

Alternatives Analysis Report (AAR)

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

BCP Site No. C915197

July 2007
Revised May 2010

0071-006-203

Prepared For:

ArcelorMittal Tecumseh Redevelopment, Inc.

Prepared By:



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Table of Contents

1.0	INTRODUCTION.....	1
1.1	Background.....	1
1.2	Purpose.....	2
1.3	Report Organization.....	3
2.0	REMEDIAL INVESTIGATION FINDINGS.....	4
2.1	Soil/Fill.....	4
2.2	Groundwater.....	6
2.3	Fate and Transport of COPCs.....	7
2.4	Qualitative Human Health Exposure Assessment.....	7
2.5	Fish and Wildlife Impact Assessment.....	8
3.0	INTERIM REMEDIAL MEASURES.....	9
3.1	Pre-IRM Investigation.....	10
3.2	IRM Activities.....	11
4.0	VOLUME, NATURE, AND EXTENT OF REMAINING CONTAMINATION.....	13
4.1	Comparison to Unrestricted SCOs.....	13
4.2	Comparison to Restricted-Commercial SCOs.....	14
5.0	DEVELOPMENT OF REMEDIAL ACTION OBJECTIVES AND GENERAL RESPONSE ACTIONS.....	15
5.1	Remedial Action Objectives.....	15
5.2	General Response Actions.....	15
5.3	Standards, Criteria and Guidance (SCGs).....	15
5.3.1	<i>Chemical-Specific SCGs.....</i>	<i>16</i>
5.3.2	<i>Location-Specific SCGs.....</i>	<i>17</i>
5.3.3	<i>Action-Specific SCGs.....</i>	<i>17</i>
5.4	Future Use Evaluation.....	17
6.0	DEVELOPMENT AND SCREENING OF REMEDIAL ALTERNATIVES.....	19
6.1	Development of Alternatives.....	19
6.2	Evaluation of Alternatives.....	19
6.2.1	<i>Alternative 1: No Further Action.....</i>	<i>20</i>
6.2.2	<i>Alternative 2: Excavation of Impacted Soil/Fill.....</i>	<i>22</i>
6.2.3	<i>Alternative 3: No Further Remedial Action with Placement of Soil Cover System Prior to Redevelopment.....</i>	<i>25</i>
6.2.4	<i>Alternative 4: No Further Remedial Action with Deferred Soil Cover System during Redevelopment.....</i>	<i>28</i>
6.3	Comparison of Alternatives.....	30
6.4	Proposed Remedy.....	31
7.0	POST-REMEDIAL REQUIREMENTS.....	33

ALTERNATIVES ANALYSIS REPORT

Phase I Business Park Area

Table of Contents

7.1	Final Engineering Report.....	33
7.2	Site Management Plan	33
7.2.1	Engineering and Institutional Control Plan.....	34
7.2.2	Site Monitoring Plan.....	34
7.2.3	Operation and Maintenance Plan.....	35
7.2.4	Inspections, Reporting, and Certifications.....	36
7.2.4.1	<i>Inspections</i>	36
7.2.4.2	<i>Reporting</i>	36
7.2.4.3	<i>Certification</i>	37
7.2.4.4	<i>Corrective Measures Plan</i>	38
8.0	REFERENCES	39

LIST OF TABLES

Table 1	Potential Chemical-Specific ARARs
Table 2	Potential Location-Specific ARARs
Table 3	Potential Action-Specific ARARs
Table 4	Alternative 2: Excavation of Impacted Soil/Fill to Unrestricted SCOs
Table 5	Alternative 3: Placement of Soil Cover System Prior to Redevelopment
Table 6	Alternative 4: Deferred Soil Cover System during Redevelopment

LIST OF FIGURES

Figure 1	Site Location and Vicinity Map
Figure 2	Site Plan
Figure 3	Extent of Remedial Excavation Performed

APPENDICES

Appendix A	Remedial Investigation Data Summaries
Appendix B	Land Use Evaluation

1.0 INTRODUCTION

1.1 Background

ArcelorMittal Tecumseh Redevelopment, Inc. (Tecumseh) owns an approximately 1,100-acre property on the west side of New York State Route 5 (Hamburg Turnpike) in the City of Lackawanna, New York (see Figures 1 and 2). The majority of Tecumseh's property is located in the City of Lackawanna with portions of the property extending into the Town of Hamburg. Tecumseh's property is bordered by NY State Route 5 on the east, Lake Erie to the west and northwest, and other industrial properties to the south and the northeast.

The property was formerly used for the production of steel, coke, and related products by Bethlehem Steel Corporation (BSC). Steel production on the property was discontinued in 1983 and the coke ovens ceased activity in 2000. Tecumseh acquired its Lackawanna property from BSC's bankruptcy estate in 2003.

A Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) of the entire former Bethlehem Steel Lackawanna Works was initiated by BSC under an Administrative Order issued by the United States Environmental Protection Agency (USEPA) in 1990. Tecumseh completed the RFI in January 2005 (Ref. 1). In August 2006, USEPA approved the RFI and terminated BSC's (and in turn Tecumseh's) obligations under the 1990 Administrative Order. Tecumseh is presently under an Order on Consent with the New York State Department of Environmental Conservation (NYSDEC) to undertake corrective measures at certain solid waste management units (SWMUs) primarily on the western slag fill and coke manufacturing portion of the property.

Tecumseh has developed conceptual redevelopment plans for the entire 1,100-acre property. A portion of those plans incorporates a business park area along NY State Route 5. Phase I of the Business Park, herein referred to as the Phase I Business Park Area or the Site, will be completed first. The Phase I Business Park is located west of NY State Route 5 (Hamburg Turnpike), east of the Gateway Metroport Ship Canal, and east and south of land currently owned by Gateway Trade Center (see Figures 1 and 2). The flat lying, approximately 102-acre Site is comprised mostly of vacant land covered by small trees and scrub vegetation, but includes some active railroad spurs, a few remaining buildings (e.g., former Fire Dept. headquarters near Gate 1), and remnants of former building foundations and below-ground utilities. 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. In addition, a security service provides part-time monitoring at the site to discourage trespassing. TurnKey's offices are located across Route 5 facing the Phase I Business Park Area allowing for additional monitoring during business hours.

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

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

As described in Section 2.0, the RI identified several test pit locations containing visually identifiable petroleum impact. Soil/fill exhibiting significant field evidence of petroleum impact needed to be addressed irrespective of the final remedy for the Site. Accordingly, Tecumseh and the NYSDEC agreed that an Interim Remedial Measure (IRM) addressing the petroleum impacted areas (as well as some incidental lead-impacted soil/fill) would be implemented to expedite the overall site cleanup and redevelopment schedule. The IRM Work Plan was submitted to the NYSDEC in June 2008, and was revised and approved in August 2008. IRM activities began in April 2009 and were substantially complete in August 2009. Section 4.0 summarizes the IRM activities completed at the Site.

1.2 Purpose

This Alternative Analysis Report (AAR) has been prepared on behalf of Tecumseh Redevelopment to identify and evaluate effective and implementable remedial alternatives for the Phase I Business Park; and to develop a recommended final remedial approach that

is protective of human health and the environment. The AAR provides sufficient detail to support the decision making process relative to remedial actions for the Site.

1.3 Report Organization

This AAR contains the following sections.

- Section 1.0 presents the Site background.
- Section 2.0 presents a summary of the RI findings.
- Section 3.0 describes the IRM activities completed at the Site.
- Section 4.0 provides an estimate of the volume and extent of remaining contamination requiring cleanup under various end use and remedial scenarios.
- Section 5.0 develops the Remedial Action Objectives for the Site
- Section 6.0 identifies and evaluates the remedial alternatives for the Site, and presents the proposed remedy.
- Section 7.0 describes the post-remedial requirements that will be implemented as a component of the Site remedy.
- Section 8.0 presents cited references.

2.0 REMEDIAL INVESTIGATION FINDINGS

The Remedial Investigation (RI) was conducted to characterize the general chemical composition of surface and subsurface soil/fill and groundwater on the Phase I Business Park; identify contaminant “source areas” or other areas of the Site potentially requiring remediation; define chemical constituent migration pathways; and qualitatively assess human health and ecological risks in sufficient detail to provide a scientific basis for performance of a remedial alternatives analysis. The RI included the following field activities to delineate and characterize on-site soil/fill as well as assess groundwater quality at the Site:

- Visual, olfactory, and PID characterization of surface and subsurface soil/fill via test pit excavation and boring advancement.
- Collection of surface and subsurface soil/fill samples.
- Advancement of on-site borings completed as groundwater monitoring wells.
- Collection and analysis of groundwater samples from existing and newly installed monitoring wells at the Site.

The findings of the RI, described in detail in the RI Report (Ref. 5), are summarized below.

2.1 Soil/Fill

As shown on Figure 2, the Site was broken into ten Areas of Assessment (AOAs), identified as AOA-1 through AOA-10. The AOAs were developed to focus the soil/fill investigation according to area-specific concerns based on known past uses and potential contaminant releases and to facilitate data presentation. AOAs-1, -4, -5, and -6 comprise the former main operational steel mill area of the Site. AOAs-2 and -3 consist primarily of support buildings located south of the main mill complex as well as several fuel oil tank locations. 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 the AOA-7/8 group. AOAs-9 and -10 contain the former rail yard, support buildings (e.g., rigger shop, repair shop), and the fire department headquarters; the only remaining buildings on the Site.

Surface and subsurface soil/fill was investigated during the RI at 82 test pit locations and an additional 37 surface locations (119 total locations) to evaluate the nature of potential impacts within the 10 AOAs. A total of 49 surface soil samples and 35 subsurface soil samples were collected from those locations during the RI.

Samples were analyzed for constituents of potential concern (COPCs), which were identified in the RI Work Plan based on Site operational history and Phase I ESA findings. The primary COPCs included base-neutral Target Compound List (TCL) semi-volatile organic compounds (SVOCs) associated with petroleum bulk storage and fossil fuels, and select inorganic compounds (i.e., arsenic, cadmium, chromium, lead, mercury, and cyanide) typically associated with steel manufacturing. Other COPCs analyzed on a location-specific basis included polychlorinated biphenyls (PCBs), which were analyzed at rail yard and former transformer areas, and petroleum-based volatile organic compounds (VOCs) analyzed in former gasoline storage locations. Pesticides, herbicides, and dioxins were also added to the list of COPCs at two surface soil sample locations per NYSDEC's request. In addition to the COPCs, an expanded list of parameters was developed as part of the RI Work Plan. The "expanded" list was employed during the RI at a minimum frequency of 1 per 20 samples per matrix to check for the presence of a broad range of other constituents less likely to be encountered.

The RI findings were compared to both commercial and unrestricted use Soil Cleanup Objectives (SCOs) per 6 NYCRR Part 375. Unrestricted use SCOs are deemed protective of human health and the environment under any future use scenario, including agricultural, residential, and other applications that could involve high contact with soil materials. Accordingly, unrestricted use SCOs are generally not applicable for sites such as the Phase I Business Park, which has a long (more than 100 years for the Site) industrial history in an urban setting. The RI therefore focused on the more meaningful discussion of the data as compared to commercial SCOs.

The RI soil/fill data summary is presented in Appendix A. In general, the data indicated the presence of COPC metals and base-neutral SVOCs above commercial SCOs at several sample locations, including composite sample locations. The frequent detection of these substances above SCOs is consistent with the observed presence of coal/coke fines and slag within the soil/fill matrix and macadam cover. Pesticides, herbicides, and dioxins were reported as not detected or identified at trace levels well below commercial SCOs. With limited exceptions, PCBs were also reported as not detected or at concentrations well below the commercial SCO of 1 part per million (ppm), with no PCB Aroclors detected above 3 ppm.

VOCs were not detected above commercial SCOs; however, field evidence of petroleum impact was observed in discrete locations of the Site. Specifically, subsurface impacts were identified at 11 test pit locations (i.e., TP-1-6, TP-1-13, TP-5-3, TP-5-7, TP-6-6, TP-6-7, TP-7-2, TP-7-4, TP-9-3, TP-10-1, and TP-10-3). Some of these impacts were described as petroleum in nature with staining and/or visible product, while others were described as potentially indicative of former tar-bound macadam road or floor. Test pit TP-10-6 also uncovered an underground storage tank (UST). Further discussion of these test pit locations is presented in Section 3.0.

2.2 Groundwater

A groundwater monitoring program was conducted at the Site to assess groundwater quality and potential groundwater contaminant migration pathways. Following completion of the soil/fill portion of the investigation, seven new piezometers and seven new monitoring wells were installed to better determine shallow groundwater flow direction and upgradient/ downgradient groundwater quality on the Phase I Business Park. Figure 2 presents the groundwater monitoring points used during the RI, which included: existing upgradient monitoring well MW-8A; newly installed temporary piezometers P-50S, P-51S, P-52S, P-54S, P-55S, P-56S, and P-57S; and newly installed monitoring wells MW-12A, MW-13A, MW-14A, MW-15A, MW-16A, MW-17A, and MW-18A.

The RI groundwater data summary is presented in Appendix A. Of the eight groundwater monitoring wells sampled, only one well contained concentrations above the NYSDEC Class GA Groundwater Quality Standards/Guidance Values (GWQS/GV) per 6NYCRR Part 703. Specifically, monitoring well MW-12A contained concentrations of barium, iron, magnesium, manganese, and sodium that exceeded their respective GWQS/GV. As such, the RI findings indicate that groundwater is not impacted by COPCs. Although MW-12A indicated somewhat elevated concentrations of barium, MW-12A is located on the upgradient side of the Site, in an area where soils exhibited barium concentrations much less than the corresponding soil cleanup objective presented in 6NYCRR Part 375-6 for protection of groundwater due to leaching. In addition, barium was not detected above Class GA Groundwater Quality Standards at downgradient well locations. As such, the RI concluded that the presence of barium in MW-12A is not indicative of an on-site source of contamination.

2.3 Fate and Transport of COPCs

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

2.4 Qualitative Human Health Exposure Assessment

Based on the types of receptors and points of exposure identified in the RI, the following potential routes of exposure were identified:

Current Use Scenario

- Trespasser – skin contact, incidental ingestion, and inhalation
- Construction Worker – skin contact, incidental ingestion and inhalation

Future Use Scenario

- Indoor Worker – inhalation (associated with petroleum-impacted soil/fill exhibiting elevated PID readings)
- Construction and Outdoor Worker – skin contact, inhalation and incidental ingestion

The RI concluded that in most instances, these exposures can be readily mitigated during and following redevelopment through proper institutional controls, soil/fill management and engineering controls in the form of asphalt, building, and landscape cover.

Groundwater contained elevated concentrations of a limited number of metals at only one location (MW-12). For both the current and future use scenarios, groundwater is not considered to pose a relevant exposure mechanism due to the absence of significant groundwater impacts, the availability of a local municipal potable water source, the depth to groundwater (greater than 4.5 feet; the standard depth of utilities and foundation footers), and an existing deed restriction that does not allow the use of Site groundwater.

2.5 Fish and Wildlife Impact Assessment

Based on the Fish and Wildlife Resource Impact Analysis Decision Key included in the RI, no fish and wildlife resources impact analysis was warranted.

3.0 INTERIM REMEDIAL MEASURES

As discussed in Section 2.1, several test pit locations excavated during the RI contained visually impacted soil/fill or groundwater exhibiting localized petroleum impact, with the latter likely a result of co-located or proximate soil/fill contamination. These included the following test pits or test pit areas (see Figure 2):

- Test Pit TP-1-6: At approximately 2.0 to 5.0 feet below ground surface (fbgs), an oily tar-like material was encountered on the southeast wall of the test pit.
- Test Pit TP-1-13: Groundwater within this test pit, which was encountered at a depth of approximately 3.8 fbgs, exhibited oily blebs and sheen. These localized groundwater impacts are likely associated with proximate soil/fill impact.
- Test Pits TP-5-3 and TP-5-7: At approximately 0.5 to 2.0 fbgs, a tar-bound macadam layer was encountered at each test pit. Based on the location of the test pit versus historical structure, the material at TP-5-3 may be a former road adjacent to a previous pitch tank, whereas the material at TP-5-7 appeared to be former building floor (i.e., within the Former Open Hearth No. 1 building). Both areas appeared similar in composition (i.e., large gravel within a hardened tar matrix intermixed with fines). Historical drawings indicate tar-bound macadam was used ubiquitously at the Site.
- Test Pit TP-6-6: Groundwater within this test pit, which was encountered at a depth of approximately 5.5 fbgs, exhibited oily blebs and sheen associated with proximate soil/fill impact. In addition, analytical results indicated elevated lead impacts at this location.
- Test Pit TP-6-7: Oily blebs and sheen were encountered on the groundwater in the southeast corner of this test pit at a depth of approximately 3.6 fbgs. These localized groundwater impacts are likely associated with proximate soil/fill impact.
- Test Pit TP-7-2: Petroleum-impacted soil/fill and visible product (i.e., thick oily/tar) were observed within the concrete secondary containment of two former aboveground tar tanks historically located at this location.
- Test Pit TP-7-4: A small area of oily staining was noted on the bottom of this test pit at a depth of approximately 3.5 fbgs, the depth at which groundwater was encountered.
- Test Pit TP-9-3: Petroleum-impacted soil/fill, visible sheen, and piping were observed in this area.

- Test Pit TP-10-1: Petroleum impacted soil/fill and traces of visible product (i.e., thick oily/tar) were observed within a shallow bowl shaped area at this location.
- Test Pit TP-10-6: One UST and suspected weathered gasoline petroleum impacted soil/fill was identified along the west side of the Former Fire Station building. (Historic information indicated the possible presence of additional USTs north of the building, but due to the indeterminate location of underground utilities in the area further investigation along north side of the building was not performed during the RI).

NYSDEC's DER-10 Technical Guidance for Site Investigation and Remediation (Ref. 4) specifies under Chapter 4, Section 4.1(d)2 (Sources of Contamination), that "all free product, concentrated solid or semi-solid hazardous substances, dense non-aqueous phase liquid, light non-aqueous phase liquid, and/or grossly contaminated media shall be removed and/or treated to the greatest extent feasible." The term "grossly contaminated media" is defined in 6NYCRR Part 375-1.2(w) as "soil, sediment, surface water, or groundwater which contains free product or mobile contamination that is identifiable either visually, through strong odor, by elevated contaminant vapor levels or is otherwise readily detectable without laboratory analysis;" and "feasible" is defined under 6NYCRR Part 375-1.2 (u) as "suitable to site conditions, capable of being successfully carried out with available technology, implementable and cost effective."

Based on these requirements, Tecumseh and the NYSDEC agreed that an Interim Remedial Measure (IRM) should be performed to address the above-described petroleum impacts as well as lead-impacted soils at TP-6-6, as these areas would need to be remediated regardless of the outcome of the alternatives analysis evaluation. It was determined that the IRM would involve excavation and onsite exsitu bioremediation (land farming) of petroleum-impacted soil/fill, with lead-impacted soil/fill from TP-6-6 and any tarry materials slated for excavation and offsite disposal. In addition, the underground storage tank near TP-10-6 would be removed, cleaned and scrapped offsite with any gasoline-impacted soils bioremediated onsite.

3.1 Pre-IRM Investigation

Because the extent of impacts at several of the above-described test pit locations was not fully defined during the RI, a pre-IRM investigation was proposed (Ref. 6). The pre-IRM field activities were performed during the period of April 2 through 7, 2008. The work

generally involved: re-establishing each of these original test pit locations via GPS coordinates recorded during the RI; collecting a representative sample for waste profiling (i.e., for offsite disposal, if deemed necessary), and for those areas not previously delineated excavating a series of supplemental test pits in each of four compass directions from the original test pit location until the extent of the impacts was determined. Soil/fill removed from the supplemental test pits was logged for visual/olfactory/ PID evidence of petroleum/organic impacts until the approximate area and depth of impact was delineated. In addition, the extent of lead-impact at TP-6-6 was delineated via sample collection in a grid pattern over the area surrounding the original test pit.

At NYSDEC's request, supplemental metals sampling was also undertaken at three of the RI test pit areas during the pre-IRM investigation to check for potential metal hotspots. These areas included TP1-1 through 5 (an RI composite sample area), which was re-sampled to check for discrete mercury impacts; TP-5-3, which was tested for lead and cadmium impacts concurrent with the additional petroleum delineation described above; and TP-7-1-1(1-3)/8-4 (an RI composite sample area) which was re-sampled to check for discrete arsenic impacts.

The results of the pre-IRM investigation are detailed in TurnKey's August 2008 IRM Work Plan (Ref. 7). In general, the investigation showed that the combined petroleum impacts encompassed several thousand cubic yards of soil/fill, including approximately 100 cubic yards of tar-impacted soil/fill at TP-5-3 and approximately 110 cubic yards of lead-impacted soil fill at TP-6-6. No additional metal hotspots requiring removal were encountered. In addition, it was agreed with the NYSDEC that potential tar impacts originally identified at TP-5-7 were macadam and therefore did not need to be removed.

3.2 IRM Activities

Remedial activities completed at the Site were conducted in accordance with the August 2008 NYSDEC-approved IRM Work Plan for the Phase I Business Park (Ref. 7). IRM activities began in April 2009 and were substantially complete in August 2009. The following IRM activities were performed:

- Construction of temporary onsite pads on paved areas in the northern portion of the Phase I Business Park Area.

- Excavation of approximately 12,000 cubic yards of petroleum-impacted soil/fill. The impacted soil/fill was placed in the bioremediation area for on-site treatment (tilling). At this time onsite treatment is approximately 80% complete. Approximately 2,400 cubic yards of soils remain on the biopad and are expected to be fully remediated during the 2010 construction season. The remaining soils were stockpiled for use as onsite, subgrade fill during future backfill and site grading work.
- Excavation of an estimated 100 cubic yards of lead-impacted slag/fill from the TP-6-6 area (i.e., from supplemental grids 2 and 14). The material was placed on poly sheets pending characterization and off-site disposal.
- Excavation of approximately 45 cubic yards coal tar-impacted slag/fill from TP-5-3 and TP-7-2. The material was placed on poly sheets pending off-site disposal.
- Removal of two USTs from the Phase I Business Park Area: one along the west side of the Former Fire Station building, and a second encountered north of the building. In addition, while excavating the impacted soils associated with these USTs a third underground storage tank was discovered just outside the Phase I Business Park Area border on the adjacent Gateway Metroport property. Because the third UST was outside the BCP Site boundary, the NYSDEC Petroleum Spills Hotline was contacted within 2 hours of the UST discovery. The third UST was subsequently removed by Gateway
- Backfill of excavations with: steel slag under Beneficial Use Determination (BUD) #555-9-15 (approx. 9,000 cubic yards); bioremediated slag/fill; and non-impacted crushed asphalt (approx. 120 cubic yards); Backfill material was placed into the excavation and compacted/tracked with the excavator/backhoe bucket in 2-foot lifts.

Figure 3 shows the approximate extent of soil/fill excavated during the IRM. Additional details concerning the IRM activities will be presented in the Final Engineering Report.

4.0 VOLUME, NATURE, AND EXTENT OF REMAINING CONTAMINATION

Estimates of the volume, nature, and extent of media that may require remediation to satisfy the Remedial Action Objectives or that needs to be quantified to facilitate evaluation of remedial alternatives is presented in this section. Because the IRM work is substantially complete and is expected to be fully completed within the upcoming months, the estimates are prepared in the context of the remaining site impacts.

As indicated in Section 2.2, groundwater was not impacted above the applicable standards, criteria and guidance (SCGs) with the exception of an upgradient well (MW-12A), which is not impacted by site-related constituents. Accordingly, groundwater is not considered in the determination of the volume, nature and extent of contamination requiring remediation. Concerning soil/fill, Appendix A identifies the test pit data for soil/fill that remains onsite following the IRM activities.

The estimated volume, nature and extent of the remaining soil/fill contamination are a function of the cleanup goal: for the unrestricted use scenario, the cleanup goal would involve achieving unrestricted use SCOs; whereas for the reasonably anticipated future use scenario (see Section 5.0) the cleanup goal would involve achieving the commercial use SCOs.

Per the data presented in Appendix A, untreated soil/fill remaining at the Site following IRM activities is generally characterized by elevated concentrations of metals and polycyclic aromatic hydrocarbons (PAHs). These contaminants are generally non-mobile, ubiquitous, and widespread across the Phase I Business Park property. Other constituents are also sporadically present at elevated concentration relative to the unrestricted use SCOs. Considering these data, the volume and extent of media requiring cleanup under the unrestricted and reasonably-anticipated future use (i.e., commercial/industrial) scenarios is presented in Sections 4.1 and 4.2.

4.1 Comparison to Unrestricted SCOs

Exceedance of the unrestricted-use SCOs was noted in the majority of soil/fill samples collected, particularly for carcinogenic polycyclic aromatic hydrocarbons (cPAHs); metal COPCs (i.e., arsenic, cadmium, chromium, lead, and mercury); and to a lesser extent PCBs (Aroclors 1248, 1254, and 1260) and pesticides (4,4'-DDT). Due to the highly

ubiquitous nature of the constituents observed in Site soil/fill and the extent to which they exceeded the unrestricted use SCO values, it is likely that the entire 102-acre property defines the impacted soil/fill area. The depth of impact is assumed to extend into native material, with an average depth of approximately 8 feet below ground surface (fbgs). Thus, the volume of impacted soil/fill requiring remediation is approximately 1.3 million cubic yards.

4.2 Comparison to Restricted-Commercial SCOs

The soil/fill data indicated widespread exceedance of the Part 375 restricted-commercial SCOs for several ubiquitous constituents. Specifically, nearly all samples collected exhibited exceedance of the commercial SCOs for carcinogenic PAHs, with the several also exhibiting exceedances for arsenic. Based on the data, it is not possible to quantify with any certainty areas that do not exceed one or more of the commercial SCO criteria. It is therefore assumed, for the purpose of cost estimating, that the entire 102-acre Site is impacted above the restricted-commercial SCOs to a depth of 8 feet, therefore the volume of soil/fill requiring remediation is the same as the unrestricted use scenario (1.3 million cubic yards).

5.0 DEVELOPMENT OF REMEDIAL ACTION OBJECTIVES AND GENERAL RESPONSE ACTIONS

The development of an appropriate remedial approach begins with definition of site-specific Remedial Action Objectives (RAOs) to address substantial human health and ecological risk or other significant environmental issues identified in the Remedial Investigation (RI). General Response Actions are then developed as potential means to achieve the RAOs.

5.1 Remedial Action Objectives

RAOs for this Site have been developed based on the RI findings, which have identified elevated soil/fill concentrations (particularly COPC metals and PAHs) across the majority of the Site, and the completed IRM activities which addressed grossly-impacted soil/fill materials and hotspots. In developing the RAOs, consideration is given to both the reasonably anticipated future use of the Site (i.e., commercial and/or industrial reuse; see Section 5.4), and Standards, Criteria and Guidance (SCGs) that affect the cleanup approach.

Toward that end, the RAOs for the Site are to:

- Prevent exposure to soil/fill at levels exceeding applicable health-based criteria.
- Implement and maintain institutional controls to assure that the Site is not used in a manner inconsistent with the reasonably anticipated future use scenario.

5.2 General Response Actions

General Response Actions are broad classes of actions that may satisfy the RAOs. General response actions form the foundation for the identification and screening of remedial technologies and alternatives. General Response Actions considered for the Site are:

- Engineering controls (i.e. cover) and Institutional Controls (e.g., Environmental Easement and other administrative measures) to mitigate exposure.
- Excavation of impacted soil/fill.

5.3 Standards, Criteria and Guidance (SCGs)

This section provides a summary of the standards, criteria and guidance (SCGs) that are considered applicable or relevant and appropriate to remediation of the Site. SCGs

include New York State laws, regulations, guidance as well as more stringent Federal requirements.

Applicable SCGs pertain to cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under NY State or Federal environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a site. An applicable requirement must directly and fully address the situation at the site.

Relevant and appropriate SCGs pertain to cleanup standards, standards of control, or other substantive requirements, criteria, or limitations promulgated under NY State or Federal environmental or facility siting laws that, while not “applicable” to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a site, address problems or situations sufficiently similar to those encountered at the site that their use is well suited to the particular site.

SCGs are classified as chemical-, action-, or location-specific. Chemical-specific SCGs are usually health- or risk-based concentrations in environmental media (e.g., air, soil, water), or methodologies that when applied to site-specific conditions, result in the establishment of concentrations of a chemical that may be found in, or discharged to, the ambient environment. Location-specific SCGs generally are restrictions imposed when remedial activities are performed in an environmentally sensitive area or special location. Some examples of special locations include floodplains, wetlands, historic places, and sensitive ecosystems or habitats. Action-specific SCGs are restrictions placed on particular treatment or disposal technologies. Examples of action-specific SCGs are effluent discharge limits and hazardous waste manifest requirements.

Additional discussions concerning the specific chemical-, action-, and location-specific SCGs that may be applicable, relevant or appropriate to remedy selection at the Site are presented below. In each case, the identified SCGs are generally limited to regulations or technical guidance in lieu of the environmental laws from which they are authorized, as the laws are typically less prescriptive in nature and are inherently considered in the regulatory and guidance evaluations.

5.3.1 Chemical-Specific SCGs

The determination of potential chemical-specific SCGs for a site is based on the nature and extent of contamination; potential migration pathways and release mechanisms

for site contaminants; the presence of human receptor populations; and the likelihood that exposure to site contaminants will occur. The RI performed for the Phase I Business Park Area provides this information. RI sampling events included the collection and analysis of surface soil, subsurface soil, and groundwater samples. Table 1 presents a list of chemical-specific NY State and Federal SCGs that may be applicable or relevant and appropriate to the Site based on this information.

5.3.2 Location-Specific SCGs

The location of the Site is a fundamental determinant of its impact on human health and the environment. Location-specific SCGs are restrictions placed on the concentration of hazardous substances or the conduct of activities solely because they are in a specific location. Some examples of these unique locations include: floodplains, wetlands, historic places, and sensitive ecosystems or habitats. Table 2 presents the location-specific SCGs that may be applicable or relevant and appropriate to the Site.

5.3.3 Action-Specific SCGs

Table 3 identifies action-specific SCGs that may significantly impact the selection of remedial alternatives for the Phase I Business Park Site. This list of potential action-specific SCGs is based on the candidate remedial alternatives identified in Section 6.0.

5.4 Future Use Evaluation

In developing and screening remedial alternatives, NYSDEC's Part 375 regulations require that the reasonableness of the anticipated future land use be factored into the evaluation. The regulations identify 16 criteria that must be considered. These criteria and the resultant outcome for the Phase I Business Park are presented in Appendix A. As indicated, Appendix A supports commercial and/or industrial redevelopment as the reasonably anticipated future use of the Site, consistent with surrounding Site use, zoning, and the Master Redevelopment Plan endorsed by Tecumseh, Erie County, and the City of Lackawanna (see Appendix A). The remedial alternatives identified in Section 6.0 are evaluated against their consistency with the reasonably anticipated land use as well as other screening criteria.

In addition to the evaluation of alternatives to remediate to the likely end use of the Site, NYSDEC regulation and policy calls for evaluation of an unrestricted use scenario (considered under 6NYCRR Part 375-2.8 to be representative of cleanup to pre-disposal

conditions). Per NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (Ref. 4), evaluation of a “no-action” alternative is also required to provide a baseline for comparison against other alternatives. These alternatives are discussed in greater detail in Section 6.0.

6.0 DEVELOPMENT AND SCREENING OF REMEDIAL ALTERNATIVES

6.1 Development of Alternatives

The following remedial alternatives have been developed in accordance with the General Response Actions and NYSDEC regulations:

- Alternative 1: No further action (NFA)
- Alternative 2: Excavation of Impacted Soil/Fill (Unrestricted Use Scenario)
- Alternative 3: NFA with Placement of Soil Cover System Prior to Redevelopment
- Alternative 4: NFA with Deferred Soil Cover System during Redevelopment

Alternatives 3 and 4 inherently include institutional controls in the form of an Environmental Easement, signage and site monitoring to preclude trespassing. Engineering controls in the form of existing fencing would also be maintained.

6.2 Evaluation of Alternatives

In addition to achieving RAOs, the remedy is evaluated against the following criteria consistent with 6NYCRR Part 375-1.8(f):

- **Overall Protection of Public Health and the Environment.** This criterion is an evaluation of the remedy's ability to protect public health and the environment, assessing how risks posed through each existing or potential pathway of exposure are eliminated, reduced, or controlled through removal, treatment, engineering controls, or institutional controls.
- **Compliance with Standards, Criteria, and Guidance (SCGs).** Compliance with SCGs addresses whether a remedy will meet applicable environmental laws, regulations, standards, and guidance.
- **Long-Term Effectiveness and Permanence.** This criterion evaluates the long-term effectiveness of the remedy after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: (i) the magnitude of the remaining risks (i.e., will there be any significant threats, exposure pathways, or risks to the community and environment from the remaining wastes or treated residuals), (ii) the adequacy of the engineering and institutional controls intended to limit the risk, (iii) the reliability of these controls, and (iv) the ability of the remedy to continue to meet RAOs in the future.
- **Reduction of Toxicity, Mobility or Volume with Treatment.** This criterion evaluates the remedy's ability to reduce the toxicity, mobility, or volume of Site

contamination. Preference is given to remedies that permanently and significantly reduce the toxicity, mobility, or volume of the wastes at the Site.

- **Short-Term Impacts and Effectiveness.** Short-term effectiveness is an evaluation of the potential short-term adverse impacts and risks of the remedy upon the community, the workers, and the environment during construction and/or implementation. This includes a discussion of how the identified adverse impacts and health risks to the community or workers at the Site will be controlled, and the effectiveness of the controls. This criterion also includes a discussion of engineering controls that will be used to mitigate short term impacts (i.e., dust control measures), and an estimate of the length of time needed to achieve the remedial objectives.
- **Implementability.** The implementability criterion evaluates the technical and administrative feasibility of implementing the remedy. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.
- **Cost-Effectiveness.** Capital, operation, maintenance, and monitoring costs are estimated for each remedial alternative and presented on a present worth basis. Detailed cost estimates for each alternative, excluding the no action alternative, are presented on Tables 4 through 6.
- **Community Acceptance.** This criterion evaluates the public's comments, concerns, and overall perception of the remedy. The Community Acceptance criterion incorporates public concerns into the evaluation of the remedial alternatives. Therefore, Community Acceptance of the remedy will be evaluated after the public comment period required by the BCP.
- **Land Use.** In addition to the above criteria, 6NYCRR Part 375-1 specifies that the criterion of Land Use (i.e., the current, intended, and reasonably anticipated future land uses of the Site and its surroundings) be considered in the selection of the remedy. The intended future land use was initially submitted to the NYSDEC via the BCP application. The reasonably anticipated future use of the Site in a commercial/industrial capacity (i.e., as a business park) is further discussed in Appendix A.

6.2.1 Alternative 1: No Further Action

The No Further Action (NFA) alternative is defined as performing no additional remedial activities at the Site beyond the soil/fill remediation already undertaken during IRM activities, which will be further described in the Final Engineering Report.

The No Further Action alternative provides a baseline for comparison against the other remedial alternatives, and justifies the need for further remedial action.

Overall Protection of Human Health and the Environment – The IRM achieved removal of source area soil/fill. Based on this work and the fact that the Site is isolated, covered by indigenous vegetation, secured with fencing, and patrolled by security during off hours to discourage trespassing, Alternative 1 is protective of human health and the environment under the current (undeveloped) scenario. However, under the future use (developed) scenario, the no Further Action alternative would not be protective of human health because of the concentrations of certain constituents (primarily PAHs and metals) remaining in the soil/fill above levels deemed protective for the commercial/industrial reuse scenario. Therefore, the No Further Action does not achieve the RAOs for the Site.

Compliance with SCGs – Although IRM activities were performed in accordance with applicable, relevant, and appropriate SCGs, concentrations of several constituents above commercial SCOs per 6NYCRR Part 375-6 remain in the upper 1-2 feet of soil/fill and will not be further addressed prior to Site occupancy. In addition, the No Further Action alternative does not provide for institutional controls in the form of a Site Management Plan to preclude less restrictive forms of site use or uncontrolled handling of soil/fill during redevelopment per DER-10. Therefore, the No Further Action alternative does not comply with the SCGs.

Long-Term Effectiveness and Permanence – IRM activities have removed source area contamination from the Site. The residual contaminants (i.e., primarily metals and PAHs) remaining on-site are non-mobile, ubiquitous, and beneath the existing indigenous vegetative cover. Therefore, under the current (undeveloped) scenario, any remaining risks to the community and environment are insignificant. However, under the future use scenario the remedy would not provide permanent or effective means to prevent exposure to soil/fill at levels exceeding applicable health-based criteria due to the absence of institutional and engineering controls to address proper soil/fill management, provide for clean cover, etc.

Reduction of Toxicity, Mobility, or Volume – Removal and biological treatment of the petroleum-impacted source area soil/fill during the IRM permanently and significantly reduced the toxicity, mobility, and volume of the most contaminated soil/fill that could potentially be contacted or produce localized areas of environmental impact at the Site. The

residual contamination remaining on-site will not likely be mobilized via erosion or wind due to the vegetative cover that currently exists on the property; however this alternative does not further reduce contaminant mobility. The toxicity and volume of the residual contamination would not be reduced under this alternative.

Short-Term Effectiveness and Impacts – The short-term adverse impacts and risks to Site workers and the community during the IRM excavation and backfilling activities were controlled through proper use of personal protective equipment (PPE) to prevent direct contact with soil/fill and dust control methods were used to limit the release of particulates. No additional short-term impacts will occur under the No Further Action alternative.

Implementability – No technical or administrative issues are associated with implementation of the No Further Action Alternative.

Cost – The capital costs for IRM activities were approximately \$500,000. No additional capital or O&M costs will be incurred under the No Further Action alternative.

Land Use – The reasonably anticipated future use of the Site is for commercial/industrial purposes. Under a No Further Action approach, contaminant concentrations on-site would remain in the upper 1-2 feet of soil/fill above restricted-commercial SCOs; therefore, this alternative is not consistent with the reasonably anticipated future use of the Site.

6.2.2 Alternative 2: Excavation of Impacted Soil/Fill

This alternative would involve excavation and off-site treatment or disposal of impacted soil/fill to meet either the unrestricted or commercial reuse scenario. Because the extent of impact and associated soil/fill excavation and backfill volumes are assumed to be the same under either approach (see Section 4.0), this alternative is screened in the context of meeting the unrestricted use scenario, obviating the need for engineering and institutional controls. This alternative would therefore necessitate excavation of all soil/fill where COPCs exceed unrestricted use SCOs per 6NYCRR Part 375, with transport of the excavated materials to and disposal at a permitted, off-site disposal facility. The estimated total volume of impacted soil/fill remaining above unrestricted use SCOs is approximately 1.3 million cubic yards. Once excavated and disposed off-site, the same volume of clean soil would be

necessary to backfill the excavation, followed by seeding to mitigate erosion. For purposes of cost estimating, the excavated materials are assumed to be non-hazardous and would be transported to a permitted solid waste landfill for disposal.

Overall Protection of Human Health and the Environment – Excavation and off-site disposal to unrestricted use SCOs would be protective of human health under the reasonably anticipated future use scenario. However, because this alternative would require removal of 1.3 million cubic yards of clean soil from an off-site borrow source(s), it would contribute to several detrimental environmental and ecological issues. These would include stripping of large areas of vegetation from offsite borrow source areas, resulting in loss of greenhouse gas consuming plant life and cover for habitat and foraging, as well as permanent use and displacement of 1.3 million cubic yards of valuable landfill airspace, potentially causing ancillary environmental issues due to reduced disposal capacity. Several additional short-term health and environmental impacts would be encountered as discussed below.

Compliance with SCGs – Excavation and off-site disposal would need to be performed in accordance with applicable, relevant, and appropriate SCGs. Soil excavation and backfilling activities would necessitate preparation of and adherence to a community air monitoring plan for particulates in accordance with NYSDEC TAGM 4031. Borrow source mining would require a permit and storm water pollution prevention plan (SWPPP) for all disturbed areas greater than 1 acre in size. Vegetative cover stripping and excavation work on the Site would be performed under the BCP and would therefore require an equivalent SWPPP to address onsite impacts. Imported soil material would need to meet backfill quality criteria per 6NYCRR Part 375.

Long-Term Effectiveness and Permanence – This alternative would achieve removal of all impacted soil/fill; therefore, no impact would remain on the Site. As such, the excavation alternative would provide long-term effectiveness and permanence. Post-remedial monitoring and certifications would not be required.

Reduction of Toxicity, Mobility, or Volume – Through removal of all impacted soil/fill, this alternative would permanently and significantly reduce the toxicity, mobility, and volume of contamination on the Site. However, since this alternative transfers site soil/fill from one environment to another, an overall reduction of toxicity, mobility, and volume would not occur beyond the quantity treated during the IRM.

Short-Term Effectiveness and Impacts – The short-term adverse impacts and risks to the community, workers, and environment during implementation of this alternative are significant. Site workers would be required to wear PPE during excavation to prevent direct contact with soil/fill. Substantial community air monitoring, dust control, and soil erosion measures would be required to limit the release of particulates during soil/fill excavation and placement of backfill soils. Physical hazards, primarily attributable to potential accidents from heavy truck traffic on NY State Route 5, would be expected. Substantial disruption of the neighboring community would occur due to material transport and deliveries and noise from heavy equipment used to construct the remedy, which would require over 90,000 truck loads for the removal work and an additional 90,000 truck loads for the borrow material imported to the site. Assuming approximately 20 miles roundtrip per truckload and an average diesel truck and trailer mileage rate of approximately 8 miles per gallon, this would result in the consumption of an estimated 450,000 gallons of diesel fuel and associated emissions for trucking alone, with several tens of thousands of gallons also consumed by the heavy equipment used to excavate and load the contaminated soils, mine and load the borrow source soils, and place the materials at the landfill. The USEPA Office of Transportation and Air Quality estimates generation of approximately 22.2 pounds of CO₂ per gallon of diesel consumed. Accordingly, Alternative 2 would needlessly produce 10 million pounds of greenhouse gas while at the same time stripping hundreds of acres of CO₂ consuming plant life from the borrow area. Erosion and storm water impacts from the excavation work would also be expected, requiring controls at both the borrow source area and the Site. The RAOs would be achieved once the soil/fill was removed from the Site and backfill soils were placed. Because of the significant volume of material that would need to be removed and replaced, it is estimated that the project would take 2-3 years to complete.

Implementability – Significant technical and administrative implementability issues would be encountered under this unrestricted use alternative. These include, but are not limited to: the need for construction, maintenance, and operation of substantial dewatering facilities to handle infiltration water; difficulty in securing the required number of large trucking firms to furnish the numerous dump trailers that will be required to move such a large volume of soil/fill; the need to coordinate and secure disposal contracts with numerous permitted off-site landfills, as no single location would be able to accept the volume of soil/fill generated under this alternative; difficulty locating and permitting local borrow

sources for such a large volume of backfill; traffic coordination for trucks entering and exiting NY State Route 5; and the need to relocate rail lines to allow excavation beneath the existing tracks.

Cost – Capital costs for implementation of this alternative are estimated at over \$128 million. Table 4 presents a breakdown of these capital costs; there are no long-term operation and maintenance costs associated with this alternative.

Land Use – This alternative, although more rigorous than required, would allow for commercial and/or industrial redevelopment.

6.2.3 Alternative 3: No Further Remedial Action with Placement of Soil Cover System Prior to Redevelopment

This alternative would involve no further remedial activities beyond the IRM. However, an engineering control in the form of a 12” soil cover would be installed prior to Certificate of Completion issuance and redevelopment. The cover would then be removed, as necessary, to accommodate build-out during the redevelopment period. Standard institutional and engineering controls would also be implemented under this alternative. Specifically, a Site Management Plan (SMP) incorporating an Excavation Plan, an Operation, Maintenance and Monitoring (OM&M) Plan, and ongoing Engineering and Institutional Control certification requirements would be developed and enforced through an environmental easement, which will restrict use of the Phase I Business Park Area to commercial and industrial applications and preclude groundwater use without treatment.

Overall Protection of Human Health and the Environment –This alternative, coupled with the completed IRM activities which removed source area soil/fill, meets NYSDEC requirements for a Track IV cleanup under the BCP regulations and is therefore protective of human health and the environment at the Site. Accordingly, Alternative 3 would achieve the RAOs. However, placement of a 12” soil cover over the Phase I Business Park area would require immediate clearing of the Site and borrow source(s), resulting in rapid loss of 102-acres of greenhouse gas consuming plant life and cover for habitat and foraging onsite and a likely similar acreage offsite. In addition there would be significant short-term impacts as described below.

Compliance with SCGs – This alternative complies with applicable, relevant and appropriate SCGs. Imported cover material would need to meet backfill quality criteria per 6NYCRR Part 375. Borrow source mining would require a permit and storm water pollution prevention plan (SWPPP) for all disturbed areas greater than 1 acre in size. Vegetative cover stripping and cover placement would be performed under the BCP and would therefore require an equivalent SWPPP to address onsite impacts.

Long-Term Effectiveness and Permanence – Removal of the source area soil/fill via the IRM as well as construction of a cover system prior to redevelopment would prevent direct contact with soil/fill exceeding restricted-commercial SCOs. The efficacy of the cover system will be maintained and monitored via the Site Management Plan. Periodic inspection and maintenance of the cover and possible repair of the soil and vegetative layers would be required to assure long-term cover integrity.

Reduction of Toxicity, Mobility, or Volume – Removal of source area and hot-spot soil/fill as an IRM permanently and significantly reduced the toxicity, mobility, and volume of the grossly contaminated soil/fill that could potentially be contacted or produce localized areas of environmental impact at the Site. Placement of a soil cover over the remaining areas would somewhat reduce the mobility of contaminants from erosion, although the RI concluded that this pathway is not likely significant under the current (undeveloped) scenario. Accordingly the toxicity, mobility and volume of remaining residual contaminants would not be appreciably reduced under this alternative.

Short-Term Effectiveness and Impacts – Similar to Alternative 2, the short-term adverse impacts and risks to the community, workers, and environment during implementation of this approach are significant. Because the site clearing and soil cover placement would occur in a single construction season as opposed to a gradual progression during build out, excess physical hazards (primarily related to potential accidents from soil deliveries and associated increased truck traffic on NY State Route 5) would be expected. Disruption of the neighboring community would occur due to material transport, deliveries, noise, and air emissions from heavy equipment used to strip the site and construct the cover. Community air monitoring, dust control, and soil erosion measures would be required during subgrade preparation and soil cover placement.

Moreover, under this alternative, the Phase I Business Park Area would require over 164,000 cubic yards of imported cover soil, which would be stripped from an offsite borrow source and then transported to the site in approximately 11,700 truck loads and graded/raked using heavy, diesel-fueled grading equipment. This action alone would result in storm water impacts at the borrow source(s) and onsite, diesel fuel consumption on the order of 29,250 gallons (assuming 20 miles round trip, 8 miles per gallon), and related traffic, dust and air emissions. These impacts would be compounded when redevelopment was initiated, as much of the soil cover (est. 80%) would need to be removed and hauled offsite to allow for build out. Thus, an additional 23,400 gallons of diesel fuel may be consumed, resulting in total consumption of approximately 52,650 gallons of diesel fuel. As indicated above, the USEPA's estimated CO₂ generation rate for diesel engines is approximately 22.2 lbs per gallon of diesel consumed. Accordingly, the transportation of soil cover to the site and subsequent removal and offsite transportation would produce over 1.1 million lbs of greenhouse gas while at the same time stripping hundreds of acres of CO₂ consuming trees and shrubs.

Finally, the existing slag fill currently allows for good surface water percolation and drainage. If a soil cover were placed over the Phase I Business Park Area ahead of redevelopment, it would be absent the permanent storm water drainage system and site grading that will be designed and constructed when redevelopment occurs. As a result, ponding, washout and undesirable drainage patterns can be expected, damaging the cover system if soil cover is placed before final grading and storm water collection and conveyance systems are in place.

The RAOs would be achieved upon cover placement.

Implementability – Technical and administrative implementability issues anticipated under this alternative include difficulty locating local borrow sources for such a large volume of cover soil; traffic coordination for trucks entering and exiting NY State Route 5; the need to integrate the cover with rail lines traversing the property; and the need to design and provide for significant erosion and storm water controls to mitigate ponding, washout, and undesirable storm water drainage and runoff patterns. A pre-redevelopment cover system is also certain to be damaged and repaired multiple times by development work and buried infrastructure (sewer, water, gas, electric, telephone, etc), necessitating multiple inspections

by an environmental professional, and documentation/explanation in annual Periodic Review Reports.

Cost – It is estimated that \$5.9 million would be required to construct a 12-inch landscape cover over the entire 102-acres, which includes development of a Site Management Plan and environmental-based redevelopment costs associated with removal of the temporary soil cover system. Annual O&M costs for cover maintenance and annual certifications are estimated to be \$24,500, resulting in an estimated 30-year present worth cost of \$6.3 million. Table 5 presents a breakdown of these costs.

Land Use – This alternative is consistent with the reasonably anticipated future use of the Site for commercial/industrial purposes.

6.2.4 Alternative 4: No Further Remedial Action with Deferred Soil Cover System during Redevelopment

This alternative is similar to Alternative 3 in that it provides for construction of a 12” soil cover over exposed areas of the Site, however the cover would be placed on a sub-parcel basis during the redevelopment stage (i.e., after COC issuance) to coordinate with and exclude the cover that inherently will be provided by building, road, parking areas and landscaping. While this soil cover would not be in place at the time of COC issuance, it would be mandatory under the Site Management Plan and the environmental easement (see Section 7.0) that the cover be constructed prior to occupancy of any built-out subparcel, with the remainder of the undeveloped Business Park Area segregated from the redeveloped subparcel by fencing and appropriate signage to restrict access to uncovered areas. The size of the subparcels would vary according to the build-out plan; however a minimum acreage (e.g., 5 acres) incorporating the proposed redevelopment buildings and structures is envisioned.

Overall Protection of Human Health and the Environment – The IRM achieved removal of source area soil/fill. Based on this work and the fact that the Site is isolated, covered by indigenous vegetation, secured with fencing, and patrolled by security during off hours to discourage trespassing, this alternative is protective of human health and the environment under the current (undeveloped) scenario. This alternative would be protective of human health and the environment under the future use scenario, as it provides for implementation of the 12-inch cover system in areas not otherwise covered by buildings,

roads, etc. as well as segregation of developed subparcels from undeveloped areas of the Site. Therefore, Alternative 4 successfully achieves this RAO for the Site.

Compliance with SCGs – This alternative complies with the applicable, relevant and appropriate SCGs. Imported cover material would need to meet backfill quality criteria per 6NYCRR Part 375. Borrow source mining would require a permit and storm water pollution prevention plan (SWPPP) for all disturbed areas greater than 1 acre in size. Vegetative cover would be placed during the redevelopment period along with building, road and other build-out and as such would be subject to storm water regulations.

Long-Term Effectiveness and Permanence – Construction of a cover system on a subparcel basis prior to occupancy would prevent direct contact with soil/fill exceeding restricted-commercial SCOs. The efficacy of the cover system will be maintained and monitored via the Site Management Plan. Periodic inspection and maintenance of the soil cover as well as the “hardscape” cover provided by asphalt roads, concrete, etc. would be required to assure long-term cover integrity.

Reduction of Toxicity, Mobility, or Volume – Removal of source area and hot-spot soil/fill as an IRM permanently and significantly reduced the toxicity, mobility, and volume of the grossly contaminated soil/fill that could potentially be contacted or produce localized areas of environmental impact at the Site. Placement of a soil cover in conjunction with cover provided by build-out over the remaining areas may somewhat reduce the mobility of contaminants from erosion, although the RI concluded that this pathway is not likely significant under the current (undeveloped) scenario. Accordingly the toxicity, mobility and volume of remaining residual contaminants would not be appreciably reduced under this alternative.

Short-Term Effectiveness and Impacts – Because cover will be placed on a gradual basis as development occurs and will exclude hardscape cover inherently provided by buildings, roads, parking areas, etc. (which are anticipated to represent 80-90% of the site acreage), short-term impacts will be minimized. The net volume of soil cover required under this approach would be approximately 32,900 cubic yards, representing approximately 2,300 truck trips from borrow sources over a multi-year period in lieu of a single construction season, negating traffic concerns along Route 5. As the cover soil placement will coordinate with the build-out, no additional removal work will be required. Community air monitoring,

dust control, and soil erosion measures would only be required during Site development. The RAOs would be achieved upon cover placement.

Implementability – No significant technical or administrative implementability issues are associated with implementation of this alternative.

Cost – It is estimated that \$1.3 million would be required during redevelopment to construct a landscape cover over areas not covered by building, parking, or roads (i.e., assumed to be approximately 20% of the Site), which includes development of a Site Management Plan. Annual OM&M costs for cover maintenance and annual certifications are estimated to be \$24,500, resulting in an estimated 30-year present worth cost of \$1.7 million. Table 6 presents a breakdown of these costs.

Land Use – This alternative is consistent with the reasonably anticipated future use of the Site. Furthermore, this alternative facilitates redevelopment by deferring final soil cover placement until redevelopment, thus avoiding the costs, time delays, and unnecessary disruption of placing, removing, and replacing cover during building, road, and utility construction.

6.3 Comparison of Alternatives

With the exception of Alternative 1, each of the remedial alternatives would be protective of human health under the current and reasonably anticipated future use scenario. However, Alternative 2 - Excavation and Off-site Disposal of Impacted Soil/Fill, would permanently use and displace 1.3 million cubic yards of valuable landfill airspace, potentially causing ancillary environmental issues due to reduced landfill capacity, and would require removal of 1.3 million cubic yards of clean soil from off-site borrow source(s), also potentially contributing to detrimental off-site environmental and ecological issues. Similarly, Alternative 3 – NFA with Placement of Soil Cover Prior to Redevelopment, would require immediate clearing of the Site and removal of approximately 164,000 cubic yards of soil/fill from an offsite source, again contributing to onsite and offsite environmental and ecological issues associated with loss of habitat and greenhouse gas consuming plant life.

Alternative 1 – No Further Action, would not be compliant with SCGs contained in 6NYCRR Part 375 and DER-10; the remaining alternatives comply with or SCGs or would readily comply with SCGs if implemented in concert with required plans, permits, etc.

Alternative 1 also would not provide for satisfactory long-term effectiveness and permanence, whereas Alternative 2 would be effective and permanent upon implementation. Alternatives 3 and 4 would be effective and permanent provided the cover systems are appropriately maintained. None of the alternatives provides for appreciable reduction in toxicity, mobility and volume beyond that achieved by the IRM.

Alternatives 2 and 3 are associated with significant short term impacts and implementability issues associated with the removal and transport of large quantities of soil over a short period of time, which will likely contribute to storm water contamination from erosion and runoff, generate significant truck traffic and disruption of the community, consume large quantities of diesel fuel, and produce millions of pounds of greenhouse gas. Alternative 3 will also face technical implementability issues related to drainage problems and soil cover erosion, and will likely require multiple repairs.

Alternative 1 represents the lowest cost approach, with no additional expenditure of funds beyond those already incurred in completing the IRM. Alternative 4 has the next lowest projected present worth cost at \$1.7 million, followed by Alternative 3 at \$6.3 million and Alternative 2 at \$128 million

With the exception of Alternative 1, each of the alternatives provides a remedy that will allow redevelopment per the reasonably anticipated future use of the Site for commercial/industrial use. Alternative 4 facilitates redevelopment by deferring final soil cover placement until the redevelopment stage, thus avoiding the costs, time delays, and unnecessary disruption of placing, removing, and replacing cover during building, road, and utility construction.

6.4 Proposed Remedy

Alternative 4 - No further action beyond the IRM, with deferred cover placement during redevelopment is the proposed remedial approach for the Site. Alternative 4 was selected because it satisfies the RAOs for the Site, is significantly less disruptive to the community and has fewer detrimental short term impacts and implementability concerns than Alternatives 2 and 3, and is consistent with current and future land use.

The following are components of the selected remedy:

1. Development and implementation of a Site Management Plan for long term management of remaining contamination. The Site Management Plan will specify cover placement requirements on a sub-parcel basis, including cover soil

quality, DEC notifications, and segregation of developed sub-parcels from undeveloped sub-parcels, and will include plans for: institutional and engineering controls certification, proper excavation during redevelopment, and site monitoring and reporting.

2. Execution and recording of an Environmental Easement to restrict land use and prevent future exposure to any contamination remaining at the Site.
3. Placement of a soil cover system, consisting of 12 inches of clean soil, on a sub-parcel basis during redevelopment. The soil cover will be placed over areas not covered by asphalt pavement, concrete-covered sidewalks, and concrete building slabs. Fencing and signage will be employed to segregate developed sub-parcels from undeveloped sub-parcels.
4. Periodic certification of the institutional and engineering controls listed above.

The 30-year present worth cost for implementation of Alternative 4 is estimated to be \$1.7 million with a projected \$1.3 million for capital expenditures and \$24,500 for annual cover system maintenance, monitoring, and reporting

7.0 POST-REMEDIAL REQUIREMENTS

7.1 Final Engineering Report

A Final Engineering Report (FER) documenting the IRM will be submitted to the NYSDEC under separate cover. The FER will include the following information and documentation, consistent with the NYSDEC regulations contained in 6 NYCRR Part 375-1.6(c):

- Background and Site description.
- Summary of the Site remedy that satisfied the remedial action objectives for the Site.
- Certification by a professional engineer to satisfy the requirements outlined in 6 NYCRR Part 375-1.6(c)(4).
- Description of engineering and institutional controls at the Site.
- Site map showing the areas remediated.
- Documentation of imported materials.
- Documentation of materials disposed off-site.
- Copies of daily inspection reports and, if applicable, problem identification and corrective measure reports.
- Air monitoring data and reports.
- Photo documentation of remedial activities.
- Text describing the remedial activities performed; a description of any deviations from the Work Plan and associated corrective measures taken; and other pertinent information necessary to document that the site activities were carried out in accordance with this Work Plan.
- Analytical data packages and data usability summary reports (DUSRs).

7.2 Site Management Plan

A Site Management Plan (SMP) will be prepared and submitted concurrent with the FER. The purpose of the Site Management Plan is to assure that proper procedures are in place to provide for long-term protection of human health and the environment after remedial construction is complete. The SMP is comprised of four main components:

- Engineering and Institutional Control Plan

- Site Monitoring Plan
- Operation and Maintenance Plan
- Inspections, Reporting, and Certifications

7.2.1 Engineering and Institutional Control Plan

An institutional control in the form of a new Environmental Easement will be necessary to limit future use of the Site to restricted (commercial or industrial) applications and prevent groundwater use for potable purposes. An existing deed restriction is on file for the Tecumseh Site limiting reuse to “industrial” applications. However, industrial uses are loosely defined and allow incidental commercial-type facilities such as offices and laboratories, provided that they do not provide for occupancy by multiple numbers of persons under the age of 18. The deed restriction also prohibits construction or use of groundwater extraction wells (excluding monitoring and remediation wells).

Benchmark will prepare an Engineering and Institutional Control (EC/IC) Plan that will include a complete description of all institutional and/or engineering controls employed at the Site, including the mechanisms that will be used to continually implement, maintain, monitor, and enforce such controls. The EC/IC Plan will include:

- A description of all EC/ICs on the site.
- The basic implementation and intended role of each EC/IC.
- A description of the key components of the ICs set forth in the Environmental Easement.
- A description of the features to be evaluated during each required inspection and periodic review, including the EC/IC certification, reporting, and Site monitoring.
- A description of plans and procedures to be followed for construction of the 12-inch soil cover as a condition of occupancy.
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the Site remedy, as determined by the NYSDEC.

7.2.2 Site Monitoring Plan

The Site Monitoring Plan will describe the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the Site, including:

- Sampling and analysis of all appropriate media (e.g., groundwater).

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

To adequately address these issues, this Site Monitoring Plan will provide information on:

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

Semi-annual groundwater monitoring to assess overall reduction in contamination on-site and off-site will be conducted for the first two years. The frequency thereafter will be discussed with the NYSDEC. Trends in contaminant levels in groundwater in the affected areas, will be evaluated to determine if the remedy continues to be effective in achieving remedial goals.

7.2.3 Operation and Maintenance Plan

An Operation & Maintenance (O&M) plan governing maintenance of the cover system will include:

- Include the operation and maintenance activities necessary to allow individuals unfamiliar with the Site to maintain the soil cover system.
- Include an O&M contingency plan.
- Evaluate Site information periodically to confirm that the remedy continues to be effective for the protection of public health and the environment. If necessary,

the O&M Plan will be updated to reflect changes in Site conditions or the manner in which the cover system is maintained.

7.2.4 Inspections, Reporting, and Certifications

7.2.4.1 Inspections

Site-wide inspection will be conducted annually or as otherwise approved by the NYSDEC. All applicable inspection forms and other records, including all media sampling data and system maintenance reports, generated for the Site during the reporting period will be provided in electronic format in a Periodic Review Report.

7.2.4.2 Reporting

The Periodic Review Report will be submitted to the NYSDEC annually or as otherwise approved, beginning 18 months after the Certificate of Completion or equivalent document is issued. The report will be prepared in accordance with NYSDEC DER-10 and submitted within 45 days of the end of each certification period. The Periodic Review Report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the Site.
- Results of the required annual Site inspections and severe condition inspections, if applicable.
- All applicable inspection forms and other records generated for the Site during the reporting period in electronic format.
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions.
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends.
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format.
- A Site evaluation that includes the following:

- The compliance of the remedy with the requirements of the site-specific RAWP, ROD, or Decision Document.
- The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications.
- Any new conclusions or observations regarding site contamination based on inspections or data generated by the Site Monitoring Plan for the media being monitored.
- Recommendations regarding any necessary changes to the remedy and/or Site Monitoring Plan.
- The overall performance and effectiveness of the remedy.

7.2.4.3 Certification

The signed EC/IC Certification will be included in the Periodic Review Report described in Section 4.2.4.2: For each institutional or engineering control identified for the Site, a Professional Engineer licensed to practice in New York State will certify that all of the following statements are true:

- The inspection of the Site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction.
- The engineering and institutional controls employed at this Site are unchanged from the date the control was put in place, or last approved by the NYSDEC.
- Nothing has occurred that would impair the ability of the control to protect the public health and environment.
- Nothing has occurred that would constitute a violation or failure to comply with any Site Management Plan for this control.
- Access to the Site will continue to be provided to the NYSDEC to evaluate the remedy, including access to evaluate the continued maintenance of this control.
- If a financial assurance mechanism is required under the oversight document for the Site, the mechanism remains valid and sufficient for the intended purpose under the document.
- Use of the Site is compliant with the Environmental Easement.
- The engineering control systems are performing as designed and are effective.
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the Site remedial program and generally accepted engineering practices.

- The information presented in this report is accurate and complete.

7.2.4.4 Corrective Measures Plan

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

8.0 REFERENCES

1. *RCRA Facility Investigation (RFI) Report for the Former Bethlehem Steel Corporation Facility, Lackawanna, New York, Parts I through VII*, prepared for Bethlehem Steel Corporation by URS Consultants, Inc., October 2004.
2. *Phase I Environmental Site Assessment for Parcel B*, prepared for Bethlehem Steel Corporation by URS Consultants, Inc., March 2001.
3. *Remedial Investigation Work Plan for Phase I Business Park Area*, prepared for Tecumseh Redevelopment, Inc. by TurnKey Environmental Restoration, LLC, May 2005 (revised August 2005).
4. New York State Department of Environmental Conservation. *DER-10; Technical Guidance for Site Investigation and Remediation*. December 2006, Revised June 2010.
5. *Remedial Investigation Report for Phase I Business Park*, prepared for Tecumseh Redevelopment, Inc. by TurnKey Environmental Restoration, LLC, October 2006 (revised June 2007).
6. *Correspondence to Mr. Maurice Moore of the NYSDEC re: Phase I Business Park Area, Supplemental Remedial Investigation*. TurnKey Environmental Restoration, LLC. March 27, 2008
7. *Interim Remedial Measures Work Plan for Phase I Business Park Area*, prepared for ArcelorMittal Tecumseh Redevelopment, Inc. by TurnKey Environmental Restoration, LLC, June 2008 (revised August 2008).

TABLES

**TABLE 1
POTENTIAL CHEMICAL-SPECIFIC ARARs**

**PHASE I BUSINESS PARK SITE
ALTERNATIVES ANALYSIS REPORT**

Standard, Requirement, Criteria or Limitation	Citation or Reference	Description/Comments
Groundwater:		
RCRA Groundwater Protection Standards and Maximum Concentration Limits	40 CFR 264, Subpart F	Establishes criteria for groundwater consumption. Groundwater is/will not be used for potable purposes. Potentially relevant for off-site groundwater quality.
NYSDEC Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations	6NYCRR Parts 701- 703	Establishes groundwater and surface water quality criteria. Applicable to on-site and off-site groundwater quality, and runoff/groundwater migration. Establishes criteria for groundwater consumption.
Ambient Water Quality Standards and Guidance Values	TOGS 1.1.1, October 1993	Establishes groundwater and surface water quality standards and guidance values. Applicable to on-site and off-site groundwater quality
Air:		
New York State Air Quality Classifications and Standards	6NYCRR Parts 256 and 257	Establishes air quality standards protective of public health. Potentially applicable to disruptive activities.
National Primary and Secondary Ambient Air Quality Standards (NAAQS)	40 CFR Part 50	Establishes primary and secondary ambient air quality standards to protect public health and welfare. Potentially applicable to disruptive activities.
New York State DOH Soil Vapor Intrusion Guidance	New York State Department of Health, Oct. 2006	Establishes sub-slab and indoor air thresholds for sites impacted by VOCs. Potentially relevant.
Soil:		
NYSDEC Environmental Remedial Programs	6NYCRR Part 375	Establishes procedures for inactive haz. waste site remedy selection & identifies Soil Cleanup Objectives based on human health, ecological protection, and groundwater protection. Applicable to site soil/fill.
NYSDEC Technical Assistance and Guidance Memorandum 4046	NYSDEC TAGM HWR-94-4046, November 1993	Presents recommended soil cleanup objectives based on protection of health under a residential use condition, background levels, and protection of groundwater. Potentially relevant.
USEPA Preliminary Remediation Goals	EPA Region IX, Oct. 2002, updated per EPA Toxicity Guidance Memo (12/12/04)	Presents residential and non-residential soil cleanup goals based on human health criteria and groundwater protection. Potentially relevant.
USEPA Soil Screening Guidance	Technical Background Document and Users Guide, May 1996 revisions	Presents a framework for developing risk-based, soil screening levels for protection of human health. Provides a tiered approach to site evaluation and screening level development for Superfund sites. Potentially relevant.
Other:		
USEPA Integrated Risk Information System (IRIS)	www.epa.gov/iris	Database of human health effects that may result from exposure to various substances found in the environment.

**TABLE 2
POTENTIAL LOCATION-SPECIFIC ARARs**

**PHASE I BUSINESS PARK SITE
ALTERNATIVES ANALYSIS REPORT**

Standard, Requirement, Criteria or Limitation	Citation or Reference	Description/Comments
Other:		
National Historic Preservation Act	16 CFR Part 470	Requires avoiding impacts on cultural resources having historical significance. Potentially applicable to remedial alternatives involving soil/fill disruption.
NYSDEC Environmental Remedial Programs	6NYCRR Part 375	Requires consideration of future land use in remedy selection and soil cleanup criteria. Applicable to site soil/fill.

**TABLE 3
POTENTIAL ACTION-SPECIFIC ARARs**

**PHASE I BUSINESS PARK SITE
ALTERNATIVES ANALYSIS REPORT**

Standard, Requirement, Criteria or Limitation	Citation or Reference	Description/Comments
Groundwater:		
Clean Water Act, National Pretreatment Standards	40 CFR 403.5	General pretreatment regulations for discharge to POTWs – potentially applicable for soil excavation alternatives involving temporary discharges of storm water or perched groundwater to sanitary sewer.
Air:		
NYSDEC Guidance for Fugitive Dust Suppression and Particulate Monitoring at Inactive Hazardous Waste Sites.	NYSDEC TAGM 4031	Establishes guidance for community air monitoring and controls to monitor and mitigate fugitive dusts during intrusive activities at NY State inactive hazardous waste sites – applicable to disruptive activities.
OSHA General Industry Air Contaminants Standard	29 CFR 1910.1000	Establishes Permissible Exposure Limits for workers exposed to airborne contaminants. Applicable to disruptive activities.
Solid, Hazardous, and Non-Hazardous Waste:		
NYSDEC Inactive Hazardous Waste Disposal Sites	6NYCRR Part 375	Establishes procedures for inactive hazardous waste disposal site identification, classification, and investigation activities, as well as remedy selection and interim remedial actions. To be considered.
NY State Solid Waste Transfer Permits	6NYCRR Part 364	Establishes procedures to protect the environment from mishandling and mismanagement of all regulated waste transported from a site of generation to the site of ultimate treatment, storage, or disposal. Potentially applicable for alternatives involving off-site disposal.
DOT Rules for Hazardous Materials Transport	(49 CFR 107, 171.1 - 171.5).	Establishes requirements for shipping of hazardous materials. Potentially applicable for alternatives involving off-site disposal
Occupational Safety and Health Act (29 USC 651 <i>et seq.</i>)	29 CFR Part 1910 and 1926	Describes procedures for maintaining worker safety. Applicable to site construction activities.
NYSDEC Land Disposal Restrictions	6NYCRR Part 376	Identifies hazardous wastes that are restricted from land disposal and defines those limited circumstances under which an otherwise prohibited waste may be land disposed. Applicable to soil/fill disposal alternatives



TABLE 4

ALTERNATIVE 2: EXCAVATION OF IMPACTED SOIL/FILL TO UNRESTRICTED SCOs

**Alternative Analysis Report (AAR)
Phase I Business Park Area
ArcelorMittal Tecumseh Redevelopment, Inc.**

Item	Quantity	Units	Unit Cost	Total Cost
<u>Impacted Slag/Fill Removal</u>				
Clearing & Grubbing	102	Acres	\$ 4,000	\$ 408,000
Soil/Fill Excavation & Dewatering (to 8 fbgs)	1316480	CY	\$ 10	\$ 13,164,800
Transportation and Disposal at TSDF	2236146	TON	\$ 35	\$ 78,265,110
Rail Relocation	1	LS	\$ 4,000,000	\$ 4,000,000
Verification Sampling	1	LS	\$ 50,000	\$ 50,000
Subtotal:				\$ 95,887,910
<u>Site Restoration</u>				
Part 375 ¹ Compliant Backfill, Place & Compact	1234200	CY	\$ 15	\$ 18,513,000
6" Topsoil	82280	CY	\$ 20	\$ 1,645,600
Seeding	102	Acres	\$ 2,500	\$ 255,000
Subtotal:				\$ 20,413,600
Subtotal Capital Cost				\$ 116,301,510
Contractor Mobilization/Demobilization				\$ 100,000
Health and Safety/Air Monitoring				\$ 150,000
Engineering/Contingency				\$ 11,630,151
Total Capital Cost				\$ 128,181,660
Total Present Worth (PW): Capital Cost + OM&M PW				\$ 128,181,660



TABLE 5

**ALTERNATIVE 3: PLACEMENT OF A SOIL COVER SYSTEM
PRIOR TO REDEVELOPMENT**

**Alternative Analysis Report (AAR)
Phase I Business Park Area
ArcelorMittal Tecumseh Redevelopment, Inc.**

Item	Quantity	Units	Unit Cost	Total Cost
<u>Institutional Controls</u>				
Develop Site Management Plan	1	LS	\$ 12,000	\$ 12,000
Subtotal:				\$ 12,000
<u>Soil Cover System</u>				
Clearing & Grubbing	102	Acres	\$ 4,000	\$ 408,000
6" Part 375 ¹ Compliant Cover, Place & Compact	82280	CY	\$ 15	\$ 1,234,200
6" Topsoil	82280	CY	\$ 20	\$ 1,645,600
Seeding	102	Acres	\$ 2,500	\$ 255,000
Subtotal:				\$ 3,542,800
<u>Subtotal Remedial Cost</u>				\$ 3,554,800
Contractor Mobilization/Demobilization (5%)				\$ 177,740
Health and Safety (2%)				\$ 71,096
Engineering/Contingency				\$ 150,000
Total Capital Remediation Cost				\$ 3,953,636
<u>Environmental-Based Redevelopment Costs</u>				
Clear/Remove & Transport Existing Cover Soil	131648	CY	\$ 5	\$ 658,240
Offsite Transportation and Staging Offsite	131648	CY	\$ 10	\$ 1,316,480
Air Monitoring during Intrusive Work	1	LS	\$ 15,000	\$ 15,000
Subtotal:				\$ 1,989,720
TOTAL CAPITAL COSTS				\$ 5,943,356
<u>Annual Operation Maintenance & Monitoring (OM&M):</u>				
Site Maintenance and Mowing	2	Yr	\$ 7,500	\$ 15,000
Groundwater Sampling / Reporting	2	Yr	\$ 3,500	\$ 7,000
Annual Certification	1	Yr	\$ 2,500	\$ 2,500
Total Annual OM&M Cost				\$ 24,500
Number of Years (n):				30
Interest Rate (i):				5%
p/A value:				15.3725
OM&M Present Worth (PW):				\$ 376,626
Total Present Worth (PW): Capital Cost + OM&M PW				\$ 6,319,982

Notes:

1. Per 6NYCRR 375-6.7(d)(ii)(b)



TABLE 6

**ALTERNATIVE 4: DEFERRED SOIL COVER SYSTEM
DURING REDEVELOPMENT**

**Alternative Analysis Report (AAR)
Phase I Business Park Area
ArcelorMittal Tecumseh Redevelopment, Inc.**

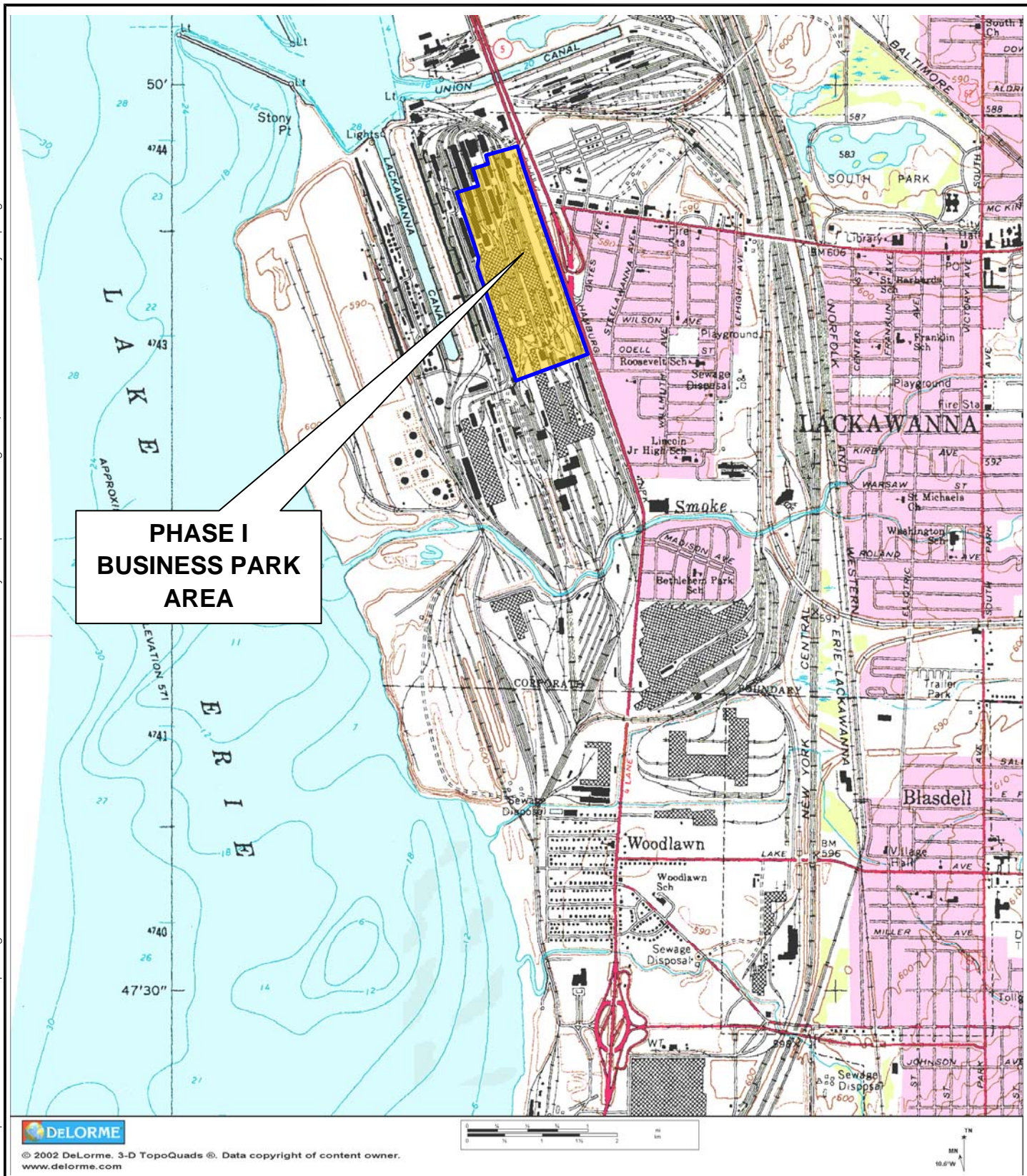
Item	Quantity	Units	Unit Cost	Total Cost
<u>Institutional Controls</u>				
Develop Site Management Plan	1	LS	\$ 12,000	\$ 12,000
Subtotal:				\$ 12,000
<u>Soil Cover System¹</u>				
Clearing & Grubbing	102	Acres	\$ 4,000	\$ 408,000
6" Part 375 ² Compliant Cover, Place & Compact	16456	CY	\$ 15	\$ 246,840
6" Topsoil	16456	CY	\$ 20	\$ 329,120
Seeding	20	Acres	\$ 2,500	\$ 51,000
Subtotal:				\$ 1,034,960
<u>Subtotal Remedial Cost</u>				
Contractor Mobilization/Demobilization (5%)				\$ 52,348
Health and Safety (2%)				\$ 20,939
Engineering/Contingency				\$ 150,000
Total Capital Remediation Cost				\$ 1,270,247
<u>Environmental-Based Redevelopment Costs</u>				
Air Monitoring during Intrusive Work	1	LS	\$ 15,000	\$ 15,000
Subtotal:				\$ 15,000
TOTAL CAPITAL COSTS				\$ 1,285,247
<u>Annual Operation Maintenance & Monitoring (OM&M):</u>				
Site Maintenance and Mowing	2	Yr	\$ 7,500	\$ 15,000
Groundwater Sampling / Reporting	2	Yr	\$ 3,500	\$ 7,000
Annual Certification	1	Yr	\$ 2,500	\$ 2,500
Total Annual OM&M Cost				\$ 24,500
Number of Years (n):				30
Interest Rate (i):				5%
p/A value:				15.3725
OM&M Present Worth (PW):				\$ 376,626
Total Present Worth (PW): Capital Cost + OM&M PW				\$ 1,661,873

Notes:

1. Assumed to cover 20% of the Site.
2. Per 6NYCRR 375-6.7(d)(ii)(b)

FIGURES

FIGURE 1



2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NEW YORK 14218
(716) 856-0599

SITE LOCATION AND VICINITY MAP
ALTERNATIVES ANALYSIS REPORT

PHASE I BUSINESS PARK AREA
LACKAWANNA, NEW YORK

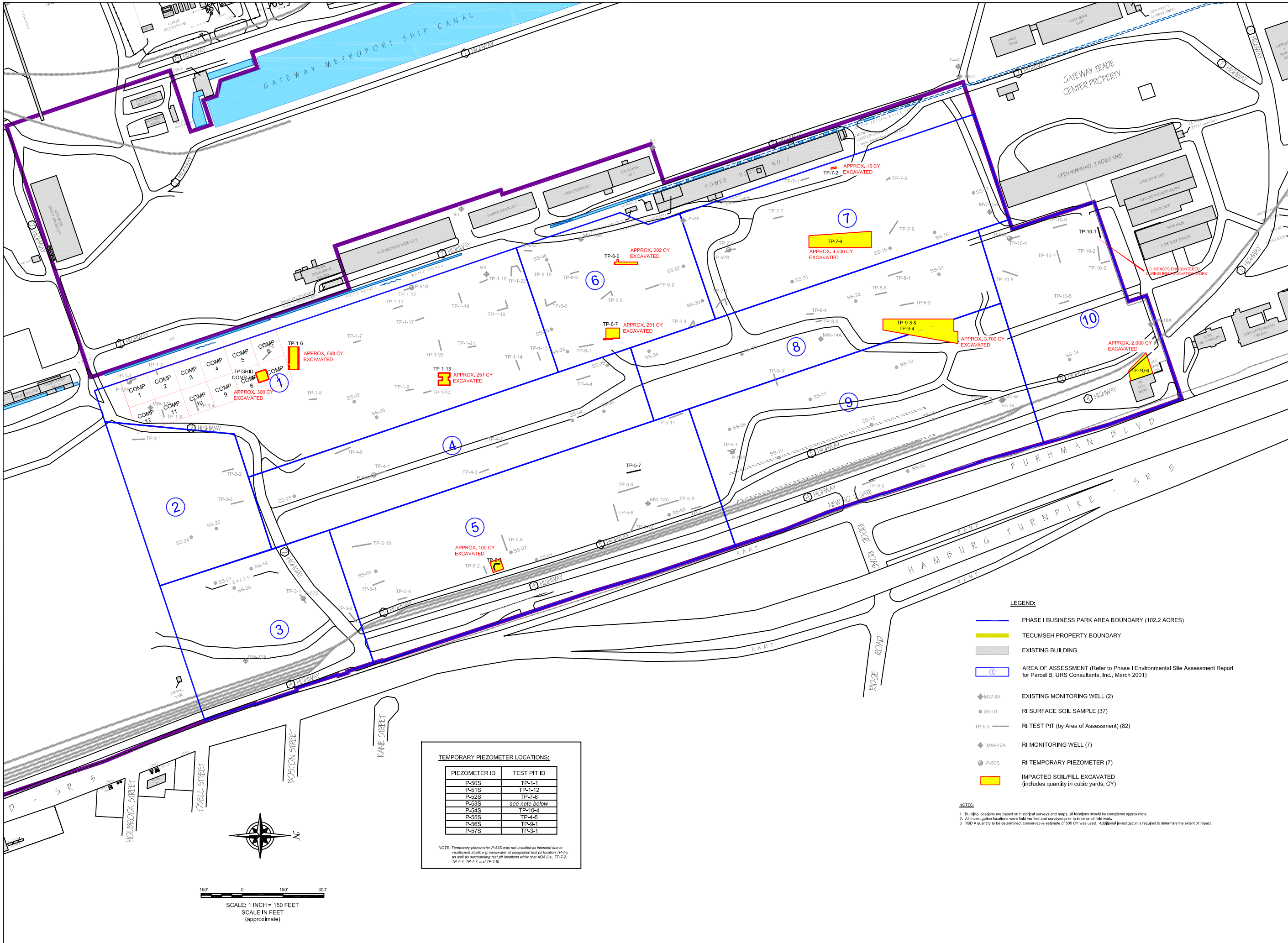
PREPARED FOR
TECUMSEH REDEVELOPMENT, INC.

PROJECT NO.: 0071-006-202

DATE: MAY 2010

DRAFTED BY: BCH

FILEPATH:\CAD\TurnKey\Tecumseh Redevelopment\Brownfield Cleanup Program (BCP)\Phase I Business Park Area\Alternatives Analysis Report (AAR)\Figure 1, site location and vicinity map.dwg



TEMPORARY PIEZOMETER LOCATIONS:

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

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

- LEGEND:**
- PHASE I BUSINESS PARK AREA BOUNDARY (102.2 ACRES)
 - TECUMSEH PROPERTY BOUNDARY
 - EXISTING BUILDING
 - ① AREA OF ASSESSMENT (Refer to Phase I Environmental Site Assessment Report for Parcel B, URS Consultants, Inc., March 2001)
 - MW-5A EXISTING MONITORING WELL (2)
 - SS-01 RI SURFACE SOIL SAMPLE (37)
 - TP-5-3 RI TEST PIT (by Area of Assessment) (82)
 - MW-12A RI MONITORING WELL (7)
 - P-50S RI TEMPORARY PIEZOMETER (7)
 - IMPACTED SOIL/FILL EXCAVATED (includes quantity in cubic yards, CY)

- NOTES:**
- Building locations are based on historical surveys and maps, all locations should be considered approximate.
 - All investigation locations were field verified and surveyed prior to initiation of field work.
 - TSD = quantity to be determined; conservative estimate of 500 CY was used. Additional investigation is required to determine the extent of impact.

REVISIONS

NO.	BY	DATE	REMARKS

SEAL

DRAWN BY: BCH/NTM
 DATE: MAY 2010
 CHECKED BY: THF
 APPROVED BY:

PREPARED FOR:
 PHASE I BUSINESS PARK AREA
 LACKAWANNA, NEW YORK
 TECUMSEH REDEVELOPMENT, INC.

EXTENT OF REMEDIAL
 EXCAVATION PERFORMED AS IRM

FIGURE 3

APPENDIX A

REMEDIAL INVESTIGATION DATA SUMMARIES



TABLE 1A

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 1

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type							Unrestricted SCO (mg/kg)
	TP-1-(1-5)	TP-1-(1-5)	TP-1-(6-10)	TP-1-(67810)	TP-1-9	TP-1-(11-12)	TP-1-(11-12)	
	0.0 - 2.0	2.0 - 5.0	0.0 - 2.0	2.0 - 5.0	1.0 - 4.8	0.0 - 2.0	2.0 - 4.5	
	composite	composite	composite	composite	grab	composite	composite	
STARS Volatile Organic Compounds (VOCs - Method 8021) - mg/kg								
Benzene	--	--	--	--	0.0013	--	--	0.06
Naphthalene	--	--	--	--	0.076 J	--	--	12
Methylene Chloride	--	--	--	--	--	--	--	0.05
TOTAL VOCs (mg/kg)	0	0	0	0	0.0773	0	0	--
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg								
Acenaphthene	0.98 J	0.31 J	0.28 J	ND	0.22 J	0.26 J	0.11 J	20
Acenaphthylene	2.2	1.5 J	1.4 J	0.17 J	0.44 J	2.9	1.9	100
Anthracene	2.9	1.7 J	1.2 J	0.096 J	0.41 J	2.2	1.9	100
Benzo(a)anthracene	7.8	5.5	2.9	0.45 J	1.2 J	8.3	5.6	1
Benzo(b)fluoranthene	16 J	8.4 J	4.5 J	0.73 J	1.9 J	11 J	7.7 J	1
Benzo(k)fluoranthene	5 J	2.3 J	1.8 J	0.25 J	0.61 J	3 J	2.4 J	0.8
Benzo(g,h,i)perylene	6.5	2.7	2.5	0.28 J	0.42 J	3.9	2.7	100
Benzo(a)pyrene	8	5.5	3.1	0.47 J	1.2 J	7.7	4.9	1
Chrysene	8.8	6.1	3.2	0.44 J	1 J	7.5	5.2	1
Dibenzo(a,h)anthracene	1.9	0.8 J	0.55 J	ND	0.2 J	1.1 J	0.79 J	0.33
Dibenzofuran	0.68 J	0.72 J	0.35 J	ND	0.24 J	0.6 J	0.69 J	7
Fluoranthene	19	12	5.9	0.66 J	2.0	17	11	100
Fluorene	1.1 J	0.84 J	0.53 J	ND	ND	1 J	1 J	30
Indeno(1,2,3-cd)pyrene	6.3	2.5	1.8	0.28 J	0.49 J	3.5	2.4	0.5
2-Methylnaphthalene	0.34 J	0.43 J	0.18 J	ND	0.23 J	0.31 J	0.32 J	--
Phenanthrene	12	7.7	4.1	0.3 J	1.4 J	8.2	7.3	100
Pyrene	13	7.7	3.9	0.47 J	1.4 J	11	7.3	100
TOTAL SVOCs (mg/kg)	112.5	66.7	38.19	4.596	13.36	89.47	63.21	--
Polychlorinated Biphenyls (PCBs) - mg/kg								
Aroclor 1248	--	--	--	--	--	--	--	0.1
Aroclor 1254	--	--	--	--	--	--	--	0.1
Aroclor 1260	--	--	--	--	--	--	--	0.1
Inorganic Compounds - mg/kg								
Arsenic, Total	121	34.6	13.1	10.2	12.1	25.4	21.8	13
Cadmium, Total	ND	ND	ND	ND	ND	ND	ND	2.5
Chromium, Total	123 J	40.3 J	70.1 J	79.9 J	13.2 J	152 J	128 J	30
Lead, Total	257 J	126 J	210 J	108 J	59.2 J	240 J	176 J	63
Mercury, Total	12	0.206	0.075	0.051	0.041	0.131	0.082	0.18
Cyanide, Total	123	14.2	ND	9.2	ND	1.6	ND	27

Notes:

- Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
- Soil/fill sample TP-1-22 (2.0 - 6.5) was analyzed for TCL VOCs plus STARS, all other samples were analyzed for STARS VOCs, only.
- Soil/fill sample TP-1-22 (2.0 - 6.5) was analyzed for TCL SVOCs (BNAs), all other samples were analyzed for BN SVOCs, only.
- J = Estimated value; result is less than the sample quantitation limit but greater than zero.
- ND = parameter not detected above laboratory detection limit.
- SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006.
- = not analyzed for this parameter or no individual SCO
- ** = Field scan was not obtained due to inclement weather conditions.
- * RED TEXT * = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound	= TCL VOC
compound	= Polycyclic Aromatic Hydrocarbon (PAH)
BOLD	= Value exceeds Unrestricted SCO.



TABLE 1A (continued)

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 1

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type							Unrestricted SCO (mg/kg)
	TP-1-(13-17)	TP-1-(13-17)	TP-1-18	TP-1-19	TP-1-22 ^{2,3}	SS-06	SS-22	
	0.0 - 2.0	2.0 - 5.0	2.0 - 5.0	2.0 - 7.0	2.0 - 6.5	0.0 - 1.0	0.0 - 1.0	
	composite	composite	grab	grab	grab	grab	grab	
STARS Volatile Organic Compounds (VOCs - Method 8021) - mg/kg								
Benzene	--	--	--	--	ND	--	--	0.06
Naphthalene	--	--	--	--	ND	--	--	12
Methylene Chloride	--	--	--	--	0.012	--	--	0.05
TOTAL VOCs (mg/kg)	0	0	0	0	0.012	0	0	--
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg								
Acenaphthene	0.2 J	ND	ND	0.89 J	ND	--	--	20
Acenaphthylene	0.55 J	1.1 J	0.41 J	5.2	1.6 J	--	--	100
Anthracene	0.8 J	0.66 J	0.44 J	5.3	0.89 J	--	--	100
Benzo(a)anthracene	2.4	2.2	1.6 J	16	5.9 J	--	--	1
Benzo(b)fluoranthene	3.3 J	3.2 J	2.1 J	21 J	7.1 J	--	--	1
Benzo(k)fluoranthene	1.3 J	1.1 J	0.65 J	7 J	2.4 J	--	--	0.8
Benzo(g,h,i)perylene	1.4 J	1.4 J	0.85 J	6	3.9 J	--	--	100
Benzo(a)pyrene	2.5	2.3	1.6 J	14	5.3 J	--	--	1
Chrysene	2.3	2.2	1.4 J	15	5.7 J	--	--	1
Dibenzo(a,h)anthracene	0.39 J	0.38 J	0.25 J	2.1	1.3 J	--	--	0.33
Dibenzofuran	0.21 J	ND	0.1 J	1.2 J	ND	--	--	7
Fluoranthene	4.8	3.8	2.3	36 J	9.4	--	--	100
Fluorene	0.27 J	0.2 J	ND	1.7 J	ND	--	--	30
Indeno(1,2,3-cd)pyrene	1.2 J	1.1 J	0.76 J	6.1	3.7 J	--	--	0.5
2-Methylnaphthalene	0.21 J	ND	ND	0.3 J	ND	--	--	--
Phenanthrene	2.9	1.5 J	1.4 J	24	2.7 J	--	--	100
Pyrene	3.5	2.7	1.8 J	23	9.8	--	--	100
TOTAL SVOCs (mg/kg)	28.23	23.84	15.66	184.8	59.69	0	0	--
Polychlorinated Biphenyls (PCBs) - mg/kg								
Aroclor 1248	--	--	--	--	--	ND	0.067	0.1
Aroclor 1254	--	--	--	--	--	0.47	ND	0.1
Aroclor 1260	--	--	--	--	--	ND	0.19	0.1
Inorganic Compounds - mg/kg								
Arsenic, Total	21.2	15.7	--	--	--	--	--	13
Cadmium, Total	1.7 J	ND	--	--	--	--	--	2.5
Chromium, Total	104 J	46.8 J	--	--	--	--	--	30
Lead, Total	437 J	231 J	--	--	--	--	--	63
Mercury, Total	0.146	0.112	--	--	--	--	--	0.18
Cyanide, Total	1.3	1.2	--	--	--	--	--	27

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detected.
2. Soil/fill sample TP-1-22 (2.0 - 6.5) was analyzed for TCL VOCs plus STARS, all other samples were analyzed for STARS VOCs, only.
3. Soil/fill sample TP-1-22 (2.0 - 6.5) was analyzed for TCL SVOCs (BNAs), all other samples were analyzed for BN SVOCs, only.
4. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
5. ND = parameter not detected above laboratory detection limit.
6. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006.
7. "--" = not analyzed for this parameter or no individual SCO
8. "*" = Field scan was not obtained due to inclement weather conditions.
9. "RED TEXT" = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound	= TCL VOC
compound	= Polycyclic Aromatic Hydrocarbon (PAH)
BOLD	= Value exceeds Unrestricted SCO.



TABLE 1B

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 1

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type							Restricted-Commercial SCO (mg/kg)
	TP-1-(1-5)	TP-1-(1-5)	TP-1-(6-10)	TP-1-(67810)	TP-1-9	TP-1-(11-12)	TP-1-(11-12)	
	0.0 - 2.0 composite	2.0 - 5.0 composite	0.0 - 2.0 composite	2.0 - 5.0 composite	1.0 - 4.8 grab	0.0 - 2.0 composite	2.0 - 4.5 composite	
STARS Volatile Organic Compounds (VOCs - Method 8021) - mg/kg								
Benzene	--	--	--	--	0.0013	--	--	44
Naphthalene	--	--	--	--	0.076 J	--	--	500
Methylene Chloride	--	--	--	--	--	--	--	500
TOTAL VOCs (mg/kg)	0	0	0	0	0.0773	0	0	--
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg								
Acenaphthene	0.98 J	0.31 J	0.28 J	ND	0.22 J	0.26 J	0.11 J	500
Acenaphthylene	2.2	1.5 J	1.4 J	0.17 J	0.44 J	2.9	1.9	500
Anthracene	2.9	1.7 J	1.2 J	0.096 J	0.41 J	2.2	1.9	500
Benzo(a)anthracene	7.8	5.5	2.9	0.45 J	1.2 J	8.3	5.6	5.6
Benzo(b)fluoranthene	16 J	8.4 J	4.5 J	0.73 J	1.9 J	11 J	7.7 J	5.6
Benzo(k)fluoranthene	5 J	2.3 J	1.8 J	0.25 J	0.61 J	3 J	2.4 J	56
Benzo(g,h,i)perylene	6.5	2.7	2.5	0.28 J	0.42 J	3.9	2.7	500
Benzo(a)pyrene	8	5.5	3.1	0.47 J	1.2 J	7.7	4.9	1
Chrysene	8.8	6.1	3.2	0.44 J	1 J	7.5	5.2	56
Dibenzo(a,h)anthracene	1.9	0.8 J	0.55 J	ND	0.2 J	1.1 J	0.79 J	0.56
Dibenzofuran	0.68 J	0.72 J	0.35 J	ND	0.24 J	0.6 J	0.69 J	350
Fluoranthene	19	12	5.9	0.66 J	2.0	17	11	500
Fluorene	1.1 J	0.84 J	0.53 J	ND	ND	1 J	1 J	500
Indeno(1,2,3-cd)pyrene	6.3	2.5	1.8	0.28 J	0.49 J	3.5	2.4	5.6
2-Methylnaphthalene	0.34 J	0.43 J	0.18 J	ND	0.23 J	0.31 J	0.32 J	--
Phenanthrene	12	7.7	4.1	0.3 J	1.4 J	8.2	7.3	500
Pyrene	13	7.7	3.9	0.47 J	1.4 J	11	7.3	500
TOTAL SVOCs (mg/kg)	112.5	66.7	38.19	4.596	13.36	69.47	63.21	--
Polychlorinated Biphenyls (PCBs) - mg/kg								
Aroclor 1248	--	--	--	--	--	--	--	1
Aroclor 1254	--	--	--	--	--	--	--	1
Aroclor 1260	--	--	--	--	--	--	--	1
Inorganic Compounds - mg/kg								
Arsenic, Total	121	34.6	13.1	10.2	12.1	25.4	21.8	16
Cadmium, Total	ND	ND	ND	ND	ND	ND	ND	9.3
Chromium, Total	123 J	40.3 J	70.1 J	79.9 J	13.2 J	152 J	128 J	1,500
Lead, Total	257 J	126 J	210 J	108 J	59.2 J	240 J	176 J	1,000
Mercury, Total	12	0.206	0.075	0.051	0.041	0.131	0.082	2.8
Cyanide, Total	123	14.2	ND	9.2	ND	1.6	ND	27

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Soil/fill sample TP-1-22 (2.0 - 6.5) was analyzed for TCL VOCs plus STARS, all other samples were analyzed for STARS VOCs, only.
3. Soil/fill sample TP-1-22 (2.0 - 6.5) was analyzed for TCL SVOCs (BNAs), all other samples were analyzed for BN SVOCs, only.
4. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
5. ND = parameter not detected above laboratory detection limit.
6. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006.
7. "--" = not analyzed for this parameter or no individual SCO
8. "***" = Field scan was not obtained due to inclement weather conditions.
9. "RED TEXT" = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound	= TCL VOC
compound	= Polycyclic Aromatic Hydrocarbon (PAH)
BOLD	= Value exceeds Restricted-Commercial SCO.



TABLE 1B (continued)

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 1

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type							Restricted-Commercial SCO (mg/kg)
	TP-1-(13-17)	TP-1-(13-17)	TP-1-18	TP-1-19	TP-1-22 ^{2,3}	SS-06	SS-22	
	0.0 - 2.0 composite	2.0 - 5.0 composite	2.0 - 5.0 grab	2.0 - 7.0 grab	2.0 - 6.5 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	
STARS Volatile Organic Compounds (VOCs - Method 8021) - mg/kg								
Benzene	--	--	--	--	ND	--	--	44
Naphthalene	--	--	--	--	ND	--	--	500
Methylene Chloride	--	--	--	--	0.012	--	--	500
TOTAL VOCs (mg/kg)	0	0	0	0	0.012	0	0	--
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg								
Acenaphthene	0.2 J	ND	ND	0.89 J	ND	--	--	500
Acenaphthylene	0.55 J	1.1 J	0.41 J	5.2	1.6 J	--	--	500
Anthracene	0.8 J	0.66 J	0.44 J	5.3	0.89 J	--	--	500
Benzo(a)anthracene	2.4	2.2	1.6 J	16	5.9 J	--	--	5.6
Benzo(b)fluoranthene	3.3 J	3.2 J	2.1 J	21 J	7.1 J	--	--	5.6
Benzo(k)fluoranthene	1.3 J	1.1 J	0.65 J	7 J	2.4 J	--	--	56
Benzo(g,h,i)perylene	1.4 J	1.4 J	0.85 J	6	3.9 J	--	--	500
Benzo(a)pyrene	2.5	2.3	1.6 J	14	5.3 J	--	--	1
Chrysene	2.3	2.2	1.4 J	15	5.7 J	--	--	56
Dibenzo(a,h)anthracene	0.39 J	0.38 J	0.25 J	2.1	1.3 J	--	--	0.56
Dibenzofuran	0.21 J	ND	0.1 J	1.2 J	ND	--	--	350
Fluoranthene	4.8	3.8	2.3	36 J	9.4	--	--	500
Fluorene	0.27 J	0.2 J	ND	1.7 J	ND	--	--	500
Indeno(1,2,3-cd)pyrene	1.2 J	1.1 J	0.76 J	6.1	3.7 J	--	--	5.6
2-Methylnaphthalene	0.21 J	ND	ND	0.3 J	ND	--	--	--
Phenanthrene	2.9	1.5 J	1.4 J	24	2.7 J	--	--	500
Pyrene	3.5	2.7	1.8 J	23	9.8	--	--	500
TOTAL SVOCs (mg/kg)	28.23	23.84	15.66	184.8	59.69	0	0	--
Polychlorinated Biphenyls (PCBs) - mg/kg								
Aroclor 1248	--	--	--	--	--	ND	0.067	1
Aroclor 1254	--	--	--	--	--	0.47	ND	1
Aroclor 1260	--	--	--	--	--	ND	0.19	1
Inorganic Compounds - mg/kg								
Arsenic, Total	21.2	15.7	--	--	--	--	--	16
Cadmium, Total	1.7 J	ND	--	--	--	--	--	9.3
Chromium, Total	104 J	46.8 J	--	--	--	--	--	1,500
Lead, Total	437 J	231 J	--	--	--	--	--	1,000
Mercury, Total	0.146	0.112	--	--	--	--	--	2.8
Cyanide, Total	1.3	1.2	--	--	--	--	--	27

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Soil/fill sample TP-1-22 (2.0 - 6.5) was analyzed for TCL VOCs plus STARS, all other samples were analyzed for STARS VOCs, only.
3. Soil/fill sample TP-1-22 (2.0 - 6.5) was analyzed for TCL SVOCs (BNAs), all other samples were analyzed for BN SVOCs, only.
4. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
5. ND = parameter not detected above laboratory detection limit.
6. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006.
7. "--" = not analyzed for this parameter or no individual SCO
8. "***" = Field scan was not obtained due to inclement weather conditions.
9. "RED TEXT" = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound	= TCL VOC
compound	= Polycyclic Aromatic Hydrocarbon (PAH)
BOLD	= Value exceeds Restricted-Commercial SCO.



TABLE 2A

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 2

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type				Unrestricted SCO (mg/kg)
	TP-2-(1-3)	TP-2-(1-3)	SS-23	SS-24	
	0.0 - 2.0 composite	2.0 - 5.5 composite	0.0 - 1.0 grab	0.0 - 1.0 grab	
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg					
Acenaphthene	0.44 J	0.67 J	ND	1.1 J	20
Acenaphthylene	0.59 J	20	ND	0.89 J	100
Anthracene	1 J	17 J	0.4 J	3.9 J	100
Benzo(a)anthracene	6.7 J	50	1.6 J	14	1
Benzo(b)fluoranthene	11 J	86 J	2.6 J	15 J	1
Benzo(k)fluoranthene	3.7 J	25 J	0.53 J	6 J	0.8
Benzo(g,h,i)perylene	3.3 J	34	1.3 J	7 J	100
Benzo(a)pyrene	6.8 J	62	1.5 J	12	1
Chrysene	8	52	1.5 J	11	1
Dibenzo(a,h)anthracene	1 J	8.6	ND	2.3 J	0.33
Dibenzofuran	ND	3.8 J	ND	1 J	7
Fluoranthene	14	95 J	3.5 J	28	100
Fluorene	0.38 J	4.2 J	ND	1.5 J	30
Indeno(1,2,3-cd)pyrene	3 J	30	1.1 J	6.9 J	0.5
2-Methylnaphthalene	ND	1.6 J	ND	ND	--
Naphthalene	ND	4.2 J	ND	ND	12
Phenanthrene	6.5 J	52 J	1.4 J	16	100
Pyrene	11	94	3.3 J	20	100
TOTAL SVOCs (mg/kg)	77.41	640.1	18.73	146.6	--
Inorganic Compounds - mg/kg					
Arsenic, Total	10	7.4	7.8	--	13
Cadmium, Total	2.8	1.4	2.9	--	2.5
Chromium, Total	136 J	15.9 J	95.6	--	30
Lead, Total	267 J	103 J	198	--	63
Mercury, Total	2.9 J	1.8 J	1.9	--	0.18
Cyanide, Total	11.5	ND	14.7 J	--	27

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds reported
2. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
3. ND = parameter not detected above laboratory detection limit.
4. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final Decem
5. "--" = not analyzed for this parameter or no individual SCO
6. "*" = Field scan was not obtained due to inclement weather conditions.
7. "RED TEXT" = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound
BOLD

= Polycyclic Aromatic Hydrocarbon (PAH)
= Value exceeds Restricted-Commercial SCO.



TABLE 2B

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 2

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type				Restricted-Commercial SCO (mg/kg)
	TP-2-(1-3)	TP-2-(1-3)	SS-23	SS-24	
	0.0 - 2.0	2.0 - 5.5	0.0 - 1.0	0.0 - 1.0	
	composite	composite	grab	grab	
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg					
Acenaphthene	0.44 J	0.67 J	ND	1.1 J	500
Acenaphthylene	0.59 J	20	ND	0.89 J	500
Anthracene	1 J	17 J	0.4 J	3.9 J	500
Benzo(a)anthracene	6.7 J	50	1.6 J	14	5.6
Benzo(b)fluoranthene	11 J	86 J	2.6 J	15 J	5.6
Benzo(k)fluoranthene	3.7 J	25 J	0.53 J	6 J	56
Benzo(g,h,i)perylene	3.3 J	34	1.3 J	7 J	500
Benzo(a)pyrene	6.8 J	62	1.5 J	12	1
Chrysene	8	52	1.5 J	11	56
Dibenzo(a,h)anthracene	1 J	8.6	ND	2.3 J	0.56
Dibenzofuran	ND	3.8 J	ND	1 J	350
Fluoranthene	14	95 J	3.5 J	28	500
Fluorene	0.38 J	4.2 J	ND	1.5 J	500
Indeno(1,2,3-cd)pyrene	3 J	30	1.1 J	6.9 J	5.6
2-Methylnaphthalene	ND	1.6 J	ND	ND	--
Naphthalene	ND	4.2 J	ND	ND	500
Phenanthrene	6.5 J	52 J	1.4 J	16	500
Pyrene	11	94	3.3 J	20	500
TOTAL SVOCs (mg/kg)	77.41	640.07	18.73	146.59	--
Inorganic Compounds - mg/kg					
Arsenic, Total	10	7.4	7.8	--	16
Cadmium, Total	2.8	1.4	2.9	--	9.3
Chromium, Total	136 J	15.9 J	95.6	--	1,500
Lead, Total	267 J	103 J	198	--	1,000
Mercury, Total	2.9 J	1.8 J	1.9	--	2.8
Cyanide, Total	11.5	ND	14.7 J	--	27

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds reported a
2. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
3. ND = parameter not detected above laboratory detection limit.
4. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final Decemb
5. "--" = not analyzed for this parameter or no individual SCO
6. "*" = Field scan was not obtained due to inclement weather conditions.
7. "RED TEXT" = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound
BOLD

= Polycyclic Aromatic Hydrocarbon (PAH)
= Value exceeds Restricted-Commercial SCO.



TABLE 3A

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 3

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type				Unrestricted SCO (mg/kg)
	TP-3-(1-2)	TP-3-(1-2)	SS-(19-21)	MW-13A	
	0.0 - 1.0 composite	1.0 - 3.0 composite	0.0 - 1.0 composite	0.0 - 1.0 grab	
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg					
Acenaphthene	ND	0.68 J	2.5 J	--	20
Acenaphthylene	3.9 J	4.8 J	3.1 J	--	100
Anthracene	1.9 J	4.8 J	9.3	--	100
Benzo(a)anthracene	10	23	24	--	1
Benzo(b)fluoranthene	15 J	32 J	26 J	--	1
Benzo(k)fluoranthene	5.2 J	8.5 J	7.5 J	--	0.8
Benzo(g,h,i)perylene	9.2	14	12	--	100
Benzo(a)pyrene	12	24	21	--	1
Chrysene	10	22	20	--	1
Dibenzo(a,h)anthracene	2.5 J	4.4 J	3.7 J	--	0.33
Dibenzofuran	ND	0.65 J	3.6 J	--	7
Fluoranthene	18	48	50	--	100
Fluorene	ND	1.5 J	4.6 J	--	30
Indeno(1,2,3-cd)pyrene	8.3	14	11	--	0.5
2-Methylnaphthalene	ND	0.4 J	2.6 J	--	--
Naphthalene	ND	0.38 J	6.1 J	--	12
Phenanthrene	4 J	19	33	--	100
Pyrene	14 J	37	38	--	100
TOTAL SVOCs (mg/kg)	114	259	278	--	--
Polychlorinated Biphenyls (PCBs) - mg/kg					
Aroclor 1254	--	--	0.29	--	0.1
Aroclor 1260	--	--	0.22 J	--	0.1
Inorganic Compounds ² - mg/kg					
Aluminum, Total	--	13800	--	--	--
Arsenic, Total	11.6 J	36.7 J	11.8	--	13
Barium, Total	--	166 J	--	--	350
Beryllium, Total	--	2.1	--	--	7.2
Cadmium, Total	1.3	4.1	1.2	--	2.5
Calcium, Total	--	87000 J	--	--	--
Chromium, Total	175 J	59.1 J	35.8	--	30
Cobalt, Total	--	6.8	--	--	--
Copper, Total	--	119 J	--	--	50
Iron, Total	--	45300 J	--	--	--
Lead, Total	141 J	280 J	151	--	63
Magnesium, Total	--	19400	--	--	--
Manganese, Total	--	3710	--	--	1,600
Inorganic Compounds ² - mg/kg					
Mercury, Total	0.161	0.08	0.217	--	0.18
Nickel, Total	--	18.6	--	--	30
Potassium, Total	--	1090	--	--	--



TABLE 3A

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 3

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type				Unrestricted SCO (mg/kg)
	TP-3-(1-2)	TP-3-(1-2)	SS-(19-21)	MW-13A	
	0.0 - 1.0	1.0 - 3.0	0.0 - 1.0	0.0 - 1.0	
	composite	composite	composite	grab	
Sodium, Total	--	633	--	--	--
Vanadium, Total	--	33.2	--	--	--
Zinc, Total	--	452	--	--	109
Cyanide, Total	ND	ND	ND	--	27
Dioxins - mg/kg					
2,3,7,8-TCDD	--	--	--	ND	--
Herbicides - mg/kg					
2,4-D	--	--	--	ND	--
Pentachlorophenol	--	--	--	ND	--
Pesticides - mg/kg					
4,4'-DDT	--	--	--	0.094	0.0033

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Sample TP-3-(1-2) (1.0 - 3.0) analyzed for TAL Metals, all other samples analyzed for arsenic, cadmium, chromium, cyanide, lead, & mercury, only.
3. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
4. ND = parameter not detected above laboratory detection limit.
5. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006.
6. "--" = not analyzed for this parameter or no individual SCO
7. " **RED TEXT** " = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound	= Polycyclic Aromatic Hydrocarbon (PAH)
compound	= TAL Metal
BOLD	= Value exceeds Unrestricted SCO



TABLE 3B

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 3

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type				Restricted-Commercial SCO (mg/kg)
	TP-3-(1-2)	TP-3-(1-2)	SS-(19-21)	MW-13A	
	0.0 - 1.0	1.0 - 3.0	0.0 - 1.0	0.0 - 1.0	
	composite	composite	composite	grab	
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg					
Acenaphthene	ND	0.68 J	2.5 J	--	500
Acenaphthylene	3.9 J	4.8 J	3.1 J	--	500
Anthracene	1.9 J	4.8 J	9.3	--	500
Benzo(a)anthracene	10	23	24	--	5.6
Benzo(b)fluoranthene	15 J	32 J	26 J	--	5.6
Benzo(k)fluoranthene	5.2 J	8.5 J	7.5 J	--	56
Benzo(g,h,i)perylene	9.2	14	12	--	500
Benzo(a)pyrene	12	24	21	--	1
Chrysene	10	22	20	--	56
Dibenzo(a,h)anthracene	2.5 J	4.4 J	3.7 J	--	0.56
Dibenzofuran	ND	0.65 J	3.6 J	--	350
Fluoranthene	18	48	50	--	500
Fluorene	ND	1.5 J	4.6 J	--	500
Indeno(1,2,3-cd)pyrene	8.3	14	11	--	5.6
2-Methylnaphthalene	ND	0.4 J	2.6 J	--	--
Naphthalene	ND	0.38 J	6.1 J	--	500
Phenanthrene	4 J	19	33	--	500
Pyrene	14 J	37	38	--	500
TOTAL SVOCs (mg/kg)	114	259	278	--	--
Polychlorinated Biphenyls (PCBs) - mg/kg					
Aroclor 1254	--	--	0.29	--	1
Aroclor 1260	--	--	0.22 J	--	1
Inorganic Compounds ² - mg/kg					
Aluminum, Total	--	13800	--	--	--
Arsenic, Total	11.6 J	36.7 J	11.8	--	16
Barium, Total	--	166 J	--	--	400
Beryllium, Total	--	2.1	--	--	590
Cadmium, Total	1.3	4.1	1.2	--	9.3
Calcium, Total	--	87000 J	--	--	--
Chromium, Total	175 J	59.1 J	35.8	--	1,500
Cobalt, Total	--	6.8	--	--	--
Copper, Total	--	119 J	--	--	270
Iron, Total	--	45300 J	--	--	--
Lead, Total	141 J	280 J	151	--	1,000
Magnesium, Total	--	19400	--	--	--
Manganese, Total	--	3710	--	--	10,000
Inorganic Compounds ² - mg/kg					
Mercury, Total	0.161	0.08	0.217	--	2.8
Nickel, Total	--	18.6	--	--	310



TABLE 3B

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 3

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type				Restricted-Commercial SCO (mg/kg)
	TP-3-(1-2)	TP-3-(1-2)	SS-(19-21)	MW-13A	
	0.0 - 1.0	1.0 - 3.0	0.0 - 1.0	0.0 - 1.0	
	composite	composite	composite	grab	
Potassium, Total	--	1090	--	--	--
Sodium, Total	--	633	--	--	--
Vanadium, Total	--	33.2	--	--	--
Zinc, Total	--	452	--	--	10,000
Cyanide, Total	ND	ND	ND	--	27
Dioxins - mg/kg					
2,3,7,8-TCDD	--	--	--	ND	--
Herbicides - mg/kg					
2,4-D	--	--	--	ND	--
Pentachlorophenol	--	--	--	ND	--
Pesticides - mg/kg					
4,4'-DDT	--	--	--	0.094	47

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Sample TP-3-(1-2) (1.0 - 3.0) analyzed for TAL Metals, all other samples analyzed for arsenic, cadmium, chromium, cyanide, lead, & mercury, only.
3. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
4. ND = parameter not detected above laboratory detection limit.
5. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006.
6. "--" = not analyzed for this parameter or no individual SCO
7. " **RED TEXT** " = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound	= Polycyclic Aromatic Hydrocarbon (PAH)
compound	= TAL Metal
BOLD	= Value exceeds Restricted-Commercial SCO



TABLE 4A

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 4

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type						Unrestricted SCO (mg/kg)
	TP-4 (1-5)	TP-4 (1-5)	SS-04	SS-05	SS-25	SS-26	
	0.0 - 1.0 composite	1.0 - 3.0 composite	0.0 - 1.0 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg							
Acenaphthene	ND	ND	--	--	0.16 J	--	20
Acenaphthylene	ND	0.68 J	--	--	0.27 J	--	100
Anthracene	1.2 J	0.61 J	--	--	0.78	--	100
Benzo(a)anthracene	4.4 J	1.9	--	--	1.6	--	1
Benzo(b)fluoranthene	5.5 J	3.1 J	--	--	2.2 J	--	1
Benzo(k)fluoranthene	1.8 J	0.99 J	--	--	0.61 J	--	0.8
Benzo(g,h,i)perylene	2.4 J	1.6 J	--	--	0.81	--	100
Benzo(a)pyrene	4.2 J	2.2	--	--	1.6	--	1
Chrysene	4.4 J	2	--	--	1.6	--	1
Dibenzo(a,h)anthracene	0.72 J	0.5 J	--	--	0.23 J	--	0.33
Dibenzofuran	ND	0.13 J	--	--	0.24 J	--	7
Fluoranthene	9	3.3	--	--	4	--	100
Fluorene	ND	0.2 J	--	--	0.42	--	30
Indeno(1,2,3-cd)pyrene	2.1 J	1.4 J	--	--	0.78	--	0.5
2-Methylnaphthalene	ND	ND	--	--	0.068 J	--	--
Naphthalene	ND	0.11 J	--	--	0.065 J	--	12
Phenanthrene	3.3 J	2	--	--	3.2	--	100
Pyrene	8.1 J	2.8	--	--	2.8	--	100
TOTAL SVOCs (mg/kg)	47.1	23.5	--	--	21.4	--	--
Polychlorinated Biphenyls (PCBs) - mg/kg							
Aroclor 1248	--	--	1.2	0.54	--	--	0.1
Aroclor 1254	--	--	3.0	ND	--	--	0.1
Aroclor 1260	--	--	ND	0.38	--	--	0.1
Inorganic Compounds - mg/kg							
Arsenic, Total	9.3 J	7	--	--	7.6	12.6	13
Cadmium, Total	3.2 J	2.1	--	--	1.4	5.8	2.5
Chromium, Total	114 J	82.3 J	--	--	67.8	245	30
Lead, Total	642 J	800 J	--	--	166	355	63
Mercury, Total	1.5 J	0.559 J	--	--	0.148	3.8	0.18
Cyanide, Total	ND	ND	--	--	3.5 J	8.2 J	27
Wet Chemistry - units shown parenthetically							
pH (S.U.)	--	--	--	--	--	8.40	--

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds reported as non-detected
2. J = Estimated value; result is less than the sample quantitation limit but greater than zero
3. ND = parameter not detected above laboratory detection limit
4. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006
5. "--" = not analyzed for this parameter or no individual SCC
6. "*" = Field scan was not obtained due to inclement weather conditions
7. "RED TEXT" = Data was qualified per the third party Data Usability Summary Report (DUSR)

Color Code:

compound	= Polycyclic Aromatic Hydrocarbon (PAH)
BOLD	= Value exceeds Unrestricted SCO



TABLE 4B

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 4

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type						Restricted-Commerical SCO (mg/kg)
	TP-4 (1-5)	TP-4 (1-5)	SS-04	SS-05	SS-25	SS-26	
	0.0 - 1.0 composite	1.0 - 3.0 composite	0.0 - 1.0 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg							
Acenaphthene	ND	ND	--	--	0.16 J	--	500
Acenaphthylene	ND	0.68 J	--	--	0.27 J	--	500
Anthracene	1.2 J	0.61 J	--	--	0.78	--	500
Benzo(a)anthracene	4.4 J	1.9	--	--	1.6	--	5.6
Benzo(b)fluoranthene	5.5 J	3.1 J	--	--	2.2 J	--	5.6
Benzo(k)fluoranthene	1.8 J	0.99 J	--	--	0.61 J	--	56
Benzo(g,h,i)perylene	2.4 J	1.6 J	--	--	0.81	--	500
Benzo(a)pyrene	4.2 J	2.2	--	--	1.6	--	1
Chrysene	4.4 J	2	--	--	1.6	--	56
Dibenzo(a,h)anthracene	0.72 J	0.5 J	--	--	0.23 J	--	0.56
Dibenzofuran	ND	0.13 J	--	--	0.24 J	--	350
Fluoranthene	9	3.3	--	--	4	--	500
Fluorene	ND	0.2 J	--	--	0.42	--	500
Indeno(1,2,3-cd)pyrene	2.1 J	1.4 J	--	--	0.78	--	5.6
2-Methylnaphthalene	ND	ND	--	--	0.068 J	--	--
Naphthalene	ND	0.11 J	--	--	0.065 J	--	500
Phenanthrene	3.3 J	2	--	--	3.2	--	500
Pyrene	8.1 J	2.8	--	--	2.8	--	500
TOTAL SVOCs (mg/kg)	47.12	23.52	0	0	21.43	0	--
Polychlorinated Biphenyls (PCBs) - mg/kg							
Aroclor 1248	--	--	1.2	0.54	--	--	1
Aroclor 1254	--	--	3.0	ND	--	--	1
Aroclor 1260	--	--	ND	0.38	--	--	1
Inorganic Compounds - mg/kg							
Arsenic, Total	9.3 J	7	--	--	7.6	12.6	16
Cadmium, Total	3.2 J	2.1	--	--	1.4	5.8	9.3
Chromium, Total	114 J	82.3 J	--	--	67.8	245	1,500
Lead, Total	642 J	800 J	--	--	166	355	1,000
Mercury, Total	1.5 J	0.559 J	--	--	0.148	3.8	2.8
Cyanide, Total	ND	ND	--	--	3.5 J	8.2 J	27
Wet Chemistry - units shown parenthetically							
pH (S.U.)	--	--	--	--	--	8.40	--

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds reported as non-detect
2. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
3. ND = parameter not detected above laboratory detection limit.
4. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006
5. "--" = not analyzed for this parameter or no individual SCO
6. "*" = Field scan was not obtained due to inclement weather conditions.
7. "RED TEXT" = Data was qualified per the third party Data Usability Summary Report (DUSR)

Color Code:

compound	= Polycyclic Aromatic Hydrocarbon (PAH)
BOLD	= Value exceeds Restricted-Commercial SCO



TABLE 5A

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 5

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type						Unrestricted SCO (mg/kg)
	TP-5-(1-5)	TP-5-(1245)	TP-5-3	TP-5-(6-10)	TP-5-(6-10)	TP-5-11	
	0.0 - 1.0	1.0 - 4.5	1.0 - 4.5	0.0 - 1.0	1.0 - 4.0	0.0 - 1.0	
	composite	composite	grab	composite	composite	grab	
STARS Volatile Organic Compounds (VOCs - Method 8021) - mg/kg							
Naphthalene	--	--	1.6	--	--	--	12
TOTAL VOCs (mg/kg)	--	--	1.6	--	--	--	--
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg							
Acenaphthene	4.4 J	2.1 J	2.2 J	0.54 J	0.19 J	0.039 J	20
Acenaphthylene	5.6 J	10	6.2 J	0.65 J	0.18 J	0.15 J	100
Anthracene	24	20	15	1.9 J	0.52 J	0.17 J	100
Benzo(a)anthracene	36	41	31	4.6 J	1.3 J	0.68	1
Benzo(b)fluoranthene	40 J	48 J	36 J	6.2 J	2.3 J	1.2 J	1
Benzo(k)fluoranthene	13 J	18 J	9.8 J	2.1 J	0.83 J	0.31 J	0.8
Benzo(g,h,i)perylene	17	22	17	2.7 J	1 J	0.44	100
Benzo(a)pyrene	32	40	29	4.4 J	1.5	0.75	1
Chrysene	33	37	27	4.1 J	1.3 J	0.71	1
Dibenzo(a,h)anthracene	4.8 J	5.8 J	4.4 J	0.86 J	0.31 J	0.12 J	0.33
Dibenzofuran	7.7	6.6 J	4.3 J	ND	0.21 J	0.079 J	7
Fluoranthene	100	130 D	94	10	2.5	1.1	100
Fluorene	13	12	9	0.66 J	0.29 J	0.047 J	30
Indeno(1,2,3-cd)pyrene	16	20	16	2.4 J	0.92 J	0.4	0.5
2-Methylnaphthalene	2.8 J	1.4 J	0.99 J	ND	0.16 J	0.087 J	--
Naphthalene	18	2.9 J	2.5 J	ND	0.41 J	0.078 J	12
Phenanthrene	82	92	66	5.5 J	1.9	0.6	100
Pyrene	72	84	68	7.3 J	1.9	0.86	100
TOTAL SVOCs (mg/kg)	521.3	592.8	438.4	53.9	17.7	7.8	--
Polychlorinated Biphenyls (PCBs) - mg/kg							
TOTAL PCBs (mg/kg)	--	--	--	--	--	--	--
Inorganic Compounds ² - mg/kg							
Aluminum, Total	6630	--	--	--	--	--	--
Arsenic, Total	12.8 J	2.8 J	103 J	23.5	12.8	7.5	13
Barium, Total	73 J	--	--	--	--	--	350
Beryllium, Total	0.99	--	--	--	--	--	7.2
Cadmium, Total	8.2	ND	94.9	16 J	9.3 J	0.52 J	2.5
Calcium, Total	84300 J	--	--	--	--	--	--
Chromium, Total	299 J	3.3 J	161 J	138 J	75.1 J	47.7 J	30
Cobalt, Total	6.9	--	--	--	--	--	--
Copper, Total	126 J	--	--	--	--	--	50
Iron, Total	78700 J	--	--	--	--	--	--
Lead, Total	535 J	6.4 J	10200 J	814 J	427 J	50.8 J	63
Magnesium, Total	18600	--	--	--	--	--	--
Manganese, Total	14500	--	--	--	--	--	1,600
Mercury, Total	1.9	0.591	0.375	2.0	5.9	0.068	0.18
Nickel, Total	27.4	--	--	--	--	--	30
Potassium, Total	639 J	--	--	--	--	--	--
Selenium, Total	4.7	--	--	--	--	--	3.9
Sodium, Total	225 J	--	--	--	--	--	--
Vanadium, Total	211	--	--	--	--	--	--
Zinc, Total	905	--	--	--	--	--	109
Cyanide, Total	ND	ND	ND	ND	ND	ND	27

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Sample TP-5-(1-5) (0.0 - 1.0) was analyzed for TAL Metals, all other samples were analyzed for arsenic, cadmium, chromium, cyanide, lead, and mercury, only.
3. D = Analyzed at the secondary dilution factor.
4. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
5. ND = parameter not detected above laboratory detection limit.
6. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006.
7. "--" = not analyzed for this parameter or no individual SCO
8. "RED TEXT" = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound	= Polycyclic Aromatic Hydrocarbon (PAH)
compound	= TAL Metal
BOLD	= Value exceeds Unrestricted SCO



TABLE 5A (continued)

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 5

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type					Unrestricted SCO (mg/kg)
	TP-5-11	TP-5-12	SS-(1-2)	SS-03	SS-27	
	1.0 - 4.0	1.0 - 3.5	0.0 - 1.0	0.0 - 1.0	0.0 - 1.0	
	grab	grab	composite	grab	grab	
Headspace Determination (ppm) - 10.6 eV Lamp [subsurface samples only]						
Total VOCs	0.0	0.0	--	--	--	--
PID Field Scans (ppm) - 10.6 eV Lamp						
Total VOCs	0.0	0.0	--	--	--	--
STARS Volatile Organic Compounds (VOCs - Method 8021) - mg/kg						
Naphthalene	--	--	--	--	--	12
TOTAL VOCs (mg/kg)	--	--	--	--	--	--
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg						
Acenaphthene	0.16 J	--	ND	--	0.58 J	20
Acenaphthylene	0.31 J	--	ND	--	ND	100
Anthracene	0.54 J	--	0.35 J	--	1.4 J	100
Benzo(a)anthracene	1.9	--	1.6 J	--	11	1
Benzo(b)fluoranthene	2.4 J	--	2.4 J	--	23 J	1
Benzo(k)fluoranthene	0.87 J	--	0.78 J	--	25 J	0.8
Benzo(g,h,i)perylene	1.1	--	0.93 J	--	8.9	100
Benzo(a)pyrene	1.9	--	1.7 J	--	12	1
Chrysene	1.8	--	1.7 J	--	12	1
Dibenzo(a,h)anthracene	0.32 J	--	0.27 J	--	2.6 J	0.33
Dibenzofuran	0.19 J	--	ND	--	ND	7
Fluoranthene	3.3	--	3 J	--	24	100
Fluorene	0.22 J	--	ND	--	0.55 J	30
Indeno(1,2,3-cd)pyrene	0.98	--	0.93 J	--	7.9	0.5
2-Methylnaphthalene	0.17 J	--	ND	--	ND	--
Naphthalene	0.29 J	--	ND	--	ND	12
Phenanthrene	1.6	--	1 J	--	11	100
Pyrene	2.8	--	2.6 J	--	19	100
TOTAL SVOCs (mg/kg)	20.9	0	17.3	0	158.9	--
Polychlorinated Biphenyls (PCBs) - mg/kg						
TOTAL PCBs (mg/kg)	--	--	--	ND	--	--
Inorganic Compounds ² - mg/kg						
Aluminum, Total	--	--	--	--	--	--
Arsenic, Total	7.7	43.7	13.2	--	--	13
Barium, Total	--	--	--	--	--	350
Beryllium, Total	--	--	--	--	--	7.2
Cadmium, Total	3 J	45.3 J	11.2	--	--	2.5
Calcium, Total	--	--	--	--	--	--
Chromium, Total	141 J	98.7 J	39.5	--	--	30
Cobalt, Total	--	--	--	--	--	--
Copper, Total	--	--	--	--	--	50
Iron, Total	--	--	--	--	--	--
Lead, Total	157 J	1340 J	574	--	--	63
Magnesium, Total	--	--	--	--	--	--
Manganese, Total	--	--	--	--	--	1,600
Mercury, Total	0.045	0.349	2.5	--	--	0.18
Nickel, Total	--	--	--	--	--	30
Potassium, Total	--	--	--	--	--	--
Selenium, Total	--	--	--	--	--	3.9
Sodium, Total	--	--	--	--	--	--
Vanadium, Total	--	--	--	--	--	--
Zinc, Total	--	--	--	--	--	109
Cyanide, Total	ND	ND	ND	--	--	27

Notes:

- Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
- Sample TP-5-(1-5) (0.0 - 1.0) was analyzed for TAL Metals, all other samples were analyzed for arsenic, cadmium, chromium, cyanide, lead, and m
- D = Analyzed at the secondary dilution factor.
- J = Estimated value; result is less than the sample quantitation limit but greater than zero.
- ND = parameter not detected above laboratory detection limit.
- SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006.
- = not analyzed for this parameter or no individual SCO
- RED TEXT** = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound	= Polycyclic Aromatic Hydrocarbon (PAH)
compound	= TAL Metal
BOLD	= Value exceeds Unrestricted SCO



TABLE 5B

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT I

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type						Restricted-Commercial SCO (mg/kg)
	TP-5-(1-5)	TP-5-(1245)	TP-5-3	TP-5-(6-10)	TP-5-(6-10)	TP-5-11	
	0.0 - 1.0	1.0 - 4.5	1.0 - 4.5	0.0 - 1.0	1.0 - 4.0	0.0 - 1.0	
	composite	composite	grab	composite	composite	grab	
STARS Volatile Organic Compounds (VOCs - Method 8021) - mg/kg							
Naphthalene	--	--	1.6	--	--	--	500
TOTAL VOCs (mg/kg)	--	--	1.6	--	--	--	--
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg							
Acenaphthene	4.4 J	2.1 J	2.2 J	0.54 J	0.19 J	0.039 J	500
Acenaphthylene	5.6 J	10	6.2 J	0.65 J	0.18 J	0.15 J	500
Anthracene	24	20	15	1.9 J	0.52 J	0.17 J	500
Benzo(a)anthracene	36	41	31	4.6 J	1.3 J	0.68	5.6
Benzo(b)fluoranthene	40 J	48 J	36 J	6.2 J	2.3 J	1.2 J	5.6
Benzo(k)fluoranthene	13 J	18 J	9.8 J	2.1 J	0.83 J	0.31 J	56
Benzo(g,h,i)perylene	17	22	17	2.7 J	1 J	0.44	500
Benzo(a)pyrene	32	40	29	4.4 J	1.5	0.75	1
Chrysene	33	37	27	4.1 J	1.3 J	0.71	56
Dibenzo(a,h)anthracene	4.8 J	5.8 J	4.4 J	0.86 J	0.31 J	0.12 J	0.56
Dibenzofuran	7.7	6.6 J	4.3 J	ND	0.21 J	0.079 J	350
Fluoranthene	100	130 D	94	10	2.5	1.1	500
Fluorene	13	12	9	0.66 J	0.29 J	0.047 J	500
Indeno(1,2,3-cd)pyrene	16	20	16	2.4 J	0.92 J	0.4	5.6
2-Methylnaphthalene	2.8 J	1.4 J	0.99 J	ND	0.16 J	0.087 J	--
Naphthalene	18	2.9 J	2.5 J	ND	0.41 J	0.078 J	500
Phenanthrene	82	92	66	5.5 J	1.9	0.6	500
Pyrene	72	84	68	7.3 J	1.9	0.86	500
TOTAL SVOCs (mg/kg)	521.3	592.6	436.4	53.9	17.7	7.8	--
Polychlorinated Biphenyls (PCBs) - mg/kg							
TOTAL PCBs (mg/kg)	--	--	--	--	--	--	--
Inorganic Compounds ² - mg/kg							
Aluminum, Total	6630	--	--	--	--	--	--
Arsenic, Total	12.8 J	2.8 J	103 J	23.5	12.8	7.5	16
Barium, Total	73 J	--	--	--	--	--	400
Beryllium, Total	0.99	--	--	--	--	--	590
Cadmium, Total	8.2	ND	94.9	16 J	9.3 J	0.52 J	9.3
Calcium, Total	84300 J	--	--	--	--	--	--
Chromium, Total	299 J	3.3 J	161 J	138 J	75.1 J	47.7 J	1,500
Cobalt, Total	6.9	--	--	--	--	--	--
Copper, Total	126 J	--	--	--	--	--	270
Iron, Total	78700 J	--	--	--	--	--	--
Lead, Total	535 J	6.4 J	10200 J	814 J	427 J	50.8 J	1,000
Magnesium, Total	18600	--	--	--	--	--	--
Manganese, Total	14500	--	--	--	--	--	10,000
Mercury, Total	1.9	0.591	0.375	2.0	5.9	0.068	2.8
Nickel, Total	27.4	--	--	--	--	--	310
Potassium, Total	639 J	--	--	--	--	--	--
Selenium, Total	4.7	--	--	--	--	--	1,500
Sodium, Total	225 J	--	--	--	--	--	--
Vanadium, Total	211	--	--	--	--	--	--
Zinc, Total	905	--	--	--	--	--	10,000
Cyanide, Total	ND	ND	ND	ND	ND	ND	27

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Sample TP-5-(1-5) (0.0 - 1.0) was analyzed for TAL Metals, all other samples were analyzed for arsenic, cadmium, chromium, cyanide, lead, and mercury, only.
3. D = Analyzed at the secondary dilution factor.
4. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
5. ND = parameter not detected above laboratory detection limit.
6. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006.
7. "--" = not analyzed for this parameter or no individual SCO
8. "RED TEXT" = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound	= Polycyclic Aromatic Hydrocarbon (PAH)
compound	= TAL Metal
BOLD	= Value exceeds Restricted-Commercial SCO



TABLE 5B (continued)

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT I

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type					Restricted-Commercial SCO (mg/kg)
	TP-5-11	TP-5-12	SS-(1-2)	SS-03	SS-27	
	1.0 - 4.0	1.0 - 3.5	0.0 - 1.0	0.0 - 1.0	0.0 - 1.0	
	grab	grab	composite	grab	grab	
STARS Volatile Organic Compounds (VOCs - Method 8021) - mg/kg						
Naphthalene	--	--	--	--	--	500
TOTAL VOCs (mg/kg)	∞	∞	∞	∞	∞	∞
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg						
Acenaphthene	0.16 J	--	ND	--	0.58 J	500
Acenaphthylene	0.31 J	--	ND	--	ND	500
Anthracene	0.54 J	--	0.35 J	--	1.4 J	500
Benzo(a)anthracene	1.9	--	1.6 J	--	11	5.6
Benzo(b)fluoranthene	2.4 J	--	2.4 J	--	23 J	5.6
Benzo(k)fluoranthene	0.87 J	--	0.78 J	--	25 J	56
Benzo(g,h,i)perylene	1.1	--	0.93 J	--	8.9	500
Benzo(a)pyrene	1.9	--	1.7 J	--	12	1
Chrysene	1.8	--	1.7 J	--	12	56
Dibenzo(a,h)anthracene	0.32 J	--	0.27 J	--	2.6 J	0.56
Dibenzofuran	0.19 J	--	ND	--	ND	350
Fluoranthene	3.3	--	3 J	--	24	500
Fluorene	0.22 J	--	ND	--	0.55 J	500
Indeno(1,2,3-cd)pyrene	0.98	--	0.93 J	--	7.9	5.6
2-Methylnaphthalene	0.17 J	--	ND	--	ND	--
Naphthalene	0.29 J	--	ND	--	ND	500
Phenanthrene	1.6	--	1 J	--	11	500
Pyrene	2.8	--	2.6 J	--	19	500
TOTAL SVOCs (mg/kg)	20.85	0	17.26	0	158.9	∞
Polychlorinated Biphenyls (PCBs) - mg/kg						
TOTAL PCBs (mg/kg)	∞	∞	∞	ND	∞	1
Inorganic Compounds ² - mg/kg						
Aluminum, Total	--	--	--	--	--	--
Arsenic, Total	7.7	43.7	13.2	--	--	16
Barium, Total	--	--	--	--	--	400
Beryllium, Total	--	--	--	--	--	590
Cadmium, Total	3 J	45.3 J	11.2	--	--	9.3
Calcium, Total	--	--	--	--	--	--
Chromium, Total	141 J	98.7 J	39.5	--	--	1,500
Cobalt, Total	--	--	--	--	--	--
Copper, Total	--	--	--	--	--	270
Iron, Total	--	--	--	--	--	--
Lead, Total	157 J	1340 J	574	--	--	1,000
Magnesium, Total	--	--	--	--	--	--
Manganese, Total	--	--	--	--	--	15,000
Mercury, Total	0.045	0.349	2.5	--	--	2.8
Nickel, Total	--	--	--	--	--	310
Potassium, Total	--	--	--	--	--	--
Selenium, Total	--	--	--	--	--	1,500
Sodium, Total	--	--	--	--	--	--
Vanadium, Total	--	--	--	--	--	--
Zinc, Total	--	--	--	--	--	89,000
Cyanide, Total	ND	ND	ND	--	--	27

Notes:

- Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
- Sample TP-5-(1-5) (0.0 - 1.0) was analyzed for TAL Metals, all other samples were analyzed for As, Cd, Cr, CN, Pb, & Hg, only.
- D = Analyzed at the secondary dilution factor.
- J = Estimated value; result is less than the sample quantitation limit but greater than zero.
- ND = parameter not detected above laboratory detection limit.
- SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006.
- " - " = not analyzed for this parameter or no individual SCO
- * RED TEXT * = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound	= Polycyclic Aromatic Hydrocarbon (PAH)
compound	= TAL Metal
BOLD	= Value exceeds Restricted-Commercial SCO



TABLE 6A

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 6

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type										Unrestricted SCO (mg/kg)
	TP-6-(1-5)	TP-6-(1-5)	TP-6-6	TP-6-7	TP-6-10	SS-07	SS-08	SS-28	SS-29	SS-30	
	0.0 - 2.0 composite	2.0 - 6.0 composite	2.0 - 6.0 grab	2.0 - 4.0 grab	2.0 - 6.0 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg											
Acenaphthene	5.4 J	6.8 J	0.84 J	--	--	--	--	--	0.31 J	--	20
Acenaphthylene	ND	ND	2 J	--	--	--	--	--	0.23 J	--	100
Anthracene	14 J	14 J	3.8 J	--	--	--	--	--	0.94 J	--	100
Benzo(a)anthracene	30 J	28 J	17	--	--	--	--	--	2.4 J	--	1
Benzo(b)fluoranthene	36 J	27 J	16 J	--	--	--	--	--	3.2 J	--	1
Benzo(k)fluoranthene	41 J	6.8 J	6 J	--	--	--	--	--	1.1 J	--	0.8
Benzo(g,h,i)perylene	15 J	14 J	9	--	--	--	--	--	1.7 J	--	100
Benzo(a)pyrene	22 J	22 J	14	--	--	--	--	--	2.5 J	--	1
Chrysene	28 J	25 J	17	--	--	--	--	--	2.5 J	--	1
Dibenzo(a,h)anthracene	4.5 J	4.1 J	2.7 J	--	--	--	--	--	0.4 J	--	0.33
Dibenzofuran	3.1 J	3.6 J	0.5 J	--	--	--	--	--	0.32 J	--	7
Fluoranthene	71	65	40	--	--	--	--	--	5.6	--	100
Fluorene	5.8 J	6.4 J	0.95 J	--	--	--	--	--	0.45 J	--	30
Indeno(1,2,3-cd)pyrene	13 J	12 J	8.2	--	--	--	--	--	1.4 J	--	0.5
Naphthalene	ND	2.2 J	0.4 J	--	--	--	--	--	0.57 J	--	12
Phenanthrene	52	51	15	--	--	--	--	--	4.1	--	100
Pyrene	55	51	35	--	--	--	--	--	4.6	--	100
TOTAL SVOCs (mg/kg)	395.8	338.9	188.4	0	0	0	0	0	32.32	0	--
Polychlorinated Biphenyls (PCBs) - mg/kg											
Aroclor 1254	--	--	--	--	0.58	ND	0.88	ND	--	--	0.1
Aroclor 1260	--	--	--	--	ND	1.6	ND	0.35	--	--	0.1
Inorganic Compounds - mg/kg											
Arsenic, Total	14.7 J	22.6 J	152 J	39.2 J	--	--	--	--	17.7	18.5	13
Cadmium, Total	5.3 J	5.1 J	7.9 J	3 J	--	--	--	--	8	6.7	2.5
Chromium, Total	123	99.1	242	52.8	--	--	--	--	171	97.5	30
Lead, Total	454	474	774	1660	--	--	--	--	440	549	63
Mercury, Total	1.2	1.1	0.429	0.362	--	--	--	--	0.389	3	0.18
Cyanide, Total	ND	ND	ND	2.0	--	--	--	--	ND	ND	27

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
3. ND = parameter not detected above laboratory detection limit.
4. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006.
5. "--" = not analyzed for this parameter or no individual SCO
6. " RED TEXT " = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound	= Polycyclic Aromatic Hydrocarbon (PAH)
BOLD	= Value exceeds Unrestricted SCO



TABLE 6B

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT €

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type										Restricted-Commercial SCO (mg/kg)
	TP-6-(1-5)	TP-6-(1-5)	TP-6-6	TP-6-7	TP-6-10	SS-07	SS-08	SS-28	SS-29	SS-30	
	0.0 - 2.0 composite	2.0 - 6.0 composite	2.0 - 6.0 grab	2.0 - 4.0 grab	2.0 - 6.0 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg											
Acenaphthene	5.4 J	6.8 J	0.84 J	--	--	--	--	--	0.31 J	--	500
Acenaphthylene	ND	ND	2 J	--	--	--	--	--	0.23 J	--	500
Anthracene	14 J	14 J	3.8 J	--	--	--	--	--	0.94 J	--	500
Benzo(a)anthracene	30 J	28 J	17	--	--	--	--	--	2.4 J	--	5.6
Benzo(b)fluoranthene	36 J	27 J	16 J	--	--	--	--	--	3.2 J	--	5.6
Benzo(k)fluoranthene	41 J	6.8 J	6 J	--	--	--	--	--	1.1 J	--	56
Benzo(g,h,i)perylene	15 J	14 J	9	--	--	--	--	--	1.7 J	--	500
Benzo(a)pyrene	22 J	22 J	14	--	--	--	--	--	2.5 J	--	1
Chrysene	28 J	25 J	17	--	--	--	--	--	2.5 J	--	56
Dibenzo(a,h)anthracene	4.5 J	4.1 J	2.7 J	--	--	--	--	--	0.4 J	--	0.56
Dibenzofuran	3.1 J	3.6 J	0.5 J	--	--	--	--	--	0.32 J	--	350
Fluoranthene	71	65	40	--	--	--	--	--	5.6	--	500
Fluorene	5.8 J	6.4 J	0.95 J	--	--	--	--	--	0.45 J	--	500
Indeno(1,2,3-cd)pyrene	13 J	12 J	8.2	--	--	--	--	--	1.4 J	--	5.6
Naphthalene	ND	2.2 J	0.4 J	--	--	--	--	--	0.57 J	--	500
Phenanthrene	52	51	15	--	--	--	--	--	4.1	--	500
Pyrene	55	51	35	--	--	--	--	--	4.6	--	500
TOTAL SVOCs (mg/kg)	395.8	338.9	188.4	0	0	0	0	0	32.32	0	--
Polychlorinated Biphenyls (PCBs) - mg/kg											
Aroclor 1254	--	--	--	--	0.58	ND	0.88	ND	--	--	1
Aroclor 1260	--	--	--	--	ND	1.6	ND	0.35	--	--	1
Inorganic Compounds - mg/kg											
Arsenic, Total	14.7 J	22.6 J	152 J	39.2 J	--	--	--	--	17.7	18.5	16
Cadmium, Total	5.3 J	5.1 J	7.9 J	3 J	--	--	--	--	8	6.7	9.3
Chromium, Total	123	99.1	242	52.8	--	--	--	--	171	97.5	1,500
Lead, Total	454	474	774	1660	--	--	--	--	440	549	1,000
Mercury, Total	1.2	1.1	0.429	0.362	--	--	--	--	0.389	3	2.8
Cyanide, Total	ND	ND	ND	2.0	--	--	--	--	ND	ND	27

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
3. ND = parameter not detected above laboratory detection limit.
4. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006.
5. "--" = not analyzed for this parameter or no individual SCO
6. "RED TEXT" = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound	= Polycyclic Aromatic Hydrocarbon (PAH)
BOLD	= Value exceeds Restricted-Commercial SCO



TABLE 7A

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 7

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type									Unrestricted SCO (mg/kg)
	TP-7-(1-3)/8-4	TP-7-(1,3)/8-4	TP-7-2	TP-7-(4-7)	TP-7-(4-7)	SS-15	SS-16	SS-17	SS-31	
	0.0 - 2.0 composite	1.5 - 5.5 composite	2.0 - 5.0 grab	0.0 - 1.0 composite	2.0 - 7.0 composite	0.0 - 1.0 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	
STARS Volatile Organic Compounds (VOCs - Method 8021) - mg/kg										
n-Butylbenzene	--	--	7.6	--	--	--	--	--	--	12
Ethylbenzene	--	--	1.8	--	--	--	--	--	--	1
Isopropylbenzene	--	--	0.48	--	--	--	--	--	--	--
p-Cymene	--	--	1.4	--	--	--	--	--	--	--
n-Propylbenzene	--	--	1.6	--	--	--	--	--	--	3.9
1,2,4-Trimethylbenzene	--	--	26	--	--	--	--	--	--	3.6
m-Xylene	--	--	3.1	--	--	--	--	--	--	0.26
Xylenes, Total	--	--	3.1	--	--	--	--	--	--	0.26
Naphthalene	--	--	120	--	--	--	--	--	--	12
TOTAL VOCs (mg/kg)	0	0	162	0	0	0	0	0	0	--
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg										
Acenaphthylene	1.6 J	0.25 J	3.8 J	0.68 J	0.9 J	--	--	--	0.2 J	100
Anthracene	1 J	ND	2.7 J	0.48 J	1.4 J	--	--	--	0.072 J	100
Benzo(a)anthracene	6 J	1 J	9.3	2.2 J	4.3 J	--	--	--	0.33 J	1
Benzo(b)fluoranthene	8.7 J	1.1 J	12 J	2.8 J	5.1 J	--	--	--	0.78 J	1
Benzo(k)fluoranthene	2.2 J	0.46 J	3 J	1 J	1.6 J	--	--	--	0.23 J	0.8
Benzo(g,h,i)perylene	5.8 J	0.65 J	6.8 J	1.1 J	2.7 J	--	--	--	0.62	100
Benzo(a)pyrene	6.4 J	0.87 J	9.7	2 J	3.6 J	--	--	--	0.51	1
Chrysene	6.2 J	0.96 J	10	2.1 J	4.3 J	--	--	--	0.37 J	1
Dibenzo(a,h)anthracene	1.5 J	0.2 J	1.7 J	0.35 J	0.81 J	--	--	--	0.18 J	0.33
Dibenzofuran	ND	ND	1 J	ND	ND	--	--	--	0.04 J	7
Fluoranthene	9.3	1.5 J	16	3.2 J	8.1	--	--	--	0.35 J	100
Fluorene	ND	ND	2.9 J	ND	0.59 J	--	--	--	ND	30
Indeno(1,2,3-cd)pyrene	4.7 J	0.59 J	5.4 J	0.98 J	2.2 J	--	--	--	0.53	0.5
2-Methylnaphthalene	ND	ND	15	ND	ND	--	--	--	0.099 J	--
Naphthalene	0.83 J	ND	7.5 J	ND	0.44 J	--	--	--	0.063 J	12
Phenanthrene	4.2 J	0.45 J	13	1.7 J	5.2 J	--	--	--	0.15 J	100
Pyrene	8.5	1.4 J	17	2.8 J	7.1 J	--	--	--	0.35 J	100
TOTAL SVOCs (mg/kg)	66.93	9.43	136.8	21.39	48.34	0	0	0	4.874	--
Polychlorinated Biphenyls (PCBs) - mg/kg										
Aroclor 1260	--	--	--	--	--	ND	0.017 J	0.14	--	0.1
Inorganic Compounds - mg/kg										
Arsenic, Total	116 J	15.8 J	4.2 J	10 J	10.1 J	--	--	--	--	13
Cadmium, Total	7.6 J	1.4 J	0.75 J	4.4 J	2.7 J	--	--	--	--	2.5
Chromium, Total	315	124	52.1	118	34.4	--	--	--	--	30



TABLE 7A

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 7

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type									Unrestricted SCO (mg/kg)
	TP-7-(1-3)/8-4	TP-7-(1,3)/8-4	TP-7-2	TP-7-(4-7)	TP-7-(4-7)	SS-15	SS-16	SS-17	SS-31	
	0.0 - 2.0 composite	1.5 - 5.5 composite	2.0 - 5.0 grab	0.0 - 1.0 composite	2.0 - 7.0 composite	0.0 - 1.0 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	
Lead, Total	728	61.5	171	628	318	--	--	--	--	63
Mercury, Total	2.1	0.141	0.086	0.637	0.757	--	--	--	--	0.18
Cyanide, Total	ND	ND	ND	ND	ND	--	--	--	--	27

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. B = Analyte was detected in the associated blank as well as in the sample.
3. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
4. ND = parameter not detected above laboratory detection limit.
5. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006.
6. "--" = not analyzed for this parameter or no individual SCO
7. " **RED TEXT** " = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound	= Polycyclic Aromatic Hydrocarbon (PAH)
BOLD	= Value exceeds Unrestricted SCO



TABLE 7B

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 7

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type									Restricted- Commercial SCO (mg/kg)
	TP-7-(1-3)/8-4	TP-7-(1,3)/8-4	TP-7-2	TP-7-(4-7)	TP-7-(4-7)	SS-15	SS-16	SS-17	SS-31	
	0.0 - 2.0 composite	1.5 - 5.5 composite	2.0 - 5.0 grab	0.0 - 1.0 composite	2.0 - 7.0 composite	0.0 - 1.0 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	
STARS Volatile Organic Compounds (VOCs - Method 8021) - mg/kg										
n-Butylbenzene	--	--	7.6	--	--	--	--	--	--	500
Ethylbenzene	--	--	1.8	--	--	--	--	--	--	390
Isopropylbenzene	--	--	0.48	--	--	--	--	--	--	--
p-Cymene	--	--	1.4	--	--	--	--	--	--	--
n-Propylbenzene	--	--	1.6	--	--	--	--	--	--	500
1,2,4-Trimethylbenzene	--	--	26	--	--	--	--	--	--	190
m-Xylene	--	--	3.1	--	--	--	--	--	--	500
Xylenes, Total	--	--	3.1	--	--	--	--	--	--	500
Naphthalene	--	--	120	--	--	--	--	--	--	500
TOTAL VOCs (mg/kg)	0	0	162.0	0	0	0	0	0	0	--
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg										
Acenaphthylene	1.6 J	0.25 J	3.8 J	0.68 J	0.9 J	--	--	--	0.2 J	500
Anthracene	1 J	ND	2.7 J	0.48 J	1.4 J	--	--	--	0.072 J	500
Benzo(a)anthracene	6 J	1 J	9.3	2.2 J	4.3 J	--	--	--	0.33 J	5.6
Benzo(b)fluoranthene	8.7 J	1.1 J	12 J	2.8 J	5.1 J	--	--	--	0.78 J	5.6
Benzo(k)fluoranthene	2.2 J	0.46 J	3 J	1 J	1.6 J	--	--	--	0.23 J	56
Benzo(g,h,i)perylene	5.8 J	0.65 J	6.8 J	1.1 J	2.7 J	--	--	--	0.62	500
Benzo(a)pyrene	6.4 J	0.87 J	9.7	2 J	3.6 J	--	--	--	0.51	1
Chrysene	6.2 J	0.96 J	10	2.1 J	4.3 J	--	--	--	0.37 J	56
Dibenzo(a,h)anthracene	1.5 J	0.2 J	1.7 J	0.35 J	0.81 J	--	--	--	0.18 J	0.56
Dibenzofuran	ND	ND	1 J	ND	ND	--	--	--	0.04 J	350
Fluoranthene	9.3	1.5 J	16	3.2 J	8.1	--	--	--	0.35 J	500
Fluorene	ND	ND	2.9 J	ND	0.59 J	--	--	--	ND	500
Indeno(1,2,3-cd)pyrene	4.7 J	0.59 J	5.4 J	0.98 J	2.2 J	--	--	--	0.53	5.6
2-Methylnaphthalene	ND	ND	15	ND	ND	--	--	--	0.099 J	--
Naphthalene	0.83 J	ND	7.5 J	ND	0.44 J	--	--	--	0.063 J	500
Phenanthrene	4.2 J	0.45 J	13	1.7 J	5.2 J	--	--	--	0.15 J	500
Pyrene	8.5	1.4 J	17	2.8 J	7.1 J	--	--	--	0.35 J	500
TOTAL SVOCs (mg/kg)	66.93	9.43	136.8	21.39	48.34	0	0	0	4.874	--
Polychlorinated Biphenyls (PCBs) - mg/kg										
Aroclor 1260	--	--	--	--	--	ND	0.017 J	0.14	--	1
Inorganic Compounds - mg/kg										
Arsenic, Total	116 J	15.8 J	4.2 J	10 J	10.1 J	--	--	--	--	16
Cadmium, Total	7.6 J	1.4 J	0.75 J	4.4 J	2.7 J	--	--	--	--	9.3
Chromium, Total	315	124	52.1	118	34.4	--	--	--	--	1,500



TABLE 7B

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 7

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type									Restricted-Commercial SCO (mg/kg)
	TP-7-(1-3)/8-4	TP-7-(1,3)/8-4	TP-7-2	TP-7-(4-7)	TP-7-(4-7)	SS-15	SS-16	SS-17	SS-31	
	0.0 - 2.0 composite	1.5 - 5.5 composite	2.0 - 5.0 grab	0.0 - 1.0 composite	2.0 - 7.0 composite	0.0 - 1.0 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	0.0 - 1.0 grab	
Lead, Total	728	61.5	171	628	318	--	--	--	--	1,000
Mercury, Total	2.1	0.141	0.086	0.637	0.757	--	--	--	--	2.8
Cyanide, Total	ND	ND	ND	ND	ND	--	--	--	--	27

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. B = Analyte was detected in the associated blank as well as in the sample.
3. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
4. ND = parameter not detected above laboratory detection limit.
5. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006.
6. "--" = not analyzed for this parameter or no individual SCO
7. " **RED TEXT** " = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound	= Polycyclic Aromatic Hydrocarbon (PAH)
BOLD	= Value exceeds Restricted-Commercial SCO



TABLE 8A

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT E

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type						Unrestricted SCO (mg/kg)
	TP-8-(1-3)	TP-8-(1-3)	TP-8-6	SS-18	SS-(32-33)	SS-34	
	0.0 - 1.0	1.0 - 7.0	1.0 - 3.0	0.0 - 1.0	0.0 - 1.0	0.0 - 1.0	
	composite	composite	grab	grab	composite	grab	
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg							
Acenaphthene	0.62 J	ND	--	--	0.41 J	0.67 J	20
Acenaphthylene	0.36 J	ND	--	--	0.22 J	ND	100
Anthracene	1.4 J	ND	--	--	0.83 J	1.6 J	100
Benzo(a)anthracene	3.7 J	0.81 J	--	--	2.4	6.7 J	1
Benzo(b)fluoranthene	4.2 J	1.4 J	--	--	3.2 J	9.2 J	1
Benzo(k)fluoranthene	1.6 J	1.6 J	--	--	1.1 J	3.2 J	0.8
Benzo(g,h,i)perylene	2.3 J	0.7 J	--	--	1.3 J	4.3 J	100
Benzo(a)pyrene	3.1 J	0.85 J	--	--	2.3	7.2 J	1
Chrysene	3.8 J	0.82 J	--	--	2.5	6.6 J	1
Dibenzo(a,h)anthracene	0.62 J	ND	--	--	0.4 J	1.2 J	0.33
Dibenzofuran	0.31 J	ND	--	--	0.27 J	ND	7
Di-n-butyl phthalate	ND	ND	--	--	0.18 J	ND	--
Fluoranthene	8.6	1.2 J	--	--	4.9	13	100
Fluorene	0.49 J	ND	--	--	0.35 J	0.48 J	30
Indeno(1,2,3-cd)pyrene	1.9 J	0.55 J	--	--	1.2 J	4.1 J	0.5
2-Methylnaphthalene	ND	ND	--	--	0.2 J	ND	--
Naphthalene	0.27 J	ND	--	--	0.24 J	ND	12
Phenanthrene	5.4	0.54 J	--	--	3.5	6.2 J	100
Pyrene	7.5	1.1 J	--	--	4	10	100
TOTAL SVOCs (mg/kg)	46.2	9.57	0	0	29.5	74.5	--
Polychlorinated Biphenyls (PCBs) - mg/kg							
Aroclor 1248	--	--	--	3.4	--	--	0.1
Inorganic Compounds - mg/kg							
Arsenic, Total	11.5 J	6.3 J	17.3	--	4.6 J	17.8	13
Cadmium, Total	2.6 J	0.71 J	6.3	--	2.9 J	4.8	2.5
Chromium, Total	84	101	180 J	--	71.5 J	95.3	30
Lead, Total	286	57.9	2180 J	--	1250 J	510	63
Mercury, Total	0.293	0.033	0.473 J	--	5.7 J	4.2	0.18
Cyanide, Total	2.2	ND	ND	--	7.7 J	10.5 J	27

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. B = Analyte was detected in the associated blank as well as in the sample.
3. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
4. ND = parameter not detected above laboratory detection limit.
5. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006.
6. "--" = not analyzed for this parameter or no individual SCO
7. " **RED TEXT** " = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound	= Polycyclic Aromatic Hydrocarbon (PAH)
BOLD	= Value exceeds unrestricted SCO



TABLE 8B

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 8

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type						Restricted-Commercial SCO (mg/kg)
	TP-8-(1-3)	TP-8-(1-3)	TP-8-6	SS-18	SS-(32-33)	SS-34	
	0.0 - 1.0	1.0 - 7.0	1.0 - 3.0	0.0 - 1.0	0.0 - 1.0	0.0 - 1.0	
	composite	composite	grab	grab	composite	grab	
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg							
Acenaphthene	0.62 J	ND	--	--	0.41 J	0.67 J	500
Acenaphthylene	0.36 J	ND	--	--	0.22 J	ND	500
Anthracene	1.4 J	ND	--	--	0.83 J	1.6 J	500
Benzo(a)anthracene	3.7 J	0.81 J	--	--	2.4	6.7 J	5.6
Benzo(b)fluoranthene	4.2 J	1.4 J	--	--	3.2 J	9.2 J	5.6
Benzo(k)fluoranthene	1.6 J	1.6 J	--	--	1.1 J	3.2 J	56
Benzo(g,h,i)perylene	2.3 J	0.7 J	--	--	1.3 J	4.3 J	500
Benzo(a)pyrene	3.1 J	0.85 J	--	--	2.3	7.2 J	1
Chrysene	3.8 J	0.82 J	--	--	2.5	6.6 J	56
Dibenzo(a,h)anthracene	0.62 J	ND	--	--	0.4 J	1.2 J	0.56
Dibenzofuran	0.31 J	ND	--	--	0.27 J	ND	350
Di-n-butyl phthalate	ND	ND	--	--	0.18 J	ND	--
Fluoranthene	8.6	1.2 J	--	--	4.9	13	500
Fluorene	0.49 J	ND	--	--	0.35 J	0.48 J	500
Indeno(1,2,3-cd)pyrene	1.9 J	0.55 J	--	--	1.2 J	4.1 J	5.6
2-Methylnaphthalene	ND	ND	--	--	0.2 J	ND	--
Naphthalene	0.27 J	ND	--	--	0.24 J	ND	500
Phenanthrene	5.4	0.54 J	--	--	3.5	6.2 J	500
Pyrene	7.5	1.1 J	--	--	4	10	500
TOTAL SVOCs (mg/kg)	46.2	9.57	0	0	29.5	74.5	--
Polychlorinated Biphenyls (PCBs) - mg/kg							
Aroclor 1248	--	--	--	3.4	--	--	1
Inorganic Compounds - mg/kg							
Arsenic, Total	11.5 J	6.3 J	17.3	--	4.6 J	17.8	16
Cadmium, Total	2.6 J	0.71 J	6.3	--	2.9 J	4.8	9.3
Chromium, Total	84	101	180 J	--	71.5 J	95.3	1,500
Lead, Total	286	57.9	2180 J	--	1250 J	510	1,000
Mercury, Total	0.293	0.033	0.473 J	--	5.7 J	4.2	2.8
Cyanide, Total	2.2	ND	ND	--	7.7 J	10.5 J	27

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. B = Analyte was detected in the associated blank as well as in the sample.
3. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
4. ND = parameter not detected above laboratory detection limit.
5. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006.
6. "--" = not analyzed for this parameter or no individual SCO
7. "RED TEXT" = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound
BOLD

- = Polycyclic Aromatic Hydrocarbon (PAH)
- = Value exceeds Restricted-Commercial SCO



TABLE 9A

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 6

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type												Unrestricted SCO (mg/kg)
	TP-9-1	TP-9-2	TP-9-3	TP-9-3	TP-9-5	TP-9-(125)	TP-9-(125)	SS-09	SS-(10-13)	SS-35	SS-36		
	1.0 - 3.5	1.0 - 7.0	0.0 - 1.0	1.0 - 4.5	1.0 - 4.5	0.0 - 1.0	1.0 - 7.0	0.0 - 1.0	0.0 - 1.0	0.0 - 1.0	0.0 - 1.0		
	grab	grab	grab	grab	grab	composite	composite	grab	composite	grab	grab		
STARS Volatile Organic Compounds (VOCs - Method 8021) ² - mg/kg													
n-Butylbenzene	ND	ND	--	8.2	ND	--	--	--	--	--	--	12	
sec-Butylbenzene	ND	ND	--	6.0	ND	--	--	--	--	--	--	11	
tert-Butylbenzene	ND	ND	--	2.0	ND	--	--	--	--	--	--	5.9	
Isopropylbenzene	ND	ND	--	0.75	ND	--	--	--	--	--	--	--	
p-Cymene	ND	ND	--	2.3	ND	--	--	--	--	--	--	--	
n-Propylbenzene	ND	ND	--	3.4	ND	--	--	--	--	--	--	3.9	
Toluene	ND	ND	--	0.16	ND	--	--	--	--	--	--	0.7	
1,2,4-Trimethylbenzene	ND	ND	--	7.9	ND	--	--	--	--	--	--	3.6	
1,3,5-Trimethylbenzene	ND	ND	--	1.6	ND	--	--	--	--	--	--	8.4	
o-Xylene	ND	ND	--	2.1	ND	--	--	--	--	--	--	0.26	
m-Xylene	ND	ND	--	0.23	ND	--	--	--	--	--	--	0.26	
Xylenes, Total	ND	ND	--	2.3	ND	--	--	--	--	--	--	0.26	
Naphthalene	ND	ND	--	16	ND	--	--	--	--	--	--	12	
Methylene Chloride	0.007	--	--	--	--	--	--	--	--	--	--	0.05	
TOTAL VOCs (mg/kg)	0.007	0	0	50.8	0	0	0	0	0	0	0	--	
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) ³ - mg/kg													
Acenaphthene	--	--	0.096 J	5.1	--	ND	ND	--	0.18 J	--	ND	20	
Acenaphthylene	--	--	0.4 J	ND	--	0.62 J	ND	--	0.69 J	--	0.38 J	100	
Anthracene	--	--	0.57 J	3.2	--	0.62 J	ND	--	0.62 J	--	0.24 J	100	
Benzo(a)anthracene	--	--	1.3	0.21 J	--	1.6 J	0.5 J	--	2.9	--	1.1 J	1	
Benzo(b)fluoranthene	--	--	2 J	ND	--	3.2 J	0.75 J	--	6.1 J	--	2.4 J	1	
Benzo(k)fluoranthene	--	--	0.64 J	ND	--	1 J	0.2 J	--	1.7 J	--	0.87 J	0.8	
Benzo(g,h,i)perylene	--	--	1.2	ND	--	1.6 J	0.38 J	--	4.4	--	1.3 J	100	
Benzo(a)pyrene	--	--	1.2	ND	--	2 J	0.46 J	--	4.2	--	1.7 J	1	
Chrysene	--	--	1.3	0.4 J	--	1.8 J	0.51 J	--	3	--	1.2 J	1	
Dibenzo(a,h)anthracene	--	--	0.28 J	ND	--	0.48 J	ND	--	1.1 J	--	0.29 J	0.33	
Dibenzofuran	--	--	0.17 J	1.3 J	--	0.27 J	ND	--	0.13 J	--	ND	7	
Fluoranthene	--	--	2.4	0.55 J	--	2.6 J	0.87 J	--	3.8	--	1.6 J	100	
Fluorene	--	--	0.16 J	9	--	0.2 J	ND	--	0.1 J	--	ND	30	
Indeno(1,2,3-cd)pyrene	--	--	0.89	ND	--	1.4 J	0.37 J	--	3.6	--	1 J	0.5	
2-Methylnaphthalene	--	--	0.5 J	35	--	0.29 J	ND	--	0.17 J	--	ND	--	
Naphthalene	--	--	0.32 J	ND	--	0.42 J	ND	--	0.25 J	--	ND	12	
Phenanthrene	--	--	1.9	23	--	1.4 J	0.75 J	--	1.5	--	0.49 J	100	
Pyrene	--	--	2	2.4	--	2.4 J	0.79 J	--	3.5	--	1.5 J	100	
TOTAL SVOCs (mg/kg)	0	0	17.33	80.16	0	21.0	5.58	0	37.84	0	14.07	--	
Polychlorinated Biphenyls (PCBs) - mg/kg													
Aroclor 1248	--	--	--	--	--	--	--	0.088	ND	--	--	0.1	
Aroclor 1260	--	--	--	--	--	--	--	0.78	0.033	--	--	0.1	
Inorganic Compounds - mg/kg													
Arsenic, Total	--	--	26.8	4.8	--	19.5 J	5.4 J	--	79.8 J	--	--	13	



TABLE 9A

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 6

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type											Unrestricted SCO (mg/kg)
	TP-9-1	TP-9-2	TP-9-3	TP-9-3	TP-9-5	TP-9-(125)	TP-9-(125)	SS-09	SS-(10-13)	SS-35	SS-36	
	1.0 - 3.5 grab	1.0 - 7.0 grab	0.0 - 1.0 grab	1.0 - 4.5 grab	1.0 - 4.5 grab	0.0 - 1.0 composite	1.0 - 7.0 composite	0.0 - 1.0 grab	0.0 - 1.0 composite	0.0 - 1.0 grab	0.0 - 1.0 grab	
Cadmium, Total	--	--	5.5 J	ND	--	2.8	0.41	--	3.5 J	--	--	2.5
Chromium, Total	--	--	249 J	6.3 J	--	174 J	23.7 J	--	90.6 J	--	--	30
Lead, Total	--	--	620 J	73.7 J	--	207 J	126 J	--	389 J	--	--	63
Mercury, Total	--	--	0.144	0.031	--	0.155 J	0.037 J	--	0.421 J	--	--	0.18
Cyanide, Total	--	--	ND	ND	--	1.8 J	1.9 J	--	3 J	--	--	27
Dioxins - mg/kg												
2,3,7,8-TCDD	--	--	--	--	--	--	--	--	--	ND	--	--
Herbicides - mg/kg												
2,4-D	--	--	--	--	--	--	--	--	--	0.083 J	--	--
Pentachlorophenol	--	--	--	--	--	--	--	--	--	0.12	--	--
Pesticides - mg/kg												
4,4'-DDT	--	--	--	--	--	--	--	--	--	0.023	--	0.0033

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Soil/fill sample TP-9-1 (1.0 - 3.5) was analyzed for TCL VOCs plus STARS, all other samples were analyzed for STARS VOCs, only.
3. Soil/fill sample TP-9-(125) (1.0 - 7.0) was analyzed for TCL SVOCs (BNAs), all other samples were analyzed for BN SVOCs, only.
4. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
5. ND = parameter not detected above laboratory detection limit.
6. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006.
7. "--" = not analyzed for this parameter or no individual SCO
8. * RED TEXT * = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound	= TCL VOC
compound	= Polycyclic Aromatic Hydrocarbon (PAH)
BOLD	= Value exceeds Unrestricted SCO



TABLE 9B

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT :

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type											Restricted-Commercial SCO (mg/kg)
	TP-9-1	TP-9-2	TP-9-3	TP-9-3	TP-9-5	TP-9-(125)	TP-9-(125)	SS-09	SS-(10-13)	SS-35	SS-36	
	1.0 - 3.5	1.0 - 7.0	0.0 - 1.0	1.0 - 4.5	1.0 - 4.5	0.0 - 1.0	1.0 - 7.0	0.0 - 1.0	0.0 - 1.0	0.0 - 1.0	0.0 - 1.0	
	grab	grab	grab	grab	grab	composite	composite	grab	composite	grab	grab	
STARS Volatile Organic Compounds (VOCs - Method 8021) ² - mg/kg												
n-Butylbenzene	ND	ND	--	8.2	ND	--	--	--	--	--	--	500
sec-Butylbenzene	ND	ND	--	6.0	ND	--	--	--	--	--	--	500
tert-Butylbenzene	ND	ND	--	2.0	ND	--	--	--	--	--	--	500
Isopropylbenzene	ND	ND	--	0.75	ND	--	--	--	--	--	--	--
p-Cymene	ND	ND	--	2.3	ND	--	--	--	--	--	--	--
n-Propylbenzene	ND	ND	--	3.4	ND	--	--	--	--	--	--	500
Toluene	ND	ND	--	0.16	ND	--	--	--	--	--	--	500
1,2,4-Trimethylbenzene	ND	ND	--	7.9	ND	--	--	--	--	--	--	190
1,3,5-Trimethylbenzene	ND	ND	--	1.6	ND	--	--	--	--	--	--	190
o-Xylene	ND	ND	--	2.1	ND	--	--	--	--	--	--	500
m-Xylene	ND	ND	--	0.23	ND	--	--	--	--	--	--	500
Xylenes, Total	ND	ND	--	2.3	ND	--	--	--	--	--	--	500
Naphthalene	ND	ND	--	16	ND	--	--	--	--	--	--	500
Methylene Chloride	0.007	--	--	--	--	--	--	--	--	--	--	500
TOTAL VOCs (mg/kg)	0.007	0	0	50.8	0	0	0	0	0	0	0	--
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) ³ - mg/kg												
Acenaphthene	--	--	0.096 J	5.1	--	ND	ND	--	0.18 J	--	ND	500
Acenaphthylene	--	--	0.4 J	ND	--	0.62 J	ND	--	0.69 J	--	0.38 J	500
Anthracene	--	--	0.57 J	3.2	--	0.62 J	ND	--	0.62 J	--	0.24 J	500
Benzo(a)anthracene	--	--	1.3	0.21 J	--	1.6 J	0.5 J	--	2.9	--	1.1 J	5.6
Benzo(b)fluoranthene	--	--	2 J	ND	--	3.2 J	0.75 J	--	6.1 J	--	2.4 J	5.6
Benzo(k)fluoranthene	--	--	0.64 J	ND	--	1 J	0.2 J	--	1.7 J	--	0.87 J	56
Benzo(g,h,i)perylene	--	--	1.2	ND	--	1.6 J	0.38 J	--	4.4	--	1.3 J	500
Benzo(a)pyrene	--	--	1.2	ND	--	2 J	0.46 J	--	4.2	--	1.7 J	1
Chrysene	--	--	1.3	0.4 J	--	1.8 J	0.51 J	--	3	--	1.2 J	56
Dibenzo(a,h)anthracene	--	--	0.28 J	ND	--	0.48 J	ND	--	1.1 J	--	0.29 J	0.56
Dibenzofuran	--	--	0.17 J	1.3 J	--	0.27 J	ND	--	0.13 J	--	ND	350
Fluoranthene	--	--	2.4	0.55 J	--	2.6 J	0.87 J	--	3.8	--	1.6 J	500
Fluorene	--	--	0.16 J	9	--	0.2 J	ND	--	0.1 J	--	ND	500
Indeno(1,2,3-cd)pyrene	--	--	0.89	ND	--	1.4 J	0.37 J	--	3.6	--	1 J	5.6
2-Methylnaphthalene	--	--	0.5 J	35	--	0.29 J	ND	--	0.17 J	--	ND	--
Naphthalene	--	--	0.32 J	ND	--	0.42 J	ND	--	0.25 J	--	ND	500
Phenanthrene	--	--	1.9	23	--	1.4 J	0.75 J	--	1.5	--	0.49 J	500
Pyrene	--	--	2	2.4	--	2.4 J	0.79 J	--	3.5	--	1.5 J	500
TOTAL SVOCs (mg/kg)	0	0	17.33	80.16	0	21.0	5.58	0	37.84	0	14.07	--



TABLE 9B

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 9

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type											Restricted-Commercial SCO (mg/kg)
	TP-9-1	TP-9-2	TP-9-3	TP-9-3	TP-9-5	TP-9-(125)	TP-9-(125)	SS-09	SS-(10-13)	SS-35	SS-36	
	1.0 - 3.5 grab	1.0 - 7.0 grab	0.0 - 1.0 grab	1.0 - 4.5 grab	1.0 - 4.5 grab	0.0 - 1.0 composite	1.0 - 7.0 composite	0.0 - 1.0 grab	0.0 - 1.0 composite	0.0 - 1.0 grab	0.0 - 1.0 grab	
Polychlorinated Biphenyls (PCBs) - mg/kg												
Aroclor 1248	--	--	--	--	--	--	--	0.088	ND	--	--	1
Aroclor 1260	--	--	--	--	--	--	--	0.78	0.033	--	--	1
Inorganic Compounds - mg/kg												
Arsenic, Total	--	--	26.8	4.8	--	19.5 J	5.4 J	--	79.8 J	--	--	16
Cadmium, Total	--	--	5.5 J	ND	--	2.8	0.41	--	3.5 J	--	--	9.3
Chromium, Total	--	--	249 J	6.3 J	--	174 J	23.7 J	--	90.6 J	--	--	1,500
Lead, Total	--	--	620 J	73.7 J	--	207 J	126 J	--	389 J	--	--	1,000
Mercury, Total	--	--	0.144	0.031	--	0.155 J	0.037 J	--	0.421 J	--	--	2.8
Cyanide, Total	--	--	ND	ND	--	1.8 J	1.9 J	--	3 J	--	--	27
Dioxins - mg/kg												
2,3,7,8-TCDD	--	--	--	--	--	--	--	--	--	ND	--	--
Herbicides - mg/kg												
2,4-D	--	--	--	--	--	--	--	--	--	0.083 J	--	--
Pentachlorophenol	--	--	--	--	--	--	--	--	--	0.12	--	--
Pesticides - mg/kg												
4,4'-DDT	--	--	--	--	--	--	--	--	--	0.023	--	47

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Soil/fill sample TP-9-1 (1.0 - 3.5) was analyzed for TCL VOCs plus STARS, all other samples were analyzed for STARS VOCs, only.
3. Soil/fill sample TP-9-(125) (1.0 - 7.0) was analyzed for TCL SVOCs (BNAs), all other samples were analyzed for BN SVOCs, only.
4. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
5. ND = parameter not detected above laboratory detection limit.
6. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006.
7. "--" = not analyzed for this parameter or no individual SCO
8. "RED TEXT" = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound	= TCL VOC
compound	= Polycyclic Aromatic Hydrocarbon (PAH)
BOLD	= Value exceeds Restricted-Commercial SCO



TABLE 10A

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 1C

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type									Unrestricted SCO (mg/kg)
	TP-10-1	TP-10-(1-3)	TP-10-(2-3)	TP-10-(4-5)	TP-10-(4-5)	TP-10-6	TP-10-6	TP-10-7	SS-14	
	1.0 - 4.5 grab	0.0 - 1.0 composite	1.0 - 4.0 composite	0.0 - 1.0 composite	1.0 - 2.5 composite	0.0 - 1.0 grab	1.0 - 5.5 grab	1.0 - 2.5 grab	0.0 - 1.0 grab	
STARS Volatile Organic Compounds (VOCs - Method 8021) - mg/kg										
n-Butylbenzene	ND	--	--	--	--	ND	19	--	--	12
sec-Butylbenzene	5.5	--	--	--	--	ND	22	--	--	11
tert-Butylbenzene	ND	--	--	--	--	ND	16	--	--	5.9
Isopropylbenzene	0.29	--	--	--	--	ND	ND	--	--	--
p-Cymene	2.1	--	--	--	--	ND	16	--	--	--
n-Propylbenzene	ND	--	--	--	--	ND	30	--	--	3.9
Toluene	ND	--	--	--	--	ND	25	--	--	0.7
1,2,4-Trimethylbenzene	ND	--	--	--	--	ND	77	--	--	3.6
1,3,5-Trimethylbenzene	2.2	--	--	--	--	ND	13	--	--	8.4
o-Xylene	ND	--	--	--	--	ND	21	--	--	0.26
m-Xylene	ND	--	--	--	--	ND	14	--	--	0.26
Xylenes, Total	ND	--	--	--	--	ND	34	--	--	0.26
Naphthalene	4.7	--	--	--	--	ND	9.1	--	--	12
Methyl tert butyl ether	ND	--	--	--	--	ND	0.93	--	--	0.93
TOTAL VOCs (mg/kg)	14.79	0	0	0	0	0	263.0	0	0	--
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg										
Acenaphthene	2.9 J	1.7 J	0.056 J	ND	ND	--	--	ND	--	20
Acenaphthylene	0.63 J	ND	ND	0.2 J	ND	--	--	ND	--	100
Anthracene	0.61 J	3.3 J	0.12 J	0.14 J	ND	--	--	ND	--	100
Benzo(a)anthracene	1.4 J	7.7	0.3 J	0.72 J	0.077 J	--	--	0.042 J	--	1
Benzo(b)fluoranthene	1.5 J	9.7 J	0.33 J	1.1 J	0.19 J	--	--	0.05 J	--	1
Benzo(k)fluoranthene	0.69 J	2.3 J	0.12 J	0.39 J	0.19 J	--	--	ND	--	0.8
Benzo(g,h,i)perylene	0.89 J	3.6 J	0.12 J	0.59 J	0.099 J	--	--	0.034 J	--	100
Benzo(a)pyrene	1.1 J	6.4 J	0.25 J	0.81	0.092 J	--	--	0.04 J	--	1
Chrysene	1 J	7 J	0.26 J	0.72 J	0.08 J	--	--	0.034 J	--	1
Dibenzo(a,h)anthracene	ND	1.2 J	0.043 J	0.16 J	0.025 J	--	--	ND	--	0.33
Dibenzofuran	ND	0.71 J	ND	0.047 J	ND	--	--	ND	--	7
Fluoranthene	4.5 J	15	0.62	1.1	0.14 J	--	--	0.056 J	--	100
Fluorene	1.2 J	1.4 J	0.042 J	ND	ND	--	--	ND	--	30
Indeno(1,2,3-cd)pyrene	0.76 J	3 J	0.11 J	0.5 J	0.083 J	--	--	0.029 J	--	0.5
2-Methylnaphthalene	0.48 J	ND	ND	0.073 J	ND	--	--	ND	--	--
Naphthalene	ND	0.41 J	ND	0.068 J	ND	--	--	ND	--	12
Phenanthrene	0.48 J	11	0.39	0.51 J	0.051 J	--	--	0.028 J	--	100
Pyrene	3.3 J	12	0.45	0.92	0.12 J	--	--	0.057 J	--	100
TOTAL SVOCs (mg/kg)	21.44	86.42	3.211	8.048	1.147	0	0	0.37	0	--
Polychlorinated Biphenyls (PCBs) - mg/kg										
TOTAL PCBs (mg/kg)	--	--	--	--	--	--	--	--	ND	0.1



TABLE 10A

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 1C

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type									Unrestricted SCO (mg/kg)
	TP-10-1	TP-10-(1-3)	TP-10-(2-3)	TP-10-(4-5)	TP-10-(4-5)	TP-10-6	TP-10-6	TP-10-7	SS-14	
	1.0 - 4.5 grab	0.0 - 1.0 composite	1.0 - 4.0 composite	0.0 - 1.0 composite	1.0 - 2.5 composite	0.0 - 1.0 grab	1.0 - 5.5 grab	1.0 - 2.5 grab	0.0 - 1.0 grab	
Inorganic Compounds - mg/kg										
Arsenic, Total	18 J	29.5 J	2.4 J	18.4 J	2.7 J	--	--	--	--	13
Cadmium, Total	1.2	3.3	0.38	2.7	ND	--	--	--	--	2.5
Chromium, Total	28.8 J	167 J	9.8 J	29 J	7.5 J	--	--	--	--	30
Lead, Total	421 J	234 J	26.2 J	260 J	91.1 J	--	--	--	--	63
Mercury, Total	0.113 J	0.092 J	ND	0.356 J	0.043 J	--	--	--	--	0.18
Cyanide, Total	ND	10.3 J	ND	ND	ND	--	--	--	--	27
TCLP - (units shown parenthetically)										
2-Butanone (mg/L)	--	--	--	--	--	ND	0.026 J	--	--	--
Lead, Total (mg/L)	--	--	--	--	--	0.0167	0.0653	--	--	--
Flashpoint (°F)	--	--	--	--	--	> 200	> 200	--	--	--
H ₂ S Released from Waste (mg/kg)	--	--	--	--	--	ND	ND	--	--	--
HCN Released from Waste (mg/kg)	--	--	--	--	--	ND	ND	--	--	--
Leachable pH (S.U.)	--	--	--	--	--	8.39	9.04	--	--	--

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
3. ND = parameter not detected above laboratory detection limit.
4. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006.
5. "--" = not analyzed for this parameter or no individual SCO
6. "RED TEXT" = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound
BOLD

- = Polycyclic Aromatic Hydrocarbon (PAH)
- = Value exceeds Unrestricted SCO



TABLE 10B

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 1C

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type									Restricted-Commercial SCO (mg/kg)
	TP-10-1	TP-10-(1-3)	TP-10-(2-3)	TP-10-(4-5)	TP-10-(4-5)	TP-10-6	TP-10-6	TP-10-7	SS-14	
	1.0 - 4.5 grab	0.0 - 1.0 composite	1.0 - 4.0 composite	0.0 - 1.0 composite	1.0 - 2.5 composite	0.0 - 1.0 grab	1.0 - 5.5 grab	1.0 - 2.5 grab	0.0 - 1.0 grab	
STARS Volatile Organic Compounds (VOCs - Method 8021) - mg/kg										
n-Butylbenzene	ND	--	--	--	--	ND	19	--	--	500
sec-Butylbenzene	5.5	--	--	--	--	ND	22	--	--	500
tert-Butylbenzene	ND	--	--	--	--	ND	16	--	--	500
Isopropylbenzene	0.29	--	--	--	--	ND	ND	--	--	--
p-Cymene	2.1	--	--	--	--	ND	16	--	--	--
n-Propylbenzene	ND	--	--	--	--	ND	30	--	--	500
Toluene	ND	--	--	--	--	ND	25	--	--	500
1,2,4-Trimethylbenzene	ND	--	--	--	--	ND	77	--	--	190
1,3,5-Trimethylbenzene	2.2	--	--	--	--	ND	13	--	--	190
o-Xylene	ND	--	--	--	--	ND	21	--	--	500
m-Xylene	ND	--	--	--	--	ND	14	--	--	500
Xylenes, Total	ND	--	--	--	--	ND	34	--	--	500
Naphthalene	4.7	--	--	--	--	ND	9.1	--	--	500
Methyl tert butyl ether	ND	--	--	--	--	ND	0.93	--	--	500
TOTAL VOCs (mg/kg)	14.79	0	0	0	0	0	263.0	0	0	--
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - mg/kg										
Acenaphthene	2.9 J	1.7 J	0.056 J	ND	ND	--	--	ND	--	500
Acenaphthylene	0.63 J	ND	ND	0.2 J	ND	--	--	ND	--	500
Anthracene	0.61 J	3.3 J	0.12 J	0.14 J	ND	--	--	ND	--	500
Benzo(a)anthracene	1.4 J	7.7	0.3 J	0.72 J	0.077 J	--	--	0.042 J	--	5.6
Benzo(b)fluoranthene	1.5 J	9.7 J	0.33 J	1.1 J	0.19 J	--	--	0.05 J	--	5.6
Benzo(k)fluoranthene	0.69 J	2.3 J	0.12 J	0.39 J	0.19 J	--	--	ND	--	56
Benzo(g,h,i)perylene	0.89 J	3.6 J	0.12 J	0.59 J	0.099 J	--	--	0.034 J	--	500
Benzo(a)pyrene	1.1 J	6.4 J	0.25 J	0.81	0.092 J	--	--	0.04 J	--	1
Chrysene	1 J	7 J	0.26 J	0.72 J	0.08 J	--	--	0.034 J	--	56
Dibenzo(a,h)anthracene	ND	1.2 J	0.043 J	0.16 J	0.025 J	--	--	ND	--	0.56
Dibenzofuran	ND	0.71 J	ND	0.047 J	ND	--	--	ND	--	350
Fluoranthene	4.5 J	15	0.62	1.1	0.14 J	--	--	0.056 J	--	500
Fluorene	1.2 J	1.4 J	0.042 J	ND	ND	--	--	ND	--	500
Indeno(1,2,3-cd)pyrene	0.76 J	3 J	0.11 J	0.5 J	0.083 J	--	--	0.029 J	--	5.6
2-Methylnaphthalene	0.48 J	ND	ND	0.073 J	ND	--	--	ND	--	--
Naphthalene	ND	0.41 J	ND	0.068 J	ND	--	--	ND	--	500
Phenanthrene	0.48 J	11	0.39	0.51 J	0.051 J	--	--	0.028 J	--	500
Pyrene	3.3 J	12	0.45	0.92	0.12 J	--	--	0.057 J	--	500
TOTAL SVOCs (mg/kg)	21.44	86.42	3.211	8.048	1.147	0	0	0.37	0	--
Polychlorinated Biphenyls (PCBs) - mg/kg										
TOTAL PCBs (mg/kg)	--	--	--	--	--	--	--	--	ND	1



TABLE 10B

SOIL ANALYTICAL SUMMARY FOR AREA OF ASSESSMENT 1C

Alternative Analysis Report
Phase I Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment, Inc.

Parameter ¹	Sample Location, Depth Interval (fbgs), and Type									Restricted-Commercial SCO (mg/kg)
	TP-10-1	TP-10-(1-3)	TP-10-(2-3)	TP-10-(4-5)	TP-10-(4-5)	TP-10-6	TP-10-6	TP-10-7	SS-14	
	1.0 - 4.5 grab	0.0 - 1.0 composite	1.0 - 4.0 composite	0.0 - 1.0 composite	1.0 - 2.5 composite	0.0 - 1.0 grab	1.0 - 5.5 grab	1.0 - 2.5 grab	0.0 - 1.0 grab	
Inorganic Compounds - mg/kg										
Arsenic, Total	18 J	29.5 J	2.4 J	18.4 J	2.7 J	--	--	--	--	16
Cadmium, Total	1.2	3.3	0.38	2.7	ND	--	--	--	--	9.3
Chromium, Total	28.8 J	167 J	9.8 J	29 J	7.5 J	--	--	--	--	1,500
Lead, Total	421 J	234 J	26.2 J	260 J	91.1 J	--	--	--	--	1,000
Mercury, Total	0.113 J	0.092 J	ND	0.356 J	0.043 J	--	--	--	--	2.8
Cyanide, Total	ND	10.3 J	ND	ND	ND	--	--	--	--	27
TCLP - (units shown parenthetically)										
2-Butanone (mg/L)	--	--	--	--	--	ND	0.026 J	--	--	--
Lead, Total (mg/L)	--	--	--	--	--	0.0167	0.0653	--	--	--
Flashpoint (°F)	--	--	--	--	--	> 200	> 200	--	--	--
H ₂ S Released from Waste (mg/kg)	--	--	--	--	--	ND	ND	--	--	--
HCN Released from Waste (mg/kg)	--	--	--	--	--	ND	ND	--	--	--
Leachable pH (S.U.)	--	--	--	--	--	8.39	9.04	--	--	--

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
3. ND = parameter not detected above laboratory detection limit.
4. SCO = Soil Cleanup Objective (Protection of Public Health - Commercial), per NYSDEC 6NYCRR Part 375-6.8(b), Final December 2006.
5. " - " = not analyzed for this parameter or no individual SCO
6. " RED TEXT " = Data was qualified per the third party Data Usability Summary Report (DUSR).

Color Code:

compound	= Polycyclic Aromatic Hydrocarbon (PAH)
BOLD	= Value exceeds Restricted-Commercial SCO

APPENDIX B

LAND USE EVALUATION

APPENDIX B

LAND USE EVALUATION

NYSDEC's Part 375 regulations require that the reasonableness of the anticipated future land be factored into the evaluation of remedial alternatives. The regulations identify 16 criteria that must be considered. These criteria and the resultant outcome for the Phase I Business Park are presented below.

1. *Current use and historical and/or recent development patterns:* The Phase I Business Park Site is located in an industrial area in the City of Lackawanna. The Site was formerly used to house a portion of Bethlehem Steel Company's integrated steel making operations. Most facility operations ceased in 1983, with a majority of the structures at the facility demolished in subsequent years. The approximately 102-acre Site is comprised mostly of vacant land, but includes some active railroad spurs and other structures. **Accordingly, industrial/commercial-use redevelopment would be consistent with historic site use.**
2. *Applicable zoning laws and maps:* The Site is currently zoned industrial and is located in an area of the City zoned primarily as industrial and commercial. **Use in an industrial/commercial capacity is therefore consistent with current zoning.**
3. *Brownfield opportunity areas as designated set forth in GML 970-r:* The Brownfield Opportunity Areas Program provides municipalities and community based organizations with assistance, to complete revitalization plans and implementation strategies for areas or communities affected by the presence of brownfield sites, and site assessments for strategic sites. Although the Phase I Business Park Site does not lie within a BOA, a BOA application has been filed for the area by the City of Lackawanna. As such, the site is in a location where environmental impacts are ubiquitous. **Reuse in a restricted capacity is expected in areas where background conditions preclude achieving unrestricted use soil cleanup objectives.**
4. *Applicable comprehensive community master plans, local waterfront revitalization plans as provided for in EL article 42, or any other applicable land use plan formally adopted by a municipality:* The Phase I Business Park falls within a Master Redevelopment Plan for the entire 1100-acre Tecumseh property (see Attached), which is the subject of a Memorandum of Understanding signed by Erie County, the City of Lackawanna, and Tecumseh Redevelopment. **Redevelopment of the Phase I Business Park Area in a commercial/industrial capacity is consistent with the Master Redevelopment Plan.**
5. *Proximity to real property currently used for residential use, and to urban, commercial, industrial, agricultural, and recreational areas:* The Site is surrounded by vacant land and industrial properties. Land use east of the Site across Route 5 includes vacant land, commercial, industrial, and residential properties. **Nearby and adjacent property is primarily**

APPENDIX B LAND USE EVALUATION

used in a non-residential capacity, both for industrial and commercial purposes. Maintaining use of the Site in an industrial/commercial capacity is consistent with surrounding property.

6. *Any written and oral comments submitted by members of the public on the proposed use as part of the activities performed pursuant to the citizen participation plan:* **No comments have been received from the public relevant to Site use concerns.**
7. *Environmental justice concerns, which include the extent to which the proposed use may reasonably be expected to cause or increase a disproportionate burden on the community in which the site is located, including low-income minority communities, or to result in a disproportionate concentration of commercial or industrial uses in what has historically been a mixed use or residential community:* **Nearby and adjacent property is actively used in a non-residential capacity, both for industrial and commercial purposes. Maintaining use of the Site in a commercial/industrial capacity does not pose environmental justice issues.**
8. *Federal or State land use designations:* The property is designated Urban Land (U2) by the Soil Conservation Service. Urban land typically contains ubiquitous contaminants. **Reuse in a restricted capacity is typical in areas where background conditions preclude achieving unrestricted use soil cleanup objectives.**
9. *Population growth patterns and projections:* The population of the City of Lackawanna in 2000 was 19,064 (2000 Census). The 2004 population estimate for the City of Lackawanna is 18,394 (a decline of 3.5%). A declining population indicates a surplus housing market. **Reuse of the Site in a non-residential capacity does not materially affect opportunities for residential growth.**
10. *Accessibility to existing infrastructure:* The main local roadways that provide access to the Site are NYS Route 5/Hamburg Turnpike and Fuhrmann Boulevard. Utilities (sewer, water, electric, natural gas, and communication) present along Route 5 previously serviced the Site when it was an active industrial facility. **Existing infrastructure supports reuse in an industrial capacity.**
11. *Proximity of the site to important cultural resources, including federal or State historic or heritage sites or Native American religious sites:* **No such resources or sites are known to be present on or near the property.**
12. *Natural resources, including proximity of the site to important federal, State or local natural resources, including waterways, wildlife refuges, wetlands, or critical habitats of endangered or threatened species:* The Erie County Internet Mapping System shows that State or Federal wetlands do not exist on the subject property. The nearest Federal wetland is approximately 0.5 miles west of the Site; protected bird species have been identified on this wetland. There are no threatened or endangered species, nor important plant habitats on the Site. **The absence of significant ecological resources on or**

APPENDIX B LAND USE EVALUATION

adjacent to the Site indicates that cleanup to restricted use conditions will not pose an ecological threat.

13. *Potential vulnerability of groundwater to contamination that might emanate from the site, including proximity to wellhead protection and groundwater recharge areas and other areas identified by the Department and the State's comprehensive groundwater remediation and protection program established set forth in ECL article 15 title 31:* Groundwater at the Site is assigned Class "GA" by 6NYCRR Part 701.15. Thirteen environmental monitoring wells and nine piezometers exist on the Site. Groundwater data obtained during the RI indicate no significant impact. Detected constituents were generally limited to naturally occurring metals. No potable wells were identified on the Site. **The absence of potable wells, wellhead protection, and groundwater recharge areas indicates that cleanup to restricted use conditions will not pose a drinking water threat.**
14. *Proximity to flood plains:* The Erie County Internet Mapping System indicates that the 100-year floodplain is located approximately 0.6 miles south of the Site. As flood plains are not present on the property, there is no risk of significant soil erosion due to flooding. **As such, cleanup to industrial standards does not pose a threat to surface water.**
15. *Geography and geology:* The flat-lying Site is located within the Erie-Ontario lake plain physiographic province, which is typified by little topographic relief and gentle slope toward Lake Erie, except in the immediate vicinity of major drainage ways. 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 are, in turn, underlain by shale or limestone bedrock. Bedrock is about 60 feet below grade near the eastern perimeter of the Site. **Geography and geology are consistent with an industrial re-use.**
16. *Current institutional controls applicable to the site:* There is an existing deed restriction that prohibits the use of groundwater on the property and limits redevelopment to industrial, office and other uses not involving prolonged occupancy by persons under the age of 18. **The planned commercial/industrial redevelopment is consistent with the existing institutional controls.**

Based on the above analysis, reuse of the Site in a commercial/industrial capacity is consistent with past and current development and zoning on and around the Site, and does not pose additional environmental or human health risk.