Interim Remedial Measures Work Plan

Phase I Business Park Area
Lackawanna, New York
BCP Site No. C915197

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Prepared For:

ArcelorMittal Tecumseh Redevelopment, Inc.

ArcelorMittal

Prepared By:

TurnKey Environmental Restoration, LLC

in association with

Benchmark Environmental Engineering & Science, PLLC

726 Exchange Street, Suite 624, Buffalo, New York | phone: (716) 856-0599 | fax: (716) 856-0583

INTERM REMEDIAL MEASURES (IRM) WORK PLAN

ARCELORMITTAL TECUMSEH REDEVELOPMENT, INC.
PHASE I BUSINESS PARK
LACKAWANNA, NEW YORK

CERTIFICATION:

Thomas H. Forbes, P.E. — Date: 8-11-08

License No.: 070950-1

Registration State: New York

SEAL:

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1.0 INTRODUCTION

1.1 Background and History

ArcelorMittal Tecumseh Redevelopment, Inc. (Tecumseh) owns an approximately 1,070-acres of land (property) located on the west side of New York State Route 5 (Hamburg Turnpike) in the City of Lackawanna, NY (see Figures 1 and 2). 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 on the east, Lake Erie to the west and northwest, and other industrial properties to the south and the northeast.

The property was formerly used for the production of steel, coke, and related products by Bethlehem Steel Corporation (BSC). Steel production on the property was discontinued in 1983 and the coke ovens ceased activity in 2000. Tecumseh acquired its Lackawanna property from BSC's bankruptcy estate 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 (Ref. 1). In August 2006, USEPA approved the RFI and terminated Bethlehem Steel's obligations under the 1990 Administrative Order. Tecumseh is presently negotiating an Order on Consent with the New York State Department of Environmental Conservation (NYSDEC) to undertake corrective measures at certain solid waste management units (SWMUs) primarily on the western slag fill and coke manufacturing portion of the property.

Tecumseh has developed conceptual redevelopment plans for the entire 1,070-acre property. A portion of those plans incorporates a business park area along NYS Route 5. Phase I of the Business Park, herein referred to as the Phase I Business Park Area or the Site, encompassing approximately 102 acres, will be completed first.

In March 2001, BSC performed a Phase I Environmental Site Assessment (ESA) on the Phase I Business Park property (formerly deemed "Parcel B") as part of a due diligence review in conjunction with the then-proposed redevelopment and sale of the property (Ref. 2). A copy of the report was subsequently submitted to the NYSDEC. The Phase I ESA

determined that portions of the Phase I Business Park were likely to have been impacted by historical steel manufacturing operations.

In June of 2005 Tecumseh submitted an application to the NYSDEC requesting acceptance of the Phase I Business Park into the NY State Brownfield Cleanup Program (BCP). The application was accompanied by a Remedial Investigation (RI) Work Plan (Ref. 3) that identified site characterization requirements to be completed pursuant to the BCP and NYSDEC DER-10 guidance (Ref. 4). The Site was accepted into the BCP with the execution of the Brownfield Cleanup Agreement in November of 2005. RI field activities were initiated in January 2006 and substantially completed in February 2006. The RI Report was submitted to NYSDEC in October 2006, and was revised and resubmitted in June 2007 (Ref 5).

1.2 Remedial Investigation Findings

The Remedial Investigation (RI) was conducted to characterize the chemical composition of surface and subsurface soil/fill and groundwater on the Phase I Business Park Area; identify potential contaminant "source areas" or other areas of the Site potentially requiring remediation; define chemical constituent migration pathways; and qualitatively assess human health and ecological risks in sufficient detail to provide a scientific basis for performance of a remedial alternatives analysis. A detailed description of the RI findings is presented in the RI report (Ref. 5). A summary of the findings and conclusions is presented below. RI sampling locations are identified on Figure 2.

1.2.1 Soil/Fill

Several metals and base-neutral semi-volatile organic compounds (SVOCs) were detected above 6NYCRR Part 375 commercial Soil Cleanup Objectives (SCOs) at numerous locations across the Site. The RI indicated that the frequent detection of these substances above the SCOs is consistent with the observed presence of coal/coke fines and slag within the soil/fill matrix and macadam cover, and therefore represents a ubiquitous condition (further evaluation of certain metals-impacted areas was undertaken at NYSDEC's request as part of the IRM planning work as described in Section 2.0). In addition, field evidence of potential petroleum impact was observed at discrete locations on the property. Specifically, potential subsurface petroleum impacts were identified at 11 test pit locations (i.e., TP-1-6, TP-1-13, TP-5-3, TP-5-7, TP-6-6, TP-6-7, TP-7-2, TP-7-4, TP-9-3, TP-10-1, and TP-10-3).

Some of these impacts were described as petroleum-impacted soil/fill with staining and/or visible product, while others were described as either likely remnants of a former macadam roadway or localized (perched) groundwater impact likely attributable to proximate soil/fill conditions. Test pit TP-10-6 also contained an underground storage tank (UST).

1.2.2 Groundwater

Of the eight groundwater monitoring wells sampled in support of the RI, only one well contained concentrations above the NYSDEC Class GA Groundwater Quality Standards/Guidance Values (GWQS/GV) per 6NYCRR Part 703. Monitoring well MW-12A contained concentrations of barium, iron, magnesium, manganese, and sodium that exceeded their respective GWQS/GV. The RI concluded that the findings at MW-12 do not indicate an on-site source of contamination, and that Site groundwater is generally not impacted by chemicals of potential concern (COPCs).

1.2.3 Contaminant Fate and Transport

Based on the analysis of chemical fate and transport, the RI identified limited pathways through which Site COPCs could potentially migrate to other areas or media. These included fugitive dust emissions via physical disturbance of soil particles and, to a lesser extent, soil vapor-to-air volatilization (near areas of petroleum impact). However, given the large distance between the Site and occupied structures, NYSDEC/NYSDOH requirements for dust controls during excavation at remedial program construction sites and the type and concentration of soil/fill constituents, it is unlikely that site-related COPCs would reach off-site receptors at significant exposure point concentrations.

1.2.4 Qualitative Human Health and Fish & Wildlife Exposure Assessment

Based on the types of receptors and points of exposure indicated by the data, the RI determined that exposures to soil/fill constituents can be readily mitigated during and following redevelopment through proper soil/fill management and placement of asphalt, building and landscape cover. For both the current and future use scenarios, groundwater is not considered to pose a relevant exposure pathway due to the absence of significant groundwater impacts, the availability of a local municipal potable water source, the depth to groundwater (i.e., greater than 4.5 feet; the standard depth of utilities and foundation

footers), and the existence of a deed restriction that does not allow the use of Site groundwater.

The Fish and Wildlife Resource Impact Analysis Decision Key included in the RI concluded that no fish and wildlife resources impact analysis was warranted for the Site.

1.3 Purpose and Scope

NYSDEC's draft (May 2004) Brownfield Cleanup Program Guide (Ref. 6) stipulates that source control should be the goal of all BCP remedies. The Brownfield Cleanup Program Guide specifically states that the most preferable approach to source control is a removal and/or treatment approach, whereby "all free product, concentrated solid or semi-solid hazardous substances, dense non-aqueous phase liquid, light non-aqueous phase liquid and/or grossly contaminated media shall be removed and/or treated to the greatest extent feasible" where, "grossly contaminated media" is defined as "soil, sediment, surface water or groundwater which contains free product or mobile contamination that is identifiable either visually, through strong odor, by elevated contaminant vapor levels or is otherwise readily detectable without laboratory analysis;" and "feasible" is defined as "suitable to site conditions, capable of being successfully carried out with available technology, implementable and cost effective" per 6NYCRR Part 375-1.2(w) and (u), respectively.

As described above, the RI identified eleven test pit locations containing visually identifiable petroleum impact, potential macadam, or perched groundwater exhibiting field evidence of localized impact (with the latter likely a result of co-located or proximate soil/fill contamination). Soil/fill exhibiting significant field evidence of petroleum impact needs to be addressed irrespective of the final remedy for the Site. Accordingly, Tecumseh and the NYSDEC have agreed that an Interim Remedial Measure (IRM) addressing the petroleum-impacted area will be implemented to expedite the overall site cleanup and redevelopment schedule.

This document presents the planned scope of work and implementation procedures for completion of Interim Remedial Measures at the Phase I Business Park Area (Site), as well as the findings of an IRM investigation recently undertaken to better define the nature, volume and extent of the source areas and to further evaluate certain RI test pits exhibiting elevated metals concentrations. The IRM will be completed on a design-build basis by TurnKey Environmental Restoration, LLC (TurnKey) on behalf of Tecumseh. The work will be completed in accordance with NYSDEC DER-10 guidelines (Ref. 4). In general, IRM

activities will include: removal and off-site disposal of underground storage tanks (USTs); excavation and off-site disposal of characteristically hazardous or tar-based petroleum-impacted soil/fill; and excavation and onsite treatment of remaining petroleum-impacted soil/fill. A summary of the IRM investigation approach and findings is presented as Section 2.0. A description of the areas slated for IRM activities and details of the planned IRM work are included in Sections 3.0 and 4.0.

2.0 SUPPLEMENTAL INVESTIGATION

2.1 Investigation Approach

2.1.1 Potential Petroleum-Impacted Soil/Fill

Potential petroleum-impacted soil/fill areas were identified during the RI at test pits TP-1-6, TP-1-13, TP-5-3, TP-5-7, TP-6-6, TP-6-7, TP-7-2, TP-7-4, TP-9-3, TP-10-1, and TP-10-3. At four of these locations (TP-7-2, TP-9-3, TP-10-1, and TP-10-6), the extent of the impact was sufficiently delineated during the RI field activities to allow estimation of the extent and volume of the impacted area. At the remaining seven locations, the extent of petroleum impact was not determined during the RI. Accordingly, TurnKey recommended further investigation to delineate the extent of the impact at the remaining seven locations and to characterize for disposal all of the potential petroleum-impacted soil/fill at all eleven locations.

A supplemental sampling program was proposed by TurnKey to the NYSDEC on March 27, 2008 (ref. 8). The field activities were performed during the period of April 2 through 7, 2008. The Work Plan involved re-establishing each of these original test pit locations (via GPS coordinates recorded during the RI), collecting a representative sample for waste profiling, and, for those areas not sufficiently delineated, excavating a series of supplemental test pits in each of four compass directions from the original test pit location. Soil/fill removed from the supplemental test pits was logged for visual/olfactory/ PID evidence of petroleum/organic impacts until the approximate area and depth of impact was delineated. Waste characterization samples were analyzed for leachable (RCRA-regulated) metals, volatile organic compounds (VOCs), and SVOCs via USEPA Toxicity Characteristic Leaching Protocol (TCLP) analysis, as well as total PCBs and flashpoint.

2.1.2 Potential Metal-Impacted Soil/Fill

At NYSDEC's request, the supplemental investigation included soil sampling in the vicinity of certain RI test pits exhibiting elevated concentrations of one or more metal constituents to determine whether the RI data was indicative of a metal "hot spot" area (potentially requiring remediation) or an isolated/anomalous sample result. Specifically, supplemental mercury sampling was undertaken near RI Test Pits TP-1-1 through TP-1-5, with supplemental lead and cadmium sampling undertaken at TP-5-3. In addition, it was

verbally agreed to collect a shallow (0-2 foot) composite sample from TP-7-1, TP-7-2, TP-7-3, and TP-8-4 and re-analyze the sample for arsenic.

2.2 Investigation Findings

A summary of the investigation findings is presented below. Supplemental test pit logs are presented in Appendix A. Supplemental analytical data are presented in Appendices B and C.

2.2.1 Potential Petroleum-Impacted Soil/Fill

The estimated extent and volume of the petroleum impacts and waste characterization results are presented below:

- **Test Pit TP-1-6** consisted of sandy/clay soils with petroleum impacts at various depths from 2 feet to 4 feet below ground surface. Perched groundwater also occurred at various depths from 2ft to 4ft below ground surface. The estimated extent of impact was approximately 40 feet wide x 100 feet long. The volume of impacted soil was estimated at 670 cubic yards Waste profile analysis indicates the material is characteristically non-hazardous.

- **Test Pit TP-1-13** consisted of petroleum impacted fill material. The fill material was primarily concrete, slag and steel debris. Perched groundwater occurred at 4ft below ground surface. The extent of impact was approximately 45 feet long x 25 feet wide. The test pit was completed to a depth of approximately 7.5 ft, with dry non-impacted fill/debris from 0-3.5 ft below ground surface overlying petroleum impacted fill from 3.5- 7.5 ft below ground surface. The volume of non-impacted fill was estimated at 150 cubic yards. The volume of impacted fill was estimated at 175 cubic yards. Waste profile analysis indicates the material is characteristically non-hazardous.

- **Test Pit TP-5-3** contains thin lenses of coal tar approximately 0.5-1.0 ft thick, intermixed with soil/fill material. The extent of impact was approximately 25 ft wide x 80 ft long. The volume of impacted fill was estimated at 100 cubic yards. Waste profile analysis indicates that the material is characteristically non-hazardous.

- **Test Pit TP-5-7** consists of thin lenses of macadam/aggregate tar pitch approximately 1.5 ft below ground surface. The lenses are approximately 1-2 inches thick. The macadam appears to be part of a former roadway and is therefore not considered a source area impact.

- **Test Pit TP-6-6** encountered substantial amounts of debris material (brick, wire, steel) intermingled with petroleum-impacted soil/slag fill. Perched groundwater occurred at 4ft below ground surface. Preliminary waste profile analysis indicated that the impacted soil/slag fill material failed TCLP lead criteria. Accordingly, TurnKey remobilized to the Site on May 9th and performed supplemental investigation of the TP-6-6 area to further define the extent of petroleum impacts and better delineate the areas potentially subject to handling as characteristic hazardous waste. The TP-6-6 area was divided into eighteen (18) 20ft x 20ft sampling grids (see Figure 3). Samples were collected from the center of the grids exhibiting petroleum impacts (i.e., grids 1, 2, 5, 8, 11, 14 and 17) and were subjected to analysis for TCLP lead to determine if leachable lead is extensive across the area. The resample data indicated that petroleum-impacted material obtained from sampling grids 2 and 14 are above the TCLP lead criteria of 5 mg/l. Therefore source material in these subareas (est. 100 - 120 cubic yards) is considered hazardous and will be handled as such during the IRM. The remaining petroleum-impacted non-hazardous material from grids 1, 5, 8, 11 and 17 encompass areas of approximately 20' x 20' each with approximately 3 feet of non-impacted debris over an approximate 3.5' thick petroleum-impacted slag/fill layer. Accordingly, the estimated volume of non-hazardous petroleum-impacted soil/fill is 260 cubic yards. A copy of the analytical data package is presented in Appendix B.

- **Test Pit TP-6-7** consisted of debris/fill (concrete, brick, and metal) from 0-4 fbgs. Petroleum-impacted soil was observed from approximately 4-8 fbgs. The extent of impact is approximately 25 feet wide by 25 feet long in the southwest corner of the test pit, for an estimated volume of approximately 93 cubic yards. Waste profile analytical data indicate that the material is non-hazardous.

- **Test Pit TP-7-4** consisted of fill soils from 0-4' overlying silty clay soil. Petroleum impacted soil occurred at 4ft below ground surface. Approximate thickness of impacted soil is 3.0-3.5 ft. Perched groundwater occurring at approximately 4 ft below ground surface. The extent of impact was approximately 70 ft wide x 100 ft long x 3.5 ft deep. The volume of impacted soil is approximately 910 cubic yards. Waste profile analysis indicates the material is characteristically non-hazardous.

During the supplemental investigation of the potential elevated mercury area associated with Test Pit TP-1- 1 through 5 (described in Section 2.2.2), petroleum-impacted material was detected in two areas of the sampling grid (see Figure 4). Therefore, test pits

were excavated in these areas to further delineate the impacts. The estimated extent and volume of impacts are as follows:

- **Test Pit Grid Comp 7** consisted of dry, non-impacted soil/fill from 0-4 fbgs. Petroleum-impacted clay/sand soil and perched groundwater were encountered in a portion of the grid at 4 fbgs. The extent of impact is approximately 20 feet wide by 50 feet long by 4 feet deep, for an estimated volume of approximately 150 cubic yards.

- **Test Pit Grid Comp 8** contained an approximate 20 foot wide by 20 foot long area of petroleum impacted soil from approximately 2.0-5.0 fbgs, for an estimated volume of approximately 45 cubic yards.

In addition to the above-described areas, petroleum-impacted soil/fill from the remaining four test pit areas quantified during the RI is described below.

- **Test Pit TP-7-2**: Petroleum-impacted soil/fill and visible product (i.e., thick oily/tar) were observed within concrete secondary containment around two historic aboveground tar tanks. The extent of impact was estimated to be 20 feet by 4 feet by 5.5 feet deep, for a corresponding volume of approximately 16 cubic yards. A 6-inch steel discharge pipe was also observed emanating from the Former Power House No. 1 Building west of the test pit. This pipe will be investigated further during remedial activities at this location. Groundwater was encountered at approximately 4.5 fbgs. Analytical data indicate that the material is non-hazardous.

- **Test Pit TP-9-3**: Petroleum-impacted soil/fill, visible sheening, and appurtenant piping was observed at this location and determined to extend approximately 55 feet by 60 feet by 6-8 feet deep, for a corresponding volume of approximately 980 cubic yards. No USTs were observed during test pitting activities. This location historically contained aboveground fuel oil tanks. Groundwater was encountered at approximately 4.5 fbgs. Analytical data indicate that the material is non-hazardous.

- **Test Pit TP-10-1**: Petroleum-impacted soil/fill and traces of visible product (i.e., thick oily/tar) were observed within a shallow bowl shaped area at this location and determined to extend approximately 16 feet by 5 feet by 4.5 feet deep, for a corresponding volume of approximately 13 cubic yards. This location historically

contained oil tanks. Groundwater was not encountered at the bottom depth of 9 fbgs. Analytical data indicate that the material is non-hazardous.

- **Test Pit TP-10-6**: One UST and suspected weathered gasoline-impacted soil/fill was identified along the west side of the Former Fire Station building. Petroleum impacts encompass an estimated area approximately 30 feet by 40 feet by 10 feet deep, for a corresponding volume of approximately 444 cubic yards. Historical information indicated additional UST(s) may be located north of the building. Due to the unknown location of suspected underground utilities (i.e., high-pressure natural gas and sewer), further investigation along north side of the building was not performed. Soil/fill along the north side of the building will be excavated, if necessary, during planned UST and impacted soil/fill removal activities at this location. Groundwater was encountered at approximately 5.5 fbgs. Analytical data indicate that the material is non-hazardous.

Based on these estimates, the estimated total projected volume of petroleum-impacted soil/fill requiring remedial measures is approximately 4,000 cubic yards. Of this amount, approximately 100-120 cubic yards (TP-6-6, grids 2 and 14) are characteristically hazardous for lead. In addition, approximately 100 cubic yards (TP-5-3) are considered coal tar material.

2.2.2 Potential Metal-Impacted Soil/Fill

2.2.2.1 TP1-1 through 5

During the RI, an elevated concentration of mercury was detected in the 0-2-foot soil/fill composite sample from Test Pit TP-1- 1 through 5. Because this was a composite sample over a large area, it was not possible to know whether the impact is widespread or the result of bias from elevated mercury at one or more of the individual test pit locations. Therefore, a grid-based supplemental sampling approach was undertaken to better determine the source of the elevated mercury (See Figure 4). The sampling grid encompassed a 200 ft x 600 ft area, which was divided into twelve (12) 100 ft x 100 ft grids. Each 100 ft x 100 ft area was subdivided into four 50 ft x 50 ft areas. A soil/fill grab sample was collected from the center of each 50 ft x 50 ft area at the 0-1ft depth and 1-2 ft depth. After collecting the grab samples, composite samples were prepared from the grabs, with one composite representing the 0-1 ft depth and the second representing 1-2' depth in the

100 ft x 100 ft grid. A total of 24 composite samples were collected. The composite samples were analyzed for Total Mercury in accordance with USEPA Method 7471.

Analytical results from the 24 composite samples indicated that mercury concentrations were below Industrial Soil Cleanup Objective (SCO) of 5.7 mg/Kg per 6NYCRR Part 375[1] as summarized on Figure 4. The analytical data package is presented in Appendix C.

2.2.2.2 TP-5-3

Elevated concentrations of lead and cadmium were detected in Test Pit TP-5-3 during the RI. Therefore, upon completion of delineating petroleum impacts in TP-5-3 (see above), samples of the soil/fill from the perimeter test pit sidewalls were collected for lead and cadmium. Analytical results indicate a concentration of cadmium from the south wall of the test pit slightly above the industrial SCO, with remaining samples yielding results below the industrial SCO for both cadmium and lead (i.e., 60 and 3,900 mg/Kg, respectively). A copy of the laboratory analytical data is presented in Appendix C and summarized on Figure 4.

2.2.2.3 TP-7-1-1(1-3)/8-4

During the RI, an elevated concentration of arsenic was detected in the 0-2-foot soil/fill composite sample from Test Pit TP-7-1(1-3)/8-4. It was therefore verbally agreed with the NYSDEC to collect an additional composite sample adjacent to the former test pits. The composite sample was analyzed for Total Arsenic in accordance with USEPA Method 6010. Analytical results indicate that arsenic concentrations were below the Industrial SCO of 16 mg/Kg. A copy of the laboratory analytical data is presented in Appendix C and summarized on Figure 4.

[1] Use of industrial SCOs as a screening tool for metals hot spots is premised on incorporation of institutional and engineering controls, including cover, prior to site occupancy.

2.2.2.4 Summary

In summary, the supplemental metals data indicated that all concentrations were below screening levels with the exception of cadmium along the south sidewall at TP-5-3, which was only slightly above the SCO. However, soil/fill at TP-5-3 will be excavated for purposes of addressing petroleum-impacted soil/fill; therefore, incidental removal of the metal-impacted soil/fill will occur in this area irrespective of concentration. Accordingly, the above-described potential metal-impacted soil/fill areas do not constitute hot spots warranting interim remedial measures.

3.0 IRM APPROACH

Based on the findings of the investigation work described in Section 2.0, an IRM will be performed to address petroleum-impacted soil/fill detected at TP-1-6, TP-1-13, TP-5-3, TP-6-6, TP-6-7, TP-7-2, TP-7-4, TP-9-3, TP-10-1, TP-10-3, and Test Grids #7 and #8. The IRM will involve:

- Excavation and off-site disposal of characteristically hazardous petroleum-impacted soil/fill.
- Excavation and off-site energy recovery of coal tar impacted material.
- Removal of underground storage tank(s) at TP-10-6.
- Onsite bioremediation of non-hazardous petroleum-impacted soil/fill.
- Backfill of excavations with biotreated soil/fill and/or slag from a permitted beneficial use source.
- Dewatering and perched water management, as required.

Petroleum-impacted soil/fill is defined as soil/fill with obvious visible impact, petroleum odors, and/or elevated PID readings (i.e., sustained readings >20 ppm). In general, excavation will continue laterally and vertically until visually-impacted soil/fill is removed and NYSDEC agrees that no further excavation is required. The location and approximate dimensions (i.e., length, width, and depth) of the excavation and associated excavation quantities will be documented. Post-excavation verification samples will not be collected with the exception of UST pit(s) in TP-10-6 (see Section 3.2.1).

3.1 Temporary Facilities and Controls

Temporary controls will be employed for protection against off-site migration of soil/fill and safety hazards during construction. These will include safety fencing, dust suppression, and erosion control as further described below.

3.1.1 Safety Fencing

Temporary safety construction fencing (i.e., 3-foot high orange plastic) will be placed around the outer perimeter of the excavation area at the end of each day of activity and will not be removed until the excavation and general backfill work is complete.

3.1.2 Dust Suppression

Dust suppression during Site excavation work will be a component of the soil/fill removal and soil backfill activities. During soil/fill excavation and loading activities, the contractor will be prepared to apply a water spray across the excavation face and surrounding areas if necessary to mitigate airborne dust formation and migration. Other dust suppression techniques that may be used to supplement the water spray include:

- Applying water on haul roads.
- Hauling materials in properly tarped containers or vehicles.
- Restricting vehicle speeds on-site.
- Covering excavated areas and materials after excavation activity ceases.
- Reducing the excavation size and/or number of excavations.

Dust suppression techniques shall be employed if the community air monitoring results indicate particulate levels are below action levels. All reasonable attempts will be made to keep visible and/or fugitive dust to a minimum.

3.1.3 Erosion and Sedimentation Control

A Master Erosion Control Plan has been prepared and incorporated as Appendix D to this Work Plan. This Master Erosion Control Plan includes provisions for silt fencing, hay baling, mulching, and other measures as warranted. During periods of excavation and backfilling, excavations will be dewatered as required to prevent erosion and surface ponding.

3.1.4 Groundwater Management

Groundwater elevation measurements recorded during the RI, as well as observations made during test pit excavation, indicate that groundwater is present at depths between 3.5 and 9 fbgs. Gasoline-powered trash pumps and hoses will be used to transfer groundwater and precipitation, if encountered, to a holding tank for treatment and discharge to grade away from the excavation. In general, water removed from the excavations will be stored/settled in a portable steel tank (Baker Open/Closed Top Tank or equivalent) and pumped through a 10-25 micron bag or cartridge filter prior to treatment using granular activated carbon (GAC). GAC vessels will be plumbed in series to allow for organic breakthrough monitoring between the lead and lag vessels. GAC vessel sizing will be

dependent on the manufacturer. Two 1,000 lb vessels are anticipated based on average projected flow rates and maximum concentrations of constituents of concern. Upon completion of excavation dewatering work, the tank will be decontaminated via pressure washing and spent filter bags will be containerized and disposed off-site. Spent GAC will be characterized and transported off-site for regeneration or disposal at a permitted TSDF in accordance with applicable federal and state regulations.

3.2 Excavation and Backfill

Prior to excavation work, site infrastructure drawings will be reviewed and the underground utilities locating service will be contacted to locate and mark any underground utilities in the vicinity of the source areas. If active utilities are present, care will be taken to maintain appropriate set-backs or stabilize the utilities as necessary to allow source area removal to proceed. Overlying clean soils (i.e., soil/fill not exhibiting visual, olfactory, or PID signs of impact), concrete, brick, and stone will be considered acceptable for replacement/reuse in the excavation as backfill and, therefore, will be staged separately from materials designated for bioremediation or offsite disposal. C&D debris that may be problematic due to interference with mechanical tilling equipment or having scrap value will also be segregated for disposal or scrap depending on its nature.

Materials designated for bioremediation will be loaded to trucks and hauled to the designated onsite bioremediation area(s) as discussed below. Tar-impacted slag/fill from TP-5-3 and characteristically-hazardous slag/fill from TP-6-6, grids 2 and 14 will be loaded to DOT-permitted tandem trucks or dump trailers, tarped and disposed at an appropriate TSDF as discussed in Section 3.4.

Care will be taken to minimize dust formation during excavation and loading (see Section 3.1.2). The excavation equipment will have sufficient boom length to allow for placement of soils into the truck bed. Side dumping (i.e., with a front-end loader) will only be permitted if fugitive dust can be consistently controlled within the Community Air Monitoring Plan action limits. The excavated areas will be surveyed (i.e., approximate boundaries as determined by GPS and average depth as manually measured) and the information will be transferred to a site map.

3.2.1 Removal of UST in TP-10-6

Test Pit TP-10-6 contains suspect weathered gasoline likely originating from the abandoned UST identified along the west side of the Former Fire Station building during the RI. Historical information indicated additional USTs may be located north of the building. Additional test excavations will be performed during the interim remedial measures to check for the presence of other USTs that will be addressed, if encountered.

The USTs will either be abandoned in-place or removed in accordance with NYSDEC DER-10 guidance. Removal of the UST and associated impacted soil/fill, if any, will be the preferred method over in-place abandonment; however, in-place abandonment will be considered if physical constraints of the Site (e.g., the UST is beneath a building or near foundations) prevent safe removal of the UST. Handling of impacted soil surrounding the UST(s), if any, is described in Section 3.3. Removed tanks will be cut open, cleaned and scrapped.

Following the removal of the USTs and any impacted soil, a total of five confirmatory grab soil/fill samples will be collected; one from each of the four sidewalls and one from the floor of the excavation. All samples will be analyzed by a National Environmental Laboratory Approval Program (NELAP)-approved laboratory for STARS List VOCs and SVOCs by USEPA Methods 8021 and 8270. Five-business day turnaround will be required for the analytical results to minimize the time that the excavation remains open. Confirmatory samples will be compared to restricted (Industrial) health-based Soil Cleanup Objectives.

3.2.2 Excavation Backfill

With NYSDEC concurrence that the excavation is complete, it will either be surrounded with construction fencing and left open pending backfill with bioremediated slag/fill, or backfilled with clean imported fill material that meets the requirements of Table 1 or steel slag under BUD #555-9-15. Backfill material will be placed into the excavation and compacted/tracked with the excavator/backhoe bucket in 2-foot lifts to match the existing grade of the Site and minimize settling.

3.3 Bioremediation

Tecumseh plans to construct, operate and maintain a bioremediation system on approximately 2 acres of the Phase I Business Park Area to treat approximately 3,800 cubic

yards of non-hazardous, non-tar petroleum-impacted soils generated from IRM excavation activities.

Bioremediation involves the stimulation of naturally-occurring microorganisms to enhance degradation of petroleum hydrocarbons in impacted soil. These indigenous microorganisms are typically present in sufficient populations petroleum-impacted soil but their action is normally limited by insufficient quantities of oxygen and available nutrients, such as nitrogen, phosphorus, and/or potassium, which are needed to support biological degradation of hydrocarbons. When the soil is aerated by mechanical mixing and adequate nutrients are added, and moisture levels maintained in hydrocarbon impacted soil, these mainly aerobic and facultative microorganisms increase in number, excrete enzymes that breakdown the long-chain hydrocarbons, and otherwise metabolize the hydrocarbons. Sometimes highly acidic or alkaline soils require pH adjustment by addition of an acid or base to promote biodegradation. When necessary, nutrients (i.e. fertilizer) addition will be utilized to enhance biodegradation.

3.3.1 Design Parameters

The planned bioremediation system will be located on existing concrete and asphalt pads located on the north end of the Phase I Business Park Area (see Figure 5). The system will dedicate up to 2 acres for the "land farming" of impacted soil/fill, with pads furthest from Gateway Metroport buildings in the northeast portion of the Phase I Business Park Area used prior to pads further west. Land farming involves the use of conventional farm and/or heavy construction earth-moving equipment to spread, fertilize, aerate, and control moisture in soil to promote and accelerate natural aerobic and facultative biological degradation of volatile and semi-volatile petroleum compounds by indigenous soil microbes. This provides a cost-effective alternative to off-site transportation of these petroleum-impacted soils and disposal in commercial solid waste landfills.

Prior to placement, the designated bioremediation areas will be lined with approximately 6-inches of mulch or similar material to assist in absorption of excess water and provide a sot base for tilling equipment. Material designated for biotreatment will be transported to the treatment area in dump trucks or dump trailers. Primary segregation of large debris will occur at the excavation location. As excavated materials are placed, graded and tilled secondary segregation will occur and debris not suitable for bioremediation or backfill will be disposed or scrapped. A visual inspection of loads handled at the treatment

area will be performed and the approximate quantity of soil will be determined by volume. Soil will be placed and graded to a 12-24" lift thickness. Petroleum-impacted soil will be confined and treated in the designated area. Soil that is designated as treated will remain within the treatment area and stored until receipt of analytical results signifying that soil is treated to the requirements described herein.

3.3.2 Monitoring and Sampling

Periodic monitoring of the biotreatment areas will be carried out so as to track system performance, with tilling, nutrient and moisture addition occurring as needed to promote expeditious treatment. 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, a confirmatory sample will be collected at a frequency of no less than one per thousand cubic yards of treated soil/fill. The sample will be analyzed for NYSDEC STARS List VOCs and SVOCs and compared to restricted (Industrial) health-based Soil Cleanup Objectives consistent with other onsite soil/fill materials. A Field Operating Procedure for post-treatment sample collection is included as Appendix G. Once the samples meet these concentrations they will be removed and preferably transferred back to the original excavated area or otherwise placed in the Phase I Business Park Area. No bioremediated soil/fill will be transported offsite unless deemed necessary due to poor treatment response or as necessary to expedite the overall cleanup and redevelopment schedule. In such instance the material will be disposed, with NYSDEC approval, at a permitted solid waste disposal facility.

3.3.3 Odor Control Measures

Objectionable odors, if present, will be controlled so as to not migrate to offsite receptors by: limiting the work area, modifying the area based on wind conditions, applying a foam-based odor suppressant, or providing an alternate means approved by the NYSDEC.

3.4 Off-Site Disposal

All source area soil/fill removed from the Site will be loaded into dump trailers or trucks for transport to an approved offsite disposal facility. Debris and scrap materials will be disposed at a permitted C&D facility, solid waste disposal facility or scrap yard. Non-hazardous slag/fill materials that do not undergo complete bioremediation, if any, will be

disposed off-site at a permitted solid waste disposal facility as alternative daily cover. Coal tar-impacted soil/fill will likely be transported to the Colmac Clarion, Inc. Piney Creek Project power plant in Pennsylvania for burning under the *General Permit for Processing/Beneficial Use of Residual Waste* issued by the Pennsylvania Department of Environmental Protection (PADEP). Lead-impacted materials from TP-6-6, grids 2 and 14 will be likely be disposed at a RCRA-permitted Subtitle C landfill following stabilization to reduce leachable lead levels to below TCLP limits.

Disposal approvals will be obtained from the off-site facilities prior to transport. Fly-ash or other suitable admix material may be added to the soil/fill as necessary to absorb free liquid in saturated soils and meet moisture content limits established by the disposal facility. Each load will be appropriately manifested. All trailers leaving the Site will be fully tarped to mitigate spills or wind erosion of soils.

4.0 SITE-WIDE HEALTH AND SAFETY PLAN (HASP)

A Site-Wide Health and Safety Plan (HASP) has been prepared for the Tecumseh Redevelopment Site in accordance with 40 CFR 300.150 of the NCP and 29 CFR 1910.120. The HASP will be enforced in accordance with the requirements of 29 CFR 1910.120 and will cover all on-site investigation and remedial activities. TurnKey's HASP is provided for informational purposes in Appendix E. Each contractor working at the Site will be required to develop a HASP as or more stringent than TurnKey's HASP. Health and safety activities will be monitored throughout the IRM by the on-site Health and Safety Officer. This person will report directly to the Project Manager and the Corporate Health and Safety Coordinator. The HASP will be subject to revision, as necessary, based on new information that is discovered during the IRM.

The HASP also includes a contingency plan that addresses potential site-specific emergencies, and a Community Air Monitoring Plan (CAMP) that describes required particulate and vapor monitoring to protect the neighboring community during intrusive Site activities. The CAMP is consistent 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 NYSDOH's Generic Community Air Monitoring Plan (dated June 20, 2000) and NYSDEC Technical Assistance and Guidance Memorandum (TAGM) 4031: Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites.

5.0 REPORTING AND SCHEDULE

A qualified engineer or scientist will be on-site full-time to document the IRM activities. Such documentation will include, at minimum, daily reports of IRM activities, community air monitoring results, photographs and sketches.

5.1 Construction Monitoring

Standard daily reporting procedures will include preparation of a daily report and, when appropriate, problem identification and corrective measures reports. Appendix F contains sample project documentation forms. Information that may be included on the daily report form includes:

- Processes and locations of construction under way.
- Equipment and personnel working in the area, including subcontractors.
- Number and type of truckloads of soil/fill removed.
- A description of biotreatment undertaken, including tilling volume and duration and nutrient and moisture addition.
- Approximate verification sampling locations (sketches) and sample designations.

The completed reports will be available on-site and will be submitted to the NYSDEC as part of the Final Engineering Report. The NYSDEC will be promptly notified of problems requiring modifications to this Work Plan prior to proceeding or completion of the construction item.

Photo documentation of the IRM activities will be prepared by the Engineer or Scientist throughout the duration of the project as necessary to convey typical work activities and whenever changed conditions or special circumstances arise.

5.2 Final Engineering Report

Details of the IRM construction will be included in the Final Engineering Report submitted to the NYSDEC. The report will include:

- A Site or area planimetric map showing all remediated source areas (e.g., lateral limits of excavations), and significant site features.

- Tabular summaries of unit quantities including: volume of soil/fill excavated; disposition of excavated soil/fill; and volume/type/source of backfill.
- Number of USTs removed and scrap receipts
- Documentation on the disposition of impacted media removed from the Site.
- Post-treatment sample locations and results
- Copies of daily inspection reports and, if applicable, problem identification and corrective measure reports.
- Photo documentation of IRM activities.
- Text describing the IRM activities performed; a description of any deviations from the Work Plan and associated corrective measures taken; and other pertinent information necessary to document that the Site activities were carried out in accordance with this Work Plan.

In addition, the report will include those items required pursuant to NYSDEC's internal FER checklist.

5.3 Project Schedule

The tentative project schedule for the major tasks to be performed in support of the IRM is presented below:

- *August 2008* – Conduct IRM Excavation activities.
- *August – November 2008* – Conduct onsite bioremediation and backfilling.
- *December 2008* – Submit Final Engineering Report.

6.0 REFERENCES

1. URS Consultants, Inc. 2004. *RCRA Facility Investigation (RFI) Report for the Former Bethlehem Steel Corporation Facility, Lackawanna, New York, Parts I through VII.* October.

2. URS Consultants, Inc. 2001. *Phase I Environmental Site Assessment for Parcel B.* March.

3. TurnKey Environmental Restoration, LLC. 2005. *Remedial Investigation Work Plan for Phase I Business Park Area, Lackawanna, New York.* May (revised August).

4. New York State Department of Environmental Conservation. 2006. *DER-10; Technical Guidance for Site Investigation and Remediation.* December.

5. TurnKey Environmental Restoration, LLC. 2007. *Remedial Investigation Report for Phase I Business Park, Lackawanna, New York.* October 2006 (revised June 2007).

6. New York State Department of Environmental Conservation. 2004. *Draft Brownfield Cleanup Program Guide.* May.

7. TurnKey Environmental Restoration, LLC. 2005. *Remedial Investigation Work Plan for Phase I Business Park Area, Lackawanna, New York.* May (revised August).

8. TurnKey Environmental Restoration, LLC. 2008. Correspondence to Mr. Maurice Moore of the NYSDEC re: *Phase I Business Park Area, Supplemental Remedial Investigation.* March 27, 2008

TABLES

TABLE 1

CRITERIA FOR USE OF OFF-SITE SOIL

Phase I Business Park Area
Lackawanna, New York

Parameter	Commercial SCOs	Protection of Groundwater
Volatile Organic Compounds (mg/kg)		
1,1,1-Trichloroethane	500	0.68
1,1-Dichloroethane	240	0.27
1,1-Dichloroethene	500	0.33
1,2-Dichlorobenzene	500	1.1
1,2-Dichloroethane	500	0.02
1,2-Dichloroethene(cis)	500	0.25
1,2-Dichloroethene(trans)	500	0.19
1,3-Dichlorobenzene	280	2.4
1,4-Dichlorobenzene	130	1.8
1,4-Dioxane	130	0.1
Acetone	500	0.05
Benzene	44	0.06
Butylbenzene	500	12
Carbon tetrachloride	22	0.76
Chlorobenzene	500	1.1
Chloroform	350	0.37
Ethylbenzene	390	1
Hexachlorobenzene	6	3.2
Methyl ethyl ketone	500	0.12
Methyl tert-butyl ether	500	0.93
Methylene chloride	500	0.05
Propylbenzene-n	500	3.9
Sec-Butylbenzene	500	11
Tert-Butylbenzene	500	5.9
Tetrachloroethene	150	1.3
Toluene	500	0.7
Trichloroethene	200	0.47
Trimethylbenzene-1,2,4	190	3.6
Trimethylbenzene-1,3,5	190	8.4
Vinyl chloride	13	0.02
Xylene (mixed)	500	1.6

TABLE 1

CRITERIA FOR USE OF OFF-SITE SOIL

Phase I Business Park Area
Lackawanna, New York

Parameter	Commercial SCOs	Protection of Groundwater
Semi-Volatile Organic Compounds (mg/kg)		
Acenaphthene	500	98
Acenaphthylene	500	107
Anthracene	500	1,000
Benzo(a)anthracene	6	1
Benzo(a)pyrene	1	22
Benzo(b)fluoranthene	6	1.7
Benzo(g,h,i)perylene	500	1,000
Benzo(k)fluoranthene	56	1.7
Chrysene	56	1
Dibenz(a,h)anthracene	1	1,000
Fluoranthene	500	1,000
Fluorene	500	386
Indeno(1,2,3-cd)pyrene	6	8.2
m-Cresol(s)	500	0.33
Naphthalene	500	12
o-Cresol(s)	500	0.33
p-Cresol(s)	500	0.33
Pentachlorophenol	7	0.8
Phenanthrene	500	1,000
Phenol	500	0.33
Pyrene	500	1,000
Metals (mg/kg)		
Arsenic	16	16
Barium	400	820
Beryllium	590	47
Cadmium	9	7.5
Chromium, Hexavalent[1]	400	19
Chromium, Trivalent[1]	1,500	NS
Copper	270	1,720
Cyanide	27	40
Lead	1,000	450

TABLE 1

CRITERIA FOR USE OF OFF-SITE SOIL

Phase I Business Park Area
Lackawanna, New York

Parameter	Commercial SCOs	Protection of Groundwater
Metals (mg/kg)		
Manganese	10,000	2,000
Mercury (total)	3	0.73
Nickel	310	130
Selenium	1,500	4
Silver	1,500	8.3
Zinc	10,000	2,480
PCBs/Pesticides (mg/kg)		
2,4,5-TP Acid (Silvex)	500	3.8
4,4'-DDE	62	17
4,4'-DDT	47	136
4,4'-DDD	92	14
Aldrin	1	0.19
Alpha-BHC	3	0.02
Beta-BHC	3	0.09
Chlordane (alpha)	24	2.9
Delta-BHC	500	0.25
Dibenzofuran	350	210
Dieldrin	1	0.1
Endosulfan I	200	102
Endosulfan II	200	102
Endosulfan sulfate	200	1,000
Endrin	89	0.06
Heptachlor	15	0.38
Lindane	9	0.1
Polychlorinated biphenyls	1	3.2

Notes:

1. 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

FIGURE 1

TURNKEY ENVIRONMENTAL RESTORATION, LLC

726 EXCHANGE STREET
SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-635

PROJECT NO.: 0071-006-202

DATE: APRIL 2008

DRAFTED BY: BCH

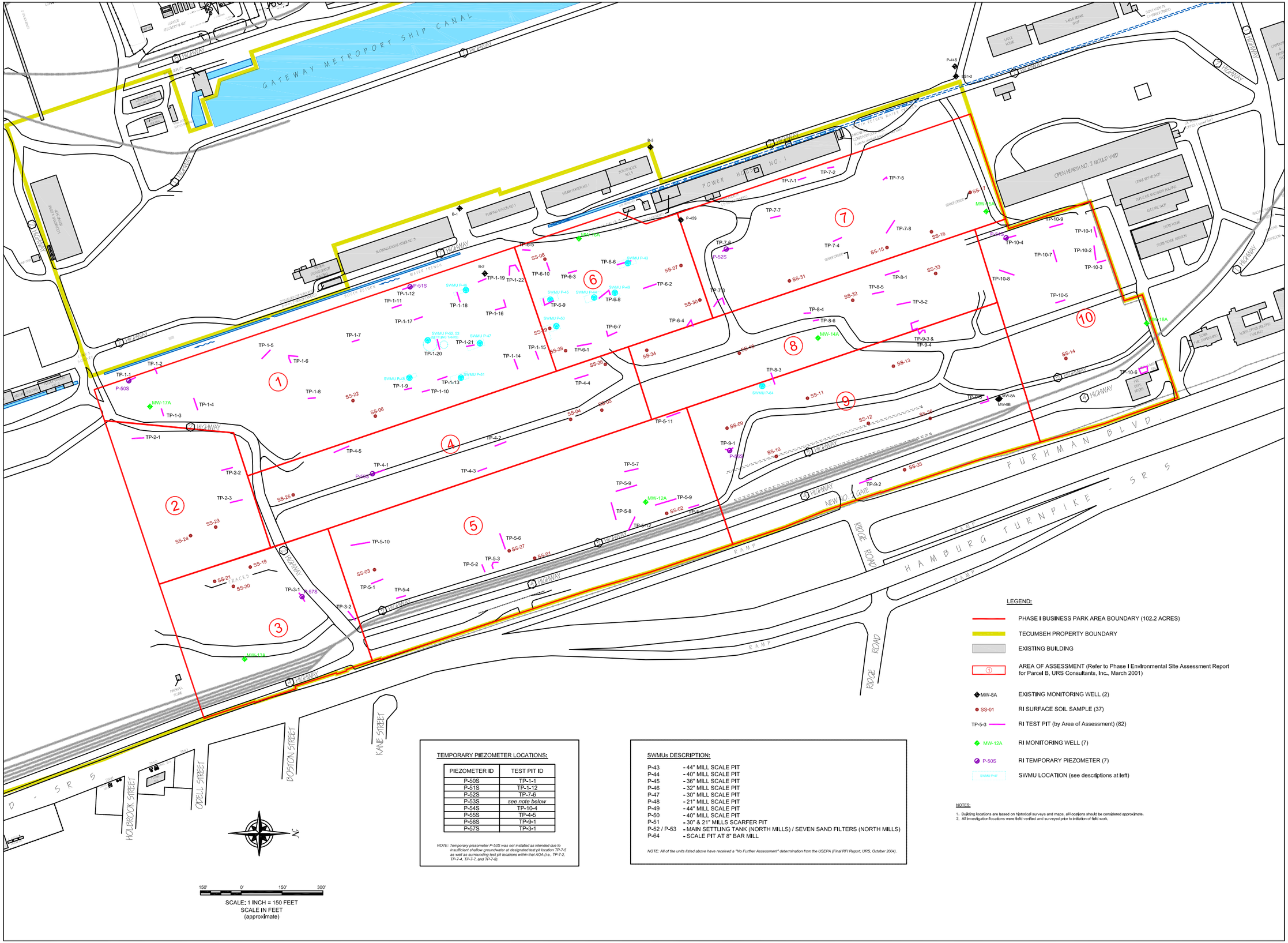
SITE LOCATION AND VICINITY MAP

PHASE I BUSINESS PARK AREA
LACKAWANNA, NEW YORK

PREPARED FOR
ARCELORMITTAL TECUMSEH REDEVELOPMENT, INC.

FILEPATH=I:\TurnKey\Clients\Tecumseh Redevelopment\Brownfield Cleanup Program (BCP)\Phase I Parcel\Soil-Fill Management Plan (Part II of SMP)\CAD\figure 1; site location and vicinity map.dwg

F:\TurnKey\Clients\Tecumseh Redevelopment\Brownfield Cleanup Program (BCP)\Phase I Parcel\IRM\Figures\Figure 2; Site Plan.dwg, 6/23/2008 2:57:56 PM, Adobe PDF



TEMPORARY PIEZOMETER LOCATIONS:

PIEZOMETER ID	TEST PIT ID
P-50S	TP-1-1
P-51S	TP-1-12
P-52S	TP-7-6
P-53S	*see note below*
P-54S	TP-10-4
P-55S	TP-4-5
P-56S	TP-9-1
P-57S	TP-3-1

NOTE: Temporary piezometer P-53S was not installed as intended due to insufficient shallow groundwater at designated test pit location TP-7-5 as well as surrounding test pit locations within that AOA (i.e., TP-7-2, TP-7-4, TP-7-7, and TP-7-8).

SWMUs DESCRIPTION:

P-43 - 44" MILL SCALE PIT
P-44 - 40" MILL SCALE PIT
P-45 - 36" MILL SCALE PIT
P-46 - 32" MILL SCALE PIT
P-47 - 30" MILL SCALE PIT
P-48 - 21" MILL SCALE PIT
P-49 - 44" MILL SCALE PIT
P-50 - 40" MILL SCALE PIT
P-51 - 30" & 21" MILLS SCARFER PIT
P-52 / P-53 - MAIN SETTLING TANK (NORTH MILLS) / SEVEN SAND FILTERS (NORTH MILLS)
P-64 - SCALE PIT AT 8" BAR MILL

NOTE: All of the units listed above have received a "No Further Assessment" determination from the USEPA (Final RFI Report, URS, October 2004).

LEGEND:

- PHASE I BUSINESS PARK AREA BOUNDARY (102.2 ACRES)
- TECUMSEH PROPERTY BOUNDARY
- EXISTING BUILDING
- ① AREA OF ASSESSMENT (Refer to Phase I Environmental Site Assessment Report for Parcel B, URS Consultants, Inc., March 2001)
- MW-8A EXISTING MONITORING WELL (2)
- SS-01 RI SURFACE SOIL SAMPLE (37)
- TP-5-3 RI TEST PIT (by Area of Assessment) (82)
- MW-12A RI MONITORING WELL (7)
- P-50S RI TEMPORARY PIEZOMETER (7)
- SWMU P-47 SWMU LOCATION (see descriptions at left)

NOTES:

1. Building locations are based on historical surveys and maps, all locations should be considered approximate.
2. All investigation locations were field verified and surveyed prior to initiation of field work.

TURNKEY ENVIRONMENTAL RESTORATION, LLC
726 EXCHANGE STREET
SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-0635

JOB NO.: 0071-006-202

REVISIONS

NO.	BY	DATE	REMARKS

DRAWN BY: BCH
DATE:
CHECKED BY: THF
APPROVED BY:

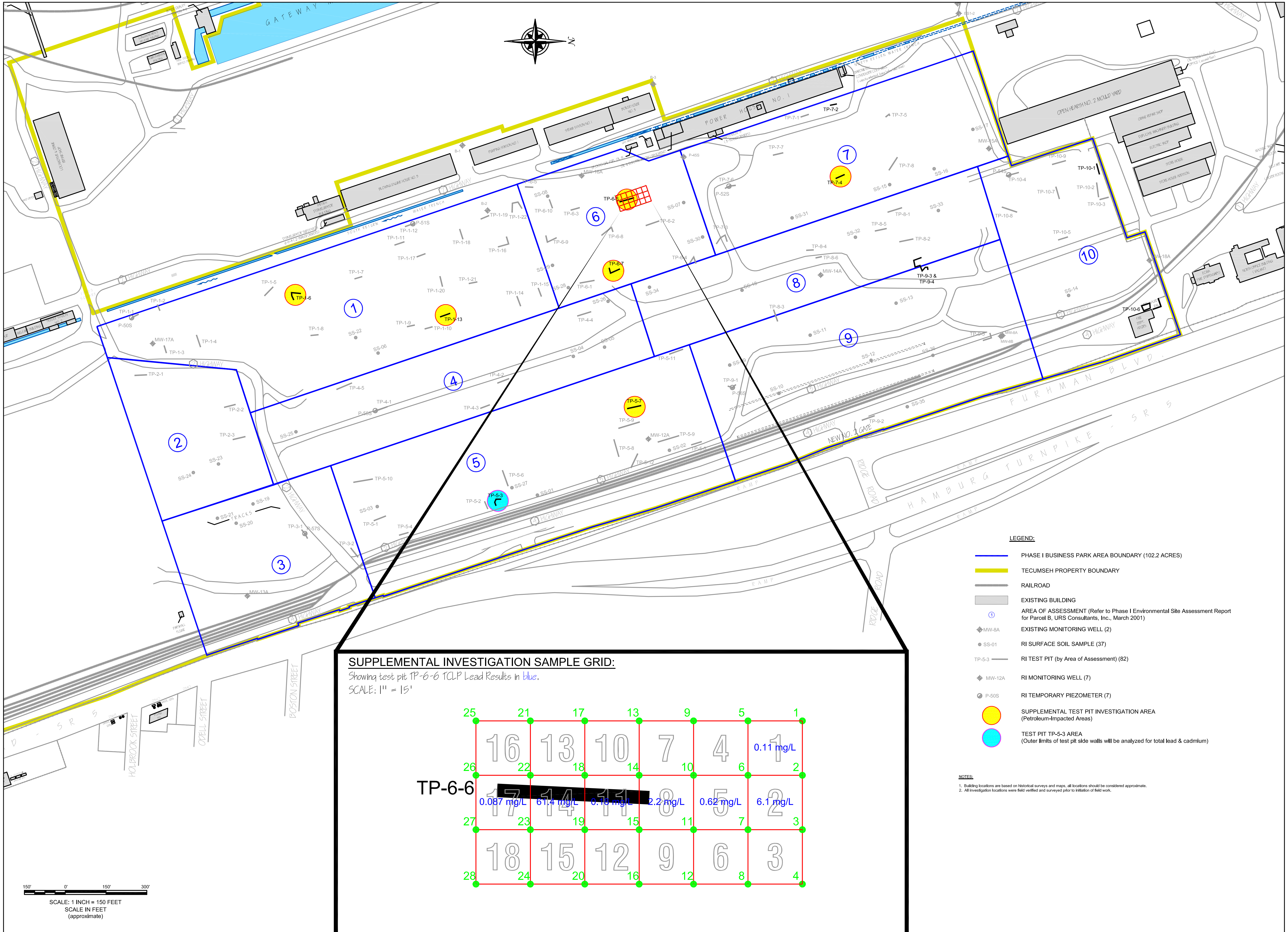
SEAL

SITE PLAN

PHASE I BUSINESS PARK AREA
LACKAWANNA, NEW YORK

PREPARED FOR:
ARCELOR MITTAL TECUMSEH REDEVELOPMENT, INC.

FIGURE 2



SUPPLEMENTAL INVESTIGATION SAMPLE GRID:
Showing test pit TP-6-6 TCLP Lead Results in blue.
SCALE: 1" = 15'
TP-6-6
0.11 mg/L
0.087 mg/L
61.4 mg/L
0.18 mg/L
2.2 mg/L
0.62 mg/L
6.1 mg/L
GATEWAY
POWER HOUSE NO. 1
OPEN HEARTH NO. 2 MOLD YARD
FURHMAN BLVD.
HAMBURG TURNPIKE - SR 5
RIDGE ROAD
NEW NO. 1 GATE
HOLBROOK STREET
ODELL STREET
BOSTON STREET
LEGEND:
PHASE I BUSINESS PARK AREA BOUNDARY (102.2 ACRES)
TECUMSEH PROPERTY BOUNDARY
RAILROAD
EXISTING BUILDING
AREA OF ASSESSMENT (Refer to Phase I Environmental Site Assessment Report for Parcel B, URS Consultants, Inc., March 2001)
EXISTING MONITORING WELL (2)
RI SURFACE SOIL SAMPLE (37)
RI TEST PIT (by Area of Assessment) (82)
RI MONITORING WELL (7)
RI TEMPORARY PIEZOMETER (7)
SUPPLEMENTAL TEST PIT INVESTIGATION AREA (Petroleum-Impacted Areas)
TEST PIT TP-5-3 AREA (Outer limits of test pit side walls will be analyzed for total lead & cadmium)
NOTES:
1. Building locations are based on historical surveys and maps, all locations should be considered approximate.
2. All investigation locations were field verified and surveyed prior to initiation of field work.
SCALE: 1 INCH = 150 FEET
SCALE IN FEET
(approximate)

TurnKey Environmental Restoration, LLC

726 EXCHANGE STREET
SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-0635

JOB NO.: 0071-006-202

REVISIONS

NO.	BY	DATE	REMARKS

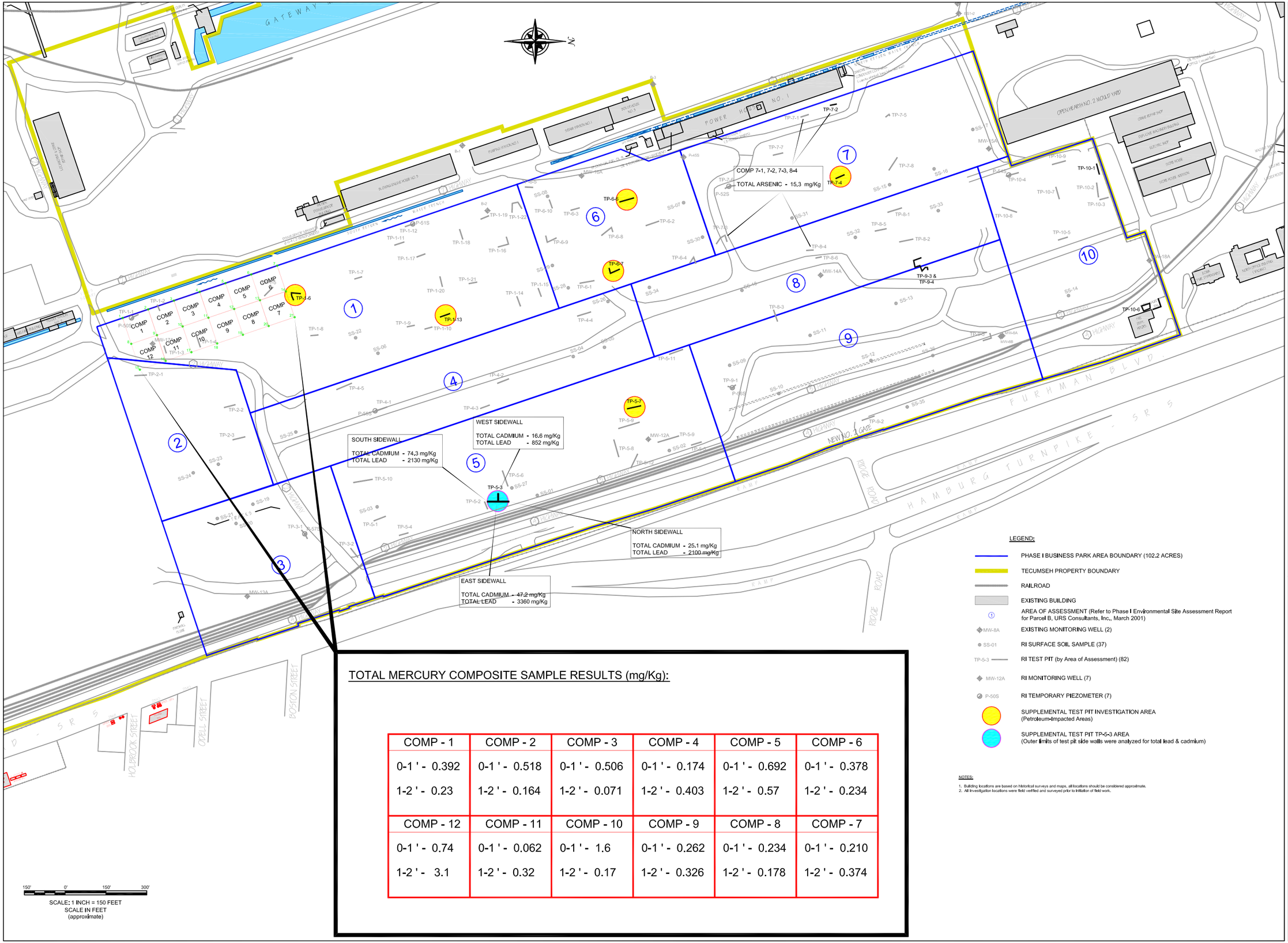
SEAL

DRAWN BY:	BCH
DATE:	JUNE 2008
CHECKED BY:	THF
APPROVED BY:	

TP6-6 TCLP LEAD ANALYTICAL DATA SUMMARY

PHASE I BUSINESS PARK AREA
LACKAWANA, NEW YORK
PREPARED FOR
ARCELORMITTAL TECUMSEH REDEVELOPMENT, INC.

FIGURE 3



F:\TurnKey\Clients\Tecumseh Redevelopment\Brownfield Cleanup Program (BCP)\Phase I Parcel\IRM\Figures\Figure 3; ANALYTICAL DATA SUMMARY.dwg, 6/23/2008 3:16:09 PM, Adobe PDF

TOTAL MERCURY COMPOSITE SAMPLE RESULTS (mg/Kg):

COMP - 1	COMP - 2	COMP - 3	COMP - 4	COMP - 5	COMP - 6
0-1 ' - 0.392 1-2 ' - 0.23	0-1 ' - 0.518 1-2 ' - 0.164	0-1 ' - 0.506 1-2 ' - 0.071	0-1 ' - 0.174 1-2 ' - 0.403	0-1 ' - 0.692 1-2 ' - 0.57	0-1 ' - 0.378 1-2 ' - 0.234
COMP - 12	COMP - 11	COMP - 10	COMP - 9	COMP - 8	COMP - 7
0-1 ' - 0.74 1-2 ' - 3.1	0-1 ' - 0.062 1-2 ' - 0.32	0-1 ' - 1.6 1-2 ' - 0.17	0-1 ' - 0.262 1-2 ' - 0.326	0-1 ' - 0.234 1-2 ' - 0.178	0-1 ' - 0.210 1-2 ' - 0.374

SCALE: 1 INCH = 150 FEET
SCALE IN FEET
(approximate)

LEGEND:

▬	PHASE I BUSINESS PARK AREA BOUNDARY (102.2 ACRES)
▬	TECUMSEH PROPERTY BOUNDARY
▬	RAILROAD
▭	EXISTING BUILDING
①	AREA OF ASSESSMENT (Refer to Phase I Environmental Site Assessment Report for Parcel B, URS Consultants, Inc., March 2001)
⌖ MW-8A	EXISTING MONITORING WELL (2)
● SS-01	RI SURFACE SOIL SAMPLE (37)
TP-5-3 ▬	RI TEST PIT (by Area of Assessment) (82)
⌖ MW-12A	RI MONITORING WELL (7)
● P-50S	RI TEMPORARY PIEZOMETER (7)
●	SUPPLEMENTAL TEST PIT INVESTIGATION AREA (Petroleum-Impacted Areas)
●	SUPPLEMENTAL TEST PIT TP-5-3 AREA (Outer limits of test pit side walls were analyzed for total lead & cadmium)

NOTES:

1. Building locations are based on historical surveys and maps, all locations should be considered approximate.
2. All investigation locations were field verified and surveyed prior to initiation of field work.

TurnKey Environmental Restoration, LLC

726 EXCHANGE STREET
SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-0635

JOB NO.: 0071-006-202

REVISIONS

NO.	BY	DATE	REMARKS

SEAL

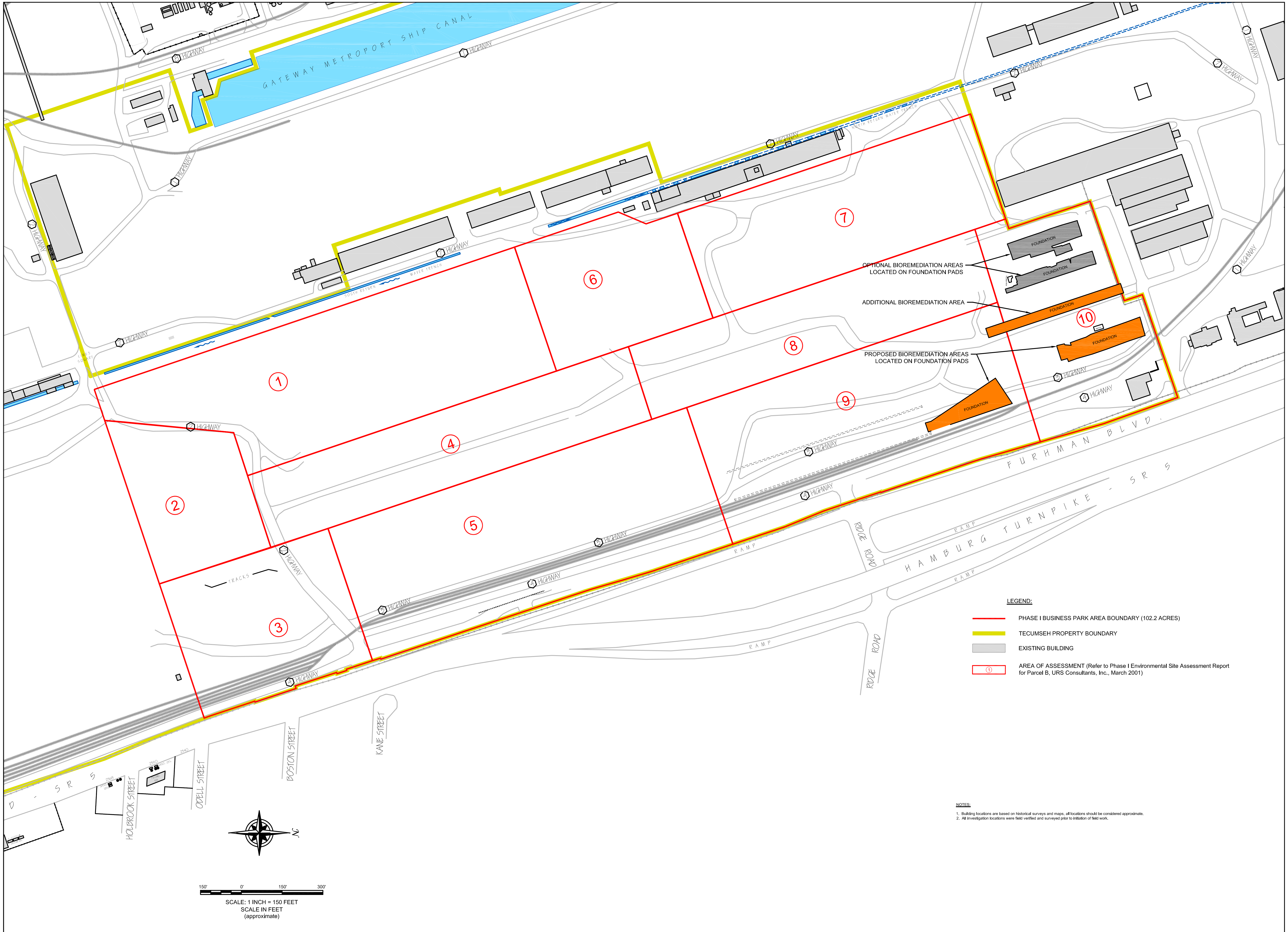
DRAWN BY: BCH/NTM
DATE: APRIL 2008
CHECKED BY: THF
APPROVED BY:

SUPPLEMENTAL METALS INVESTIGATION ANALYTICAL DATA SUMMARY

PHASE I BUSINESS PARK AREA
LACKAWANNA, NEW YORK

PREPARED FOR
ARCELORMITTAL TECUMSEH REDEVELOPMENT INC.

FIGURE 4


GATEWAY METROPORT SHIP CANAL
HIGHWAY
OPTIONAL BIOREMEDIATION AREAS LOCATED ON FOUNDATION PADS
ADDITIONAL BIOREMEDIATION AREA
PROPOSED BIOREMEDIATION AREAS LOCATED ON FOUNDATION PADS
FOUNDATION
1
2
3
4
5
6
7
8
9
10
TRACKS
FURHMAN BLVD.
HAMBURG TURNPIKE - SR 5
RAMP
RIDGE ROAD
KANE STREET
BOSTON STREET
ODELL STREET
HOLBROOK STREET
LEGEND:
PHASE I BUSINESS PARK AREA BOUNDARY (102.2 ACRES)
TECUMSEH PROPERTY BOUNDARY
EXISTING BUILDING
AREA OF ASSESSMENT (Refer to Phase I Environmental Site Assessment Report for Parcel B, URS Consultants, Inc., March 2001)
150' 0' 150' 300'
SCALE: 1 INCH = 150 FEET
SCALE IN FEET
(approximate)

NOTES:

1. Building locations are based on historical surveys and maps, all locations should be considered approximate.
2. All investigation locations were field verified and surveyed prior to initiation of field work.

TURNKEY ENVIRONMENTAL RESTORATION, LLC
726 EXCHANGE STREET
SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-0635

JOB NO.: 0071-006-202

REVISIONS

NO.	BY	DATE	REMARKS

SEAL

DRAWN BY: BCH
DATE:
CHECKED BY: THF
APPROVED BY:

BIOREMEDIATION AREAS

PHASE I BUSINESS PARK AREA
LACKAWANNA, NEW YORK

PREPARED FOR
ARCELOR MITTAL TECUMSEH REDEVELOPMENT, INC.

FIGURE 5

APPENDIX A

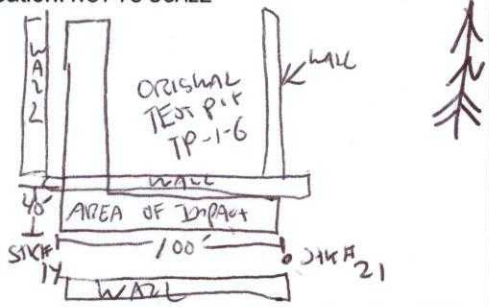
SUPPLEMENTAL INVESTIGATION
TEST PIT LOG SHEETS

TEST PIT EXCAVATION LOG

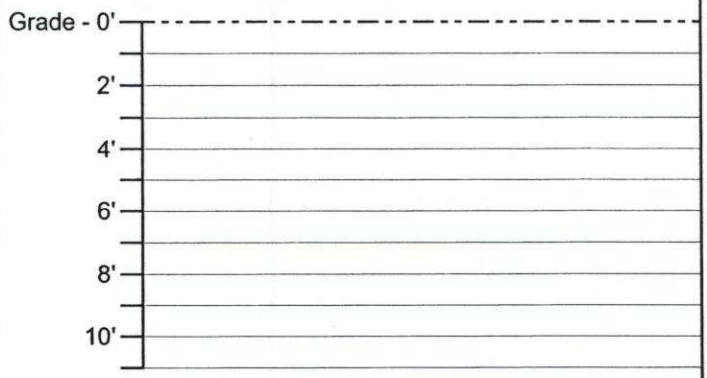
Project: Supplemental Inv Tecumseh PHASE I Business Park
Project No.: 0071-006-202
Client: Tecumseh
Location: ~~0071-006-202~~

TEST PIT I.D.: TP-1-6
Excavation Date: 4/21/08
Excavation Method: Track Excavator
Logged / Checked By: RLD

Test Pit Location: *NOT TO SCALE*



Test Pit Cross Section:



TIME		
Start:	Length:	(approx.)
End:	Width:	(approx.)
	Depth:	(approx.)

~~Depth (fbgs)~~	USCS Symbol & Soil Description	PID Scan (ppm)	Photos Y / N	Samples Collected (fbgs)
	Area of Impact is Approx 40'w x100'L, Impacted soil contains Heavy Black Oil			
	Possibly #6 Fuel Oil (Bunker oil). Oil Lenses occuring at various Depths. From 2' BGS to 4' BGS. Average Depth of Impact			
	Soil is 4-4.5' Deep. Oil Flowing on Groundwater. Perched Groundwater From 2' BGS to 4' BGS			
	Approx 650-675 sq of Impacted Soils.			

COMMENTS:

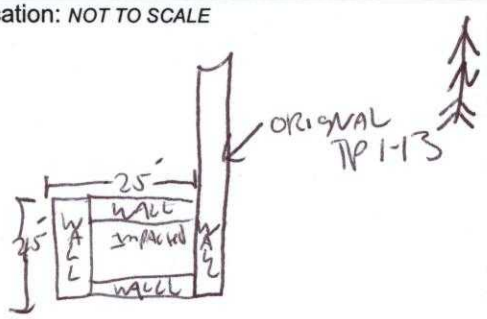
GROUNDWATER ENCOUNTERED:	☒ YES	☐ NO	If yes, depth to GW: 2 to 4' BGS
VISUAL IMPACTS:	☒ YES	☐ NO	Describe:
OLFACTORY OBSERVATIONS:	☐ YES	☐ NO	Describe:
NON-NATIVE FILL ENCOUNTERED:	☐ YES	☐ NO	
OTHER OBSERVATIONS:	☐ YES	☐ NO	Describe:
SAMPLES COLLECTED:			Sample I.D.:
			Sample I.D.:
			Sample I.D.:

TEST PIT EXCAVATION LOG

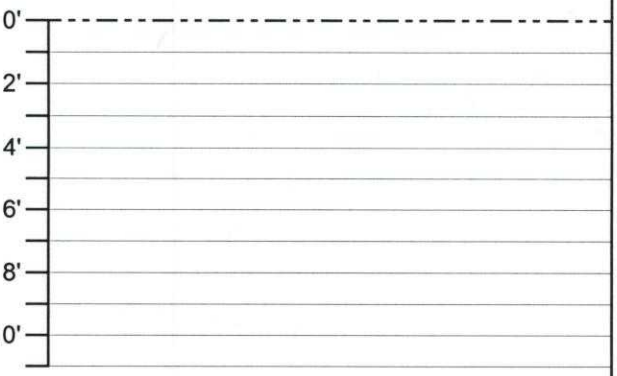
Supplemental Inv

Project:	Tecumseh Phase I Business Park	TEST PIT I.D.:	TP 1-13
Project No.:	007-006-702	Excavation Date:	4/4/08
Client:		Excavation Method:	Track Excavator
Location:	~~007-006-702~~	Logged / Checked By:	RLD

Test Pit Location: *NOT TO SCALE*



Test Pit Cross Section:



TIME		
Start:	Length:	(approx.)
End:	Width:	(approx.)
	Depth:	(approx.)

~~Depth~~ (fbgs)	USCS Symbol & Soil Description	PID Scan (ppm)	Photos Y / N	Samples Collected (fbgs)
	Oil Impacted/Soaked Fill West of TP1-13 within Foundation walls. Fill consist of			
	Slag, Steel, concrete, Oil Floating on ground water. water at Approx 3.5' BGS			
	Area of impact Approx 45'2 x 25'w x 4'd. Approx 166 CY.			

COMMENTS:

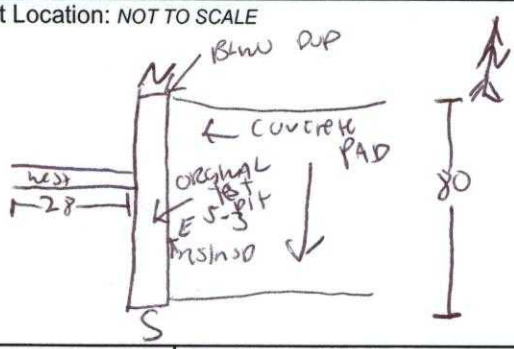
GROUNDWATER ENCOUNTERED:	☑ YES	☐ NO	If yes, depth to GW: 4'
VISUAL IMPACTS:	☑ YES	☐ NO	Describe:
OLFACTORY OBSERVATIONS:	☐ YES	☐ NO	Describe:
NON-NATIVE FILL ENCOUNTERED:	☐ YES	☐ NO	
OTHER OBSERVATIONS:	☐ YES	☐ NO	Describe:
SAMPLES COLLECTED:			Sample I.D.:
			Sample I.D.:
			Sample I.D.:

TEST PIT EXCAVATION LOG

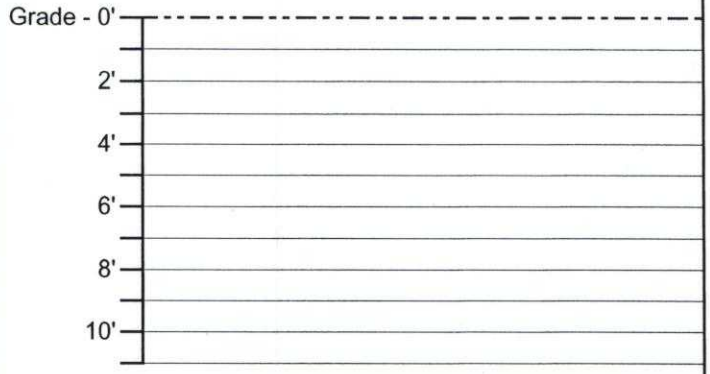
Supplemental Inv

Project:	Tecumseh Phase I Business Park	TEST PIT I.D.:	TP 5-3
Project No.:	0071-006-202	Excavation Date:	4/3/08
Client:	Tecumseh	Excavation Method:	Track Excavator
Location:	~~0071-006-202~~	Logged / Checked By:	RLD

Test Pit Location: *NOT TO SCALE*



Test Pit Cross Section:



TIME		
Start:	Length:	(approx.)
End:	Width:	(approx.)
	Depth:	(approx.)

~~Depth (fbge)~~	USCS Symbol & Soil Description	PID Scan (ppm)	Photos Y / N	Samples Collected (fbgs)
	Original Test pit contains small lenses of coal tar -Approx .5 - 1' thick			
	~~Coal~~ Coal Tar Extends to the East Approx 25' From Original Test TP-5-3. No ~~Subsurface~~ Visually Impacted coal tar observed North			
	Or South of TP-5-3. A Concrete Pad Located to East of TP-5-3. -Area			
	of Impact Approx 80'2x 25'w x 1'D Approx 75-80 cy			
	Collected Samples for Pb, cd on North, South, East, & West side walls. MS/MSD Collected on East side wall. Blind Dup 4/3/08			

COMMENTS: Collected on North side wall

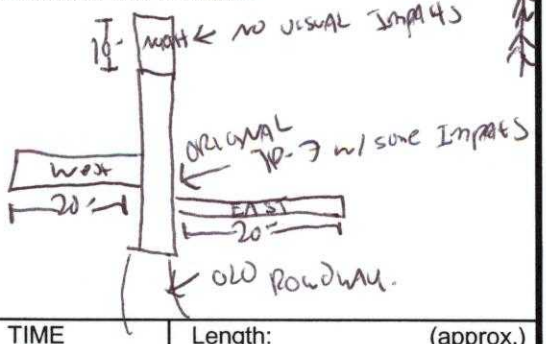
GROUNDWATER ENCOUNTERED:	☐ YES	☑ NO	If yes, depth to GW:
VISUAL IMPACTS:	☐ YES	☐ NO	Describe:
OLFACTORY OBSERVATIONS:	☐ YES	☐ NO	Describe:
NON-NATIVE FILL ENCOUNTERED:	☐ YES	☐ NO	
OTHER OBSERVATIONS:	☐ YES	☐ NO	Describe:
SAMPLES COLLECTED:			Sample I.D.:
			Sample I.D.:
			Sample I.D.:

TEST PIT EXCAVATION LOG

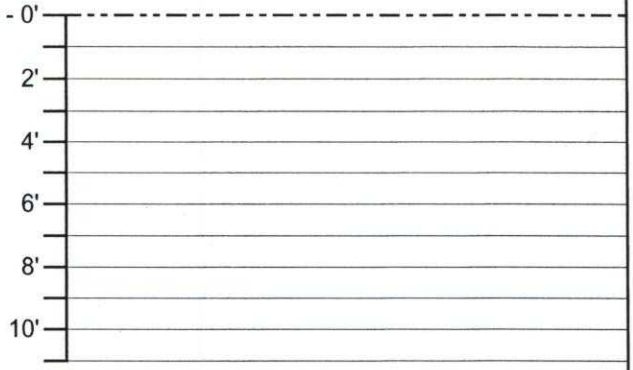
TurnKey Environmental Restoration, LLC

Project:	Supplemental Inv Tecumseh PHASE I Business Park	TEST PIT I.D.:	TP-5-7
Project No.:	0071-006-202	Excavation Date:	4/3/08
Client:	Tecumseh	Excavation Method:	MAK Excavator
Location:		Logged / Checked By:	RLD

Test Pit Location: *NOT TO SCALE*



Test Pit Cross Section:



TIME		
Start:	Length:	(approx.)
End:	Width:	(approx.)
	Depth:	(approx.)

~~Depth (fbgs)~~	USCS Symbol & Soil Description	PID Scan (ppm)	Photos Y / N	Samples Collected (fbgs)
	BLACK Asphalt/TAR with Round Stone occurs 1-2' BGS. - NO COAL TAR ODORS detected			
	Material is hard when cold. - Soft & Pliable when Exposed to Sun/Heat. LAYERS OF TAR are Less ~~than~~ than ~~6~~ 6 inches.			
	Most LAYER are 1-2.5". ~~Material~~ Material Appears to be a Former Road Bed			

COMMENTS:

GROUNDWATER ENCOUNTERED:	☐ YES	☐ NO	If yes, depth to GW:
VISUAL IMPACTS:	☐ YES	☐ NO	Describe:
OLFACTORY OBSERVATIONS:	☐ YES	☐ NO	Describe:
NON-NATIVE FILL ENCOUNTERED:	☐ YES	☐ NO	
OTHER OBSERVATIONS:	☐ YES	☐ NO	Describe:
SAMPLES COLLECTED:			Sample I.D.:
			Sample I.D.:
			Sample I.D.:

TEST PIT EXCAVATION LOG

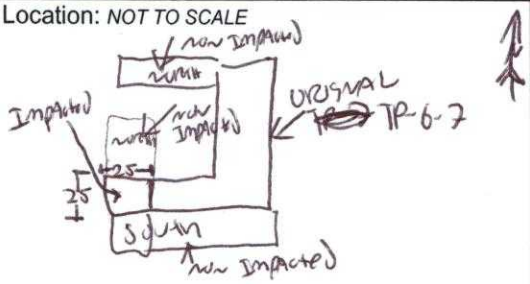
Project: Tecumseh PHASE I Business Park (Supplemental Inv) | TEST PIT I.D.: TP-6-07

Project No.: 0071-006-202 | Excavation Date: 4/3/08

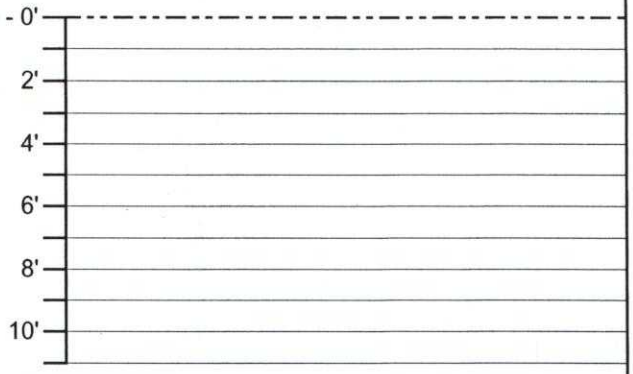
Client: Tecumseh | Excavation Method: Track Excavator

Location: | Logged / Checked By: RLD

Test Pit Location: *NOT TO SCALE*



Test Pit Cross Section:



TIME		
Start:	Length:	(approx.)
End:	Width:	(approx.)
	Depth:	(approx.)

~~Depth~~ (~~fbgs~~)	USCS Symbol & Soil Description	PID Scan (ppm)	Photos Y / N	Samples Collected (fbgs)
~~Sloo~~ South west	Impacted) encountered in South west CORNER OF ORIGINAL TEST pit - 0-4' Debris FILL with water ~~RED~~ AT 4' BGS. Oil Floating on water.			
NORTH/ NORTH west	NO IMPACTS OBSERVED to the NORTH OF TP- 6-7			
SOUTH/ SOUTH EAST	NO IMPACTS OBSERVED to the SOUTH OR SOUTH EAST			

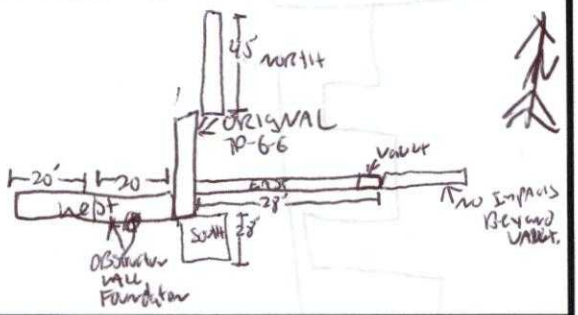
COMMENTS:

GROUNDWATER ENCOUNTERED:	☑ YES	☐ NO	If yes, depth to GW: 4'
VISUAL IMPACTS:	☐ YES	☐ NO	Describe:
OLFACTORY OBSERVATIONS:	☐ YES	☐ NO	Describe:
NON-NATIVE FILL ENCOUNTERED:	☐ YES	☐ NO	
OTHER OBSERVATIONS:	☐ YES	☐ NO	Describe:
SAMPLES COLLECTED:			Sample I.D.:
			Sample I.D.:
			Sample I.D.:

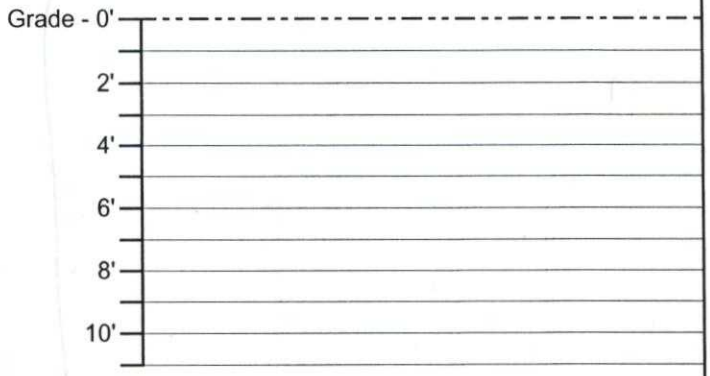
TEST PIT EXCAVATION LOG

Project:	Supplemental INV PHASE I Business Park	TEST PIT I.D.:	TP-6-6
Project No.:	0071-006-202	Excavation Date:	4/3/08
Client:	Tecumseh	Excavation Method:	Track Excavator
Location:		Logged / Checked By:	RLD

Test Pit Location: *NOT TO SCALE*



Test Pit Cross Section:



TIME		
Start:	Length:	(approx.)
End:	Width:	(approx.)
	Depth:	(approx.)

~~Depth (fbgs)~~	USCS Symbol & Soil Description	PID Scan (ppm)	Photos Y / N	Samples Collected (fbgs)
East	Fill & Debris, steel, wire, SNS, water AT 4' with oil Floating on WATER. - ~~VAULT~~ VAULT at end of Test Trench, no Impacts Beyond VAULT.			
South	Fill & Debris, with oil on WATER at 4' ~~Oil~~ Oil can Found in Foundation walls to South.			
West	40' Long Trench, OBstruction with Foundations 20' west of original test pit, Remaining 20' OF test pit to west ~~Shows~~ Shows no Impacts			
North	45' Long Trench. Fill & Debris, -Steel, wire, Brick, etc From 0-4'-dry. water at 4' with oil soaked Debris ~ oil smells like Transmission/Hydraulic oil.			
	3-4' OF Impacted Debris.			

COMMENTS:

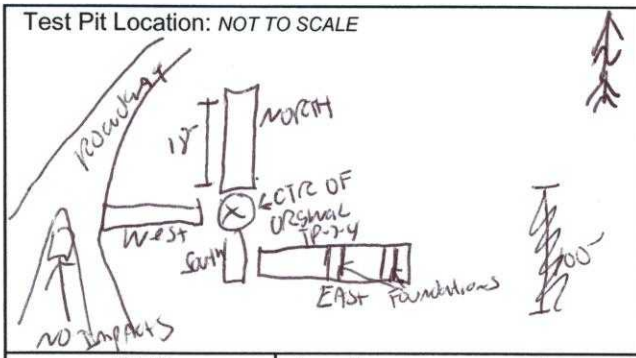
GROUNDWATER ENCOUNTERED:	☐ YES	☐ NO	If yes, depth to GW:
VISUAL IMPACTS:	☐ YES	☐ NO	Describe:
OLFACTORY OBSERVATIONS:	☐ YES	☐ NO	Describe:
NON-NATIVE FILL ENCOUNTERED:	☐ YES	☐ NO	
OTHER OBSERVATIONS:	☐ YES	☐ NO	Describe:
SAMPLES COLLECTED:			Sample I.D.:
Area of Impact Approx 30', ~~65'~~ RLD W x 125' L x 3.5' D			Sample I.D.:
= ~~1000~~ 486 CY RLD			Sample I.D.:

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TEST PIT EXCAVATION LOG

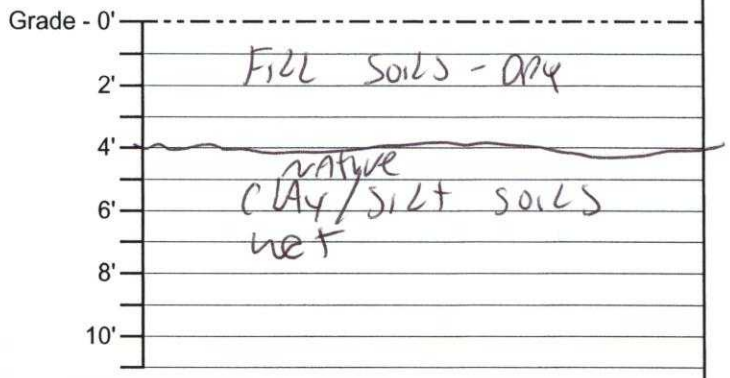
Project:	Tecumseh PHASE I Business Park	TEST PIT I.D.:	TP-7-4
Project No.:		Excavation Date:	4/2/08
Client:		Excavation Method:	Mack Excavator
Location:		Logged / Checked By:	RLD

Test Pit Location: *NOT TO SCALE*



TIME		
Start:	Length:	(approx.)
End:	Width:	(approx.)
	Depth:	(approx.)

Test Pit Cross Section:



~~Depth (fbgs)~~	USCS Symbol & Soil Description	PID Scan (ppm)	Photos Y / N	Samples Collected (fbgs)
NORTH	0-8' FILL, native gray silt at 8' no visually impacted soils 18' north of TP-7-4			
EAST	no Impacts EAST of TP-7-4, SLAG/FILL, BRICKS wet,			
CTR	Center of original test pit, DRY FILL from 0-4', overlying silty clay, petroleum odors in clay soils			
South	petroleum odors in clay soils - Approx 4' BGS. ~~GRADE~~ 20' south of original test pit PID Readings 0-16 ppm			
West	no Impacts in FILL soils from 0-4' Impacts of petroleum in clay soils with PID Readings of 40-50 ppm. Impacted Lense Approx 3-3.5' thick.			

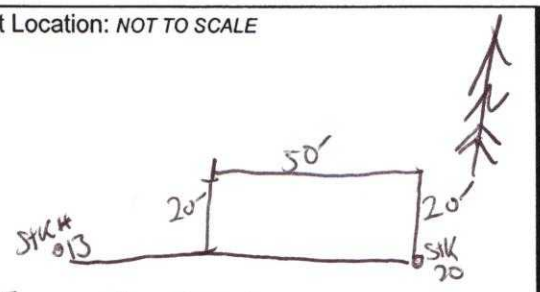
COMMENTS:

GROUNDWATER ENCOUNTERED:	☑ YES ☐ NO	If yes, depth to GW:	3-4'
VISUAL IMPACTS:	☐ YES ☐ NO	Describe:	
OLFACTORY OBSERVATIONS:	☐ YES ☐ NO	Describe:	
NON-NATIVE FILL ENCOUNTERED:	☐ YES ☐ NO		
OTHER OBSERVATIONS:	☐ YES ☐ NO	Describe:	
SAMPLES COLLECTED:		Sample I.D.:	
~~Approx~~ Area of Excavation = 900 cy	20'w x 100'L x 3.5'D.	Sample I.D.:	
		Sample I.D.:	

TEST PIT EXCAVATION LOG

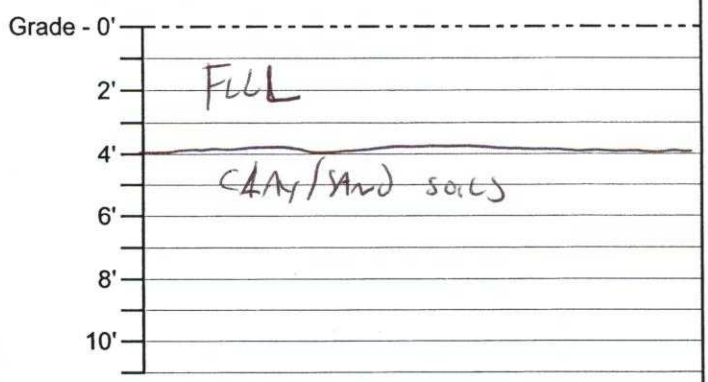
Project:	Supplemental Inv Tecumseh PHASE 1 Business Park	TEST PIT I.D.:	GRID # 7
Project No.:	0071-006-202	Excavation Date:	4/7/08
Client:	Tecumseh	Excavation Method:	Track Excavator
Location:		Logged / Checked By:	RLD

Test Pit Location: *NOT TO SCALE*



See Figure 1 For Test Pit Locations

Test Pit Cross Section:



TIME		
Start:	Length:	(approx.)
End:	Width:	(approx.)
	Depth:	(approx.)

~~Depth (fbgs)~~	USCS Symbol & Soil Description	PID Scan (ppm)	Photos Y / N	Samples Collected (fbgs)
	Impacted Soil ~~area~~ encountered Approx 2' BGS. 0-4' FILL - DRY at 2',			
	Oil Impacted CLAY/SAND SOILS Approx 150 CY			

COMMENTS:

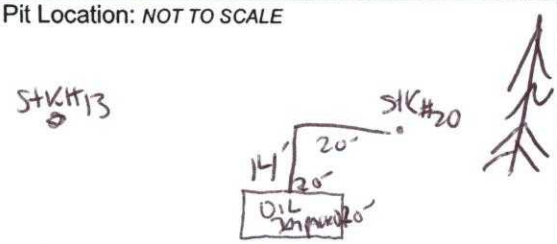
GROUNDWATER ENCOUNTERED:	☑ YES	☐ NO	If yes, depth to GW: 2'
VISUAL IMPACTS:	☑ YES	☐ NO	Describe: Heavy Oil / #6 Oil
OLFACTORY OBSERVATIONS:	☐ YES	☐ NO	Describe:
NON-NATIVE FILL ENCOUNTERED:	☐ YES	☐ NO	
OTHER OBSERVATIONS:	☐ YES	☐ NO	Describe:
SAMPLES COLLECTED:			Sample I.D.:
			Sample I.D.:
			Sample I.D.:

TEST PIT EXCAVATION LOG

TURNKEY ENVIRONMENTAL RESTORATION, LLC

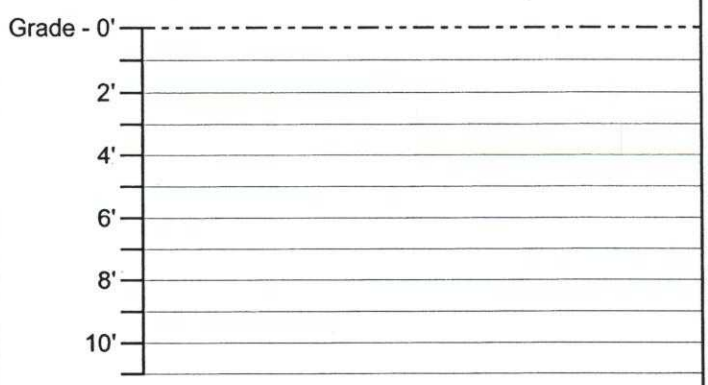
Project:	Supplemental Inv Tecumseh PHASE I BUSINESS PARK	TEST PIT I.D.:	GRID #8
Project No.:	0071-006202	Excavation Date:	4/2/08
Client:	Tecumseh	Excavation Method:	Track Excavator
Location:		Logged / Checked By:	RLD

Test Pit Location: *NOT TO SCALE*



See Fig 1 For Test Pit Location

Test Pit Cross Section:



TIME		
Start:	Length:	(approx.)
End:	Width:	(approx.)
	Depth:	(approx.)

Depth (fbgs)	USCS Symbol & Soil Description	PID Scan (ppm)	Photos Y / N	Samples Collected (fbgs)
	A 20'x 20' Area South of STK #20 was Impacted with Oil (Heavy #6 Oil) Impacts			
	Occuring Approx 1.5-2' BGS. - A crushed Drum containg oil was observed 2' BGS.			
	Approx 50 cy of Impacted Soils Depth of Impacted Soil Approx 4' Thick			

COMMENTS:

GROUNDWATER ENCOUNTERED:	☐ YES	☑ NO	If yes, depth to GW:
VISUAL IMPACTS:	☑ YES	☐ NO	Describe:
OLFACTORY OBSERVATIONS:	☐ YES	☐ NO	Describe:
NON-NATIVE FILL ENCOUNTERED:	☐ YES	☐ NO	
OTHER OBSERVATIONS:	☐ YES	☐ NO	Describe:
SAMPLES COLLECTED:			Sample I.D.:
			Sample I.D.:
			Sample I.D.:

APPENDIX B

SUPPLEMENTAL INVESTIGATION
PETROLEUM WASTE CHARACTERIZATION DATA

Date: 04/25/2008
Time: 10:43:27

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
METHOD 8260 - TCLP VOLATILES

Rept: AN0326

Client ID		TP 1-13		TP 1-6		TP 10-1		TP 10-6	
Job No	Lab ID	A08-3633	A8363302	A08-3633	A8363301	A08-3633	A8363306	A08-3633	A8363307
Sample Date		04/04/2008		04/04/2008		04/07/2008		04/07/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Benzene	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
2-Butanone	MG/L	ND	0.05	ND	0.05	ND	0.05	ND	0.05
Carbon Tetrachloride	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Chlorobenzene	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Chloroform	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
1,2-Dichloroethane	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
1,1-Dichloroethene	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Tetrachloroethene	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Trichloroethene	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Vinyl chloride	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
IS/SURROGATE(S)									
Chlorobenzene-D5	%	96	50-200	96	50-200	93	50-200	108	50-200
1,4-Difluorobenzene	%	96	50-200	96	50-200	93	50-200	97	50-200
1,4-Dichlorobenzene-D4	%	89	50-200	89	50-200	86	50-200	91	50-200
Toluene-D8	%	102	71-126	100	71-126	109	71-126	93	71-126
p-Bromofluorobenzene	%	98	73-120	94	73-120	104	73-120	88	73-120
1,2-Dichloroethane-D4	%	92	66-137	89	66-137	97	66-137	91	66-137

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/22/2008
Time: 15:38:18

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
METHOD 8260 - TCLP VOLATILES

Rept: AN0326

Client ID		TP-5-7		TP-6-6		TP-6-7		TP-7-4	
Job No	Lab ID	A08-3489	A8348904	A08-3489	A8348902	A08-3489	A8348903	A08-3489	A8348901
Sample Date		04/03/2008		04/03/2008		04/03/2008		04/02/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Benzene	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
2-Butanone	MG/L	ND	0.05	ND	0.05	ND	0.05	ND	0.05
Carbon Tetrachloride	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Chlorobenzene	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Chloroform	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
1,2-Dichloroethane	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
1,1-Dichloroethene	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Tetrachloroethene	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Trichloroethene	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Vinyl chloride	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
IS/SURROGATE(S)									
Chlorobenzene-D5	%	85	50-200	89	50-200	86	50-200	93	50-200
1,4-Difluorobenzene	%	86	50-200	88	50-200	86	50-200	90	50-200
1,4-Dichlorobenzene-D4	%	58	50-200	65	50-200	61	50-200	68	50-200
Toluene-D8	%	101	71-126	100	71-126	102	71-126	97	71-126
p-Bromofluorobenzene	%	76	73-120	77	73-120	79	73-120	78	73-120
1,2-Dichloroethane-D4	%	121	66-137	117	66-137	120	66-137	114	66-137

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/25/2008
Time: 10:43:27

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
METHOD 8260 - TCLP VOLATILES

Rept: AN0326

Client ID		TP 5-3		TP 7-2		TP 9-3			
Job No	Lab ID	A08-3633	A8363303	A08-3633	A8363304	A08-3633	A8363305		
Sample Date		04/04/2008		04/07/2008		04/07/2008			
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Benzene	MG/L	ND	0.01	ND	0.01	ND	0.01	NA	
2-Butanone	MG/L	ND	0.05	ND	0.05	ND	0.05	NA	
Carbon Tetrachloride	MG/L	ND	0.01	ND	0.01	ND	0.01	NA	
Chlorobenzene	MG/L	ND	0.01	ND	0.01	ND	0.01	NA	
Chloroform	MG/L	ND	0.01	ND	0.01	ND	0.01	NA	
1,2-Dichloroethane	MG/L	ND	0.01	ND	0.01	ND	0.01	NA	
1,1-Dichloroethene	MG/L	ND	0.01	ND	0.01	ND	0.01	NA	
Tetrachloroethene	MG/L	ND	0.01	ND	0.01	ND	0.01	NA	
Trichloroethene	MG/L	ND	0.01	ND	0.01	ND	0.01	NA	
Vinyl chloride	MG/L	ND	0.01	ND	0.01	ND	0.01	NA	
IS/SURROGATE(S)									
Chlorobenzene-D5	%	94	50-200	98	50-200	95	50-200	NA	
1,4-Difluorobenzene	%	93	50-200	98	50-200	94	50-200	NA	
1,4-Dichlorobenzene-D4	%	88	50-200	91	50-200	87	50-200	NA	
Toluene-D8	%	104	71-126	102	71-126	104	71-126	NA	
p-Bromofluorobenzene	%	98	73-120	99	73-120	95	73-120	NA	
1,2-Dichloroethane-D4	%	93	66-137	92	66-137	93	66-137	NA	

10/49

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/25/2008
Time: 10:43:35

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
METHOD 8270 - TCLP BASE NEUTRAL/ACID EXTRACTABLES

Rept: AN0326

Client ID Job No Sample Date	Lab ID	TP 1-13 A08-3633 04/04/2008	A8363302	TP 1-6 A08-3633 04/04/2008	A8363301	TP 10-1 A08-3633 04/07/2008	A8363306	TP 10-6 A08-3633 04/07/2008	A8363307
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
1,4-Dichlorobenzene	MG/L	ND	0.040	ND	0.040	ND	0.040	ND	0.040
2,4-Dinitrotoluene	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
Hexachlorobenzene	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
Hexachlorobutadiene	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
Hexachloroethane	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
3-Methylphenol	MG/L	ND	0.040	ND	0.040	ND	0.040	ND	0.040
2-Methylphenol	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
4-Methylphenol	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
Nitrobenzene	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
Pentachlorophenol	MG/L	ND	0.040	ND	0.040	ND	0.040	ND	0.040
Pyridine	MG/L	ND	0.10	ND	0.10	ND	0.10	ND	0.10
2,4,5-Trichlorophenol	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
2,4,6-Trichlorophenol	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
======IS/SURROGATE(S)======									
1,4-Dichlorobenzene-D4	%	102	50-200	92	50-200	91	50-200	98	50-200
Naphthalene-D8	%	104	50-200	96	50-200	98	50-200	96	50-200
Acenaphthene-D10	%	106	50-200	91	50-200	98	50-200	100	50-200
Phenanthrene-D10	%	100	50-200	93	50-200	94	50-200	97	50-200
Chrysene-D12	%	87	50-200	81	50-200	82	50-200	81	50-200
Perylene-D12	%	100	50-200	97	50-200	98	50-200	97	50-200
Nitrobenzene-D5	%	76	46-120	78	46-120	77	46-120	73	46-120
2-Fluorobiphenyl	%	81	48-120	87	48-120	79	48-120	75	48-120
p-Terphenyl-d14	%	103	24-136	104	24-136	102	24-136	99	24-136
Phenol-D5	%	28	16-120	30	16-120	28	16-120	26	16-120
2-Fluorophenol	%	38	20-120	42	20-120	37	20-120	34	20-120
2,4,6-Tribromophenol	%	94	52-132	101	52-132	89	52-132	85	52-132

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/25/2008
Time: 10:43:35

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
METHOD 8270 - TCLP BASE NEUTRAL/ACID EXTRACTABLES

Rept: AN0326

Client ID		TP 5-3		TP 7-2		TP 9-3			
Job No	Lab ID	A08-3633	A8363303	A08-3633	A8363304	A08-3633	A8363305		
Sample Date		04/04/2008		04/07/2008		04/07/2008			
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
1,4-Dichlorobenzene	MG/L	ND	0.040	ND	0.040	ND	0.040	NA	
2,4-Dinitrotoluene	MG/L	ND	0.020	ND	0.020	ND	0.020	NA	
Hexachlorobenzene	MG/L	ND	0.020	ND	0.020	ND	0.020	NA	
Hexachlorobutadiene	MG/L	ND	0.020	ND	0.020	ND	0.020	NA	
Hexachloroethane	MG/L	ND	0.020	ND	0.020	ND	0.020	NA	
3-Methylphenol	MG/L	0.17	0.040	ND	0.040	ND	0.040	NA	
2-Methylphenol	MG/L	0.052	0.020	ND	0.020	ND	0.020	NA	
4-Methylphenol	MG/L	0.17	0.020	ND	0.020	ND	0.020	NA	
Nitrobenzene	MG/L	ND	0.020	ND	0.020	ND	0.020	NA	
Pentachlorophenol	MG/L	ND	0.040	ND	0.040	ND	0.040	NA	
Pyridine	MG/L	ND	0.10	ND	0.10	ND	0.10	NA	
2,4,5-Trichlorophenol	MG/L	ND	0.020	ND	0.020	ND	0.020	NA	
2,4,6-Trichlorophenol	MG/L	ND	0.020	ND	0.020	ND	0.020	NA	
=IS/SURROGATE(S)=									
1,4-Dichlorobenzene-D4	%	92	50-200	103	50-200	102	50-200	NA	
Naphthalene-D8	%	99	50-200	106	50-200	101	50-200	NA	
Acenaphthene-D10	%	95	50-200	104	50-200	99	50-200	NA	
Phenanthrene-D10	%	95	50-200	104	50-200	93	50-200	NA	
Chrysene-D12	%	86	50-200	91	50-200	88	50-200	NA	
Perylene-D12	%	108	50-200	110	50-200	106	50-200	NA	
Nitrobenzene-D5	%	74	46-120	78	46-120	82	46-120	NA	
2-Fluorobiphenyl	%	85	48-120	86	48-120	86	48-120	NA	
p-Terphenyl-d14	%	99	24-136	97	24-136	97	24-136	NA	
Phenol-D5	%	30	16-120	28	16-120	27	16-120	NA	
2-Fluorophenol	%	40	20-120	41	20-120	40	20-120	NA	
2,4,6-Tribromophenol	%	105	52-132	92	52-132	101	52-132	NA	

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/22/2008
Time: 15:38:18

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
METHOD 8270 - TCLP BASE NEUTRAL/ACID EXTRACTABLES

Rept: AN0326

Client ID Job No Lab ID Sample Date		TP-5-7 A08-3489 A8348904 04/03/2008		TP-6-6 A08-3489 A8348902 04/03/2008		TP-6-7 A08-3489 A8348903 04/03/2008		TP-7-4 A08-3489 A8348901 04/02/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
1,4-Dichlorobenzene	MG/L	ND	0.040	ND	0.040	ND	0.040	ND	0.040
2,4-Dinitrotoluene	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
Hexachlorobenzene	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
Hexachlorobutadiene	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
Hexachloroethane	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
3-Methylphenol	MG/L	ND	0.040	ND	0.040	0.0028 J	0.040	ND	0.040
2-Methylphenol	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
4-Methylphenol	MG/L	ND	0.020	ND	0.020	0.0028 J	0.020	ND	0.020
Nitrobenzene	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
Pentachlorophenol	MG/L	ND	0.040	ND	0.040	ND	0.040	ND	0.040
Pyridine	MG/L	ND	0.10	ND	0.10	ND	0.10	ND	0.10
2,4,5-Trichlorophenol	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
2,4,6-Trichlorophenol	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
IS/SURROGATE(S)									
1,4-Dichlorobenzene-D4	%	84	50-200	77	50-200	78	50-200	81	50-200
Naphthalene-D8	%	89	50-200	82	50-200	84	50-200	83	50-200
Acenaphthene-D10	%	96	50-200	86	50-200	89	50-200	90	50-200
Phenanthrene-D10	%	91	50-200	83	50-200	82	50-200	84	50-200
Chrysene-D12	%	103	50-200	95	50-200	96	50-200	97	50-200
Perylene-D12	%	89	50-200	82	50-200	84	50-200	82	50-200
Nitrobenzene-D5	%	90	46-120	92	46-120	87	46-120	73	46-120
2-Fluorobiphenyl	%	78	48-120	81	48-120	75	48-120	67	48-120
p-Terphenyl-d14	%	75	24-136	59	24-136	55	24-136	47	24-136
Phenol-D5	%	36	16-120	34	16-120	33	16-120	29	16-120
2-Fluorophenol	%	45	20-120	42	20-120	41	20-120	34	20-120
2,4,6-Tribromophenol	%	102	52-132	103	52-132	101	52-132	88	52-132

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/25/2008
Time: 10:43:43

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
TCLP RCRA METALS

Rept: AN0326

Client ID		TP 1-13		TP 1-6		TP 10-1		TP 10-6	
Job No	Lab ID	A08-3633	A8363302	A08-3633	A8363301	A08-3633	A8363306	A08-3633	A8363307
Sample Date		04/04/2008		04/04/2008		04/07/2008		04/07/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Arsenic - Total	MG/L	ND	0.010	ND	0.010	ND	0.010	ND	0.010
Barium - Total	MG/L	0.52	0.0020	0.35	0.0020	0.80	0.0020	0.49	0.0020
Cadmium - Total	MG/L	ND	0.0010	0.0019	0.0010	0.0033	0.0010	0.0026	0.0010
Chromium - Total	MG/L	ND	0.0040	ND	0.0040	ND	0.0040	0.0048	0.0040
Lead - Total	MG/L	ND	0.0050	0.062	0.0050	0.0083	0.0050	0.035	0.0050
Mercury - Total	MG/L	ND	0.00020	ND	0.00020	ND	0.00020	ND	0.00020
Selenium - Total	MG/L	ND	0.015	ND	0.015	ND	0.015	ND	0.015
Silver - Total	MG/L	ND	0.0030	ND	0.0030	ND	0.0030	ND	0.0030

Client ID		TP 5-3		TP 7-2		TP 9-3			
Job No	Lab ID	A08-3633	A8363303	A08-3633	A8363304	A08-3633	A8363305		
Sample Date		04/04/2008		04/07/2008		04/07/2008			
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Arsenic - Total	MG/L	ND	0.010	ND	0.010	ND	0.010	NA	
Barium - Total	MG/L	0.25	0.0020	0.34	0.0020	0.44	0.0020	NA	
Cadmium - Total	MG/L	ND	0.0010	0.0082	0.0010	0.0016	0.0010	NA	
Chromium - Total	MG/L	0.011	0.0040	0.0057	0.0040	ND	0.0040	NA	
Lead - Total	MG/L	ND	0.0050	0.051	0.0050	0.010	0.0050	NA	
Mercury - Total	MG/L	ND	0.00020	ND	0.00020	ND	0.00020	NA	
Selenium - Total	MG/L	ND	0.015	ND	0.015	ND	0.015	NA	
Silver - Total	MG/L	ND	0.0030	ND	0.0030	ND	0.0030	NA	

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/22/2008
Time: 15:38:44

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
TCLP RCRA METALS

Rept: AN0326

Client ID		TP-5-7		TP-6-6		TP-6-7		TP-7-4	
Job No	Lab ID	A08-3489	A8348904	A08-3489	A8348902	A08-3489	A8348903	A08-3489	A8348901
Sample Date		04/03/2008		04/03/2008		04/03/2008		04/02/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Arsenic - Total	MG/L	ND	0.010	0.011	0.010	0.013	0.010	ND	0.010
Barium - Total	MG/L	0.16	0.0020	0.30	0.0020	0.19	0.0020	0.54	0.0020
Cadmium - Total	MG/L	ND	0.0010	0.026	0.0010	0.0076	0.0010	ND	0.0010
Chromium - Total	MG/L	0.014	0.0040	ND	0.0040	ND	0.0040	ND	0.0040
Lead - Total	MG/L	ND	0.0050	72.4	0.025	0.21	0.0050	ND	0.0050
Mercury - Total	MG/L	ND	0.00020	ND	0.00020	ND	0.00020	ND	0.00020
Selenium - Total	MG/L	ND	0.015	ND	0.015	ND	0.015	ND	0.015
Silver - Total	MG/L	ND	0.0030	ND	0.0030	ND	0.0030	ND	0.0030

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/25/2008
Time: 10:43:39

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
METHOD 8082 - POLYCHLORINATED BIPHENYLS

Rept: AN0326

Client ID		TP 1-13		TP 1-6		TP 10-1		TP 10-6	
Job No	Lab ID	A08-3633	A8363302	A08-3633	A8363301	A08-3633	A8363306	A08-3633	A8363307
Sample Date		04/04/2008		04/04/2008		04/07/2008		04/07/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Aroclor 1016	UG/KG	ND	24	ND	200	ND	19	ND	21
Aroclor 1221	UG/KG	ND	24	ND	200	ND	19	ND	21
Aroclor 1232	UG/KG	ND	24	ND	200	ND	19	ND	21
Aroclor 1242	UG/KG	ND	24	ND	200	ND	19	ND	21
Aroclor 1248	UG/KG	ND	24	ND	200	ND	19	ND	21
Aroclor 1254	UG/KG	ND	24	ND	200	ND	19	59	21
Aroclor 1260	UG/KG	ND	24	ND	200	ND	19	ND	21
SURROGATE(S)									
Tetrachloro-m-xylene	%	91	35-134	0 D	35-134	70	35-134	74	35-134
Decachlorobiphenyl	%	134	34-148	0 D	34-148	94	34-148	272 *	34-148

Client ID		TP 5-3		TP 7-2		TP 9-3			
Job No	Lab ID	A08-3633	A8363303	A08-3633	A8363304	A08-3633	A8363305		
Sample Date		04/04/2008		04/07/2008		04/07/2008			
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Aroclor 1016	UG/KG	ND	35	ND	220	ND	19	NA	
Aroclor 1221	UG/KG	ND	35	ND	220	ND	19	NA	
Aroclor 1232	UG/KG	ND	35	ND	220	ND	19	NA	
Aroclor 1242	UG/KG	ND	35	ND	220	ND	19	NA	
Aroclor 1248	UG/KG	ND	35	ND	220	ND	19	NA	
Aroclor 1254	UG/KG	ND	35	ND	220	ND	19	NA	
Aroclor 1260	UG/KG	ND	35	56 J	220	5.2 J	19	NA	
SURROGATE(S)									
Tetrachloro-m-xylene	%	82	35-134	95	35-134	69	35-134	NA	
Decachlorobiphenyl	%	758 *	34-148	315 *	34-148	85	34-148	NA	

13/49

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/22/2008
Time: 15:38:18

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
METHOD 8082 - POLYCHLORINATED BIPHENYLS

Rept: AN0326

Client ID Job No Lab ID Sample Date		TP-5-7 A08-3489 A8348904 04/03/2008		TP-6-6 A08-3489 A8348902 04/03/2008		TP-6-7 A08-3489 A8348903 04/03/2008		TP-7-4 A08-3489 A8348901 04/02/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Aroclor 1016	UG/KG	ND	91	ND	97	ND	94	ND	19
Aroclor 1221	UG/KG	ND	91	ND	97	ND	94	ND	19
Aroclor 1232	UG/KG	ND	91	ND	97	ND	94	ND	19
Aroclor 1242	UG/KG	ND	91	ND	97	ND	94	ND	19
Aroclor 1248	UG/KG	ND	91	ND	97	62 J	94	ND	19
Aroclor 1254	UG/KG	ND	91	ND	97	ND	94	ND	19
Aroclor 1260	UG/KG	25 J	91	110	97	44 J	94	ND	19
SURROGATE(S)									
Tetrachloro-m-xylene	%	122	35-134	68	35-134	65	35-134	67	35-134
Decachlorobiphenyl	%	85	34-148	162 *	34-148	172 *	34-148	84	34-148

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/25/2008
Time: 10:43:45

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
WET CHEMISTRY ANALYSIS

Rept: AN0326

Client ID		TP 1-13		TP 1-6		TP 10-1		TP 10-6	
Job No	Lab ID	A08-3633	A8363302	A08-3633	A8363301	A08-3633	A8363306	A08-3633	A8363307
Sample Date		04/04/2008		04/04/2008		04/07/2008		04/07/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Flashpoint	°F	>176.0	0	>176.0	0	>176.0	0	>176.0	0

Client ID		TP 5-3		TP 7-2		TP 9-3			
Job No	Lab ID	A08-3633	A8363303	A08-3633	A8363304	A08-3633	A8363305		
Sample Date		04/04/2008		04/07/2008		04/07/2008			
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Flashpoint	°F	>176.0	0	>176.0	0	>176.0	0	NA	

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/22/2008
Time: 15:38:44

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
WET CHEMISTRY ANALYSIS

Rept: AN0326

Client ID Job No Sample Date	Lab ID	TP-5-7 A08-3489 04/03/2008	A8348904	TP-6-6 A08-3489 04/03/2008	A8348902	TP-6-7 A08-3489 04/03/2008	A8348903	TP-7-4 A08-3489 04/02/2008	A8348901
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Flashpoint	°F	>176.0	0	>176.0	0	>176.0	0	>176.0	0

NA = Not Applicable ND = Not Detected

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4142 (0907)

Client: Benchmark Env Eng & Sci, PLLC	Project Manager: Tom Forbes	Date: 4/8/08	Chain of Custody Number: 396495
Address: 726 Exchange St Suite 624	Telephone Number (Area Code)/Fax Number: 716-856-0599 / 0583	Lab Number:	Page 1 of 2
City: Buffalo / State: NY / Zip Code: 14210	Site Contact: R. Dubisz	Lab Contact: B. Fischer	
Project Name and Location (State): Tecumseh Phase I Business Park	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Analysis: TCLP VOCs	TCLP SVOCs	TCLP Metals	PCBs	Flashpoint	Special Instructions/ Conditions of Receipt
TP 1-6	4/4/08	1500				Y	Y						✓	✓	✓	✓	✓	
TP 1-13	4/4/08	1200				Y	Y						✓	✓	✓	✓	✓	
TP ~~5-3~~ 5-3	4/4/08	1100				Y	Y						✓	✓	✓	✓	✓	
TP 7-2	4/7/08	1300				Y	Y						✓	✓	✓	✓	✓	
TP 9-3	4/7/08	1330				Y	Y						✓	✓	✓	✓	✓	
TP 10-1	4/7/08	1400				Y	Y						✓	✓	✓	✓	✓	
TP 10-6	4/7/08	1440				✓	Y						✓	✓	✓	✓		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other Standard

QC Requirements (Specify): Standard Level II

	Date	Time		Date	Time
1. Relinquished By	4/8/08	1000	1. Received By	04-08-08	16:30
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4142 (0907)

Client: Benchmark Env Eng	Project Manager: Tom Forbes	Date: 4/4/08
Address: 726 Exchange St Suite 624	Telephone Number (Area Code)/Fax Number: 716-856-0599 / 0387	Lab Number:
City: Buffalo · State: NY · Zip Code: 14210	Site Contact: R. Daiz · Lab Contact: B Fischer	Chain of Custody Number: 389933
Project Name and Location (State): Tecumseh - Phase I Business Park	Carrier/Waybill Number:	Page 1 of 1
Contract/Purchase Order/Quote No.: 48000095-0		

Analysis (Attach list if more space is needed)

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	TCLP VOCs	TCLP SVOCs	TCLP metals	TCLP Hg	PCBs	Ignitability	Special Instructions/ Conditions of Receipt
TP-2-4	4/2/08	1600				X	X						✓	✓	✓	✓	✓	✓	
TP-6-6	4/3/08	1700				X	X						✓	✓	✓	✓	✓	✓	
TP-6-7	4/3/08	1430				X	X						✓	✓	✓	✓	✓	✓	
TP 5-7	4/3/08	1600				X	X						✓	✓	✓	✓	✓	✓	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☑ Unknown

Sample Disposal
☐ Return To Client ☑ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other Standard

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	4/4/08	0900	1. Received By: [signature]	04-04-08	11:35
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Date: 05/19/2008
Time: 09:45:57

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
TCLP METALS

Rept: AN1246

Client ID		TP 6-6 GRID 1		TP 6-6 GRID 11		TP 6-6 GRID 14		TP 6-6 GRID 17	
Job No / Lab ID		A08-5311 / A8531101		A08-5311 / A8531105		A08-5311 / A8531106		A08-5311 / A8531107	
Sample Date		05/09/2008		05/09/2008		05/09/2008		05/09/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Lead - Total	MG/L	0.11	0.0050	0.18	0.0050	61.4	0.050	0.087	0.0050

Client ID		TP 6-6 GRID 2		TP 6-6 GRID 5		TP 6-6 GRID 8			
Job No / Lab ID		A08-5311 / A8531102		A08-5311 / A8531103		A08-5311 / A8531104			
Sample Date		05/09/2008		05/09/2008		05/09/2008			
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Lead - Total	MG/L	6.1	0.0050	0.62	0.0050	2.2	0.0050	NA	

NA = Not Applicable ND = Not Detected

TestAmerica Lab

APPENDIX C

SUPPLEMENTAL INVESTIGATION
POTENTIAL METALS IMPACTED AREA DATA

Date: 04/25/2008
Time: 10:43:27

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
METHOD 8260 - TCLP VOLATILES

Rept: AN0326

Client ID		TP 1-13		TP 1-6		TP 10-1		TP 10-6	
Job No	Lab ID	A08-3633	A8363302	A08-3633	A8363301	A08-3633	A8363306	A08-3633	A8363307
Sample Date		04/04/2008		04/04/2008		04/07/2008		04/07/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Benzene	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
2-Butanone	MG/L	ND	0.05	ND	0.05	ND	0.05	ND	0.05
Carbon Tetrachloride	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Chlorobenzene	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Chloroform	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
1,2-Dichloroethane	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
1,1-Dichloroethene	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Tetrachloroethene	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Trichloroethene	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Vinyl chloride	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
IS/SURROGATE(S)									
Chlorobenzene-D5	%	96	50-200	96	50-200	93	50-200	108	50-200
1,4-Difluorobenzene	%	96	50-200	96	50-200	93	50-200	97	50-200
1,4-Dichlorobenzene-D4	%	89	50-200	89	50-200	86	50-200	91	50-200
Toluene-D8	%	102	71-126	100	71-126	109	71-126	93	71-126
p-Bromofluorobenzene	%	98	73-120	94	73-120	104	73-120	88	73-120
1,2-Dichloroethane-D4	%	92	66-137	89	66-137	97	66-137	91	66-137

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/22/2008
Time: 15:38:18

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
METHOD 8260 - TCLP VOLATILES

Rept: AN0326

Client ID		TP-5-7		TP-6-6		TP-6-7		TP-7-4	
Job No	Lab ID	A08-3489	A8348904	A08-3489	A8348902	A08-3489	A8348903	A08-3489	A8348901
Sample Date		04/03/2008		04/03/2008		04/03/2008		04/02/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Benzene	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
2-Butanone	MG/L	ND	0.05	ND	0.05	ND	0.05	ND	0.05
Carbon Tetrachloride	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Chlorobenzene	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Chloroform	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
1,2-Dichloroethane	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
1,1-Dichloroethene	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Tetrachloroethene	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Trichloroethene	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Vinyl chloride	MG/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01
IS/SURROGATE(S)									
Chlorobenzene-D5	%	85	50-200	89	50-200	86	50-200	93	50-200
1,4-Difluorobenzene	%	86	50-200	88	50-200	86	50-200	90	50-200
1,4-Dichlorobenzene-D4	%	58	50-200	65	50-200	61	50-200	68	50-200
Toluene-D8	%	101	71-126	100	71-126	102	71-126	97	71-126
p-Bromofluorobenzene	%	76	73-120	77	73-120	79	73-120	78	73-120
1,2-Dichloroethane-D4	%	121	66-137	117	66-137	120	66-137	114	66-137

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/25/2008
Time: 10:43:27

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
METHOD 8260 - TCLP VOLATILES

Rept: AN0326

Client ID		TP 5-3		TP 7-2		TP 9-3			
Job No	Lab ID	A08-3633	A8363303	A08-3633	A8363304	A08-3633	A8363305		
Sample Date		04/04/2008		04/07/2008		04/07/2008			
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Benzene	MG/L	ND	0.01	ND	0.01	ND	0.01	NA	
2-Butanone	MG/L	ND	0.05	ND	0.05	ND	0.05	NA	
Carbon Tetrachloride	MG/L	ND	0.01	ND	0.01	ND	0.01	NA	
Chlorobenzene	MG/L	ND	0.01	ND	0.01	ND	0.01	NA	
Chloroform	MG/L	ND	0.01	ND	0.01	ND	0.01	NA	
1,2-Dichloroethane	MG/L	ND	0.01	ND	0.01	ND	0.01	NA	
1,1-Dichloroethene	MG/L	ND	0.01	ND	0.01	ND	0.01	NA	
Tetrachloroethene	MG/L	ND	0.01	ND	0.01	ND	0.01	NA	
Trichloroethene	MG/L	ND	0.01	ND	0.01	ND	0.01	NA	
Vinyl chloride	MG/L	ND	0.01	ND	0.01	ND	0.01	NA	
IS/SURROGATE(S)									
Chlorobenzene-D5	%	94	50-200	98	50-200	95	50-200	NA	
1,4-Difluorobenzene	%	93	50-200	98	50-200	94	50-200	NA	
1,4-Dichlorobenzene-D4	%	88	50-200	91	50-200	87	50-200	NA	
Toluene-D8	%	104	71-126	102	71-126	104	71-126	NA	
p-Bromofluorobenzene	%	98	73-120	99	73-120	95	73-120	NA	
1,2-Dichloroethane-D4	%	93	66-137	92	66-137	93	66-137	NA	

10/49

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/25/2008
Time: 10:43:35

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
METHOD 8270 - TCLP BASE NEUTRAL/ACID EXTRACTABLES

Rept: AN0326

Client ID Job No Sample Date	Lab ID	TP 1-13 A08-3633 04/04/2008	A8363302	TP 1-6 A08-3633 04/04/2008	A8363301	TP 10-1 A08-3633 04/07/2008	A8363306	TP 10-6 A08-3633 04/07/2008	A8363307
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
1,4-Dichlorobenzene	MG/L	ND	0.040	ND	0.040	ND	0.040	ND	0.040
2,4-Dinitrotoluene	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
Hexachlorobenzene	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
Hexachlorobutadiene	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
Hexachloroethane	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
3-Methylphenol	MG/L	ND	0.040	ND	0.040	ND	0.040	ND	0.040
2-Methylphenol	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
4-Methylphenol	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
Nitrobenzene	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
Pentachlorophenol	MG/L	ND	0.040	ND	0.040	ND	0.040	ND	0.040
Pyridine	MG/L	ND	0.10	ND	0.10	ND	0.10	ND	0.10
2,4,5-Trichlorophenol	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
2,4,6-Trichlorophenol	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
======IS/SURROGATE(S)======									
1,4-Dichlorobenzene-D4	%	102	50-200	92	50-200	91	50-200	98	50-200
Naphthalene-D8	%	104	50-200	96	50-200	98	50-200	96	50-200
Acenaphthene-D10	%	106	50-200	91	50-200	98	50-200	100	50-200
Phenanthrene-D10	%	100	50-200	93	50-200	94	50-200	97	50-200
Chrysene-D12	%	87	50-200	81	50-200	82	50-200	81	50-200
Perylene-D12	%	100	50-200	97	50-200	98	50-200	97	50-200
Nitrobenzene-D5	%	76	46-120	78	46-120	77	46-120	73	46-120
2-Fluorobiphenyl	%	81	48-120	87	48-120	79	48-120	75	48-120
p-Terphenyl-d14	%	103	24-136	104	24-136	102	24-136	99	24-136
Phenol-D5	%	28	16-120	30	16-120	28	16-120	26	16-120
2-Fluorophenol	%	38	20-120	42	20-120	37	20-120	34	20-120
2,4,6-Tribromophenol	%	94	52-132	101	52-132	89	52-132	85	52-132

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/25/2008
Time: 10:43:35

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
METHOD 8270 - TCLP BASE NEUTRAL/ACID EXTRACTABLES

Rept: AN0326

Client ID		TP 5-3		TP 7-2		TP 9-3			
Job No	Lab ID	A08-3633	A8363303	A08-3633	A8363304	A08-3633	A8363305		
Sample Date		04/04/2008		04/07/2008		04/07/2008			
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
1,4-Dichlorobenzene	MG/L	ND	0.040	ND	0.040	ND	0.040	NA	
2,4-Dinitrotoluene	MG/L	ND	0.020	ND	0.020	ND	0.020	NA	
Hexachlorobenzene	MG/L	ND	0.020	ND	0.020	ND	0.020	NA	
Hexachlorobutadiene	MG/L	ND	0.020	ND	0.020	ND	0.020	NA	
Hexachloroethane	MG/L	ND	0.020	ND	0.020	ND	0.020	NA	
3-Methylphenol	MG/L	0.17	0.040	ND	0.040	ND	0.040	NA	
2-Methylphenol	MG/L	0.052	0.020	ND	0.020	ND	0.020	NA	
4-Methylphenol	MG/L	0.17	0.020	ND	0.020	ND	0.020	NA	
Nitrobenzene	MG/L	ND	0.020	ND	0.020	ND	0.020	NA	
Pentachlorophenol	MG/L	ND	0.040	ND	0.040	ND	0.040	NA	
Pyridine	MG/L	ND	0.10	ND	0.10	ND	0.10	NA	
2,4,5-Trichlorophenol	MG/L	ND	0.020	ND	0.020	ND	0.020	NA	
2,4,6-Trichlorophenol	MG/L	ND	0.020	ND	0.020	ND	0.020	NA	
=IS/SURROGATE(S)=									
1,4-Dichlorobenzene-D4	%	92	50-200	103	50-200	102	50-200	NA	
Naphthalene-D8	%	99	50-200	106	50-200	101	50-200	NA	
Acenaphthene-D10	%	95	50-200	104	50-200	99	50-200	NA	
Phenanthrene-D10	%	95	50-200	104	50-200	93	50-200	NA	
Chrysene-D12	%	86	50-200	91	50-200	88	50-200	NA	
Perylene-D12	%	108	50-200	110	50-200	106	50-200	NA	
Nitrobenzene-D5	%	74	46-120	78	46-120	82	46-120	NA	
2-Fluorobiphenyl	%	85	48-120	86	48-120	86	48-120	NA	
p-Terphenyl-d14	%	99	24-136	97	24-136	97	24-136	NA	
Phenol-D5	%	30	16-120	28	16-120	27	16-120	NA	
2-Fluorophenol	%	40	20-120	41	20-120	40	20-120	NA	
2,4,6-Tribromophenol	%	105	52-132	92	52-132	101	52-132	NA	

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/22/2008
Time: 15:38:18

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
METHOD 8270 - TCLP BASE NEUTRAL/ACID EXTRACTABLES

Rept: AN0326

Client ID Job No Lab ID Sample Date		TP-5-7 A08-3489 A8348904 04/03/2008		TP-6-6 A08-3489 A8348902 04/03/2008		TP-6-7 A08-3489 A8348903 04/03/2008		TP-7-4 A08-3489 A8348901 04/02/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
1,4-Dichlorobenzene	MG/L	ND	0.040	ND	0.040	ND	0.040	ND	0.040
2,4-Dinitrotoluene	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
Hexachlorobenzene	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
Hexachlorobutadiene	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
Hexachloroethane	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
3-Methylphenol	MG/L	ND	0.040	ND	0.040	0.0028 J	0.040	ND	0.040
2-Methylphenol	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
4-Methylphenol	MG/L	ND	0.020	ND	0.020	0.0028 J	0.020	ND	0.020
Nitrobenzene	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
Pentachlorophenol	MG/L	ND	0.040	ND	0.040	ND	0.040	ND	0.040
Pyridine	MG/L	ND	0.10	ND	0.10	ND	0.10	ND	0.10
2,4,5-Trichlorophenol	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
2,4,6-Trichlorophenol	MG/L	ND	0.020	ND	0.020	ND	0.020	ND	0.020
IS/SURROGATE(S)									
1,4-Dichlorobenzene-D4	%	84	50-200	77	50-200	78	50-200	81	50-200
Naphthalene-D8	%	89	50-200	82	50-200	84	50-200	83	50-200
Acenaphthene-D10	%	96	50-200	86	50-200	89	50-200	90	50-200
Phenanthrene-D10	%	91	50-200	83	50-200	82	50-200	84	50-200
Chrysene-D12	%	103	50-200	95	50-200	96	50-200	97	50-200
Perylene-D12	%	89	50-200	82	50-200	84	50-200	82	50-200
Nitrobenzene-D5	%	90	46-120	92	46-120	87	46-120	73	46-120
2-Fluorobiphenyl	%	78	48-120	81	48-120	75	48-120	67	48-120
p-Terphenyl-d14	%	75	24-136	59	24-136	55	24-136	47	24-136
Phenol-D5	%	36	16-120	34	16-120	33	16-120	29	16-120
2-Fluorophenol	%	45	20-120	42	20-120	41	20-120	34	20-120
2,4,6-Tribromophenol	%	102	52-132	103	52-132	101	52-132	88	52-132

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/25/2008
Time: 10:43:43

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
TCLP RCRA METALS

Rept: AN0326

Client ID		TP 1-13		TP 1-6		TP 10-1		TP 10-6	
Job No	Lab ID	A08-3633	A8363302	A08-3633	A8363301	A08-3633	A8363306	A08-3633	A8363307
Sample Date		04/04/2008		04/04/2008		04/07/2008		04/07/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Arsenic - Total	MG/L	ND	0.010	ND	0.010	ND	0.010	ND	0.010
Barium - Total	MG/L	0.52	0.0020	0.35	0.0020	0.80	0.0020	0.49	0.0020
Cadmium - Total	MG/L	ND	0.0010	0.0019	0.0010	0.0033	0.0010	0.0026	0.0010
Chromium - Total	MG/L	ND	0.0040	ND	0.0040	ND	0.0040	0.0048	0.0040
Lead - Total	MG/L	ND	0.0050	0.062	0.0050	0.0083	0.0050	0.035	0.0050
Mercury - Total	MG/L	ND	0.00020	ND	0.00020	ND	0.00020	ND	0.00020
Selenium - Total	MG/L	ND	0.015	ND	0.015	ND	0.015	ND	0.015
Silver - Total	MG/L	ND	0.0030	ND	0.0030	ND	0.0030	ND	0.0030

Client ID		TP 5-3		TP 7-2		TP 9-3			
Job No	Lab ID	A08-3633	A8363303	A08-3633	A8363304	A08-3633	A8363305		
Sample Date		04/04/2008		04/07/2008		04/07/2008			
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Arsenic - Total	MG/L	ND	0.010	ND	0.010	ND	0.010	NA	
Barium - Total	MG/L	0.25	0.0020	0.34	0.0020	0.44	0.0020	NA	
Cadmium - Total	MG/L	ND	0.0010	0.0082	0.0010	0.0016	0.0010	NA	
Chromium - Total	MG/L	0.011	0.0040	0.0057	0.0040	ND	0.0040	NA	
Lead - Total	MG/L	ND	0.0050	0.051	0.0050	0.010	0.0050	NA	
Mercury - Total	MG/L	ND	0.00020	ND	0.00020	ND	0.00020	NA	
Selenium - Total	MG/L	ND	0.015	ND	0.015	ND	0.015	NA	
Silver - Total	MG/L	ND	0.0030	ND	0.0030	ND	0.0030	NA	

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/22/2008
Time: 15:38:44

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
TCLP RCRA METALS

Rept: AN0326

Client ID		TP-5-7		TP-6-6		TP-6-7		TP-7-4	
Job No	Lab ID	A08-3489	A8348904	A08-3489	A8348902	A08-3489	A8348903	A08-3489	A8348901
Sample Date		04/03/2008		04/03/2008		04/03/2008		04/02/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Arsenic - Total	MG/L	ND	0.010	0.011	0.010	0.013	0.010	ND	0.010
Barium - Total	MG/L	0.16	0.0020	0.30	0.0020	0.19	0.0020	0.54	0.0020
Cadmium - Total	MG/L	ND	0.0010	0.026	0.0010	0.0076	0.0010	ND	0.0010
Chromium - Total	MG/L	0.014	0.0040	ND	0.0040	ND	0.0040	ND	0.0040
Lead - Total	MG/L	ND	0.0050	72.4	0.025	0.21	0.0050	ND	0.0050
Mercury - Total	MG/L	ND	0.00020	ND	0.00020	ND	0.00020	ND	0.00020
Selenium - Total	MG/L	ND	0.015	ND	0.015	ND	0.015	ND	0.015
Silver - Total	MG/L	ND	0.0030	ND	0.0030	ND	0.0030	ND	0.0030

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/25/2008
Time: 10:43:39

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
METHOD 8082 - POLYCHLORINATED BIPHENYLS

Rept: AN0326

Client ID		TP 1-13		TP 1-6		TP 10-1		TP 10-6	
Job No	Lab ID	A08-3633	A8363302	A08-3633	A8363301	A08-3633	A8363306	A08-3633	A8363307
Sample Date		04/04/2008		04/04/2008		04/07/2008		04/07/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Aroclor 1016	UG/KG	ND	24	ND	200	ND	19	ND	21
Aroclor 1221	UG/KG	ND	24	ND	200	ND	19	ND	21
Aroclor 1232	UG/KG	ND	24	ND	200	ND	19	ND	21
Aroclor 1242	UG/KG	ND	24	ND	200	ND	19	ND	21
Aroclor 1248	UG/KG	ND	24	ND	200	ND	19	ND	21
Aroclor 1254	UG/KG	ND	24	ND	200	ND	19	59	21
Aroclor 1260	UG/KG	ND	24	ND	200	ND	19	ND	21
SURROGATE(S)									
Tetrachloro-m-xylene	%	91	35-134	0 D	35-134	70	35-134	74	35-134
Decachlorobiphenyl	%	134	34-148	0 D	34-148	94	34-148	272 *	34-148

Client ID		TP 5-3		TP 7-2		TP 9-3			
Job No	Lab ID	A08-3633	A8363303	A08-3633	A8363304	A08-3633	A8363305		
Sample Date		04/04/2008		04/07/2008		04/07/2008			
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Aroclor 1016	UG/KG	ND	35	ND	220	ND	19	NA	
Aroclor 1221	UG/KG	ND	35	ND	220	ND	19	NA	
Aroclor 1232	UG/KG	ND	35	ND	220	ND	19	NA	
Aroclor 1242	UG/KG	ND	35	ND	220	ND	19	NA	
Aroclor 1248	UG/KG	ND	35	ND	220	ND	19	NA	
Aroclor 1254	UG/KG	ND	35	ND	220	ND	19	NA	
Aroclor 1260	UG/KG	ND	35	56 J	220	5.2 J	19	NA	
SURROGATE(S)									
Tetrachloro-m-xylene	%	82	35-134	95	35-134	69	35-134	NA	
Decachlorobiphenyl	%	758 *	34-148	315 *	34-148	85	34-148	NA	

13/49

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/22/2008
Time: 15:38:18

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
METHOD 8082 - POLYCHLORINATED BIPHENYLS

Rept: AN0326

Client ID Job No Lab ID Sample Date		TP-5-7 A08-3489 A8348904 04/03/2008		TP-6-6 A08-3489 A8348902 04/03/2008		TP-6-7 A08-3489 A8348903 04/03/2008		TP-7-4 A08-3489 A8348901 04/02/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Aroclor 1016	UG/KG	ND	91	ND	97	ND	94	ND	19
Aroclor 1221	UG/KG	ND	91	ND	97	ND	94	ND	19
Aroclor 1232	UG/KG	ND	91	ND	97	ND	94	ND	19
Aroclor 1242	UG/KG	ND	91	ND	97	ND	94	ND	19
Aroclor 1248	UG/KG	ND	91	ND	97	62 J	94	ND	19
Aroclor 1254	UG/KG	ND	91	ND	97	ND	94	ND	19
Aroclor 1260	UG/KG	25 J	91	110	97	44 J	94	ND	19
SURROGATE(S)									
Tetrachloro-m-xylene	%	122	35-134	68	35-134	65	35-134	67	35-134
Decachlorobiphenyl	%	85	34-148	162 *	34-148	172 *	34-148	84	34-148

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/25/2008
Time: 10:43:45

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
WET CHEMISTRY ANALYSIS

Rept: AN0326

Client ID		TP 1-13		TP 1-6		TP 10-1		TP 10-6	
Job No	Lab ID	A08-3633	A8363302	A08-3633	A8363301	A08-3633	A8363306	A08-3633	A8363307
Sample Date		04/04/2008		04/04/2008		04/07/2008		04/07/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Flashpoint	°F	>176.0	0	>176.0	0	>176.0	0	>176.0	0

Client ID		TP 5-3		TP 7-2		TP 9-3			
Job No	Lab ID	A08-3633	A8363303	A08-3633	A8363304	A08-3633	A8363305		
Sample Date		04/04/2008		04/07/2008		04/07/2008			
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Flashpoint	°F	>176.0	0	>176.0	0	>176.0	0	NA	

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 04/22/2008
Time: 15:38:44

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
WET CHEMISTRY ANALYSIS

Rept: AN0326

Client ID Job No Sample Date	Lab ID	TP-5-7 A08-3489 04/03/2008	A8348904	TP-6-6 A08-3489 04/03/2008	A8348902	TP-6-7 A08-3489 04/03/2008	A8348903	TP-7-4 A08-3489 04/02/2008	A8348901
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Flashpoint	°F	>176.0	0	>176.0	0	>176.0	0	>176.0	0

NA = Not Applicable ND = Not Detected

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4142 (0907)

Client: Benchmark Env Eng & Sci, PLLC	Project Manager: Tom Forbes	Date: 4/8/08	Chain of Custody Number: 396495
Address: 726 Exchange St Suite 624	Telephone Number (Area Code)/Fax Number: 716-856-0599 / 0583	Lab Number:	Page 1 of 2
City: Buffalo / State: NY / Zip Code: 14210	Site Contact: R. Dubisz	Lab Contact: B. Fischer	
Project Name and Location (State): Tecumseh Phase I Business Park	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Analysis: TCLP VOCs	TCLP SVOCs	TCLP Metals	PCBs	Flashpoint	Special Instructions/ Conditions of Receipt
TP 1-6	4/4/08	1500				Y	Y						✓	✓	✓	✓	✓	
TP 1-13	4/4/08	1200				Y	Y						✓	✓	✓	✓	✓	
TP ~~5-3~~ 5-3	4/4/08	1100				Y	Y						✓	✓	✓	✓	✓	
TP 7-2	4/7/08	1300				Y	Y						✓	✓	✓	✓	✓	
TP 9-3	4/7/08	1330				Y	Y						✓	✓	✓	✓	✓	
TP 10-1	4/7/08	1400				Y	Y						✓	✓	✓	✓	✓	
TP 10-6	4/7/08	1440				✓	Y						✓	✓	✓	✓		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other Standard

QC Requirements (Specify): Standard Level II

	Date	Time		Date	Time
1. Relinquished By	4/8/08	1000	1. Received By	04-08-08	16:30
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4142 (0907)

Client: Benchmark Env Eng	Project Manager: Tom Forbes	Date: 4/4/08	Chain of Custody Number: 389933
Address: 726 Exchange St Suite 624	Telephone Number (Area Code)/Fax Number: 716-856-0599 / 0387	Lab Number:	Page 1 of 1
City: Buffalo / State: NY / Zip Code: 14210	Site Contact: R. Daiz / Lab Contact: B Fischer		
Project Name and Location (State): Tecumseh - Phase I Business Park	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.: 48000095-0			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: TCLP VOCs	TCLP SVOC	TCLP metals	TCLP Hg	PCBs	Ignitability	Special Instructions/ Conditions of Receipt
TP-2-4	4/2/08	1600				X		X						✓	✓	✓	✓	✓	✓	
TP-6-6	4/3/08	1700				X		X						✓	✓	✓	✓	✓	✓	
TP-6-7	4/3/08	1430				X		X						✓	✓	✓	✓	✓	✓	
TP 5-7	4/3/08	1600				X		X						✓	✓	✓	✓	✓	✓	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ______ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other Standard

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	4/4/08	0900	1. Received By	4-04-08	11:35
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Date: 05/19/2008
Time: 09:45:57

TURNKEY - TECUMSEH REDEVELOPMENT SITE
Phase 1 Business Park (level 2)
TCLP METALS

Rept: AN1246

Client ID		TP 6-6 GRID 1		TP 6-6 GRID 11		TP 6-6 GRID 14		TP 6-6 GRID 17	
Job No / Lab ID		A08-5311 / A8531101		A08-5311 / A8531105		A08-5311 / A8531106		A08-5311 / A8531107	
Sample Date		05/09/2008		05/09/2008		05/09/2008		05/09/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Lead - Total	MG/L	0.11	0.0050	0.18	0.0050	61.4	0.050	0.087	0.0050

Client ID		TP 6-6 GRID 2		TP 6-6 GRID 5		TP 6-6 GRID 8			
Job No / Lab ID		A08-5311 / A8531102		A08-5311 / A8531103		A08-5311 / A8531104			
Sample Date		05/09/2008		05/09/2008		05/09/2008			
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Lead - Total	MG/L	6.1	0.0050	0.62	0.0050	2.2	0.0050	NA	

NA = Not Applicable ND = Not Detected

TestAmerica Lab

APPENDIX D

MASTER EROSION CONTROL PLAN

INTERIM REMEDIAL MEASURES WORK PLAN
APPENDIX D

MASTER EROSION CONTROL PLAN

PHASE I BUSINESS PARK AREA
LACKAWANNA, NEW YORK

BROWNFIELD CLEANUP PROGRAM SITE NO. C915197

May 2008 0071-006-202

Prepared for:

ArcelorMittal Tecumseh Redevelopment, Inc.

Prepared by:

TURNKEY ENVIRONMENTAL RESTORATION, LLC

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LIST OF ATTACHMENTS

D-1	NYSDEC SPDES General Permit for Storm Water Discharges from Construction Activities
D-2	Erosion Control Details
D-3	Inspection and Maintenance Report Form

1.0 INTRODUCTION

1.1 Background

The Phase I Business Park Area (Site) is located west of New York State Route 5 (Hamburg Turnpike), east of the Gateway Metroport Ship Canal, and east and south of land currently owned by Gateway Trade Center in the City of Lackawanna, New York. The Site is currently owned by ArcelorMittal Tecumseh Redevelopment (Tecumseh). The Site was accepted into the NY State Brownfield Cleanup Program (BCP) with the execution of the Brownfield Cleanup Agreement in November of 2005.

The approximately 102-acre Site is flat lying and comprised mostly of vacant land, but includes some active railroad spurs and other structures. The Site was formerly used to house a portion of Bethlehem Steel Corporation's integrated steel making operations. Most facility operations ceased in 1983, with a majority of the structures at the facility demolished in subsequent years.

The Phase I Business Park Area is slated for redevelopment as a commercial/light industrial area, consistent with surrounding property. Redevelopment is scheduled to begin in winter/spring 2009.

1.2 Purpose and Scope

This Master Erosion Control Plan (MECP) was prepared to provide guidance during Interim Remedial Measures (IRM) activities since erosion control will be a critical component of preventing the potential migration of contaminants off-site during excavation activities. This document is generic in nature and provides minimum erosion control practices to be used.

2.0 GENERAL PERMIT REQUIREMENTS

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 that will result in the disturbance of 1 or more acres of land must obtain coverage under SPDES General Permit (GP-02-01) prior to the commencement of soil disturbance. 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. Figure 1 (Attachment D-1) is a flowchart to be used in determining whether a SWPPP will be required during site redevelopment construction activities. The Notice of Intent application form and the text of the Construction Storm Water General Permit are provided in Attachment D-1.

3.0 POTENTIAL EROSION AND SEDIMENT CONTROL CONCERNS

Potential areas and items of concern during IRM activities include the following:

- Remediated areas or off-site properties adjacent to unremediated parcels need protection so they do not become impacted by Site operations.
- Storm water inlets will require protective measures to limit sediment transfer to storm sewers.
- Runoff from soil stockpiles will require erosion controls.
- Surface slopes need to be minimized as much as practical to control sediment transfer.
- Soil/fill excavated will require proper handling and disposal.

4.0 EROSION AND SEDIMENT CONTROL MEASURES

4.1 Background

Standard soil conservation practices need to be incorporated into IRM activities to mitigate soil erosion damage, off-site sediment migration, and water pollution from erosion. These practices combine vegetative and structural measures, many of which will be permanent in nature and become part of the completed project (i.e., drainage channels and grading). Other measures will be temporary and serve only during the construction stage. Selected erosion and sediment control measures will meet the following criteria:

- Incorporate temporary and permanent erosion control measures.
- Remove sediment from sediment-laden storm water before it leaves the Site.

4.2 Temporary Measures

Temporary erosion and sedimentation control measures and facilities will be used during construction. These temporary measures will be installed and maintained until they are either no longer needed or until such time as permanent measures are installed and become effective. Erosion and sediment controls shall be installed in accordance with the standards and specifications presented in Attachment D-2. At a minimum, the following temporary measures will be used:

- Silt fencing
- Straw/hay bales
- Temporary vegetation/mulching
- Temporary sedimentation basins
- Cautious placement, compaction and grading of stockpiles

4.2.1 Silt Fencing

IRM activities may result in surface water flow to drainage ditches and swales, storm sewers, the North Return Water Trench (NRWT), the South Return Water Trench (SRWT), and adjacent properties. Silt fencing will be the primary sediment control measure used in these areas. Prior to extensive soil excavation or grading activities, silt fences will be installed

along the perimeter of all construction areas. The orientation of the fencing will be adjusted as necessary as the work proceeds to accommodate changing site conditions.

Intermediate fencing will be used upgradient of the perimeter fencing to help lower surface water runoff velocities and reduce the volume of sediment to perimeter fencing. Stockpiles will also be surrounded with silt fencing.

As sediment collects, the silt fences will be cleaned as necessary to maintain their integrity. Removed sediment will be used elsewhere on-site as general fill. All perimeter silt fences will remain in place until construction activities in an area are completed and vegetative cover has been established.

4.2.2 Straw and/or Hay Bales

Straw and/or hay bales will be used to intercept sediment laden storm water runoff in drainage channels during construction. The use of either hay or straw will be based on the availability of materials at the time of construction.

Bales will be placed in swales and ditches where the anticipated flow velocity is not expected to be greater than 5 feet/second (fps). Intermediate bales will be placed upgradient of the final barrier to reduce flow velocities and sediment loadings where higher velocities are anticipated.

As with silt fencing, sediment will be removed as necessary from behind the bales and disposed of on-site. Bales that have become laden with sediment or that have lost their structural integrity or effectiveness due to the weather will be replaced.

4.2.3 Temporary Sedimentation Basins

Temporary sedimentation basins will be constructed as necessary upgradient of storm water inlets to reduce the volume of sediment laden runoff from the Site. The basins can be as simple as a small excavated area along the alignment of a storm water ditch or as elaborate as a full-scale sedimentation basin with outlet structures designed for certain storm events from a given area of the Site. The basins will be cleaned as necessary and the removed sediment used elsewhere on-site as subgrade fill material.

4.2.4 Cautious Placement of Stockpiles

IRM excavation activities will produce stockpiles of soil and subgrade soil/fill materials. Careful placement and construction of stockpiles will be required to control

erosion. Stockpiles will be placed no closer than 50 feet from the NRWT, SRWT, storm water inlets, and parcel boundaries. Additionally, stockpiles will be graded and compacted as necessary for positive surface water runoff and dust control.

4.3 Permanent Control Measures during Site Redevelopment

Permanent erosion and sedimentation control measures and structures will be installed as soon as practical during construction for long-term erosion protection. Examples of permanent erosion control measures could include:

- Using maximum slopes in erosion prone areas to limit erosion.
- Minimizing the potential contact with, and migration of, subsurface soil/fill through the placement of a "clean" soil cover system in all areas not covered with structures, roads, parking areas, sidewalks, etc.
- Constructing permanent storm water detention ponds where appropriate.
- Planting and maintaining vegetation.
- Limiting runoff flow velocities to the extent practical.
- Lining collection channels with riprap, erosion control fabric, vegetation, or similar materials.

5.0 CONSTRUCTION MANAGEMENT PRACTICES

5.1 General

The following general construction practices should be evaluated for erosion and sedimentation control purposes during IRM activities:

- Clearing and grading only as much area as is necessary to accommodate the construction needs to minimize disturbance of areas subject to erosion (i.e., phasing the work).
- Covering exposed or disturbed areas of the Site as quickly as practical.
- Installing erosion and sediment control measures before disturbing the Site subgrade.
- Minimizing both on-site and off-site tracking of soil by vehicles by using routine entry/exit routes.

5.2 Monitoring, Inspection and Maintenance

All erosion and sedimentation controls described in this Plan will be inspected by a qualified representative of the Site Manager within 24 hours of a heavy rainfall event (defined as more than 0.5 inches of precipitation in a 24-hour period) and repaired or modified as necessary to effectively control erosion or turbidity problems. Inspections should include areas under construction, stockpile areas, erosion control devices (i.e., silt fences, hay bales, etc.) and locations where vehicles enter and leave the site. Routine inspections of the entire Site should also be made on a monthly basis during development.

If inspections indicate problems, corrective measures should be implemented within 24 hours. A report summarizing the scope of the inspection, name of the inspector, date, observations made, and a description of the corrective actions taken should be completed. Attachment D-3 includes the Inspection and Maintenance Report Form.

5.2.1 Implementation

Erosion controls and features shall, at all times, be properly constructed, operated, and maintained in accordance with regulatory requirements and good engineering and construction practices. Erosion control measures and activities will be conducted in accordance with currently accepted Best Management Practices (BMPs).

Erosion control monitoring, inspection, and maintenance are an integral part of Site storm water and erosion control. The key elements of the monitoring effort include the following:

- Site inspections and maintenance
- BMPs monitoring
- Recordkeeping
- Review and modifications
- Certification of compliance

5.2.2 Site Inspections and Maintenance Practices

The temporary erosion control features will be maintained until no longer needed or permanent erosion control methods are installed. Site inspections are required every seven days or within 24 hours of a rainfall of 0.5 inches or greater. All disturbed areas, areas for material storage, locations where vehicles enter or exit the site, and all of the erosion and sediment controls identified as part of this Plan must be inspected. Controls must be in good operating condition until the affected area they protect has been completely stabilized and the construction activity is complete. If a repair is necessary, it must be completed within seven days of receipt of a report or notice, if practical. Inspection for specific erosion and sediment controls will include the following:

- Silt fence will be inspected to determine the following:
  1) Depth
  2) Condition of fabric
  3) That the fabric is attached to the posts
  4) That the fence posts are firmly in the ground
- The silt fences will be inspected weekly and within 24 hours of a 0.5 inch or greater storm event.
- Diversion berms, if used, will be inspected and any breaches promptly repaired.
- Temporary and permanent seeding and planting will be inspected for bare spots, washouts, and other potential erosion control problems.
- The Contractor shall designate individual(s) that will be responsible for erosion control, maintenance, and repair activities. The designated individual will also be

responsible for inspecting the site and filling out the inspection and maintenance report.

- Personnel selected for inspection and maintenance responsibilities will receive training as directed by the Engineer. They will be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls used onsite in good working order.

The individual inspecting the Site must record any damages or deficiencies on the Inspection and Maintenance Report Form in Attachment D-3. This form can be used to request maintenance and repair and to document inspection and maintenance activities. Damages or deficiencies must be corrected as soon as possible after the inspection. Any changes that may be required to correct deficiencies in this Plan should also be made as soon as possible, but in no case later than seven days after the inspection.

5.2.3 Recordkeeping

A copy of the MECP and inspection and maintenance records must be kept at the Site from the time construction activities begins until the Site is stabilized. These documents will be made available upon request to regulatory agency representatives or members of the public.

5.2.4 Modifications to the Storm Water Management and Erosion Control Plan

During the course of construction, unanticipated changes may occur that affect this MECP such as schedule changes, phasing changes, staging area modifications, off-site drainage impacts, and repeated failures of designed controls. Any changes to the activities and controls identified in this Plan must be documented and the Plan revised accordingly. Certification of revisions to this plan shall be included at the end of the document.

ATTACHMENT D-1

NYSDEC SPDES GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

- Notice of Intent
- Notice of Termination
- NYSDEC SPDES General Permit For Storm Water Discharges from Construction

4286041005

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-02-01

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. To properly complete this form, please refer to the Instruction Manual which can be accessed at http://www.dec.ny.gov/docs/water_pdf/instr_man.pdf

-IMPORTANT-

THIS FORM FOR HANDPRINT ONLY

RETURN THIS FORM TO THE ADDRESS ABOVE

PRINT CAPITAL LETTERS IN BLACK INK AND AVOID CONTACT WITH THE EDGE OF BOXES
FILL IN CIRCLES COMPLETELY AND DO NOT USE CHECKMARKS
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)

Location Information

Project Site Information

Project/Site Name

Street Address (NOT P.O. BOX)

City/Town/Village (THAT ISSUES BUILDING PERMIT)

State N Y Zip -

County DEC Region (if known)

Name of Nearest Cross Street

Distance to Nearest Cross Street (Feet)

Direction to Nearest Cross Street

○ **North** ○ **South** ○ **East** ○ **West**

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.state.ny.us/website/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 dropdown menu on the left and choose "Get Coordinates". Click on the center of your site and a small 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**

Project Site Information

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

Pre-Development Existing Land Use	Post-Development Future Land Use
○ FOREST	○ SINGLE FAMILY HOME — Number of Lots
○ PASTURE/OPEN LAND	○ SINGLE FAMILY SUBDIVISION
○ CULTIVATED LAND	○ TOWN HOME RESIDENTIAL
○ SINGLE FAMILY HOME	○ MULTIFAMILY RESIDENTIAL
○ SINGLE FAMILY SUBDIVISION	○ INSTITUTIONAL/SCHOOL
○ TOWN HOME RESIDENTIAL	○ INDUSTRIAL
○ MULTIFAMILY RESIDENTIAL	○ COMMERCIAL
○ INSTITUTIONAL/SCHOOL	○ ROAD/HIGHWAY
○ INDUSTRIAL	○ RECREATIONAL/SPORTS FIELD
○ COMMERCIAL	○ BIKE PATH/TRAIL
○ ROAD/HIGHWAY	○ LINEAR UTILITY (water, sewer, gas, etc.)
○ RECREATIONAL/SPORTS FIELD	○ PARKING LOT
○ BIKE PATH/TRAIL	○ OTHER
○ SUBSURFACE UTILITY	OTHER
○ PARKING LOT	
○ OTHER	
OTHER	

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 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. Will there be more than 5 acres disturbed at any given 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? **(if yes, The SWPPP must address all planned phases)** * ○ Yes ○ No

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

Start Date ___/___/_____ - **End Date** ___/___/_____

Receiving System(s)

12. Provide the name of the nearest, natural, classified surface waterbody(ies) into which construction site runoff has the potential to discharge.

For Questions 13 and 14 refer to the Instruction Manual for a subset of 303(d) segments and TMDL watersheds subject to Condition A of the permit. These waterbodies and watersheds have been identified for regulation within the stormwater program due to some level of impairment by nutrients, silt or sediment. The Instruction Manual can be accessed at www.dec.state.ny.us/website/dow/toolbox/instr_man.pdf

13. Has the surface waterbody(ies) in question 12 been identified as a 303(d) segment? * ○ Yes ○ No

14. Is this project located in a TMDL Watershed? * ○ Yes ○ No

***NOTE:** **If you answered Yes to either question 13 or 14, Pursuant to Part I.D.3.(b) of the permit, you must have your SWPPP prepared and certified by a licensed/certified professional and the SWPPP is subject to a 60-business day review.**

15. Does the site runoff enter a separate storm sewer system- including roadside drains, swales, ditches, culverts, etc? **(if no, skip question 16)** ○ Yes ○ No ○ Unknown

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

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ Yes ○ No ○ Unknown

Stormwater Pollution Prevention Plan (SWPPP)

18. 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 *

19. 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 question 20** ○ Yes ○ No

20. 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 *

NOTE: If you answered no to question 18 or 20, Pursuant to Part I.D.3.(b) of the permit, you must have your SWPPP prepared and certified by a licensed/certified professional and the SWPPP is subject to a 60-business day review. Please provide further details in the details/comment section on the last page of this form.

21. 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 Information (if different from Owner/Operator info)

SWPPP Preparer

Contact Name (Last, Space, First)

Mailing Address

City

State Zip -

Phone - -

Fax - -

Email

Stormwater Pollution Prevention Plan (SWPPP)

Erosion and Sediment Control Practices

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

23. 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

Other

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

Stormwater Pollution Prevention Plan (SWPPP)

Water Quality and Quantity Control

Important:Completion of Questions 24-30 is not required if the project:

Disturbs less than 5 acres and is planned for single-family residential homes(including subdivisions) or construction on agricultural property and does not have a discharge to a 303(d) water or is not located within a TMDL watershed.

Additionally, sites where there will be no future impervious area within the disturbed area and that do not have a change(pre to post development)in hydrology do not need to complete questions 24-30.

24. Indicate **all** the permanent Stormwater Management Practice(s) that will be installed on this site

Post Construction Stormwater Management Practices

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)**

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)**

Open Channels

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

○ **Other**

Describe other stormwater management practices not listed above or explain any deviations from the technicial standards. If the SWPPP does not conform to the technicial standards, the SWPPP must be prepared and certified by a licensed/certified professional and is subject to a 60-business day review.

Has a long term Operation and Maintenance plan for the post construction management practices been developed? ○ **Yes** ○ **No**

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

Stormwater Pollution Prevention Plan (SWPPP)
Water Quality and Quantity Control

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

Total Water Quality Volume (WQv)

WQv Required ___.___ **acre-feet**

WQv Provided ___.___ **acre-feet**

26. 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**

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**

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 27 and 28 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)

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

28. 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. ___ %

29. Indicate the total number of permanent stormwater management practices to be installed ___

30. Provide the total number of stormwater discharge points from the site (include discharges to either surface waters or to seperate storm sewer systems) ___

Other Permits

31. Select any other DEC permits that are required for this project or ○ None

DEC Permits

○ Air Pollution Control	○ Stream Protection/Article 15
○ Coastal Erosion	○ Water Quality Certificate
○ Hazardous Waste	○ Dam Safety
○ Long Island Wells	○ Water Supply
○ Mined Land Reclamation	○ Freshwater Wetlands
○ Other SPDES	○ Tidal Wetlands
○ Solid Waste	○ Wild, Scenic and Recreational Rivers

Other

32. 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

Details/Comments

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 also certify under penalty of law that this document and the corresponding documents were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person(s) who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. 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) 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

/ /

9100215042

New York State Department of Environmental Conservation
Division of Water
Bureau of Water Permits, 4th Floor
625 Broadway, Albany, New York 12233-3505
Phone: (518) 402-8111 . **Fax:** (518) 402-9029
Website: www.dec.state.ny.us

NYR (for DEC use only)

Notice of Intent or Termination

For Stormwater Discharges Associated with Industrial Activity under the State Pollutant Discharge Elimination System (SPDES) Multi-Sector General Permit GP-0-06-002

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 Notice of Intent or Termination (NOIT) Form. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

"IMPORTANT - PRINT CAPITAL LETTERS USING BLACK INK. AVOID CONTACT WITH THE EDGE OF THE BOXES. FILL IN CIRCLES COMPLETELY AND DO NOT USE CHECK MARKS. OWNER/OPERATOR MUST SIGN FORM."

Owner/Operator Information

O/O Name

O/O Street Address

O/O City

O/O State N Y

O/O Zip -

Contact Information

Contact First Name

Contact Last Name

Contact Phone - -

Contact Fax - -

Contact eMail

0250215049

Facility Information

Facility Name

Facility Street Address

Facility City

Facility State NY

Facility Zip -

Facility County

Name of Nearest Cross Street

Distance to Nearest Cross Street (feet)

Direction to Nearest Cross Street

○ **North** ○ **South** ○ **East** ○ **West**

---

1. Permit I.D Number (for renewals, modifications or terminations) **NYR**

2. Reason for Submittal:

   ○ Coverage for a new facility (not previously permitted)

   ○ Permit Renewal

   ○ Modification (There has been a change in information since the earlier submission)

   ○ Want to terminate general stormwater permit coverage

3. Provide the Geographic Coordinates for the facility in NYTM units.

   X Coordinates (Easting)

   4 Y Coordinates (Northing)

These coordinates can be obtained through the NYSDEC Stormwater Interactive Map on the DEC Website at: http://www.dec.state.ny.us/website/imsmaps/stormwater/viewer.htm
Directions: Go to the above website. Zoom into your project location such that you can accurately click on the center of your facility. Once you have located your facility, go to the drop-down menu on the left and choose "Get Coordinates". Click on the center of your facility and a small window containing the X, Y coordinates in NYTM units will pop up. Transcribe these coordinates into the spaces above. For problems with the interactive map, please try the help function.

4. Identify all applicable Industrial Activities from the Industrial Sectors shown below that are located within areas subject to the stormwater discharges covered under this permit. Check all that apply to your facility.

Sampling Notes	Mark all that apply	SIC Code or Activity Code	Activity Represented
		Sector A: Timber Products	
B,C	○	2411	Log Storage and Handling (Wet deck storage areas are only authorized if no chemical additives are used in the spray water or applied to the logs).
B	○	2421	General Sawmills and Planning Mills
B	○	2426	Hardwood Dimension and Flooring Mills
B	○	2429	Special Product Sawmills, Not Elsewhere
B	○	2431-2439 (except 2434 - see sector W)	Millwork, Veneer, Plywood, and Structural Wood.
B	○	2441, 2448, 2449	Wood Containers
B	○	2451, 2452	Wood Buildings and Mobile Homes
B	○	2491	Wood Preserving
B	○	2493	Reconstituted Wood Products
B	○	2499	Wood Products, Not Elsewhere Classified
		Sector B: Paper and Allied Products	
	○	2611	Pulp Mills
	○	2621	Paper Mills
B	○	2631	Paperboard Mills
	○	2652-2657	Paperboard Containers and Boxes
	○	2671-2679	Converted Paper and Paperboard Products, Except Containers and Boxes
		Sector C: Chemical and Allied Products	
B	○	2812-2819	Industrial Inorganic Chemicals.
B	○	2821-2824	Plastics Materials and Synthetic Resins, Synthetic Rubber, Cellulosic and Other Manmade Fibers Except Glass.
	○	2833-2836	Medicinal Chemicals and Botanical Products; Pharmaceutical Preparations; In Vitro and In Vivo Diagnostic Substances; Biological Products, Except Diagnostic Substances.
B	○	2841-2844	Soaps, Detergents, and Cleaning Preparations; Perfumes, Cosmetics, and Other Toilet Preparations.
	○	2851	Paints, Varnishes, Lacquers, Enamels, and Allied Products.
	○	2861-2869	Industrial Organic Chemicals.
B,C	○	2873-2879	Agricultural Chemicals.
	○	2891-2899	Miscellaneous Chemical Products.
	○	3952 (limited to list)	Inks and Paints, Including China Painting Enamels, India Ink, Drawing Ink, Platinum Paints for Burnt Wood or Leather Work, Paints for China Painting, Artist's Paints and Artist's Watercolors.
		Sector D: Asphalt Paving and Roofing Materials and Lubricants	
B,C	○	2951, 2952	Asphalt Paving and Roofing Materials
	○	2992, 2999	Miscellaneous Products of Petroleum and Coal
		Sector E: Glass Clay, Cement, Concrete, and Gypsum Products	
	○	3211	Flat Glass
	○	3221, 3229	Glass and Glassware, Pressed or Blown
	○	3231	Glass Products Made of Purchased Glass
C	○	3241	Hydraulic Cement
B	○	3251-3259	Structural Clay Products
B	○	3261-3269	Pottery and Related Products
B,C	○	3271-3275	Concrete, Gypsum and Plaster
	○	3281	Cut Stone and Stone Products
	○	3291-3299	Abrasive, Asbestos, and Miscellaneous Non-metallic Mineral Products

Sampling Notes	Mark all that apply	SIC Code or Activity Code	Activity Represented
		Sector F: Primary Metals	
B	O	3312-3317	Steel Works, Blast Furnaces, and Rolling and Finishing Mills
B	O	3321-3325	Iron and Steel Foundries
	O	3331-3339	Primary Smelting and Refining of Nonferrous Metals
	O	3341	Secondary Smelting and Refining of Nonferrous Metals
B	O	3351-3357	Rolling, Drawing, and Extruding of Nonferrous
B	O	3363-3369	Nonferrous Foundries (Castings)
	O	3398, 3399	Miscellaneous Primary Metal Products
		Sector G: Metal Mining (Ore Mining and Dressing)	
B	O	1011	Iron Ores
B	O	1021	Copper Ores
B	O	1031	Lead and Zinc Ores
B	O	1041, 1044	Gold and Silver Ores
B	O	1061	Ferroalloy Ores, Except Vanadium
B	O	1081	Metal Mining Services
B	O	1094, 1099	Miscellaneous Metal Ores
		Sector H: Coal Mines and Coal Mining Related Facilities	
		Sector I: Oil and Gas Extraction and Refining	
B	O	1311	Crude Petroleum and Natural Gas
B	O	1321	Natural Gas Liquids
B	O	1381-1389	Oil and Gas Field Services
B	O	2911	Petroleum Refineries
		Sector J: Mineral Mining and Dressing	
B	O	1411	Dimension Stone
B,C	O	1422-1429	Crushed and Broken Stone, Including Rip Rap
B,C	O	1442, 1446	Sand and Gravel
	O	1455, 1459	Clay, Ceramic, and Refractory Materials
	O	1474-1479	Chemical and Fertilizer Mineral Mining
B	O	1481	Nonmetallic Minerals Services, Except Fuels
B	O	1499	Miscellaneous Nonmetallic Minerals, Except Fuels
		Sector K: Hazardous Waste Treatment, Storage, or Disposal Facilities	
B,C	O	HZ	Hazardous Waste Treatment, Storage or Disposal
		Sector L: Land Fills and Land Application Sites	
B,C	O	LF	Landfills, Land Application Sites, and Open Dumps
		Sector M: Automobile Salvage Yards	
B	O	5015	Automobile Salvage Yards
		Sector N: Scrap Recycling Facilities	
B	O	5093	Scrap Recycling Facilities
B	O	4499 (limited to list)	Dismantling Ships, Marine Salvaging, and Marine Wrecking - Ships for Scrap
		Sector O: Steam Electric Generating Facilities	
B,C	O	SE	Steam Electric Generating Facilities

Sampling Notes	Mark all that apply	SIC Code or Activity Code	Activity Represented
		Sector P: Land Transportation and Warehousing	
B	O	4011, 4013	Railroad Transportation
B	O	4111-4173	Local and Highway Passenger Transportation
B	O	4212-4231	Motor Freight Transportation and Warehousing
B	O	4311	United States Postal Service
B	O	5171	Petroleum Bulk Stations and Terminals
		Sector Q: Water Transportation	
B	O	4412-4499 (except 4499 as specified in Sector N)	Water Transportation
		Sector R: Ship and Boat Building or Repairing Yards	
	O	3731, 3732	Ship and Boat Building or Repair Yards
		Sector S: Air Transportation	
B	O	4512-4581	Air Transportation Facilities
		Sector T: Treatment Works	
B	O	TW	Treatment Works
		Sector U: Food and Kindred Products	
	O	2011-2015	Meat Products
	O	2021-2026	Dairy Products
	O	2032-2038	Canned, Frozen and Preserved Fruits, Vegetables and Food Specialties
B	O	2041-2048	Grain Mill Products
	O	2051-2053	Bakery Products
	O	2061-2068	Sugar and Confectionery Products
B	O	2074-2079	Fats and Oils
	O	2082-2087	Beverages
	O	2091-2099	Miscellaneous Food Preparations and Kindred Products
	O	2111-2141	Tobacco Products
		Sector V: Textile Mills, Apparel, and Other Fabric Product Manufacturing, Leather and Leather Pruducts	
	O	2211-2299	Textile Mill Products
	O	2311-2399	Apparel and Other Finished Products Made From Fabrics and Similiar Materials
	O	3131-3199 (except 3111- see sector Z)	Leather and Leather Products, except Leather Tanning and Finishing
		Sector W: Furniture and Fixtures	
	O	2434	Wood Kitchen Cabinets
	O	2511-2599	Furniture and Fixtures
		Sector X: Printing and Publishing	
	O	2711-2796	Printing, Publishing, and Allied Industries
		Sector Y: Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Industries	
B	O	3011	Tires and Inner Tubes
B	O	3021	Rubber and Plastics Footwear
B	O	3052, 3053	Gaskets, Packing, and Sealing Devices and rubber and Plastics Hose and Belting
B	O	3061, 3069	Fabricated Rubber Products, Not Elsewhere Classified
B	O	3081-3089	Miscellaneous Plastics Products
	O	3931	Musical Instruments
	O	3942-3949	Dolls, Toys, Games and Sporting and Athletic Goods
	O	3951-3955	Pens, Pencils, and Other Artists' Materials
	O	3961, 3965	Costume Jewelry, Costume Novelties, Buttons, and Miscellaneous Notions, Except Precious Metal
	O	3991-3999	Miscellaneous Manufacturing Industries

Sampling Notes	Mark all that apply	SIC Code or Activity Code	Activity Represented
		Sector Z: Leather Tanning and Finishing	
B	○	3111	Leather Tanning, Currying and Finishing
		Sector AA: Fabricated Metal Products	
B	○	3411-3499	Fabricated Metal Products, Except Machinery and Transportation Equipment
B	○	3911-3915	Jewelry, Silverware, and Plated Ware
		Sector AB: Transportation Equipment, Industrial or Commercial Machinery	
	○	3511-3599 (except 3571-3579 see Sector AC)	Industrial and Commercial Machinery (Except Computer and Office Equipment)
	○	3711-3799 (except 3731 & 3732 see Sector R)	Transportation Equipment (Except Ship and Boat Building and Repairing)
		Sector AC: Electronic, Electrical, Photographic, and Optical Goods	
B	○	3571-3579	Computer and Office Equipment
B	○	3612-3699	Electronic, Electrical Equipment and Components, Except Computer Equipment
B	○	3812-3873	Measuring, Analyzing and Controlling Instrument; Photographic and Optical Goods
		Sector AD & AE: Non-Classified Facilities/Storm Water Discharges Designated By the Board As Requiring Permits	
B	○	Sector AD	Other Storm Water Discharges Designated By the Department As Needing a Permit or Any Facility Discharging Storm Water Associated With Industrial Activity Not Described By Any of Sectors A-AC. Note: Facilities may not elect to be covered under Sector AD. Only the Department may assign a facility to Sector AD.
B	○	Sector AE	

Notes: B - Benchmark Monitoring Required
C - Compliance Monitoring for Point Source Category Effluent Limitations

5. Has a Stormwater Pollution Prevention Plan (SWPPP) been prepared for this facility in accordance with the requirements of the SPDES Multi-Sector General Permit? Please be advised that you cannot obtain coverage under this permit without having first prepared a SWPPP. ..... ○ Yes ○ No

6. For each stormwater discharge associated with industrial activity at your facility identify the outfall number (e.g., 001, 002, etc.); the four digit Standard Industrial Classification (SIC) codes or 2-letter Industrial Activity Codes that best represent the principal products or services rendered by the facility for that drainage area; and the acreage of industrial activity exposed to stormwater for each outfall (round to nearest tenth of an acre):

Outfall No.	Industrial Activities (SIC or 2-letter Codes) A	B	C	Acreage
1				.
2				.
3				.
4				.
5				.
6				.
7				.
8				.
9				.
			Total Acreage	.

(Note: SIC information can be obtained at the following web sites: http://www.osha.gov/pls/imis/sicsearch.html and http://www.softshare.com/tables/sic/. The 2-letter Industrial Activity Codes are: **HZ** - hazardous waste treatment, storage or disposal facilities; **LF** - landfills/disposal facilities that receive or have received any industrial waste; **SE** - steam electric power generating facilities; or **TW** - treatment works for treating domestic sewage.)

7. Does this facility have coal piles that are exposed to precipitation? ..... ○ Yes ○ No

8. Does this facility discharge have salt piles that are exposed to precipitation? ..... ○ Yes ○ No

9. Does this facility discharge stormwater from secondary containment areas for liquid bulk storage or transfer areas? ..... ○ Yes ○ No

10. Is the facility subject to any of the following EPA Point Source Category Effluent Limitations?

- Runoff from material storage piles at cement manufacturing facilities (40 CFR Part 411 Subpart C)? ..... ○ Yes ○ No

If yes, list Outfall Nos. | | | | | | | | | | | | | | | |

- Contaminated runoff from phosphate fertilizer manufacturing facilities (40 CFR Part 418 Subpart A)? ..... ○ Yes ○ No

If yes, list Outfall Nos. | | | | | | | | | | | | | | | |

- Coal Pile runoff at steam electric power generating facilities (40 CFR Part 423)? ..... ○ Yes ○ No

If yes, list Outfall Nos. | | | | | | | | | | | | | | | |

- Discharges resulting from spraydown or intentional wetting of logs at wet deck storage areas (40 CFR Part 429 Subpart I)? ..... ○ Yes ○ No

If yes, list Outfall Nos. | | | | | | | | | | | | | | | |

- Mine dewatering discharges at crushed stone, construction sand and gravel, and industrial sand mines (40 CFR Part 436)? ..... ○ Yes ○ No

If yes, list Outfall Nos. | | | | | | | | | | | | | | | |

- Runoff from asphalt emulsion facilities (40 CFR Part 443 Subpart A)? ..... ○ Yes ○ No

If yes, list Outfall Nos. | | | | | | | | | | | | | | | |

- Runoff from landfills (40 CFR 445 Subpart A and B)? ..... ○ Yes ○ No

If yes, list Outfall Nos. | | | | | | | | | | | | | | | |

11. Provide the name(s) of the surface waterbody(ies) into which site runoff will discharge:

12(a). Does site runoff enter a Municipal Separate Storm Sewer System including roadside drains, swales, ditches, culverts, etc.? ..... ○ Yes ○ No

12(b). If yes, what is the name of the municipality/entity that owns the Municipal Separate Storm Sewer System?

13. Identify any other DEC Permits that are required for this facility:

○ Air Pollution Control	○ Stream Protection/Article 15
○ Coastal Erosion	○ Water Quality Certificate
○ Hazardous Waste	○ Dam Safety
○ Long Island Wells	○ Water supply
○ Mined Land Reclamation	○ Freshwater Wetlands
○ Other SPDES	○ Tidal Wetlands
○ Solid Waste	○ Wild, Scenic and Recreational Rivers

Other

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Owner/Operator First Name (please print or type) MI

Date / /

Owner/Operator Last Name (please print or type)

Signature

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

from

CONSTRUCTION ACTIVITY

Permit No. GP-02-01

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

Effective Date: January 8, 2003

Expiration: January 8, 2008

William R. Adriance
Chief Permit Administrator

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

Authorized Signature

William R. Adriance

Date: January 8, 2003

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

Preface

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater discharges from certain construction activities to waters of the United States[1] are unlawful unless they are authorized by a NPDES (National Pollutant Discharge Elimination System) permit or by a state permit program. New York's SPDES (State Pollutant Discharge Elimination System) is a NPDES-approved program with permits issued in accordance with the Environmental Conservation Law ("ECL"). Discharges of pollutants to all other "Waters of New York State" such as groundwaters are also unlawful unless they are authorized by a SPDES permit.

A discharger, owner, or operator may[2] obtain coverage under this general permit by submitting a Notice of Intent ("NOI") to the Department. Copies of this General Permit and the NOI for New York are available by calling (518) 402-8109 or at any Department of Environmental Conservation (the Department) regional office (see Appendix A on Page 23). They are also available on the Department's website at:

www.dec.state.ny.us

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[1] "Waters of the United States" means:

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; and
(b) All interstate waters, including interstate "wetlands"; and
(c) All other waters such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
    (1) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    (3) Which are used or could be used for industrial purposes by industries in interstate commerce; and
(d) All impoundments of waters otherwise defined as waters of the United States under this definition; and
(e) Tributaries of waters identified in paragraphs (a) through (d) of this definition; and
(f) The territorial sea; and
(g) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal areas in wetlands) nor resulted from the impoundment of waters of the United States.

[2] "may" refers to circumstances under which the discharger is ineligible for coverage under this general permit because of other provisions of this permit. Dischargers which are excluded from coverage under this general permit as provided for in Part I, Section C, for example, are not authorized to discharge under this permit. This also applies to possible situations in which an NOI has been submitted and/or a regulatory fee paid pursuant to Article 72 of the ECL. The submittal of an NOI and/or regulatory fee has no bearing or relevance whatsoever on the eligibility of the construction activity discharging stormwater runoff under the authority of this permit.

Local Programs of a Regulated MS4

Under the federal Phase II stormwater program, many cities, villages, towns, and other public entities in New York State which are located within "Urbanized Areas" as defined by the U.S. Census and who operate a Municipal Separate Storm Sewer System ("MS4") will be required to obtain SPDES permit coverage for stormwater discharges under their jurisdiction and control (see 40CFR Part 122 §122.26.32). Additionally, MS4s may be designated by the Department as regulated MS4s. Among other requirements, the Phase 2 NPDES stormwater regulations require regulated MS4s to address stormwater runoff from construction activities. Construction activities covered under this general permit, which are subject to stormwater runoff controls of a regulated MS4, will also need to comply with the MS4's controls.

Five (5) Day Coverage

Prior to the submission of an NOI, the owner or operator must have completed a Storm Water Pollution Prevention Plan (SWPPP) that complies with all requirements of this general permit. Submitting an NOI is an affirmation that a SWPPP has been prepared and will be implemented. If an applicant certifies that the SWPPP has been developed in conformance with the Department's technical standards, the applied-for activity may obtain coverage under this general permit in five (5) business days after the Department's receipt of the NOI provided, that the activity is eligible for coverage under this general permit and that the Department has not informed the applicant otherwise.

Sixty (60) Day Coverage

While the Department's technical standards are appropriate statewide, it is recognized that there may be situations where stormwater management goals can best be met by alternative means that are more suitable given local conditions.

For construction projects in these situations, applicants must identify in their NOI each of the deviations from the Department's technical standards that they are seeking. Applicants must also explain why the deviations are needed or desired and what impacts to water quality, if any, can be expected if the deviation were allowed. Applicants must also explain the actions, if any, that local board(s) have taken with respect to the deviation(s). For applicants which cannot certify conformance with the Department's technical standards, the SWPPP must also be certified by a licensed/certified professional that the SWPPP has been developed in a manner which will insure compliance with water quality standards and with the substantive intent of this permit.

In cases of deviations from the Department's technical standards, applicants must allow sixty (60) business days after the receipt by the Department of a completed NOI and certification before gaining coverage under this general permit and before initiating any construction activity. During this 60 day period, the Department may conduct further review of the NOI and SWPPP. If additional information is needed to complete the review, the NOI will be considered

incomplete and the applicant will be so advised. The intent of this provision is to require conformance the Department's technical standards wherever possible and appropriate. At the same time, alternative means to address stormwater control may be allowed under this general permit where they are more suitable for the site in question and where they will not diminish water quality protection.

There are other scenarios under which coverage under this general permit will not occur until 60 business days from the receipt of a completed NOI. For example, if the construction activity or post construction runoff causes the discharge of a pollutant of concern to a water identified on the 303(d) list or a watershed with an approved TMDL for that pollutant of concern, coverage under the general permit will not occur until sixty (60) business days from the receipt by the Department of a completed NOI. For these projects the operator may be required to submit the SWPPP and/or appropriate certification(s) to the Department for review. The flowchart shown in Figure 1 on page vi will help to describe the process under which certain conditions exist that require possible further analysis and water quality/quantity considerations.

Computer Tool Available For Completion of SWPPPs and NOIs Under Development

The Department is currently developing an interactive computer software tool entitled "How to Prepare SWPPPs and Notices of Intent" to assist applicants in both developing SWPPPs and completing NOIs. This will be available in the near future for use on the Department website as well as being packaged independently on compact discs. This tool will contain guidance as well as many useful links to reference materials and documents concerning erosion and sedimentation control, as well as to the design of stormwater management practices . The Department's website will contain the latest information and guidance on the various tools available.

The Department's Technical Standards

The Department's technical standards for erosion and sediment control are contained in the document, *"New York Standards and Specifications for Erosion and Sediment Control"*[3] published by the Empire State Chapter of the Soil and Water Conservation Society. For the design of water quantity and water quality controls (post-construction stormwater control practices), the Department's technical standards are detailed in the *"New York State Stormwater Management Design Manual."* Both of these documents are available on the Department's website. If an applicant certifies that stormwater management practices will conform to the Department's technical standards, then coverage under the permit may occur sooner than otherwise would be the case if non-conformance with the manuals existed. See Figure 1 on page vi for more information.

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3 Previously, the *"New York Guidelines for Urban Erosion and Sediment Control"*, also commonly referred to as the "Blue Book".

Permit Valid for Any Size Disturbance

This permit may be used for construction activities involving any amount of disturbed acreage, provided that all other eligibility conditions in subsection B of Part I are satisfactorily met (see page 2 of this permit). Thus, this permit may apply to activities identified under 40 CFR Part 122, subsection 122.26(b)(14)(x) which are also referred to as "NPDES Phase 1 construction activities" involving soil disturbances of five (5) acres or more. This permit may also apply to activities identified under 40 CFR Part 122, subsection 122.26(b)(15) which are also referred to as "NPDES Phase 2 small construction activities" involving soil disturbances of between one (1) and five (5) acres. And, this permit may also apply to construction activities involving soil disturbances of less than one (1) acre if the Department determines that a SPDES permit is required pursuant to the ECL. In any and all cases, all of the eligibility provisions of this general permit must be met in order to gain coverage.

Notice of Termination

After construction is completed as defined in the general permit (see Part II beginning on Page 7), cancellation of coverage is accomplished by the submittal of a Notice of Termination ("NOT"). Failure to submit a NOT may result in the continued obligation to pay a yearly Regulatory Fee established pursuant to Article 72 of the ECL and/or may be cause for suspension of permit coverage.

Previous versions of NOIs, NOTs and Notices of Intent, Transfer and Termination ("NOITT"s) cannot be used in conjunction with this general permit. There is a new NOI required for obtaining coverage under this general permit. Failure to include information identified as "mandatory" entries on the new NOI form may prevent and/or delay discharge authorization being sought under this permit.

The new NOT will also include an identification of any permanent structures that are being left on the site after stabilization occurs and after termination of permit coverage under this general permit. The NOT will also include a certification that the structures were constructed as described in the SWPPP and that an Operation and Maintenance ("O&M") manual has been prepared and has been made available to the owner of such permanent structures who is expected to conduct the necessary O&M over the life of the structure(s).

Ineligible Activities

The submittal of a completed NOI and/or the payment of an annual regulatory fee by an applicant does not necessarily mean that an applicant is covered under this permit if the applicant is ineligible for coverage under this permit under the terms cited in Part I of this permit. In other words, submitting a completed NOI and paying an annual regulatory fee does not automatically gain an applicant permit coverage if the applicant is ineligible for coverage under this permit even if the Department fails to immediately inform the applicant of such ineligibility.

Permit Expiration Date

Coverage under this general permit is available January 8, 2003 and will expire five (5) years after issuance on January 8, 2008.

Activities Previously Covered Under GP-93-06

In a separate proposal, the Department is also concurrently seeking to re-issue GP-93-06 with an expiration of August 1, 2003. The purpose of this action is to provide a transition period for permittees which have had SPDES permit coverage under GP-93-06 immediately prior to January 8, 2003, the effective date of GP-02-01. **Prior to August 1, 2003**, these activities will need to:
(1) stabilize their sites in accordance with GP-93-06 and submit an NOT; or, if necessary,
(2) gain coverage under GP-02-01 by submitting a new NOI.

For **new** construction activities, coverage under GP-93-06 will not be available after the effective date of GP-02-01, January 8, 2003. Such discharges may be eligible for coverage under GP-02-01 (see Part I.B. on page 2 of this permit).

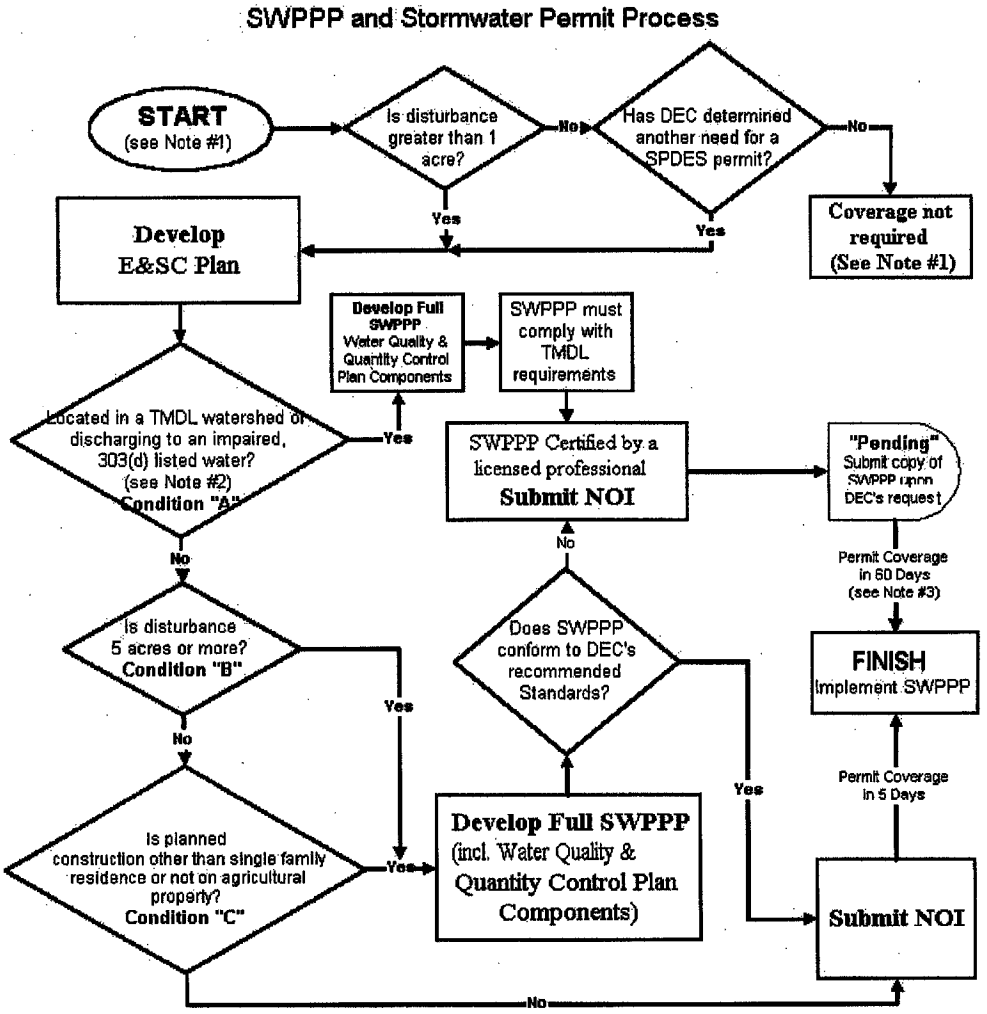
Water Quality Violations Not Permitted

This permit does not authorize any person to cause or contribute to a condition in contravention of any water quality standards that are contained in the Rules and Regulations of the State of New York (see Part I of this permit on page 2) even if the permittee is in compliance with all other provisions of this permit. Any violations of water quality standards may be considered by the Department to be violations of this permit and/or the ECL, including its accompanying regulations.

Other Department Permits

Construction activities may also require other Department permits in addition to the coverage provided by this general permit including, but not limited to, dam safety, wetlands and stream protection. Such other Department permits must be obtained separately from coverage under this general permit. Further information concerning these permits should be sought from the Regional Permit Administrator at the appropriate Department regional office (See Appendix A on page 23).

FIGURE 1



NOTES:

1. Under any of the above conditions other environmental permits may be required. DEC may require permit for construction disturbance < 1 acre on a case by case basis.
2. **and** the following exists: construction and/or stormwater discharges from the construction or post-construction site contain the pollutant of concern identified in the TMDL or 303(d) listing.
3. After receipt by DEC of completed application.

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

FROM CONSTRUCTION ACTIVITIES

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Part I. COVERAGE UNDER THIS PERMIT

A. **Maintaining Water Quality** - It shall be a violation of this general permit and the Environmental Conservation Law ("ECL") for any discharge authorized by this general permit 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 including, but not limited to:

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 and 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.

B. **Eligibility Under This General Permit**

1. This permit may authorize all discharges of stormwater from construction activity[4] to surface waters and groundwaters except for ineligible discharges identified under subparagraph C of this Part (see below). Discharge authorization under this permit requires the submittal of a completed NOI.

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

3. Notwithstanding paragraphs B.1 and B.2 above, the following non-stormwater discharges may be authorized by this permit: discharges from fire

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[4] This includes discharges of stormwater associated with industrial activity identified under 40 CFR Part 122, subsection 122.26(b)(14)(x), small construction activities identified under 40 CFR Part 122, subsection 122.26(b)(15) or any other stormwater from construction activities that are not otherwise ineligible for coverage under this permit (See Part I, subsection B beginning on page 2).

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; springs; 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 general 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(see Part III beginning on Page 7). Under all circumstances, the permittee must still comply with water quality standards (see Part I, subsection A on Page 2).

C. **Activities Which Are Ineligible for Coverage Under This General Permit** - All of the following stormwater discharges from construction activities are **not** authorized by this permit:

1. Discharges after construction activities have been completed and the site has undergone final stabilization[5];

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

3. Discharges that are subject to an existing SPDES individual or general permit or which are required to obtain an individual or alternative general permit pursuant to Part V, subparagraph K (see page 21) of this permit;

4. Discharges that are likely to adversely affect a listed, or proposed to be listed, endangered or threatened species, or its critical habitat;

5. Discharges which are subject to an existing effluent (limitation) guideline addressing stormwater and/or process wastewater unless said guidelines are contained herein; or

6. Discharges which either cause or contribute to a violation of water quality standards adopted pursuant to the ECL and its accompanying regulations (See subsection A of Part I on page 2).

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[5] "Final Stabilization" means that all soil disturbing activities at the site have been completed, and that a uniform perennial vegetative cover with a density of 80% has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

D. **Authorization Under This General Permit**

1. An operator[6] must submit a completed NOI form in order to be authorized to discharge under this general permit. The NOI form shall be one which is associated with this general permit, signed in accordance with Part V. H.(see Page 19) of this permit and submitted to the address indicated on the NOI form. NOIs and NOITTs used in association with either previous or other general permits are not valid for obtaining coverage under this general permit. The submittal of an NOI is an affirmation to the operators' understanding and belief that the activity is eligible for coverage under this permit and that a SWPPP has been prepared and will be implemented in accordance with Part III of this permit.

2. All contractors and subcontractors of the operator identified under Part III.E.1 (see page 17) must provide the certification cited under Part III.E.2 (see page 17). Such certifications shall become part of the SWPPP for the construction activity covered under this general permit.

3. Unless notified by the Department to the contrary, operators who are eligible for coverage under this permit **and** who submit an NOI in accordance with the requirements of this permit, may be authorized to discharge stormwater from construction activities under the terms and conditions of this permit, and in accordance with the following timetable:

a. For construction activities which:

(1) develop a SWPPP in conformance with the Department's technical standards (See subsection D of Part III on page 10), and do not or will not discharge a pollutant of concern to an impaired water or a TMDL watershed;

or

(2) as of the effective date of this general permit, GP-02-01, have obtained coverage under, and are operating in compliance with, GP-93-06; and do not or will not discharge a pollutant of concern to an impaired water or a TMDL watershed;

authorization to discharge under this permit may occur five (5) business days after the date on which the NOI is received by the Department.

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6 For the purposes of this permit, the term "operator" means the person, persons, or legal entity which owns or leases the property on which the construction activity is occurring. Also, see Part V., subsection H. on page 19 of this permit.

b. For activities which do not comply with the preceding subsection (i.e. Part I.D.3.a.), authorization to discharge under this permit will begin no sooner than sixty (60) business days from the receipt of the completed NOI unless notified differently by the Department pursuant to Part V, subsection K of this permit (see page 21). For activities not satisfying Part I.D.3.a.(1) above, or for construction site runoff subject to a TMDL (see Figure 1 on page vi), the SWPPP must be prepared by a licensed/certified professional[7] and include a certification stating that the SWPPP has been developed in a manner which will assure compliance with water quality standards (see Part I.A.) and with the substantive intent of this permit.

c. For construction activities which are subject to a sixty-day period provision identified in the preceding subparagraph b., the SWPPP shall include each of the components identified in Part III.A.1.b. (see page 8).

4. At its sole discretion, the Department may deny or terminate coverage under this permit and require coverage under another SPDES permit at any time based on a review of the NOI, the SWPPP or other relevant information (see Part V, subsection K of this permit on page 21).

5. A copy of the NOI and a brief description of the project shall be posted at the construction site in a prominent place for public viewing.

6. A signed copy of the NOI, the SWPPP, and any reports required by this permit shall also be submitted concurrently to the local governing body and any other authorized agency[8] having jurisdiction or regulatory control over the construction project.

7. New stormwater discharges from construction activities that require any other Uniform Procedures Act permit (Environmental Conservation Law, 6 NYCRR Part 621) cannot be covered under this general permit until the other required permits are obtained. Upon satisfaction of the State Environmental Quality Review Act ("SEQRA") for the proposed action and issuance of necessary permits, the applicant may submit an NOI to obtain coverage under this general

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7 A "licensed/certified professional" means a person currently licensed to practice engineering in New York State or is a Certified Professional in Erosion and Sediment Control (CPESC).

8 For the purposes of this general permit, "any other authorized agency" shall include any local, regional, or state entity or agency except the Department which has authority to review stormwater discharge from the project, including authority under any approved watershed protection plan or regulations.

permit.[9] In order to facilitate the Department's review of a multi-permitted project, an applicant should submit, at a minimum, a copy of the SWPPP which contains the information specified in Appendix B (see page 24). This information will assist the Department in determining whether or not coverage under this general permit or another SPDES permit is the more appropriate option. The Department may also require the submission of additional information in order to determine the SWPPP's conformance with the Department's technical standards.

8. Upon renewal of this general permit or issuance of a new general permit, the permittee is required to notify the Department of its intent to be covered by the new general permit. Coverage will continue under this permit for its term unless action is taken to terminate permit coverage as provided elsewhere in this permit. See also Part V. subsection B. on page 18 of this permit.

9. In the event of a transfer of ownership or responsibility for stormwater runoff, there can be no "automatic" transfer of permit coverage from one permittee to the next without appropriate notification from the dischargers. The former permittee must submit an NOT and notify the new discharger of the possible need for the new discharger to submit a new NOI (see Section E, subparagraph 2 below).

E. **Deadlines for Notification**

1. Operators who intend to obtain coverage under this general permit for stormwater runoff from construction activities must submit an NOI in accordance with the requirements of this Part at least five (5), or sixty (60) business days, as appropriately determined from Part I, Section D.3 (see page 4) prior to the commencement of construction[10] activities.

2. For stormwater runoff from construction activities where the operator changes, a new NOI must be submitted by the new operator in accordance with the requirements of this permit. The former operator must submit a NOT in accordance with Part II (see page 7) of this permit and notify the new operator of the requirement to submit a new NOI to obtain coverage under this permit. The new operator must also review and sign the SWPPP in accordance with Part III.B.(see page 9) and continue implementation of the SWPPP as required by this

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9 The purposes of this subsection is to assure that the requirements of SEQRA are fulfilled, if necessary, before any discharge authorization under this general permit is granted.

10 "Commencement of Construction" means the initial disturbance of soils associated with clearing, grading, or excavating activities, or other construction activities.

permit.

Part II. TERMINATION OF COVERAGE[11]

Where a site has been finally stabilized, the operator must submit a NOT form prescribed by the Department for use with this general permit. The NOT shall be signed in accordance with Part V. H.(see page 19) of this permit and submitted to the address indicated on the approved NOT form.

The permittee must identify all permanent stormwater management structures that have been constructed and provide the owner(s) of such structures with a manual describing the operation and maintenance practices that will be necessary in order for the structure to function as designed after the site has been stabilized. The permittee must also certify that the permanent structure(s) have been constructed as described in the SWPPP.

Part III. STORMWATER POLLUTION PREVENTION PLANS ("SWPPP"s)

A. General

1. SWPPP Preparation

a. A SWPPP shall be developed by the operator for construction activities at each site to be covered by this permit, prior to the initiation of activities requiring coverage under this permit. SWPPPs shall be prepared in accordance with sound engineering practices. The SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater discharges. In addition, the SWPPP shall describe and ensure the implementation of practices which will be used to reduce the pollutants in stormwater discharges and to assure compliance with the terms and conditions of this permit. Operators are encouraged to have their SWPPP reviewed for adequacy and completeness by the local soil and water conservation district ("SWCD") and/or other professionals qualified in erosion and sediment control practices[12] and stormwater management. Moreover, if the construction activity is identified under Part I, subsection D.3.b. (See page 5), or for construction site runoff subject to a TMDL (see Figure 1 on page vi), the SWPPP must include a certification by a licensed/certified professional.

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11 Submittal of an NOT will terminate coverage under this general permit and will also remove the permittee from subsequent billings of the annual regulatory fee levied under Article 72 of the ECL.

12 For example, CPESC, Inc. administers a certified program of individuals under its CPESC (Certified Professional in Erosion and Sediment Control) program which is sponsored by the International Erosion Control Association (IECA) and the Soil and Water Conservation Society (SWCS) and is endorsed by USDA - Natural Resources Conservation Service. CPESC, Inc. also administers the CPSWQ (Certified Professional in Stormwater Quality) program.

b. All SWPPPs shall include erosion and sediment controls. For construction activities meeting either Condition "A", "B" or "C" described below, the SWPPP shall also include water quantity and water quality controls (post-construction stormwater control practices).(see Part III. D.).

(1) Condition A - Construction site or post construction runoff discharging a pollutant of concern to either an impaired water identified on DEC's 303(d) list or a TMDL watershed for which pollutants in stormwater have been identified as a source of the impairment.

(2) Condition B - Construction site runoff from Phase 1 construction activities (construction activities disturbing five (5) or more acres) identified under 40 CFR Part 122, §122.26(b)(14)(x).

(3) Condition C - Construction site runoff from construction activity disturbing between one (1) and five (5) acres of land during the course of the project, exclusive of the construction of single family residences and construction activities at agricultural properties.

2. **SWPPP Implementation** - Operators are responsible for implementing the provisions of the SWPPP and ensuring that all contractors and subcontractors who perform professional services at the site provide certification of the SWPPP in accordance with Part I.D.2. (see page 4) and Part III.E.2. (see page 17) of this permit. All contractors and subcontractors identified in the SWPPP in accordance with Part III.E.1. (see page 17) of this permit must agree to implement applicable provisions of the SWPPP and satisfy the certification requirement of Part III.E.2. (see page17). However, contractors and subcontractors who are not operators, as defined in this permit (see page 4), are not required to submit a NOI in addition to the NOI submitted by the operator.

3. **Deadlines for SWPPP Preparation and Compliance** - The SWPPP must be developed prior to the submittal of an NOI and provide for compliance with the terms and schedule of the SWPPP beginning with the initiation of construction activities. The operator shall also certify in the SWPPP that all appropriate stormwater control measures will be in place before commencement of construction of any segment of the project that requires such measures.

4. **Local Requirements** - Developing a SWPPP that complies with the requirements listed herein does not relieve an operator from the obligation of complying with stormwater management requirements of the local government having jurisdiction over the project.

5. **Activities Previously Covered Under GP-93-06** - For construction activities which are covered by GP-93-06 as of the effective date of this permit (GP-02-01), the continued implementation of their SWPPP that was developed and implemented in accordance with GP-93-06 is acceptable until such time as:

(a) an NOT is submitted;

(b) the Department notifies them otherwise in accordance with this permit, including Part V, subsection K (see page 21); or

(c) this permit expires.

B. **Signature and SWPPP Review**

1. The SWPPP shall be signed in accordance with Part V. H.(see page 19), and be retained at the site where the construction activity occurs in accordance with Part IV (see retention of records on page 17) of this permit.

2. The permittee shall submit a copy of the SWPPP and any amendments thereto to the local governing body and any other authorized agency having jurisdiction or regulatory control over the construction activity. The operator shall make SWPPPs available upon request to the Department and any local agency having jurisdiction; or in the case of a stormwater discharge associated with industrial activity which discharges through a municipal separate storm sewer system, to the municipal operator of the system.

3. The Department, or its authorized representative, may notify the permittee at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. Such notification shall identify those provisions of the permit which are not being met by the SWPPP and identify which provisions of the SWPPP require modifications in order to meet the minimum requirements of this permit. Within seven (7) days of such notification, (or as otherwise provided by the Department) the permittee shall make the required changes to the SWPPP and shall submit to the Department a written certification that the requested changes have been made. Notwithstanding the foregoing, the Department reserves all rights to enforce the terms of the ECL.

C. **Keeping SWPPPs Current** - The permittee shall amend the SWPPP whenever:

1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or

2. The SWPPP proves to be ineffective in:

   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP required by this permit, or

   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity.

3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP (see Part III.E, page 17 below). Amendments to the SWPPP may be reviewed by the Department in the same manner as provided by Part III.B (see page 9 above).

D. **General Contents of SWPPPs** -

1. Standards for construction activities covered under this permit - The Department's technical standards for erosion and sediment controls are detailed in the "*New York Standards and Specifications for Erosion and Sediment Control*"[13] published by the Empire State Chapter of the Soil and Water Conservation Society. For the design of water quality and water quantity controls (post-construction stormwater control practices), the Department's technical standards are detailed in the "*New York State Stormwater Management Design Manual.*"

If an operator certifies that the SWPPP has been developed in conformance with the Department's technical standards referenced above, they may obtain coverage under this general permit in five (5) business days from the Department's receipt of the NOI, provided the construction activity does not meet Condition A in Part III.A.1.b. For SWPPPs which will not conform with the Department's technical standards, the SWPPP must be prepared by a licensed/certified professional and include a certification stating that the SWPPP has been developed in a manner which will assure compliance with the State's water quality standards and with the substantive intent of this permit. In addition, coverage under this general permit will not begin until sixty (60) business days from the receipt of a completed NOI.

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13 Previously, the "*New York Guidelines for Urban Erosion and Sediment Control*," also commonly referred to as the "Blue Book."

2. **Minimum SWPPP Components** SWPPPs prepared pursuant to this general permit shall present fully designed and engineered stormwater management practices with all necessary maps, plans and construction drawings. The SWPPP must, at a minimum, include the following:

a. For all construction activities subject to this general permit -

(1). provide background information about the scope of the project, including the location, type and size of project.

(2) provide a site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map should 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 off-site material, waste, borrow or equipment storage areas; and location(s) of the stormwater discharge(s);

(3) provide a description of the soil(s) present at the site;

(4) provide a construction phasing plan describing the intended sequence 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. Consistent with the New York Guidelines for Urban Erosion and Sediment Control, there shall not be more than five (5) acres of disturbed soil at any one time without prior written approval from the Department;

(5) provide 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 storm water discharges;

(6) provide a description of construction and waste materials expected to be stored on-site with updates as appropriate, and a description of controls to reduce pollutants from these materials including storage practices to minimize exposure of the materials to storm water, and spill prevention and response;

(7) describe the temporary and permanent structural and vegetative measures to be used for soil stabilization, runoff control and sediment control for each stage of the project from initial land

clearing and grubbing to project close-out;

(8) identify and show on a site map/construction drawing(s) the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

(9) provide the dimensions, material specifications and installation details for all erosion and sediment control practices, including the siting and sizing of any temporary sediment basins;

(10) identify temporary practices that will be converted to permanent control measures;

(11) provide an implementation schedule for staging temporary erosion and sediment control practices, including the timing of initial placement and the duration that each practice should remain in place;

(12) provide a maintenance schedule to ensure continuous and effective operation of the erosion and sediment control practices;

(13) provide the names(s) of the receiving water(s);

(14) provide a delineation of SWPPP implementation responsibilities for each part of the site;

(15) provide a description of structural practices to divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable; and

(16) provide any existing data that describes the stormwater runoff characteristics at the site.

b. For construction activities meeting Condition A, B or C in Part III.A.1.b.

(1) provide all the information required in Parts III.D.2.a.1 - 16 above;

(2) provide a description of each post-construction stormwater control practice;

(3) identify and show on a site map/construction drawing(s) the specific location(s) and size(s) of each post-construction stormwater control practice;

(4) provide a hydrologic and hydraulic analysis for all structural components of the stormwater control system for the applicable design storms;

(5) provide a comparison of post-development stormwater runoff conditions with pre-development conditions;

(6) provide the dimensions, material specifications and installation details for each post-construction stormwater control practice;

(7) provide a maintenance schedule to ensure continuous and effective operation of each post-construction stormwater control practice.

The following three subsections, Part III.D. 3. through Part III.D. 5., apply only to construction activities covered under this general permit which meet Conditions "A" , "B"[14] or "C" in Part III. A.1.b. Beginning with Part III.E. below (see page 17) the requirements set forth therein apply to all permittees covered under this permit.

3. **Site Assessment and Inspections** -

a. The operator shall have a qualified professional[15] conduct an assessment of the site prior to the commencement of construction and certify in an inspection report that the appropriate erosion and sediment controls described in the SWPPP and required by Part III.D. (see page 10) of this permit have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction. Following the commencement of construction, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater. During each inspection, the qualified professional shall record the following information:

(1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

(2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

(3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

(4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of the sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

(5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and

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14 Condition "B" includes construction activities covered under GP-93-06 and, therefore, are subject to Part III.D.3 through Part III.D. 5.

15 "Qualified professional" means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a licensed professional engineer, Certified Professional in Erosion and Sediment Control (CPESC), or soil scientist.

containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water;
and

(6) All deficiencies that are identified with the implementation of the SWPPP.

b. The operator shall maintain a record of all inspection reports in a site log book. The site log book shall be maintained on site and be made available to the permitting authority upon request. Prior to the commencement of construction,[16] the operator shall certify in the site log book that the SWPPP, prepared in accordance with Part III.D. (see page 10) of this permit, meets all Federal, State and local erosion and sediment control requirements.

The operator shall post at the site, in a publicly-accessible location, a summary of the site inspection activities on a monthly basis.

c. Prior to filing of the Notice of Termination or the end of permit term, the operator shall have the qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization[17] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed.

d. The operator shall certify that the requirements of Parts III.D.3., III.D.4. and III.D.5 of this permit have been satisfied within 48 hours of actually meeting such requirements.

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16 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

17 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

4. **Stabilization**[18] - The operator shall initiate stabilization measures as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. This requirement does not apply in the following instances:

a. Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures shall be initiated as soon as practicable;

b. Where construction activity on a portion of the site is temporarily ceased, and earth-disturbing activities will be resumed within twenty-one (21) days, temporary stabilization measures need not be initiated on that portion of the site.

5. **Maintenance** - Sediment shall be removed from sediment traps or sediment ponds whenever their capacity has been reduced by fifty (50) percent from the design capacity.

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18 "Stabilization" means covering or maintaining an existing cover over soil. Cover can be vegetative (e.g. grass, trees, seed and mulch, shrubs, or turf) or non-vegetative (e.g. geotextiles, riprap, or gabions).

E. **Contractors**

1. The SWPPP must clearly identify for each measure identified in the SWPPP, the contractor(s) and subcontractor(s) that will implement the measure. All contractors and subcontractors identified in the SWPPP must sign a copy of the certification statement in Part III.E.2 (see below) of this permit in accordance with Part V.H.(see page 19) of this permit. All certifications must be included in the SWPPP. Additionally, new contractors and subcontractors (see subsection C.3. above) need to similarly certify.

2. **Certification Statement** - All contractors and subcontractors identified in a SWPPP in accordance with Part III.E.1 (see above) of this permit shall sign a copy of the following certification statement before undertaking any construction activity at the site identified in the SWPPP:

> "I certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP for the construction site identified in such SWPPP as a condition of authorization to discharge stormwater. I also understand that the operator must comply with the terms and conditions 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."

The certification must include the name and title of the person providing the signature in accordance with Part V.H.(see page 19) of this permit; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification is made.

Part IV. MONITORING, REPORTING AND RETENTION OF RECORDS

A. The Department may, at its sole discretion, require monitoring of discharge(s) from the permitted construction activity after notifying the permittee in writing of the basis for such monitoring, the parameters and frequency at which monitoring shall occur and the associated reporting requirements, if any.

B. The operator shall retain copies of SWPPPs and any reports submitted in conjunction with this permit, and records of all data used to complete the NOI to be covered by this permit, for a period of at least three years from the date that the site is finally stabilized. This period may be extended by the Department, in its sole discretion, at any time upon written notification.

C. The operator shall retain a copy of the SWPPP required by this permit at the construction site from the date of initiation of construction activities to the date of final

stabilization.

D. The operator shall also prepare a written summary of its status with respect to compliance with this general permit at a minimum frequency of every three months during which coverage under this permit exists. The summary should address the status of achieving each component of the SWPPP . This summary shall be handled in the same manner as prescribed for SWPPPs under Part III, subsection B (see Page 9).

E. **Addresses** - Except for the submittal of NOIs and NOTs, all written correspondence under this permit directed to the Department, including the submittal of individual permit applications, shall be sent to the address of the appropriate Department Office as listed in Appendix A (see page 23).

Part V. STANDARD PERMIT CONDITIONS

A. **Duty to Comply** - The 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 permit noncompliance constitutes a violation of the Clean Water Act (CWA) and the ECL and is grounds for an enforcement action against either the operator or the contractor/subcontractor; permit revocation 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. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the operator or the operator's on-site representative.

B. **Continuation of the Expired General Permit** - This permit expires five (5) years after issuance on January 8, 2008. However, coverage may be obtained under the expired general permit which will continue in force and effect until a new general permit is issued. After issuance of a new general permit, those with coverage under GP-02-01 will have six (6) months from the effective date of the new general permit to complete their project or obtain coverage under the new permit. Unless otherwise notified by the Department in writing, operators seeking authorization under a new general permit must submit a new NOI in accordance with the terms of such new general permit. See also Part I, subsection D.8. on page 6.

C. **Penalties for Violations of Permit Conditions** - There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $25,000 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 a permittee 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 permittee 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 permittee shall furnish any information requested by any agency with regulatory or review authority over this project for the purpose of determining compliance with this permit or compliance with any other regulatory requirements placed on the project in conjunction with this permit. Failure to provide requested information shall be a violation of this permit. Such regulating agencies include but are not limited to the Department, SWCDs,[19] local planning, zoning, health, and building departments that review and approve erosion and sediment control plans, grading plans, and Stormwater Management Plans, as well as MS4s into whose system runoff from the permitted project or activity discharges. The SWPPP and inspection reports required by this general permit are public documents that the operator must make available for inspection, review and copying by any person within five (5) business days of the operator receiving a written request by any such person to review the SWPPP and/or the inspection reports. Copying of documents will be done at the requester's expense.

G. **Other Information** - When the permittee becomes aware that he or she failed to submit any relevant facts or submitted incorrect information in the NOI or in any other report to the Department, he or she shall promptly submit such facts or information.

H. **Signatory Requirements** - All NOIs, NOTs, SWPPPs, reports, certifications or information required by this permit or submitted pursuant to this permit, shall be signed as follows:

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

   a. For a corporation: by (1) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person authorized to and who performs similar policy or decision-making functions for the corporation; or (2) the manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25,000,000 (in second-quarter 1980 dollars) if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

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19 "SWCD" means Soil and Water Conservation District

b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes (1) the chief executive officer of the agency, or (2) 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 all reports required by the permit and other information requested by the Department or local agency shall be signed by a person described above 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 above and submitted to the Department.

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 manager, operator, superintendent, or 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).

c. **Certification** - Except for NOIs and NOTs, any person signing documents in accordance with this Part shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

I. **Property Rights** - 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.

J. **Severability** - 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.

K. **Denial of Coverage Under This Permit**

1. At its sole discretion, the Department may require any person authorized by this permit to apply for and/or obtain either an individual SPDES permit or an alternative SPDES general permit. Where the Department requires a discharger authorized to discharge under this permit to apply for an individual SPDES permit, the Department shall notify the discharger in writing that a permit application is required. This notification shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the discharger to file the application, and a statement that on the effective date of issuance or denial of the individual SPDES permit or the alternative general permit as it applies to the individual permittee, coverage under this general permit shall automatically terminate. Applications shall be submitted to the appropriate Department Office indicated in Appendix A of this permit. The Department may grant additional time to submit the application upon request of the applicant. If a discharger fails to submit in a timely manner an individual SPDES permit application as required by the Department under this paragraph, then the applicability of this permit to the individual SPDES permittee is automatically terminated at the end of the day specified by the Department for application submittal.

2. Any discharger authorized by this permit may request to be excluded from the coverage under this permit by applying for an individual permit. In such cases, the permittee shall submit an individual application in accordance with the requirements of 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 A on page 23 of this permit). The request may be granted by issuance of an individual permit or an alternative general permit at the discretion of the Department.

3. When an individual SPDES permit is issued to a discharger covered by this permit, or the discharger is authorized to discharge under an alternative SPDES general permit, the applicability of this permit to the individual SPDES permittee is automatically terminated on the effective date of the individual permit or the date of authorization of coverage under the alternative general permit, whichever the case may be. When an individual SPDES permit is denied to an operator otherwise subject to this permit, or the operator is denied for coverage under an alternative SPDES general permit, the applicability of this permit to the individual SPDES permittee is automatically terminated on the date of such denial, unless otherwise specified by the Department.

L. **Proper Operation and Maintenance** - The permittee 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 permittee to achieve compliance with the conditions of this permit and with the requirements of SWPPPs. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee only when necessary to achieve compliance with the conditions of the permit.

M. **Inspection and Entry** - The permittee 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:

1. Enter upon the permittee'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, revoked, or renewed. The filing of a request by the permittee for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not stay compliance with any terms of this permit.

APPENDIX A

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	Bldg 40 - SUNY @ Stony Brook Stony Brook, NY 11790-2356 Tel. (631) 444-0365	Bldg 40 - SUNY @ Stony Brook Stony Brook, NY 11790-2356 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	200 White Plains Road, 5th Floor Tarrytown, NY 10591-5805 Tel. (845) 332-1835
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	Route 86, PO Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Hudson Street 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

APPENDIX B

Information Required of Construction Activities Which Are Identified Under Part I, subsection D.7. (see page 5)

A. The location (including a map) and the nature of the construction activity;

B. The total area of the site and the area of the site that is expected to undergo excavation during the life of the permit;

C. Proposed measures, including best management practices, to control pollutants in storm water discharges during construction, including a brief description of applicable State and local erosion and sediment control requirements;

D. Proposed measures to control pollutants in storm water discharges that will occur after construction operations have been completed, including a brief description of applicable State or local erosion and sediment control requirements;

E. An estimate of the runoff coefficient of the site and the increase in impervious area after the construction addressed in the permit application is completed, the nature of the fill material and existing data describing the soil or the quality of the discharge; and

F. The name of the receiving water(s).

ATTACHMENT D-2

EROSION CONTROL DETAILS

- Temporary Critical Area Plantings
- Mulching
- Temporary Swale
- Perimeter Dike/Swale
- Straw Bale Dike
- Silt Fence
- Sediment Trap

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

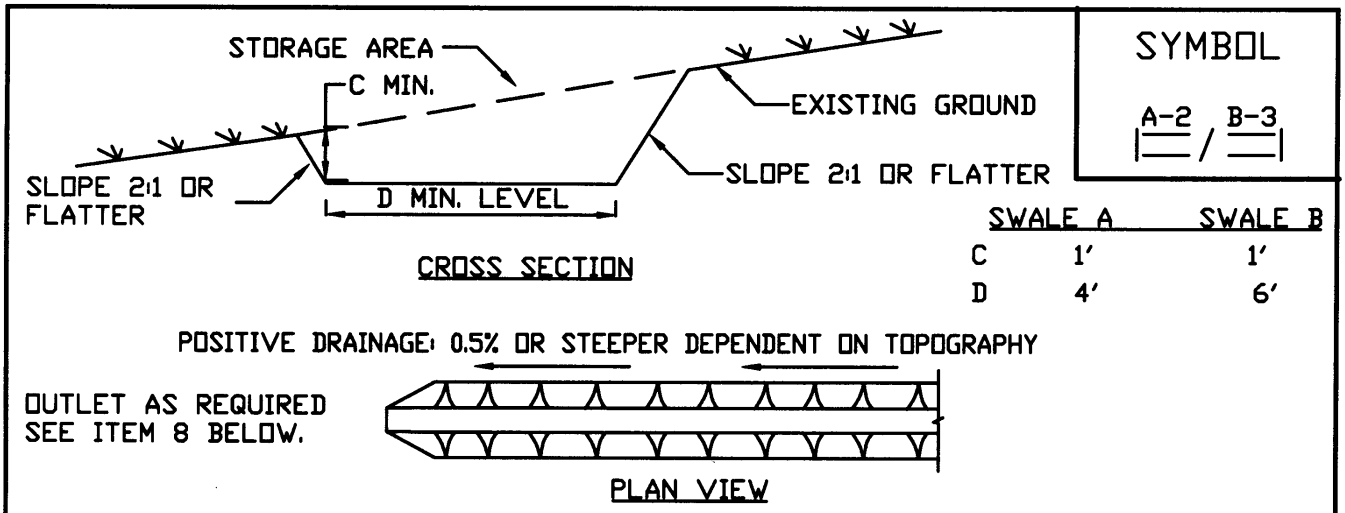
Swale shall have an outlet that functions with a minimum of erosion, and dissipates runoff velocity prior to discharge off the site.

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

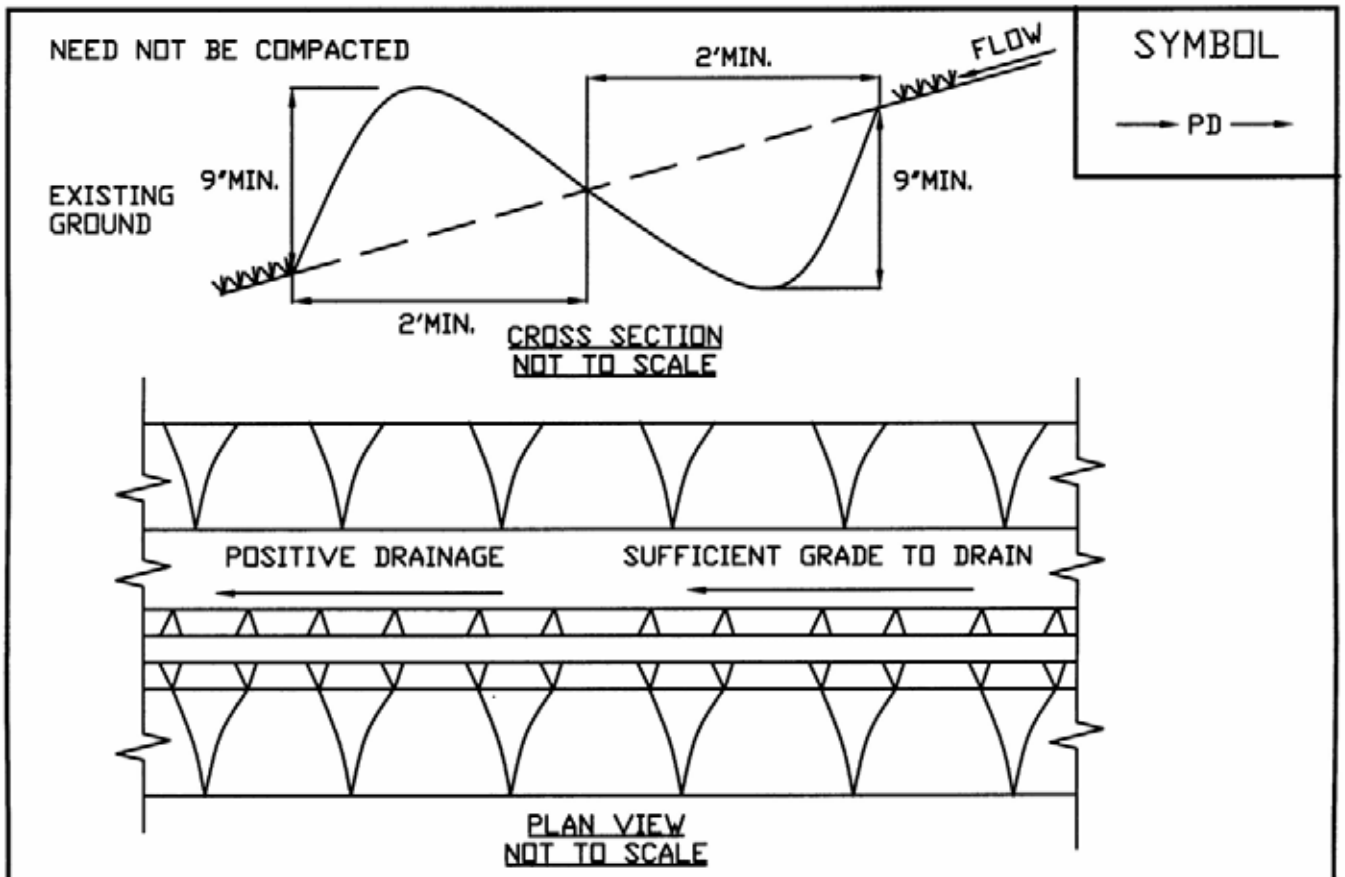
1. Perimeter dike/swale shall have a stabilized outlet.

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

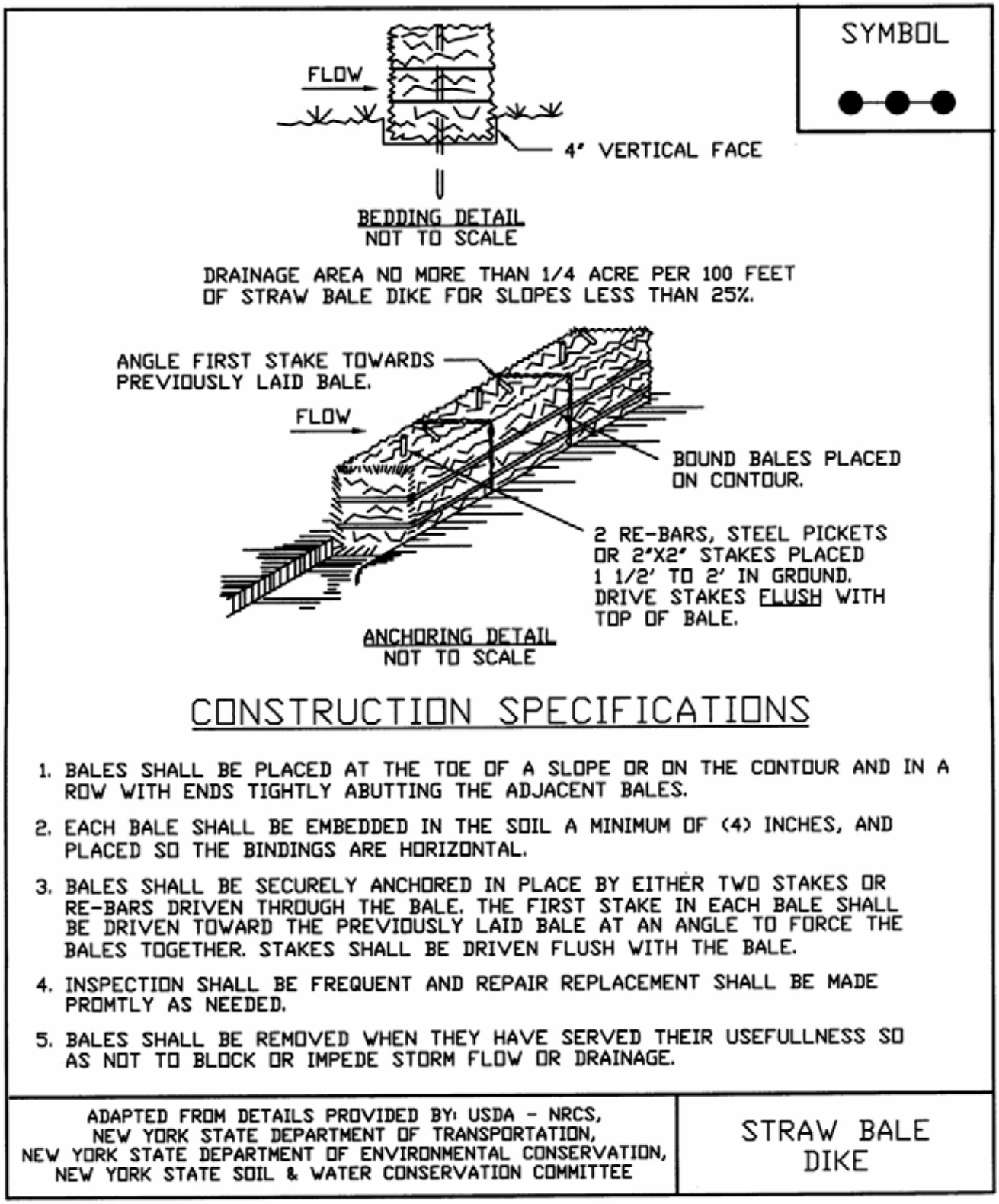
Where slope gradient changes through the drainage area, steepness refers to the steepest slope section contributing to the straw bale dike.

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

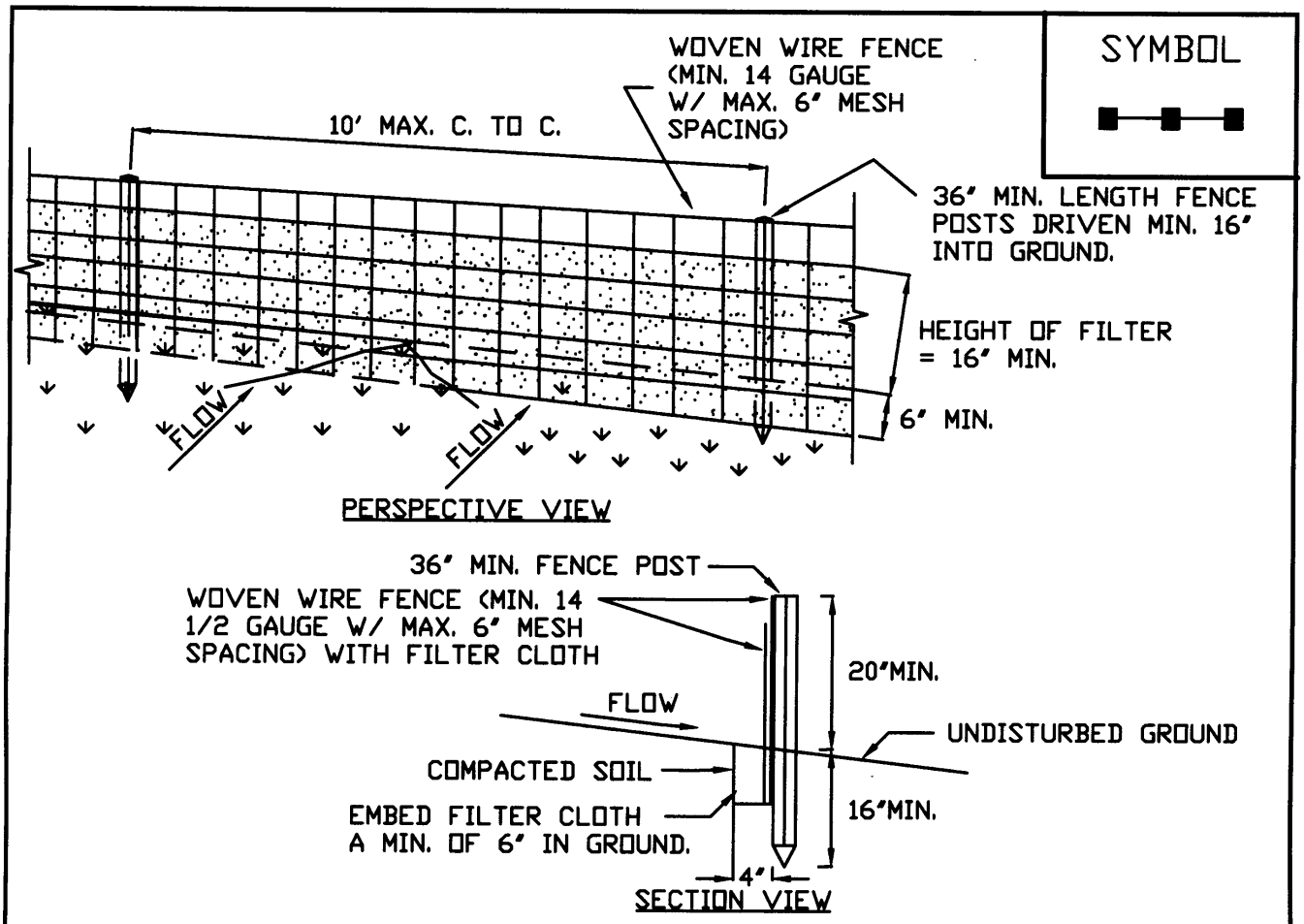
Mullen Burst Strength (PSI)	190	ASTM D3786
Puncture Strength (lbs)	40	ASTM D751 (modified)
Slurry Flow Rate (gal/min/sf)	0.3	
Equivalent Opening Size	40-80	US Std Sieve CW-02215
Ultraviolet Radiation Stability (%)	90	ASTM G-26

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

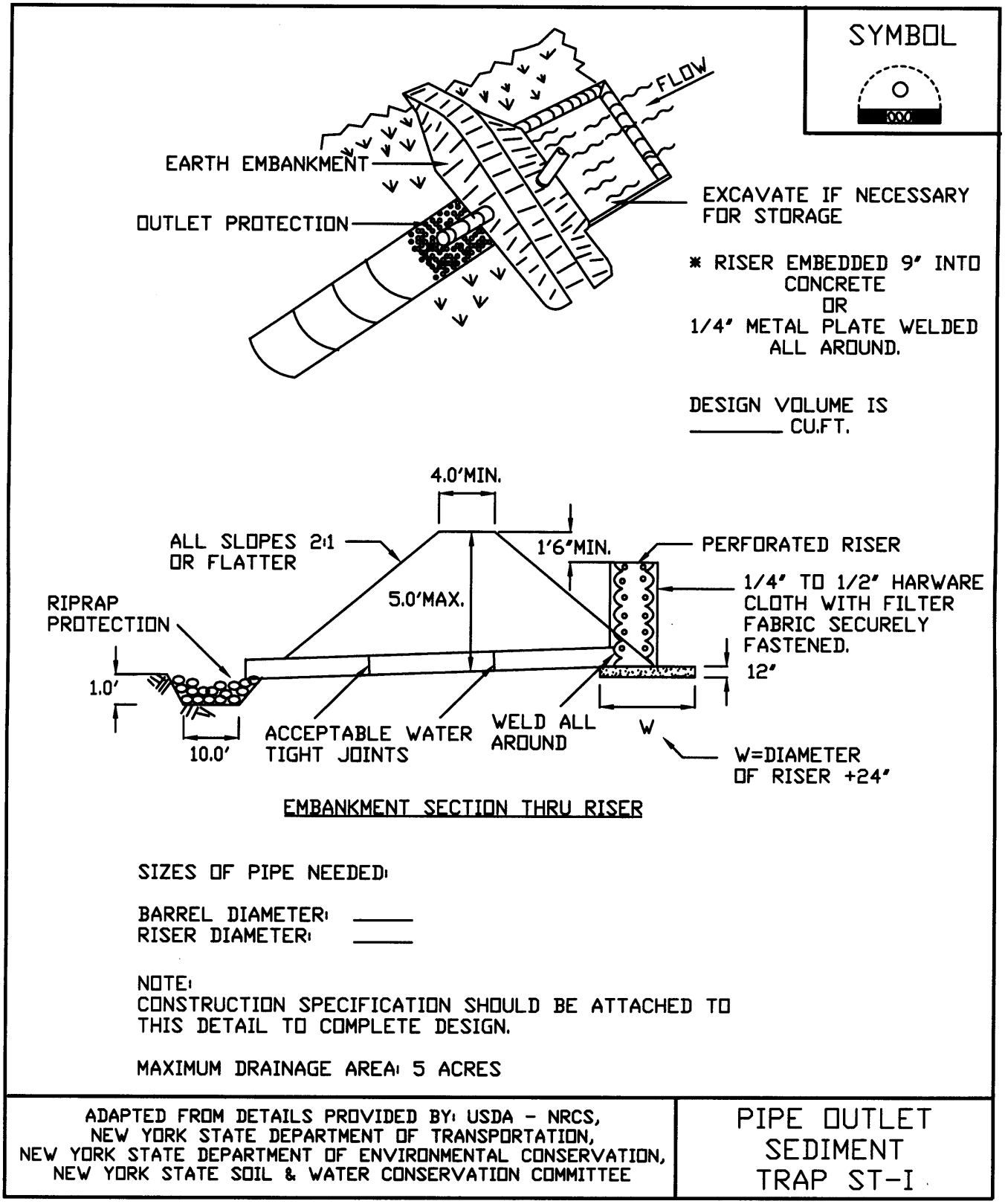


Figure 5A.16(2)
Pipe Outlet Sediment Trap: ST-I—Construction Specifications

SYMBOL

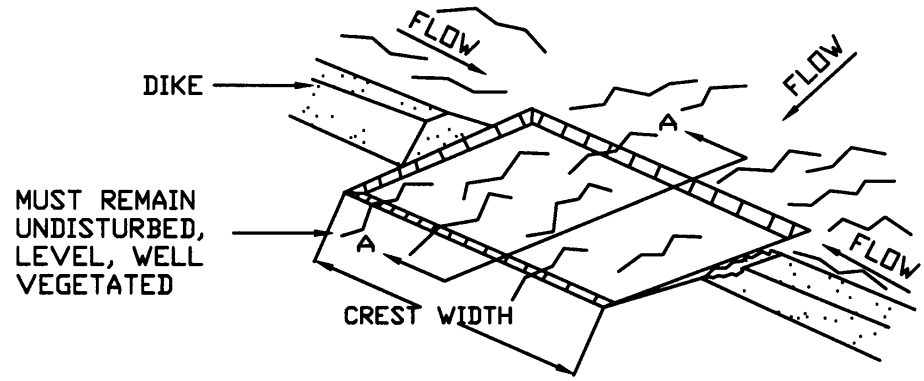
CONSTRUCTION SPECIFICATIONS

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.

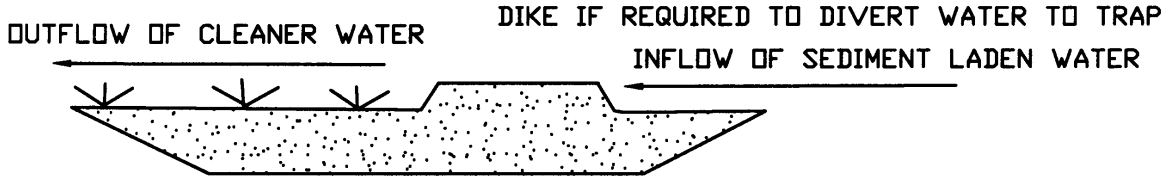
ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

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

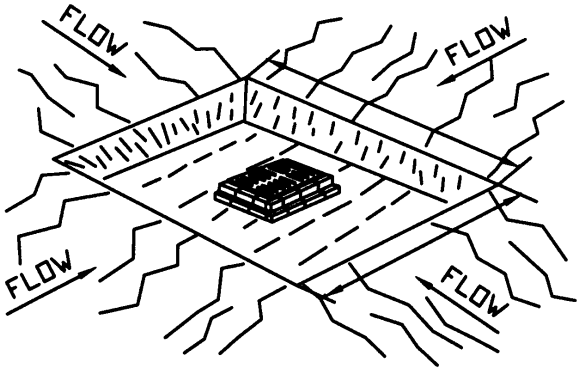
CONSTRUCTION SPECIFICATIONS

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

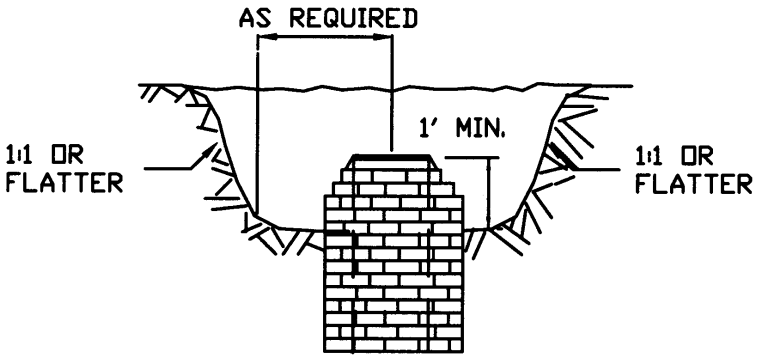
ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	GRASS OUTLET SEDIMENT TRAP ST-II

Figure 5A.18
Catch Basin Sediment Trap: ST-III



SYMBOL

YARD DRAIN



CROSS SECTION

CONSTRUCTION SPECIFICATIONS

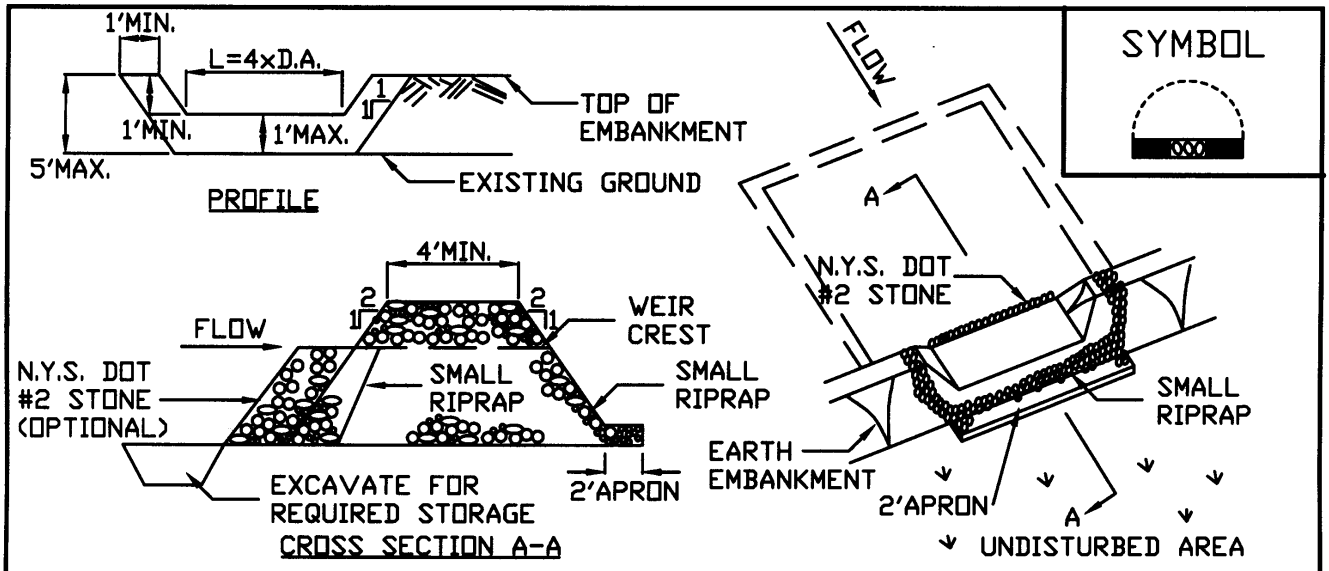
1. SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND STABILIZED.
2. THE VOLUME OF SEDIMENT STORAGE SHALL BE 3600 CUBIC FEET PER ACRE OF CONTRIBUTORY 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

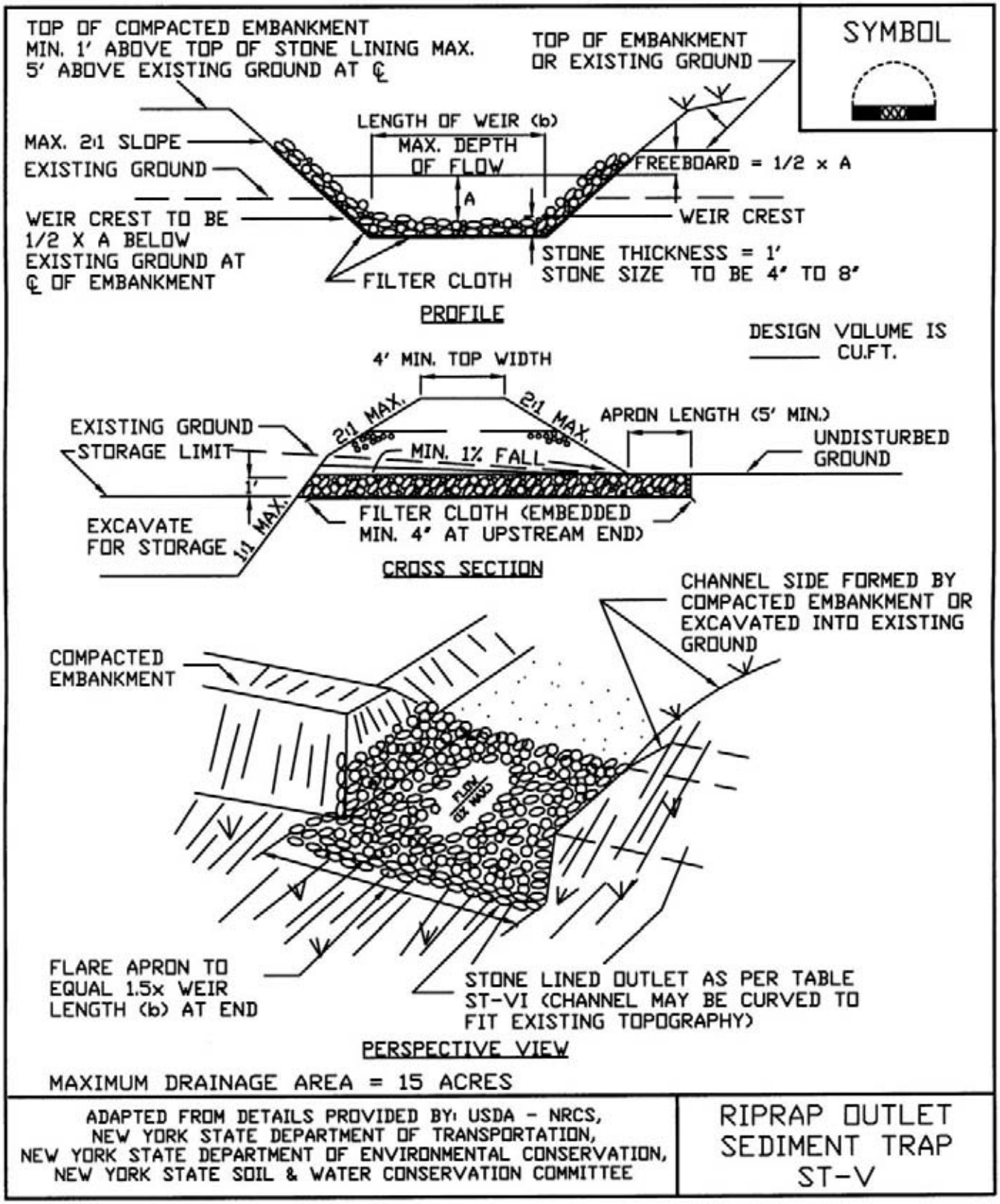


Figure 5A.202)
Riprap Outlet Sediment Trap: ST-V—Construction Specifications

SYMBOL

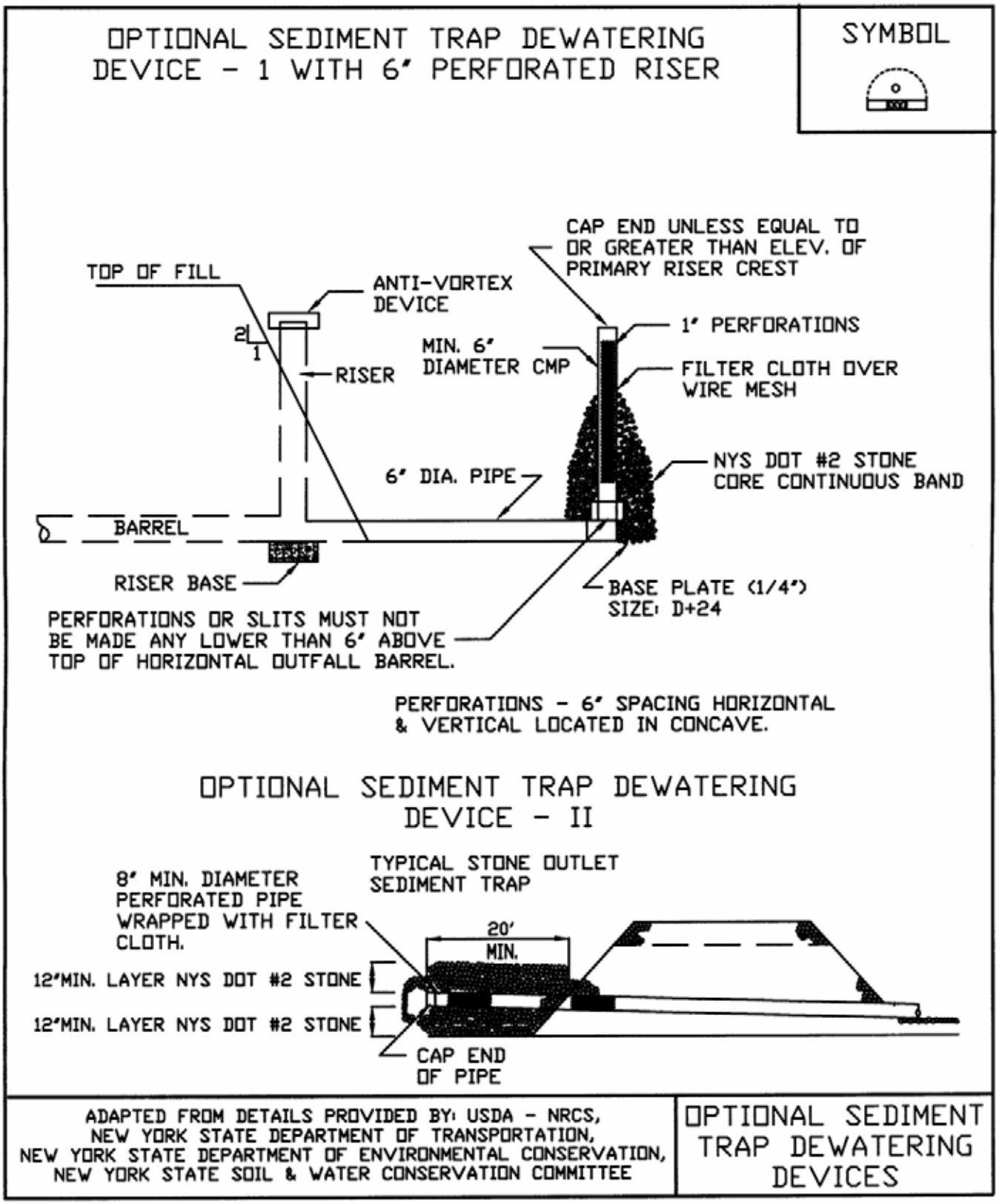
CONSTRUCTION SPECIFICATIONS

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



ATTACHMENT D-3

INSPECTION AND MAINTENANCE REPORT FORM

Inspection and Maintenance Report Form

To be completed every 7 days and within 24 hours of a rainfall event of 0.5 inches or more

Regular Inspector:_____Rainfall Event Inspector:_____Rainfall (inches):_____

Contractor Activities	OK	NO	N/A	Notes
Are construction onsite traffic routes, parking, and storage of equipment and supplies restricted to areas specifically designated for those uses?				
Are locations of temporary soil stock piles of construction materials in approved areas?				
Is there any evidence of spills and resulting cleanup procedures?				
General Erosion & Sediment Controls				
Are sediment and erosion BMPs installed in the proper location and according to the specifications set out in the SWM & ECP?				
Are all operational storm drain inlets protected from sediment inflow?				
Do any seeded or landscaped areas require maintenance, irrigation, fertilization, seeding or mulching?				
Is there any evidence that sediment is leaving the site?				
Is there any evidence of erosion or cut fill slopes?				
Perimeter Road Use				
Does much sediment get tracked on to the perimeter road? Is the gravel clean or is it filled with sediment? Does all traffic use the perimeter road to leave the site? Is maintenance or repair required for the perimeter road?				

_____ _____

Inspected by (Signature) Date

Inspection and Maintenance Report Form

To be completed every 7 days and within 24 hours of a rainfall event of 0.5 inches or more

Inspector:_____

STABILIZATION MEASURES					
Area	Date Since Last Disturbed	Date of Next Disturbance	Stabilized? Yes/No	Stabilized with	Condition

Stabilization Required: _____

_____

_____

_____

_____

_____

To be performed by: _____ On or before: _____

APPENDIX E

SITE-WIDE HEALTH AND SAFETY PLAN

SITE HEALTH AND SAFETY PLAN
For
BROWNFIELD CLEANUP PROGRAM
REMEDIAL INVESTIGATION ACTIVITIES

At the
TECUMSEH REDEVELOPMENT, INC.
PHASE I BUSINESS PARK

LACKAWANNA, NY

May 2005 0071-006-100

TECUMSEH REDEVELOPMENT PHASE I BUSINESS PARK
HEALTH AND SAFETY PLAN FOR RI ACTIVITIES

ACKNOWLEDGEMENT

Plan Reviewed by (initial):

Corporate Health and Safety Director: Thomas H. Forbes, P.E.

Project Manager: Thomas H. Forbes, P.E.

Designated Site Safety and Health Officer: Bryan C. Hann

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 PHASE I BUSINESS PARK
HEALTH AND SAFETY PLAN FOR RI ACTIVITIES

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TECUMSEH REDEVELOPMENT PHASE I BUSINESS PARK
HEALTH AND SAFETY PLAN FOR RI ACTIVITIES

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TECUMSEH REDEVELOPMENT PHASE I BUSINESS PARK
HEALTH AND SAFETY PLAN FOR RI ACTIVITIES

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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 Remedial Investigation (RI) activities on the Phase I Business Park portion of 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 RI 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

Bethlehem Steel Corporation (BSC) performed coke and steel manufacturing on an approximate 1,100-acre parcel on the West side of Route 5 in Lackawanna, New York until September 2001 (see Figures 1 and 2). International Steel Group, Inc. (ISG) purchased the assets of the bankrupt BSC in May 2003, and subsequently merged with Mittal Steel in 2005. Tecumseh Redevelopment, Inc. (Tecumseh), a wholly owned subsidiary of ISG, owns the proposed Phase I Business Park property and all other former Lackawanna Works property west of New York Route 5 (Hamburg Turnpike) that was owned by Bethlehem Steel at the time of asset purchase (i.e., May 2003).

The former Lackawanna Works included coal and coke handling facilities, coke ovens, by-product recovery facilities, and steel-making facilities.

A number of solid waste management units (SWMUs) are present on the 1,100-acre Tecumseh property. A RCRA Facility Investigation (RFI) of these SWMUs was initiated by BSC under an Administrative Order issued by the United States Environmental Protection Agency (USEPA) in 1990. Tecumseh completed the RFI in December 2004. USEPA and the New York State Department of Environmental Conservation (NYSDEC) are reviewing the RFI for completion. Tecumseh is currently negotiating an Order on Consent with the NYSDEC to undertake corrective measures at certain SWMUs on the property.

Tecumseh has signed a Memorandum of Understanding (MOU) with Erie County and the City of Lackawanna to promote and implement redevelopment of the former BSC property following cleanup. A portion of the Redevelopment Master Plan incorporates a Business Park area along NYS Route 5. Phase I of the Business Park, encompassing approximately 102 acres, will be completed first. Phases II and III, encompassing approximately 144 and 124 acres, respectively, will follow.

Investigation and Redevelopment of the Business Park areas is proposed for completion under NY State's Brownfield Cleanup Program (BCP). *This HASP has been prepared to address remedial investigation (RI) activities only in and immediately adjacent to the 102-acre Phase I Business Park area (referred to hereafter as "the site".* A separate HASP will be prepared for the Phase II and III areas.

1.3 Known and Suspected Environmental Conditions

The subject 102-acre Phase I Business Park Area was formerly used to house a portion of BSC's steel making operations. Specific processes and steel making facilities performed on the Phase I Business Park Area parcel included:

- Open Hearth furnaces
- Blooming Mill
- Billet Preparation Mills
- Roughing Mills
- Rail Mills
- Foundary
- Water Treatment Plant

Twelve SWMUs were identified on the subject 102-acre area during the RCRA Facility Assessment (RFA) that preceded the RFI. In accordance with the RFI Order, BSC performed assessments for all twelve 12 of these SWMUs. Based on the assessment

findings, USEPA Region II issued "No Further Assessment" designations for 11 of the SWMUs in December of 1990. A "No Further Assessment" designation was issued for the twelfth SWMU in September 1991. Accordingly, all 12 SWMUs located within the proposed Phase I Business Park were excluded from the RFI Order by the USEPA.

A Phase I Environmental Site Assessment (ESA) was completed for the subject 102-acre parcel by BSC in 2001. (The parcel was at that time designated by BSC as "Parcel B"). The results of the assessment indicated several potential environmental conditions based on historic site uses, adjacent site uses, and field observations. These include:

- The likely impact of surface soils by petroleum-based compounds associated with greases, lubricating and hydraulic oils, and fuels associated with the operation of steel mills, foundry, petroleum bulk storage and other historic steel manufacturing operations. Portions of the subject parcel exhibit visibly petroleum staining.

- The potential impact of surface and subsurface soils by metals associated with steel manufacturing operations.

- The potential impact of surface and subsurface soils by dielectric fluid from transformers and railyards in discrete areas of the parcel.

- Potential soil and groundwater impacts from gasoline storage in discrete onsite areas, and historic off-site gasoline releases upgradient of the property.

A remedial investigation will be performed in support of the BCP to determine the nature and extent of impacts from these known and suspect environmental conditions.

1.4 Parameters of Interest

Based on the Phase I ESA findings, constituents of potential concern (COPCs) at the site 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 poly-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.

- **Inorganics** – Inorganic COPCs potentially present at elevated concentrations due to steel making activities may include arsenic, cadmium, chromium, cyanide, lead, and mercury. Other inorganics present in site soil/fill may include manganese, nickel, silver, selenium, and zinc. Several of these parameters are components of coke and slag and may be present where coke and slag fill are present.

- **PCBs (Polychlorinated Biphenyls)** – PCBs were detected at slightly elevated concentrations LNAPL. Aroclors 1242 and 1260 were detected at concentrations less than 2.0 and 3.within the 3 mg/kg, respectively (Reference 3).

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 RI Activities

TurnKey-Benchmark personnel will be on-site to observe and perform RI investigation activities. The field activities to be completed as part of the RI are described below. Planned RI activities are more fully described in the RI Work Plan for the site (Reference 2).

1. **Soil/Fill Sampling:** TurnKey-Benchmark will direct test-pit excavations and borings, and will collect samples from these and surface locations for purposes of determining the nature and extent of potential COPC impacts to soil/fill.

2. **Monitoring/Observation Well Installation and Sampling:** TurnKey-Benchmark will observe the installation of groundwater monitoring wells within the vicinity of the Site, will develop the wells, and will collect samples for purposes of determining the nature and extent of potential COPC impacts to groundwater.

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 site. 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 this site.

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. Thomas H. Forbes***. 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 this site is ***Mr. 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. Bryan C. Hann***. The qualified alternate SSHO is ***Mr. Richard L. Dubisz.*** 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 Drilling and Test Pit Contractors, 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 (viz., 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 site, 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 fill/soils, and through the inhalation of contaminated particles or vapors. Other points of exposure may include direct contact with groundwater. In addition, the use of drilling and/or medium to large sized construction equipment (e.g., excavator) 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 petroleum products, inorganics and potentially PCBs in the site soils and to a lesser extent in site groundwater. Previous field investigations have not provided quantitative data for the site, with the exception of upgradient groundwater data (wells MWN-08A and MWN-08B). Table 1 identifies concentration ranges for COPCs detected in these wells during previous investigations at the site as identified in Section 1.4 of this HASP. 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.

- **Cyanides,** when present in free form, are generally incompatible with strong oxidizers such as chlorides, acids and acid salts. Routes of entry include inhalation, skin absorption, ingestion and eye contact. Harmful effects and symptoms of cyanide exposure include weakness, headache, confusion, nausea, vomiting, eye/skin irritation, and slow, gasping respiration.

- **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.

- **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. PAH's 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.

- **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 RI activities discussed in Section 1.4, 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

RI field activities at the Former Steel Manufacturing site may present the following physical hazards:

- The potential for physical injury during heavy construction equipment use, such as backhoes, excavators and drilling equipment.
- 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 RI operations and sampling 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 RI activities at the site (such as, but not limited to, equipment operators, general laborers, and drillers) 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 (viz., 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 (viz., 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, or 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 ADP Screening & Selection Services, an occupational health care provider under contract with TurnKey-Benchmark. ADP's local facility is Health Works WNY, Seneca Square Plaza, 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 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 (viz., sight, musculoskeletal, cardiovascular) for safe job performance and to wear respiratory protection 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.

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, drill rigs 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 United States Environmental Protection Agency (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 upon current information regarding both the contaminants suspected to be present at the Site and the various tasks that are included in the 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 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 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, or other appropriate instrument(s), will be used by TurnKey personnel to monitor organic vapor concentrations as specified in this HASP. Combustible gas will be monitored with the "combustible gas" option on the combustible gas meter or other appropriate instrument(s). In addition, fugitive dust/particulate concentrations will be monitored during major soil intrusion (viz., well/boring installation) 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 RI activities. 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 mg/m^3 - Continue field operations.
- 50-150 mg/m^3 - Don dust/particulate mask or equivalent
- Greater than 150 mg/m^3 - Don dust/particulate mask or equivalent. Initiate engineering controls to reduce respirable dust concentration (viz., wetting of excavated soils or tools at discretion of Site Health and Safety Officer).

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 Site Health and Safety Officer, 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 Site Health and Safety Officer, are conducted.

  - If the sustained organic vapor level is above 25 ppm at the perimeter of the exclusion zone, the Site Health and Safety Officer must be notified and work activities shut down. The Site Health and Safety Officer 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 (DEC) and Department of Health (DOH) 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.

- ***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 Site Health and Safety Officer 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 Site Health and Safety Officer.

  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.

- **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 (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.

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 Reportable Quantity (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 Reportable Quantity (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 1100 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 RI 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 in Attachment H2 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 (viz., 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 (viz., 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
- Environmental Products and Services, Inc.: (716) 447-4700
- Op-Tech: (716) 873-7680

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 Site Safety and Health Officer 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 areas, 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 Site Safety and Health Officer'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 and only 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 a duration of 6 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
- Water wash 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 RI 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 National Fire Protection Association.

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 3.

16.0 REFERENCES

1. *Phase I Environmental Site Assessment Report, Parcel B – BSC*, Lackawanna, NY, URS Greiner-Woodward Clyde, March 2001.

2. New York State Department of Health Generic Community Air Monitoring Plan, Appendix 1A, Draft DER-10 Technical Guidance for Site Investigation and Remediation, December 2002.

TABLES

TABLE 1

CONSTITUENTS OF POTENTIAL CONCERN

Phase I Business Park Area
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Parameter	CAS No.	Maximum Detected Concentration [2]		
		Groundwater [3] (mg/L)	Surface Soil/Fill (mg/kg)	Sub-Surface Soil/Fill (mg/kg)
Volatile Organic Compounds (VOCs):		ND	NA	NA
Polycyclic Aromatic Hydrocarbons (PAHs):		ND	NA	NA
Inorganics:				
Arsenic	7440-38-2	5.4	NA	NA
Cadmium	7440-43-9	ND	NA	NA
Chromium	7440-47-3	6	NA	NA
Lead	7439-92-1	3.6J	NA	NA
Mercury	7439-97-6	ND	NA	NA
Miscellaneous:				
Cyanide (total)	57-12-5	ND	NA	NA
Polychlorinated Biphenyls (PCBs):		ND	NA	NA

Notes:

1. Constituents of Potential Concern Based on Phase I ESA (Reference 1).
2. Maximum detected concentrations for soil and groundwater media, where available.
3. Groundwater analytical data collected from upgradient wells MWN-8A and MWN-8B.
4. " NA " = not analyzed.
5. " ND " = parameter not detected above method detection limits.

TABLE 2

TOXICITY DATA FOR CONSTITUENTS OF POTENTIAL CONCERN [1]

Phase I Business Park Area
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Parameter	Synonyms	CAS No.	Code	Concentration Limits [2]		
				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)[3] : 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*	--	--	--
Coal Dust (mg/m^3)	Anthracite, Bituminous, or Lignite coal dust	NA	*none*	2.4	--	ND
Inorganics: 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
Miscellaneous: mg/m^3						
Cyanide (total)		57-12-5	*none*	5	5	25
Polychlorinated Biphenyls (PCBs)[3] : mg/m^3						
Aroclor 1242	Chlorodiphenyl, 42% chlorine	53469-21-9	Ca	1	1	5
Aroclor 1260	Chlorodiphenyl, 60% chlorine	11096-82-5	*none*	--	--	--

Notes:

1. Constituents are identified as Consituents of potential Concern based on the Phase I ESA (Reference 1).
2. Concentration limits as reported by NIOSH Pocket Guide to Chemical Hazards, February 2004 (NIOSH Publication No. 97-140, fourth printing with changes and updates).
3. Individual parameters listed are those most commonly detected at steel/coke manufacturing sites. Table 2 to be updated following receipt of RI analytical data.
4. " -- " = 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 exceeded.
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 THE CONSTITUENTS OF POTENTIAL CONCERN [1]

Phase I Business Park Area
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Activity [1]	Direct Contact with Soil/Fill	Inhalation of Vapors or Dust	Direct Contact with Groundwater
1. Soil/Fill Sampling	x	x	
2. Monitoring Well Installation Oversight.		x	
3. Monitoring Well Sampling.			x

Notes:
1. Activity as described in Section 1.5 of the Health and Safety Plan.

TABLE 4

REQUIRED LEVELS OF PROTECTION
FOR RI TASKS

Phase I Business Park Area
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Activity	Respiratory Protection [1]	Clothing	Gloves [2]	Boots [2, 3]	Other Required PPE/Modifications [2, 4]
1. Soil/Fill Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
2. Monitoring Well Installation Oversight.	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
3. Monitoring Well Sampling.	Level D (upgrade to Level C if necessary)	Poly-coated Tyvek or S	L/N	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

FIGURE 1

TURNKEY ENVIRONMENTAL RESTORATION, LLC

726 EXCHANGE STREET
SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-635

PROJECT NO.: 0071-006-100

DATE: MAY 2005

DRAFTED BY: BCH

SITE LOCATION AND VICINITY MAP

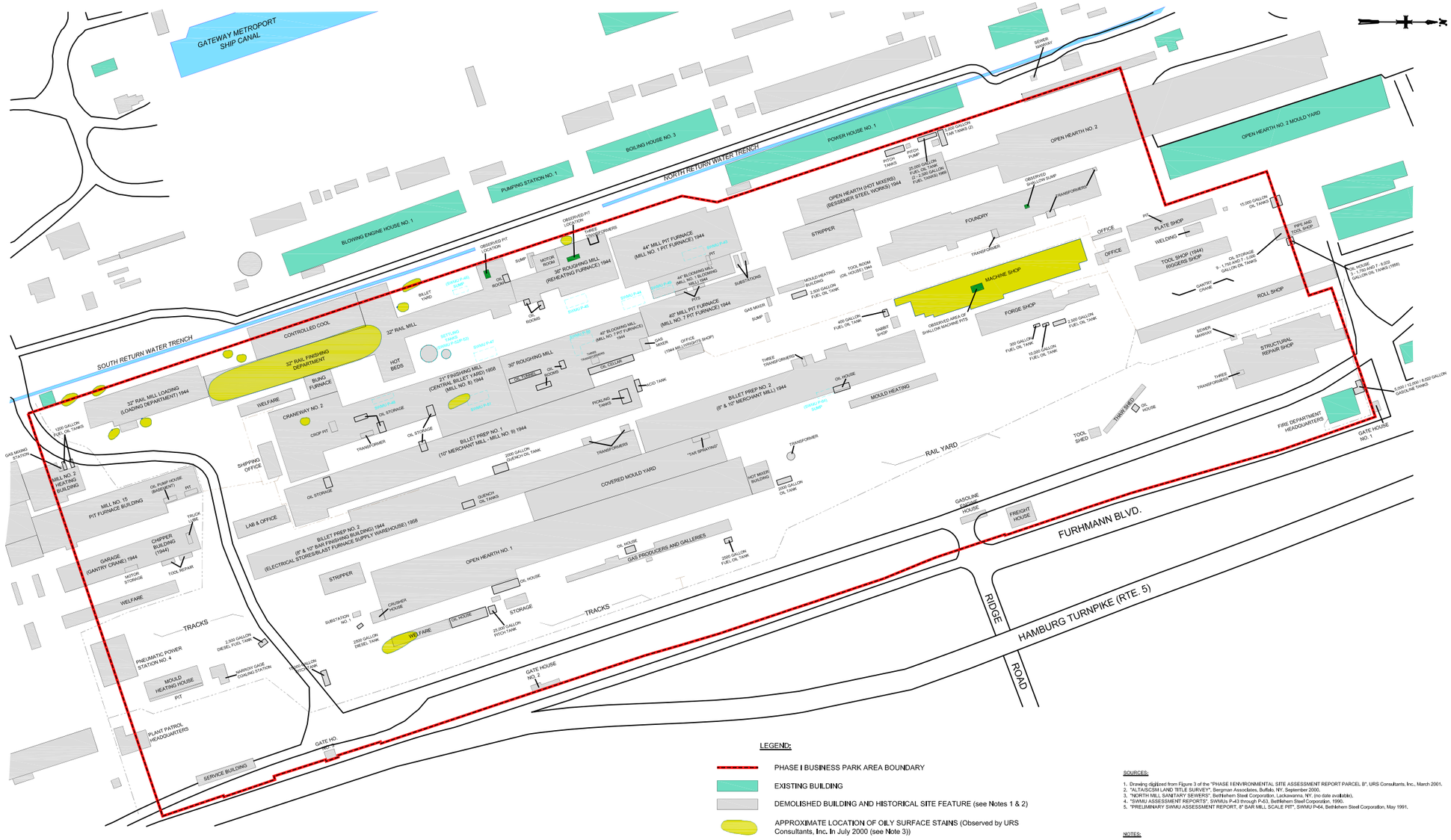
BROWNFIELD CLEANUP PROGRAM - HASP

PHASE I BUSINESS PARK AREA
LACKAWANNA, NEW YORK

PREPARED FOR

TECUMSEH REDEVELOPMENT, INC.

FILEPATH=\cad\turnkey\international steel group (isg)\brownfield cleanup program (bcp)\phase i business park area\hasp\figure 1 site location and vicinity mapdwg



LEGEND:

- PHASE I BUSINESS PARK AREA BOUNDARY
- EXISTING BUILDING
- DEMOLISHED BUILDING AND HISTORICAL SITE FEATURE (see Notes 1 & 2)
- APPROXIMATE LOCATION OF OILY SURFACE STAINS (Observed by URS Consultants, Inc. in July 2000 (see Note 3))
- APPROXIMATE LOCATION OF PITS (4) - TO BE FIELD VERIFIED (Observed in June 2000 by URS Consultants, Inc.)
- SWMU LOCATION (see descriptions at right)
- APPROXIMATE LOCATION OF ACTIVE SANITARY SEWER LINE
- APPROXIMATE LOCATION OF ABANDONED SANITARY SEWER LINE

SOURCES:

1. Drawing digitized from Figure 3 of the "PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT PARCEL B", URS Consultants, Inc., March 2001.
2. "ALTA/ACSM LAND TITLE SURVEY", Bergman Associates, Buffalo, NY, September 2000.
3. "NORTH MILL SANITARY SEWERS", Bethlehem Steel Corporation, Lackawanna, NY, (no date available).
4. "SWMU ASSESSMENT REPORTS", SWMUs P-43 through P-53, Bethlehem Steel Corporation, 1990.
5. "PRELIMINARY SWMU ASSESSMENT REPORT, 8" BAR MILL SCALE PIT", SWMU P-64, Bethlehem Steel Corporation, May 1991.

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.
3. Areas of observed staining represent numerous discrete stains within each noted boundary.
4. All proposed locations are to be field verified and surveyed prior to initiation of field work.

SWMUs DESCRIPTION:

P-43	- 44" MILL SCALE PIT
P-44	- 40" MILL SCALE PIT
P-45	- 36" MILL SCALE PIT
P-46	- 32" MILL SCALE PIT
P-47	- 30" MILL SCALE PIT
P-48	- 21" MILL SCALE PIT
P-49	- 44" MILL SCALE PIT
P-50	- 40" MILL SCALE PIT
P-51	- 30" & 21" MILLS SCARFER PIT
P-52 / P-53	- MAIN SETTLING TANK (NORTH MILLS) / SEVEN SAND FILTERS (NORTH MILLS)
P-54	- SCALE PIT AT 8" BAR MILL

NOTE: All of the units listed above have received a "No Further Assessment" determination from the USEPA (Final RFI Report, URS, October 2004).

150' 0' 150' 300'

SCALE: 1 INCH = 150 FEET
SCALE IN FEET
(approximate)

TURNKEY ENVIRONMENTAL RESTORATION, LLC
720 EXCHANGE STREET
SUITE 620
BUFFALO, NEW YORK 14210
(716) 856-0635

JOB NO.: 0071-006-100

REVISIONS

NO.	BY	DATE	REMARKS

DRAWN BY: BCH
DATE: MAY 2005
CHECKED BY: THF
APPROVED BY:

SEAL

PHASE I BUSINESS PARK SITE PLAN

BROWNFIELD CLEANUP PROGRAM
PHASE I BUSINESS PARK AREA
LACKAWANNA, NEW YORK

PREPARED FOR
TECUMSEH REDEVELOPMENT, INC.

FIGURE 2

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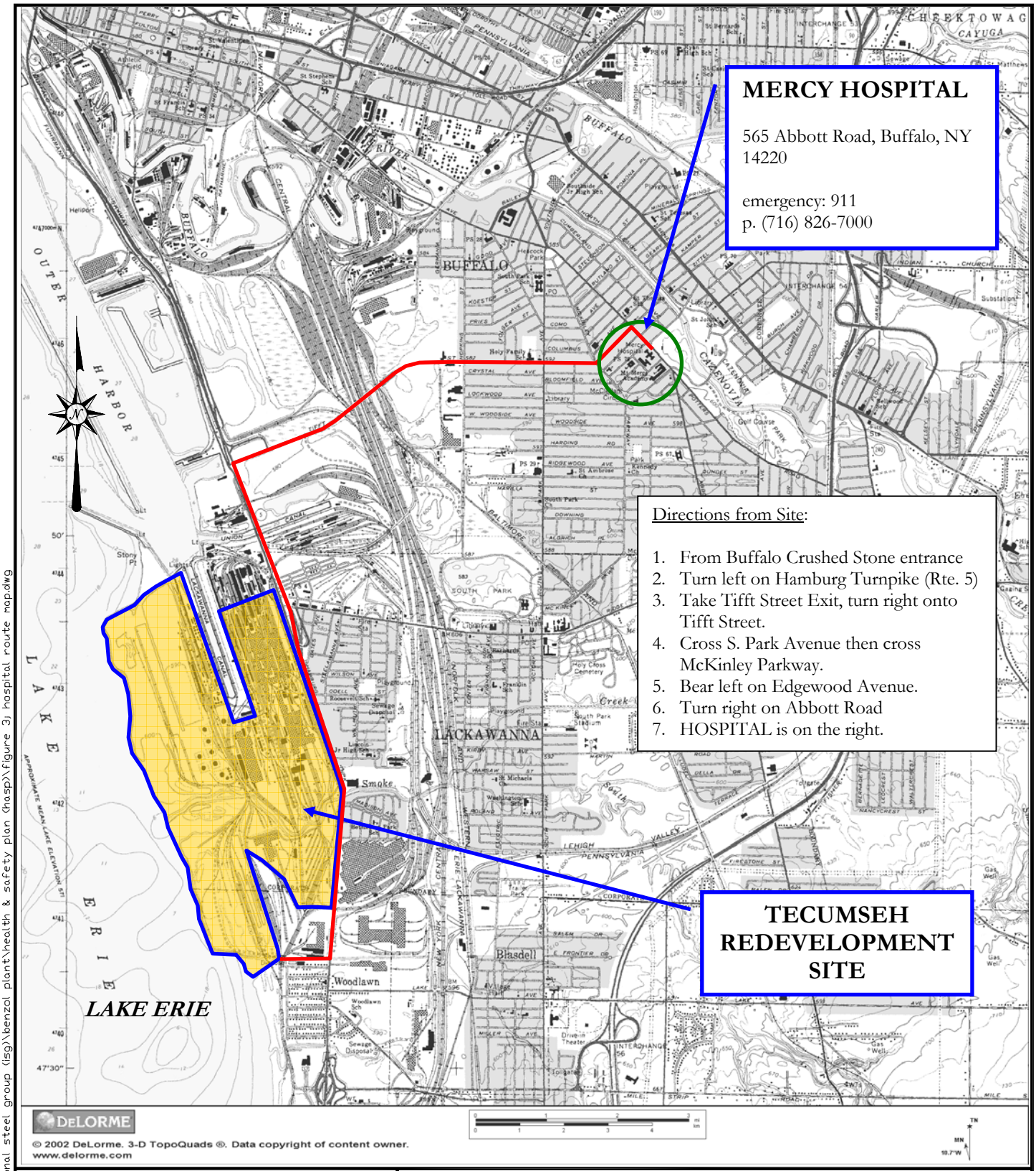
F:\CAD\TurnKey\Tecumseh Redevelopment\Brownfield Cleanup Program (BCP)\Phase I Business Park Area\HASP\Figure 2; Site Plan.dwg, 6/24/2008 8:24:45 AM, Adobe PDF

FIGURE 3



TURNKEY ENVIRONMENTAL RESTORATION, LLC
726 EXCHANGE STREET
SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-0635

PROJECT NO.: 0071-002-901

DATE: NOVEMBER 2004

DRAFTED BY: BCH

HOSPITAL ROUTE MAP

HEALTH & SAFETY PLAN (HASP)

FORMER BETHLEHEM STEEL LACKAWANNA COKE DIVISION SITE
LACKAWANNA, NEW YORK

PREPARED FOR

TECUMSEH REDEVELOPMENT, INC.

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APPENDIX A

EMERGENCY RESPONSE PLAN

EMERGENCY RESPONSE PLAN
For
BROWNFIELD CLEANUP PROGRAM
REMEDIAL INVESTIGATION ACTIVITIES

At the
TECUMSEH REDEVELOPMENT, INC.
PHASE I BUSINESS PARK

LACKAWANNA, NY

May 2005 0071-006-100

Prepared for:

TECUMSEH REDEVELOPMENT, INC.
LACKAWANNA, NY

TECUMSEH PHASE I BUSINESS PARK BCP
HEALTH AND SAFETY PLAN FOR RI ACTIVITIES
APPENDIX A: EMERGENCY RESPONSE PLAN

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2.0 PRE-EMERGENCY PLANNING 2

3.0 ON-SITE EMERGENCY RESPONSE EQUIPMENT 3

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9.0 EMERGENCY RESPONSE CRITIQUE & RECORD KEEPING 10

10.0 EMERGENCY RESPONSE TRAINING 11

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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 Health and Safety Plan (HASP) prepared for Remedial Investigation (RI) activities conducted in the proposed Phase I Business Park Area of the Former Bethlehem Steel Lackawanna Works Site, Lackawanna, New York. This appendix of the 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, due to flammability of Kensol 61 product in subsurface

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	1	Benzol Plant Field Enclosure
First Aid Kit	1	Site Vehicle
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 Phase I Business Park Area 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***
Work: (716) 856-0599
Mobile: (716) 864-1730

Corporate Health and Safety Director: ***Thomas H. Forbes***
Work: (716) 856-0599
Mobile: (716) 864-1730

Site Safety and Health Officer (SSHO): ***Bryan C. Hann***
Work: (716) 856-0635
Home: (716) 870-1165

Alternate SSHO: ***Richard L. Dubisz***
Work: (716) 856-0635
Home: (716) 655-7406

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:
Former Bethlehem Steel Lackawanna Works Site
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 Site Health and Safety Officer 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 excavation.

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 Site Health and Safety Officer 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 (***Bryan Hann*** 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 Site Safety and Health Officer 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 (viz., 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 Site Health and Safety Officer 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 the Buffalo Crushed Stone site access drive, or Gate2, turn left 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:

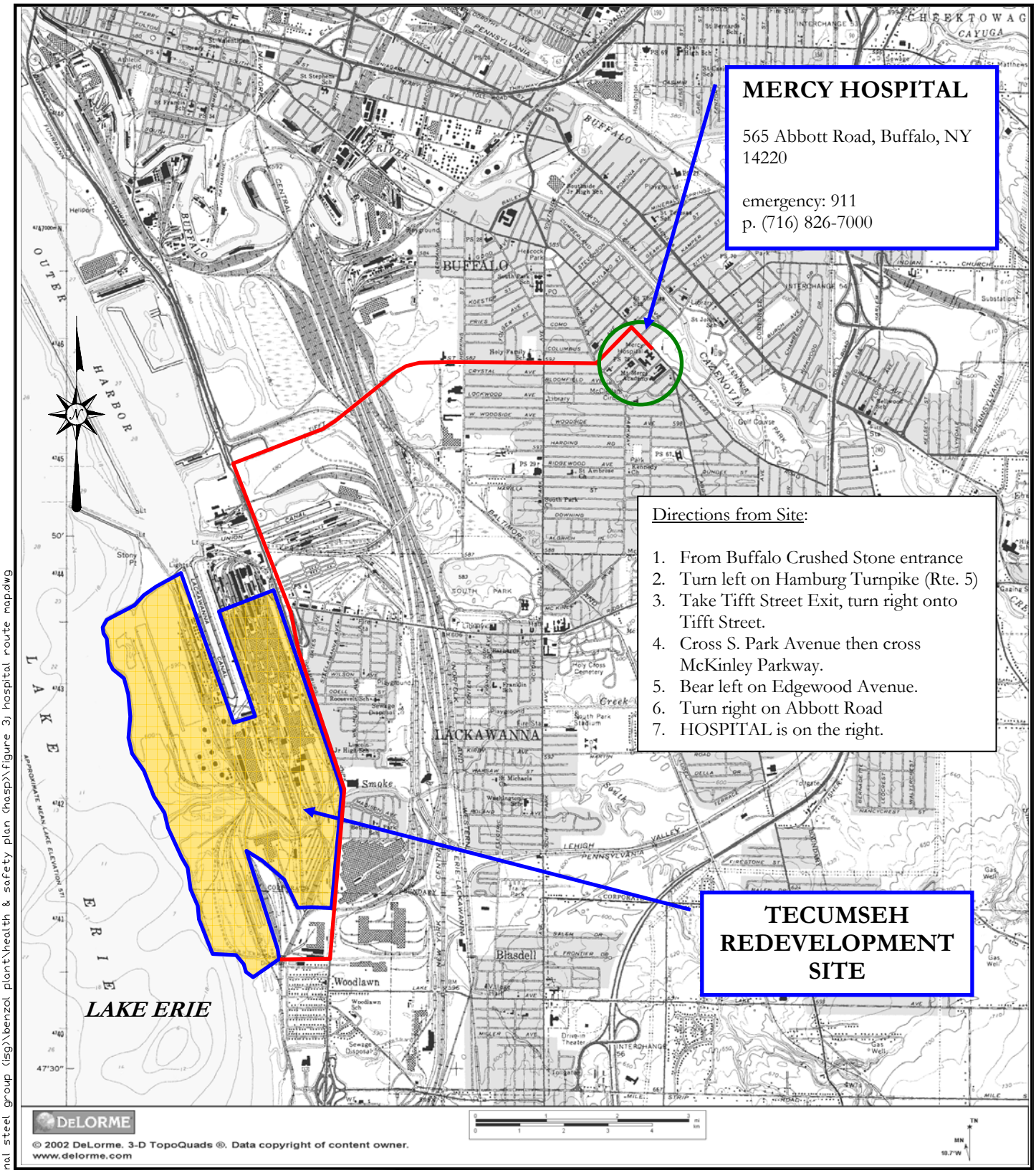
- Occupational injuries and illnesses.
- Accident investigations.
- Reports to insurance carrier or State compensation agencies.
- Reports required by the client.
- Records and reports required by local, state, federal and/or international agencies.
- Property or equipment damage.
- Third party injury 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

FIGURE A-1



TURNKEY ENVIRONMENTAL RESTORATION, LLC
726 EXCHANGE STREET
SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-0635

PROJECT NO.: 0071-002-901

DATE: NOVEMBER 2004

DRAFTED BY: BCH

HOSPITAL ROUTE MAP

HEALTH & SAFETY PLAN (HASP)

FORMER BETHLEHEM STEEL LACKAWANNA COKE DIVISION SITE
LACKAWANNA, NEW YORK

PREPARED FOR

TECUMSEH REDEVELOPMENT, INC.

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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:

APPENDIX C

NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN

APPENDIX 1A

New York State Department of Health
Generic Community Air Monitoring Plan

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 volatile organic compounds (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 NYSDEC/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. 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.

- 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.

- 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.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

All 15-minute readings must be recorded and be available for State (DEC and DOH) 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.

- 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.

- 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.

All readings must be recorded and be available for State (DEC and DOH) personnel to review.

APPENDIX F

PROJECT DOCUMENTATION FORMS

INSPECTOR'S DAILY REPORT

CONTRACTOR			
CLIENT		DATE:	

LOCATION				DAY		JOB NO.	
WEATHER		TEMP	° F	START		END	

WORK PERFORMED:

CONTRACTOR ACTIVITIES:

[PUT CONTRACTOR ACTIVITIES HERE, BE SPECIFIC. TYPE OF EQUIPMENT, ACTIVITIES PERFORMED, BY WHOM, LOCATION OF LANDFILL ETC.]

TURNKEY ACTIVITIES:

[PUT ENGINEER ACTIVITIES HERE, BE SPECIFIC. TYPE OF EQUIPMENT, ACTIVITIES AND TESTING PERFORMED, SAMPLES COLLECTED, BY WHOM, LOCATION OF LANDFILL ETC.]

TEST PERFORMED		*QA PERSONNEL* SIGNATURE			
PICTURES TAKEN	none	REPORT NO.			
VISITORS	none	SHEET	1	OF	

INSPECTOR'S DAILY REPORT

CONTRACTOR			
CLIENT		DATE:	

LOCATION				DAY		JOB NO.	
WEATHER		TEMP	° F	START		END	

MEETINGS HELD & RESULTS:

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	*H*	#	*DESCRIPTION*	*H*	#	*DESCRIPTION*	*H*	#	*DESCRIPTION*	*H*	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.			DJ Dump truck		
Laborer-Foreman			Carpenter						Water Truck		
Laborer									Backhoe		
Operating Engineer			Concrete Finisher						Excavator		
						Roller			Pad foot roller		
Carpenter						Paving Equipment					
						Air Compressor					

REMARKS:

REFERENCES TO OTHER FORMS:

SAMPLES COLLECTED:					
SAMPLE NUMBER					
APPROX. LOCATION OF STOCKPILE					
NO. OF STOCKPILE					
DATE OF COLLECTION					
CLIMATOLOGIC CONDITIONS					
FIELD OBSERVATION		SHEET		OF	

DAILY LOG	DATE			
	REPORT NO.			
	PAGE		OF	

PROBLEM IDENTIFICATION REPORT

Date:

Project:

Job No:

Location:

CQA Monitor(s):

Client:

Contractor:

Contractor's Supervisor:

WEATHER CONDITIONS:

Ambient Air Temp. - A.M.:

Ambient Air Temp. - P.M.:

Wind Direction:

Wind Speed:

Precipitation:

Problem Description:

Problem Location (reference test location, sketch on back of form as appropriate):

Problem Causes:

Suggested Corrective Measures or Variances:

Linked to Corrective Measures Report No. *or Variance Log No.*

Approvals (initial):

CQA Engineer:

Project Manager:

Signed:

CQA Representative

DAILY LOG	DATE			
	REPORT NO.			
	PAGE		OF	

CORRECTIVE MEASURES REPORT

Date:

Project:

Job No:

Location:

CQA Monitor(s):

Client:

Contractor:

Contractor's Supervisor:

WEATHER CONDITIONS:

Ambient Air Temp. - A.M.:

Ambient Air Temp. - P.M.:

Wind Direction:

Wind Speed:

Precipitation:

Corrective Measures Undertaken (reference Problem Identification Report No.)

Retesing Location:

Suggested Method of Minimizing Re-Occurrence:

Approvals (initial):

CQA Engineer:

Project Manager:

Signed:

CQA Representative

APPENDIX G

FIELD OPERATING PROCEDURES FOR SAMPLE COLLECTION

FOP 080.0

STOCKPILE & BORROW SOURCE SAMPLING PROCEDURES FOR PHYSICAL ANALYSIS

PURPOSE

This guideline presents a method for collecting representative soil samples from stockpiled borrow source material for physical analysis.

GENERAL

Generally, one of two methods will be utilized to collect soil samples for analysis. One method is to collect the samples by digging a series of representative test pits at the borrow source area and obtaining samples from those test pits. The other method involves collecting samples from representative stockpiles (normally after the material has been mechanically screened). Both procedures are discussed within this method.

Sample collection equipment will include stainless steel mixing bowls, stainless steel mixing spoons, and a stainless steel hand auger with extension rods or a stainless steel spade or equivalent. It may be necessary to use a backhoe or drilling rig to facilitate sample collection.

STOCKPILED SOIL SAMPLING METHOD

As shown in the attached Figure 1, twelve (12) samples of approximate equal volume should be collected from the top, middle and bottom of each 1000 CY stockpile by CQA personnel and composited in the field to give one representative aliquot per 1000 CY.

Stockpile Sampling Procedure

1. Using a shovel or backhoe, penetrate the pile to a depth of about two to three feet.
2. Collect a sample using the shovel.

3. Transfer the sample to a specially prepared mixing area.
4. Repeat Steps 1 through 3 at each 1,000 CY stockpile.
5. Mix subsamples using shovel into one homogenous mass and place in a properly labeled 5-gallon bucket. Fill each bucket completely and cover.
6. Attach a label to each container and record location referencing the stockpile identification number. The label may be made with permanent marker on the side (not top) of the container or using adhesive-back paper labels affixed to the side of the container. At a minimum, the labels should be identified with the following information:
    - Project Name
    - Sample number.
    - Initials of CQA inspector or sample collection personnel.
    - Date of collection.
    - Location of collection (i.e. stockpile I.D.)
7. Return remaining contents of composite sample to stockpile.
8. Deliver the samples to the laboratory for analysis as soon as possible.
9. All information pertinent to each sampling event should be recorded by sampling personnel in the field at the time of sample collection. Each report should correspond to each stockpile and will contain the following information:
    - Project Name
    - Sample number or numbers collected
    - Field observations.
    - Climatologic conditions.
    - Date and time of collection.
    - Approximate location of test pit.
    - Name of person who collected sample.

BORROW AREA TEST PIT SAMPLING METHOD

Prior to obtaining representative soil samples, test holes should be excavated at the borrow area to determine the actual depth and lateral extent of the borrow source soil material. A base line should then be established and a grid system staked in the field. Five samples

should be collected at equidistant locations for each 5000 cubic yards (CY) of soil designated for use in the borrow areas (at approximately mid-depth).

Borrow Area Sampling Procedure

1. Using a shovel, collect a representative sample at approximately mid-depth at each of the sampling locations representing 1000 CY of the proposed excavation area.
2. Transfer each sample into a labeled separate 5-gallon bucket. Fill each bucket completely and cover.
3. Attach a label to each container and record location referencing the established grid system in the borrow area. The label may be made with permanent marker on the side (not top) of the container or using adhesive-back paper labels affixed to the side of the container. At a minimum, the labels should be identified with the following information:
    - Project Name
    - Sample number.
    - Initials of CQA inspector or sample collection personnel.
    - Date of collection.
    - Location of collection (i.e. location of borrow area grid system location)
4. Deliver the samples to the laboratory for analysis as soon as possible.
5. All information pertinent to each sampling event should be recorded by sampling personnel in the field at the time of sample collection. Each report should correspond to each test pit and will contain the following information:
    - Project Name
    - Sample number or numbers collected
    - Field observations.
    - Climatologic conditions.
    - Date and time of collection.
    - Approximate location of test pit.
    - Name of person who collected sample.

ATTACHMENTS

Figure 1; Stockpile Sampling Methodology

REFERENCES

None

FIGURE 4

1,000 CY STOCKPILE SAMPLING METHODOLOGY