site personnel. The evacuation routes and assembly area will be determined by conditions at the time of the evacuation based on wind direction, the location of the hazard source, and other factors as determined by rehearsals and inputs from emergency response organizations. Wind direction indicators are located so that workers can determine a safe up wind or cross wind evacuation route and assembly area if not informed by the emergency response coordinator at the time the evacuation alarm sounds. Since work conditions and work zones within the site may be changing on daily basis, it shall be the responsibility of the construction SSHO to review evacuation routes and procedures as necessary and to inform all TurnKey-Benchmark workers of any changes.

Personnel exiting the site will gather at a designated assembly point. To determine that everyone has successfully exited the site, personnel will be accounted for at the assembly site. If any worker cannot be accounted for, notification is given to the SSHO (***Thomas Behrendt*** or ***Richard Dubisz***) so that appropriate action can be initiated. Contractors and subcontractors on this Site have coordinated their emergency response plans to ensure that

these plans are compatible and that source(s) of potential emergencies are recognized, alarm systems are clearly understood, and evacuation routes are accessible to all personnel relying upon them.

7.0 EXTREME WEATHER CONDITIONS

In the event of adverse weather conditions, the SSHO in conjunction with the Contractor's SSHO will determine if engineering operations can continue without sacrificing the health and safety of site personnel. Items to be considered prior to determining if work should continue include but are not limited to:

- Potential for heat/cold stress.
- Weather-related construction hazards (i.e., flooding or wet conditions producing undermining of structures or sheeting, high wind threats, etc).
- Limited visibility.
- Potential for electrical storms.
- Limited site access/egress (e.g., due to heavy snow)

8.0 EMERGENCY MEDICAL TREATMENT & FIRST AID

Personnel Exposure:

The following general guidelines will be employed in instances where health impacts threaten to occur acute exposure is realized:

- Skin Contact: Use copious amounts of soap and water. Wash/rinse affected area for at least 15 minutes. Decontaminate and provide medical attention. Eyewash stations will be provided on site. If necessary, transport to Mercy Hospital.
- Inhalation: Move to fresh air and, if necessary, transport to Mercy Hospital.
- Ingestion: Decontaminate and transport to Mercy Hospital.

Personal Injury:

Minor first-aid will be applied on-site as deemed necessary. In the event of a life threatening injury, the individual should be transported to Mercy Hospital via ambulance. The SSHO will supply available chemical specific information to appropriate medical personnel as requested.

First aid kits will conform to Red Cross and other applicable good health standards, and shall consist of a weatherproof container with individually sealed packages for each type of item. First aid kits will be fully equipped before being sent out on each job and will be checked weekly by the SSHO to ensure that the expended items are replaced.

Directions to Mercy Hospital (see Figure A-1):

The following directions describe the best route to Mercy Hospital:

- From Gate 2, proceed onto the Hamburg Turnpike (SR 5).
- Proceed east on Hamburg Turnpike (SR 5) to the Tifft Street Exit and turn right onto Tifft Street.
- Take Tifft Street east crossing South Park Avenue and McKinley Parkway. Bear left on Edgewood Avenue.
- Turn right on Abbott Road and Mercy Hospital will be on right hand side. Follow signs to emergency room (ER).

9.0 EMERGENCY RESPONSE CRITIQUE & RECORD KEEPING

Following an emergency, the SSHO and Project Manager shall review the effectiveness of this Emergency Response Plan (ERP) in addressing notification, control, and evacuation requirements. Updates and modifications to this ERP shall be made accordingly. It shall be the responsibility of each contractor to establish and assure adequate records of the following:

- Occupational injuries and illnesses.
- Accident investigations.
- Reports to insurance carrier or State compensation agencies.
- Reports required by the client.
- Records and reports required by local, state, federal, and/or international agencies.
- Property or equipment damage.
- Third party injury or damage claims.
- Environmental testing logs.
- Explosive and hazardous substances inventories and records.
- Records of inspections and citations.
- Safety training.

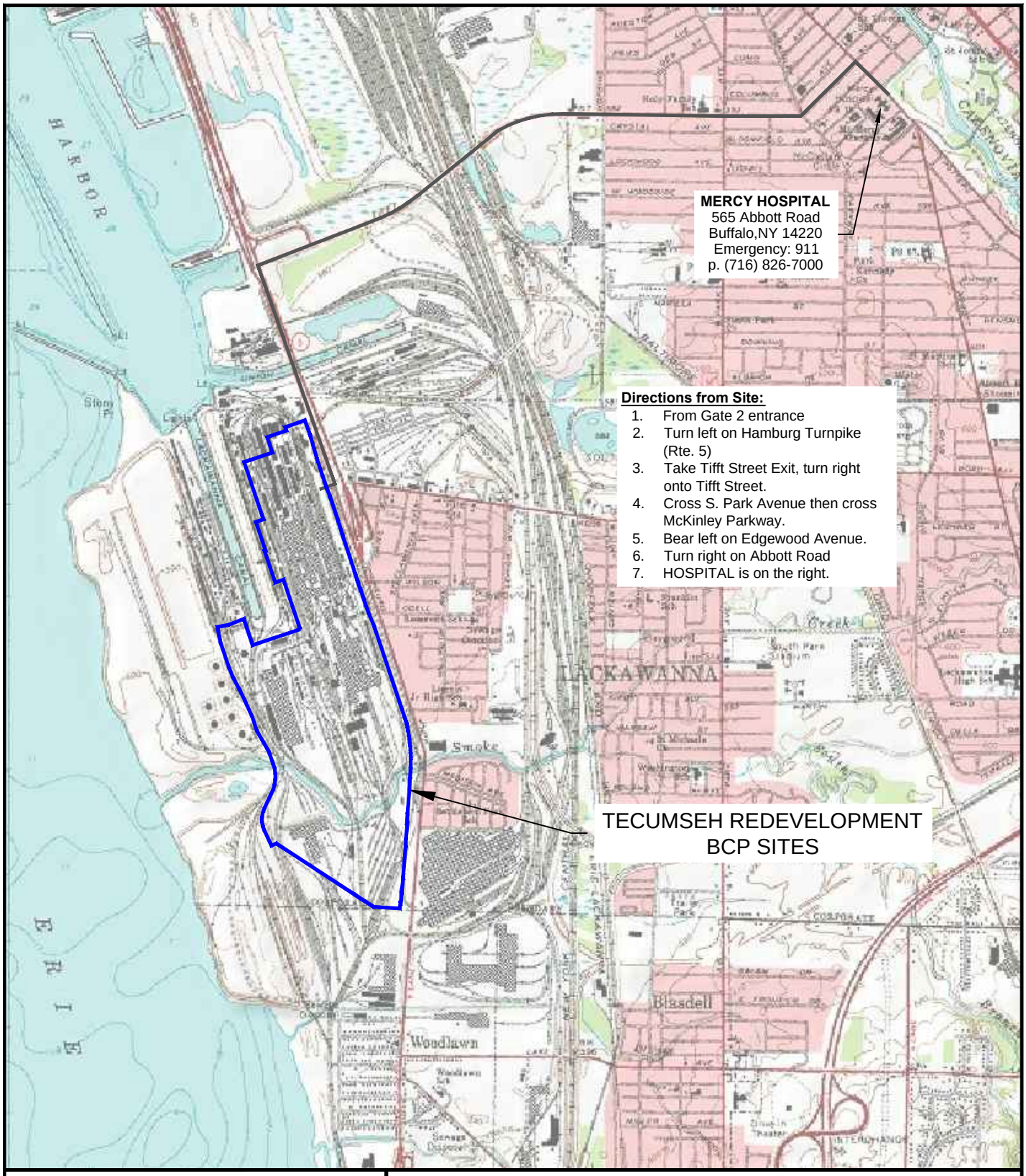
10.0 EMERGENCY RESPONSE TRAINING

All persons who enter the worksite, including visitors, shall receive a site-specific briefing about anticipated emergency situations and the emergency procedures by the SSHO. Where this site relies on off-site organizations for emergency response, the training of personnel in those off-site organizations has been evaluated and is deemed adequate for response to this site.

FIGURES

F:\CAD\TurnKey\Tecumseh Redevelopment\Brownfield Cleanup Program (BCP)\Site-Wide HASP\Figure A-1; Hospital Route Map.dwg

FIGURE A-1



TurnKey Environmental Restoration, LLC

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BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: 0071-012-322

DATE: JULY 2013

DRAFTED BY: BLR

HOSPITAL ROUTE MAP

SITE-WIDE HEALTH AND SAFETY PLAN

TECUMSEH REDEVELOPMENT BCP SITES
LACKAWANNA, NEW YORK

APPENDIX B

HOT WORK PERMIT FORM

HOT WORK PERMIT

PART 1 - INFORMATION

Issue Date:

Date Work to be Performed: Start: | Finish (permit terminated):

Performed By:

Work Area:

Object to be Worked On:

PART 2 - APPROVAL

(for 1, 2 or 3: mark Yes, No or NA)*

Will working be on or in:	Finish (permit terminated):	
1. Metal partition, wall, ceiling covered by combustible material?	yes	no
2. Pipes, in contact with combustible material?	yes	no
3. Explosive area?	yes	no

* = If any of these conditions exist (marked "yes"), a permit will not be issued without being reviewed and approved by Thomas H. Forbes (Corporate Health and Safety Director). Required Signature below.

PART 3 - REQUIRED CONDITIONS**

(Check all conditions that must be met)

	PROTECTIVE ACTION		PROTECTIVE EQUIPMENT
	Specific Risk Assessment Required		Goggles/visor/welding screen
	Fire or spark barrier		Apron/fireproof clothing
	Cover hot surfaces		Welding gloves/gauntlets/other:
	Move movable fire hazards, specifically		Wellintons/Knee pads
	Erect screen on barrier		Ear protection: Ear muffs/Ear plugs
	Restrict Access		B.A.: SCBA/Long Breather
	Wet the ground		Respirator: Type:
	Ensure adequate ventilation		Cartridge:
	Provide adequate supports		Local Exhaust Ventilation
	Cover exposed drain/floor or wall cracks		Extinguisher/Fire blanket
	Fire watch (must remain on duty during duration of permit)		Personal flammable gas monitor
	Issue additional permit(s):		

Other precautions:

** Permit will not be issued until these conditions are met.

SIGNATURES

Orginating Employee:	Date:
Project Manager:	Date:
Part 2 Approval:	Date:

Prepared By: _____

APPENDIX C

NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

COMMUNITY AIR MONITORING DAILY LOG

Date:

Project:

Job No.:

Client:

LOCATION of ACTIVITIES/MONITORING STATIONS (Provide Sketch on Attached Map):

WEATHER CONDITIONS:

Time of Day:	A.M.	P.M.
Ambient Air Temp.:		
Wind Direction:		
Wind Speed:		
Precipitation:		

DESCRIPTION OF SITE ACTIVITIES:

PARTICULATE MONITORING	Location	Time	Value	Duration	Corrective Measures Taken (Eng Controls/Work Stoppage, etc.)
Exceedence of 100 ug/m3 [1]					
Exceedence of 150 ug/m3 [1]					
Visual Observation of Fugitive Dust			NA		
			NA		
			NA		

VOC MONITORING	Location	Time	Value	Duration	Corrective Measures Taken (Eng Controls/Work Stoppage, etc.)
Exceedence of 5 ppm [1]					Temporarily halt Work and continue monitoring
Reading of 5 to 25 ppm [1]					Temporarily halt Work, abate emissions with corrective actions and continue monitoring [3]
Exceedence of 25 ppm [2]					Shut Down Work Immediately and notify Site Safety & Health Officer

1. Above background for 15 minute moving average.
2. Above background at Site perimeter (indicate location on attached sketch)
3. Work may resume when total VOC conc. 200 ft downwind or half the distance to nearest receptor (whicever is less) is below 5 ppm for 15 min.

NOTE: All exceedences are to be reported to Benchmark within 15 minutes.

Prepared By: Date:

Checked By: Date:

Appendix 1B
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50° C (14 to 122° F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

APPENDIX D

MONITORING WELL BORING AND CONSTRUCTION LOGS

DATE
STARTED 9-25-90
FINISHED 9-25-90
SHEET 1 OF 2

EMPIRE SOILS INVESTIGATIONS INC.

SUBSURFACE LOG

(BTA-90-133)

HOLE NO. MWS-4
SURF. ELEV. 584.3
G. W. DEPTH See Notes

PROJECT Bethlehem Steel Corporation
Phase I Investigation

LOCATION Lackawanna Facility
Lackawanna, New York

DEPTH FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	N	PID ppm	SOIL OR ROCK CLASSIFICATION	NOTES
0								Gray f-c GRAVEL (SLAG), some f-c Sand, (cinders) little-tr. silt, (moist, FILL)	
5								Brown Silty CLAY, little f-m Sand, tr. gravel (moist, FILL)	
10		1	7	10		19	BG	Black f-c GRAVEL (COAL), some-and f-c Sand, little-tr. Silt (wet, FILL)	
			9	8					
15								Black-brown f-c SAND (CINDERS), some Clayey-Silt, little f-m Gravel (wet, FILL)	Note: Strong coal tar/coke -like odor, no PID readings above background.
20								Contains "and" Clayey Silt	Driller noted change at approx. 24.0'.
25									
30		2	2	2		5	BG	Gray Silty CLAY, little f-m Sand, tr. gravel, occasional silt partings (moist, soft)	
			3	5					
35									Driller noted more difficult drilling at approx. 34.0' possible Glacial Till.
40									

N = No blows to drive 2 " spoon 12 " with 140 lb pin wt. falling 30 "per blow

C = No blows to drive _____ " casing _____ " with _____ lb weight falling _____ "per blow

CLASSIFICATION Visual by Onsite Geologist

METHOD OF INVESTIGATION ASTM D-1586 USING 6-1/4" HOLLOW STEM AUGERS

DATE
STARTED 9-25-90
FINISHED 9-25-90
SHEET 2 OF 2

EMPIRE SOILS INVESTIGATIONS INC

SUBSURFACE LOG

(BTA-90-133)

HOLE NO. MWS-4
SURF. ELEV. 584.3
G. W. DEPTH See Notes

PROJECT Bethlehem Steel Corporation
Phase I Investigation

LOCATION Lackawanna Facility
Lackawanna, New York

DEPTH FEET	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	N	PID ppm	SOIL OR ROCK CLASSIFICATION	NOTES
40									
									Difficult drilling possible boulder from 43.7 to 44.0'.
45									
									Driller notes auger refusal at 52.0'.
50								Auger Refusal at 52.0'.	
								Gray-black SHALE ROCK, medium hard, sound, to slightly weathered, thin bedded. Slight petroleum odor noted in Shale.	NX Size Rock Core Run #1: (52.0'-57.0') REC: 100% RQD: 34%
55									
								Boring Complete at 57.0'.	Free standing water measured at boring completion.
60									
									PID=Organic vapor measurements taken with a photoionization detector (PID). Measurements recorded in parts per million (ppm). BG=Background PID measurements= 0.0-0.2 ppm.
65								Refer to Monitoring Well Completion Reports for Well Installation Details.	
70									
75									
80									

N = No blows to drive 2 " spoon 12 " with 140 lb pin wt. falling 30 "per blow.

C = No blows to drive _____ " casing _____ " with _____ lb weight falling _____ "per blow

CLASSIFICATION Visual by Onsite Geologist

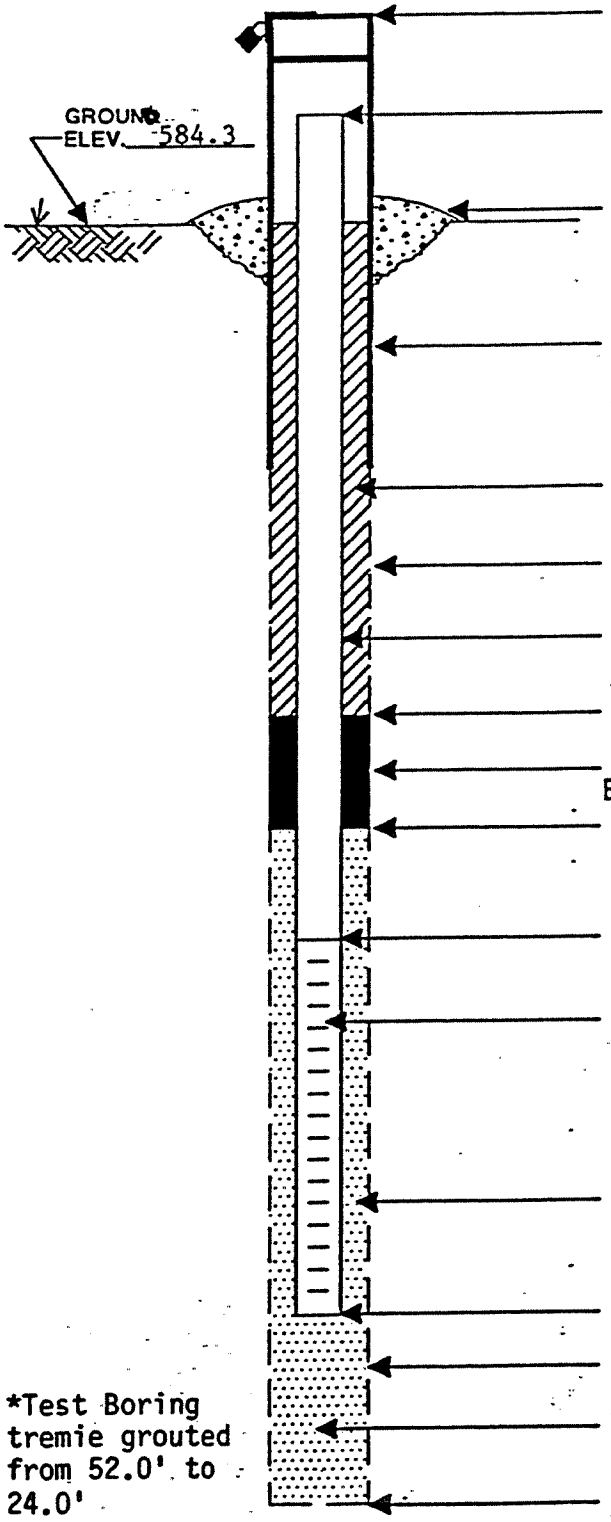
METHOD OF INVESTIGATION ASTM D-1586 USING 4-1/4" HOLLOW STEM AUGERS

EMPIRE
SOILS INVESTIGATIONS INC.

MONITORING WELL COMPLETION RECORD

PROJECT : Bethlehem Steel WELL No. MWS-4
PROJECT No. : BTA-90-133 LOCATION : Lackawanna, N.Y.
INSTALLATION DATE(S) : 9-26-90
FIELD GEOLOGIST : L. Zimmerman

DRILLER : J. Lamm
DRILLING METHOD : ASTM-D-1586
DEVELOPMENT METHOD : Isco Pump



ELEVATION / TOP OF SURFACE CASING : 587.56
STICK-UP / TOP OF SURFACE CASING : 3.26'
ELEVATION / TOP OF RISER PIPE : 587.22
STICK-UP / TOP OF RISER PIPE : 2.92'
TYPE OF SURFACE SEAL : Sakrete
I.D. OF SURFACE CASING : 8-Inches Square
TYPE OF SURFACE CASING : Corrosion-resistant steel
TYPE OF BACKFILL : Cement/Bentonite grout
BOREHOLE DIAMETER : Nominal 12-1/4-inches
I.D. OF RISER PIPE : 4.0-inches
TYPE OF RISER PIPE : Polyvinyl Chloride (PVC), Schedule 40, threaded
DEPTH OF SEAL : 2.5'
TYPE OF SEAL : Bentonite Pellets
Bentonite Slurry
DEPTH OF SAND PACK : 5.5'
DEPTH TOP OF SCREEN : 7.0'
TYPE OF SCREEN : Type 316-Stainless Steel
SLOT SIZE x LENGTH : 0.010" slot x 10'
I.D. OF SCREEN : 4.0-inches
TYPE OF SAND PACK: #2-QRok Sand
DEPTH BOTTOM OF SCREEN : 17.0'
DEPTH BOTTOM OF SAND PACK : 19.0'
*TYPE OF BACKFILL BELOW OBSERVATION WELL : 3% Bentonite to Cement grout to 25' a natural material
ELEVATION / DEPTH OF HOLE : 532.3/52.0

*Test Boring tremie grouted from 52.0' to 24.0'

DAMES & MOORE
A PROFESSIONAL LIMITED PARTNERSHIP

WELL DEVELOPMENT RECORD

WELL No. MW-54

PROJECT : BSC - Phase 1 Investigation PROJECT No. : BTA-90-133 SITE LOCATION : Lackawanna, New York

CONTRATOR : Empire Soils Investigations METHOD(S) OF DEVELOPMENT : Purged with ISCO Pump

FIELD INSPECTOR(S) : Sharon McLellan, Don Wartinger

DATE	WEATHER/ TEMP.	TIME	WATER DEPTH TOP OF RISER (FT)	pH (UNITS)	TEMP. (°C)	SP. COND. (umhos)	NTU	VISUAL APPEAR., ODOR, ETC...	NOTES : GAL. REMOVED, ETC...
11/29/90	Overcast, 30°-90°F, 10-25mph WSW winds	10:35	Initial= 9.62						Initial water level prior to development
				11.9	10.8	2.10	71	Brown, slightly turbid, no odors noted	8 gallons removed
				12.0	10.3	2.26	50		13 gallons removed
				11.3	11.1	1.91	50		20 gallons removed
				10.8	11.1	1.78	21	Water clearing	26 gallons removed
				10.6	11.6	1.75	15		32 gallons removed
				10.4	11.8	1.76	10		38 gallons removed
				10.3	11.7	1.73	12		45 gallons removed
		11:35	Final= 11.30						Final water level after development

Note: 6.5g = one well volume

DATE
STARTED 9-5-90
FINISHED 9-5-90
SHEET 1 OF 2

EMPIRE SOILS INVESTIGATIONS INC

SUBSURFACE LOG

BTA-90-133

HOLE NO. MWN-10
SURF. ELEV. 583.8
G. W. DEPTH See Notes

PROJECT Bethlehem Steel Corporation
Phase I Investigation

LOCATION Lackawanna Facility
Lackawanna, New York

DEPTH FEET	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	N	PID Sample	SOIL OR ROCK CLASSIFICATION	NOTES
0								Black f-c SAND, some f-c Gravel, little Cinders, tr. slag (moist, FILL)	
20		1	7	7		17			
			10	12				Gray CLAYEY SILT, little f. Sand, tr. gravel (moist-wet, medium)	
40		2	40	100/3		REF		Contains some f-c Sand, little f-m Gravel, tr. wood, tr. broken rock (moist-wet, HARD)	Driller notes drilling becomes more difficult at 38.0' possible clay interface. REF=Split Spoon Refusal

N = No blows to drive 2 " spoon 12 " with 140 lb. pin wt. falling 30 "per blow.

C = No blows to drive _____ " casing _____ " with _____ lb. weight falling _____ "per blow.

CLASSIFICATION Visual by Onsite Geologist

METHOD OF INVESTIGATION ASTM D-1586 USING 4-1/4" HOLLOW STEM AUGERS

DATE
STARTED 9-5-90
FINISHED 9-5-90
SHEET 2 OF 2

EMPIRE SOILS INVESTIGATIONS INC

SUBSURFACE LOG

(BTA-90-133)

HOLE NO. MWN-10
SURF ELEV. 583.8
G. W. DEPTH See Notes

PROJECT Bethlehem Steel Corporation
Phase I Investigation

LOCATION Lackawanna Facility
Lackawanna, New York

DEPTH-FT	SAMPLE'S	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	N	PID Sample	SOIL OR ROCK CLASSIFICATION	NOTES
40									
								Auger and Split Spoon Refusal at 53.0'	
		3	100/.0			REF		Boring Complete at 53.0'.	
								Refer to Monitoring Well Completion Reports for Well Installation Details.	Free Standing Water measured at 18.1' at boring completion. Free Standing Water measured at 6.0' on 9-11-90 at 9:20 am. Test boring open to 8.0'.
									Boring grouted to 21.0' upon 4-1/4" H.S.A. completion.
									PID=Organic vapor measurements taken with a photoionization detector (PID). Measurements recorded in parts per million (ppm).
									BG=Background PID measurements=0.0-0.2 ppm.
45									
50									
55									
60									
65									
70									
75									
80									

N = No blows to drive 2 " spoon 12 with 140 lb. pin wt. falling 30 "per blow.
C = No blows to drive _____ " casing _____ " with _____ lb weight falling _____ "per blow.

CLASSIFICATION Visual by Onsite Geologist

METHOD OF INVESTIGATION ASTM D-1586 USING 4-1/4" HOLLOW STEM AUGERS

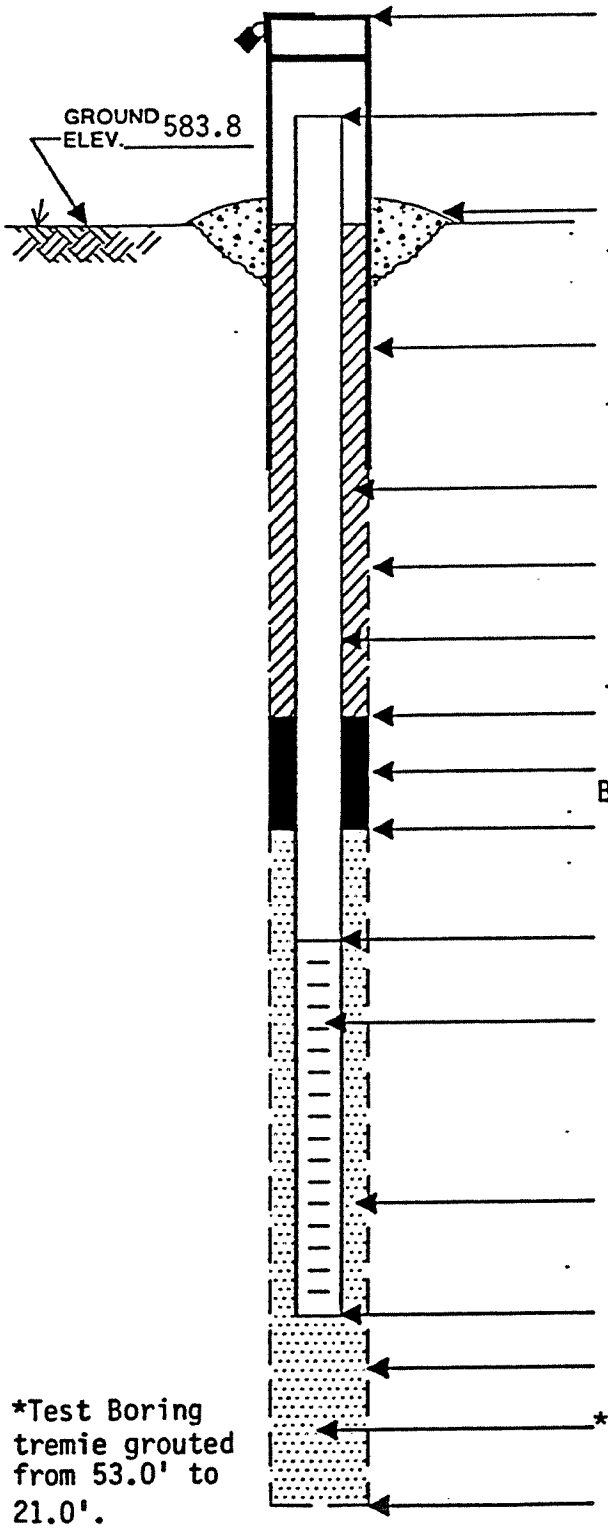
EMPIRE
SOILS INVESTIGATIONS INC

MONITORING WELL COMPLETION RECORD

PROJECT : Bethlehem Steel
PROJECT No. : BTA-90-133
INSTALLATION DATE(S) : 9-11-90
FIELD GEOLOGIST : D. Abrams

WELL No. MWN-10
LOCATION : Lackawanna, N.Y.

DRILLER : J. Lamm
DRILLING METHOD : ASTM-D-1586
DEVELOPMENT METHOD : Isco Pump



ELEVATION / TOP OF SURFACE CASING : 587.28
STICK-UP / TOP OF SURFACE CASING : 3.48'
ELEVATION / TOP OF RISER PIPE : 586.55
STICK-UP / TOP OF RISER PIPE : 2.75'
TYPE OF SURFACE SEAL : Sakrete
I.D. OF SURFACE CASING : 8-Inch Square
TYPE OF SURFACE CASING : Corrosion-resistant steel
TYPE OF BACKFILL : Cement/Bentonite grout
BOREHOLE DIAMETER : Nominal 12-1/4-inches
I.D. OF RISER PIPE : 4.0-inches
TYPE OF RISER PIPE : Polyvinyl Chloride (PVC), Schedule 40, threaded
DEPTH OF SEAL : 2.0'
TYPE OF SEAL : Bentonite Pellets
Bentonite Slurry
DEPTH OF SAND PACK : 5.0'
DEPTH TOP OF SCREEN : 6.0'
TYPE OF SCREEN : Type 316-Stainless Steel
SLOT SIZE x LENGTH : 0.010" slot x 10'
I.D. OF SCREEN : 4.0-inches
TYPE OF SAND PACK: #2-QRok Sand
DEPTH BOTTOM OF SCREEN : 16.0'
DEPTH BOTTOM OF SAND PACK : 21.0'
*TYPE OF BACKFILL BELOW OBSERVATION WELL : #2 QRok Sand 21.0'-16.0'
Bentonite/Cement grout to 21.0'
ELEVATION / DEPTH OF HOLE : 530.8/ 53.0'

*Test Boring tremie grouted from 53.0' to 21.0'.

DAMES & MOORE
A PROFESSIONAL LIMITED PARTNERSHIP

WELL DEVELOPMENT RECORD

WELL No. MW-N10

PROJECT : BSC - Phase 1 Investigation PROJECT No. : BTA-90-133 SITE LOCATION : Lackawanna, New York

CONTRATOR : Empire Soils Investigations METHOD(S) OF DEVELOPMENT : Purged with ISCO Pump

FIELD INSPECTOR(S) : Sharon McLellan, Don Wartinger

DATE	WEATHER/ TEMP.	TIME	WATER DEPTH TOP OF RISER (FT)	pH (UNITS)	TEMP. (°C)	SP. COND. (umhos)	NTU	VISUAL APPEAR., ODOR, ETC...	NOTES : GAL. REMOVED, ETC...
11/29/90	Overcast, 30°-40°F, 10-25 Mph WSW winds	12:15	Initial= 8.56						
				11.7	11.8	1.50	12	Water clear, no odor	5 gallons removed
				11.8	11.3	1.54	7		10 gallons removed
				11.7	12.0	1.57	6		15 gallons removed
				11.7	11.7	1.58	4		20 gallons removed
				11.7	11.7	1.55	3.7		25 gallons removed
				11.7	11.9	1.54	3.5		30 gallons removed
				11.6	12.4	1.50	3.6		35 gallons removed
				11.6	12.5	1.50	3.5		40 gallons removed

DAMES & MOORE
A PROFESSIONAL LIMITED PARTNERSHIP

WELL DEVELOPMENT RECORD

WELL No. MW-N10

PROJECT : BSC - Phase 1 Investigation PROJECT No. : BTA-90-133 SITE LOCATION : Lackawanna, New York

CONTRATOR : Empire Soils Investigations METHOD(S) OF DEVELOPMENT : Purged with ISCO Pump

FIELD INSPECTOR(S) : Sharon McLellan, Don Wartinger,

DATE	WEATHER/ TEMP.	TIME	WATER DEPTH TOP OF RISER (FT)	pH (UNITS)	TEMP. (°C)	SP. COND. (umhos)	NTU	VISUAL APPEAR., ODOR, ETC...	NOTES : GAL. REMOVED, ETC...
11/29/90				11.5	12.5	1.50	3.6		45 gallons removed
				11.5	12.6	1.51	3.6		50 gallons removed
		1:15	Final= 13.08						Final water level after development

Note: 6.6g = one well volume

LD

Project No: 0071-008-300

Borehole Number: MWN-56A

Project: Phase III Business Park Area

A.K.A.:

Client: ArcelorMittal Tecumseh Redevelopment, Inc.

Logged By: TAB

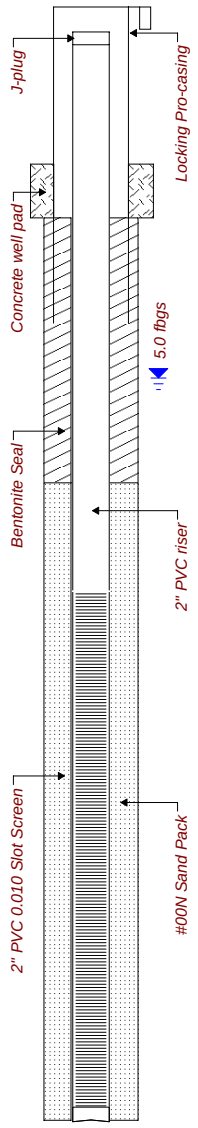
Site Location: Phase III Business Park Area

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs (ppm)	Lab Sample	Well Completion Details or Remarks
	0.0	Ground Surface							
	0.0 / -0.5	***Asphalt*** Augered through former asphalt parking lot.							
	0.5	***Fill*** Black, moist, non-plastic fines with some fine sand, with cinders and slag peices, medium dense, loose when disturbed, no odor.	1	57	1.0		4.0		
2.0	-2.0 / 2.0	As above, with reddish brown burnt peices.	2	15	1.2		2.9		
	-4.0 / 4.0	As above wet.	3	4	0.7		3.0		
7.0	-6.0 / 6.0	As above, no burnt looking material.	4	17	0.6		10.5		
	-8.0 / 8.0	As above, grey with orange brick.	5	31	1.1		3.5		
	-11.0 / 11.0	***Peat*** Dark to reddish brown, wet, silt with fine sand and few clay, with organic material (woody material), no odor.	6	2	0.0		NA		
12.0			7	2	1.2		0.9		
	-14.5 / 14.5	***Silty Clay*** Gray, wet, silty clay with trace fine sand, soft , high plasticity, laminated, no odor.	8	2	1.1		3.1		
	-15.5 / 15.5	***Peat*** As 11.0 - 14.50 fbgs.	9	2	0.0		NA		
17.0	-18.0 / 18.0	End of Borehole							

PID VOCs scale: 0 – 12.5 – 25 ppm



Drilled By: Earth Dimensions, Inc.
Drill Rig Type: CME 550 ATV rig
Drill Method: 4.25-inch HSA continous SS sample

Drill Date(s): 09/11/08

Hole Size: 9-inches
Stick-up: approx. 3-feet
Datum: mean sea level

Sheet: 1 of 1

Project No: 0071-008-300

Borehole Number: MWN-57A

Project: Phase III Business Park Area

A.K.A.:

Client: ArcelorMittal Tecumseh Redevelopment, Inc.

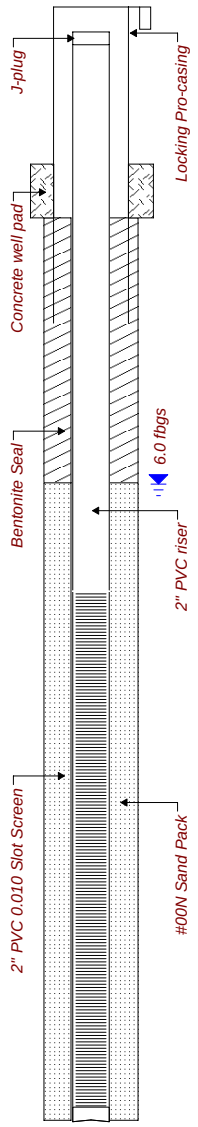
Logged By: TAB

Site Location: Phase III Business Park Area

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs (ppm)	Lab Sample
	0.0	Ground Surface						
	0.0	***Fill*** Black, moist, non plastic - fines with some fine sand, with cinders and slag peices, dense, loose when disturbed, no odor.	1	36	1.1		3.1	
2.0	-2.0 / 2.0	As above, with yellow brick.	2	21	1.0		1.6	
	-4.0 / 4.0	As above, wet, no yellow brick.	3	9	1.1		1.8	
7.0	-6.0 / 6.0	As above, wet.	4	6	1.0		2.5	
	-8.0 / 8.0	As above.	5	5	1.1		2.1	
	-10.0 / 10.0	As above, with some brown fine sand, with slight sheen on groundwater no odor.	6	7	1.0		2.0	
12.0	-12.0 / 12.0	As above, with no brown fine sand, no sheeing on ground water	7	7	10		2.6	
	-13.0 / 13.0	***Silty Clay*** Gray, wet, silty clay with trace fine sand, medium soft , high plasticity, laminated, no odor.						
	-14.0 / 14.0	As above.	8	5	0.9		2.3	
	-14.5 / 14.5	***Peat*** Dark brown, wet, peat, silt with little fine sand and few clay, medium pasticity, medium soft, with organic material, no odor.						
17.0			9	6	1.0		2.2	
	-18.0 / 18.0	End of Borehole						



Drilled By: Earth Dimensions, Inc.
Drill Rig Type: CME 550 ATV rig
Drill Method: 4.25-inch HSA continous SS sample

Drill Date(s): 09/11/08

Hole Size: 9-inches
Stick-up: approx. 3-feet
Datum: mean sea level

Sheet: 1 of 1

Project No: 0071-008-300

Borehole Number: MWN-58A

Project: Phase III Business Park

A.K.A.:

Client: Arcelor Mittal Tecumseh

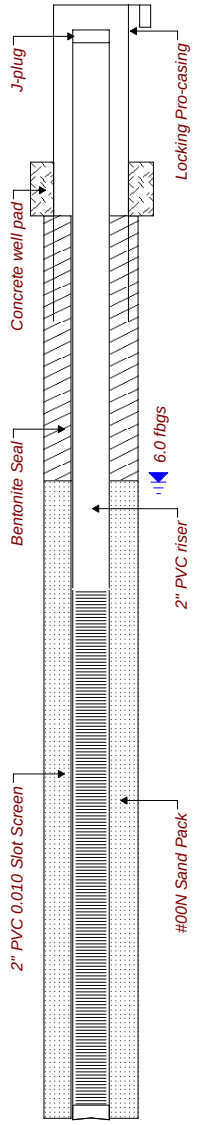
Logged By: TAB

Site Location: Phase III Business Park

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
-3.0									
	0.0	Ground Surface							
	0.0	***Fill*** Dark brown and black, moist, non - plastic fines with some fine sand, and with few coarse sands and fine gravel, with blue grey slag, dense, loose when disturbed, no odor.	1	30	1.1		3.8		
2.0	-2.0 / 2.0	As above, with blue slag peices, loose.	2	9	0.6		8.8		
	-4.0 / 4.0	As above, with yellow refractory brick no blue slag.	3	5	1.4		1.2		
7.0	-6.0 / 6.0	As above, wet.	4	6	1.5		1.5		
	-8.0 / 8.0	As above.	5	5	0.6		2.1		
	-10.0 / 10.0	As above..	6	4	0.3		1.6		
12.0	-12.0 / 12.0	***Silty Clay*** Gray, wet, silty clay with trace fine sand, medium soft , high plasticity, laminated, no odor.	7	7	1.4		1.6		
	-14.0 / 14.0	As above.	8	4	1.3		1.4		
17.0	-16.0 / 16.0	As above.	9	7	1.7		1.9		
	-18.0 / 18.0	End of Borehole							



Drilled By: Earth Dimensions, Inc.
Drill Rig Type: CME 550 ATV rig
Drill Method: 4.25-inch HSA continous SS sample

Drill Date(s): 9/12/08

Hole Size: 9-inch
Stick-up: approx. 3 - foot
Datum: mean sea level

Sheet: 1 of 1

Project No: 0071-008-300

Borehole Number: MWN-59A

Project: Phase III Business Park

A.K.A.:

Client: Arcelor Mittal Tecumseh

Logged By: TAB

Site Location: Phase III Business Park

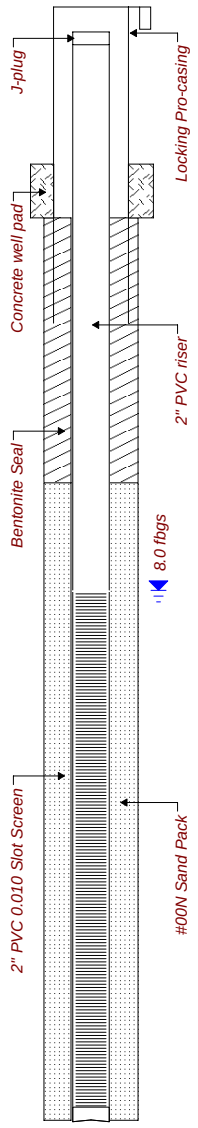
Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs (ppm)	Lab Sample
	0.0	Ground Surface						
	0.0	***Fill*** Dark brown, moist, non - plastic fines wth some fine sand, with slag and cinders, Dense, loose when disturbed, no odor.	1	53	1.0		2.4	
2.0	-2.0 / 2.0	As above, with green slag, medium dense.	2	17	1.1		1.3	
	-4.0 / 4.0	As above, no green slag, loose.	3	4	0.5		1.1	
7.0	-6.0 / 6.0	As above, wet, with few fine gravel.	4	9	0.6		1.6	
	-8.0 / 8.0	As above, wet.	5	17	0.7		1.8	
	-9.0 / 9.0	***Silty Clay*** Gray, wet, silty clay with trace fine sand, very stiff, high plasticity, laminated, no odor.	6	12	1.3		1.6	
12.0			7	16	0.0		NA	
	-14.0 / 14.0	As above, medium soft.	8	8	1.3		1.3	
	-16.0 / 16.0	As above.	9	6	1.5		1.0	
17.0	-17.0 / 17.0	***Peat*** Dark brown wet, silt with clay and little fine sand, organic woody material, medium soft, no odor.						
	-18.0 / 18.0	End of Borehole						

PID VOCs scale: 0 – 12.5 – 25 ppm

Well Completion Details or Remarks



Drilled By: Earth Dimensions
Drill Rig Type: Dietrich D120
Drill Method: 4.25-inch HSA continous SS sample

Drill Date(s): 9/16/08

Hole Size: 9 - inch
Stick-up: approx. 3 - foot
Datum: mean sea level

Sheet: 1 of 1

Project No: 0071-008-300

Borehole Number: MWN-60A

Project: Phase III Business Park

A.K.A.:

Client: Arcelor Mittal Tecumseh

Logged By: TAB

Site Location: Phase III Business Park

Checked By: BCH

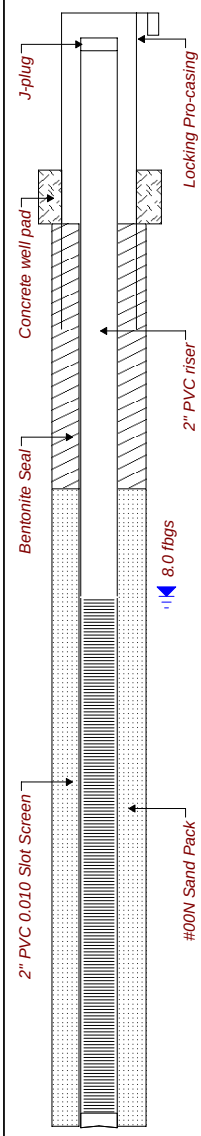
TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE / SAMPLE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs (ppm)	Lab Sample
-3.0								
	0.0 / 0.0	Ground Surface						
		Fill Brown, moist, non - plastic fines wth some fine sand, with blue grey colored slag, Dense, loose when disturbed, no odor.	1	45	1.3		1.3	
2.0	-2.0 / 2.0	As above, Black color with cinders.	2	30	1.2		10.2	
	-4.0 / 4.0	As above.	3	55	1.5		9.4	
	-6.0 / 6.0	As above, with orange and yellow brick.	4	29	1.2		13.2	
7.0	-8.0 / 8.0	As above, wet.	5	14	1.2		7.6	
	-9.0 / 9.0	***Silty Clay*** Gray, wet, silty clay with trace fine sand, stiff, high plasticity, orange mottling, laminated, no odor.	6	22	1.3		2.0	
12.0	-12.0 / 12.0	As above, with little sand, with vertical orange staining.	7	16	1.6		2.0	
	-14.0 / 14.0	As above.	8	13	1.8		1.8	
	-16.0 / 16.0	As above.	9	10	1.5		2.5	
17.0	-18.0 / 18.0	End of Borehole						

PID VOCs scale: 0, 12.5, 25

Well Completion Details or Remarks



Drilled By: Earth Dimensions, Inc.
Drill Rig Type: Dietrich D120
Drill Method: 4.25-inch HSA continous SS sample

Hole Size: 9 - inch
Stick-up: approx. 3 - foot
Datum: mean sea level

Drill Date(s): 9/16/08

Sheet: 1 of 1

Project No: 0071-008-300

Borehole Number: MWS-30A

Project: Phase III Business Park

A.K.A.:

Client: Arcelor Mittal Tecumseh

Logged By: TAB

Site Location: Phase III Business Park

Checked By: BCH

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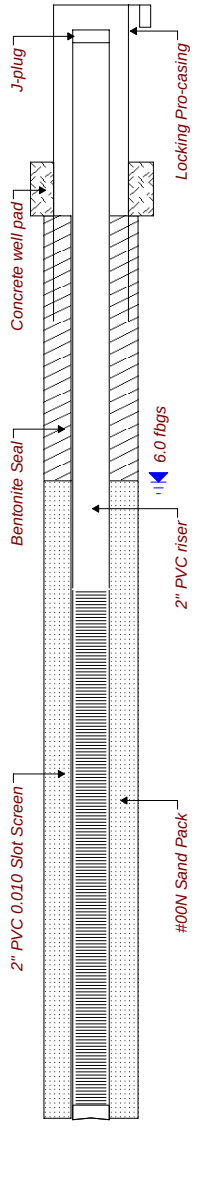
Buffalo, NY 14218
(716) 856-0635

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs (ppm)	Lab Sample	Well Completion Details or Remarks
-3.0							0 / 12.5 / 25		
	0.0 / 0.0	Ground Surface							
		Fill Brown to black, moist, non - plastic, fines with some fine sand, with cinders and slag peices, dense, loose when disturbed, no odor.	1	31	1.8		1.0		
2.0	-2.0 / 2.0	As above, loose.	2	8	1.4		8.5		
	-4.0 / 4.0	As above.	3	5	1.2		0.2		
	-6.0 / 6.0	As above, wet, with yellow color and broken up concrete, medium dense.	4	25	0.6		0.0		
7.0	-8.0 / 8.0	***Silty Clay*** Gray, wet, silty clay with trace fine sand, very stiff , high plasticity, laminated, no odor.	5	12	1.6		1.0		
	-10.0 / 10.0	As above.	6	18	1.4		1.0		
12.0	-12.0 / 12.0	As above, stiff.	7	11	1.6		0.8		
	-14.0 / 14.0	As above, medium soft.	8	8	1.4		1.7		
	-16.0 / 16.0	As above, with little sand.	9	5	1.0		2.0		
17.0	-18.0 / 18.0	End of Borehole							



Drilled By: Earth Dimensions
Drill Rig Type: Dietrich D-120
Drill Method: 4.25-inch HSA continous SS sample

Drill Date(s): 9/18/08

Hole Size: 9 - inch
Stick-up: approx. 3 - foot
Datum: mean sea level

Sheet: 1 of 1

Project No: 0071-008-300

Borehole Number: MWS-33A

Project: Phase III Business Park

A.K.A.:

Client: Arcelor Mittal Tecumseh

Logged By: TAB

Site Location: Phase III Business Park

Checked By: BCH

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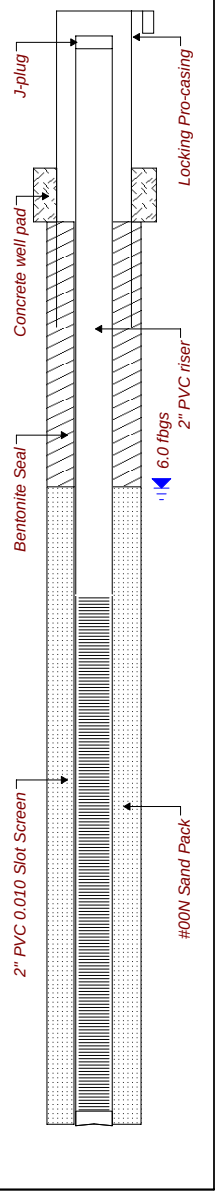
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs (ppm)	Lab Sample	Well Completion Details or Remarks
-3.0									
	0.0	Ground Surface							
	0.0	***Fill*** Dark brown, moist, non - plastic fines wth some fine sand, with slag and cinders, Dense, loose when disturbed, no odor.	1	34	1.5		1.4		
2.0	-2.0 / 2.0	As above.	2	100 / 3	0.3		1.1		
	-4.0 / 4.0	As above, with black slag.	3	17	0.7		1.7		
	-6.0 / 6.0	As above, wet, slight musty odor.	4	9	1.0		18.4		
7.0	-8.0 / 8.0	***Silty Clay*** Gray, wet, silty clay with trace fine sand, stiff, high plasticity, laminated, no odor.	5	9	1.3		20.4		
	-10.0 / 10.0	As above, brown staining.	6	12	1.2		2.3		
12.0	-12.0 / 12.0	As above.	7	13	1.8		1.4		
	-14.0 / 14.0	As above.	8	6	1.6		0.4		
	-16.0 / 16.0	As above, with little sand.	9	4	1.8		0.9		
17.0	-18.0 / 18.0	End of Borehole							



Drilled By: Earth Dimensions
Drill Rig Type: Dietrich D120
Drill Method: 4.25-inch HSA continous SS sample

Drill Date(s): 9/18/08

Hole Size: 9 - inch
Stick-up: approx. 3 - foot
Datum: mean sea level

Sheet: 1 of 1

Project No: 0071-008-300

Borehole Number: MWS-34A

Project: Phase III Business Park

A.K.A.:

Client: Arcelor Mittal Tecumseh

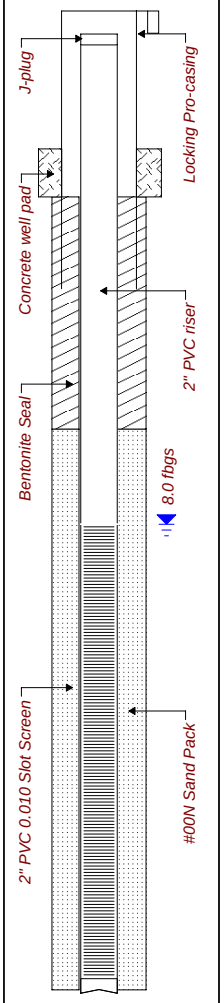
Logged By: TAB

Site Location: Phase III Business Park

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 / 25 / 50)	Lab Sample	Well Completion Details or Remarks
-3.0									
	0.0	Ground Surface							
	0.0	***Fill*** Dark brown to reddish brown, moist, non - plastic, fines with some fine sand and slag peices, with rusty material dense, loose when disturbed, no odor.	1	25	1.1		2.4		
	-2.0								
2.0	2.0	As above. with some coarse sand and fine garvel, mixed with blue grey slag.	2	16	1.2		2.1		
	-4.0								
	4.0	As above but black with cinders.	3	22	1.3		1.7		
	-6.0								
	6.0	As above, with orange brick, hydrocarbon type odor.	4	6	0.8		16.2		
7.0	-8.0								
	8.0	As above brown with hydrocarbon type odor. Auger refusal at 9.0 fbgs moved ~25.0 feet to west. Augered with out sampling encountered auger refusal at 4.0 fbgs, moved rig ~10.0 feet to west augered to 8.0 fbgs and continued sampling.	5	17	0.6		32.3		
	-10.0								
	10.0	***Silty Clay*** Gray, wet, silty clay with trace fine sand, medium soft , high plasticity, laminated, no odor.	6	5	0.7		10.4		
	-12.0								
12.0	12.0	As above.	7	8	0.8		14.4		
	-14.0								
	14.0	As above.	8	5	2.0		1.5		
	-16.0								
	16.0	As above.	9	6	1.4		4.7		
17.0	-18.0								
	18.0	End of Borehole							
22.0									



Drilled By: Earth Dimensions, Inc
Drill Rig Type: CME 550 ATV rig
Drill Method: 4.25-inch HSA continous SS sample

Drill Date(s): 9/12/08 & 9/15/08

Hole Size: 9 - inch
Stick-up: aprrox 3 - foot
Datum: mean sea level

Sheet: 1 of 1

Project No: 0071-008-300

Borehole Number: MWS-35A

Project: Phase III Business Park

A.K.A.:

Client: Arcelor Mittal Tecumseh

Logged By: TAB

Site Location: Phase III Business Park

Checked By: BCH

TurnKey Environmental Restoration, LLC
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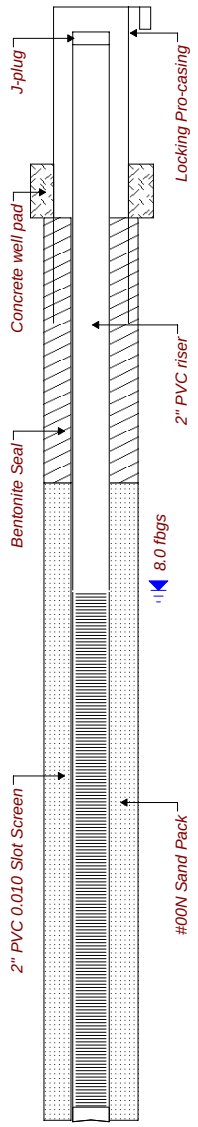
SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
-3.0									
	0.0	Ground Surface							
	0.0	***Fill*** Dark brown, moist, non - plastic fines with some fine sand few fine gravel, and slag peices, with yellow refractory brick and cinders, medium dense, loose when disturbed, no odor.	1	20	1.5		4.3		
2.0	-2.0 / 2.0	As above, with more cinders and orange brick.	2	9	1.2		1.0		
	-4.0 / 4.0	As above, with yellow refractory brick.	3	17	1.2		1.7		
7.0	-6.0 / 6.0	As above, with no yellow and orange brick.	4	10	0.8		1.6		
	-8.0 / 8.0	As above, wet, very dense, auger refusal at 9.0 fbgs moved ~15.0 feet to west, augered with out sampling to 10.0 fbgs and continued sampling.	5	100 / 2	0.6		1.4		
	-10.0 / 10.0	As above, but black with few coarse gravel.	6	44	1.3		0.6		
12.0	-12.0 / 12.0	As above, medium dense.	7	21	0.4		0.8		
	-14.0 / 14.0	***Silty Clay*** Gray, wet, silty clay with trace fine sand, medium soft , high plasticit, laminated. no odor.	8	7	1.0		0.8		
	-16.5 / 16.5	***Peat*** Dark brown, wet, silt with clay and few fine sand, medium soft, with organic material, no odor.	9	6	1.5		0.3		
17.0	-18.0 / 18.0	End of Borehole							



Drilled By: Earth Dimensions, Inc.
Drill Rig Type: CME 550 ATV rig
Drill Method: 4.25-inch HSA continous SS sample

Drill Date(s): 9/15/08

Hole Size: 9 - inch
Stick-up: aprrox. 3 - foot
Datum: mean sea level

Sheet: 1 of 1

Project No: 0071 - 009 - 310

Borehole Number: MWN-61A

Project: Phase IIIA Business Park Area

A.K.A.:

Client: Tecumseh Redevelopment Inc.

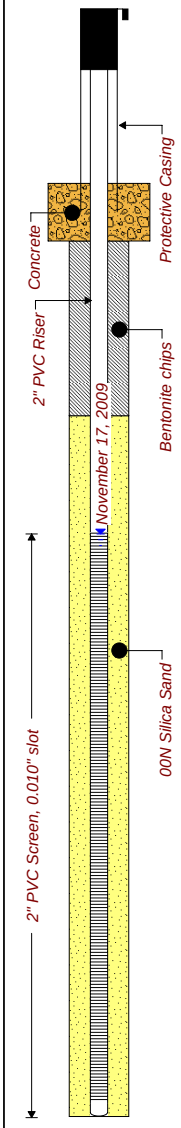
Logged By: TAB

Site Location: Lackawanna , NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs (ppm)	Lab Sample	Well Completion Details or Remarks
-3.0									
	0.0	Ground Surface							
	0.0	***Fill*** Dark Brown, moist, fill, non plastic fines with some fine and coarse sand, few coarse gravel, grey slag, very dense, loose when disturbed.	1	NA	0.8		0.0		
2.0	-2.0 / 2.0	As above, black, red/orange slag peices.	2	94	1.6		0.3		
	-4.0 / 4.0	As above.	3	91	1.8		1.1		
	-6.0 / 6.0	As above, wet.	4	24	0.8		0.0		
7.0	-8.0 / 8.0	As above, slight sheen and slight petroleum-like odor.	5	19	0.5		0.0		
	-10.5 / 10.5	***Lean Clay*** Dark grey, wet, medium plasticity fines, little fine sand, trace coarse sand, rootlets.	6	4	0.5		4.5		
12.0	-12.0 / 12.0	As above	7	5	1.3		4.4		
	-14.0 / 14.0	As above, trace fine sand.	8	8	1.5		0.0		
	-16.0 / 16.0	End of Borehole							
17.0									



Drilled By: Earth Dimensions, Inc.
Drill Rig Type: Deitrich D120
Drill Method: 2-foot split spoon fowolled by 41/4-inch hollow stem augers
Comments:
Drill Date(s): 11/17/09 - 11/20/09

Hole Size: 8.5-inch
Stick-up: 2.5 - feet
Datum: Mean Sea level

Sheet: 1 of 1

Project No: 0071 - 009 - 310

Borehole Number: MWN-62D

Project: Phase IIIA Business Park Area

A.K.A.:

Client: Tecumseh Redevelopment, Inc.

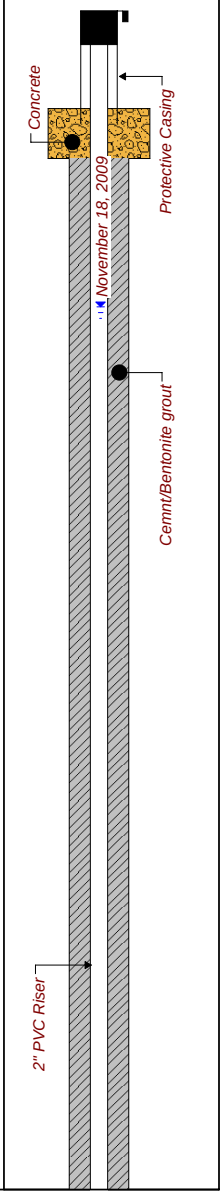
Logged By: TAB

Site Location: Lackawanna, NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm	Lab Sample	Well Completion Details or Remarks
-3.0							0 12.5 25		
	0.0	Ground Surface							
	0.0	***FIll*** Black, moist, fill, non plastic fines with some fine and coarse sand, few coarse gravel, grey slag, very dense, loose when disturbed, yellow brick.	1	29	1.1		0.0		
	-2.0								
2.0	2.0	As above, no yellow brick, with coal peices	2	29	1.5		0.0		
	-4.0								
	4.0	***Lean Clay*** Dark brown/black and grey, moist, mostly medium plastic fines with some fine sand, with coal peices, medium plasticity.	3	5	0.8		0.0		
	-6.0								
	6.0	***Poorly Graded Sand with Silt and Gravel*** Brown to grey, wet, fine sand with few coarse sand and trace coarse gravel and non-plasstic fines, rapid dilatancy, medium dense.	4	11	1.3		0.0		
7.0			5	16	1.0		0.0		
			6	15	1.2		0.0		
12.0			7	28	0.7		0.0		
	-13.0								
	13.0	***Organic soil with sand*** Brown, wet, mostly low plasticity fines, little fine sand, organic material.	8	7	1.5		0.0		
	-16.0								
	16.0	As above	9	6	1.2		0.0		
17.0	-18.0								
	18.0	***Lean Clay***							
	-19.0	Grey, wet, mostly high plasticiy fines with trace fine sand, soft.	10	3	1.6		0.0		
	19.0	***Organic Soil with Sand*** As 13.0 fbgs to 18.0 fbgs.	11	5	1.2		0.0		
22.0			12	5	1.7		0.0		
	-24.0								
	24.0	***Silty Sand*** Grey, wet, mostly non plastic fines with some fine sand, loose, rapid dilatancy	13	7	1.4		0.0		
27.0			14	15	1.8		0.0		
	-28.0								
	28.0	***Lean Clay*** Grey, wet, mostly high plasticity fines, trace fine and coarse sand, varved with reddish brown layers where clay is not extremly soft.	15	13	1.0		0.0		
			16	3	1.7		0.0		
32.0							0.0		



Drilled By: Earth Dimensions, Inc.
Drill Rig Type: Deitrich D120
Drill Method: 2-foot split spoon fowolled by 41/4-inch hollow stem augers
Comments:
Drill Date(s): 11/17/09 - 11/20/09

Hole Size: 8,5-inch
Stick-up: 2.5 - feet
Datum: Mean Sea level

Sheet: 1 of 2

Project No: 0071 - 009 - 310

Borehole Number: MWN-62D

Project: Phase IIIA Business Park Area

A.K.A.:

Client: Tecumseh Redevelopment, Inc.

Logged By: TAB

Site Location: Lackawanna, NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs (ppm)	Lab Sample	Well Completion Details or Remarks
			17	1	1.9		0.0		
			18	1	1.6		0.0		
37.0			19	1	1.3		0.0		
			20	1	1.3		0.0		
			21	wh	1.1		0.0		
42.0	-42.0 / 42.0	***Sandy Lean Clay with Gravel*** Grey, wet to moist, some fine sand with few non plastic to low plasticity fines, few medium to coarse sands with little fine and subrounded gravels with shale fragments, MEdium dense to very dense. Auger refusal at 52.0 fbgs top of rock at 52.0 fbgs, augered 0.5 fbgs into rock to facilitate instalation of bedrock well.	22	12	1.1		0.0		
			23	11	.7		0.0		
47.0			24	114	1.4		0.0		
			25	102	1.1		0.0		
			26	100/3	0.8		0.0		
52.0	-52.0 / 52.0	***Dolomitic Limestone w/ Shale bedding.*** Run #1 (52 - 57) fbgs Dark Grey, microcrystaline very strong, slight decompostion along fracture zones, Blocky ,moderatly fractured, recovery = 100%, RQD = 96.2% is excellent. Run#2 (57-63.2)fbgs As run #1, at 61.0 fbgs a 45 degree sheer fracture, recovery = 97%, RQD = 92.8% is excellent.					0.0		Bentonite chips; 2" PVC Screen, 0.010" slot; 00N Silica Sand
57.0									
62.0	-63.2 / 63.2	End of Borehole							
67.0									

Drilled By: Earth Dimensions, Inc.
Drill Rig Type: Deitrich D120
Drill Method: 2-foot split spoon fowolled by 41/4-inch hollow stem augers
Comments:
Drill Date(s): 11/17/09 - 11/20/09

Hole Size: 8,5-inch
Stick-up: 2.5 - feet
Datum: Mean Sea level

Sheet: 2 of 2

Project No: 0071 - 009 - 310

Borehole Number: MWS-31A

Project: Phase IIIA Business Park Area

A.K.A.:

Client: Tecumseh Redevelopment, Inc.

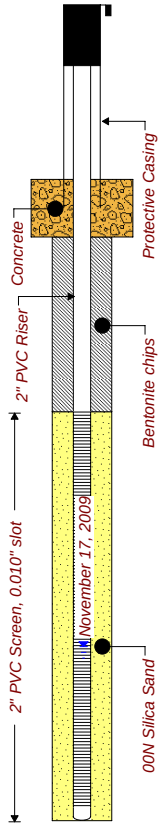
Logged By: TAB

Site Location: Lackawanna, NY

Checked By:

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
-3.0									
	0.0	Ground Surface							
	0.0	***Fill*** Black/grey, moist, fill, non plastic fines with some fine and coarswe sand, some grey salg, with rootlets at top, very dense, loose when disturbed.	1	100 / 3	0.7		0.0		
2.0	-2.0 / 2.0	As above, black	2	32	1.4		0.0		
	-4.0 / 4.0	As above with orange brick in shoe	3	30	0.8		0.0		
7.0	-6.0 / 6.0	As above dark brown, yellow brick in shoe	4	74	1.4		0.0		
	-8.0 / 8.0	As above, wet with coal peices	5	12	1.3		0.0		
	-10.5 / 10.5	***Lean Clay*** Grey, wet to moist, high plasticity fines, few fine sand, trace coarse sand, stiff.	6	9	1.5		0.0		
12.0	-12.0 / 12.0	End of Borehole							
17.0									



Drilled By: Earth Dimensions, Inc.
Drill Rig Type: Deitrich D120
Drill Method: 2-foot split spoon fowolled by 41/4-inch hollow stem augers
Comments:
Drill Date(s): 11/17/09 - 11/20/09

Hole Size: 8-inch
Stick-up: 2.5 - feet
Datum: Mean Sea level

Sheet: 1 of 1

APPENDIX E

GROUNDWATER MONITORING WELL SAMPLING LOG FORM

TurnKey Environmental Restoration, LLC

WATER LEVEL MONITORING RECORD

Project Name:	Client:
Project No.:	Location:
Field Personnel:	Date:
Weather:	

Well No.	Time	Top of Riser Elevation (fmsl)	Static Depth to Water (fbTOR)	Groundwater Elevation (fmsl)	Total Depth (fbTOR)	Last Total Depth Measurement (fbTOR)

Comments/Remarks:

PREAPRED BY: DATE:

GROUNDWATER FIELD FORM

Project Name: Date:

Location: Project No.: Field Team:

Well No.			Diameter (inches):			Sample Date / Time:			
Product Depth (fbTOR):			Water Column (ft):			DTW when sampled:			
DTW (static) (fbTOR):			One Well Volume (gal):			Purpose: ☐ Development ☐ Sample ☐ Purge & Sample			
Total Depth (fbTOR):			Total Volume Purged (gal):			Purge Method:			
Time	Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
	0 Initial								
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								
Sample Information:									
	S1								
	S2								

Well No.			Diameter (inches):			Sample Date / Time:			
Product Depth (fbTOR):			Water Column (ft):			DTW when sampled:			
DTW (static) (fbTOR):			One Well Volume (gal):			Purpose: ☐ Development ☐ Sample ☐ Purge & Sample			
Total Depth (fbTOR):			Total Volume Purged (gal):			Purge Method:			
Time	Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
	0 Initial								
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								
Sample Information:									
	S1								
	S2								

REMARKS:

Note: All measurements are in feet, distance from top of riser.

Volume Calculation

Diam.	Vol. (g/ft)
1"	0.041
2"	0.163
4"	0.653
6"	1.469

Stabilization Criteria

Parameter	Criteria
pH	± 0.1 unit
SC	± 3%
Turbidity	± 10%
DO	± 0.3 mg/L
ORP	± 10 mV

PREPARED BY:

APPENDIX F

SITE-WIDE INSPECTION FORM

Enclosure 1
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site Nos. C915199 through C915199J

Site Name Phase III Business Park ("Controlled Property")

Site Address: 2303 Hamburg Turnpike Zip Code: 14218

City/Town: Lackawanna

County: Erie

Current Use: Industrial

Intended Use: Industrial/Commercial Business Park

Verification of Site Details **Box 2**

		YES	NO
1.	Are the Site Details above, correct?	☐	☐
	If NO, are changes handwritten above or included on a separate sheet?	☐	☐
2.	Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment since the initial/last certification?	☐	☐
	If YES, is documentation or evidence that documentation has been previously submitted included with this certification?	☐	☐
3.	Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property since the initial/last certification?	☐	☐
	If YES, is documentation or evidence that documentation has been previously submitted included with this certification?	☐	☐
4.	Has a change-of-use occurred since the initial/last certification?	☐	☐
	If YES, is documentation or evidence that documentation has been previously submitted included with this certification?	☐	☐
5.	For non-significant-threat Brownfield Cleanup Program Sites subject to ECL 27-1415.7(c), has any new information revealed that assumptions made in the Qualitative Exposure Assessment for offsite contamination are no longer valid?	☐	☐
	If YES, is the new information or evidence that new information has been previously submitted included with this Certification?	☐	☐
6.	For non-significant-threat Brownfield Cleanup Program Sites subject to ECL 27-1415.7(c), are the assumptions in the Qualitative Exposure Assessment still valid (must be certified every five years) ?	☐	☐

SITE NOs. C915199 through C915199J

Description of Institutional Control Certification

	YES	NO
1. Compliance with the Site Management Plan (SMP) for the implemented remedy:	□	□
2. The groundwater beneath the Site is not used as a potable water source or for any other use without prior written permission of the Department:	□	□
3. Groundwater monitoring as specified in the SMP:	□	□
4. Operation and maintenance of the ASD system as specified in the SMP:	□	□

Description of Engineering Control Certification **Box 4**

	YES	NO
1. Maintenance of the cover systems over the Site:	□	□

Control Certification Statement

For each Institutional or Engineering control listed above, I certify by checking "Yes" that all of the following statements are true:

(a) the Institutional Control and/or Engineering Control employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

(b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

(c) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

(d) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control.

(e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

IC/EC CERTIFICATIONS
SITE NOs. C915199 through C915199J

Box 5

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 2 & 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I _____ at _____,
print name print business address

am certifying as _____(Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

_____ _____
Signature of Owner or Remedial Party Rendering Certification Date

Box 6

QUALIFIED ENVIRONMENTAL PROFESSIONAL (QEP) SIGNATURE

I certify that all information and statements in Box 4 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I _____ at _____,
print name print business address

am certifying as a Qualified Environmental Professional for the _____

(Owner or Remedial Party) for the Site named in the Site Details Section of this form.

_____ _____ _____
Signature of Qualified Environmental Professional, for the Owner or Remedial Party, Rendering Certification | Stamp (if Required) | Date

Enclosure 2

Certification of Institutional Controls/ Engineering Controls (ICs/ECs)
Step-by-Step Instructions, Certification Requirements and Definitions

The Owner, or Remedial Party, and when necessary, a Professional Engineer (P.E.), or the Qualified Environmental Professional (QEP), must review and complete the IC/EC Certification Form, sign the IC/EC Certifications Signature Page, and return it, along with the Periodic Review Report (PRR), within 45 days of the date of this notice.

Please use the following instructions to complete the IC/EC Certification.

I. Verification of Site Details (Box 1 and Box 2):

Answer the six questions in the Verification of Site Details Section. Questions 5 and 6 refer to only sites in the Brownfield Cleanup Program. ECL Section 27-1415-7(c) is included in **IV. IC/EC Certification Requirements**. The Owner and/or your P.E. or QEP may include handwritten changes and/or other supporting documentation, as necessary.

II. Verification of Institutional / Engineering Controls (Box 3 and Box 4)

Review the listed Institutional / Engineering Controls, confirming that all existing controls are listed, and that all existing controls are still applicable. If there is a control that is no longer applicable the Owner / Remedial Party is to petition the Department requesting approval to remove the control.

2. Select "YES" or "NO" for **Control Certification** for each IC/EC, based on Sections (a)-(e) of the **Control Certification Statement**.

   If the Department concurs with the explanation, the corrective measures, and the proposed schedule, a letter authorizing the implementation of those corrective measures will be issued by the Project Manager. If the Department has any questions or concerns regarding the completion of the certification, the Project Manager will contact you.

3. If you cannot certify "Yes" for each Control, please continue to complete the remainder of this **Control Certification** form. Attach supporting documentation that explains why the **Control Certification** cannot be rendered, as well as a statement of proposed corrective measures, and an associated schedule for completing the corrective measures. Note that this **Control Certification** form must be submitted even if an IC or EC cannot be certified; however, the certification process will not be considered complete until corrective action is conducted.

   If the Department concurs with the explanation, the corrective measures, and the proposed schedule, a letter authorizing the implementation of those corrective measures will be issued by the Project Manager. Once the corrective measures are complete a new Periodic Review Report (with IC/EC Certification) is to be submitted within 45 days to the Department. If the Department has any questions or concerns regarding the PRR and/or completion of the IC/EC Certification, the Project Manager will contact you.

III. IC/EC Certification by Signature (Box 5 and Box 6):

1. If you certified "Yes" for each Control, please complete and sign the IC/EC Certifications page. To determine WHO signs the **IC/EC Certification,** please use Table 1. Signature Requirements for the IC/EC Certification, which follows.

Table 1. Signature Requirements for Control Certification Page

Type of Control	Example of IC/EC	Required Signatures
IC only	Environmental Easement Deed Restriction.	A site or property owner or remedial party.
IC with an EC which does not include a treatment system or engineered caps.	Fence, Clean Soil Cover, Individual House Water Treatment System, Vapor Mitigation System	A site or property owner or remedial party, and a QEP. (P.E. license not required)
IC with an EC that includes treatment system or an engineered cap.	Pump & Treat System providing hydraulic control of a plume, Part 360 Cap.	A site or property owner or remedial party, and a QEP with a P.E. license.

IV. IC/EC Certification Requirements:

Division of Environmental Remediation Program Policy requires periodic certification of IC(s) and EC(s) as follows:

For Environmental Restoration Projects: N.Y. Envtl Conserv.Law Section 56-0503 (Environmental restoration projects; state assistance)

For State Superfund Projects: Envtl Conserv.Law Section 27-1318. (Institutional and engineering controls)

For Brownfields Cleanup Program Projects: Envtl Conserv.Law Section 27-1415. (Remedial program requirements)

Envtl Conserv.Law Section 27-1415-7(c) states:

(c) At non-significant threat sites where contaminants in groundwater at the site boundary contravene drinking water standards, such certification shall also certify that no new information has come to the owner's attention, including groundwater monitoring data from wells located at the site boundary, if any, to indicate that the assumptions made in the qualitative exposure assessment of offsite contamination are no longer valid. Every five years the owner at such sites shall certify that the assumptions made in the qualitative exposure assessment remain valid. The requirement to provide such certifications may be terminated by a written determination by the Commissioner in consultation with the Commissioner of Health, after notice to the parties on the brownfield site contact list and a public comment period of thirty days.

Voluntary Cleanup Program: Applicable program guidance.

Petroleum Remediation Program: Applicable program guidance.

Federal Brownfields: Applicable program guidance.

Manufactured Gas Plant Projects: Applicable program guidance (including non-registry listed MGPs).

WHERE to mail the signed Certification Form by March 1st of each year (or within 45 days of the date of the Department notice letter):

New York State Department of Environmental Conservation
Division of Environmental Remediation

Attn: Division of Environmental Remediation – North Section
NYSDEC
270 Michigan Avenue
Buffalo, NY 14203-2999

Please note that extra postage may be required.

V. Definitions

"Engineering Control" (EC), means any physical barrier or method employed to actively or passively contain, stabilize, or monitor contamination, restrict the movement of contamination to ensure the long-term effectiveness of a remedial program, or eliminate potential exposure pathways to contamination. Engineering controls include, but are not limited to, pavement, caps, covers, subsurface barriers, vapor barriers, slurry walls, building ventilation systems, fences, access controls, provision of alternative water supplies via connection to an existing public water supply, adding treatment technologies to such water supplies, and installing filtration devices on private water supplies.

"Institutional Control" (IC), means any non-physical means of enforcing a restriction on the use of real property that limits human and environmental exposure, restricts the use of groundwater, provides notice to potential owners, operators, or members of the public, or prevents actions that would interfere with the effectiveness of a remedial program or with the effectiveness and/or integrity of operation, maintenance, or monitoring activities at or pertaining to a remedial site.

"Professional Engineer" (P.E.) means an individual or firm licensed or otherwise authorized under article 145 of the Education Law of the State of New York to practice engineering.

"Property Owner" means, for purposes of an IC/EC certification, the actual owner of a property. If the site has multiple properties with different owners, the Department requires that the owners be represented by a single representative to sign the certification.

"Oversight Document" means any document the Department issues pursuant to each Remedial Program (see below) to define the role of a person participating in the investigation and/or remediation of a site or area(s) of concern. Examples for the various programs are as follows:

BCP (after approval of the BCP application by DEC) - Brownfield Site Cleanup Agreement.
ERP (after approval of the ERP application by DEC) - State Assistance Contract.
Federal Superfund Sites - Federal Consent Decrees, Administrative Orders on Consent or Unilateral Orders issued pursuant to CERCLA.
Oil Spill Program - Order on Consent, or Stipulation pursuant to Article 12 of the Navigation Law (and the New York Environmental Conservation Law).
State Superfund Program - Administrative Consent Order, Record of Decision.
VCP (after approval of the VCP application by DEC) - Voluntary Cleanup Agreement.
RCRA Corrective Action Sites- Federal Consent Decrees, Administrative Orders on Consent or permit conditions issued pursuant to RCRA.

“Qualified Environmental Professional” (QEP), means a person who possesses sufficient specific education, training, and experience necessary to exercise professional judgment to develop opinions and conclusions regarding the presence of releases or threatened releases to the surface or subsurface of a property or off-site areas, sufficient to meet the objectives and performance factors for the areas of practice identified by this Part. Such a person must:

(1) hold a current professional engineer’s or a professional geologist’s license or registration issued by the State or another state, and have the equivalent of three years of full-time relevant experience in site investigation and remediation of the type detailed in this Part; or

(2) be a site remediation professional licensed or certified by the federal government, a state or a recognized accrediting agency, to perform investigation or remediation tasks consistent with Department guidance, and have the equivalent of three years of full-time relevant experience.

“Qualitative Exposure Assessment” means a qualitative assessment to determine the route, intensity, frequency, and duration of actual or potential exposures of humans and/or fish and wildlife to contaminants.

“Remedial Party” means a person implementing a remedial program at a remedial site pursuant to an order, agreement or State assistance contract with the Department.

“Site Management” (SM) means the activities undertaken as the last phase of the remedial program at a site, which continue after a Certificate of Completion is issued. Site management is conducted in accordance with a site management plan, which identifies and implements the institutional and engineering controls required for a site, as well as any necessary monitoring and/or operation and maintenance of the remedy.

“Site Management Plan” (SMP) means a document which details the steps necessary to assure that the institutional and engineering controls required for a site are in-place, and any physical components of the remedy are operated, maintained and monitored to assure their continued effectiveness, developed pursuant to Section 6 (DER10 Technical Guide).

“Site Owner” means the actual owner of a site. If the site has multiple owners of multiple properties with ICs and/or ECs, the Department requires that the owners designate a single representative for IC/EC Certification activities.

APPENDIX G

QUALITY ASSURANCE PROJECT PLAN

BROWNFIELD CLEANUP PROGRAM

APPENDIX G
QUALITY ASSURANCE PROJECT PLAN

TECUMSEH PHASE III BUSINESS PARK
NYSDEC SITE NUMBERS: C915199 through C915199J
LACKAWANNA, NEW YORK

November 2013 0071-012-322

Prepared by:

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

QUALITY ASSURANCE PROJECT PLAN (QAPP)
TECUMSEH PHASE III BUSINESS PARK

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1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) is an appendix to the Site Management Plan (SMP), a required element of the remedial program at the Phase III Business Park (hereinafter referred to as the "Controlled Property") under the New York State (NYS) Brownfield Cleanup Program (BCP), administered by New York State Department of Environmental Conservation (NYSDEC). These BCP Sites, listed by name and number in Section 1.1 of the SMP, were remediated or are slated to undergo remediation in accordance with Brownfield Cleanup Agreement (BCA) Index #B9-0696-05-06(C), which was executed on March 14, 2007 and amended on August 20, 2012.

1.1 Site Location and Description

The Controlled Property is located in the City of Lackawanna, County of Erie, New York and is identified as a portion of tax parcel SBL#141.11-1-50 on the Erie County Tax Map. The Controlled Property is an approximately 149-acre area bounded by Gateway Metroport Ship Canal and property owned by Gateway Trade Center site to the north; the South Buffalo Railroad Company to the south; Phase II Business Park and the South Return Water Trench (SRWT) to the east; and other Tecumseh property to the west. The boundaries of the Controlled Property as well as the boundaries of the individual Sites contained therein are more fully described in the Environmental Easement (see Appendix A of the SMP).

1.2 Site History

The approximate 150-acre Controlled Property formerly housed several facilities used in Bethlehem Steel Corporation's steel manufacturing processes. These included a basic oxygen furnace (BOF) plant; an open hearth and furnace building; a sinter plant; finishing mills; mould warming; rail servicing; and electrical substations. Fifteen historic solid waste management units (SWMUs P-17 and P-19 through P-32) are present on the Controlled Property. Bethlehem Steel Corporation performed assessments for these SWMUs during a Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) and subsequent RCRA Facility Investigation (RFI). Based on the findings, USEPA Region II

issued "No Further Action" determination for the identified SWMUs within the Controlled Property.

The Controlled Property contains few structural remnants and other features associated with historic integrated steel-making facilities. These include remaining buildings of the former Water Quality Control Station (WQCS) No. 3, the Electrical Department building, remnants of former overhead coke gas and active natural gas conveyance lines on the northern side of the property, access roads, electrical power lines, and railroad tracks. Immediately east of the Controlled Property boundary is a man-made drainage channel designated as the SRWT that begins near WQCS No. 3 and flows south to Smokes Creek (see Figure 2). Historically and currently, the trench collects and discharges groundwater and storm water to Smokes Creek under active SPDES Permit No. NY-0269310. There are no active outfalls into the SRWT from the Controlled Property.

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2.0 PROJECT ORGANIZATION AND RESPONSIBILITY

The following section provides a generic organization for sampling activities, including roles, responsibilities, and required qualifications of these organizations.

2.1 NYSDEC and NYSDOH

It is the responsibility of the NYSDEC, in conjunction with the New York State Department of Health (NYSDOH), to review the project documents for completeness and conformance with the site-specific cleanup objectives and to make a decision to accept or reject these documents based on this review. The NYSDEC also has the responsibility and authority to review and approve all QA documentation collected during brownfield cleanup construction and to confirm that the QA Plan was followed.

2.2 Site Owner

The Site Owner, or holder of the certificate of completion (COC), will be responsible for complying with the QA requirements as specified herein and for monitoring and controlling the quality of the Brownfield cleanup activities either directly or through their designated environmental consultant and/or legal counsel. The Site Owner will also have the authority to select contractor(s) to assist them in fulfilling these responsibilities. The Site Owner is responsible for implementing the project, and has the authority to commit the resources necessary to meet project objectives and requirements.

2.3 Project Manager

The Project Manager has the responsibility for ensuring that the project meets the overall project objectives, reports directly to the Site Owner, coordinates with the NYSDEC/NYSDOH Project Coordinators, and is responsible for technical and project oversight. The PM will:

- Define project objectives and develop a detailed work plan schedule.
- Establish project policy and procedures to address the specific needs of the project as a whole, as well as the objectives of each task.
- Acquire and apply technical and corporate resources as needed to assure performance within budget and schedule constraints.

- Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product.
- Review the work performed on each task to assure its quality, responsiveness, and timeliness.
- Review and analyze overall task performance with respect to planned requirements and authorizations.
- Review and approve all deliverables before their submission to NYSDEC.
- Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product.
- Ultimately be responsible for the preparation and quality of interim and final reports.
- Represent the project team at meetings.

2.4 Field Team Leader:

The Field Team Leader (FTL) has the responsibility for implementation of specific project tasks identified at the Site, and is responsible for the supervision of project field personnel, subconsultants, and subcontractors. The FTL reports directly to the Project Manager. The FTL will:

- Define daily develop work activities.
- Orient field staff concerning the project's special considerations.
- Monitor and direct subcontractor personnel.
- Review the work performed on each task to ensure its quality, responsiveness, and timeliness.
- Assure that field activities, including sample collection and handling, are carried out in accordance with this QAPP.

2.5 Quality Assurance (QA) Officer

The QA Officer is responsible for auditing the implementation of the QA program in conformance with the demands of specific investigations and policies, and NYSDEC requirements. Specific functions and duties include:

- Performing QA audits on various phases of the field operations.

- Reviewing and approving QA plans and procedures.
- Providing QA technical assistance to project staff.
- Reporting on the adequacy, status, and effectiveness of the QA program on a regular basis to the Project Manager for technical operations.
- Responsible for assuring third party data review of all sample results from the analytical laboratory.

2.6 Laboratory Responsibilities

Any environmental laboratory used for sample analysis for this Site must be an independent, NYSDOH Environmental Laboratory Approval Program (ELAP)-certified facility approved to perform the analyses prescribed herein.

- *Laboratory Director:*

  The Laboratory Director is a technical advisor and is responsible for summarizing and reporting overall unit performance. Responsibilities of the Laboratory Director include:

  - Provide technical, operational, and administrative leadership.
  - Allocation and management of personnel and equipment resources.
  - Quality performance of the facility.
  - Certification and accreditation activities.
  - Blind and reference sample analysis.

- *Quality Assurance Manager (QA Manager):*

  The QA Manager has the overall responsibility for data after it leaves the laboratory. The QA Manager will be independent of the laboratory but will communicate data issues through the Laboratory Director. In addition, the QA Manager will:

  - Oversee laboratory QA.
  - Oversee QA/QC documentation.
  - Conduct detailed data review.
  - Determine whether to implement laboratory corrective actions, if required.
  - Define appropriate laboratory QA procedures.
  - Prepare laboratory SOPs.

3.0 QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA

The overall objectives and criteria for assuring quality for this effort are discussed below. This QAPP addresses how the acquisition and handling of samples and the review and reporting of data will be documented. The objectives of this QAPP are to address the following:

- The procedures to be used to collect, preserve, package, and transport groundwater samples.
- Field data collection.
- Record keeping.
- Data management.
- Chain-of-custody procedures.
- Precision, accuracy, completeness, representativeness, for sample analysis and data management under EPA analytical methods.

Tables 1 and 2 provide analytical methods and detection/reporting limits for chemical parameters that may be analyzed. In addition, water levels and select water quality parameters (i.e., pH, turbidity, specific conductance, and temperature) will be measured in the field as described in the FOPs located in the SMP

The goals for precision, accuracy, and completeness intended for use on this project are discussed in Sections 3.1 through 3.3 of this QAPP. All data will be reported completely. No data will be omitted unless an error occurred in the analyses or the run was invalidated because of QC sample recovery or poor precision.

3.1 Precision

Precision is a measurement of the degree to which two or more measurements are in agreement, which is quantitatively assessed based on the standard deviation. Precision in the laboratory is assessed through the calculation of relative percent difference (RPD) and relative calculation of relative standard deviations (RSD) for three or more replicate samples. Table 3 provides general precision goals.

Laboratory precision will be assessed through the analysis of matrix spike/matrix spike duplicate (MS/MSD) and field duplicate samples for organic parameters. For inorganic

parameters, precision will be assessed through the analysis of matrix spike/duplicates field duplicate pairs. Precision for field parameters, including pH, turbidity, specific conductance, and temperature will be determined through duplicate analysis of 1 in every 20 samples. Table 4 provides precision control limits for field-measured parameters.

3.2 Accuracy

Accuracy is the degree of agreement between an observed value and an accepted reference of true value. Accuracy in the field is assessed through the use of field blanks and trip blanks and through the adherence to all sample handling, preservation, and holding times. One trip blank will accompany each batch of water matrix sample containers shipped to the laboratory for volatile organic chemical analysis. Laboratory accuracy is assessed through the analysis of a matrix spike/matrix spike duplicate (MS/MSD) (1 per 20 samples), standard reference materials (SRM), laboratory control samples (LCS), and surrogate compounds, and the determination of percent recoveries. The equation to be used for accuracy for this investigation is found in Section 10.1 of this QAPP. Table 3 gives accuracy control limits for the laboratory.

3.3 Completeness

Data completeness is a measure of the amount of valid data obtained from a prescribed measurement system as compared with that expected and required to meet the project goals. Laboratory and field completeness will be addressed by applying data quality checks and assessments described in Section 3.1 and 3.2 and Section 7.0 to ensure that the data collected are valid and significant.

As shown on Table 3, the laboratory completeness objectives will be 90 percent or greater. A third party data validator will follow procedures described in Section 7.2 to assess the completeness and validity of laboratory data deliverables. For this investigation, 100 percent of all laboratory analytical results will undergo third party data review. The completeness of an analysis will be documented by including in the report sufficient information to allow the data validator to assess the quality of the results.

Raw data such as chromatograms, spectra, calibration data, laboratory worksheets and notes, etc will not be produced with the analytical data reporting package but will be stored with the sample results in the laboratory and made available upon request, if necessary, to

substantiate analytical results. The raw data will be archived for at least two years by the laboratory. The laboratory will retain all analytical information; regardless of whether the substantiation of results is requested.

3.4 Data Representativeness

Data representativeness expresses the degree to which data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition within a defined spatial and/or temporal boundary. All proposed field-testing and measurement procedures were selected to maximize the degree to which the field data will represent the conditions at the Site, and the matrix being sampled or analyzed.

As described in Section 8.0, Performance System Audits and the proper execution of field activities are the main mechanism for ensuring data representativeness. Representativeness in the laboratory is ensured through the use of the proper analytical procedures, appropriate methods, meeting sample holding times, and analyzing and assessing field duplicate samples.

3.5 Level of QC Effort for Sample Parameters

Field blank, method blank, trip blank, field duplicate, laboratory duplicate, laboratory control, standard reference materials (SRM) and matrix spike samples will be analyzed to assess the quality of the data resulting from the field sampling and analytical programs. QC samples are discussed below.

- Field and trip blanks consisting of distilled water will be submitted to the analytical laboratories to provide the means to assess the quality of the data resulting from the field-sampling program. Field (equipment) blank samples are analyzed to check for procedural chemical constituents at the facility that may cause sample contamination. Trip blanks are used to assess the potential for contamination of samples due to contaminant migration during sample shipment and storage.
- Method blank samples are generated within the laboratory and used to assess contamination resulting from laboratory procedures.
- Duplicate samples are analyzed to check for sampling and analytical reproducibility.

- MS/MSD and MS/Duplicate samples provide information about the effect of the sample matrix on the digestion and measurement methodology. Depending on site-specific circumstances, one MS/MSD or MS/Duplicate should be collected for every 20 or fewer investigative samples to be analyzed for organic and inorganic chemicals of a given matrix.

The general level of QC effort will be one field (blind) duplicate and one field blank (when non-dedicated equipment is used) for every 20 or fewer investigative samples of a given matrix. Additional sample volume will also be provided to the laboratory to allow one site-specific MS/MSD or MS/Duplicate for every 20 or fewer investigative samples of a given matrix. One trip blank consisting of distilled, deionized water will be included along with each sample delivery group of aqueous VOC samples.

4.0 CUSTODY PROCEDURES

Sample custody is controlled and maintained through the chain-of-custody procedures. Chain of custody is the means by which the possession and handling of samples will be tracked from the source (field) to their final disposition, the laboratory. A sample is considered to be in a person's custody if it is in the person's possession or it is in the person's view after being in his or her possession or it was in that person's possession and that person has locked it in a vehicle or room. Sample containers will be cleaned and preserved at the laboratory before shipment to the Site.

4.1 Field Custody Procedures

Field logbooks and appropriate field forms will provide the means of recording data collection activities performed during the investigation. As such, entries will be described in as much detail as possible so that persons going to the facility could reconstruct a particular situation without reliance on memory. Field logbooks will be bound field survey books or notebooks. Each logbook will be identified by the project-specific document number. The title page of each logbook will contain the following:

- Person to whom the logbook is assigned
- Logbook number
- Project name
- Project start date
- End date

Entries into the logbook or appropriate field form will contain a variety of information. At the beginning of each logbook entry, the date, start time, weather, names of all sampling team members present, level of personal protection equipment being used, and the signature of the person making the entry will be entered. The names of visitors to the Site, field sampling or investigation team personnel and the purpose of their visit will also be recorded in the field logbook. Measurements made and samples collected will be recorded in the logbook and appropriate field form. All entries will be made in permanent ink, signed, and dated and no erasures will be made. If an incorrect entry is made, the information will be crossed out with a single strike mark that is signed and dated by the sampler. Whenever a sample location is surveyed, which includes compass and distance measurements or, latitude and longitude information (e.g., obtained by using a global positioning system) the location

information shall be recorded. In the event that photographs are taken to document field activities, the number and brief description of the photographs taken will also be recorded. All equipment used to make measurements will be identified, along with the date of calibration.

Samples will be collected following the sampling procedures documented in this QAPP. The equipment used to collect samples will be noted, along with the time of sampling, sample description, depth at which the sample was collected, volume and number of containers. Sample identification numbers will be assigned prior to sample collection. Field duplicate samples, which will receive a separate sample identification number, will be noted under sample description.

The sample packaging and shipment procedures summarized below will ensure that the samples will arrive at the laboratory with the chain-of-custody intact. The protocol for specific sample numbering and other sample designations is included in an FOP provided in Appendix A of this QAPP. Examples of field custody documents and instructions for completion are also presented in Appendix A of this QAPP.

- The field sampler is personally responsible for the care and custody of the samples until they are transferred or properly dispatched. Field procedures have been designed such that as few people as possible will handle the samples.
- All bottles will be identified by the use of sample tags with sample numbers, sampling locations, date/time of collection, and type of analysis. The sample numbering system is presented in the FOP.
- Sample labels will be completed for each sample using waterproof ink unless prohibited by weather conditions. For example, a logbook notation would explain that a pencil was used to fill out the sample label because the ballpoint pen would not function in freezing weather.
- Samples will be accompanied by a properly completed chain-of-custody form. The sample numbers and locations will be listed on the chain-of-custody form. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents transfer of custody of samples from the sampler to another person, to a mobile laboratory, to the permanent laboratory, or to/from a secure storage area.

Samples will be properly packaged and cooled to 4°C for shipment and dispatched to the appropriate laboratory for analysis, with a separate signed custody record enclosed in and secured to the inside top of each sample box or cooler. Shipping containers will be locked

and secured with strapping tape and custody seals for shipment to the laboratory. The custody seals will be attached to the front right and back left of the cooler and covered with clear plastic tape after being signed by the field team leader. The cooler will be strapped shut with strapping tape in at least two locations.

4.2 Laboratory Custody Procedures

4.2.1 Sample Receipt

A sample custodian is responsible for receiving samples; completing chain-of-custody records; determining and documenting the condition of samples received through the Cooler Receipt and Preservation Form; logging samples into the system based on the order of log-in; and storing samples in appropriate limited-access storage areas. Chain-of-custody documentation is also maintained for the transfer of samples between the laboratory, and for shipment of samples to subcontracted laboratories.

Upon sample receipt, an inventory of shipment contents is compared with the chain-of-custody record, and any discrepancies, including broken containers, inappropriate container materials or preservatives, headspace in volatile organic samples, and incorrect or unclear sample identification, are documented and communicated to the appropriate project manager.

Each sample is given a unique laboratory code and an analytical request form is generated. The analytical request contains pertinent information for each sample, including:

- Client name
- Project number
- Task number
- Purchase order number
- Air bill number
- Chain-of-custody number
- Number of samples
- Sample descriptions
- Sample matrix type
- Date and time of sampling
- Analysis due dates
- Date and time of receipt by lab
- Client sample identification

- Any comments regarding special instructions or discrepancies

4.2.2 Sample Storage

Samples are stored in secure limited-access areas. Walk-in coolers or refrigerators are maintained at 4°C, ±2°C, or as required by the applicable regulatory program. The temperatures of all refrigerated storage areas are monitored and recorded a minimum of once per day. Deviations of temperature from the applicable range require corrective action, including moving samples to another storage location if necessary.

4.2.3 Sample Custody

Sample custody, as defined by this document, is when any of the following occur:

- It is in someone's actual possession.
- It is in someone's view after being in his or her physical possession.
- It was in someone's possession and then locked, sealed, or secured in a manner that prevents unsuspected tampering.
- It is placed in a designated and secured area.

Samples are removed from storage areas by the sample custodian or analysts and transported to secure laboratory areas for analysis. Access to the laboratory and sample storage areas is restricted to laboratory personnel and escorted visitors only; all areas of the laboratory are therefore considered secure. If required by the applicable regulatory program, internal chain-of-custody is documented in a log by the person moving the samples between laboratory and storage areas.

Laboratory documentation used to establish chain-of-custody and sample identification may include the following:

- Field chain-of-custody forms or other paperwork that arrives with the sample.
- The laboratory chain-of-custody.
- Sample labels or tags are attached to each sample container.
- Sample custody seals.
- Sample preparation logs (i.e., extraction and digestion information) recorded in hardbound laboratory books that are filled out in legible handwriting, and signed and dated by the chemist.

- Sample analysis logs (e.g., metals, GC/MS, etc.) information recorded in hardbound laboratory books that are filled out in legible handwriting, and signed and dated by the chemist.
- Sample storage log (same as the laboratory chain-of-custody).
- Sample disposition log, which documents sample disposal by a contracted waste disposal company.

4.2.4 Sample Tracking

All samples are maintained in the appropriate coolers prior to and after analysis. The analysts remove and return their samples as needed. Samples that require internal chain-of-custody are relinquished to the analysts by the sample custodians. The analyst and sample custodian must sign the original chain-of-custody relinquishing custody of the samples from the sample custodian to the analyst. When the samples are returned, the analyst will sign the original chain-of-custody returning sample custody to the sample custodian. Sample extracts are relinquished to the instrumentation analysts by the preparatory analysts. Each preparation department tracks internal chain-of-custody through their logbooks/ spreadsheets.

Any change in the sample during the time of custody will be noted on the chain-of-custody (e.g., sample breakage or depletion).

4.2.5 Sample Disposal

A minimum of 30 days following completion of the project, or after a period of time specified by any applicable project requirements, sample disposal is performed in compliance with federal, state, and local regulations. Alternatively, samples may be returned to the client by mutual agreement. All available data for each sample, including laboratory analysis results and any information provided by the client, are reviewed before sample disposal.

All samples are characterized according to hazardous/non-hazardous waste criteria and are segregated accordingly. All hazardous waste samples are disposed of according to formal procedures by the laboratory. It should be noted that all waste produced at the laboratory, including the laboratory's own various hazardous waste streams, is treated in accordance with all applicable local and Federal laws.

Complete internal chain-of-custody documentation is maintained for some samples from initial receipt through final disposal. This ensures that an accurate history of the sample from "cradle to grave" is generated.

5.0 CALIBRATION PROCEDURES AND FREQUENCY

This section describes the calibration procedures and the frequency at which these procedures will be performed for both field and laboratory instruments.

5.1 Field Instrument Calibration

Quantitative field data to be obtained during groundwater sampling include pH, turbidity, specific conductance, temperature, and depth to groundwater. Quantitative water level measurements will be obtained with an electronic sounder or steel tape, which require no calibration. Quantitative field data to be obtained during soil sampling include screening for the presence of volatile organic constituents using a photoionization detector (PID). Field instruments used to monitor for these parameters will be calibrated in accordance with their manufacturer's recommendations.

5.2 Laboratory Instrument Calibration

All equipment and instruments used at the laboratory will be operated, maintained, and calibrated according to the manufacturer's guidelines and recommendations, as well as to criteria set forth in the applicable analytical methodology. Operation and calibration will be performed by personnel who have been properly trained in these procedures.

6.0 ANALYTICAL PROCEDURES

The SMP describes the laboratory methods to be employed for post-remedial groundwater sampling. Samples will be analyzed by a NYSDOH ELAP-certified laboratory employing the appropriate analytical protocols and quality assurance procedures for the respective NYSDEC or USEPA methods. Tables 1 and 2 list the constituents of primary concern (COPCs) for soil and groundwater. Table 6 is a summary of the sample containers, volume, preservatives, and holding time requirements.

7.0 DATA REDUCTION, VALIDATION, AND REPORTING

All data generated through field activities, or by the laboratory operation shall be reduced and validated (as required in the SMP) before reported.

7.1 Data Reduction

7.1.1 Field Data Reduction Procedures

Field measurements of pH, turbidity, temperature, specific conductance, water level, and volatile organic vapor content (via the PID) are read directly in the units of final use, as discussed in this QAPP and listed in Table 5. Field personnel are responsible for monitoring the collection and reporting of field data. Field personnel will review field measurements at the time of measurement and will re-measure a parameter as necessary to assure quality and accuracy are maintained.

Field data will be recorded on appropriate field data record forms or the project field book as they are collected and will be maintained in the project file. The Project QA Officer will review field procedures and compare field data to previous measurements to assess comparability and accuracy of the field data measurements.

7.1.2 Laboratory Data Reduction Procedures

Results of laboratory analyses will be reported in units of final use as listed in Table 5. Laboratory calculations will be performed as prescribed for a given analytical method or in conformance with acceptable laboratory standards at the time the calculation is performed.

The laboratory will retain quality assurance/quality control (QA/QC) records for at least five years. Original laboratory reports will be stored in the project files. Copies of raw data will be available for review at the laboratory. Copies of raw data also may be requested as part of the QA/QC review. A Data Usability Summary Report (DUSR), which follows NYSDEC's May 3, 2010 DER-10 (Appendix 2B Guidance for Data Deliverables and the Development of DUSRs) will be developed from a USEPA SW-846 Equivalent Category B deliverable and completed by an independent third party data validator.

7.2 Data Usability Evaluation

If requested by the NYSDEC, data evaluation will be performed by a third party data validator using the most current methods and quality control criteria from the USEPA's Contract Laboratory Program (CLP) *National Functional Guidelines for Organic Data Review* and *National Functional Guidelines for Inorganic Data Review.*

7.3 Data Reporting

7.3.1 Field Data Reporting

All field documents will be accounted for when they are completed. Accountable documents include items such as field notebooks, sample logs, field data records, photographs, data packages, computer disks, and reports.

7.3.2 Laboratory Data Reporting

Analytical data will be summarized in tabular format with such information as sample identification, sample matrix description, parameters analyzed and their corresponding detected concentrations, and the detection limit. Analytical results will be incorporated into reports as data tables, maps showing sampling locations and analytical results, and supporting text.

8.0 PERFORMANCE SYSTEM AUDITS AND FREQUENCY

8.1 Field Performance and System Audits

8.1.1 Internal Field Audits

The QA Officer may conduct internal audits of field activities including sampling and field measurements. These audits will verify that all established procedures are being followed. Internal field audits will be conducted at least once at the beginning of the Site sample collection activities. Project duration may warrant subsequent audits on a monthly basis. The audit program consists of the following:

- Observation of field activities to confirm that procedures are performed in accordance with project protocols and standard accepted methods.
- Review daily field records, monitoring well sampling records, and any other data collection sheets during and after field measurements.

8.1.2 External Field Audits

The NYSDEC Site Project Coordinator may conduct external field audits. External field audits may be conducted any time during the field operations. These audits may or may not be announced and are at the discretion of the NYSDEC.

8.2 Laboratory System Audits

The adequacy and implementation of a laboratory's QA Plan are assessed on a continual basis through systems and performance audits. Systems audits evaluate practice against established quality system objectives and requirements. Performance audits measure the comparability and accuracy of laboratory data through the analysis of reference materials for which the true value is unknown to the analyst. Audits may be performed by the laboratory (internal), or by clients, regulatory agencies, or accreditation bodies (external).

9.0 PREVENTATIVE MAINTENANCE

Each piece of field equipment is checked according to its routine maintenance schedule and before field activities begin. Field equipment that may be used at the Site includes:

- Photoionization detector (PID)
- Water quality meters (includes pH, turbidity, temperature, Eh, and specific conductance)
- Electric water level indicator

Field personnel will report all equipment maintenance and/or replacement needs to the Project QA Officer and will record the information on the daily field record.

10.0 DATA PRECISION, ACCURACY, AND COMPLETENESS EVALUATION

10.1 Accuracy Assessment

Data accuracy, which is assessed for laboratory data only, is based on recoveries, expressed as the percentage of the true (known) concentration, from laboratory spiked samples and QA/QC samples generated by the analytical laboratory.

Percent recovery (%R) for MS/MSD results is determined according to the following equation:

$$R\% = \frac{(A - B) \times 100}{T}$$

Where A = measured concentration after spiking
B = background concentration
T = known true value of spike

Percent recovery (%R) for LCS and surrogate compound results is determined according to the following equation:

$$R\% = \frac{\text{Experimental Concentration}}{\text{Known amount added}} \times 100$$

This information is reviewed periodically by the Project Manager or Project QA Officer. Table 3 presents the goals for the recovery of any constituent in a spiked or QA/QC sample. Table 4 summarizes the accuracy goals for data generated in the field.

10.2 Precision Assessment

For data generated by the laboratory, data precision is estimated by comparing analytical results from duplicate samples. The comparison is made by calculating the relative percent difference (RPD) given by:

$$RPD\% = \frac{2(S_1 - S_2)}{S1 + S2} \times 100$$

Where S_1 = sample result
S_2 = duplicate result

This information is calculated and reviewed periodically by the Project Manager and/or Project QA Officer. Table 3 presents the goals for data precision for duplicate samples. Table 4 summarizes the precision goals for data generated in the field.

10.3 Completeness Assessment

Data completeness will be evaluated by comparing the objectives of sampling efforts with the data obtained and determining whether there are any shortcomings in required information. Completeness is defined as the percentage of valid results according to the equation below:

$$\% \text{ completeness} = \frac{A}{B} \times 100$$

Where: A = number of valid results;
B = total number of possible results

Table 3 presents the goals for data completeness for laboratory measurements. Table 4 summarizes the completeness goals for data generated in the field.

10.4 Assessment of Data

To assess the integrity of the data generated during this investigation, the Project Manager and QA Officer will review the laboratory analytical data and field data in accordance with procedures and protocols outlined in this QAPP. An assessment will be made to determine if the project objectives have been achieved and meet objectives for data integrity.

11.0 CORRECTIVE ACTION

Corrective action is the process of identifying, recommending, approving, and implementing measures to counter unacceptable procedures or out of quality control performance that can affect data quality. Corrective action can occur during field activities, laboratory analyses, data validation, and data assessment. All corrective action proposed and implemented should be documented in the regular quality assurance reports to management. Corrective action should be implemented only after approval by the Project Manager, or his/her designee. If immediate corrective action is required, approvals secured by telephone from the Project Manager should be documented in an additional memorandum.

11.1 Field Corrective Action

If errors in field procedures are discovered during the observation or review of field activities by the Project QA Officer or his/her designee, corrective action will be initiated. Nonconformance to the QA/QC requirements of the field operating procedures will be identified by field audits or immediately by project staff who know or suspect that a procedure is not being performed in accordance with the requirements. The Project QA Officer or his designee will be informed immediately upon discovery of all deficiencies. Timely action will be taken if corrective action is necessary.

Corrective action in the field may be needed when the sample network is changed (i.e., more/less samples, sampling locations other than those specified in the Work Plan, etc.) or when sampling procedures and/or field analytical procedures require modification due to unexpected conditions. In general, the Project Manager and QA Officer may identify the need for corrective action. The Project Manager will approve the corrective measure that will be implemented by the field team. It will be the responsibility of the Project Manager to ensure that corrective action has been implemented.

If the corrective action will supplement the existing sampling using existing and approved procedures in the QAPP, corrective action approved by the Project Manager will be documented. If the corrective actions result in less samples (or analytical fractions), alternate locations, etc., which may result in non-achievement of project QA objectives, it will be necessary that all levels of project management, including the NYSDEC Project Coordinator, concur with the proposed action.

Corrective actions will be implemented and documented in the project field record book. No staff member will initiate corrective action without prior communication of findings through the proper channels. If corrective actions are insufficient, work may be stopped by the NYSDEC Project Coordinator.

If at any time a corrective action issue that directly impacts project data quality objectives is identified, the NYSDEC Project Coordinator will be notified immediately.

11.2 Laboratory Corrective Action

Corrective actions may be initiated if the quality assurance goals are not achieved. The initial step in a corrective action is to instruct the analytical laboratory to examine its procedures to assess whether analytical or computational errors caused the anomalous result. If no error in laboratory procedures or sample collection and handling procedures can be identified, then the Project Manager will assess whether reanalysis or resampling is required or whether any protocol should be modified for future sampling events.

11.3 Data Validation & Assessment Corrective Action

The need for corrective action may be identified during the data validation or assessment processes. Potential types of corrective action may include resampling by the field team, or reinjection/reanalysis of samples by the laboratory.

These actions are dependent upon the ability to mobilize the field team, whether the data to be collected is necessary to meet the QA objectives (e.g., the holding time for samples is not exceeded, etc.). If the data validator identifies a corrective action situation, the Project Manager will be responsible for approving the corrective action implementation. All required corrective actions will be documented by the laboratory Quality Assurance Coordinator.

12.0 QUALITY ASSURANCE REPORTS TO MANAGEMENT

Periodic reports summarizing certain field activities may be required at the Site. Those reports will be the responsibility of the Project Manager and will include the QA Officers input on the accuracy, precision, and completeness of the data, as well as the results of the performance and system audits, and any corrective action needed or taken during the project.

12.1 Contents of Project QA Reports

The progress reports will contain, on a routine basis, a QA section describing all results of field and laboratory audits, all information generated during the period of work activities reflecting on the achievement of specific DQOs, and a summary of corrective action that was implemented, and its immediate results on the project. The status of the project with respect to the Project Schedule included in this QAPP will be determined. Whenever necessary, updates on training provided, changes in key personnel, anticipated problems in the field or laboratory for the coming month that could bear on data quality along with proposed solutions, will be reported. All QA reports will be prepared in written, final format by the project manager or his designee. To the extent possible, assessment of the project should also be performed on the basis of available QC data and overall results in relation to originally targeted objectives.

In the event of an emergency, or in case it is essential to implement corrective action immediately, QA reports can be made by telephone to the appropriate individuals, as identified in the Project Organization and Corrective Action sections of this QAPP. However, these events, and their resolution will be addressed thoroughly in the next periodic progress report.

TABLES

TABLE 1

CONSTITUENTS OF PRIMARY CONCERN (COPCs) FOR SOIL

SITE MANAGEMENT PLAN

Phase III Business Park
Lackawanna, New York

Analyte[1]	CAS Number	Analytical Method [2]	PQL	MDL
STARS Volatile Organic Compounds: (15 compounds) (ug/kg)				
Benzene	*71-43-2*	8021B	1	0.11
n-Butylbenzene	*104-51-8*	8021B	1	1.00
sec-Butylbenzene	*135-98-8*	8021B	1	0.08
tert-Butylbenzene	*98-06-6*	8021B	1	0.12
p-Cymene	*99-87-6*	8021B	1	0.41
Ethylbenzene	*100-41-4*	8021B	1	0.07
Isopropylbenzene	*98-82-8*	8021B	1	0.08
Methyl tert butyl ether	*1634-04-4*	8021B	1	0.06
n-Propylbenzene	*103-65-1*	8021B	1	0.11
Toluene	*108-88-3*	8021B	1	0.04
1,2,4-Trimethylbenzene	*95-63-6*	8021B	1	0.40
1,3,5-Trimethylbenzene	*108-67-8*	8021B	1	0.84
o-Xylene	*95-47-6*	8021B	1	0.01
p-Xylene	*106-42-3*	8021B	1	0.04
m-Xylene	*108-38-3*	8021B	1	0.04
Acenaphthene	*83-32-9*	8270C	330	11.00
Acenaphthylene	*208-96-8*	8270C	330	10.00
Anthracene	*120-12-7*	8270C	330	9.00
Benzo(a)anthracene	*56-55-3*	8270C	330	13.00
Benzo(a)pyrene	*50-32-8*	8270C	330	11.00
Benzo(b)fluoranthene	*205-99-2*	8270C	330	15.00
Benzo(g,h,i)perylene	*191-24-2*	8270C	330	10.00
Benzo(k)fluoranthene	*207-08-9*	8270C	330	17.00
Benzyl alcohol	*100-51-6*	8270C	330	14.00
bis(2-Chloroethoxy)methane	*111-91-1*	8270C	330	14.00
bis(2-Chloroethyl)ether	*111-44-4*	8270C	330	14.00
2,2'-oxybis(1-chloropropane); bis(2-chloroisopropyl)ether	*108-60-1*	8270C	330	14.00
bis(2-Ethylhexyl)phthalate	*117-81-7*	8270C	330	19.00
Butyl benzyl phthalate	*85-68-7*	8270C	330	17.00
4-Bromophenyl phenyl ether	*101-55-3*	8270C	330	11.00
4-Chloroaniline	*106-47-8*	8270C	330	18.00
4-Chloro-3-methylphenol	*59-50-7*	8270C	330	12.00
2-Chloronaphthalene	*91-58-7*	8270C	330	13.00
2-Chlorophenol	*95-57-8*	8270C	330	12.00

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SITE MANAGEMENT PLAN

Phase III Business Park
Lackawanna, New York

Analyte[1]	CAS Number	Analytical Method [2]	PQL	MDL
TCL Semi-Volatile Organic Compounds (full list): (69 compounds) (ug/kg) ***[includes Base-Neutrals (black) and Acid Extractables (blue)]***				
4-Chlorophenyl-phenylether	*7005-72-3*	8270C	330	12.00
Chrysene	*218-01-9*	8270C	330	10.00
Dibenzo(a,h)anthracene	*53-70-3*	8270C	330	13.00
Dibenzofuran	*132-64-9*	8270C	330	10.00
3,3'-Dichlorobenzidine	*91-94-1*	8270C	330	148.00
2,4-Dichlorophenol	*120-83-2*	8270C	330	15.00
1,2-Dichlorobenzene	*95-50-1*	8270C	330	15.00
1,3-Dichlorobenzene	*541-73-1*	8270C	330	14.00
1,4-Dichlorobenzene	*106-46-7*	8270C	330	13.00
Diethyl phthalate	*84-66-2*	8270C	330	9.00
2,4-Dimethylphenol	*105-67-9*	8270C	330	33.00
Dimethyl phthalate	*131-11-3*	8270C	330	10.00
Di-n-butyl phthalate	*84-74-2*	8270C	330	11.00
Di-n-octyl phthalate	*117-84-0*	8270C	330	31.00
4,6-Dinitro-2-methylphenol	*534-52-1*	8270C	1600	66.00
2,4-Dinitrophenol	*51-28-5*	8270C	1600	120.00
2,4-Dinitrotoluene	*121-14-2*	8270C	330	33.00
2,6-Dinitrotoluene	*606-20-2*	8270C	330	66.00
Fluoranthene	*206-44-0*	8270C	330	12.00
Fluorene	*86-73-7*	8270C	330	10.00
Hexachlorobenzene	*118-74-1*	8270C	330	11.00
Hexachlorobutadiene	*87-68-3*	8270C	330	13.00
Hexachlorocyclopentadiene	*77-47-4*	8270C	330	12.00
Hexachloroethane	*67-72-1*	8270C	330	14.00
Indeno(1,2,3-cd)pyrene	*193-39-5*	8270C	330	11.00
Isophorone	*78-59-1*	8270C	330	13.00
2-Methylnaphthalene	*91-57-6*	8270C	330	14.00
2-Methylphenol (o-Cresol)	*95-48-7*	8270C	330	33.00
4-Methylphenol (p-Cresol)	*106-44-5*	8270C	330	14.00
Naphthalene	*91-20-3*	8270C	330	14.00
2-Nitroaniline	*88-74-4*	8270C	1600	12.00
3-Nitroaniline	*99-09-2*	8270C	1600	17.00
4-Nitroaniline	*100-01-6*	8270C	1600	66.00
Nitrobenzene	*98-95-3*	8270C	330	12.00

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SITE MANAGEMENT PLAN

Phase III Business Park
Lackawanna, New York

Analyte[1]	CAS Number	Analytical Method [2]	PQL	MDL
TCL Semi-Volatile Organic Compounds (full list): (69 compounds) (ug/kg) ***[includes Base-Neutrals (black) and Acid Extractables (blue)]***				
2-Nitrophenol	*88-75-5*	8270C	330	66.00
4-Nitrophenol	*100-02-7*	8270C	1600	66.00
N-Nitrosodiphenylamine	*86-30-6*	8270C	330	29.00
N-Nitroso-di-n-propylamine	*621-64-7*	8270C	330	13.00
Pentachlorophenol	*87-86-5*	8270C	1600	50.00
Phenanthrene	*85-01-8*	8270C	330	11.00
Phenol	*108-95-2*	8270C	330	11.00
Pyrene	*129-00-0*	8270C	330	11.00
1,2,4-Trichlorobenzene	*120-82-1*	8270C	330	18.00
2,4,5-Trichlorophenol	*95-95-4*	8270C	800	14.00
2,4,6-Trichlorophenol	*88-06-2*	8270C	330	13.00
TAL Metals (modified): (12 compounds) (mg/L) - ***[site specific metals in blue]***				
Antimony	*7440-38-2*	6010B	15	0.69
Arsenic	*7440-38-2*	6010B	2	0.37
Barium	*7440-39-3*	6010B	0.5	0.05
Cadmium	*7440-43-9*	6010B	0.2	0.06
Chromium	*7440-47-3*	6010B	0.5	0.14
Lead	*7439-92-1*	6010B	1	0.19
Mercury	*7439-97-6*	7471A	0.02	0.0071
Nickel	*7440-02-0*	6010B	0.5	0.12
Potassium	*7440-09-7*	6010B	30	8.4
Selenium	*7782-49-2*	6010B	4	0.48
Silver	*7440-22-4*	6010B	0.5	0.15
Thallium	*7440-28-0*	6010B	6	0.66

Notes:

1. Analytes as per NYSDEC and USEPA list of parameters.
2. Analytical methods per USEPA publication, SW-846, "Test Methods for Evaluating Solid Waste," 3rd Ed.

Acronyms/Abbreviations:

CAS = Chemical Abstracts Service registry number.
MDL = Method Detection Limit provided by STL
PQL = Practical Quantitation Limit
mg/kg = milligrams per kilogram
ug/kg = micrograms per kilogram

TABLE 2

CONSTITUENTS OF PRIMARY CONCERN (COPCs) FOR GROUNDWATER

SITE MANAGEMENT PLAN

Phase III Business Park
Lackawanna, New York

Analyte[1]	*CAS Number*	Analytical Method [2]	PQL	MDL
STARS Volatile Organic Compounds: (15 compounds) (ug/L)				
Benzene	*71-43-2*	8021B	0.2	0.02
n-Butylbenzene	*104-51-8*	8021B	0.4	0.03
sec-Butylbenzene	*135-98-8*	8021B	0.4	0.02
tert-Butylbenzene	*98-06-6*	8021B	0.4	0.03
p-Cymene	*99-87-6*	8021B	0.4	0.28
Ethylbenzene	*100-41-4*	8021B	0.2	0.03
Isopropylbenzene	*98-82-8*	8021B	0.2	0.03
Methyl tert butyl ether	*1634-04-4*	8021B	0.4	0.23
n-Propylbenzene	*103-65-1*	8021B	0.2	0.03
Toluene	*108-88-3*	8021B	0.2	0.04
1,2,4-Trimethylbenzene	*95-63-6*	8021B	0.2	0.03
1,3,5-Trimethylbenzene	*108-67-8*	8021B	0.2	0.17
o-Xylene	*95-47-6*	8021B	0.2	0.09
p-Xylene	*106-42-3*	8021B	0.4	0.25
m-Xylene	*108-38-3*	8021B	0.4	0.25
TCL Semi-Volatile Organic Compounds (full list): (69 compounds) (ug/L) [includes Base-Neutrals (black) and Acid Extractables (blue)]				
Acenaphthene	*83-32-9*	8270C	10	0.15
Acenaphthylene	*208-96-8*	8270C	10	0.09
Anthracene	*120-12-7*	8270C	10	0.10
Benzo(a)anthracene	*56-55-3*	8270C	10	0.16
Benzo(a)pyrene	*50-32-8*	8270C	10	0.09
Benzo(b)fluoranthene	*205-99-2*	8270C	10	0.17
Benzo(g,h,i)perylene	*191-24-2*	8270C	10	0.12
Benzo(k)fluoranthene	*207-08-9*	8270C	10	0.12
Benzyl alcohol	*100-51-6*	8270C	20	1.79
bis(2-Chloroethoxy)methane	*111-91-1*	8270C	10	2.10
bis(2-Chloroethyl)ether	*111-44-4*	8270C	10	2.44
2,2'-oxybis(1-chloropropane); bis(2-chloroisopropyl)ether	*108-60-1*	8270C	10	1.77
bis(2-Ethylhexyl)phthalate	*117-81-7*	8270C	10	2.80
Butyl benzyl phthalate	*85-68-7*	8270C	10	7.47
4-Bromophenyl phenyl ether	*101-55-3*	8270C	10	2.50
4-Chloroaniline	*106-47-8*	8270C	10	1.05
4-Chloro-3-methylphenol	*59-50-7*	8270C	10	2.73
2-Chloronaphthalene	*91-58-7*	8270C	10	1.94

TABLE 2

CONSTITUENTS OF PRIMARY CONCERN (COPCs) FOR GROUNDWATER

SITE MANAGEMENT PLAN

Phase III Business Park
Lackawanna, New York

Analyte[1]	*CAS Number*	Analytical Method [2]	PQL	MDL
TCL Semi-Volatile Organic Compounds (full list): (69 compounds) (ug/L) [includes Base-Neutrals (black) and Acid Extractables (blue)]				
2-Chlorophenol	*95-57-8*	8270C	10	1.00
4-Chlorophenyl-phenylether	*7005-72-3*	8270C	10	2.42
Chrysene	*218-01-9*	8270C	10	0.17
Dibenzo(a,h)anthracene	*53-70-3*	8270C	10	0.12
Dibenzofuran	*132-64-9*	8270C	10	0.12
3,3'-Dichlorobenzidine	*91-94-1*	8270C	20	7.43
2,4-Dichlorophenol	*120-83-2*	8270C	10	2.13
1,2-Dichlorobenzene	*95-50-1*	8270C	10	2.50
1,3-Dichlorobenzene	*541-73-1*	8270C	10	2.43
1,4-Dichlorobenzene	*106-46-7*	8270C	10	2.45
Diethyl phthalate	*84-66-2*	8270C	10	2.99
2,4-Dimethylphenol	*105-67-9*	8270C	10	1.60
Dimethyl phthalate	*131-11-3*	8270C	10	2.53
Di-n-butyl phthalate	*84-74-2*	8270C	10	6.64
Di-n-octyl phthalate	*117-84-0*	8270C	10	6.95
4,6-Dinitro-2-methylphenol	*534-52-1*	8270C	50	7.62
2,4-Dinitrophenol	*51-28-5*	8270C	50	10.51
2,4-Dinitrotoluene	*121-14-2*	8270C	10	3.52
2,6-Dinitrotoluene	*606-20-2*	8270C	10	2.67
Fluoranthene	*206-44-0*	8270C	10	0.14
Fluorene	*86-73-7*	8270C	10	0.10
Hexachlorobenzene	*118-74-1*	8270C	10	1.14
Hexachlorobutadiene	*87-68-3*	8270C	10	3.50
Hexachlorocyclopentadiene	*77-47-4*	8270C	45	23.67
Hexachloroethane	*67-72-1*	8270C	10	3.47
Indeno(1,2,3-cd)pyrene	*193-39-5*	8270C	10	0.13
Isophorone	*78-59-1*	8270C	10	2.51
2-Methylnaphthalene	*91-57-6*	8270C	10	0.09
2-Methylphenol (o-Cresol)	*95-48-7*	8270C	10	2.07
4-Methylphenol (p-Cresol)	*106-44-5*	8270C	10	1.09
Naphthalene	*91-20-3*	8270C	10	0.11
2-Nitroaniline	*88-74-4*	8270C	50	4.50
3-Nitroaniline	*99-09-2*	8270C	50	3.50
4-Nitroaniline	*100-01-6*	8270C	50	3.14
Nitrobenzene	*98-95-3*	8270C	10	2.27
2-Nitrophenol	*88-75-5*	8270C	10	2.00

TABLE 2

CONSTITUENTS OF PRIMARY CONCERN (COPCs) FOR GROUNDWATER

SITE MANAGEMENT PLAN

Phase III Business Park
Lackawanna, New York

Analyte[1]	*CAS Number*	Analytical Method [2]	PQL	MDL
TCL Semi-Volatile Organic Compounds (full list): (69 compounds) (ug/L) [includes Base-Neutrals (black) and Acid Extractables (blue)]				
4-Nitrophenol	*100-02-7*	8270C	50	15.00
N-Nitrosodiphenylamine	*86-30-6*	8270C	10	2.29
N-Nitroso-di-n-propylamine	*621-64-7*	8270C	10	1.66
Pentachlorophenol	*87-86-5*	8270C	50	9.54
Phenanthrene	*85-01-8*	8270C	10	0.14
Phenol	*108-95-2*	8270C	10	1.10
Pyrene	*129-00-0*	8270C	10	0.17
1,2,4-Trichlorobenzene	*120-82-1*	8270C	10	2.45
2,4,5-Trichlorophenol	*95-95-4*	8270C	10	3.21
2,4,6-Trichlorophenol	*88-06-2*	8270C	10	1.92
TAL Metals (modified): (12 compounds) (mg/L) - [site specific metals in blue]				
Antimony	*7440-38-2*	6010B	0.02	0.0055
Arsenic	*7440-38-2*	6010B	0.01	0.00338
Barium	*7440-39-3*	6010B	0.002	0.00017
Cadmium	*7440-43-9*	6010B	0.001	0.00034
Chromium	*7440-47-3*	6010B	0.004	0.0009
Lead	*7439-92-1*	6010B	0.005	0.0016
Mercury	*7439-97-6*	7470A	0.0002	0.00015
Nickel	*7440-02-0*	6010B	0.01	0.0011
Potassium	*7440-09-7*	6010B	0.5	0.039
Selenium	*7782-49-2*	6010B	0.015	0.0061
Silver	*7440-22-4*	6010B	0.003	0.0009
Thallium	*7440-28-0*	6010B	0.02	0.0066

TABLE 2

CONSTITUENTS OF PRIMARY CONCERN (COPCs) FOR GROUNDWATER

SITE MANAGEMENT PLAN

Phase III Business Park
Lackawanna, New York

Analyte[1]	*CAS Number*	Analytical Method [2]	PQL	MDL
Field Parameters: (5 compounds) (units as identified below)				
pH (units)	*NA*	field	NA	NA
Temperature (^{o}C)	*NA*	field	NA	NA
Specific Conductance (uS/mS)	*NA*	field	NA	NA
Turbidity (NTU)	*NA*	field	NA	NA
Dissolved Oxygen	*NA*	field	NA	NA

Notes:

1. Analytes as per NYSDEC and USEPA list of parameters.
2. Analytical methods per USEPA publication, SW-846, "Test Methods for Evaluating Solid Waste", 3rd Ed.

Acronyms/Abbreviations:

CAS = Chemical Abstracts Service registry number.
MDL = Method Detection Limit provided by STL
mg/L = milligrams per liter
mS = milli-Siemans
ug/L = micrograms per liter
uS = micro-Siemans
NA = not applicable
NTU = nephelometric turbidity unit
PQL = Practical Quantitation Limit

TABLE 3

PROJECT GOALS FOR PRECISION, ACCURACY & COMPLETENESS FOR LABORATORY MEASUREMENTS

SITE MANAGEMENT PLAN

Phase III Business Park
Lackawanna, New York

Analytical Method	Precision Goal [1] (RPD) [2]	Accuracy Goal (% R) [3]		Completeness Goal (%)
	Soil & Water	Soil	Water	
STARS 8021B or EPA 8260B	± 30	± 50	± 30	90
EPA 8270C	± 30	± 50	± 30	90
EPA 6010B and EPA 7470A/7471A	± 30	± 50	± 30	90
Water Quality Parameters	± 30	NA	± 30	90

Notes:

1. Precision goals vary depending on the compound being analyzed; the precision goals presented are general in nature.
2. RPD = Relative Percent Difference
3. %R = Percent Recovery

TABLE 4

PROJECT GOALS FOR PRECISION, ACCURACY & COMPLETENESS FOR FIELD MEASUREMENTS

SITE MANAGEMENT PLAN

Phase III Business Park
Lackawanna, New York

Measurement	Units	Precision Goal	Accuracy Goal	Completeness Goal
pH	pH units	± 0.2 unit	± 0.2 unit	90%
Eh	milli-volts (mV)	± 1.0 mV	± 1.0 mV	90%
Temperature	degrees Celsius (^{o}C)	± 0.2 deg. C	± 0.4 deg. C	90%
Turbidity	NTU	± 0.05 NTU	± 0.05 NTU	90%
Specific Conductance	mS/cm at 25°C mS/cm at 25oC	± 100 uS/cm ± 0.1 mS/cm	± 100 uS/cm ± 0.1 mS/cm	90%
Dissolved Oxygen	ppm	± 0.3 ppm	± 0.3 ppm	90%
Water Level	fbTOR	± 0.01 unit	± 0.01 unit	90%

Acronyms/Abbreviations:

fbTOR = feet below top of riser
mS = milli-Siemans
NTU = nephelometric turbidity unit
ug/L = micrograms per liter

TABLE 5

DATA MEASUREMENT UNITS FOR FIELD & LABORATORY PARAMETERS

SITE MANAGEMENT PLAN

Phase III Business Park
Lackawanna, New York

Parameter	Units
Water Level	feet below top of riser (fbTOR)
pH	pH units
Eh	milli-volts (mV)
Temperature	degrees Celsius (^{o}C)
Turbidity	Nephelometric Turbidity Unit (NTU)
Specific Conductance	microsiemens per centimeter at 25°C (µS/cm) millisiemens per centimeter at 25°C (mS/cm)
Dissolved Oxygen (DO)	parts per million (ppm)
Concentration of parameter in soil sample	micrograms per kilogram (mg/kg) organic milligrams per kilogram (mg/kg) inorganic
Concentration of parameter in groundwater sample	micrograms per liter (mg/L) organic milligrams per liter (mg/L) inorganic
Hydraulic Conductivity	centimeters per second (cm/sec)
Photoionization Detector (PID)	parts per million by volume (ppmv)

TABLE 6

SAMPLE CONTAINER, VOLUME, PRESERVATION & HOLDING TIME REQUIREMENTS

SITE MANAGEMENT PLAN

Phase III Business Park
Lackawanna, New York

Matrix	Parameter [1]	Method [1]	Container Type	Minimum Volume	Preservation (Cool to 2-4 °C for all samples)	Holding Time from Sample Date
Soil	STARS VOCs	8260B	WMG	16 oz.	Cool to 4 °C, Zero Headspace	14 days
	TCL VOCs	8260B	WMG	16 oz.	Cool to 4 °C, Zero Headspace	14 days
	TCL SVOCs	8270C	WMG	16 oz.	Cool to 4 °C	14 days extrac./40 days
	TAL Metals	6010B/7471B	WMG	4 oz.	Cool to 4 °C	6 months/Hg 26 days
	Cyanide	9021A	WMG	4 oz.	Cool to 4 °C	14 days
	TCLP Lead	6010	WMG	8 oz.	Cool to 4 °C	6 months extrac./6 months
	Ignitability	1010	WMG	8 oz.	Cool to 4 °C	6 months
Groundwater	TCL VOCs + TICs	8260B	glass vial	3 - 4 oz.	Cool to 4 °C, HCl to pH<2,Zero Headspace	14 days
	TCL SVOCs + TICs	8270C	amber glass	1000 mL	Cool to 4 °C	7 days extrac/40 days
	TAL Metals	6010B/7470A	plastic	250 mL	HNO_3 to pH<2, Cool to 4 °C	180 days / Hg 28 days

Notes:

1. EPA-approved methods published in Reference 1 above may be used. The list of analytes, laboratory method, and the method detection limit for each parameter are included in Tables 1 and 2 of the QAPP.

Acronyms:

VOCs = Volatile Organic Compounds
SVOCs = Semi-Volatile Organic Compounds
TCLP = Toxicity Characteristic Leaching Procedure
TCL = Target Compound List
TAL = Target Analyte List
WMG = Wide Mouth Glass

References:

1. Test Methods for Evaluating Solid Wastes, USEPA SW-846, Update III, 1991.

APPENDIX H

SITE-SPECIFIC SMP REQUIREMENTS

APPENDIX H-1

SITE III-1 (C915199)

As the remedial actions are completed on Site III-1 and a Decision Document is prepared, Site-specific SMP requirements will be developed and added to Appendix H-1 as an addendum.

APPENDIX H-2

SITE III-2 (C915199B)

As the remedial actions are completed on Site III-2 and a Decision Document is prepared, Site-specific SMP requirements will be developed and added to Appendix H-2 as an addendum.

APPENDIX H-3

SITE III-3 (C915199C)

As the remedial actions are completed on Site III-3 and a Decision Document is prepared, Site-specific SMP requirements will be developed and added to Appendix H-3 as an addendum.

APPENDIX H-4

SITE III-4 (C915199D)

As the remedial actions are completed on Site III-4 and a Decision Document is prepared, Site-specific SMP requirements will be developed and added to Appendix H-4 as an addendum.

APPENDIX H-5

SITE III-5 (C915199E)

As the remedial actions are completed on Site III-5 and a Decision Document is prepared, Site-specific SMP requirements will be developed and added to Appendix H-5 as an addendum.

APPENDIX H-6

SITE III-6 (C915199F)

As the remedial actions are completed on Site III-6 and a Decision Document is prepared, Site-specific SMP requirements will be developed and added to Appendix H-6 as an addendum.

APPENDIX H-7/8

SITE III-7 (C915199G) & SITE III-8 (C915199H)

BROWNFIELD CLEANUP PROGRAM

APPENDIX H-7/H-8
SITE MANAGEMENT PLAN

TECUMSEH PHASE III BUSINESS PARK
NYSDEC SITE NUMBERS: C915199G (III-7) and C915299H (III-8)
LACKAWANNA, NEW YORK

November 2013 0071-012-322

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Revisions to Addenda of Final Approved Site Management Plan:

Revision #	Submitted Date	Summary of Revision	DEC Approval Date

PHASE III BUSINESS PARK
SITE MANAGEMENT PLAN – APPENDIX H-7/H-8
SITES III-7 AND III-8

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PHASE III BUSINESS PARK
SITE MANAGEMENT PLAN – APPENDIX H-7/H-8
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Attachment C	Example IC/EC Certification Form

1.0 INTRODUCTION

The Site Management Plan (SMP) is a required element of the remedial program at the Tecumseh Phase III Business Park (herein referred to as the Controlled Property) under the New York State (NYS) Brownfield Cleanup Program (BCP) administered by New York State Department of Environmental Conservation (NYSDEC). The purpose of an SMP is to manage the contamination on a site remaining after remedial action.

The July 2013 SMP for the Controlled Property was prepared by TurnKey Environmental Restoration, LLC (TurnKey) in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (Ref. 1) and the guidelines provided by NYSDEC. Since the Controlled Property was divided into 10 BCP Sites designated as III-1 through III-10 (BCP Site Nos. C915199 through C915199J), the main body of the SMP includes the site management components common to all 10 Sites, and Site-specific requirements are included as Appendix H to the SMP.

In October 2012, Welded Tube USA Realty, LLC[1] acquired from Tecumseh Redevelopment Inc. (Tecumseh) the 39.2-acre Site III-7 (Site No. C915199G) to construct a new manufacturing facility and the adjacent 5.9-acre Site III-8 (Site No. C915199H) for future expansion (see Figure 1). The Sites were purchased by Welded Tube USA prior to completion of remedial measures; therefore Tecumseh agreed to perform certain Interim Remedial Measures (IRMs) described in Sections 1.1 and 1.2. The NYSDEC issued Decision Documents for Sites III-7 and III-8 in May 2013; the public comment period ended on May 8, 2013. The Decision Documents specify, among other requirements, placement of acceptable cover material in areas not otherwise covered by buildings, pavement, etc.

Sites III-7 and III-8 contain contamination left after completion of the remedial actions. Engineering controls (ECs) have been incorporated into the remedy to control exposure to remaining contamination during use of the Sites to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC by the property owner, and recorded with the Erie County Clerk, will require compliance with this SMP and all ECs and institutional controls (ICs) placed on the Sites. The ICs place restrictions on site use, and mandate operation, maintenance, monitoring, and reporting measures for all ECs and ICs.

This Appendix addresses the means for implementing the ICs and ECs that are required by the Environmental Easement for Sites III-7 and III-8 of the Controlled Property. This Appendix is not to be used as stand-alone documents but as a component document of the SMP for the Controlled Property.

1.1 Pre-IRM Investigation

Pre-IRM investigation work on Sites III-7 and III-8 was initiated on February 27 and 28, 2012. At that time TurnKey personnel revisited the Remedial Investigation (RI) test pits that exceeded the slag/fill site-specific action level (SSAL) of 118 mg/kg for arsenic to define the lateral and vertical extent of arsenic impact; two of these test pits fell within the boundaries of Sites III-7 (BPA-3-TP-28) and III-8 (BPA3A-TP33).

In addition, from May 30 through June 21, 2012, SJB Service Inc. (under contract to Welded Tube USA) completed a total of 20 soil borings (designated B-1 through B-20) at select locations to obtain geotechnical information within the planned manufacturing building footprint and utility corridors. The borings were advanced to depths of 24 to 55 feet below ground surface (fbgs). Geotechnical boring B-11, located within the future Bay 4 expansion area, contained visual evidence of petroleum impact. To define the extent of petroleum-impact, TurnKey excavated supplemental test pits on June 21 and 22, 2012. Figure 1 shows the Site sampling locations.

The pre-Interim Remedial Measures (pre-IRM) investigation results are fully described in the August 2012 IRM Work Plan (Ref. 2). The areal and vertical extents of impact were estimated to be:

- **BPA3-TP-28:** Arsenic was detected in the original test pit at a concentration of 130 ppm. Arsenic was detected in the supplemental test pit 10 feet to the west of the original sampling location at a concentration of 161 ppm; the 20-foot sample detected arsenic at a concentration of 74.4 ppm. Therefore, the extent of impact was estimated to be 30 feet by 20 feet by 2 feet deep, for an in-place volume of approximately 45 cubic yards.
- **BPA3A-TP-33:** Arsenic was detected in the original test pit at an estimated concentration of 132 ppm. Arsenic was detected below the site-specific action level of 118 ppm at all supplemental test pit locations. Therefore, the extent of

[1] Welded Tube USA Realty, LLC and Welded Tube USA, Inc. (collectively referred to herein as "Welded Tube USA") is a multi-faceted cold formed carbon and high strength low alloy tubular steel producer.

impact was estimated to be 20 feet by 20 feet by 2 feet deep, for an in-place volume of approximately 30 cubic yards.

- **Boring B-11:** Based on the visual observations within the test pits surrounding boring B-11, the extent of petroleum impact was conservatively estimated to cover an approximate 200-foot by 200-foot area over a depth of 5-8 fbgs (saturated smear zone slag/fill), for a corresponding in-place volume of approximately 4,500 cubic yards. Native grey clay soil was encountered at approximately 8 fbgs; no impacts were noted within the native soils. The excavation limits for petroleum-impacted slag/fill excavation were approximate and were therefore adjusted based on field observations (i.e., visual, olfactory, and PID readings).

1.2 Summary of Interim Remedial Measures

Sites III-7 and III-8 underwent interim remedial measures (IRMs) to address arsenic and petroleum-impacted soil/fill in accordance with the NYSDEC-approved August 2012 IRM Work Plan (Ref. 2). IRM activities are summarized below; details of the IRM work are documented in the February 2013 Construction Completion Report for Sites III-7 and III-8 (Ref. 3).

TurnKey implemented the IRM work to address the arsenic and petroleum hotspots on a design-build basis on behalf of Tecumseh Redevelopment. IRM activities conducted on Sites III-7 and III-8 began on October 18, 2012 and were substantially complete by November 1, 2012. During the IRM field activities, an unexpected area of impact characterized by blackish, non-soil material was discovered. TurnKey conducted a test pit program to investigate the odorless, blackish, non-soil material that was intermingled with slag 1-2 feet thick present within an approximate 10-foot by 10-foot by 10-foot deep sub-grade concrete chamber that was exposed during clearing work by Welded Tube. The material was viscous within the chamber but quickly solidified in the colder ambient air. Laboratory analyses determined that the material was characteristically non-hazardous. This material was subsequently excavated and disposed at a permitted off-site facility by Benchmark Environmental Engineering & Science on behalf of Welded Tube during the period December 5-11, 2012. The IRM activities are illustrated by Figure 2, and summarized below.

1.2.1 Excavating and Backfilling

In general, overlying clean soils (i.e., soil/fill that did not exhibit visual, olfactory, or PID signs of impact), concrete, brick, and stone were considered acceptable for replacement/reuse in the excavation as backfill and, therefore, were staged separately from materials designated for biotreatment or off-site disposal. The following contaminated material was removed from Sites III-7 and III-8:

- Approximately 210 CY of arsenic-impacted hotspot slag/fill were excavated from test pits BPA3-TP-28 and BPA3A-TP-33 followed by off-site disposal at the Chautauqua County Landfill (CCLF) in Ellery, NY under active CCLF permit number CC0626.12S1 (issued June 26, 2012). Post-excavation documentation samples were collected from each of the arsenic-impacted hotspot excavation areas. One representative sidewall sample was collected from each of the four sides of each excavation area and one bottom sample was collected from the base of each excavation area. The samples were submitted to a New York State Department of Health (NYSDOH)-ELAP certified laboratory for analysis of arsenic in accordance with USEPA SW-846 Method 6010. Three of the sidewall samples at BPA3-TP-28 exceeded the site-specific action level (SSAL) of 118 ppm; therefore, excavation was extended an additional 4-5 feet in each direction and resampled. This continued until all sample concentrations were below the SSAL. The total disposal weight from the arsenic hotspots, as reported by the landfill, was 361.34 tons.
- Approximately 2,640 tons of petroleum-impacted soil/fill surrounding Boring B-11 was excavated and transported to the bioremediation pad. Due to the pending colder temperatures, the material was stockpiled (with NYSDEC approval) and will be spread and tilled in summer of 2013 when warmer weather temperatures prevail. Overlying clean slag/fill temporarily stockpiled on-site was returned to the petroleum-impacted excavation area and graded to make a smooth transition to the surrounding area. No off-site backfill materials were imported to this area or the arsenic-impacted areas, as building construction work generated excess non-impacted overburden that was used as backfill.
- A total of 794.85 tons of the viscous, blackish, non-soil material (intermingled with slag and some piping encountered outside of the chamber) was excavated and disposed at the CCLF. The excavation area was subsequently backfilled with non-impacted overburden material.

1.2.2 On-Site Bioremediation Pad

A bioremediation pad was constructed on adjacent Site III-6. The area was cleared of brush and the foundation was lined with approximately three inches of Beneficial Use

Determination (BUD)-approved steel slag (BUD No. 555-9-15) to provide a base for tilling equipment. Silt fence was installed around the bioremediation pad area to mitigate surface erosion from the stockpiled materials.

1.2.3 30-Inch Coke Gas Pipeline IRM

During construction activities related to the Welded Tube USA production facility, the general contractor (RE Lorenz Construction, Inc.) encountered a buried 30-inch diameter cast iron pipe along the eastern side of Site III-7. The piping, which at the time was believed to be an abandoned natural gas line, was exposed along the bottom of the Welded Tube USA storm water infiltration basin and appeared to extend outside the basin limits to the north and south. Based on interference with planned subsurface utilities, it was necessary for the contractor to cut the 30-inch line to allow the work to proceed. Upon completing the cut, the contractor noted the presence of blackish sediment-like materials exhibiting a moth-ball like odor along the bottom of the pipe. Welded Tube USA's environmental consultant, Benchmark Environmental Engineering & Science, PLLC (Benchmark), notified the NYSDEC of the finding and subsequently located records that indicated the piping was a buried coke oven gas line spanning the majority of the eastern side of Site III-7 (see Figure 1).

Based on the presence of the residual materials at the bottom of the piping, the NYSDEC determined that remedial measures would be required. Welded Tube USA therefore retained Benchmark and RE Lorenz Construction to: remove the piping (and any underlying impacted soil/fill, if encountered); clean the piping and properly dispose of the residual materials and impacted soil/fill; and backfill the excavation with un-impacted overburden supplemented with NYSDEC BUD-approved slag.

The work was undertaken in two phases, with the first phase involving removal of the piping within the storm water basin limits (approx. 200 linear feet) completed in April 2013, and the second phase involving removal of the remaining piping in late June/early July 2013. Residuals were characterized, deemed non-hazardous, and shipped to the Chautauqua County Ellery Landfill for disposal. Cleaned piping materials were transported off-site for scrap recovery. Disposal details will be presented in the Final Engineering Report for the Welded Tube Site (Ref. 4).

1.2.4 Remaining Contamination

The remedial work conducted on Sites III-7 and III-8 has removed all known "source area" soil/fill for off-site disposal (metal-impacted soil/fill) or on-site biotreatment (petroleum-impacted soil/fill). The remaining soil/fill is generally characterized by widespread exceedance of the Part 375 unrestricted-use SCOs for several ubiquitous constituents. Specifically, many samples collected during the RI exhibited exceedance of the unrestricted SCOs for carcinogenic PAHs, as well as arsenic, chromium, lead, and mercury. Other constituents remaining above unrestricted-use SCOs in select areas of the Site include PCBs (Aroclors 1248, 1254, and 1260) and inorganic compounds (i.e., cadmium, manganese, and zinc). Table 1 summarizes the results of soil/fill samples remaining that exceed the Track 1 (unrestricted) SCOs after completion of Remedial Action on Sites III-7 and III-8. Based on the data, it is not possible to quantify with any certainty areas that do not exceed one or more of the unrestricted-use SCO criteria. It is therefore estimated that 40 of the 45 acres are impacted above the unrestricted-use SCOs to the approximate native soil depth of 12 fbgs.

The groundwater quality on Site III-7 has been assessed by sampling monitoring wells MWN-10 and MWN-61A. Samples from these wells were collected on February 26, 2013 and analyzed for VOCs and SVOCs. Table 2 presents the 2013 data with a comparison to 2009/2010 groundwater quality data and NYSDEC Class GA groundwater quality standards (GWQS). Only two SVOCs (naphthalene and nitrobenzene) were detected in MWN-61A at concentrations slightly above GWQSs; 2013 concentrations were significantly reduced from 2009. VOCs and SVOCs were not detected in MWN-10. Based on these results, post-remedial groundwater monitoring on Sites III-7 and III-8 is not warranted. Attachment A includes the monitoring well construction logs for MWN-10 and MWN-61A. Attachment B including the groundwater sampling forms for the 2013 sampling event.

2.0 ENGINEERING & INSTITUTIONAL CONTROL PLAN

2.1 Introduction

Since remaining contaminated soil/fill and groundwater exists beneath Sites III-7 and III-8, Engineering Controls and Institutional Controls (EC/ICs) are required to protect human health and the environment. The EC/IC Plan in the SMP describes procedures for implementation and management of the following EC/ICs common to the Controlled Property:

- Cover systems in accordance with Section 2.2 of the SMP.
- Environmental Easement in accordance with Section 2.3 of the SMP.
- Intrusive work and cover system repair in accordance with the Excavation Work Plan (Section 2.3.1 and Appendix B of the SMP).
- Annual inspections in accordance with Section 2.4.1 of the SMP.

The EC/IC Plan is one component of the SMP and is subject to revision by NYSDEC. EC/ICs specific to Sites III-7 and III-8 are described below.

2.2 Engineering Controls

The engineering control common to the Controlled Property is the cover system described in Final Engineering Report. Figure 2 shows the approximate locations and types of cover system materials placed on Sites III-7 and III-8. In the event these cover systems are breached, penetrated, or temporarily removed, the cover system shall be repaired in accordance with Section 2.2 of the SMP and Section 4.0 of the Excavation Work Plan (SMP Appendix B).

Passive or active sub-slab depressurization systems are not required for new structures; however, installation of vapor barriers beneath building floor slabs is required. The existing 8-inch thick concrete building floor slab is underlain by an 8-mil poly vapor barrier (see Figure 2). Should interior work breach the floor and damage the existing vapor barrier, it must be repaired in-kind.

2.3 Institutional Controls

The Institutional Controls described in Section 2.3 of the SMP (i.e., Environmental Easement and Excavation Work Plan) must be implemented for Sites III-7 and III-8. There are no Site-specific Institutional Control requirements.

2.4 Inspections and Notifications

The Inspections and Notifications described in Section 2.4 of the SMP must be implemented for Sites III-7 and III-8. There are no Site-specific inspection and notification requirements.

2.5 Contingency Plan

Emergencies conditions are addressed in the Emergency Response Plan (ERP) as an attachment to the HASP (SMP Appendix C). The following emergency contact numbers are specific to Welded Tube USA:

Table 3: Contact Numbers

Name: Tony Ramsumair Title: Project Manager, Technical Services	Work: (905) 669-1111 Ext. 288 Mobile: (416) 668-2947
Name: Thomas Forbes Title: Principal Engineer, Benchmark Environmental	Work: (716) 856-0599 Mobile: (716) 864-1730
Name: TBD Title: TBD	Work: TBD Mobile: TBD

* Note: Contact numbers subject to change and should be updated as necessary

3.0 SITE MONITORING PLAN

The Site Monitoring Plan describes the measures for evaluating the performance and effectiveness of:

- The remedy to reduce or mitigate contamination at the Site;
- The cover systems; and
- All affected Site media.

Monitoring of the cover systems is described in the SMP. There are no specific monitoring requirements for Sites III-7 and III-8.

4.0 OPERATION & MAINTENANCE PLAN

The remedy for Sites III-7 and III-8 does not rely on any mechanical systems, such as sub-slab depressurization or soil vapor extraction, to protect public health and the environment. Therefore, an Operation and Maintenance Plan is not required.

5.0 INSPECTIONS, REPORTING & CERTIFICATIONS

All inspection, reporting, and certification requirement are described in Section 3.0 of the SMP. Attachment C includes a sample IC/EC Certification Form to be completed for Site III-7.

6.0 REFERENCES

1. 2013. New York State Department of Environmental Conservation. *DER-10/Technical Guidance for Site Investigation and Remediation.* May 3.
2. 2012. TurnKey Environmental Restoration, LLC. *Interim Remedial Measures (IRM) Work Plan for Phase III Business Park Area, Sub-Parcels III-7 and III-8, Lackawanna, New York*. Revised August.
3. 2012. TurnKey Environmental Restoration, LLC. Construction Completion Report (CCR) for Phase III Business Park Area, Sub-Parcels III-7 and III-8, Lackawanna, New York. Revised February.
4. 2013. TurnKey Environmental Restoration, LLC. *Final Engineering Report for Business Park Sub-Parcels III-7 and III-8, Tecumseh Redevelopment Inc., Lackawanna, New York*. August.

TABLES

TABLE 1A

SUMMARY OF REMAINING SOIL/FILL CONTAMINATION ABOVE UNRESTRICTED SCOs

SITE MANAGEMENT PLAN

Sites III-7 and III-8
Lackawanna, New York

PARAMETER [1]	Unrestricted SCOs [2] (ppm)	Sample Locations and Depths																			
		Site III-7																Site III-8			
		BPA-3A-TP-17 (3-6)	BPA-3A-TP-18	BPA-3A-TP-19	BPA-3A-TP-22 (0-2)	BPA-3A-TP-24 (0-2)	BPA-3A-TP-25 (3-5)	BPA-3A-TP-26 (0-2)	BPA-3A-TP-27 (0-2)	BPA-3A-TP-28 (0-2)	BPA-3A-TP-29 (0-2)	BPA-3A-TP-30 (2-5)	BPA-3A-TP-31 (3-5)	BPA-3A-TP-54 (0-2)	BPA-3A-TP-55 (0-2)	Blind 1 [5]	Blind 3 [5]	BPA-3A-TP-32 (0-2)	BPA-3A-TP-34 (0-2)	BPA-3A-TP-35 (0-2)	BPA-3A-TP-56 (0-2)
Volitile Organic Compounds (VOCs) - mg/kg [3]																					
1,2,4-Trimethylbenzene	**3.6**	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	0.0022 J	0.0034 J	ND	0.0026 J	--	--	--	0.0018 J
1,3,5-Trimethylbenzene	**8.4**	ND	--	ND	--	--	--	--	--	--	--	--	--	--	0.0094 J	--	0.00065 J	--	--	--	--
2-Butanone (MEK)	**0.12**	ND	--	ND	--	--	--	--	--	--	--	--	--	--	0.0077 J	--	0.0078 J	--	--	--	--
p-Cymene	**--**	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	ND	ND	ND	ND	--	--	--	ND
Acetone	**0.05**	ND	--	ND	--	--	--	--	--	--	--	--	--	--	**0.051 J**	--	0.048 J	--	--	--	--
Benzene	**0.06**	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	ND	ND	ND	ND	--	--	--	ND
Chlorobenzene	**1.1**	ND	--	ND	--	--	--	--	--	--	--	--	--	--	ND	--	ND	--	--	--	--
Cyclohexane	**--**	ND	--	ND	--	--	--	--	--	--	--	--	--	--	ND	--	ND	--	--	--	--
Ethylbenzene	**1**	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	ND	ND	ND	ND	--	--	--	ND
Isopropylbenzene	**--**	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	ND	ND	ND	ND	--	--	--	ND
Methylcyclohexane	**--**	ND	--	ND	--	--	--	--	--	--	--	--	--	--	ND	--	ND	--	--	--	--
Methylene chloride	**0.05**	0.041 B	--	**0.055 B**	--	--	--	--	--	--	--	--	--	--	ND	--	ND	--	--	--	--
m-Xylene & p-Xylene	**0.26**	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	0.0023 J	0.0032 J	ND	0.0026 J	--	--	--	0.002 J
n-Butylbenzene	**12**	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	ND	ND	ND	ND	--	--	--	ND
n-Propylbenzene	**3.9**	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	ND	ND	ND	ND	--	--	--	ND
o-Xylene	**0.26**	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	ND	0.00081	ND	ND	--	--	--	ND
sec-Butylbenzene	**11**	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	ND	ND	ND	ND	--	--	--	ND
Toluene	**0.7**	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	0.00094 J	ND	ND	0.00066 J	--	--	--	0.00085 J
Total Xylenes	**0.26**	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	0.0023 J	0.004 J	ND	0.0026 J	--	--	--	0.002 J
Semi-Volatile Organic Compounds (SVOCs) - mg/kg [3]																					
2-Methylnaphthalene	**--**	ND	ND	ND	0.64 D,J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	**20**	2.3 D,J	ND	ND	1.8 D,J	ND	ND	ND	ND	ND	ND	ND	0.3 D,J	ND	ND	ND	ND	ND	ND	3.2 D,J	ND
Acenaphthylene	**100**	ND	ND	ND	0.39 D,J	ND	ND	2.1 DJ	ND	2.4 D,J	1.3 D,J	ND	0.36 D,J	ND	ND	ND	ND	ND	ND		ND
Anthracene	**100**	5.4 D	ND	ND	6.4 D	ND	ND	3.4 DJ	ND	ND	1.1 DJ	ND	0.91 D,J	0.15 D,J	0.016 J	ND	ND	2 D,J	3.2 D,J	7.6 D,J	ND
Benzo(a)anthracene	**1**	**9.9 D**	0.018 J	**1.2 D,J**	**10 D**	0.8 D,J	0.17 D,J	**15 D**	0.38 D,J	**3.2 D,J**	**6 D**	ND	**2.8 D**	1 D,J	0.29	0.14 D,J	0.12 J	**8.2 D,J**	**11 DJ**	**27 D**	**1.9 D,J**
Benzo(a)pyrene	**1**	**8.1 D**	0.018 J	**1.4 D,J**	**8.1 D**	0.85 D,J	0.16 D,J	**13 D**	0.34 D,J	**6.2 D,J**	**6.2 D**	ND	**3.1 D**	**1.1 D,J**	0.45	0.15 D,J	0.2 J	**8.4 D,J**	**10 DJ**	**25 D**	**2.9 D**
Benzo(b)fluoranthene	**1**	**9.4 D**	0.033 J	**2.5 D,J**	**11 D**	**1.4 D,I4,J**	0.22 D,J	**14 D**	0.43 D,J	**6.1 D,J**	**7.2 D**	ND	**3.9 D**	**1.6 D,J**	0.54	0.22 D,J	0.3	**8.4 D,J**	**18 D,J,ID4**	**28 D**	**3.4 D**
Benzo(ghi)perylene	**100**	5.2 D	0.02 J	1.3 D,J	5.6 D	0.7 D,J	0.16 D,J	9.1 DJ	0.26 D,J	5.9 D,J	4.7 D	ND	3.1 D	0.99 D,J	0.46	0.18 D,J	0.22	5.5 D,J	ND	14 D,J	2.9 D
Benzo(k)fluoranthene	**0.8**	**3.6 D,J**	ND	**0.82 D,J**	**3.9 D,J**	ND	0.065 D,J	**5.3 DJ**	0.16 D,J	**2.2 D,J**	**2.4 D,J**	ND	**1.4 D,J**	0.58 D,J	0.23	0.062 D,J	0.058 J	**5.4 D,J**	ND	**14 D,J**	**1.1 D,J**
Biphenyl	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	**--**	1.6 DJ	--	ND	--	--	--	--	--	--	--	--	--	--	0.013 J	--	ND	--	--	--	--
Chrysene	**1**	**8.3 D**	0.027 J	**1.3 D,J**	**9.9 D**	0.96 D,J	0.12 D,J	**12 D**	0.36 D,J	**3.3 D,J**	**5.4 D**	ND	**2.9 D**	**1.3 D,J**	0.34	0.15 D,J	0.18 J	**7.8 D,J**	**12 D,J**	**24 D**	**2.1 D**
Dibenzo(a,h)anthracene	**0.33**	**1.1 D,J**	ND	ND	**1.5 DJ**	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.092 J	ND	0.061 J	**1.2 D,J**	ND	ND	**0.66 D,J**
Dibenzofuran	**--**	0.98 D,J	ND	ND	1.9 DJ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**ND**	ND	ND	ND
Fluoranthene	**100**	26 D	0.018 J	1.4 D,J	23 D	1.2 D,J	0.19 D,J	32 D	0.5 D,J	2.6 D,J	9.4 D	ND	6.6 D	1.3 D,J	0.38	0.18 D,J	0.2 J	18 D	26 D,J	58 D	2.1 D
Fluorene	**30**	2.1 D,J	ND	ND	2.9 D,J	ND	ND	1.1 DJ	ND	ND	ND	ND	0.23 D,J	ND	ND	ND	ND	ND	ND	3 D,J	ND
Indeno(1,2,3-cd)pyrene	**0.5**	**4.9 D**	ND	**1.3 D,J**	**5.8 D**	**0.66 D,J**	0.14 D,J	**8.1 DJ**	0.21 D,J	**4.2 D,J**	**4.4 D**	ND	**2.5 D**	**0.87 D,J**	0.35	0.14 D,J	0.18 J	**4.7 D,J**	**6.3 D,J**	**14 D,J**	**2.5 D**
Naphthalene	**12**	ND	ND	ND	0.63 DJ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	**100**	21 D	0.021 J	ND	23 D	0.39 D,J	0.088 D,J	15 D	0.2 D,J	ND	3 D,J	ND	3.5 D	0.56 D,J	0.14 J	ND	0.084 J	7.2 D,J	16 D,J	31 D	0.6 D,J
Pyrene	**100**	20 D	0.014 J	1.3 D,J	16 D	1 D,J	0.17 D,J	26 D	0.43 D,J	3.4 D,J	8.1 D	0.089 D,J	5.3 D	1.4 D,J	0.34	0.15 D,J	0.17 J	14 D	20 D,J	42 D	1.9 D,J
Polychlorinated Biphenyls (PCBs) - mg/kg [3]																					
Aroclor 1242	**0.1**	ND	--	ND	--	--	--	--	--	ND	0.037	ND	ND	--	ND	--	ND	**0.13 D**	--	--	--
Aroclor 1248	**0.1**	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	--	0.015 J	--	0.015 J	ND	--	--	--
Aroclor 1260	**0.1**	ND	--	ND	--	--	--	--	--	0.028 J	**0.25**	ND	**0.25**	--	0.018 J	--	0.018 J	**1.5 D**	--	--	--

TABLE 1A

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Sites III-7 and III-8
Lackawanna, New York

PARAMETER [1]	Unrestricted SCOs [2] (ppm)	Sample Locations and Depths																			
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		BPA-3A-TP-17 (3-6)	BPA-3A-TP-18	BPA-3A-TP-19	BPA-3A-TP-22 (0-2)	BPA-3A-TP-24 (0-2)	BPA-3A-TP-25 (3-5)	BPA-3A-TP-26 (0-2)	BPA-3A-TP-27 (0-2)	BPA-3A-TP-28 (0-2)	BPA-3A-TP-29 (0-2)	BPA-3A-TP-30 (2-5)	BPA-3A-TP-31 (3-5)	BPA-3A-TP-54 (0-2)	BPA-3A-TP-55 (0-2)	Blind 1 [5]	Blind 3 [5]	BPA-3A-TP-32 (0-2)	BPA-3A-TP-34 (0-2)	BPA-3A-TP-35 (0-2)	BPA-3A-TP-56 (0-2)
Inorganic Compounds - mg/kg																					
Aluminum, Total	--	7890 J	--	7410 J	--	--	--	--	--	--	--	--	--	--	3270 J	--	3360 J	--	--	--	--
Arsenic, Total	13	**26.7**	ND	10	**79.3**	**19.3**	10.9	**25.5**	6.1	**21.7**	10	5.4	**24.5**	**27.2 J**	7.4	13	4.6	**18.7**	**15.4**	**20.6**	12.5 J
Barium, Total	350	109 J	--	93.9 J	--	--	--	--	--	--	--	--	--	--	19.5 J	--	21 J	--	--	--	--
Beryllium, Total	7.2	0.708	--	1.07	--	--	--	--	--	--	--	--	--	--	0.366	--	0.359	--	--	--	--
Cadmium, Total	2.5	1.3	ND	0.999	**5.98**	2.43	ND	**4.07**	0.268	2.14	1.06	0.992	**7.32**	**7.21 J**	0.914	ND	1.32	**7.75**	**2.59**	**30.9**	**6.93 J**
Calcium, Total	--	30100 J,B1,B	--	25300 J,B1,B	--	--	--	--	--	--	--	--	--	--	261000	--	210000 D,J	--	--	--	--
Chromium, Total [4]	31	**75.8 J**	18.1 J	20.7 J	**125 J**	29.9 J	30.8 J	**34.9 J**	**56 J**	19.7 J	**108 J**	**195 J**	**33.4 J**	**356 J**	**178 J**	28.9 J	**256 J**	**125 J**	**49.2 J**	**145 J**	**260 J**
Cobalt, Total	--	7 J	--	4.27 J	--	--	--	--	--	--	--	--	--	--	4.85 J	--	4.48 J	--	--	--	--
Copper, Total	50	**72.1 J**	--	39 J	--	--	--	--	--	--	--	--	--	--	33.6 J	--	48 J	--	--	--	--
Iron, Total	--	46700 J	--	20600 J	--	--	--	--	--	--	--	--	--	--	34200 J	--	45700 B1,J	--	--	--	--
Lead, Total	63	**118 J**	ND	**75.4 J**	**500 J**	**201 J**	26 J	**268**	28.2	**138**	**169**	**101**	**355**	**438 J**	**101 J**	24.3 J	**101 J**	**488**	**332**	**484**	**605 J**
Magnesium, Total	--	3570 J	--	3360 J	--	--	--	--	--	--	--	--	--	--	151000 D,J	--	136000 D,J	--	--	--	--
Manganese, Total	1600	**3740 B1,D,B**	--	**1580 B1,B**	--	--	--	--	--	--	--	--	--	--	**6540 D**	--	**7090 D**	--	--	--	--
Nickel, Total	30	20.3 J	--	14.5 J	--	--	--	--	--	--	--	--	--	--	**42.5 J**	--	**50 J**	--	--	--	--
Potassium, Total	--	1330 J	--	520 J	--	--	--	--	--	--	--	--	--	--	242 J	--	220 J	--	--	--	--
Sodium, Total	--	515 J	--	241 J	--	--	--	--	--	--	--	--	--	--	193 J	--	ND	--	--	--	--
Thallium, Total	--	ND	--	ND	--	--	--	--	--	--	--	--	--	--	ND	--	ND	--	--	--	--
Vanadium, Total	--	52.6 J	--	21.5 J	--	--	--	--	--	--	--	--	--	--	71.3 J	--	122	--	--	--	--
Zinc, Total	109	**307 J**	--	**185 J**	--	--	--	--	--	--	--	--	--	--	**218 J**	--	30 J	--	--	--	--
Mercury, Total	0.18	**2.78**	ND	0.13	**0.235**	0.0467	0.0269	**0.422**	ND	0.0905	0.121	0.105	0.102	**1.16 D**	0.0817	0.0325	0.0897 J	**3.32 D**	**0.355**	**0.403**	**0.806**
Cyanide	27	2.1 J	--	ND	--	--	--	--	--	--	--	--	--	--	1.6 J	--	ND	--	--	--	--
General Chemestry Parameters																					
pH, Leachable		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC draft Part 375 Soil Cleanup Objectives (June 2006)
3. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparison to SCOs.
4. The total Chromium SCO was determined by adding the hexavalent and trivalent Chromium SCOs.
5. Blind 1 collected from BPA-3A-TP-25, Blind 2 collected from BPA-3A-TP-49, Blind 3 collected from BPA-3A-TP-55
6. The sample collected from the area of completed excavation (BPA-3-TP-33) has been removed from the table.

Definitions:

ND = Parameter not detected above laboratory detection limit.
"--" = No SCO available/sample not analyzed for parameter.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
D = All compounds were identified in an analyisis at the secondary dilution factor.
R = The data is unusable.

BOLD = result exceeds SCO.

TABLE 1B

SUMMARY OF REMAINING SOIL/FILL CONTAMINATION ABOVE UNRESTRICTED SCOs

SITE MANAGEMENT PLAN

Sites III-7 and III-8
Lackawanna, New York

Parameter [1]	Unrestricted SCOs [2] (ppm)	Sample Locations and Depths																
		Site III-7																
		BPA-3-TP-12 (0-2')	BPA-3-TP-16 (0-2')	BPA-3-TP-20 (0-2')	BPA-3-TP-23 (0-2')	BPA-3-TP-25 (3-7')	BPA-3-TP-26 (0-1')	BPA-3-TP-30 (0-2')	BPA-3-TP-31 (0-2')	BPA-3-TP-32 (0-2')	BPA-3-TP-34 (0-4')	BPA-3-TP-36 (0-2')	BPA-3-TP-37 (0-2')	BPA-3-TP-38 (0-2')	BPA-3-TP-40 (0-2')	BPA-3-TP-43 (0-2')	BPA-3-TP-82 (0-2')	Blind [5]
Volatile Organic Compounds (VOCs) - mg/kg [3]																		
Acetone	**0.05**	--	--	0.006 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	**0.06**	ND	--	ND	ND	--	--	--	--	ND	--	--	--	0.00086 J	--	--	--	ND
2-Butanone (MEK)	**0.12**	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	**--**	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	**1**	ND	--	ND	ND	--	--	--	--	ND	--	--	--	ND	--	--	--	ND
Isopropylbenzene (Cumene)	**--**	ND	--	ND	ND	--	--	--	--	ND	--	--	--	ND	--	--	--	ND
Methyl acetate	**--**	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylcyclohexane	**--**	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene chloride	**0.05**	--	--	0.014	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	**0.7**	0.004 J	--	ND	0.0033 J	--	--	--	--	0.00036 J	--	--	--	ND	--	--	--	0.0005 J
Total Xylene	**0.26**	ND	--	ND	ND	--	--	--	--	ND	--	--	--	ND	--	--	--	ND
o-Xylenes	**0.26**	ND	--	ND	ND	--	--	--	--	ND	--	--	--	ND	--	--	--	ND
m&p-Xylene	**0.26**	ND	--	ND	ND	--	--	--	--	ND	--	--	--	ND	--	--	--	ND
n-Propylbenzene	**3.9**	ND	--	ND	ND	--	--	--	--	ND	--	--	--	ND	--	--	--	ND
p-Cymene (p-isopropyltoluene)	**--**	ND	--	ND	ND	--	--	--	--	ND	--	--	--	ND	--	--	--	ND
1,2,4-Trimethylbenzene	**3.6**	ND	--	ND	0.0087 J	--	--	--	--	ND	--	--	--	0.0009 J	--	--	--	ND
1,3,5-Trimethylbenzene	**8.4**	ND	--	ND	ND	--	--	--	--	ND	--	--	--	ND	--	--	--	ND
sec-Butylbenzene	**11**	ND	--	ND	ND	--	--	--	--	ND	--	--	--	ND	--	--	--	ND
tert-Butylbenzene	**5.9**	ND	--	ND	ND	--	--	--	--	ND	--	--	--	ND	--	--	--	ND
Semi-Volatile Organic Compounds (SVOCs) - mg/kg [3]																		
Acenaphthene	**20**	ND	ND	0.11 J	0.17 J	0.32 J	0.22 J	ND	1.8	0.037 J	0.099 J	ND	0.18 J	ND	ND	ND	0.26 J	0.039 J
Acenaphthylene	**100**	ND	ND	0.47 J	0.88 J	0.19 J	0.18 J	0.15 J	0.29 J	0.15 J	0.72 J	ND	4.7	0.16 J	ND	0.057 J	1.2	0.12 J
Acetophenone	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	**100**	0.17 J	2 J	0.64 J	1	0.8 J	0.51 J	0.17 J	7.3	0.17 J	0.82 J	ND	2.4	0.15 J	ND	0.047 J	1.6	0.21 J
Benzo(a)anthracene	**1**	0.88 J	**37 J**	**1.8**	**4.1**	**2.1**	**1.5 J**	**1.2 J**	**18**	0.8 J	**3.6**	0.92 J	**12**	0.62 J	0.6 J	0.28 J	**9.2**	0.92 J
Benzo(b)fluoranthene	**1**	1 J	**65**	**2.8**	**9.2**	**3.1**	**1.7 J**	**1.7 J**	**20**	**1.4**	**5.9**	**1.6 J**	**17**	0.91 J	**1.2**	0.58 J	**11**	**1.9**
Benzo(k)fluoranthene	**0.8**	0.44 J	**26 J**	**1.1**	**3.6**	**0.84 J**	0.64 J	**1 J**	**8.4**	0.58 J	**1.3 J**	0.65 J	**4.9**	0.36 J	0.48 J	0.18 J	**4.4**	0.47 J
Benzo(g,h,i)perylene	**100**	0.86 J	57	0.69 J	2.9	0.7 J	1.3 J	0.96 J	4.8	0.44 J	1.7 J	0.85 J	12	0.33 J	0.66 J	0.26 J	5.3	0.51 J
Benzo(a)pyrene	**1**	0.83 J	**57**	**1.8**	**6.4**	**2**	1.4 J	1.4 J	15	0.89 J	**3.9**	**1.2 J**	**13**	0.71 J	1	0.34	**9**	**1.1**
Biphenyl	**--**	ND	ND	ND	0.088 J	ND	ND	ND	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	**--**	ND	ND	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	**--**	ND	ND	ND	ND	0.72 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	**--**	--	--	0.2 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	**1**	1.2 BJ	44 B	1.9 B	4.1 B	2 B	1.6 BJ	1.4 BJ	15 B	0.87 BJ	3.5 B	1.4 BJ	10 B	0.66 BJ	0.8 BJ	0.47 BJ	**8.6**	0.99 B
Dibenzo(a,h)anthracene	**0.33**	ND	**12 J**	0.22 J	**0.74 J**	0.22 J	ND	ND	**1.6**	0.12 J	**0.56 J**	0.27 J	**3 J**	0.1 J	0.069 J	0.084 J	**1.6**	0.15 J
Dibenzofuran	**--**	ND	ND	0.24 J	0.43 J	0.22 J	ND	ND	1.2	0.039 J	0.2 J	ND	0.44 J	0.052 J	ND	ND	0.16 J	0.04 J
Fluoranthene	**100**	1.5 J	42	3.8	9.8	4.4	2.1 J	1.5 J	26 D	1.5	6.4	1 J	19	1	0.65 J	0.71 J	16	1.7
Fluorene	**30**	ND	ND	0.18 J	0.47 J	0.3 J	0.17 J	ND	2.1	0.046 J	0.27 J	ND	0.32 J	ND	ND	ND	0.34 J	0.047 J
Indeno(1,2,3-cd)pyrene	**0.5**	**0.75 J**	**47**	**0.72 J**	**3**	**0.7 J**	**1.1 J**	**0.92 J**	**5.1**	0.43 J	**1.6 J**	**0.79 J**	**11**	0.35 J	**0.56 J**	0.22 J	**5.2**	0.49 J
Isophorone	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	**--**	ND	ND	0.11 J	0.4 J	0.36 J	ND	ND	0.28 J	0.044 J	0.18 J	ND	0.53 J	0.24 J	ND	ND	0.097 J	0.046 J
Naphthalene	**12**	ND	ND	0.1 J	0.92 J	0.27 J	ND	ND	0.36 J	ND	0.2 J	ND	0.63 J	0.14 J	ND	0.036 J	0.13 J	ND
N-Nitroso-di-n-propylamine	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	**100**	0.69 BJ	10 BJ	2.3	3.4	3	1.5 BJ	0.6 BJ	21	0.64 J	3	0.45 BJ	4.5 B	0.46 J	0.18 J	0.36 J	5.3	0.72 J
Pyrene	**100**	1.2 J	44	2.8	7.9	3.1	1.8 J	1.2 J	25	1.2	4.9	0.97 J	17	0.89 J	0.59 J	0.45 J	13	1.2

TABLE 1B

SUMMARY OF REMAINING SOIL/FILL CONTAMINATION ABOVE UNRESTRICTED SCOs

SITE MANAGEMENT PLAN

Sites III-7 and III-8
Lackawanna, New York

Parameter [1]	Unrestricted SCOs [2] (ppm)	Sample Locations and Depths																
		Site III-7																
		BPA-3-TP-12 (0-2')	BPA-3-TP-16 (0-2')	BPA-3-TP-20 (0-2')	BPA-3-TP-23 (0-2')	BPA-3-TP-25 (3-7')	BPA-3-TP-26 (0-1')	BPA-3-TP-30 (0-2')	BPA-3-TP-31 (0-2')	BPA-3-TP-32 (0-2')	BPA-3-TP-34 (0-4')	BPA-3-TP-36 (0-2')	BPA-3-TP-37 (0-2')	BPA-3-TP-38 (0-2')	BPA-3-TP-40 (0-2')	BPA-3-TP-43 (0-2')	BPA-3-TP-82 (0-2')	Blind [5]
PCBs - mg/kg [3]																		
Aroclor 1248	**0.1**	--	--	ND	0.012 J	--	ND	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1254	**0.1**	--	--	ND	0.032	--	ND	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1260	**0.1**	--	--	ND	ND	--	0.03	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1262	**0.1**	--	--	--	--	--	ND	--	--	--	--	--	--	--	--	--	--	--
Inorganic Compounds - mg/kg																		
Aluminum	**--**	--	--	11800 *	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	**13**	**99.2 E**	7.3 E	**20.2 E**	**15.6 E**	6.6 E	**45.4 E**	**21.6**	**44.5 E**	**27.6 E**	**64 E**	11.1	**53 E**	**32.3 E**	ND	6.5	**79**	**25.8 E**
Barium	**350**	--	--	132 N*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	**7.2**	--	--	1.4 *	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	**2.5**	2.8	0.56	4.9 *	0.33 *	1.6 *	1	0.82	2.4 *	2 *	4 *	1.6	0.73	2.8 *	0.52	1.4	1.6	1.2 *
Calcium	**--**	--	--	63700 EJ*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium [4]	**31**	**60.8 EN**	**397 EN**	**129 N***	**37.7 N***	28.3 N*	**95.4 EN**	**56.1 EN**	**122 N***	**482 N***	**109 N***	**118 EN**	**96.2 EN**	**53.5 N***	**731 N**	**537 N**	**106**	**385 N***
Cobalt	**--**	--	--	6.5 *	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	**50**	--	--	**77.5**	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	**--**	--	--	37900 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	**63**	**287 EN***	**79.9 EN***	**843 J**	54.6	**80.7**	**156 EN***	**88.8 EN**	**244**	61.1	**283**	**121 EN**	**94.3 EN***	**209**	15 *	**173 ***	**201**	**81.3 EN***
Magnesium	**--**	--	--	9110 *	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	**1600**	--	--	**21200 J***	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	**30**	--	--	19.2 EN	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	**--**	--	--	1180 *	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	**0.18**	0.057	**0.278**	**0.917 N**	**0.185 N**	57.1 N	0.081	0.136	0.141 N	0.057 N	**2.5 N**	0.055	0.083	0.093 N	ND	0.089	0.131	0.05
Silver	**2**	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	**--**	--	--	324 *	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	**--**	--	--	84.6 N*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	**109**	--	--	**284 EJ**	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide	**27**	ND	2	--	ND	2.5	ND	ND	ND	ND	ND	ND	ND	ND	3.2	2.3	ND	ND

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds reported as non-detect.
2. Values per NYSDEC Part 375 Soil Cleanup Objectives (June 2006)
3. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparison to SCOs.
4. The total Chromium SCO was determined by adding the hexavalent and trivalent Chromium SCOs.
5. Blind collected at BPA-3-TP-32, Blind 2 collected at BPA-3-TP-42, Blind 3 collected at BPA-3-TP-50, Blind 4 collected at BPA-3-TP-80.
6. Samples collected from areas of completed excavation (BPA-3-TP-17, BPA-3-TP-22, BPA-3-TP-28) have been removed from the table.

Definitions:

ND = Parameter not detected above laboratory detection limit.
NA = Sample not analyzed for parameter.
"--" = No SCO available.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
* = Indicates the spike or duplicate analysis is not within the quality control limits.
D = All compounds were identified in an analyisis at the secondary dilution factor.
N = Indicates spike sample recovery is not within the quality control limits.
E = Indicates value estimated or not reported due to the presence of interferences.

BOLD = result exceeds SCO.

TABLE 2

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

SITE MANAGEMENT PLAN

Sites III-7 and III-8
Lackawanna, New York

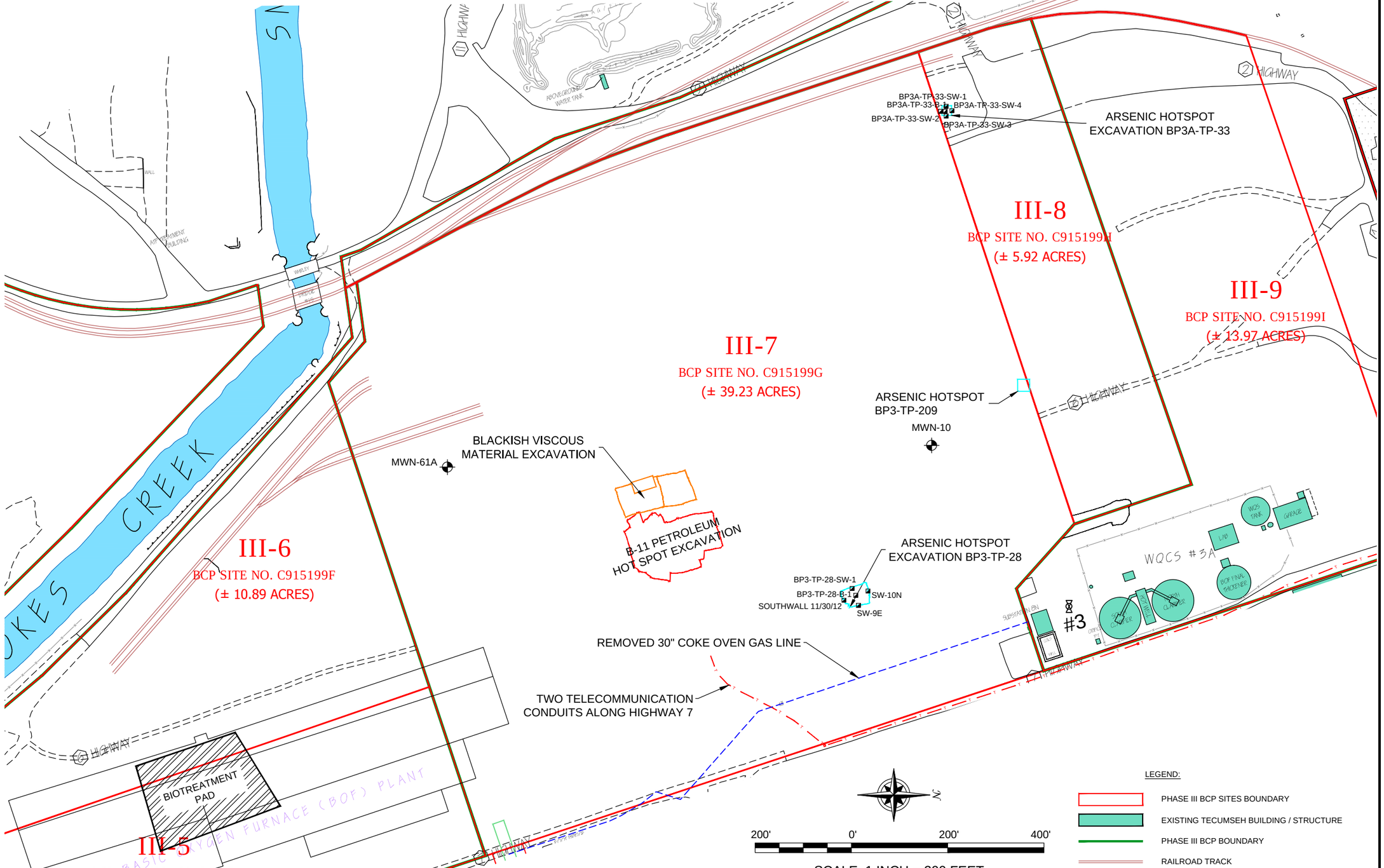
Parameter [1,2,3]	Sample Location								GWQS [4]
	MWN-10 1/14/09		MWN-10 2/26/13		MWN-61A 1/21/10		MWN-61A 2/26/13		
Field Measurements [5]:									
Sample No.	Initial	Final	Initial	Final	Initial	Final	Initial	Final	--
pH (units)	**10.00**	**10.00**	**10.28**	**10.29**	7.67	7.65	7.59	7.60	**6.5 - 8.5**
Temperature (^{o}C)	10.4	10.6	10.4	9.9	9.5	9.4	9.90	9.70	**NA**
Sp. Conductance (mS)	1873	1869	1917	1927	625.9	623.8	679.9	682.7	**NA**
Turbidity (NTU)	3.44	2.88	4.57	5.39	21	11.2	4.54	2.33	**NA**
DO (ppm)	1.35	1.42	2.21	2.26	--	--	1.80	1.81	**NA**
Eh (mV)	-191	-195	-56	-73	-145	-136	6	28	**NA**
Volatile Organic Compounds (ug/L):									
Benzene	ND		ND		ND		0.9 J		**1**
Toluene	ND		ND		**6 D,J,NJ**		ND		**5**
Semi-Volatile Organic Compounds (ug/L):									
2,4-Dimethylphenol	*NA*		ND		*NA*		0.67 J		**50**
Acenaphthene	ND		ND		18 D,J		11		**20***
Acenaphthylene	ND		ND		18 D,J		3.8 J		**--**
Anthracene	ND		ND		7.2 D,J		1.9 J		**50***
Benzo(a)anthracene	ND		ND		**2 D,J**		ND		**0.002***
Biphenyl	ND		ND		**13 D,J**		3.8 J		**5**
Carbazole	ND		ND		37 D		0.5 J		**--**
Dibenzofuran	ND		ND		39 D,J		13		**--**
Di-n-butyl phthalate	0.42 BJ		ND		ND		ND		**50**
Fluoranthene	ND		ND		12 D,J		3.3 J		**50***
Fluorene	ND		ND		12 D,J		12		**50***
2-Methylnaphthalene	ND		ND		37 D		4.9		**--**
Naphthalene	ND		ND		**290 D**		**25**		**10***
Nitrobenzene	*NA*		ND		*NA*		**0.49 J**		**0.4**
Phenanthrene	ND		ND		**62 D**		17		**50***
Pyrene	ND		ND		7.4 D,J		2.2 J		**50***

Notes:

1. Only those compounds detected above the method detection limit at a minimum of one sample location are reported in this table.
2. Shaded and bolded values represent exceedances of the GWQS/GV.
3. For summary purposes only detected parameters are shown on this table.
4. NYSDEC Class "GA" Groundwater Quality Standards (GWQS) as per 6 NYCRR Part 703.
5. Field measurements were collected immediately before and after groundwater sample collection.
6. " J " = Estimated Value
7. " ND " indicates parameter was not detected above laboratory reporting limit and is reported herein as not detected (ND).
8. " NA " = monitoring well not sampled for this analyte.
9. " * " = The Guidance Value was used where a Standard has not been established.

FIGURES

F:\CAD\TurnKey\Tecumseh Redevelopment\Brownfield Cleanup Program (BCP)\Phase III Parcel\Site Management Plan\Appendix H\Figure 1- IRM Activities.dwg



DATE: JUNE 2013
DRAFTED BY: BLR

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

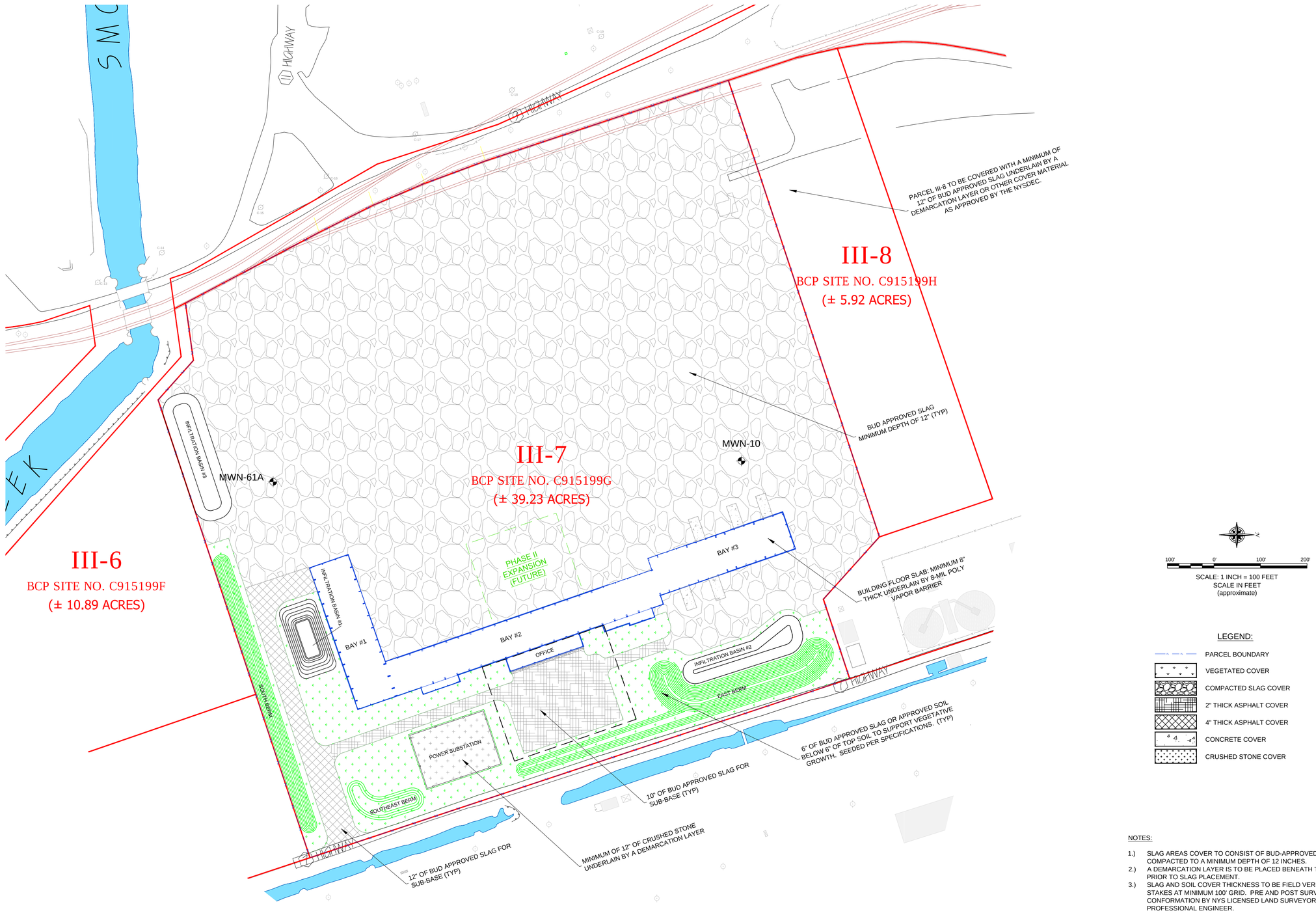
TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0071-012-322

IRM ACTIVITIES ON SITES III-7 AND III-8

SITE MANAGEMENT PLAN; SITES III-7 AND III-8
WELDED TUBE USA SITE
BCP SITES C195199G & C195199H
LACKAWANNA, NEW YORK

FIGURE 1



NOTES:

1.) SLAG AREAS COVER TO CONSIST OF BUD-APPROVED SLAG COMPACTED TO A MINIMUM DEPTH OF 12 INCHES.
2.) A DEMARCATION LAYER IS TO BE PLACED BENEATH THE SLAG PRIOR TO SLAG PLACEMENT.
3.) SLAG AND SOIL COVER THICKNESS TO BE FIELD VERIFIED BY GRADE STAKES AT MINIMUM 100' GRID. PRE AND POST SURVEY CONFORMATION BY NYS LICENSED LAND SURVEYOR OR PROFESSIONAL ENGINEER.

TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0071-012-322

REVISIONS

NO.	BY	DATE	REMARKS
1	JCT	01/28/2013	BID SET
2	JCT	03/20/2013	DONA STREET EXTENSION
3	BLR	11/7/2013	INFILTRATION BASIN #3

SEAL

DRAWN BY: BLR
DATE: JUNE 2013
CHECKED BY:
APPROVED BY:

DISCLAIMER:
PROPERTY OF TURNKEY ENV. REST., LLC. IMPORTANT: THIS DRAWING PRINT IS LOANED FOR MUTUAL ASSISTANCE AND AS SUCH IS SUBJECT TO RECALL AT ANY TIME. INFORMATION CONTAINED HEREON IS NOT TO BE DISCLOSED OR REPRODUCED IN ANY FORM FOR THE BENEFIT OF PARTIES OTHER THAN NECESSARY SUBCONTRACTORS & SUPPLIERS WITHOUT THE WRITTEN CONSENT OF TURNKEY ENV. REST., LLC.

APPROXIMATE LOCATIONS & TYPES OF COVER SYSTEM MATERIALS

SITE MANAGEMENT PLAN; SITES III-7 AND III-8
BCP SITES C195199G & C195199H
WELDED TUBE USA SITE
LACKAWANNA, NEW YORK

FIGURE 2

ATTACHMENT A

MONITORING WELL BORING AND CONSTRUCTION LOGS

DATE
STARTED 9-5-90
FINISHED 9-5-90
SHEET 1 OF 2

EMPIRE SOILS INVESTIGATIONS INC

SUBSURFACE LOG

BTA-90-133

HOLE NO. MWN-10
SURF. ELEV. 583.8
G. W. DEPTH See Notes

PROJECT Bethlehem Steel Corporation
Phase I Investigation

LOCATION Lackawanna Facility
Lackawanna, New York

DEPTH FEET	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	N	PID Sample	SOIL OR ROCK CLASSIFICATION	NOTES
0								Black f-c SAND, some f-c Gravel, little Cinders, tr. slag (moist, FILL)	
20		1	7	7		17			
			10	12				Gray CLAYEY SILT, little f. Sand, tr. gravel (moist-wet, medium)	
40		2	40	100/3		REF		Contains some f-c Sand, little f-m Gravel, tr. wood, tr. broken rock (moist-wet, HARD)	Driller notes drilling becomes more difficult at 38.0' possible clay interface. REF=Split Spoon Refusal

N = No blows to drive 2 " spoon 12 " with 140 lb. pin wt. falling 30 "per blow.

C = No blows to drive _____ " casing _____ " with _____ lb. weight falling _____ "per blow.

CLASSIFICATION Visual by Onsite Geologist

METHOD OF INVESTIGATION ASTM D-1586 USING 4-1/4" HOLLOW STEM AUGERS

DATE
STARTED 9-5-90
FINISHED 9-5-90
SHEET 2 OF 2

EMPIRE SOILS INVESTIGATIONS INC

SUBSURFACE LOG

(BTA-90-133)

HOLE NO. MWN-10
SURF ELEV. 583.8
G. W. DEPTH See Notes

PROJECT Bethlehem Steel Corporation
Phase I Investigation

LOCATION Lackawanna Facility
Lackawanna, New York

DEPTH-FT	SAMPLE'S	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	N	PID Sample	SOIL OR ROCK CLASSIFICATION	NOTES
40									
								Auger and Split Spoon Refusal at 53.0'	
		3	100/.0			REF		Boring Complete at 53.0'.	
								Refer to Monitoring Well Completion Reports for Well Installation Details.	Free Standing Water measured at 18.1' at boring completion. Free Standing Water measured at 6.0' on 9-11-90 at 9:20 am. Test boring open to 8.0'.
									Boring grouted to 21.0' upon 4-1/4" H.S.A. completion.
									PID=Organic vapor measurements taken with a photoionization detector (PID). Measurements recorded in parts per million (ppm).
									BG=Background PID measurements=0.0-0.2 ppm.
45									
50									
55									
60									
65									
70									
75									
80									

N = No blows to drive 2 " spoon 12 with 140 lb. pin wt. falling 30 "per blow.
C = No blows to drive _____ " casing _____ " with _____ lb weight falling _____ "per blow.

CLASSIFICATION Visual by Onsite Geologist

METHOD OF INVESTIGATION ASTM D-1586 USING 4-1/4" HOLLOW STEM AUGERS

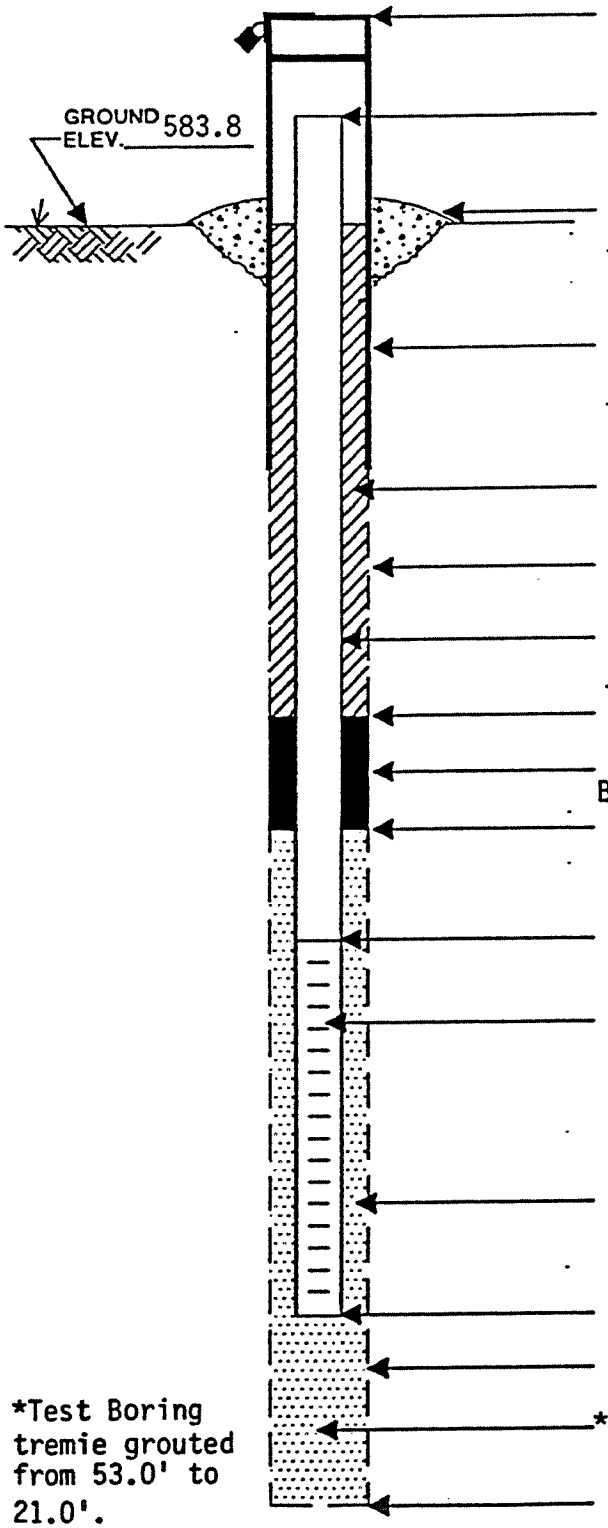
EMPIRE
SOILS INVESTIGATIONS INC

MONITORING WELL COMPLETION RECORD

PROJECT : Bethlehem Steel
PROJECT No. : BTA-90-133
INSTALLATION DATE(S) : 9-11-90
FIELD GEOLOGIST : D. Abrams

WELL No. MWN-10
LOCATION : Lackawanna, N.Y.

DRILLER : J. Lamm
DRILLING METHOD : ASTM-D-1586
DEVELOPMENT METHOD : Isco Pump



ELEVATION / TOP OF SURFACE CASING : 587.28
STICK-UP / TOP OF SURFACE CASING : 3.48'
ELEVATION / TOP OF RISER PIPE : 586.55
STICK-UP / TOP OF RISER PIPE : 2.75'
TYPE OF SURFACE SEAL : Sakrete
I.D. OF SURFACE CASING : 8-Inch Square
TYPE OF SURFACE CASING : Corrosion-resistant steel
TYPE OF BACKFILL : Cement/Bentonite grout
BOREHOLE DIAMETER : Nominal 12-1/4-inches
I.D. OF RISER PIPE : 4.0-inches
TYPE OF RISER PIPE : Polyvinyl Chloride (PVC), Schedule 40, threaded
DEPTH OF SEAL : 2.0'
TYPE OF SEAL : Bentonite Pellets
Bentonite Slurry
DEPTH OF SAND PACK : 5.0'
DEPTH TOP OF SCREEN : 6.0'
TYPE OF SCREEN : Type 316-Stainless Steel
SLOT SIZE x LENGTH : 0.010" slot x 10'
I.D. OF SCREEN : 4.0-inches
TYPE OF SAND PACK: #2-QRok Sand
DEPTH BOTTOM OF SCREEN : 16.0'
DEPTH BOTTOM OF SAND PACK : 21.0'
*TYPE OF BACKFILL BELOW OBSERVATION WELL : #2 QRok Sand 21.0'-16.0'
Bentonite/Cement grout to 21.0'
ELEVATION / DEPTH OF HOLE : 530.8/ 53.0'

*Test Boring tremie grouted from 53.0' to 21.0'.

DAMES & MOORE
A PROFESSIONAL LIMITED PARTNERSHIP

WELL DEVELOPMENT RECORD

WELL No. MW-N10

PROJECT : BSC - Phase 1 Investigation PROJECT No. : BTA-90-133 SITE LOCATION : Lackawanna, New York

CONTRATOR : Empire Soils Investigations METHOD(S) OF DEVELOPMENT : Purged with ISCO Pump

FIELD INSPECTOR(S) : Sharon McLellan, Don Wartinger

DATE	WEATHER/ TEMP.	TIME	WATER DEPTH TOP OF RISER (FT)	pH (UNITS)	TEMP. (°C)	SP. COND. (umhos)	NTU	VISUAL APPEAR., ODOR, ETC...	NOTES : GAL. REMOVED, ETC...
11/29/90	Overcast, 30°-40°F, 10-25 Mph WSW winds	12:15	Initial= 8.56						
				11.7	11.8	1.50	12	Water clear, no odor	5 gallons removed
				11.8	11.3	1.54	7		10 gallons removed
				11.7	12.0	1.57	6		15 gallons removed
				11.7	11.7	1.58	4		20 gallons removed
				11.7	11.7	1.55	3.7		25 gallons removed
				11.7	11.9	1.54	3.5		30 gallons removed
				11.6	12.4	1.50	3.6		35 gallons removed
				11.6	12.5	1.50	3.5		40 gallons removed

DAMES & MOORE
A PROFESSIONAL LIMITED PARTNERSHIP

WELL DEVELOPMENT RECORD

WELL No. MW-N10

PROJECT : BSC - Phase 1 Investigation PROJECT No. : BTA-90-133 SITE LOCATION : Lackawanna, New York

CONTRATOR : Empire Soils Investigations METHOD(S) OF DEVELOPMENT : Purged with ISCO Pump

FIELD INSPECTOR(S) : Sharon McLellan, Don Wartinger,

DATE	WEATHER/ TEMP.	TIME	WATER DEPTH TOP OF RISER (FT)	pH (UNITS)	TEMP. (°C)	SP. COND. (umhos)	NTU	VISUAL APPEAR., ODOR, ETC...	NOTES : GAL. REMOVED, ETC...
11/29/90				11.5	12.5	1.50	3.6		45 gallons removed
				11.5	12.6	1.51	3.6		50 gallons removed
		1:15	Final= 13.08						Final water level after development

Note: 6.6g = one well volume

LD

Project No: 0071 - 009 - 310

Borehole Number: MWN-61A

Project: Phase IIIA Business Park Area

A.K.A.:

Client: Tecumseh Redevelopment Inc.

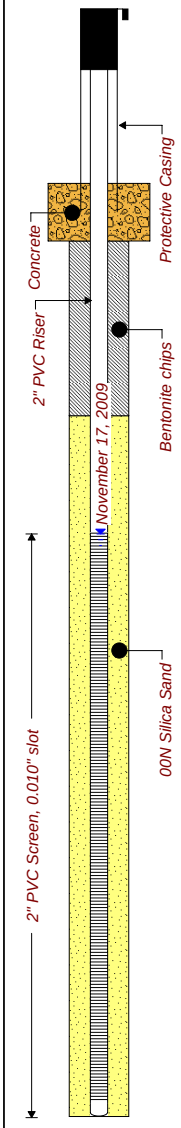
Logged By: TAB

Site Location: Lackawanna , NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs (ppm)	Lab Sample	Well Completion Details or Remarks
-3.0									
	0.0	Ground Surface							
	0.0	***Fill*** Dark Brown, moist, fill, non plastic fines with some fine and coarse sand, few coarse gravel, grey slag, very dense, loose when disturbed.	1	NA	0.8		0.0		
2.0	-2.0 / 2.0	As above, black, red/orange slag peices.	2	94	1.6		0.3		
	-4.0 / 4.0	As above.	3	91	1.8		1.1		
	-6.0 / 6.0	As above, wet.	4	24	0.8		0.0		
7.0	-8.0 / 8.0	As above, slight sheen and slight petroleum-like odor.	5	19	0.5		0.0		
	-10.5 / 10.5	***Lean Clay*** Dark grey, wet, medium plasticity fines, little fine sand, trace coarse sand, rootlets.	6	4	0.5		4.5		
12.0	-12.0 / 12.0	As above	7	5	1.3		4.4		
	-14.0 / 14.0	As above, trace fine sand.	8	8	1.5		0.0		
	-16.0 / 16.0	End of Borehole							
17.0									



Drilled By: Earth Dimensions, Inc.
Drill Rig Type: Deitrich D120
Drill Method: 2-foot split spoon fowolled by 41/4-inch hollow stem augers
Comments:
Drill Date(s): 11/17/09 - 11/20/09

Hole Size: 8.5-inch
Stick-up: 2.5 - feet
Datum: Mean Sea level

Sheet: 1 of 1

ATTACHMENT B

GROUNDWATER MONITORING WELL SAMPLING LOG FORM

TurnKey Environmental Restoration, LLC

EQUIPMENT CALIBRATION LOG

PROJECT INFORMATION:

Project Name: Supply manhole GWM

Project No.:

Client: Welded Tube/Tenaris

Date: 2/27/13

Instrument Source: ☒ BM ☐ Rental

METER TYPE	UNITS	TIME	MAKE/MODEL	SERIAL NUMBER	CAL. BY	STANDARD	POST CAL. READING	SETTINGS
☒ pH meter	units	0930	Myron L Company Ultra Meter 6P	6213516 ☒ 6212375 ☐	TAB	4.00	4.00	4.0
						7.00	7.05	7.0
						10.01	10.04	10.0
☒ Turbidity meter	NTU	0930	Hach 2100P Turbidimeter	06120C020523 ☐ 07110C026405 ☒	DAB	< 0.4	0.35	0.4
						20	20.9	20
						100	99.1	100
						800	792	~~800~~
☒ Sp. Cond. meter	uS mS	093	Myron L Company Ultra Meter 6P	6213516 ☒ 6212375 ☐	TAB	1413 mS @ 25 °C	1413	1413
☐ PID	ppm		MinRAE 2000			open air zero		MIBK response factor = 1.0
						____ ppm Iso. Gas		
☒ Dissolved Oxygen	ppm	0930	HACH Model HQ30d	0807000023281 ☒ 10050041867 ☐	TAB	100% Satuartion	Slope 88.7	PASS
☐ Particulate meter	mg/m³					zero air		
☐ Oxygen	%					open air		
☐ Hydrogen sulfide	ppm					open air		
☐ Carbon monoxide	ppm					open air		
☐ LEL	%					open air		
☐ Radiation Meter	uR/H					background area		
☐								

ADDITIONAL REMARKS:

PREPARED BY: DAB

Equipment Calibration Log

DATE: 2/27/13

GROUNDWATER FIELD FORM

Project Name:
Location: Welded Tube Project No.: Date: 2/26/13
Field Team: TAB

Well No. MWN-10A			Diameter (inches): 4"			Sample Date / Time: 2/26/13 1115			
Product Depth (fbTOR): —			Water Column (ft): 9.94			DTW when sampled: 8.67 8.67			
DTW (static) (fbTOR): 8.36			One Well Volume (gal): 6.49			Purpose: ☐ Development ☐ Sample ☒ Purge & Sample			
Total Depth (fbTOR): 18.30			Total Volume Purged (gal): 5.0			Purge Method: Low Flow			
Time	Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
1102	0 Initial	20.25	9.91	10.4	1934	47.7	2.75	-12	SL Turbid musty odor
1105	1 8.67	1.0	9.59	10.6	19115	27.1	2.94	-35	" sulfur odor
1107	2 8.67	1.5	10.31	10.6	1912	17.4	2.31	-37	"
1109	3 8.67	2.0	10.28	10.6	1911	8.54	2.53	-78	" clear
1112	4 8.67	3.0	10.28	10.5	1911	6.27	2.11	-63	" clear
	5								
	6								
	7								
	8								
	9								
	10								
Sample Information:									
1115	S1 8.67	4.0	10.28	10.4	1917	4.57	2.21	-56	"
1120	S2 8.60	5.0	10.29	9.9	1927	5.39	2.26	-73	"

Well No. MWN-61A			Diameter (inches): 2"			Sample Date / Time: 2/26/13 1208			
Product Depth (fbTOR): —			Water Column (ft): 8.91			DTW when sampled: 9.79			
DTW (static) (fbTOR): 9.72			One Well Volume (gal): 1.45			Purpose: ☐ Development ☐ Sample ☒ Purge & Sample			
Total Depth (fbTOR): 16.63			Total Volume Purged (gal): 6.5			Purge Method: Low Flow			
Time	Water Level (fbTOR)	Acc. Volume (gallons)	pH (units)	Temp. (deg. C)	SC (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
1151	0 Initial	20.25	7.69	10.6	1646	21000	1.21	16	Grey wd No Odor
1154	1 9.76	0.50	7.47	9.9	762.8	129	1.38	-21	SL Turbid SL motor Fuel
1159	2 9.76	3.0	7.54	9.9	720.4	35.3	1.59	5	"
1201	3 9.78	4.0	7.61	9.9	698.7	11.6	1.58	-3	clear " No Odor
1204	4 9.77	5.0	7.62	9.7	690.3	5.22	1.68	-2	" No Odor
1206	9.77	5.5	2.59	9.9	689.4	8.35	1.80	6	" No Odor
1[illegible]	[illegible]								
	7								
	8								
	9								
	10								
Sample Information:									
1208	S1 9.79	6.0	7.59	9.9	679.4	4.54	1.80	6	"
1216	S2 9.76	6.5	7.60	9.7	682.7	2.33	1.81	28	"

REMARKS:

Note: All measurements are in feet, distance from top of riser.

Volume Calculation

Diam.	Vol. (g/ft)
1"	0.041
2"	0.163
4"	0.653
6"	1.469

Stabilization Criteria

Parameter	Criteria
pH	± 0.1 unit
SC	± 3%
Turbidity	± 10%
DO	± 0.3 mg/L
ORP	± 10 mV

PREPARED BY: TAB

ATTACHMENT C

SAMPLE IC/EC CERTIFICATION FORM

Enclosure 2
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site No. C915199G

Site Name Site III-7 Tecumseh Phase III Business Park

Site Address: 2537 Hamburg Turnpike Zip Code: 14218
City/Town: Lackawanna
County: Erie
Site Acreage: 39.2

Reporting Period: to December 02, 2013

	YES	NO
1. Is the information above correct?	☐	☐
If NO, include handwritten above or on a separate sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	☐
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	☐
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	☐
If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.		
5. Is the site currently undergoing development?	☐	☐

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below? Commercial and Industrial	☐	☐
7. Are all ICs/ECs in place and functioning as designed?	☐	☐

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

_____ _____
Signature of Owner, Remedial Party or Designated Representative Date

SAMPLE

	YES	NO
8. Has any new information revealed that assumptions made in the Qualitative Exposure Assessment regarding offsite contamination are no longer valid?	☐	☐

If you answered YES to question 8, include documentation or evidence that documentation has been previously submitted with this certification form.

9. Are the assumptions in the Qualitative Exposure Assessment still valid? (The Qualitative Exposure Assessment must be certified every five years)	☐	☐

If you answered NO to question 9, the Periodic Review Report must include an updated Qualitative Exposure Assessment based on the new assumptions.

SITE NO. C915199G

Description of Institutional Controls

Parcel	Owner	Institutional Control
141.15-1-1	Welded Tube USA Inc.	Ground Water Use Restriction Soil Management Plan Landuse Restriction Site Management Plan IC/EC Plan

Institutional Control Description:

Adherence to Site Management Plan (SMP)
Restriction to commercial re-use
Prohibition of groundwater use
Allowance for Departmental access
Requires a Periodic Review and Report

Description of Engineering Controls

Parcel	Engineering Control
141.15-1-1	Cover System

Engineering Control Description:

Soil cover over 5 acres

SAMPLE

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted

YES	NO
☐	☐

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

(a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

(b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

(c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

(d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

(e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES	NO
☐	☐

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

_____ _____

Signature of Owner, Remedial Party or Designated Representative Date

SAMPLE

IC CERTIFICATIONS
SITE NO. C915199G

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 1,2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I _____ at _____,
print name print business address

am certifying as _____(Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

_____ _____
Signature of Owner, Remedial Party, or Designated Representative Date

SAMPLE

IC/EC CERTIFICATIONS

Box 7

Qualified Environmental Professional Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I _____ at _____,
print name print business address

am certifying as a Qualified Environmental Professional for the _____
(Owner or Remedial Party)

_____ _____ _____

Signature of Qualified Environmental Professional, for the Owner or Remedial Party, Rendering Certification

Stamp
(Required for PE)

Date

APPENDIX H-9

SITE III-9 (C915199I)

As the remedial actions are completed on Site III-9 and a Decision Document is prepared, Site-specific SMP requirements will be developed and added to Appendix H-9 as an addendum.

APPENDIX H-10

SITE III-10 (C915199J)

As the remedial actions are completed on Site III-10 and a Decision Document is prepared, Site-specific SMP requirements will be developed and added to Appendix H-10 as an addendum.