

Remedial Investigation Work Plan

*Phase I Business Park Area
Lackawanna, New York*

May 2005
Revised August 2005

0071-006-100

Prepared For:

Tecumseh Redevelopment, Inc.
Richfield, Ohio

Prepared By:





October 20, 2005

Mr. Maurice Moore
New York State Department of
Environmental Conservation
270 Michigan Avenue
Buffalo, New York 14203

Re: Tecumseh Redevelopment, Inc.
Phase I Business Park Area – Remedial Investigation Work Plan

Dear Mr. Moore:

On behalf of our client, Tecumseh Redevelopment, Inc., TurnKey Environmental Restoration, LLC has prepared the enclosed revised Remedial Investigation (RI) Work Plan for the Phase I Business Park Area of the Tecumseh Redevelopment Lackawanna site (former Bethlehem Steel Corp Lackawanna Works). An electronic copy of the proposed RI Work Plan is also enclosed.

Please contact us if you have any questions.

Sincerely,
TurnKey Environmental Restoration, LLC

Thomas H. Forbes

Thomas H. Forbes, P.E.
Project Manager

C: K. Nagel (Tecumseh Redevelopment)
E. Parker (Tecumseh Redevelopment)
D. Papajcik (Squire Sanders)
M. Doster (NYSDEC Region 9)
S. Radon (NYSDEC Region 9)
C. O'Conner (NYSDOH)
S. Bordonaro (Lackawanna Public Library)

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Phase I Business Park Area

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1.0 INTRODUCTION

Tecumseh Redevelopment, Inc. (Tecumseh) owns an approximately 1,100-acre parcel of land 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 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 the property, along with other BSC assets, out of bankruptcy in 2003. A number of solid waste management units (SWMUs) are present on the Tecumseh property, while only twelve were identified on the 102-acre Phase I Business Park Area (see Figure 2).

A Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) of all SWMUs located within the 1,100-acre parcel was initiated by BSC under an Administrative Order issued by the United States Environmental Protection Agency (USEPA) in 1990. Tecumseh completed the RFI in October 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. The twelve SWMUs located within the Phase I Business Park Area have all received a “No Further Action” determination from the USEPA (Final RFI Report, URS, October 2004).

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 Lackawanna property following cleanup. The conceptual redevelopment plans for the entire 1,100-acre site are illustrated in the Redevelopment Master Plan included as Figure 3. As shown, a portion of the Redevelopment Master Plan 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. Business Park Phases II and III, encompassing approximately 173 and 128 acres, respectively, will follow.

1.1 Background

Between 1990 and 2000, the Phase I Business Park Area (the Site) has been included as part of the 1,100-acre parcel site wide RFI conducted under a 1990 Order on Consent

with the USEPA. In 2000, the Phase I Business Park Area was released from the Order on Consent. Tecumseh is currently pursuing an agreement with the NYSDEC under the Brownfield Cleanup Program (BCP) to investigate and if necessary, remediate the property for future development as a commercial/light industrial business park.

In March 2001, BSC performed a Phase I Environmental Site Assessment (ESA) on the Phase I Business Park Area (formerly Parcel B) as part of a due diligence review in conjunction with the proposed redevelopment and sale of the property. A copy of the report was subsequently submitted to the NYSDEC. The Phase I ESA determined that portions of the Phase I Business Park Area may have been impacted by historical steel operations (BSC, 2001).

This Remedial Investigation (RI) Work Plan was prepared to accompany the Brownfield Cleanup Program (BCP) Application specific to the 102-acre Phase I Business Park Area of the Tecumseh site. A separate application has been prepared for Phases II and III of the Business Park. The RI will further assess potential environmental conditions related to the historical site activities within the Phase I Business Park Area as described herein.

1.2 Project Objectives

This document presents an RI Work Plan for the investigation and assessment of environmental conditions present at the portion of the BSC Lackawanna, New York facility designated as the Phase I Business Park Area (see Figures 1 and 2). The RI Work Plan has been prepared in accordance with NYSDEC's Draft May 2004 Draft Brownfield Cleanup Program Guide.

Based on the findings of the 2001 ESA and historic property use, Tecumseh and the NYSDEC have agreed that a remedial investigation is necessary to establish the nature and extent of known and suspected contamination at the Site, and provide the data necessary to develop an appropriate remedial action prior to redevelopment.

The primary objectives of the RI are to:

- Collect soil/fill samples, under strict adherence to NYSDEC and USEPA-accepted quality assurance/quality control (QA/QC) procedures, as necessary to establish the nature and extent of contamination at the site.

- Investigate and characterize site groundwater including flow direction and hydraulic gradient.
- Determine if the concentrations of constituents of potential concern (COPCs) pose potential unacceptable risks to human health and the environment.
- Provide the data needed to evaluate potential remedial measures and determine appropriate actions to address potential risks.

The RI will therefore focus on determining the extent of Site impacts to allow for evaluation of remedial measures (see Section 5.0 of this Work Plan).

1.3 Scope of Work

This RI Work Plan identifies various field investigation activities, (e.g., soil/fill and groundwater sampling, water-level monitoring, field documentation, and site surveying) necessary to characterize the site and allow for evaluation of remedial alternatives. The RI scope of work is presented in Section 4.0. In general, the scope of work includes:

- Collection and analysis of 37 on-site surface soil/fill samples.
- Excavation of 82 test pits across ten Areas of Assessment (AOAs) located within the 102-acre Site.
- Installation of eight temporary piezometers to assess Site groundwater flow direction and hydraulic gradient.
- Installation and sampling of overburden groundwater wells (justification for and locations of will be determined based upon soil/fill analytical results).
- Measurement of groundwater levels before implementing groundwater sampling activities (see previous two bullets).
- Performance of qualitative human health and ecological risk assessments for the site.
- Identification and evaluation of effective and implementable remedial alternatives for the site that are protective of human health and the environment.

2.0 SITE DESCRIPTION

Tecumseh currently owns the Phase I Business Park Area, which is located west of New York State Route 5 (Hamburg Turnpike), east of the Gateway Metroport Ship Canal, and east and south of land owned by Gateway Trade Center (and previously owned by BSC) (see Figures 1 and 2). The flat lying, approximately 102-acre property is mostly vacant land, but includes some active railroad spurs and a garage (former Fire Department Headquarters). A chain-link fence that borders the entire property along Route 5 and a remote-control access gate at the Ridge Road guardhouse restrict access to the property.

The subject 102-acre Phase I Business Park Area was formerly used to house a portion of BSC's steel making operations that were fully integrated into the entire BSC Lackawanna steel facility. Most facility operations ceased in 1983, with a majority of the entire facility being demolished in subsequent years. 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
- Foundry
- Water Treatment Plant

2.1 Site Topography, Physiography and Drainage

The Site is vacant and generally flat with no discernable drainage pattern. The United States Geological Survey Buffalo, SW, New York Quadrangle, 7.5-minute topographic map was reviewed to assess physiographic conditions pertaining to the Site. The map, presented as Figure 1, indicates that the Site and surrounding areas slope gently to the west toward the Gateway Metroport Ship Canal and Lake Erie. Topographic contour maps prepared by BSC indicate the Site is approximately 585 feet above mean sea level.

2.2 Site Structures and Vegetation

As previously stated, the 102-acre Site and surrounding property is composed of mostly vacant land, however the Site does contain some structural remnants, which are associated with historical steel-making operations. The structural remnants include:

- Numerous reinforced concrete slabs and building piers from former buildings and foundations from heavy equipment.
- Immediately west and outside the property boundary is a man-made drainage channel designated as the North Return Water Trench that begins near the former Pumping Station No. 1 and flows north to the Union Ship Canal (see Figure 2). Historically, the trench collected treated wastewater and non-contact cooling water from SPDES permitted outfalls from BSC operations. Currently, there are no active outfalls into the North Return Water Trench from the Site.
- Immediately west and outside the property boundary is another man-made drainage channel designated as the South Return Water Trench that begins near the former Blowing Engine House No. 1 and flows south to Smokes Creek (see Figure 2). Historically and currently, the trench collects and discharges groundwater and stormwater to Smokes Creek under an active SPDES permit. There are no active outfalls into the South Return Water Trench from the Site.

Except the structures noted above as well as a former plant Fire Department Headquarters building located on the northeast corner of the Site, the land surface is flat, vacant, and heavily vegetated with shrubs, grasses, and trees. Numerous at or near grade concrete building foundations are located throughout the Site. These foundations are all that remain of those buildings that were a part of the integrated steel-making facilities at the Site. The approximate locations of the current and former structures/buildings are shown on Figure 2.

2.3 Site Geology and Hydrogeology

The United States Department of Agriculture Soil Survey of Erie County, New York indicates that the Site is covered by surface soil classified as Urban Land; soil consisting of paved, foreign, or disturbed soils. Drilling logs from monitoring wells constructed on or near the Site indicate that the upper two feet (east side) to eight feet (west side) is typically composed of steel and iron-making slag and/or other fill material. The fill is underlain by lacustrine clays and silts that is, in turn, underlain by shale or limestone bedrock. Bedrock is

about 60 feet below grade near the eastern perimeter of the Site and about 40 feet below the surface in the western portions of the Site.

Historically, due to the proximity of Lake Erie, groundwater in the area has not been developed for industrial, agriculture, or public supply purposes. There is a deed restriction that prohibits the use of groundwater on the property. Consequently, no groundwater supply wells are present on the 1,100-acre Tecumseh property. Measurements taken in several monitoring wells on or near the Site indicate that the water table is 5 to 6 feet below grade within the soil/fill unit. Upgradient monitoring wells MW-8A and MW-8B, presented on Figure 2, are located in the northeast corner of the Site. Well MW-8A was installed to 15.15 feet below ground surface (fbgs) and screened within the soil/fill unit from 5.15 to 15.15 fbgs (10-feet); well MW-8B was installed to 71.30 feet below ground surface (fbgs) and screened within the sand/bedrock unit from 56.30 to 71.30 fbgs (15-feet) (URS, October 2004). Boring logs for wells MW-8A and MW-8B are presented in Appendix A. Groundwater elevation contour maps completed during the RFI indicate that shallow groundwater flows radially west/southwest across the Site towards the Gateway Metroport Ship Canal and Lake Erie as well as northwest toward the Buffalo Outer Harbor (URS, October 2004).

2.4 Utilities

The following utilities are present on or near the Site:

- Electric Utility: Overhead electric power lines on wooden utility poles, owned by Niagara Mohawk Power Corporation (NMPC), run north and south adjacent to the Site. The electric utilities are located just east of the North Return Water Trench and former Power House No. 1 (see Figure 2), but are not located within the Site boundary. The former Power House No. 1 is not part of the Site.
- Railroad Tracks: Several active railroad tracks, owned and operated by South Buffalo Railway, are located on the east side of the Site parallel to New York State Route 5 (Hamburg Turnpike). These tracks are used to service licensed tenants within the 1,100-acre Tecumseh property, Gateway Trade Center facilities, and for storage of railroad cars for customers.
- Water: Erie County currently supplies potable water to the site. Lake Erie is not accessible from the Site without accessing properties owned by Tecumseh or Gateway Trade Center.

- Sanitary Sewers: Active and abandoned sewer lines are located at the approximate locations indicated on Figure 2. Several sewer pump lift stations are also present along the active sanitary sewer line, although they are not presented on the figure.

2.5 Wetlands and Floodplains

No state/federal wetlands or floodplains exist at the Site.

2.6 Previous Investigations

2.6.1 RCRA Facility Assessment

Twelve SWMUs, designated as P-43 through 53 and P-64, were identified on the 102-acre Site during the RCRA Facility Assessment (RFA) that preceded the RFI. 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 Area were excluded from the RFI Order by the USEPA in January 2001.

2.6.2 Site Reconnaissance

From July 11 through 13, 2000, field reconnaissance activities were conducted by URS Consultants, Inc. to observe the conditions on the Site and the immediately adjacent properties. The field reconnaissance consisted of parallel east to west transects, approximately 50 to 75 feet apart. Structures observed in the field, such as pits, sumps, former foundation floors, and storm drains, were not surveyed; therefore locations identified on Figure 2 and presented in Appendix B are approximate. The description of site features based upon field observations made during the field reconnaissance was summarized in a July 14, 2000 memorandum presented in Appendix B.

Several areas of stressed vegetation, sometimes combined with a viscous oil substance pooled on the ground surface were observed and noted. Additionally, two large oil-stained areas were observed on the Rail Finishing concrete foundation on the south end of the Site

and the Machine Shop concrete foundation located near the north end of the Site (see Figure 2).

On July 13, 2000, following identification of surface staining associated with observed oily material, shallow test trenches were excavated at the locations show in Appendix B. These preliminary excavations indicated that the oily surface stains were confined to the upper two feet or less of soil/fill. No samples were collected for laboratory analysis, however four discrete field aliquots of the oily material were collected and screened with a benzene field test kit. Field screening did not detect benzene in any of the four samples screened.

2.6.3 Phase I Environmental Site Assessment

A Phase I Environmental Site Assessment (ESA) was completed for the 102-acre Site by BSC in 2001. The Site was, at that time, designated by BSC as “Parcel B.” The Phase I ESA is included as Attachment 5 of the BCP application. 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 soil/fill by base-neutral semi-volatile organic compounds (SVOCs) 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 visible petroleum staining at the ground surface.
- The potential impact of surface and subsurface soil/fill by metals associated with steel manufacturing operations.
- The potential impact of surface and subsurface soil/fill by PCBs from transformers and rail yards in discrete areas of the parcel.
- Potential soil/fill and groundwater impacts from volatile organic compounds associated with gasoline storage in discrete onsite areas, and historic off-site gasoline releases upgradient of the property.

2.7 Constituents of Potential Concern (COPCs)

As shown in Figure 2, the 2001 ESA divided the site into ten Areas of Assessment (AOAs), identified as AOA-1 through AOA-10. The following sections detail the

constituents of potential concern (COPCs) at the Site within each AOA (see Table 1). The COPC parameter list presented in Table 1 includes provisions for analysis of an “expanded” list of parameters presented in Table 2. The “expanded” list will be employed at a frequency of 1 per 20 samples per matrix to check for the presence of other constituents.

2.7.1 Semi-Volatile Organic Compounds

Based upon historical review and site reconnaissance, the main potential COPC on the Site appears to be SVOCs (base-neutral fraction only) in surface soil/fill (see Table 1). SVOCs are associated with greases, lubricating and hydraulic oils, and fuels associated with the operation of the steel mills, foundry, petroleum bulk storage, and other steel manufacturing operations historically conducted on the Site. In addition, site reconnaissance observations identified areas of viscous oily surface stains as shown on Figure 2.

2.7.2 Metals

Metals associated with steel manufacturing are also potentially ubiquitous in surface and shallow subsurface soil/fill at the Site (see Table 1).

2.7.3 PCBs, Volatile Organic Compounds, and Acids

Other potential COPCs, such as polychlorinated biphenyls (PCBs) from transformers and rail yards, volatile organic compounds (VOCs) from the historical use of solvents in shops and gasoline storage, and acids associated with steel pickling processes may be present in environmental media at the site (i.e., soil/fill and groundwater) (see Table 1). Based upon historical records, the potential impacts are likely limited to discrete locations within the Site.

2.7.4 Herbicides

Per NYSDEC request, surface soil/fill samples will be analyzed for herbicides at two locations, monitoring well location MW-13A and surface soil/fill location SS-35, as indicated in Table 3 and Figure 2.

2.7.5 Off-Site COPCs

Based on Sanborn map review, several properties along New York State Route 5 (Hamburg Turnpike) were identified as formerly containing gasoline service stations, and possibly leaking underground storage tanks. VOCs, specifically the gasoline range organics, may account for impacts to on-site groundwater quality along the Route 5 boundary (see Table 1).

3.0 DATA OBJECTIVES

3.1 Acceptance or Performance Criteria

Acceptance or performance criteria specify the quality of data required to support decisions regarding remedial response activities. Acceptance or performance criteria are based on the data quality objectives. Specifically, the data quality and level of analytical documentation necessary for a given set of samples will vary depending on the intended use of the data.

As part of the RI process, site-specific remedial action objectives will be developed. Sampling data will be used to evaluate whether or not remedial alternatives can meet the objectives. The intended uses of these data dictate the data confidence levels. Two data confidence levels will be employed in the RI: screening level data and definitive level data. In general, screening level confidence will apply to field measurements, including photoionization detector (PID) measurements, groundwater elevation measurements, and field analyses (viz., pH, temperature, specific conductivity, and turbidity). Definitive level confidence will apply to samples for chemical analysis.

The applicability of these levels of data will be further specified in the Quality Assurance Project Plan (QAPP). Sampling and analytical acceptance and performance criteria such as precision, accuracy, representativeness, comparability, completeness, and sensitivity, will also be defined in the QAPP.

3.2 Work Plan Approach

The RI scope of work is focused on providing defensible data to identify areas of the Site requiring remediation, define chemical constituent migration pathways, qualitatively assess human health and ecological risks, and perform the remedial alternatives evaluation. The investigation will also include the collection and analysis of groundwater samples to support remedial action objectives. Definitive level data quality will be required for chemical analysis of groundwater samples.

Field team personnel will collect environmental samples in accordance with the rationale and protocols described in the Field Sampling Plan (FSP) presented in the QAPP. USEPA and NYSDEC-approved sample collection and handling techniques will be used.

Samples for chemical analysis will be analyzed, in accordance with USEPA SW-846 methodology to meet the definitive-level data requirements, by a New York State Department of Health Environmental Laboratory Accreditation Program (ELAP) CLP-certified laboratory. Analytical results will be evaluated by a third-party data validation expert in accordance with provisions described in the QAPP.

4.0 REMEDIAL INVESTIGATION SCOPE OF WORK

This RI Work Plan will include the following activities to delineate on-site soil/fill and groundwater impacts at the site:

- Visual/olfactory/PID characterization of surface and subsurface soil.
- Advancement of on-site borings completed as groundwater monitoring wells if soil/fill impacts indicate potential impacts to groundwater quality.
- Collection and analysis of groundwater samples from existing and newly installed monitoring wells at the site.

The investigation will be geared toward collection of representative analytical data to characterize potential on-site source area soil/fill and groundwater quality. A detailed description of the scope of work follows.

4.1 General

In general, surface and subsurface soil samples will be collected from 82 test pits and 37 surface sample locations (119 total locations) to evaluate the nature of impacts within the ten Areas of Assessment (AOAs), identified on Figure 2. For the purposes of this investigation, specific AOAs of interest have been targeted for discrete sample collection and analysis, however AOAs that contained similar site operations have been grouped together as shown in Table 3. The general approach to investigating these AOAs is as follows:

- Each set of AOAs will be investigated with a series of test pit groups and surface soil samples. The test pits and surface soil sample locations are grouped based on areas that have similar concerns at the Site.
- Representative discrete samples of the soil/fill horizon within each sample group will be collected and composited. At those locations where a distinctly different or significantly impacted soil/fill horizon is identified, an individual grab sample will be collected for analysis, rather than composited with the group.
- Each soil/fill sample will be screened via PID scan and headspace determination. PID concentrations greater than 20 parts per million (ppm) above background will be collected as a discrete grab sample and analyzed for VOCs (see Section 4.4.2.2 for additional discussion concerning VOC sampling at composite locations).

- Sample analyses will target site-specific COPCs identified in Section 2.7 of this Work Plan, based on the Phase I ESA conclusions. An expanded parameter list will be employed at a frequency of one per twenty samples per matrix.
- Test pits will be excavated to top of native soil or first groundwater, whichever is encountered first.

The scope of work for each AOA group is summarized below and in Table 3. The rationale for each sample location selection is also presented in Table 3.

4.2 Project Planning

RI planning was initiated with development of this Work Plan, and included: a review of past investigation reports for the Site; a review of historical field reconnaissance notes; the performance of an initial field reconnaissance; and discussions with the NYSDEC. The scope of work outlined below and summarized in Table 3 takes into account current site-specific features and constraints.

4.3 Areas of Assessment

4.3.1 Areas of Assessment 1, 4, 5, and 6

AOAs 1, 4, 5, and 6 comprise the former main operational mill area of the Site. The COPCs within these AOAs include SVOCs and metals, with potential PCBs in several discrete locations. Thirty-eight test pits organized into 9 test pit groups, eleven individual test pits, two surface soil/fill locations organized into 1 group, and thirteen individual surface soil/fill locations will be excavated and/or sampled, respectively, in this area of the Site. The sample locations are organized as follows:

Composite Test Pit Samples (38):

- AOA 1A: five test pits TP-1-1 through TP-1-5
 - One surface soil/fill composite sample
 - One subsurface soil/fill composite sample
- AOA 1B: five test pits TP-1-6 through TP-1-10
 - One stained surface soil/fill composite sample (TP-1-6 through TP-1-8)
 - One surface soil/fill composite sample (TP-1-9 and TP-1-10)

- *One subsurface soil/fill composite sample (TP-1-6 through TP-1-10)*
- AOA 1C: two test pits TP-1-11 and TP-1-12
 - *One surface soil/fill composite sample*
 - *One subsurface soil/fill composite sample*
- AOA 1D: five test pits TP-1-13 through TP-1-17
 - *One stained surface soil/fill grab sample (TP-1-13)*
 - *One surface soil/fill composite sample (TP-1-14 through TP-1-17)*
 - *One subsurface soil/fill composite sample (TP-1-13 through TP-1-17)*
- AOA 4: five test pits TP-4-1 through TP-4-5
 - *One surface soil/fill composite sample*
 - *One subsurface soil/fill composite sample*
- AOA 5A: five test pits TP-5-1 through TP-5-5
 - *One stained surface soil/fill grab sample (TP-5-4)*
 - *One surface soil/fill composite sample (TP-5-1 through TP-5-3 and TP-5-5)*
 - *One subsurface soil/fill composite sample (TP-5-1 through TP-5-5)*
- AOA 5B: five test pits TP-5-6 through TP-5-10
 - *One surface soil/fill composite sample*
 - *One subsurface soil/fill composite sample*
- AOA 5C: one test pit TP-5-11
 - *One surface soil/fill grab sample*
 - *One subsurface soil/fill grab sample*
- AOA 6: five test pits TP-6-1 through TP-6-5
 - *One stained surface soil/fill grab sample (TP-6-5)*
 - *One surface soil/fill composite sample (TP-6-1 through TP-6-4)*
 - *One subsurface soil/fill composite sample (TP-6-1 through TP-6-5)*

Grab Test Pit Samples (11):

- AOA 1: three test pits TP-1-18, TP-1-19, and TP-1-22
 - *One subsurface soil/fill grab sample from each test pit*
- AOA 1: two test pits TP-1-20 and TP-1-21
 - *Maximum of one subsurface soil/fill grab sample from each test pit based upon PID scan, PID headspace, visual and olfactory observations*
- AOA 5: one test pit TP-5-12
 - *One subsurface soil/fill grab sample*
- AOA 6: three test pits TP-6-6, TP-6-7, and TP-6-10
 - *One subsurface soil/fill grab sample from each test pit*
- AOA 6: two test pits TP-6-8 and TP-6-9
 - *Maximum of one subsurface soil/fill grab sample from each test pit based upon PID scan, PID headspace, visual and olfactory observations*

Composite Surface Soil/Fill Samples (2):

- AOA 5: two surface soil locations SS-01 and SS-02
 - *One surface soil/fill composite sample*

Grab Surface Soil/Fill Samples (13):

- AOA 1: two surface soil locations SS-06, and SS-22
 - *One surface soil/fill grab sample from each location*
- AOA 4: four surface soil locations SS-04, SS-05, SS-25 and SS-26
 - *One surface soil/fill grab sample from each location*
- AOA 5: two surface soil locations SS-03 and SS-27
 - *One surface soil/fill grab sample from each location*
- AOA 6: five surface soil locations SS-07, SS-08, SS-28, SS-29, and SS-30
 - *One surface soil/fill grab sample from each location*

4.3.2 Areas of Assessment 2 and 3

AOAs 2 and 3 consist primarily of support buildings located south of the main mill complex as well as several fuel oil tank locations. The COPCs within these AOAs include SVOCs from former tank locations, SVOCs and PCBs from the former rail yard, metals from former building operations, and herbicides in the open areas. Five test pits organized into two test pit groups, three surface soil/fill locations organized into one group, and three individual surface soil/fill locations will be excavated and/or sampled, respectively, in this area of the Site. The sample locations are organized as follows:

Composite Test Pit Samples (5):

- AOA 2: three test pits TP-2-1 through TP-2-3
 - *One surface soil/fill composite sample*
 - *One subsurface soil/fill composite sample*
- AOA 3: two test pits TP-3-1 and TP-3-2
 - *One surface soil/fill composite sample*
 - *One subsurface soil/fill composite sample*

Composite Surface Soil/Fill Samples (3):

- AOA 3: three surface soil locations SS-19 through SS-21
 - *One surface soil/fill composite sample*

Grab Surface Soil/Fill Samples (3):

- AOA 2: two surface soil locations SS-23 and SS-24
 - *One surface soil/fill grab sample from each location*
- AOA 3: one surface soil location MW-13A
 - *One surface soil/fill grab sample*

4.3.3 Areas of Assessment 7 and 8

AOAs 7 and 8 contain the former Open Hearth, Stripper, Foundry, and Machine Shop buildings. Portions of the Billet Prep No. 2 building are also within this AOA group. The COPCs within these AOAs include SVOCs and metals from former tank locations and building operations as well as PCBs from former transformer locations. Eleven test pits organized into three test pit groups, three individual test pit locations, two surface soil/fill locations organized into one group, and six individual surface soil/fill locations will be excavated and/or sampled, respectively, in this area of the Site. The sample locations are organized as follows:

Composite Test Pit Samples (11):

- AOAs 7A and 8A: four test pits TP-7-1 through TP-7-3 and TP-8-4
 - *One surface soil/fill composite sample*
 - *One subsurface soil/fill composite sample*
- AOA 7B: four test pits TP-7-4 and TP-7-7
 - *One surface soil/fill composite sample*
 - *One subsurface soil/fill composite sample*
- AOA 8B: three test pits TP-8-1 through TP-8-3
 - *One surface soil/fill composite sample*
 - *One subsurface soil/fill composite sample*

Grab Test Pit Samples (3):

- AOA 7: one test pit TP-7-8
 - *One subsurface soil/fill grab sample based upon PID scan, PID headspace, visual and olfactory observations*
- AOA 8: one test pit TP-8-5
 - *One subsurface soil/fill grab sample based upon PID scan, PID headspace, visual and olfactory observations*
- AOA 8: one test pit TP-8-6
 - *One subsurface soil/fill grab sample*

Composite Surface Soil/Fill Samples (2):

- AOA 8: two surface soil locations SS-32 and SS-33
 - *One surface soil/fill composite sample*

Grab Surface Soil/Fill Samples (6):

- AOA 7: four surface soil locations SS-15 through SS-17, and SS-31
 - *One surface soil/fill grab sample*
- AOA 8: two surface soil locations SS-18 and SS-34
 - *One surface soil/fill grab sample*

4.3.4 Areas of Assessment 9 and 10

AOAs 9 and 10 contain the former rail yard, several support buildings (rigger shop, repair shop) and the fire department headquarters. The COPCs within these AOAs include SVOCs and metals from former tank locations and building operations, PCBs from former transformer locations and rail yards, VOCs from former gasoline storage and use areas, and herbicides from an open area near Furhmann Boulevard. Ten test pits organized into three test pit groups, four individual test pit locations, four surface soil/fill locations organized into one group, and four individual surface soil/fill locations, will be excavated and/or sampled, respectively, in this area of the Site. The following work scope will address the potential concerns in this AOA group.

Composite Test Pit Samples (10):

- AOA 9: five test pits TP-9-1 through TP-9-5
 - *One surface soil/fill composite sample*
 - *One subsurface soil/fill composite sample*
- AOA 10A: three test pits TP-10-1 through TP-10-3
 - *One surface soil/fill composite sample*
 - *One subsurface soil/fill composite sample*
- AOA 10B: two test pits TP-10-4 and TP-10-5
 - *One surface soil/fill composite sample*
 - *One subsurface soil/fill composite sample*

Grab Test Pit Samples (4):

- AOA 10: two test pits TP-10-6 and TP-10-7
 - *One subsurface soil/fill grab sample*
- AOA 10: two test pits TP-10-8 and TP-10-9

- *Maximum of one subsurface soil/fill grab sample from each test pit based upon PID scan, PID headspace, visual and olfactory observations*

Composite Surface Soil/Fill Samples (4):

- AOA 9: four surface soil locations SS-10 through SS-13
 - *One surface soil/fill composite sample*

Grab Surface Soil/Fill Samples (4):

- AOA 9: three surface soil locations SS-09, SS-35, and SS-36
 - *One surface soil/fill grab sample from each location*
- AOA 10: one surface soil location SS-14
 - *One surface soil/fill grab sample*

4.4 Investigation Activities

Individual scopes of work, developed for environmental media to be addressed during the Remedial Investigation, are presented in the following sections. The proposed locations of the on-site RI activities are presented on Figure 2. A summary of the RI sampling and analytical program is presented as Table 3.

4.4.1 Underground Utility Clearance

Prior to any intrusive activity (e.g., excavation, Geoprobe®, drill rig), TurnKey will request a utility clearance from the Underground Facilities Protective Organization (or approved other), and underground utilities will be identified and clearly marked. TurnKey will also review historic plant engineering drawings for on-site utility locations prior to initiating fieldwork. Active and abandoned sanitary sewer lines are approximately located on Figure 2. Additional utilities identified at the site are discussed in Section 2.4 of this Work Plan.

4.4.2 Soil/Fill Investigation

4.4.2.1 Surface Soil/Fill Sampling

Twenty-four composite surface soil/fill samples, which include 20 non-stained and 4 stained, and 27 grab surface soil/fill samples will be collected across the Site as discussed in Section 4.3 of this report at the locations indicated on Figure 2. Collection of surface

soil/fill samples will facilitate evaluation of potential health risks to current site receptors that may be exposed to soil/fill via direct contact, incidental ingestion or inhalation of airborne particulates.

For each surface soil/fill grab and composite sample, a dedicated stainless steel hand trowel or stainless steel spoon will be used to collect a representative aliquot of soil in accordance with the following procedure(s):

- If an area is vegetated, then the surface soil sample will be collected from 0 to 2 inches below ground surface (bgs) following removal of the sod;
- If there is no soil present in an area slated for surface sample collection, the procedure for collection of a suitable sample will be to excavate an area 12 inches by 12 inches by 6 inches deep, screen the material to less than 1/8 inch, and submit the screened material for analysis. If there is not enough material for analysis, then the excavation will be expanded 3 inches in all four directions and screened. The excavation will be expanded in this manner until sufficient sample volume is obtained.

Composite samples will be transferred to a new stainless steel bowl for compositing and homogenization. Grab and composite samples will be transferred to laboratory-supplied, precleaned sample containers for analysis of the parameters listed in Table 3 using USEPA SW-846 methodology.

Representative samples will be described in the field by qualified TurnKey personnel using the Unified Soil Classification System (USCS), scanned for total volatile organic vapors with a calibrated Photovac 2020 PID equipped with a 10.6 eV lamp (or equivalent), and characterized for impacts via visual and/or olfactory observations.

4.4.2.2 Test Pit Excavation

Eighty-two (82) test pits will be excavated across the Site as discussed in Section 4.3 of this report at the locations indicated on Figure 2 to allow for visual/olfactory/PID assessment of subsurface conditions as well as to obtain 35 subsurface soil/fill samples (16 composite and 19 grab) for chemical characterization (see Table 3).

In general, test pits will be excavated utilizing a small excavator from ground surface to native soils or first groundwater, whichever is encountered first. Test pit dimensions (i.e., depths and lengths) may vary depending on the vertical and horizontal extents of the soil/fill

horizon, depth to groundwater, or encountered impacts (i.e., free-product, elevated PID readings etc.). Test pit walls and excavated soil/fill will be examined by qualified TurnKey personnel and classified in accordance with the USCS. Excavated soil/fill and the test pit atmosphere will be field screened for the presence of VOCs using a field PID as a procedure for ensuring the health and safety of personnel at the site and to identify potentially impacted soil/fill samples for laboratory analysis. The methodology for field soil/fill screening using a PID is discussed below as well as included in the QAPP, presented under separate cover.

All test pit soil/fill samples will be initially retrieved by the excavator bucket. Representative subsurface soil/fill samples from each sample composite group and grab location, as identified in Section 4.3 above and Table 3, will be collected from the center of the excavator bucket using a dedicated stainless steel hand trowel or stainless steel spoon. Composite samples will be transferred to a new stainless steel bowl for compositing and homogenization. Grab and composite samples will be transferred to laboratory-supplied, precleaned sample containers for analysis of the parameters listed in Table 3 using USEPA SW-846 methodology.

A second representative aliquot from each grab subsurface soil/fill location or grab location within a composite group will be transferred to a sealable plastic bag for discrete headspace determination. In general, representative soil/fill samples will be collected, placed in a sealable plastic bag, and kept at or near room temperature (approximately 65-70° F) for a minimum of 15 minutes prior to PID measurement. Headspace determinations will be recorded on the appropriate field forms and Project Field Book. PID scan and/or headspace determination values greater than 20 parts per million (ppm) will require the collection of an additional sample for TCL VOC analysis using USEPA SW-846 methodology. If more than one grab sample within a composite group exhibits PID scans and/or headspace values greater than 20 ppm, a discrete grab sample will be collected from the location exhibiting the highest PID reading only. The chosen grab location soil/fill sample will be transferred directly into a laboratory-supplied, precleaned sample container for analysis of TCL VOCs.

Following completion of each test pit, soil/fill material will be returned to the excavation in the opposite order it was removed and compacted to match the existing grade. Only the number of test pits that can be adequately backfilled during a single workday will

be excavated. No excavated test pit will be left open overnight. Decontamination of non-disposable and non-dedicated sampling equipment as well as handling of investigative-derived waste (IDW) is discussed in Section 4.4.4 of this Work Plan.

4.4.2.3 Boring Advancement

In the event that test pit activities experience refusal at the surface due to the presence of concrete or other obstructions, direct-push technology via a Geoprobe® drill rig equipped with a concrete core barrel will be implemented to obtain subsurface soil/fill samples. Once the surface obstruction is breached, each boring location will be advanced a minimum of one-foot into native soil or first groundwater, whichever is encountered first, using a 1.5-inch diameter, 4-foot core sampler with dedicated PVC sleeve. Recovered samples will be described in the field by qualified TurnKey personnel using the USCS, scanned for total volatile organic vapors with a calibrated Photovac 2020 PID equipped with a 10.6 eV lamp (or equivalent), and characterized for impacts via visual and/or olfactory observations. As with the test pit subsurface soil/fill samples (see Section 4.4.2.2, Test Pit Excavation), headspace determinations will also be completed.

Upon reaching the desired depth, representative subsurface soil/fill samples from each sample composite group and grab location, as identified in Section 4.3 above and Table 3, will be collected from the PVC sleeve(s) using a dedicated stainless steel hand trowel or stainless steel spoon. Composite samples will be transferred to a new stainless steel bowl for compositing and homogenization. Grab and composite samples will be transferred to laboratory-supplied, precleaned sample containers for analysis of the parameters listed in Table 3 using USEPA SW-846 methodology.

As with the test pit subsurface soil/fill samples discussed in Section 4.4.2.2 and prior to compositing, a second representative aliquot from each grab location within the composite group will be transferred to a sealable plastic bag for discrete headspace determination. For composite groups where one or more grab samples exhibits headspace values greater than 20 ppm, a discrete grab sample will be collected from the location exhibiting the highest PID reading. The chosen grab location soil/fill sample will be transferred directly into a laboratory-supplied, precleaned sample container for analysis of TCL VOCs.

Following sample collection, the geoprobe boreholes will be backfilled with the remaining soil cuttings and supplemented, as necessary, with bentonite powder.

Decontamination of non-disposable and non-dedicated sampling equipment as well as handling of IDW is discussed in Section 4.4.4 of this Work Plan.

4.4.3 Groundwater Investigation

Based on previous investigations completed on the 1,100-acre Tecumseh site, groundwater modeling indicates that shallow groundwater at the 102-acre Site flows from east to west, toward the Gateway Metroport Ship Canal and eventually, Lake Erie. Groundwater elevation measurements taken in several monitoring wells on or near the Site indicate that the water table is 5 to 6 feet below grade within the soil/fill unit. Due to a lack of site-specific groundwater data (i.e., groundwater quality and flow direction) for the subject Site (Phase I Business Park Area), a more detailed and site-specific assessment is required. Consequently, following completion of soil/fill portion of the investigation, groundwater flow direction and upgradient and downgradient groundwater quality at the site will be assessed using existing upgradient monitoring well MW-8A, (see Figure 2), as well as eight newly installed temporary piezometers and up to seven newly installed monitoring wells.

4.4.3.1 Temporary Piezometer Installation

Taking advantage of the open test pit excavations, the proposed temporary piezometers, identified as P-50S through P-57S, will be installed in each of the eight test pits as listed below and indicated on Figure 2, prior to backfilling activities.

Test Pit ID	Temporary Piezometer ID
TP-1-1	P-50S
TP-1-12	P-51S
TP-7-6	P-52S
TP-7-5	P-53S
TP-10-4	P-54S
TP-4-5	P-55S
TP-9-1	P-56S
TP-3-2	P-57S

At one end of the eight designated test pits, the excavation will be deepened a minimum of 5-feet into the first encountered saturated unit to facilitate installation of each temporary piezometer. Upon excavation completion, each temporary piezometer will be placed directly into each test pit excavation constructed of a one-inch diameter, flush-joint Schedule 40



PVC screen and riser. Screens, machine slotted to a 0.010-inch slot size and measuring 10-feet in length, will be installed across the water table in each test pit location. Due to the transient nature of the piezometers (water levels only), a sandpack will not be installed. Each piezometer will be completed with a hydrated bentonite pellet surface seal and PVC slip cap.

If groundwater is not encountered in the designated test pits, attempts to locate a new location as close as possible to the intended position will be made in order to maintain adequate spacing between piezometers. If surface obstructions do not allow the excavation of a test pit (i.e., refusal), the subsequent Geoprobe® borehole (see Section 4.4.2.3) will be used to facilitate temporary piezometer installation.

4.4.3.2 Monitoring Well Installation

In addition to existing upgradient monitoring wells MW-8A, seven new monitoring wells, identified as MW-12A through MW-18A, will be installed to further assess groundwater quality at the Site. The location of the new wells will be based on field observations recorded during the soil/fill investigation, as well as the temporary piezometer groundwater elevation and flow direction evaluation. It is anticipated that two of the wells will be installed on the upgradient side of the Site, and five of the wells will be located downgradient and/or proximate to visually impacted soil/fill areas.

Each boring location will be advanced into the unconsolidated overburden soil/fill to a depth of approximately 15 feet below ground surface (fbgs) or a minimum of 10 feet below the first encountered groundwater, whichever is greater. Shallow overburden well borings will be advanced using 4.25-inch I.D. hollow stem augers (HSA). A 2-inch diameter, 2-foot long split spoon sampler will be advanced ahead of the auger string with a standard 140-pound hammer falling freely over a 30-inch fall until 24 inches have been penetrated or 50 blows applied. Recovered samples will be described in the field by qualified TurnKey personnel using the Unified Soil Classification System (USCS), scanned for total volatile organic vapors with a calibrated Photovac 2020 PID equipped with a 10.6 eV lamp (or equivalent), and characterized for impacts via visual and/or olfactory observations. All non-dedicated drilling tools and equipment will be decontaminated between boring locations using potable tap water and a phosphate-free detergent (i.e., Alconox).

In addition, PID scans will be supplemented with headspace determinations. In general, representative soil/fill samples from each recovered interval will be collected, placed

in a sealable plastic bag, and kept at or near room temperature (approximately 65-70°F) for a minimum of 15 minutes prior to PID measurement.

Subsequent to boring completion, each monitoring well will be constructed of 2-inch I.D. flush-joint Schedule 40 PVC solid riser and machine slotted screen (0.010-inch slot size). The monitoring well screen will be approximately 10 feet in length. Approximately 6-inches of silica sand will be placed at the bottom of each boring as a base for the well screen and as part of the sand pack. The well screen and attached riser will be placed within the borehole on top of the 6-inch sand layer and the remainder of the sand pack will be installed within the borehole annulus to a level of 2 to 3-feet above the top of the well screen. A bentonite seal of 2 to 3-feet in thickness will be installed immediately above the sand layer. The bentonite seal will be constructed with 3/8-inch bentonite pellets or medium bentonite chips and allowed to hydrate sufficiently to mitigate the potential for downhole grout contamination. Cement/bentonite grout will be installed via pressure tremie pipe injection to fill the remaining annulus to approximately one-foot below ground surface.

The top of the well riser pipe will extend approximately 3 feet above grade and will be fitted with a lockable J-plug and protected by a vented, 4-inch diameter protective steel casing. The steel casing will be installed to a depth of approximately 2-ftgs and anchored in a 2-foot by 2-foot concrete surface pad. Each steel protective casing will be fitted with a locking cap, keyed alike lock, and labeled with permanent markings for identification. The concrete surface pad will be placed around the protective steel casing to allow surface water to drain away from the well. Drill cuttings will be placed in sealed NYSDOT-approved 55-gallon drums and labeled with an alphanumeric identifier for characterization and disposal. Installation procedures, including field forms for monitoring well installation and drill rig decontamination requirements are presented in the QAPP.

4.4.3.3 Well Development

All newly installed and existing monitoring wells will be developed in accordance with NYSDEC and TurnKey protocols. Each well will be left undisturbed for a minimum of 24 hours following installation before development activities begin to ensure that the cement/bentonite grout has set. Prior to development, the static water level and well depth will be measured. Development will be accomplished using a suction-lift pump, air-displacement pump, bottom-discharging bailer, or a Waterra™ hand pump via purge and surge methodologies. Development will be recorded on field forms and considered

completed when the pH, specific conductivity and temperature have stabilized; and when the turbidity is below 50 NTU, or has stabilized above 50 NTU and a minimum of 10 well volumes have been removed. Stability is defined as variation between measurements of 10 percent or less and no overall upward or downward trend in the measurements. Water removed during development will be discharged to the ground surface no closer than 50 feet in any radial direction from the monitoring well unless visual non-aqueous phase liquid (NAPL) is present, in which case it will be drummed for characterization and disposal. If potable water is utilized during the drilling process, development volumes will be a minimum of two times the estimated volume used or “lost”.

Field personnel will perform visual NAPL surveillance during development of each well. All data collected during well development will be recorded on TurnKey’s Groundwater Well Development and Purge Logs. A detailed description of well development procedures, including the field forms, and calibration and maintenance of field instruments used to measure stability parameters are presented in the QAPP.

4.4.3.4 Groundwater Elevation Measurements

Following installation, the locations and elevations of the temporary piezometers will be surveyed against a fixed benchmark and located on the site plan. The top of the PVC casings will be referenced to existing site vertical datum to provide a reference point for groundwater elevation measurements (see Section 4.4.6). Approximately 72-hours or more following completion of well development activities, depth to groundwater will be measured in all temporary piezometers as well as the existing shallow overburden monitoring well MW-8A from the top of each riser using an electric water level indicator to the nearest 0.01 feet. Depth to water measurements will be used to calculate the groundwater elevations for each location. Groundwater elevations will be used to prepare a preliminary isopotential map of the Site. The preliminary isopotential map, in conjunction with the soil/fill observations, will be used to determine the location of permanent monitoring wells to be installed at the Site.

Following installation, the locations and elevations of the newly installed monitoring wells will be surveyed against a fixed benchmark and located on the site plan. The top of the PVC casings will be referenced to existing site vertical datum to provide a reference point for groundwater elevation measurements (see Section 4.4.6). Depth to groundwater will be measured in all temporary piezometers, newly installed monitoring wells, and existing well

MW-8A from the top of each riser using an electric water level indicator to the nearest 0.01 feet at the time that groundwater sampling is performed (see Section 4.4.2.5). Depth to water measurements will be used to calculate the groundwater elevations for each location. Groundwater elevations will be used to prepare an isopotential map of the Site. This site-specific isopotential map will be used to determine the groundwater flow direction and hydraulic gradient at the Site.

4.4.3.5 In-Situ Hydraulic Conductivity Testing

In-situ permeability of the first water bearing zone screened by all newly installed monitoring wells will be determined using the variable-head test method (“rising head”) by the method of Bouwer and Rice (1976). The hydraulic conductivity testing will be performed in accordance with TurnKey’s field operating procedure presented in the QAPP.

4.4.3.6 Groundwater Sample Collection and Analysis

Prior to sampling the monitoring wells, static water levels will be measured and recorded from each newly installed and existing monitoring well as well as the temporary piezometers identified in Table 3. Following water level measurement, TurnKey personnel will purge and sample monitoring wells MW-8A and MW-12A through MW-18A (see Figure 2) using a peristaltic pump and dedicated pump tubing following low-flow/minimal drawdown purge and sample collection procedures. Prior to sample collection, groundwater will be evacuated from each well at a low-flow rate (typically less than 0.1 L/min). Field measurements for pH, specific conductance, temperature, turbidity, and water level as well as visual and olfactory field observations will be periodically recorded and monitored for stabilization. Purging will be considered complete when pH, specific conductivity and temperature stabilize and when turbidity measurements fall below 50 Nephelometric Turbidity Units (NTU), or become stable above 50 NTU. Stability is defined as variation between field measurements of 10 percent or less and no overall upward or downward trend in the measurements. Upon stabilization of field parameters, groundwater samples will be collected and analyzed for the parameters presented in Table 3.

Groundwater samples collected for volatile organic compound (VOC) analysis will not be sampled directly through the peristaltic pump due to potential degassing (i.e., loss of VOCs) of the groundwater sample. Instead, upon collection of VOC samples, the pump will be turned off and the pressure on the flexible walled tubing within the pump head will

be maintained in order to prevent water within the tubing from escaping. The tubing will be removed from the well and coiled as to prevent any contact with the ground surface. Upon removal of the tubing and prior to re-activating the pump, the pump flow direction will be reversed. Upon pump re-activation, the pumping rate will be slowly increased; positively displacing groundwater within the tubing allowing it to flow, without disturbance and degassing, into the appropriate VOC sample jars.

Prior to and immediately following collection of groundwater samples, field measurements for pH, specific conductance, temperature, turbidity, Eh, and water level as well as visual and olfactory field observations will be recorded. All collected groundwater samples will be placed in pre-cleaned, pre-preserved laboratory provided sample bottles, cooled to 4 °C in the field, and transported under chain-of-custody command to an analytical laboratory for analysis as indicated in Table 3.

4.4.4 Decontamination & Investigation-Derived Waste (IDW)

Every attempt will be made to utilize dedicated sampling equipment, however if non-dedicated equipment is required, the equipment will be decontaminated, at a minimum, with a non-phosphate detergent (i.e., Alconox®) and potable water mixture, rinsed with distilled water, and air-dried before each use in accordance with TurnKey's field operating procedures (see the QAPP presented under separate cover). All decontaminated sampling equipment will be kept in a clean environment prior to sample collection. Heavy equipment, such as an excavator and drilling tools, will be decontaminated via high-pressure steam cleaning on a temporary decontamination pad between grab sample locations and composite groups (i.e., test pits, borings, etc.), as necessary.

Investigative-Derived Waste (IDW) generated during this investigation, such as decontamination rinse water, well development and purge water, and drill cuttings, will be placed in sealed NYSDOT-approved 55-gallon drums and labeled with an alphanumeric identifier for characterization and disposal. Liquid IDW (e.g., decontamination rinse water) may be processed through the on-site treatment system at the Benzol Plant ICM upon approval from NYSDEC. Discarded personal protective equipment (PPE) (i.e., latex gloves, Tyvek, paper towels, etc.) and disposable sampling equipment (i.e., stainless steel spoons) will be placed in sealed plastic garbage bags and disposed of as municipal solid waste.

TurnKey field personnel will coordinate the onsite handling and temporary storage of IDW, including transportation and offsite disposal.

4.4.5 Field Specific Quality Assurance/Quality Control (QA/QC)

In addition to the soil/fill and groundwater samples described above, site-specific field quality assurance/quality control (QA/QC) samples will be collected and analyzed to support the required third-party data usability assessment effort. Site-specific QA/QC samples will include matrix spikes, matrix spike duplicates, and blind duplicates. Trip blanks will accompany the aqueous VOC samples only. Dedicated sampling equipment will be used to minimize field decontamination time and avoid the need for equipment blanks. QA/QC field sampling requirements are summarized in the QAPP. A brief summary of each is presented below:

- **Trip Blanks** - A sufficient number of trip blanks for volatile organic compound analysis will be prepared by the laboratory and delivered to the sampling team prior to a sampling event. One sealed blank will be carried into the field per day along with the sample containers for each day that water matrix volatile organic samples are collected. Trip blanks will be transported and handled in the same manner as the actual samples. The results of the trip blank analysis will be reviewed to evaluate if the potential for sample contamination during transportation and handling exists. The trip blanks will be analyzed for “full list” VOCs (TCL plus STARS List) by USEPA Method 8260B.
- **Blind Duplicate** - One blind duplicate will be collected and analyzed per 20 samples collected for the parameters presented in Table 3 per matrix (i.e., groundwater, soil/fill, etc.). The location of the sample collection point will not be disclosed to the analytical laboratory, therefore the field sample containers will be returned to the laboratory identified only as the “blind duplicate”. The well or sample location will be recorded in the Project Field Book and on the respective Water Sample Collection Log and the results will be compared to review analytical precision.
- **Matrix Spike/Matrix Spike Duplicate (MS/MSD)** – A sufficient volume of sample will be collected at one sampling location per sampling event for MS/MSD analysis for the parameters presented in Table 3 per matrix (i.e., groundwater, soil/fill, etc.). The laboratory will report the results of the

MS/MSD analysis, which will be reviewed for sampling and analysis precision and accuracy.

Laboratory and field QC data will be evaluated by a third-party data validation expert. A Data Usability Summary Report (DUSR) will be prepared following the evaluation, with qualifiers added to the data as appropriate. The laboratory will report data with an equivalent “Category B” deliverables package to facilitate DUSR preparation.

4.4.6 Site Mapping & Survey

The investigation locations identified in this Work Plan were selected based on the Phase I ESA site walk observations as well as historical site features and operations. Because few historical site features remain at the Site, X-Y coordinates for all proposed surficial soil/fill sample and test pit locations will be determined and marked in the field using a Trimble GeoXT handheld GPS unit. Monitoring well and temporary piezometer locations and elevations will be measured by TurnKey’s resident surveyor. All sample locations and remaining site monuments will be measured relative to a fixed benchmark and a base map will be prepared.

As stated in Section 4.4.2.4 of this Work Plan, an isopotential map showing the general direction of groundwater flow will be prepared based on water level measurements relative to USGS vertical datum. The maps will be provided with the RI report.

4.4.7 Contingency Sample Collection

The RI scope of work is based on historical site use and observed site features. It is the intent of this RI to remain flexible to unanticipated conditions. Therefore, soil/fill excavated from the test pits will be continuously screened with a calibrated Photovac 2020 PID equipped with a 10.6 eV lamp (or equivalent). Additional materials from each test pit group that show evidence of impact (i.e., staining, sheening, visible product, and/or excessive odors) will be collected for a discrete sample analysis for parameters appropriate for the location (Table 3). The investigation will attempt to delineate areas of visible impact by extending and/or performing additional test pits. In addition, soil/fill grab samples within a single composite group (test pit or surface) exhibiting PID readings greater than 20

ppm detected in soil/fill headspace determinations or scans, will be collected for individual VOC analysis and will not be composited.

4.5 Documentation

All investigation field activities will be documented in the Project Field Book. This logbook will provide a record of activities conducted at the Site. All entries will be signed and dated at the end of each day of fieldwork by the Field Team Leader. The field logbook will include, at a minimum, the following: date and time of all entries, names of all personnel on site, weather conditions (temperature, precipitation, etc.), location of activity, and description of activity. All test pits will be logged and photographed to indicate the stratigraphic profile of each hole. TurnKey personnel will complete the following standard field forms:

- Chain of Custody Form
- Daily Drilling Report
- Drilling Safety Checklist
- Equipment Calibration Log
- Field Activity Daily Log (FADLs)
- Field Borehole/Monitoring Well Installation Log
- Field Geoprobe Borehole Log (as necessary)
- Groundwater Well Development Log
- Groundwater Well Inspection Form
- Groundwater Purge & Sample Collection Log – Low Flow
- Investigative-Derived Waste Container Log
- Photographic Log
- Real-Time Air Monitoring Log
- Sample Summary Collection Logs (groundwater and soil/fill)
- Tailgate Safety Meeting Form
- Test Pit Excavation Log
- Underground/Overhead Utility Checklist for Sampling

- Variance Log (as necessary)
- Water Level Monitoring Record
- Well Completion Detail: Stick-up (Monitoring Well/Piezometer)
- Well Completion Detail: Stick-up (Temporary Well)

Examples of the field forms are provided in the QAPP under separate cover.

5.0 INVESTIGATION SUPPORT DOCUMENTS

5.1 Health and Safety Plan (HASP)

A Site-Specific Health and Safety Plan (HASP) has been prepared for use by our employees in accordance with 40 CFR 300.150 of the NCP and 29 CFR 1910.120. The HASP, provided in Appendix C, includes the following site-specific information:

- A hazard assessment
- Training requirements
- Definition of exclusion, contaminant reduction, and other work zones
- Monitoring procedures for site operations
- Safety procedures
- Personal protective clothing and equipment requirements for various field operations
- Disposal and decontamination procedures

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 investigation activities. The HASP and CAMP will be modified/expanded as appropriate if significant site invasive activities are performed, such as those associated with a remedial alternative involving soil/fill excavation.

Health and safety activities will be monitored throughout the field investigation. A member of the field team will be designated to serve as the on-site Health and Safety Officer throughout the field program. 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 field investigation.

5.2 Community Participation Plan (CP Plan)

TurnKey will coordinate and lead community relations throughout the course of the project. A Citizen Participation Plan (CP Plan) has been prepared and is included as Appendix D. The CP Plan meets the requirements of Attachment 2 of the NYSDEC

Technical Administrative Guidance Memorandum (TAGM) DER-97-4058 and NYSDEC's Draft DER-10 guidance.

5.3 Quality Assurance Project Plan (QAPP)

A Quality Assurance Project Plan (QAPP) will be prepared as a stand-alone document (under separate cover) for the RI activities described herein. The QAPP dictates implementation of the investigation tasks delineated in this Work Plan. A Sampling and Analysis Plan (SAP) identifying methods for sample collection, decontamination, handling, and shipping, is provided as Section 4.0 of the QAPP. The RI project management methods, organizational structure, and schedule are also included in the QAPP.

The QAPP will assure the accuracy and precision of data collection during the site characterization and data interpretation periods. The QAPP identifies procedures for sample collection to mitigate the potential for cross-contamination, as well as analytical requirements necessary to assure compliance with USEPA SW-846 methodology. The QAPP has been prepared in accordance with USEPA's Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA/R-5); the EPA Region II CERCLA Quality Assurance Manual, and NYSDEC's December 2002 draft DER-10 Technical Guidance for Site Investigation and Remediation.

6.0 REMEDIAL INVESTIGATION REPORT

A Remedial Investigation Report will be completed upon receipt of the analytical results and DUSR. The report will describe the field investigation program, and present the analytical results with comparisons to applicable standards, guidance and criteria (SGCs). In addition, the report will include:

- A site map with test pit, surface soil/fill, temporary piezometer, and monitoring well (new and existing) locations.
- Investigative methodologies that deviated from the site work plan, if any.
- Geologic interpretation/description of subsurface soil/fill materials.
- Hydrogeologic interpretation/description of groundwater quality, groundwater flow, and hydraulic gradient.
- Following data review, all sample results will be grouped by media (e.g., soil/fill, groundwater) and tabulated.
- Conclusions and recommendations, including a discussion on the estimated extent of soil/fill and groundwater impacts.
- Copies of all pertinent records, including PID readings, maps, field logs, and laboratory reports will be appended to the report.

The draft RI Report will be transmitted to the NYSDEC for review and approval. Final copies will be transmitted upon addressing any comments.

6.1 Data Usability Summary Report

As previously discussed, TurnKey will require third party data review by a qualified, independent data validation expert. Specifically, a Data Usability Summary Report (DUSR) will be prepared, with appropriate data qualifiers added to the results. The format of the DUSR will follow NYSDEC's September 1997 DUSR guidelines and will be developed from complete NYSDEC ASP Category B packages. TurnKey will compare the validated analytical results to published standards and guidance values, and present the DUSR within the Remedial Investigation Report.

6.2 Qualitative Risk Assessment

Following receipt of validated data, TurnKey will qualitatively assess health and environmental risks to support the need for and extent of all remedial alternatives, including, but not limited to an unrestricted remedy (i.e., remediation resulting in unrestricted residential use of property) (see Section 7.0).

6.2.1 Human Health Risk Assessment

A qualitative discussion of human health risks will be included in the RI report. This discussion will be supported via comparison of the data to accepted health risk-based lookup values (e.g., USEPA Region 9 Preliminary Remediation Goals for residential soils, or NYSDEC TAGM HWR-94-4046 health based cleanup goals) and/or derived health risk cleanup values from this or similar guidance. In addition, for SVOC data the polycyclic aromatic hydrocarbon (PAH) fraction will be presented as both total PAHs and total carcinogenic PAHs (cPAHs) as benzo(a)pyrene equivalents to facilitate comparison to NYSDOH default values for these parameters.

Following receipt of validated data, TurnKey will perform a qualitative exposure assessment to evaluate whether the site poses an existing or potential hazard to the exposed or potentially exposed population. This will involve a review of sampling data and an evaluation of the physical conditions of the contaminant sources or physical hazards near the site that may pose an additional health risk to the community. Site contaminants will be evaluated based upon consideration of:

- Concentrations of contaminants in environmental media.
- Field data quality, laboratory data quality and sampling design.
- Comparison of on-site contaminant concentrations with typical background levels, as appropriate, as well as published health-risk based guidance (e.g., Class GA groundwater standards and guidance values per 6NYCRR Part 703).

6.2.2 Ecological Risk Assessment

Similarly, a qualitative environmental assessment will be performed based on comparison of findings to environmental indicators (e.g., TAGM HWR-94-4046 soil cleanup objectives to protect groundwater, USEPA Region 9 soil screening levels, and screening-level ecological data quality levels derived by USEPA Region 5). A qualitative assessment of

site habitat value will also be discussed based on field observations of site cover and surrounding community.

7.0 REMEDIAL DESIGN/REMEDIAL ACTION (RD/RA)

7.1 RD/RA Work Plan

A Remedial Design/Remedial Action (RD/RA) Work Plan will be prepared following completion of the Remedial Investigation Report. The RD/RA Work Plan will summarize the investigation findings and identify remedial action objectives through an Alternatives Analysis based on these findings. Proposed site-specific action levels (SSALs) for the Site will also be presented.

The RD/RA Work Plan will contain, at a minimum, the following:

- Introduction and Purpose
- Summary of Site Contamination based upon the findings of the RI
- RD/RA Objectives
- Alternatives Analysis (see Section 5.2 below)
- Plans and Specifications
- Institutional/Engineering Controls (ICs/ECs) and Annual Certifications
- Health and Safety Plan
- Quality Assurance Project Plan (QAPP)
- Remediation Schedule
- Reporting
- Project Organization

7.2 Alternatives Analysis

Based on the RD/RA objectives and SSALs, an Alternative Analysis will be performed including, but not limited to, an unrestricted remedy (i.e., remediation resulting in unrestricted residential use of property) and other alternative(s) with or without ICs/ECs. Each Alternative will be identified and described in a detailed discussion of how the selected remedy is protective of human health and the environment. Justification for the selected

remedial approach will be made and presented based on the following criteria as described in 6NYCRR 375-1.10:

- Protection of Human Health and the Environment
- Compliance with Standards, Criteria, & Guidance (SCGs)
- Short-term Effectiveness & Impacts
- Long-term Effectiveness & Permanence
- Reduction of Toxicity, Mobility, or Volume
- Implementability

Each Alternative will be evaluated against the above criteria and compared to any other alternative(s) under consideration. The removal and/or control of source areas and the stabilization of groundwater plumes will also be evaluated. The Alternatives Analysis will conclude with a recommended remedial approach based on the above factors as well as a listing of the elements of the selected proposed remedy.

8.0 SCHEDULE

A tentative schedule for completion of RI activities is presented as Figure 4. As indicated, start of field activities is dependent on NYSDEC approval of the RI Work Plan.

9.0 REFERENCES

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

URS Consultants, Inc., *Phase I Environmental Site Assessment for Parcel B*, prepared for Bethlehem Steel Corporation, March 2001.

TABLES



TABLE 1

CONSTITUENTS OF PRIMARY CONCERN (COPCs)

Remedial Investigation Work Plan
Phase I Business Park Area
Lackawanna, New York

COMPOUND	CAS #	COMPOUND	CAS #
Volatile Organic Compounds (STARS Method 8021B)		TCL Semi-Volatile Organic Compounds (cont'd) (Method 8270C - base/ neutrals only)	
Benzene	71-43-2	Isophorone	78-59-1
n-Butylbenzene	104-51-8	2-Methylnaphthalene	91-57-6
sec-Butylbenzene	135-98-8	Naphthalene	91-20-3
tert-Butylbenzene	98-06-6	2-Nitroaniline	88-74-4
p-Cymene	99-87-6	3-Nitroaniline	99-09-2
Ethylbenzene	100-41-4	4-Nitroaniline	100-01-6
Isopropylbenzene	98-82-8	Nitrobenzene	95-95-3
Methyl tert butyl ether	1634-04-4	N-Nitrosodiphenylamine	86-30-6
n-Propylbenzene	103-65-1	N-Nitroso-Di-n-propylamine	621-64-7
Toluene	108-88-3	Phenanthrene	85-01-8
1,2,4-Trimethylbenzene	95-63-6	Pyrene	129-00-0
1,3,5-Trimethylbenzene	108-67-8	1,2,4-Trichlorobenzene	120-82-1
m-Xylene	95-47-6		
o-Xylene	106-42-3	Total Metals (Method 6010B)	
p-Xylene	108-38-3	Arsenic	7440-38-2
		Cadmium	7440-43-9
TCL Semi-Volatile Organic Compounds (Method 8270C - base/ neutrals only)		Chromium	7440-47-3
Acenaphthene	83-32-9	Lead	7439-92-1
Acenaphthylene	208-96-8	Mercury (Method 7470.A(water) and 7471.A(solid))	7439-97-6
Anthracene	120-12-7		
Benzo(a)anthracene	56-55-3	Wet Chemistry	
Benzo(b)fluoranthene	205-99-2	Cyanide (Method 9010B)	57-12-5
Benzo(k)fluoranthene	207-08-9		
Benzo(g,h,i)perylene	191-24-2	PCBs	
Benzo(a)pyrene	50-32-8	Method 8082	
Benzyl alcohol	100-51-6	Aroclor 1016	12674-11-2
Bis(2-chloroethoxy) methane	111-91-1	Aroclor 1221	11104-28-2
Bis(2-chloroethyl) ether	111-44-4	Aroclor 1232	11141-16-5
2,2'-Oxybis (1-Chloropropane)	108-60-1	Aroclor 1242	53469-21-9
Bis(2-ethylhexyl) phthalate	117-81-7	Aroclor 1248	12672-29-6
4-Bromophenyl phenyl ether	101-55-3	Aroclor 1254	11097-69-1
Butyl benzyl phthalate	85-68-7	Aroclor 1260	11096-82-5
4-Chloroaniline	106-47-8		
2-Chloronaphthalene	91-58-7	Herbicides	
4-Chlorophenyl phenyl ether	7005-72-3	Method 8151A	
Chrysene	218-01-9	Acifluorfen	50594-66-6
Dibenzo(a,h)anthracene	53-70-3	Bentazon	25057-89-0
Dibenzofuran	132-64-9	Chloramben	133-90-4
Di-n-butyl phthalate	84-74-2	2,4-D	94-75-7
1,2-Dichlorobenzene	95-50-1	2,4-DB	94-82-6
1,3-Dichlorobenzene	541-73-1	Dalapon	75-99-0
1,4-Dichlorobenzene	106-46-7	DCPA diacid	
3,3'-Dichlorobenzidine	91-94-1	Dicamba	1918-00-9
Diethyl phthalate	84-66-2	3,5-Dichlorobenzoic Acid	51-36-5
Dimethyl phthalate	131-11-3	Dichloroprop	120-36-5
2,4-Dinitrotoluene	121-14-2	Dinoseb	88-85-7
2,6-Dinitrotoluene	606-20-2	5-Hydroxydicamba	7600-50-2
Di-n-octyl phthalate	117-84-0	MCPA	94-74-6
Fluoranthene	206-44-0	MCPP	7085-19-0
Fluorene	86-73-7	4-Nitrophenol	100-02-7
Hexachlorobenzene	118-74-1	Pentachlorophenol	87-86-5
Hexachlorobutadiene	87-68-3	Picloram	1918-02-1
Hexachlorocyclopentadiene	77-47-4	2,4,5-T	93-76-5
Hexachloroethane	67-72-1	2,4,5-TP	93-72-1
Indeno(1,2,3-cd)pyrene	193-39-5		



TABLE 2

EXPANDED PARAMETER LIST

Remedial Investigation Work Plan
Phase I Business Park Area
Lackawanna, New York

Collected 1 per 20 samples per matrix

COMPOUND	CAS #	COMPOUND	CAS #	COMPOUND	CAS #
TCL Volatile Organic Compounds		TCL Semi-Volatile Organic Compounds		TAL Metals	
<i>(Method 8260B - full list)</i>		<i>(Method 8270C - base-neutrals and acid extractables)</i>		<i>(Method 6010B)</i>	
<i>(plus STAR5 Method 8021 parameters)</i>					
Acetone	67-64-1	Acenaphthene	83-32-9	Antimony	7440-38-2
Benzene	71-43-2	Acenaphthylene	208-96-8	Arsenic	7440-38-2
Bromoform	75-25-2	Anthracene	120-12-7	Barium	7440-39-3
Bromodichloromethane	75-27-4	Benzo(a)anthracene	56-55-3	Cadmium	7440-43-9
Bromomethane (Methyl bromide)	74-83-9	Benzo(a)pyrene	50-32-8	Chromium	7440-47-3
2-Butanone (MEK)	78-93-3	Benzo(b)fluoranthene	205-99-2	Lead	7439-92-1
n-Butylbenzene	104-51-8	Benzo(g,h,i)perylene	191-24-2	Mercury (Method 7470A(water) and 7471A(solid))	7439-97-6
sec-Butylbenzene	135-98-8	Benzo(k)fluoranthene	207-08-9	Nickel	7440-02-0
tert-Butylbenzene	98-06-6	Benzyl alcohol	100-51-6	Potassium	7440-09-7
Carbon disulfide	75-15-0	bis(2-Chloroethoxy)methane	111-91-1	Selenium	7782-49-2
Carbon tetrachloride	56-23-5	bis(2-Chloroethyl)ether	111-44-4	Silver	7440-22-4
Chlorobenzene	108-90-7	2,2'-oxybis(1-chloropropane); bis(2-chloroisopropyl)ether	108-60-1	Thallium	7440-28-0
Chloroethane	75-00-3	bis(2-Ethylhexyl)phthalate	117-81-7		
Chloroform	67-66-3	Butyl benzyl phthalate	85-68-7	Wet Chemistry	
Chloromethane (Methyl chloride)	74-87-3	4-Bromophenyl phenyl ether	101-55-3	Cyanide (Method 9010B)	57-12-5
Cyclohexane	110-82-7	4-Chloroaniline	106-47-8		
p-Cymene (p-isopropyltoluene)	99-87-6	4-Chloro-3-methylphenol	59-50-7	PCBs	
1,2-Dibromo-3-chloropropane	96-12-8	2-Chloronaphthalene	91-58-7	Method 8082	
1,2-Dibromoethane (EDB)	106-93-4	2-Chlorophenol	95-57-8	Aroclor 1016	12674-11-2
Dibromochloromethane	124-48-1	4-Chlorophenyl-phenylether	7005-72-3	Aroclor 1221	11104-28-2
Dichlorodifluoromethane (Freon-12)	75-71-8	Chrysene	218-01-9	Aroclor 1232	11141-16-5
1,2-Dichlorobenzene	95-50-1	Dibenzo(a,h)anthracene	53-70-3	Aroclor 1242	53469-21-9
1,3-Dichlorobenzene	541-73-1	Dibenzofuran	132-64-9	Aroclor 1248	12672-29-6
1,4-Dichlorobenzene	106-46-7	3,3'-Dichlorobenzidine	91-94-1	Aroclor 1254	11097-69-1
1,1-Dichloroethane	75-34-3	2,4-Dichlorophenol	120-83-2	Aroclor 1260	11096-82-5
1,2-Dichloroethane (EDC)	107-06-2	1,2-Dichlorobenzene	95-50-1		
1,1-Dichloroethylene (1,1-DCE)	75-35-4	1,3-Dichlorobenzene	541-73-1	Herbicides	
trans-1,2-Dichloroethylene	156-60-5	1,4-Dichlorobenzene	106-46-7	<i>Method 8151A</i>	
cis-1,2-Dichloroethylene	156-59-2	Diethyl phthalate	84-66-2	Acifluorfen	50594-66-6
cis-1,3-Dichloropropene	10061-01-5	2,4-Dimethylphenol	105-67-9	Bentazon	25057-89-0
trans-1,3-Dichloropropene	10061-02-6	Dimethyl phthalate	131-11-3	Chloramben	133-90-4
1,2-Dichloropropane	78-87-5	Di-n-butyl phthalate	84-74-2	2,4-D	94-75-7
Ethylbenzene	100-41-4	Di-n-octyl phthalate	117-84-0	2,4-DB	94-82-6
2-Hexanone	591-78-6	4,6-Dinitro-2-methylphenol	534-52-1	Dalapon	75-99-0
Isopropylbenzene (Cumene)	98-82-8	2,4-Dinitrophenol	51-28-5	DCPA diacid	
Methyl acetate	79-20-9	2,4-Dinitrotoluene	121-14-2	Dicamba	1918-00-9
Methylene chloride	75-09-2	2,6-Dinitrotoluene	606-20-2	3,5-Dichlorobenzoic Acid	51-36-5
Methylcyclohexane	108-87-2	Fluoranthene	206-44-0	Dichloroprop	120-36-5
4-methyl-2-pentanone (MIBK)	108-10-1	Fluorene	86-73-7	Dinoseb	88-85-7
Methyl tert butyl ether (MTBE)	1634-04-4	Hexachlorobenzene	118-74-1	5-Hydroxydicamba	7600-50-2
n-Propylbenzene	103-65-1	Hexachlorobutadiene	87-68-3	MCPA	94-74-6
Styrene	100-42-5	Hexachlorocyclopentadiene	77-47-4	MCPP	7085-19-0
1,1,1,2-Tetrachloroethane	630-20-6	Hexachloroethane	67-72-1	4-Nitrophenol	100-02-7
Tetrachloroethylene (PCE)	127-18-4	Indeno(1,2,3-cd)pyrene	193-39-5	Pentachlorophenol	87-86-5
Toluene	108-88-3	Isophorone	78-59-1	Picloram	1918-02-1
1,2,4-Trichlorobenzene	120-82-1	2-Methylnaphthalene	91-57-6	2,4,5-T	93-76-5
1,1,1-Trichloroethane	71-55-6	2-Methylphenol (o-Cresol)	95-48-7	2,4,5-TP	93-72-1
1,1,2-Trichloroethane	79-00-5	4-Methylphenol (p-Cresol)	106-44-5		
Trichloroethylene (TCE)	79-01-6	Naphthalene	91-20-3		
Trichlorofluoromethane (Freon-11)	75-69-4	2-Nitroaniline	88-74-4		
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-117)	76-13-1	3-Nitroaniline	99-09-2		
1,2,4-Trimethylbenzene	95-63-6	4-Nitroaniline	100-01-6		
1,3,5-Trimethylbenzene	108-67-8	Nitrobenzene	98-95-3		
Vinyl chloride	75-01-4	2-Nitrophenol	88-75-5		
m-Xylene	95-47-6	4-Nitrophenol	100-02-7		
o-Xylenes	106-42-3	N-Nitrosodiphenylamine	86-30-6		
p-Xylene	108-38-3	N-Nitroso-di-n-propylamine	621-64-7		
		Pentachlorophenol	87-86-5		
		Phenanthrene	85-01-8		
		Phenol	108-95-2		
		Pyrene	129-00-0		
		1,2,4-Trichlorobenzene	120-82-1		
		2,4,5-Trichlorophenol	95-95-4		
		2,4,6-Trichlorophenol	88-06-2		
TCL Semi-Volatile Organic Compounds					
<i>(Method 8270C - base-neutrals and acid extractables)</i>					
Acenaphthene	83-32-9				
Acenaphthylene	208-96-8				
Anthracene	120-12-7				
Benzo(a)anthracene	56-55-3				
Benzo(a)pyrene	50-32-8				



TABLE 3

ANALYTICAL PROGRAM SUMMARY

Remedial Investigation Work Plan
Phase I Business Park Area
Lackawanna, New York

Area of Assessment	Subarea of Assessment	Investigation Location	Rationale	Investigation Method	Sample Horizon	Minimum Number of Samples	Sample Type	Matrix	VOCs ^{1,2}	SVOCs ^{3,4}	Metals ^{5,6}	Herb.	pH	PCBs ⁷
AREAS OF ASSESSMENT 1, 4, 5, & 6														
1	A	TP-1-1	Area of observed surface staining	test pit	SS SUB	1 1	C	soil/fill	TBD	2	2	-	-	-
		TP-1-2	Area of observed surface staining	test pit										
		TP-1-3	Area of observed surface staining	test pit										
		TP-1-4	Area of observed surface staining	test pit										
		TP-1-5	Area of observed surface staining	test pit										
	B	TP-1-6	Former area of observed surface staining in former 32" Rail Finishing Department	test pit	SSS SS SUB	1 1 1	C	soil/fill	TBD	3	3	-	-	-
		TP-1-7	Area of observed surface staining, former 32" Rail Finishing Department	test pit										
		TP-1-8	Area of observed surface staining, former 21" Finishing Mill	test pit										
		TP-1-9	Former area of oil storage in former 21" Finishing Mill	test pit										
		TP-1-10	Former area of oil storage in former 21" Finishing Mill	test pit										
	C	TP-1-11	Area of surface staining west of 32" Rail Mill	test pit	SS SUB	1 1	C	soil/fill	TBD	2	2	-	-	-
		TP-1-12	Former area of surface staining west of 32" Rail Mill	test pit										
	D	TP-1-13	Area of observed surface staining, former 21" Rail Mill	test pit	SSS SS SUB	1 1 1	C	soil/fill	TBD	3	3	-	-	-
		TP-1-14	Area of former oil tunnel and oil rooms in former 30" Roughing Mill	test pit										
		TP-1-15	Area of oil rooms in former 30" Roughing Mill	test pit										
		TP-1-16	Area of oil rooms in former 32" Rail Mill	test pit										
		TP-1-17	Former 32" Rail Mill	test pit										
	□	TP-1-18	SWMU P-46 sump	test pit	SUB	1	G	soil/fill	TBD	1	-	-	-	-
		TP-1-19	Observed pit location	test pit	SUB	1	G	soil/fill	TBD	1	-	-	-	-
		TP-1-20	SWMU P-52/P-53 Settling Tanks	test pit	SUB	TBD	G	soil/fill	TBD	-	-	-	-	-
		TP-1-21	SWMU P-47	test pit	SUB	TBD	G	soil/fill	TBD	-	-	-	-	-
TP-1-22		Sump in northwest corner of AOA 1	test pit	SUB	1	G	soil/fill	1	1	-	-	-	-	
SS-06		Former transformer area, 21" Finishing Mill	surface soil	SS	1	G	soil/fill	-	-	-	-	-	-	1
SS-22		Area between oil storage and crop pit	surface soil	SS	1	G	soil/fill	-	-	-	-	-	-	-



TABLE 3

ANALYTICAL PROGRAM SUMMARY

Remedial Investigation Work Plan
Phase I Business Park Area
Lackawanna, New York

Area of Assessment	Subarea of Assessment	Investigation Location	Rationale	Investigation Method	Sample Horizon	Minimum Number of Samples	Sample Type	Matrix	VOCs ^{1,2}	SVOCs ^{3,4}	Metals ^{5,6}	Herb.	pH	PCBs ⁷
AREAS OF ASSESSMENT 1, 4, 5, & 6 (continued)														
4	-	TP-4-1	Former Billet Prep No. 2	test pit	SS SUB	1 1	C	soil/fill	TBD	2	2	-	-	-
		TP-4-2	Former 2,000 gallon quench oil tank	test pit										
		TP-4-3	Former quench oil tanks area, Billet Prep No. 2	test pit										
		TP-4-4	Former "pickling tanks" area, former Billet Prep No. 1	test pit										
		TP-4-5	Former oil storage area, Billet Prep No. 1	test pit										
		SS-04	Former area of transformers, Billet Prep No. 2	surface soil	SS	1	G	soil/fill	-	-	-	-	-	1
		SS-05	Former area of transformers, Billet Prep No. 2	surface soil	SS	1	G	soil/fill	-	-	-	-	-	1
		SS-25	Lab and office area	surface soil	SS	1	G	soil/fill	-	1	1	-	-	-
		SS-26	Adjacent to former acid tanks	surface soil	SS	1	G	soil/fill	-	-	1	-	1	-
5	A	TP-5-1	Former area of 2,500 gallon diesel tank	test pit	SSS SS SUB	1 1 1	C	soil/fill	TBD	3	3	-	-	-
		TP-5-2	Former area of oil house	test pit										
		TP-5-3	Former area of pitch tank	test pit										
		TP-5-4	Area of surface staining, former Welfare Building	test pit										
		TP-5-5	Former area of 2,500 gallon fuel oil tank	test pit										
	B	TP-5-6	Former area of Open Hearth No. 1 near oil house	test pit	SS SUB	1 1	C	soil/fill	TBD	2	2	-	-	-
		TP-5-7	Former area of Open Hearth No. 1 (north end)	test pit										
		TP-5-8	Former Oil House area near former Gas Producers and Galleries	test pit										
		TP-5-9	Former Gas Producers and Galleries	test pit										
		TP-5-10	Former Stripper Building	test pit										
	C	TP-5-11	Former "Tar Spraying" area of Covered Mould Yard	test pit	SS SUB	1 1	G	soil/fill	TBD	2	2	-	-	-



TABLE 3

ANALYTICAL PROGRAM SUMMARY

Remedial Investigation Work Plan
Phase I Business Park Area
Lackawanna, New York

Area of Assessment	Subarea of Assessment	Investigation Location	Rationale	Investigation Method	Sample Horizon	Minimum Number of Samples	Sample Type	Matrix	VOCs ^{1,2}	SVOCs ^{3,4}	Metals ^{5,6}	Herb.	pH	PCBs ⁷
AREAS OF ASSESSMENT 1, 4, 5, & 6 (continued)														
5	□	TP-5-12	Gas Producers and Galleries Bldg. And out-building	test pit	SUB	1	G	soil/fill	TBD	-	1	-	-	-
		SS-01	Former area of railroad tracks	surface soil	SS	1	C	soil/fill	-	1	1	-	-	-
		SS-02	Former area of railroad tracks	surface soil										
		SS-03	Former area of Substation No. 1	surface soil	SS	1	G	soil/fill	-	-	-	-	-	1
		SS-27	Area between oil house and storage	surface soil	SS	1	G	soil/fill	-	1	-	-	-	-
6	□	TP-6-1	Former area of oil cellar, 40" Blooming Mill	test pit	SSS SS SUB	1 1 1	C	soil/fill	TBD	3	3	-	-	-
		TP-6-2	Former area of 44" Blooming Mill Pits	test pit										
		TP-6-3	Former 36" Roughing Mill and 44" Mill Pit Furnace area	test pit										
		TP-6-4	Former sump location east of former 40" Mill Pit Furnace	test pit										
		TP-6-5	Area of surface staining near former 36" Roughing Mill	test pit										
		TP-6-6	SWMU P-43 and nearby pit	test pit	SUB	1	G	soil/fill	TBD	-	1	-	-	-
		TP-6-7	40" Blooming Mill Gas Mixer area (big one)	test pit	SUB	1	G	soil/fill	TBD	-	1	-	-	-
		TP-6-8	SWMUs P-44 and P-49	test pit	SUB	1	G	soil/fill	TBD	-	-	-	-	-
		TP-6-9	SWMU P-45	test pit	SUB	1	G	soil/fill	TBD	-	-	-	-	-
		TP-6-10	36" Roughing Mill observed pit location	test pit	SUB	1	G	soil/fill	TBD	-	-	-	-	1
		SS-07	Former area of substations	surface soil	SS	1	G	soil/fill	-	-	-	-	-	1
		SS-08	Former area of three transformers	surface soil	SS	1	G	soil/fill	-	-	-	-	-	1
		SS-28	40" Blooming Mill three transformer area	surface soil	SS	1	G	soil/fill	-	-	-	-	-	1
		SS-29	SWMU P-50 area	surface soil	SS	1	G	soil/fill	-	1	1	-	-	-
		SS-30	40" Mill Pit furnace gas mixer area (small one)	surface soil	SS	1	G	soil/fill	-	-	1	-	-	-



TABLE 3

ANALYTICAL PROGRAM SUMMARY

Remedial Investigation Work Plan
Phase I Business Park Area
Lackawanna, New York

Area of Assessment	Subarea of Assessment	Investigation Location	Rationale	Investigation Method	Sample Horizon	Minimum Number of Samples	Sample Type	Matrix	VOCs ^{1,2}	SVOCs ^{3,4}	Metals ^{5,6}	Herb.	pH	PCBs ⁷	
AREAS OF ASSESSMENT 2 & 3															
2	-	TP-2-1	Former area of two 12,000 gallon fuel oil tanks	test pit	SS SUB	1 1	C	soil/fill	TBD	2	2	-	-	-	
		TP-2-2	Former oil pump house and pit in Mill No. 15	test pit											
		TP-2-3	Former truck lube area of former Chipper Building	test pit											
		SS-23	Outside in between tool repair sheds	surface soil	SS	1	G	soil/fill	-	1	1	-	-	-	
		SS-24	Outside motor storage	surface soil	SS	1	G	soil/fill	-	1	-	-	-	-	
3	-	TP-3-1	Former area of 2,500 gallon diesel oil tank	test pit	SS SUB	1 1	C	soil/fill	TBD	2	2	-	-	-	
		TP-3-2	Former area of 15,000 gallon pitch tank	test pit											
		SS-19	Former area of railroad tracks	surface soil	SS	1	C	soil/fill	-	1	1	-	-	-	1
		SS-20	Former area of railroad tracks	surface soil											
		SS-21	Former area of railroad tracks	surface soil											
		MW-13A	Open area	surface soil	SS	1	G	soil/fill	-	-	-	1	-	-	



TABLE 3

ANALYTICAL PROGRAM SUMMARY

Remedial Investigation Work Plan
Phase I Business Park Area
Lackawanna, New York

Area of Assessment	Subarea of Assessment	Investigation Location	Rationale	Investigation Method	Sample Horizon	Minimum Number of Samples	Sample Type	Matrix	VOCs ^{1,2}	SVOCs ^{3,4}	Metals ^{5,6}	Herb.	pH	PCBs ⁷
AREAS OF ASSESSMENT 7 & 8														
7 & 8	A	TP-7-1	Former area of pitch tank	test pit	SS SUB	1 1	C	soil/fill	TBD	2	2	-	-	-
		TP-7-2	Former area of two 5,000 gallon tar tanks and two 25,000 gallon fuel oil tanks	test pit										
		TP-7-3	Former area of 2,500 gallon fuel oil tank	test pit										
		TP-8-4	Former area of 400 gallon fuel oil tank	test pit										
7	B	TP-7-4	Former area of Foundry	test pit	SS SUB	1 1	C	soil/fill	TBD	2	2	-	-	-
		TP-7-5	Former area of Open Hearth No. 2	test pit										
		TP-7-6	Former area of Stripper Building	test pit										
		TP-7-7	Former Open Hearth (Hot Mixers)	test pit										
	-	TP-7-8	Foundry Building observed shallow sump area	test pit	SUB	1	G	soil/fill	TBD	-	-	-	-	-
		SS-15	Former area of transformer, Foundry	surface soil	SS	1	G	soil/fill	-	-	-	-	-	1
		SS-16	Former area of transformer, Foundry	surface soil	SS	1	G	soil/fill	-	-	-	-	-	1
	SS-17	Former area of transformer, Foundry	surface soil	SS	1	G	soil/fill	-	-	-	-	-	1	
	SS-31	Tool Room/Oil House building	surface soil	SS	1	G	soil/fill	-	1	-	-	-	-	
8	B	TP-8-1	Former downgradient area of Machine Shop	test pit	SS SUB	1 1	C	soil/fill	TBD	2	2	-	-	-
		TP-8-2	Former downgradient area of Forge Shop	test pit										
		TP-8-3	Former area of oil house in Billet Prep No. 2	test pit										
	-	TP-8-5	Machine Shop observed area of shallow machine pits	test pit	SUB	1	G	soil/fill	TBD	-	-	-	-	-
		TP-8-6	Babbit Shop	test pit	SUB	1	G	soil/fill	TBD	-	1	-	-	-
		SS-18	Former area of three transformers, Billet Prep No. 2	surface soil	SS	1	G	soil/fill	-	-	-	-	-	1
		SS-32	Machine Shop observed area of surface staining	surface soil	SS	1	C	soil/fill	-	1	1	-	-	-
		SS-33	Machine Shop observed area of surface staining	surface soil										
	SS-34	Office (1944 Millrights Shop) area	surface soil	SS	1	G	soil/fill	-	1	1	-	-	-	



TABLE 3

ANALYTICAL PROGRAM SUMMARY

Remedial Investigation Work Plan
Phase I Business Park Area
Lackawanna, New York

Area of Assessment	Subarea of Assessment	Investigation Location	Rationale	Investigation Method	Sample Horizon	Minimum Number of Samples	Sample Type	Matrix	VOCs ^{1,2}	SVOCs ^{3,4}	Metals ^{5,6}	Herb.	pH	PCBs ⁷		
AREAS OF ASSESSMENT 9 & 10																
9	D	TP-9-1	Former area of 2,000 gallon oil tank	test pit	SS SUB	1 1	C	soil/fill	1 (SUB only)	2	2	-	-	-		
		TP-9-2	Former area of Gasoline Engine House	test pit												
		TP-9-3	Former area of 10,000 gallon, 2,500 gallon, and 3,000 gallon fuel oil tanks	test pit												
		TP-9-4	Former area of 300 gallon fuel oil tank	test pit												
		TP-9-5	Former area of oil house adjacent to former Thaw Shed	test pit												
		SS-09	Former area of transformer	surface soil	SS	1	G	soil/fill	-	-	-	-	-	-	1	
		SS-10	Former area of Rail Yard	surface soil	SS	1	C	soil/fill	-	1	1	-	-	-	-	1
		SS-11	Former area of Rail Yard	surface soil												
		SS-12	Former area of Rail Yard	surface soil												
		SS-13	Former area of Rail Yard	surface soil	SS	1	G	soil/fill	-	-	-	1	-	-	-	
		SS-35	Area between access road and Fuhmann Blvd., near Freight House	surface soil												
SS-36	Tool Shed area	surface soil	SS	1	G	soil/fill	-	1	-	-	-	-	-			
10	A	TP-10-1	Former area of 15,000 gallon oil tank	test pit	SS SUB	1 1	C	soil/fill	TBD	2	2	-	-	-		
		TP-10-2	Former area of oil storage building	test pit												
		TP-10-3	Former area of oil house building along north end	test pit												
10	B	TP-10-4	Former area of Plate Shop	test pit	SS SUB	1 1	C	soil/fill	TBD	2	2	-	-	-		
		TP-10-5	Former area of Roll Shop	test pit												
10	D	TP-10-6	Former area of 5,000 gallon, 12,000 gallon, 8,022 gallon underground gasoline storage tanks, former Fire Department Headquarters	test pit	SUB	1	G	soil/fill	TBD	1	-	-	-	-		
		TP-10-7	Area between Welding Shop and Tool Shop	test pit	SUB	1	G	soil/fill	TBD	1	-	-	-	-		
		TP-10-8	Tool Shop building	test pit	SUB	1	G	soil/fill	TBD	-	-	-	-	-		
		TP-10-9	Unnamed building north of Plate Shop	test pit	SUB	1	G	soil/fill	TBD	-	-	-	-	-		
		SS-14	Former area of three transformers, Structural Repair Shop	surface soil	SS	1	G	soil/fill	-	-	-	-	-	-	1	



TABLE 3

ANALYTICAL PROGRAM SUMMARY

Remedial Investigation Work Plan
Phase I Business Park Area
Lackawanna, New York

Area of Assessment	Subarea of Assessment	Investigation Location	Rationale	Investigation Method	Sample Horizon	Minimum Number of Samples	Sample Type	Matrix	VOCs ^{1,2}	SVOCs ^{3,4}	Metals ^{5,6}	Herb.	pH	PCBs ⁷
GROUNDWATER														
1	-	P-50S	Determine groundwater flow direction, installed within test pit TP-1-1 upon backfill	piezometer	shallow groundwater	NA	NA	water ⁹	-	-	-	-	-	-
1		P-51S	Determine groundwater flow direction, installed within test pit TP-1-12 upon backfill	piezometer										
7		P-52S	Determine groundwater flow direction, installed within test pit TP-7-6 upon backfill	piezometer										
7		P-53S	Determine groundwater flow direction, installed within test pit TP-7-5 upon backfill	piezometer										
10		P-54S	Determine groundwater flow direction, installed within test pit TP-10-4 upon backfill	piezometer										
4		P-55S	Determine groundwater flow direction, installed within test pit TP-4-5 upon backfill	piezometer										
9		P-56S	Determine groundwater flow direction, installed within test pit TP-9-1 upon backfill	piezometer										
3		P-57S	Determine groundwater flow direction, installed within test pit TP-3-2 upon backfill	piezometer										
9	-	MW-8A ⁸	Existing monitoring well; Determine shallow groundwater flow direction and quality	monitoring well	shallow groundwater	8	G	water ⁹	8	8	8	-	8	8
5		MW-12A	Determine shallow groundwater flow direction and quality	monitoring well										
3		MW-13A	Determine shallow groundwater flow direction and quality	monitoring well										
8		MW-14A	Determine shallow groundwater flow direction and quality	monitoring well										
7		MW-15A	Determine shallow groundwater flow direction and quality	monitoring well										
6		MW-16A	Determine shallow groundwater flow direction and quality	monitoring well										
1		MW-17A	Determine shallow groundwater flow direction and quality	monitoring well										
10		MW-18A	Determine shallow groundwater flow direction and quality	monitoring well										

TOTALS:	soil/fill	2	55	52	2	1	16
	water	8	8	8	0	8	8



TABLE 3

ANALYTICAL PROGRAM SUMMARY

**Remedial Investigation Work Plan
Phase I Business Park Area
Lackawanna, New York**

Area of Assessment	Subarea of Assessment	Investigation Location	Rationale	Investigation Method	Sample Horizon	Minimum Number of Samples	Sample Type	Matrix	VOCs ^{1,2}	SVOCs ^{3,4}	Metals ^{5,6}	Herb.	pH	PCBs ⁷
--------------------	-----------------------	------------------------	-----------	----------------------	----------------	---------------------------	-------------	--------	---------------------	----------------------	-----------------------	-------	----	-------------------



Notes:

- VOCs include: STARS List VOCs via Method 8021. Additional samples may be collected depending on headspace determination results.
- One per 20 samples will be analyzed for the full TCL list of VOCs via Method 8260B, plus the STARS List VOCs via Method 8021 as determined by the QA Officer.
- SVOCs include: TCL SVOCs via Method 8270C, base-neutrals only.
- One per 20 samples will be analyzed for the full TCL list of SVOCs via Method 8270C, including base-neutrals and acid extractables as determined by the QA Officer.
- Metals include: arsenic (6010B), cadmium (6010B), chromium (6010B), cyanide (9010B), lead (6010B), and mercury (7470A for water and 7471A for soil). Analytical methods are shown parenthetically.
- One per 20 samples will be analyzed for the TAL Metals plus cyanide.
- PCBs include the full TCL list of PCBs via Method 8082.
- Existing monitoring well locations were installed during previous investigations conducted at the site by others.
- All water samples will be measured for field parameters including, at a minimum, pH, temperature, turbidity and specific conductance.
- " - " indicates no specific subarea of assessment has been designated; general area of assessment

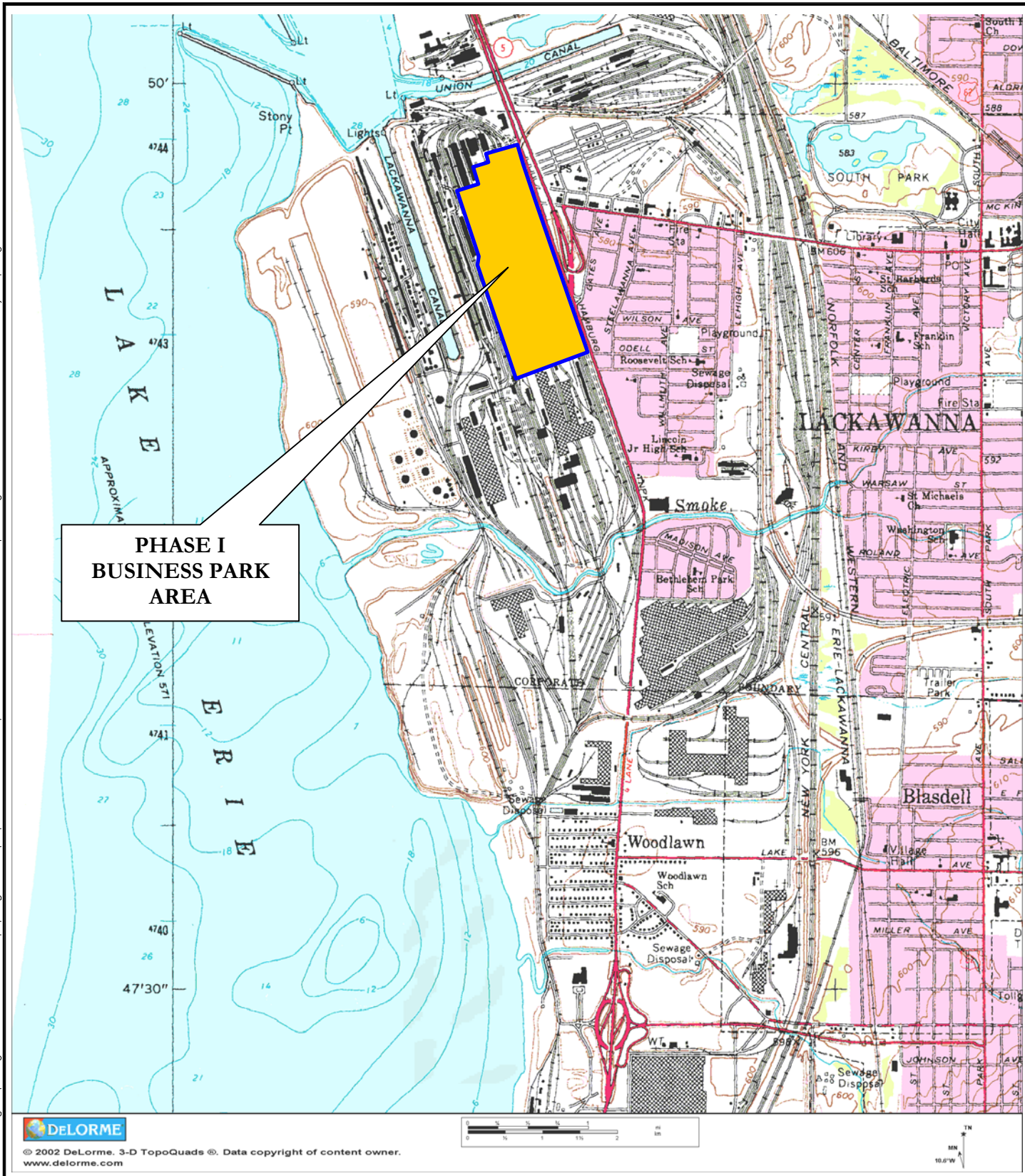
Abbreviations/ Acronyms:

C = composite sample	NA = not applicable	SS = surface soil/fill	SVOCs = semi-volatile organic compounds	TCL = Target Compound List
G = grab sample	P = piezometer	SSS = stained surface soil/fill	TAL = target analyte list	TP = test pit
MW = monitoring well	PCBs = Polychlorinated Biphenyls	SUB = subsurface soil/fill	TBD = to be determined	VOCs = volatile organic compounds

Color Code:

	= Proposed surface soil/fill sample location where staining has been observed; all stained surface soil/fill (SSS) samples will be composited from these locations
	= Sample collection and VOC analysis will be based upon PID scan (> 20 ppm), PID headspace (> 20 ppm), visual and olfactory observations of subsurface soil/fill only; all individual grab samples and only one grab location within a composite sample group will be submitted.

FIGURES



**PHASE I
BUSINESS PARK
AREA**



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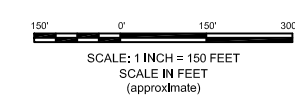
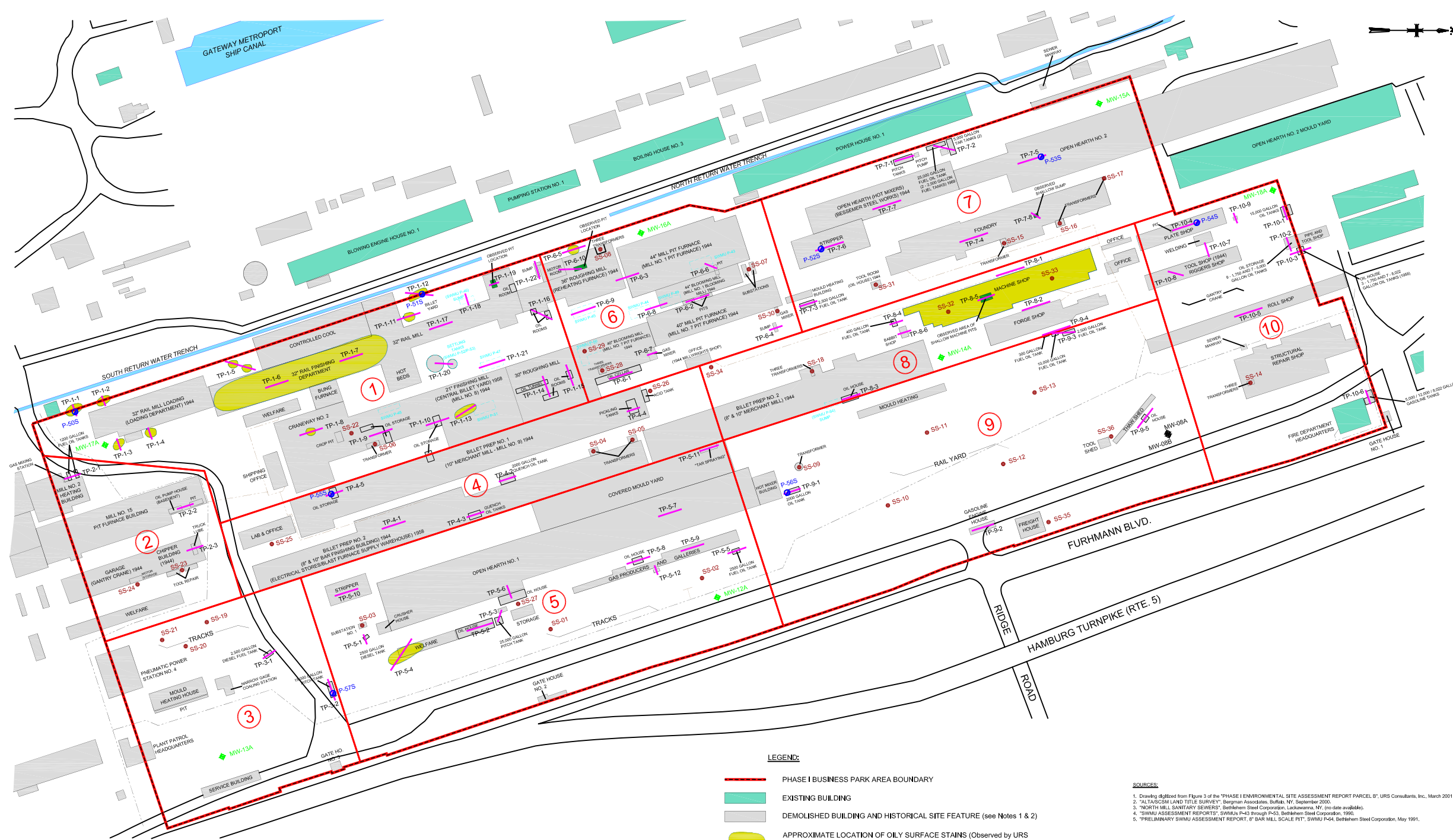
726 EXCHANGE STREET
SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-635

SITE LOCATION AND VICINITY MAP
BROWNFIELD CLEANUP PROGRAM

PHASE I BUSINESS PARK AREA
LACKAWANNA, NEW YORK

PREPARED FOR
TECUMSEH REDEVELOPMENT, INC.

PROJECT NO.: 0071-006-100
DATE: MAY 2005
DRAFTED BY: BCH



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	TP-7-5
P-54S	TP-10-4
P-55S	TP-4-5
P-56S	TP-9-1
P-57S	TP-3-2

NOTE: If the temporary piezometer cannot be installed at the location indicated, the piezometer will be installed as near as possible to the original location.

- 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))
 - AREA OF ASSESSMENT (Refer to Phase I Environmental Site Assessment Report for Parcel B, URS Consultants, Inc., March 2001)
 - APPROXIMATE LOCATION OF PITS (4) - TO BE FIELD VERIFIED (Observed In June 2000 by URS Consultants, Inc.)
 - ◆ MW-08A EXISTING MONITORING WELL (2)
 - SS-01 PROPOSED SURFACE SOIL SAMPLE (37)
 - ◆ TP-5-3 PROPOSED TEST PIT (by Area of Assessment) (82)
 - ◆ MW-12A PROPOSED MONITORING WELL (7) (TO BE LOCATED FOLLOWING SOIL/FILL ASSESSMENT)
 - P-50S PROPOSED TEMPORARY PIEZOMETER (8)
 - SWMU LOCATION (see descriptions at right)
 - APPROXIMATE LOCATION OF ACTIVE SANITARY SEWER LINE
 - APPROXIMATE LOCATION OF ABANDONED SANITARY SEWER LINE

- SOURCES:**
- Drawing (adapted from Figure 3 of the "PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT PARCEL B", URS Consultants, Inc., March 2001.
 - "ALTA/SICM LAND TITLE SURVEY", Bergman Associates, Buffalo, NY, September 2000.
 - "NORTH MILL SANITARY SEWERS", Bethlehem Steel Corporation, Lackawanna, NY, (no date available).
 - "SWMU ASSESSMENT REPORT", SWMUs P-43 through P-63, Bethlehem Steel Corporation, 1995.
 - "PRELIMINARY SWMU ASSESSMENT REPORT, 8" BAR MILL SCALE PIT", SWMU P-64, Bethlehem Steel Corporation, May 1991.
- NOTES:**
- Building locations are based on historical surveys and maps, all locations should be considered approximate.
 - All buildings known to exist on site since 1944 are shown, some buildings were expanded or demolished following 1944, maximum building extents are shown.
 - Areas of observed staining represent numerous discrete stains within each noted boundary.
 - 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-63 - 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).

REVISIONS

NO.	BY	DATE	REMARKS

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

DISCLAIMER: THIS DRAWING AND ALL INFORMATION CONTAINED HEREIN IS THE PROPERTY OF TURNKEY ENVIRONMENTAL LLC. IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREIN. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT THE WRITTEN CONSENT OF TURNKEY ENVIRONMENTAL LLC.

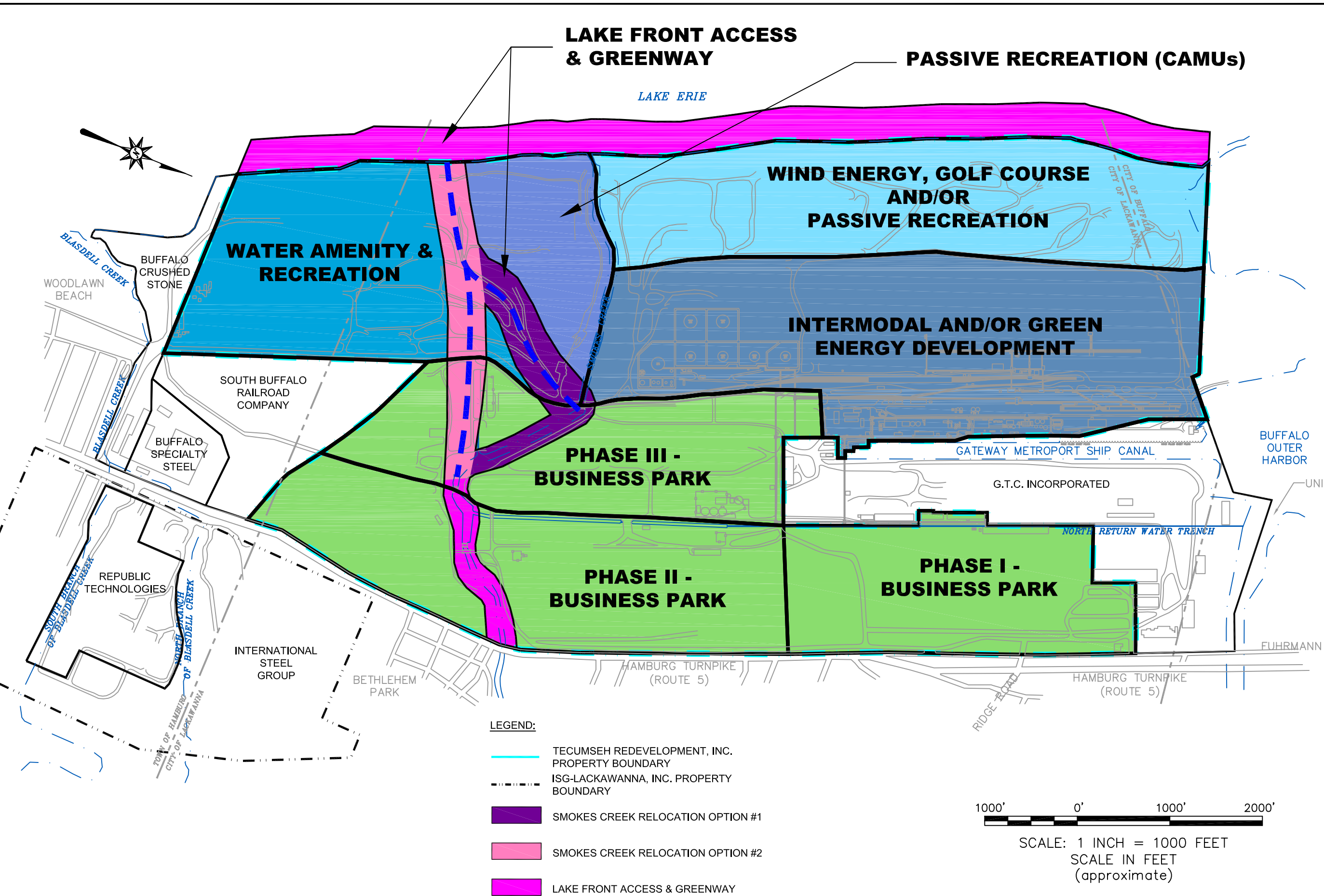
PHASE I BUSINESS PARK SITE PLAN
BROWNFIELD CLEANUP PROGRAM
PHASE I BUSINESS PARK AREA
LACKAWANNA, NEW YORK

PREPARED FOR:
TECUMSEH REDEVELOPMENT, INC.

FIGURE 2

FILEPATH: g:\c:\turnkey\environmental\steel group (log)\brownfield cleanup program (bcp)\figure 2: phase i business park site plan.dwg

DATE: MAY 2005
 DRAFTED BY: BCH
 FILEPATH: g:\cad\turnkey\international steel group (isg)\brownfield cleanup program (bcp)\phase i business park area\remediation work plan\figure 3: redevelopment master plan.dwg



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 SUITE 624
 BUFFALO, NEW YORK 14210
 (716) 856-6355

TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 00711-006-100

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

PREPARED FOR
 TECUMSEH REDEVELOPMENT, INC.

FIGURE 3

DATE: MAY 2005
 DRAFTED BY: BCH
 FILEPATH: g:\cod\turnkey\international_steel_group_(isp)\brownfield_cleanup_program_(bcp)\phase_i_business_park_area\remediation_work_plan_figure_4_project_schedule.dwg

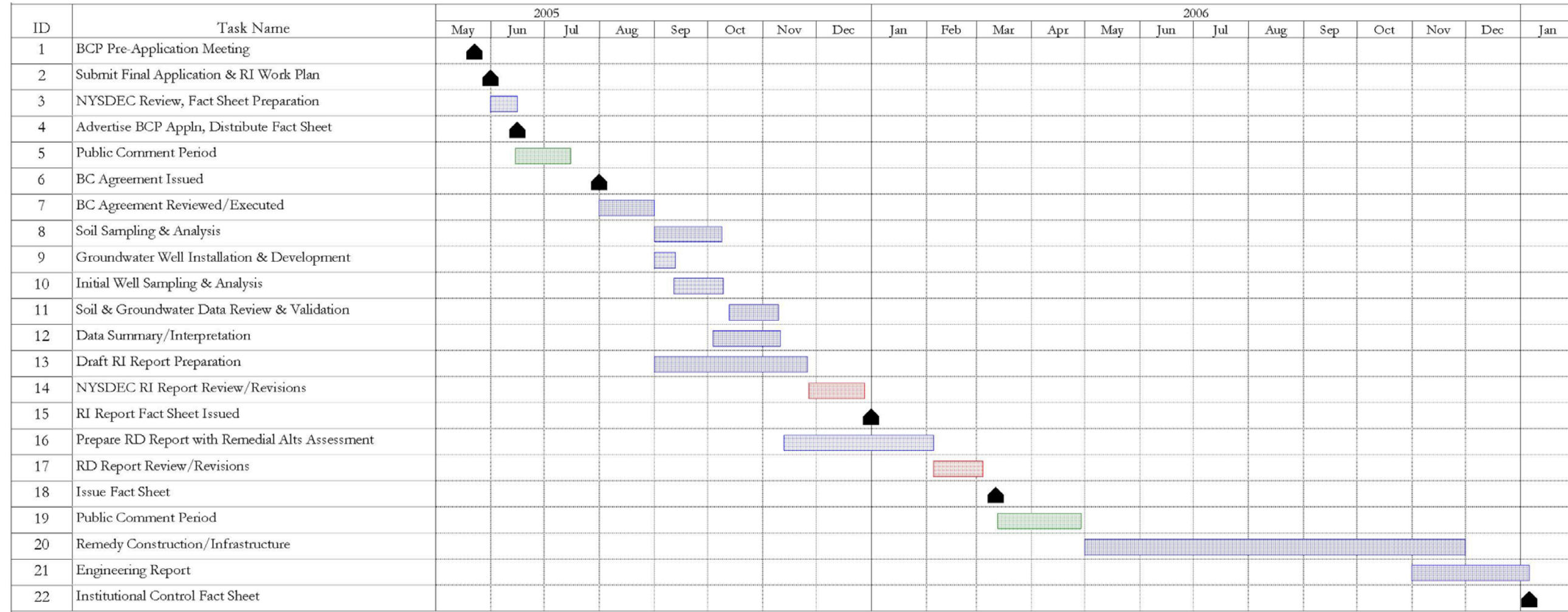


FIGURE 4

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

PREPARED FOR
 TECUMSEH REDEVELOPMENT, INC.



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

JOB NO.: 0071-006-100

Not Included in this document.



APPENDIX A

**EXISTING MONITORING WELL
INSTALLATION LOGS**

Not Included in this document.



APPENDIX B

**JULY 2000 SITE RECONNAISSANCE
FIELD NOTES**

APPENDIX C

HEALTH AND SAFETY PLAN (HASP)

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

At the
TECUMSEH REDEVELOPMENT, INC.
PHASE I BUSINESS PARK

LACKAWANNA, NY

**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
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
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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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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 3.0 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 downwind 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/m³ - Continue field operations.
- 50-150 mg/m³ - Don dust/particulate mask or equivalent
- Greater than 150 mg/m³ - 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):

- o **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.

o **Organic Vapor Contingency Monitoring Plan:**

- If the sustained organic vapor level is greater than 5 ppm over background 200 feet downwind from the work area or half the distance to the nearest off-site residential or commercial property, whichever is less, all work activities must be halted.
- If, following the cessation of the work activities or as the result of an emergency, sustained organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest off-site residential or commercial property from the work area, then the air quality must be monitored within 20 feet of the perimeter of the nearest off-site residential or commercial structure (20-foot zone).
- If efforts to abate the emission source are unsuccessful and if sustained organic vapor levels approach or exceed 5 ppm above background within the 20-foot zone for more than 30 minutes, or are sustained at levels greater than 10 ppm above background for longer than one minute, then the ***Major Vapor Emission Response Plan*** (see below) will automatically be placed into effect.

o **Major Vapor Emission Response Plan:**

Upon activation, the following activities will be undertaken:

1. All Emergency Response Contacts as listed in this Health and Safety Plan and the Emergency Response Plan (Appendix A) will be advised.
2. The local police authorities will immediately be contacted by the 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
SSH0	Police	911

SSHO	State Emergency Response Hotline	(800) 457-7362
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Additional emergency numbers are listed in the Emergency Response Plan included as Appendix A.

- o **EXPLOSIVE VAPORS:**
 - Sustained atmospheric concentrations of greater than 10% LEL in the work area - Initiate combustible gas monitoring at the downwind portion of the Site perimeter.
 - Sustained atmospheric concentrations of greater than 10% LEL at the downwind Site perimeter – Halt work and contact local Fire Department.

- o **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/m³) 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/m³ 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/m³ 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/m³ 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, countermeasures 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 illness 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. Deposit tape and gloves in waste disposal container.

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)
<i>Volatile Organic Compounds (VOCs):</i>		ND	NA	NA
<i>Polycyclic Aromatic Hydrocarbons (PAHs):</i>		ND	NA	NA
<i>Inorganics:</i>				
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
<i>Miscellaneous:</i>				
Cyanide (total)	57-12-5	ND	NA	NA
<i>Polychlorinated Biphenyls (PCBs):</i>		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/m³						
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/m³						
Cyanide (total)		57-12-5	none	5	5	25
Polychlorinated Biphenyls (PCBs) ⁽³⁾ : mg/m³						
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 Constituents 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.



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

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 maximum exposure concentration 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**

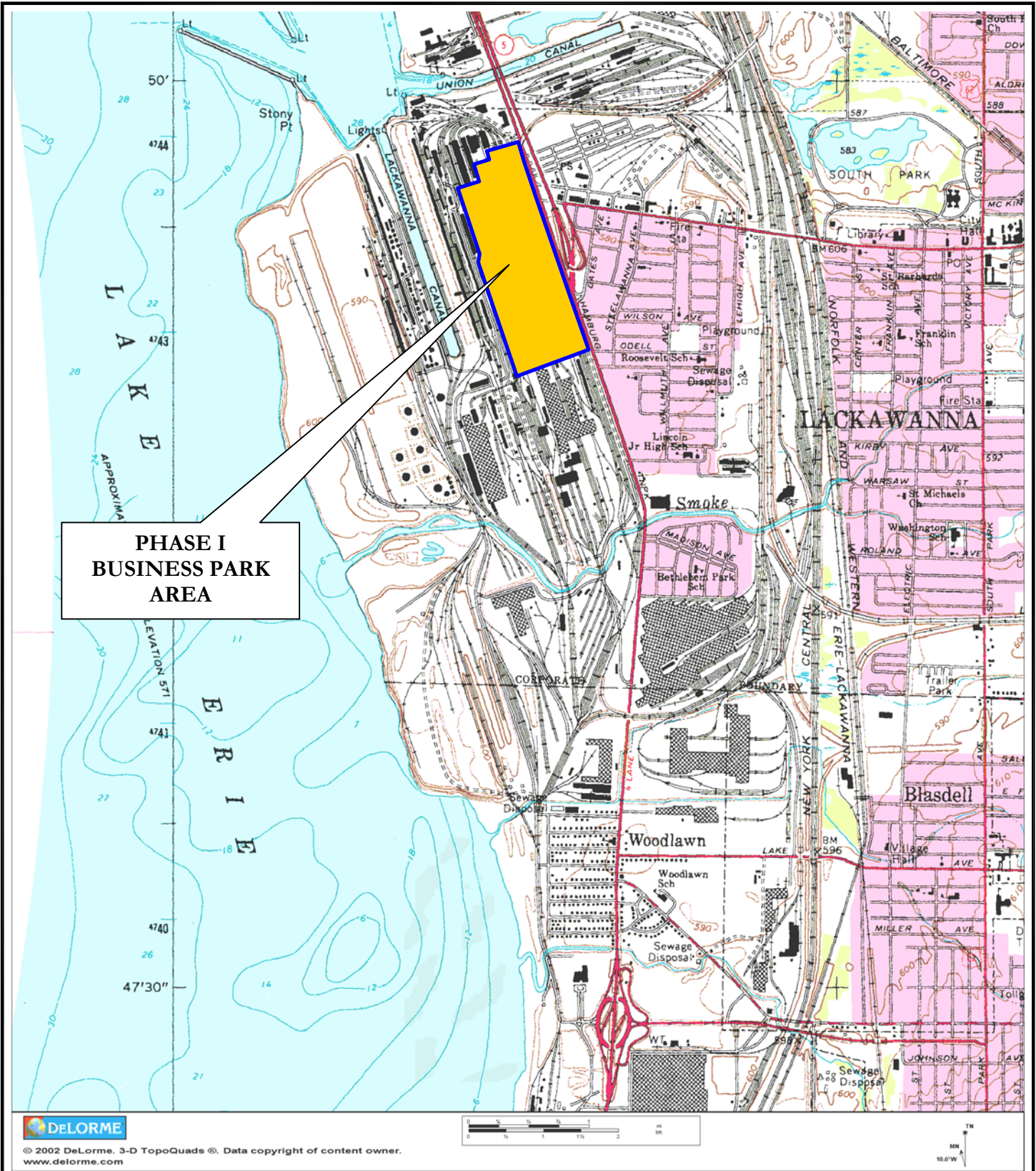
Activity	Respiratory Protection¹	Clothing	Gloves²	Boots^{2,3}	Other Required PPE/Modifications^{2,4}
1. Soil/Fill Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
2. Monitoring Well Installation Oversight.	Level D (upgrade to Level C if necessary)	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 equipped 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



FILEPATH: g:\cadd\turnkey\international steel group (dsg)\brownfield cleanup program (bcp)\phase i business park area\hasp\figure 1_ site location and vicinity map.dwg



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

SITE LOCATION AND VICINITY MAP
BROWNFIELD CLEANUP PROGRAM - HASP

PHASE I BUSINESS PARK AREA
LACKAWANNA, NEW YORK

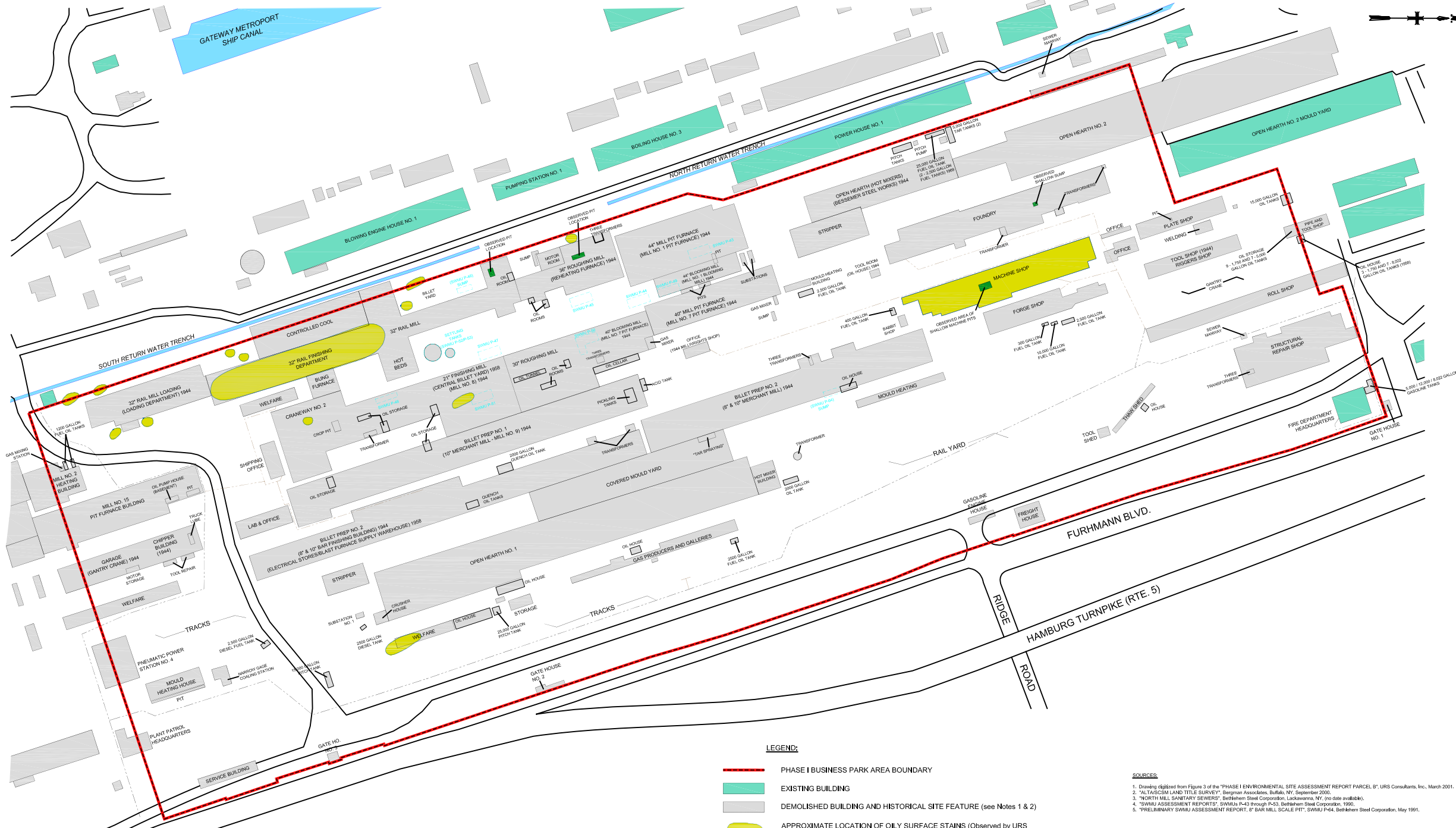
PROJECT NO.: 0071-006-100

DATE: MAY 2005

DRAFTED BY: BCH

PREPARED FOR
TECUMSEH REDEVELOPMENT, INC.

FILEPATH: g:\cadd\turnkey\international\steel group (fig)\brownfield\cleanup program (copy)\figure 2, phase 1 business park site plan.dwg



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

- 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 8", URS Consultants, Inc., March 2001.
 2. "AL TASCANI 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 REPORT", 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-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).

TURNKEY Environmental, LLC
726 EXCHANGE STREET
SUITE 604
LACKAWANNA, NEW YORK 14210
(716) 868-8635
JOB NO.: 0071-006-100

REVISIONS

NO.	BY	DATE	REMARKS

SEAL

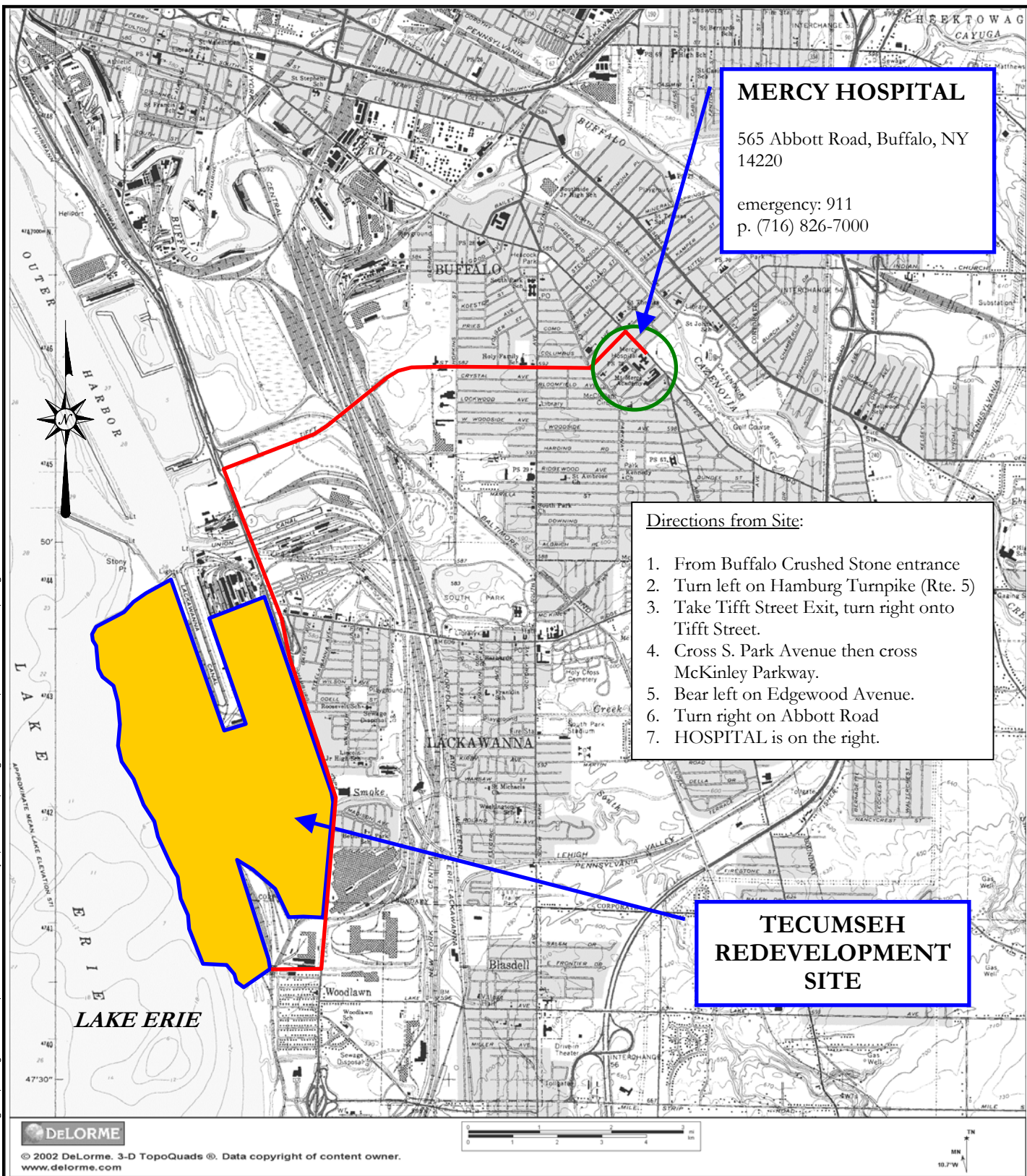
DRAWN BY: BCH	DATE: MAY 2005
CHECKED BY: THF	
APPROVED BY:	

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PHASE I BUSINESS PARK SITE PLAN
BROWNFIELD CLEANUP PROGRAM
PHASE I BUSINESS PARK AREA
LACKAWANNA, NEW YORK
PREPARED FOR
TECUMSEH REDEVELOPMENT, INC.

FIGURE 2

FIGURE 3



MERCY HOSPITAL
 565 Abbott Road, Buffalo, NY
 14220
 emergency: 911
 p. (716) 826-7000

- Directions from Site:**
1. From Buffalo Crushed Stone entrance
 2. Turn left on Hamburg Turnpike (Rte. 5)
 3. Take Tiftt Street Exit, turn right onto Tiftt Street.
 4. Cross S. Park Avenue then cross McKinley Parkway.
 5. Bear left on Edgewood Avenue.
 6. Turn right on Abbott Road
 7. HOSPITAL is on the right.

TECUMSEH REDEVELOPMENT SITE

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

HOSPITAL ROUTE MAP
 HEALTH & SAFETY PLAN (HASP)
 FORMER BETHLEHEM STEEL LACKAWANNA COKE DIVISION SITE
 LACKAWANNA, NEW YORK

PROJECT NO.: 0071-002-901
 DATE: NOVEMBER 2004
 DRAFTED BY: BCH

PREPARED FOR
TECUMSEH REDEVELOPMENT, INC.

FILEPATH:\cadd\turnkey\international_steel_group_(isp)\benzol_plant\health & safety plan (hasp)\figure 3, hospital_route.mxd

APPENDIX A

EMERGENCY RESPONSE PLAN

EMERGENCY RESPONSE PLAN
For
BROWNFIELD CLEANUP PROGRAM
REMEDIATION 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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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

HEALTH & SAFETY PLAN
APPENDIX A: EMERGENCY RESPONSE PLAN

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 Tiff Street Exit and turn right onto Tiff Street.
- Take Tiff 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.

HEALTH & SAFETY PLAN
APPENDIX A: EMERGENCY RESPONSE PLAN

Follow signs to emergency room (ER).



9.0 EMERGENCY RESPONSE CRITIQUE & RECORD KEEPING

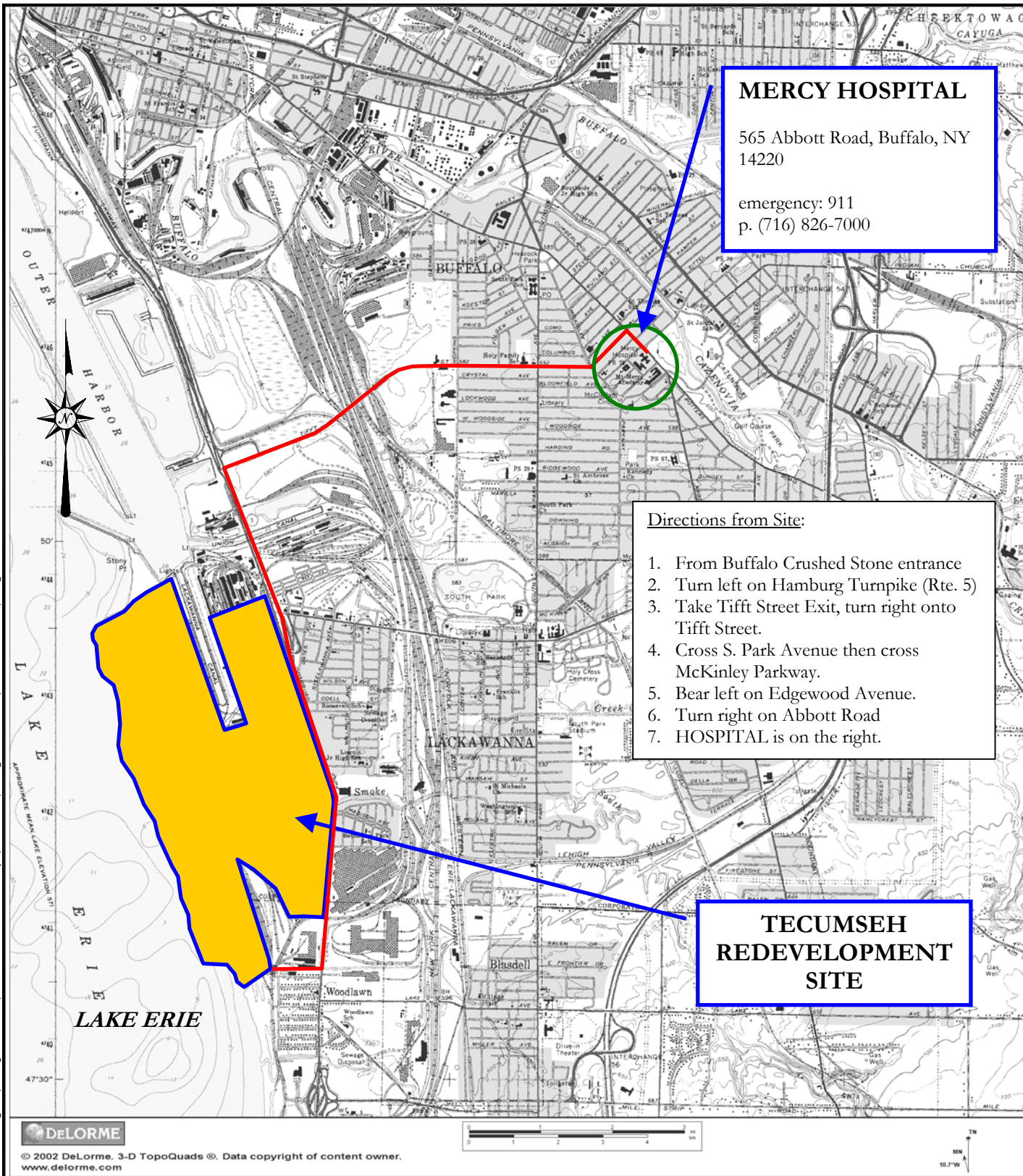
Following an emergency, the SSHO and Project Manager shall review the effectiveness of this Emergency Response Plan (ERP) in addressing notification, control and evacuation requirements. Updates and modifications to this ERP shall be made accordingly. It shall be the responsibility of each contractor 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




MERCY HOSPITAL
 565 Abbott Road, Buffalo, NY
 14220
 emergency: 911
 p. (716) 826-7000

- Directions from Site:**
1. From Buffalo Crushed Stone entrance
 2. Turn left on Hamburg Turnpike (Rte. 5)
 3. Take Tiftt Street Exit, turn right onto Tiftt Street.
 4. Cross S. Park Avenue then cross McKinley Parkway.
 5. Bear left on Edgewood Avenue.
 6. Turn right on Abbott Road
 7. HOSPITAL is on the right.

**TECUMSEH
 REDEVELOPMENT
 SITE**

FILEPAT\fig\coal\turnkey\international_steel_group_(isp)\benzol_plant\health_&_safety_plan_(hasp)\figure_3_hospital_route_map.dwg

DELORME
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 www.delorme.com

 **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.

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	
Originating 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 D

CITIZEN PARTICIPATION PLAN (CP PLAN)



New York State Department of Environmental Conservation

Brownfield Cleanup Program

Citizen Participation Plan for Tecumseh Redevelopment, Inc. Phase I Business Park

Site # (TBD)
1951 Hamburg Turnpike
Lackawanna
Erie County, New York

May 2005

Contents

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* * * * *

Note: The information presented in this Citizen Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Citizen Participation Plan may be revised during the site’s remedial process.

Applicant: **Tecumseh Redevelopment, Inc. (“Applicant”)**
Site Name: **Phase I Business Park (“Site”)**
Site Number: **TBD**
Site Address: **1951 Hamburg Turnpike, Lackawanna, NY 14218**
Site County: **Erie**

1. What is New York’s Brownfield Cleanup Program?

New York’s Brownfield Cleanup Program (BCP) is designed to encourage the private sector to investigate, remediate (cleanup) and redevelop brownfields. A brownfield is any real property, the redevelopment or reuse of which may be complicated by the presence or potential presence of a contaminant. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal and financial burdens on a community. If the brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants accepted into the BCP as they conduct brownfield site remedial activities. The BCP contains strict investigation and remediation (cleanup) requirements, ensuring that cleanups protect public health and the environment based on the intended use of the brownfield site. When NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use. For more information about the BCP, go online at: www.dec.state.ny.us/website/der/bcp

2. Citizen Participation Plan Overview

A Citizen Participation (CP) Plan provides members of the affected and interested public with information about how NYSDEC will inform and involve them during the investigation and remediation of a site under the BCP.

This CP Plan has been developed for the site under the BCP. Appendix D contains a map locating the site. NYSDEC is committed to informing and involving the public concerning the investigation and remediation of the site. This CP Plan describes the public information and involvement program that will be carried out with assistance from the Applicant.

Appendix A of this CP Plan identifies NYSDEC project contact to whom the public may address questions or request information about the site’s remedial program. The locations of the site’s document repositories also are identified in Appendix A. The document repositories provide convenient access to important project documents for public review and comment.

Appendix B contains the brownfield site contact list. This list has been developed to keep the community informed about, and involved in, the site's investigation and remediation process. The brownfield site contact list includes, at a minimum:

- Chief executive officer and zoning board of each county, city, town and village in which the site is located.
- Residents on and/or adjacent to the site.
- The public water supplier that services the area in which the site is located.
- Any person who has requested to be placed on the site contact list.
- The administrator of any school or day care facility located on and/or adjacent to the site for purposes of posting and/or dissemination at the facility.
- Document repositories and their contacts.

The brownfield site contact list will be used periodically to distribute fact sheets that provide updates about the status of the project, including notifications of upcoming remedial activities at the site (such as fieldwork), as well as availability of project documents and announcements about public comment periods.

The brownfield site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact identified in Appendix A.

Appendix C identifies the CP activities that have been and will be conducted during the site's remedial program.

The CP activities are designed to achieve the following objectives:

- Help the interested and affected public to understand contamination issues related to a brownfield site, and the nature and progress of an Applicant's efforts, under State oversight, to investigate and, if appropriate, remediate a brownfield site.
- Ensure open communication between the public and project staff throughout a brownfield site's remedial process.
- Create opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a brownfield site's investigation and remediation.

This CP Plan may be revised due to changes in major issues of public concern or in the nature and scope of remedial activities. Modifications may include additions to the site contact list, updates to major issues of concern to the public, and changes in planned citizen participation activities. The public is encouraged to discuss its ideas and suggestions about the citizen participation program with the project contact listed in Appendix A.

3. Site Information

Site Description

The Phase I Business Park Area is an approximate 102-acre parcel located at 1951 Hamburg Turnpike (a.k.a New York State Route 5) in the City of Lackawanna (the City), Erie County, New York. The property is located on the site of the former Bethlehem Steel Corporation (BSC) Lackawanna Works in a primarily industrial area of the City. Tecumseh acquired the property, along with other BSC assets, out of bankruptcy in 2003. The surrounding properties to the north, west, and south of the Site are industrial. The property uses east of the Site (east of Route 5) are primarily industrial, commercial, and vacant. A site location map is included as Appendix D.

Site History

The subject 102-acre Phase I Business Park Area was formerly used to house a portion of BSC's steel making operations that were fully integrated into the entire BSC Lackawanna steel facility. Steel production on the property was discontinued in 1983 and the coke ovens ceased activity in 2000. The Site is mostly vacant land but includes some active railroad spurs and a garage (former Fire Department Headquarters). The land surface is flat and heavily vegetated with shrubs, grasses, and trees. Numerous at or near grade concrete building foundations are located throughout the Site. These foundations are all that remain of those buildings that were a part of the integrated steel-making facilities at the site.

Environmental History

Twelve solid waste management units (SWMUs) were identified on the 102-acre Site during a Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) conducted in 1988. An assessment of these SWMUs was initiated by BSC under an Administrative Order issued by the United States Environmental Protection Agency (USEPA) in 1990. The assessment revealed no hazardous substances associated with the SWMUs and, as a result, the SWMUs received a "No Further Action" determination from the USEPA. In 2000, the subject property was released from the Order.

In March 2001, BSC performed a Phase I Environmental Site Assessment (ESA) on the Phase I Business Park Area as part of a due diligence review in conjunction with the proposed redevelopment and sale of the property. The results of the Phase I ESA indicated several potential non-hazardous environmental conditions based on historic site uses, adjacent site uses, and field observations. These include:

- The likely impact of surface soils by SVOCs 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 visible petroleum staining at the ground surface.
- The potential impact of surface and subsurface soils by metals associated with steel manufacturing operations.
- The potential impact of surface and subsurface soils by PCBs from transformers and rail yards in discrete areas of the parcel.
- Potential soil and groundwater impacts from VOCs associated with gasoline storage in discrete on-site areas and historic off-site gasoline releases upgradient of the property.

Tecumseh is currently pursuing an agreement with the NYSDEC under the BCP to investigate and, if necessary, remediate the property for future development as a commercial/light industrial business park.

4. Remedial Process

The Applicant has applied for and been accepted into New York's Brownfield Cleanup Program as a Volunteer. This means that the Applicant was not responsible for the disposal or discharge of the contaminants or whose ownership or operation of the site took place after the discharge or disposal of contaminants.

The Applicant in its Application proposes that the Site will be used for restricted purposes. To achieve this goal, the Applicant will conduct remedial activities at the Site with oversight provided by NYSDEC. The Brownfield Cleanup Agreement provides the responsibilities of each party in conducting a remedial program at the Site.

If the Applicant conducts a remedial investigation (RI) of the Site, it will be performed with NYSDEC oversight, and with the following goals:

- 1) Define the nature and extent of contamination in soil, surface water, groundwater and any other impacted media;
- 2) Identify the source(s) of the contamination;
- 3) Assess the impact of the contamination on public health and/or the environment; and
- 4) Provide information to support the development of a Remedial Work Plan to address the

contamination, or to support a conclusion that the contamination does not need to be addressed.

The Applicant will prepare an RI Report after it completes the RI. This report will summarize the results of the RI and will include the Applicant's recommendation of whether remediation is needed to address site-related contamination. The RI Report is subject to review and approval by NYSDEC. Before the RI Report is approved, a fact sheet that describes the RI Report will be sent to the Site's contact list.

NYSDEC determines whether the Site poses a significant threat to public health and/or the environment. If NYSDEC determines that the Site is a "significant threat," a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying community group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the Site and the development/implementation of a remedy.

For more information about the TAG Program and the availability of TAGs, go online at: www.dec.state.ny.us/website/der

After NYSDEC approves the RI Report, the Applicant will be able to develop a Remedial Work Plan. The Remedial Work Plan describes how the Applicant would address the contamination related to the Site.

The public would have the opportunity to review and comment on the remediation proposal. The Site contact list would be sent a fact sheet that describes the Remedial Work Plan and announces a 45-day public comment period. NYSDEC would factor this input into its decision to approve, reject or modify the Remedial Work Plan.

Approval of the Remedial Work Plan by NYSDEC would allow the Applicant to design and construct the alternative selected to remediate the Site. The Site contact list would receive notification before the start of Site remediation. When the Applicant completes remedial activities, it will prepare a Remedial Action Report that certifies that remediation activities have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the remediation is protective of public health and the environment for the intended use for the Site. The Site contact list would receive a fact sheet that announces the completion of remedial activities and the review of the Remedial Action Report.

NYSDEC would then issue the Applicant a Certificate of Completion. This Certificate states that remediation goals have been achieved, and relieves the Applicant from future remedial liability, subject to statutory conditions. If the Applicant used institutional controls or engineering controls to achieve remedial objectives, the Site contact list would receive a fact sheet discussing such controls.

An institutional control is a non-physical means of enforcing a restriction on the use of real property

that limits human or environmental exposure; restricts the use of groundwater; provides notice to potential owners, operators, or members of the public; or prevents actions that would interfere with the effectiveness of a remedial program or with the effectiveness and/or integrity of site management at or pertaining to a brownfield site. An example of an institutional control is an environmental easement.

An engineering control is a physical barrier or method employed to actively or passively contain, stabilize, or monitor contamination; restrict the movement of contamination to ensure the long-term effectiveness of a remedial program; or eliminate potential exposure pathways to contamination. Examples include caps and vapor barriers. Site management will be conducted by the Applicant as required with appropriate NYSDEC oversight.

Activities required to be conducted to inform and involve the public during the site's remedial process are introduced in Section 5 and identified in the chart in Appendix C.

5. Citizen Participation Activities

CP activities that have already occurred and are planned during the investigation and remediation of the site under the BCP are included in Appendix C: Summary of Citizen Participation Activities. NYSDEC will ensure that these CP activities are conducted, with appropriate assistance from the Applicant.

All CP activities seek to provide the public with significant information about site findings and planned remedial activities, and some activities announce comment periods and request public input about important draft documents such as the Proposed Remedial Work Plan.

The CP Plan for the site may be revised based on changes in the site's remedial program or major issues of public concern.

All written materials developed for the public will be reviewed and approved by NYSDEC for clarity and accuracy before they are distributed.

6. Major Issue of Public Concern

This section of the CP Plan identifies major issues of public concern as they relate to the site. Additional major issues of public concern may be identified during the site's remedial process.

Local Residents

The Site Investigation will be carried out by professionals experienced in performing investigation activities in densely populated areas. All work will be conducted under a site-specific Health and

Safety Plan and Community Air Monitoring Program approved by the NYSDEC and NYSDOH. The Site Investigation will be conducted over a limited duration (approximately 3-4 weeks) and during normal business hours. No soil or groundwater will be removed from the Site. Areas excavated for soil investigation will be filled in at the end of each work day. The Site Investigation will be conducted with minimal equipment usage; hence, there will be no change in traffic patterns. There will be no additional noise or odors as a result of Site Investigation activities.

Stakeholders

The Site Investigation must be completed by the end of 2005 in order to complete the subsequent Remedial Design and begin site cleanup during the 2006 construction season. The sequencing of events is important to the timely redevelopment of the Site.

Appendix A – Project Contacts and Document Repositories

Project Contacts

For information about the site's remedial program, the public may contact the following NYSDEC project contacts:

Mr. Maurice Moore, Engineering Geologist
Project Manager
NYSDEC Region 9
Division of Environmental Remediation
270 Michigan Avenue
Buffalo, NY 14203
(716) 851-7220

Mr. Michael Podd
Citizen Participation Specialist
NYSDEC Region 9
270 Michigan Avenue
Buffalo, NY 14203
(716) 851-7220

Document Repositories

The document repositories identified below have been established to provide the public with convenient access to important project documents:

Lackawanna Public Library
560 Ridge Road
Lackawanna, NY 14218
Attn: Salvatore Bordonaro, Director
Phone: (716) 823-0630
Hours: M, W 1-9
T, Th-Sat. 10-5
Sun. (closed)

NYSDEC Region 9 Office
270 Michigan Avenue
Buffalo, NY 14203
Attn: Mr. Michael Podd
Phone: (716) 851-7220
Hours: M-F 8:30-4:45
(Call for appointment)

Appendix B – Identification of Citizen Participation Activities

Required Citizen Participation Activity	CP activity(ies) occur at this point	Date Completed
Application Process:		
<ul style="list-style-type: none"> • Prepare brownfield site contact list (BSCL) • Establish document repositories • Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day comment period • Publish above ENB content in local newspaper • Mail above ENB content to BSCL 	<p>At time of preparation of application to participate in BCP</p> <p>When NYSDEC determines that BCP application is complete. The 30-day comment period begins on date of publication of notice in ENB. End date of comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice and notice to the BSCL should be provided to the public at the same time.</p>	<p>May 2005</p> <p>May 2005</p> <p>Date Published</p> <p>Date Published</p> <p>Date Mailed</p>
After Execution of Brownfield Site Cleanup Agreement:		
<ul style="list-style-type: none"> • Prepare citizen participation (CP) plan 	Draft CP Plan must be submitted within 20 days of entering Brownfield Site Cleanup Agreement. CP Plan must be approved by NYSDEC before distribution	Date of CP Plan Final Approval
After Remedial Investigation (RI) Work Plan Received:		
<ul style="list-style-type: none"> • Mail fact sheet to BSCL about proposed RI activities and announcing 30-day public comment period on draft RI Work Plan 	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, comment periods will be combined and public notice will include fact sheet. 30-day comment period begins/ends as per dates identified in fact sheet.	Date Mailed
After RI Completion:		
<ul style="list-style-type: none"> • Mail fact sheet to BSCL describing results of RI 	Before NYSDEC approves RI Report	Date Mailed
After Remedial Work Plan (RWP) Received:		
<ul style="list-style-type: none"> • Mail fact sheet to BSCL about proposed RWP and announcing 45-day comment period • Public meeting by NYSDEC about proposed RWP (if requested by public) 	Before NYSDEC approves RWP. 45-day comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day comment period.	<p>Date Mailed</p> <p>Date of Public Meeting</p>
After Approval of RWP:		
<ul style="list-style-type: none"> • Mail fact sheet to BSCL summarizing upcoming remedial construction 	Before the start of remedial construction	Date Mailed
After Remedial Action Completed:		
<ul style="list-style-type: none"> • Mail fact sheet to BSCL announcing that 	At the time NYSDEC approves Final	Date Mailed

Required Citizen Participation Activity	CP activity(ies) occur at this point	Date Completed
remedial construction has been completed • Mail fact sheet to BSCL announcing issuance of Certificate of Completion (COC)	Engineering Report. These two fact sheets should be combined when possible if there is not a delay in issuance of COC	Date Mailed

Appendix C – Brownfield Site Contact List

CITY OF LACKAWANNA

Mayor Norman L. Polanski, Jr.
714 Ridge Road
Lackawanna, NY 14218

NEW YORK STATE

Director Gerald Mikol
NYSDEC, Region 9
270 Michigan Avenue
Buffalo, NY 14203

Mr. Stanley Radon
NYSDEC, Region 9
270 Michigan Avenue
Buffalo, NY 14203

Mr. Martin Doster
NYSDEC, Region 9
270 Michigan Avenue
Buffalo, NY 14203

Mr. Michael Podd
NYSDEC, Region 9
270 Michigan Ave.
Buffalo, N.Y 14203

Mr. Cameron O'Connor
NYSDOH
584 Delaware Avenue
Buffalo, NY 14202

Senator Charles Schumer

U.S. Senate, Room 620
111 West Huron Street
Buffalo, NY 14202

Appendix C – Brownfield Site Contact List

NEW YORK STATE (continued)

Senator Hillary Rodham-Clinton
U.S. Senate, 203 Guaranty Bldg.
28 Church Street
Buffalo, NY 14202

Senator William Stachowski
58th District, N.Y.S. Senate
2030 Clinton Street
Buffalo, NY 14206

Congressman Jack Quinn
30rd Dist., Attn: Ms. Palmer
403 Main Street
Buffalo, NY 14203

Assemblyman Richard Smith
146th Assembly District
3812 South Park Avenue
Blasdell, NY 14219

Assemblyman Brian Higgins
145th Assembly District
306 Abbott Road
Buffalo, NY 14220

ERIE COUNTY

Commissioner Anthony Billittier
Erie Co. Health Dept., Rm 931
95 Franklin Street
Buffalo, NY 14202

Mr. Peter Camaratta
Erie County Industrial Development Agency
275 Oak Street
Buffalo, NY 14203

Appendix C – Brownfield Site Contact List

ERIE COUNTY (continued)

Honorable Joel Giambra
Erie County Executive
95 Franklin Street
Buffalo, NY 14202

Mr. Paul Kranz
Erie Co. Environment & Plan.
95 Franklin Street
Buffalo, NY 14202

Edward J. Kuwik
Erie County Legislator – District 1
609 Ridge Road
Lackawanna, New York 14218

PUBLIC WATER SUPPLIER

Erie County Water Authority
350 Ellicott Square Building
295 Main Street
Buffalo, NY 14203

DOCUMENT REPOSITORIES

Lackawanna Public Library
560 Ridge Road
Lackawanna, NY 14218
Attn: Salvatore Bordonaro, Director
Phone: (716) 823-0630

NYSDEC Region 9 Office
270 Michigan Avenue
Buffalo, NY 14203
Attn: Mr. Stanley Radon
Phone: (716) 851-7220

Appendix C – Brownfield Site Contact List

NEARBY SCHOOL

Queen of All Saints RC School
206 Ridge Road
Buffalo, NY 14218
Attn: Administrator
Phone: (716) 826-7566

LOCAL NEWS MEDIA

The Buffalo News
1 News Plaza
Buffalo, NY 14240

WBEN News Radio 930
Entercom Radio of Buffalo
500 Corporate Pkwy
Suite 200
Buffalo, NY 14226

WKBW-TV
7 Broadcast Plaza
Buffalo, NY 14202

RESIDENTS ON AND/OR ADJACENT TO THE SITE

See attached tables.

Property Owners - Individuals

Property Address		Owner 1		Owner 2		Mailing Address				
No.	Street	First Name	Last Name	First Name	Last Name	No.	Street	City	State	Zip
109	Gates Ave.	Stephen	Yerkovich	c/o Edward	Yerkovich	6180	Old Lake Shore Rd	Lakeview	NY	14085
113	Gates Ave.	Stephen	Yerkovich	c/o Edward	Yerkovich	6180	Old Lake Shore Rd	Lakeview	NY	14085
13	Kane St.	Angel R.	Mercado			13	Kane St.	Lackawanna	NY	14218
18	Kane St.	James O.	Harbert			18	Kane St.	Lackawanna	NY	14218
23	Kane St.	Ellen M.	Pauley-Blaze			23	Kane St.	Lackawanna	NY	14218
30	Kane St.	Gobran	Albanna			60	Holland Ave.	Lackawanna	NY	14218
33	Kane St.	Joseph J.	Pajak			33	Kane St.	Lackawanna	NY	14218
36	Kane St.	Daniel S.	Cizdziel			5304	Big Tree Rd.	Orchard Park	NY	14127
37	Kane St.	Joseph J.	Pajak			33	Kane St.	Lackawanna	NY	14218
38	Kane St.	Daniel S.	Cizdziel			5304	Big Tree Rd.	Orchard Park	NY	14127
39	Kane St.	Daniel S.	Cizdziel			5304	Big Tree Rd.	Orchard Park	NY	14127
42	Kane St.	Daniel S.	Cizdziel			5304	Big Tree Rd.	Orchard Park	NY	14127
46	Kane St.	Daniel S.	Cizdziel			5324	Big Tree Rd.	Orchard Park	NY	14127
48	Kane St.	Daniel S.	Cizdziel			5324	Big Tree Rd.	Orchard Park	NY	14127
0	N. Gates Ave.	Penelope E.	Mathews						NY	
121	N. Gates Ave.	Ralph	Giambra			121	N. Gates Ave.	Lackawanna	NY	14218
50	Ridge Rd.	Carlo M.	Perfetto			581	Ridge Rd.	Lackawanna	NY	14218
143	Steelawanna Ave.	Barbara A.	Peoples			26	Wilson St.	Lackawanna	NY	14218
145	Steelawanna Ave.	Elnora	Williams			2295	Ferrier Rd.	Eden	NY	14057
149	Steelawanna Ave.	Lena Pearl	Flippen			20	Holland Ave.	Lackawanna	NY	14218
155	Steelawanna Ave.	Annie & Tom	Morman			88	Wasson	Lackawanna	NY	14218
161	Steelawanna Ave.	Milicia (estate)	Evanovich	James	Evanovich	161	Steelawanna Ave.	Lackawanna	NY	14218

Property Owners - Companies & Organizations

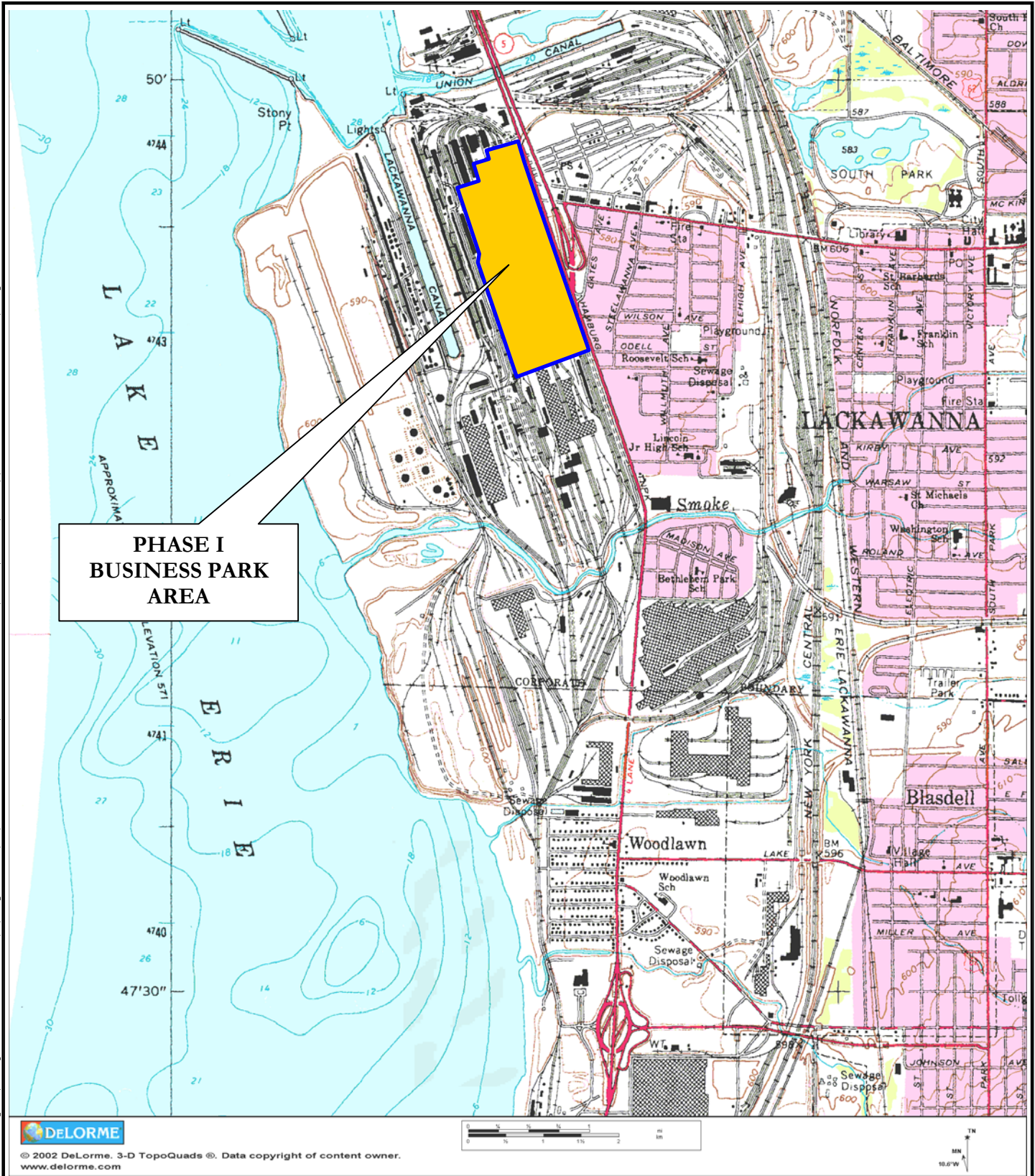
Property Address		Owner 1	Owner 2	Mailing Address				
No.	Street	Name	Name	No.	Street	City	State	Zip
60	Commerce Dr.	One Commerce Drive Properties, Inc.		60	Commerce Dr.	Lackawanna	NY	14218
100	Commerce Dr.	LCDC		640	Ridge Rd.	Lackawanna	NY	14218
170	Commerce Dr.	Crown Atlantic Co., LLC	PMB	4017	Washington Rd.	McMurray	PA	15317
0	Gates Ave.	LCDC		640	Ridge Rd.	Lackawanna	NY	14218
47	Gates Ave.	Lackawanna Municipal Housing A		135	Odell	Lackawanna	NY	14218
123	Gates Ave.	City of Lackawanna		714	Ridge Rd.	Lackawanna	NY	14218
129	Gates Ave.	City of Lackawanna		714	Ridge Rd.	Lackawanna	NY	14218
0	Hamburg Tpke.	Gateway Trade Center, Inc.			P.O. Box 880	Buffalo	NY	14224
2256	Hamburg Tpke.	City of Lackawanna		714	Ridge Rd.	Lackawanna	NY	14218
2274	Hamburg Tpke.	City of Lackawanna		714	Ridge Rd.	Lackawanna	NY	14218
2278	Hamburg Tpke.	City of Lackawanna		714	Ridge Rd.	Lackawanna	NY	14218
2282	Hamburg Tpke.	City of Lackawanna		714	Ridge Rd.	Lackawanna	NY	14218
2286	Hamburg Tpke.	City of Lackawanna		714	Ridge Rd.	Lackawanna	NY	14218
2290	Hamburg Tpke.	City of Lackawanna		714	Ridge Rd.	Lackawanna	NY	14218
2300	Hamburg Tpke.	Andolino Properties, LLC		2300	Hamburg Tpke.	Lackawanna	NY	14218
2350	Hamburg Tpke.	RAF Supply, Inc.		2350	Hamburg Tpke.	Lackawanna	NY	14218
2770	Hamburg Tpke.	State of New York		182	E. Union St.	Allegany	NY	14706
17	Kane St.	City of Lackawanna		714	Ridge Rd.	Lackawanna	NY	14218
21	Kane St.	City of Lackawanna		714	Ridge Rd.	Lackawanna	NY	14218
10	N. Gates Ave.	Punto Franco Ltd. c/o Lincoln Securities Corp.		155	Great Arrow Dr.	Buffalo	NY	14207
31	N. Gates Ave.	Safety Kleen Systems, Inc. c/o Burr Wolf			P.O. Box 27713	Houston	TX	77227
41	N. Gates Ave.	Safety Kleen Systems, Inc. c/o Burr Wolf			P.O. Box 27713	Houston	TX	77227
70	N. Gates Ave.	Marotta Leasing, Inc.		70	N. Gates Ave.	Lackawanna	NY	14218
17	Odell St.	RAF Supply, Inc.		2350	Hamburg Tpke.	Lackawanna	NY	14218
0	Ridge Rd.	BGI Interiors, Inc.						
10	Ridge Rd.	Henneberry William Ten In Co.	Mentor Rober	187	Willmuth	Lackawanna	NY	14218
43	Ridge Rd.	City of Lackawanna		714	Ridge Rd.	Lackawanna	NY	14218
47	Ridge Rd.	City of Lackawanna		714	Ridge Rd.	Lackawanna	NY	14218

Property Owners - Companies & Organizations

Property Address		Owner 1	Owner 2	Mailing Address				
No.	Street	Name	Name	No.	Street	City	State	Zip
55	Ridge Rd.	City of Lackawanna		714	Ridge Rd.	Lackawanna	NY	14218
15	Simon Ave.	City of Lackawanna		714	Ridge Rd.	Lackawanna	NY	14218
36	Simon Ave.	Twenty One Gates Ave.		S4774	Clifton Pkwy.	Hamburg	NY	14075
0	Steelawanna Ave.	Andolino Properties, LLC		2300	Hamburg Tpke.	Lackawanna	NY	14218
243	Steelawanna Ave.	RAF Supply, Inc.		2350	Hamburg Tpke.	Lackawanna	NY	14218
0		Downtown Development, Inc.						
		One Commerce Drive Property						
		South Buffalo Railway						

Appendix D – Site Location Map

FILEPATH: \\c:\ad\turnkey\international steel_group (isg)\brownfield cleanup program (bcp)\phase 1\business park area\citizen participation plan\appendix d\site location map.dwg



**PHASE I
BUSINESS PARK
AREA**



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

PREPARED FOR
TECUMSEH REDEVELOPMENT, INC.