NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

FINAL STATEMENT OF BASIS CORRECTIVE MEASURES SELECTION

Operable Unit 02

Solid Waste Management Units S-18b/c, P-9, P-18

Tecumseh Redevelopment, Inc.

Former Bethlehem Steel Corporation

DEC Site No. 915009

EPA ID No. NYD002134880

City of Lackawanna, Erie County

June 2015

PREPARED BY

DIVISION OF ENVIRONMENTAL REMEDIATION

www.dec.ny.gov

DECLARATION STATEMENT – STATEMENT OF BASIS
FINAL CORRECTIVE MEASURES SELECTION

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Statement of Purpose and Basis

This document presents the remedy for Operable Unit 02 Solid Waste Management Units S-18b/c, P-9, and P-18 of the Tecumseh Redevelopment Inc. Site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 373.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for Operable Unit Number: 02 of the Tecumseh Redevelopment Inc. Site and the public's input to the proposed remedy presented by the Department. Comments from the public are addressed in the Responsiveness Summary provided in Appendix A of the Statement of Basis. A listing of the documents included as a part of the Administrative Record is provided in Appendix B of the Statement of Basis.

Description of Selected Remedy

The proposed remedy addresses historic disposal of waste at the site. The releases are associated with historic iron and steel-making operations that occurred during Bethlehem Steel Corporation’s ownership of the site.

The elements of the selected remedy are as follows:

- Soil and fill in the OU02 SWMUs containing contaminants at levels exceeding industrial use cleanup objectives (as per 6NYCRR Part 375-6.8) will be

stabilized, removed, and consolidated in another part of the site (within Operable Unit 03). The OU03 containment system includes a slurry wall; leachate/groundwater extraction and treatment; an engineered cap/cover; and, continuing operation, monitoring and maintenance.

- SWMU OU02 removal areas will be backfilled with material that will meet the requirements for the identified site use as set forth in 6NYCRR Part 375-6.7(d).

- In conjunction with a future site-wide remedy decision, a Site Management Plan will be required that will include institutional and engineering controls as may be necessary for contaminated media that may remain at the OU02 SWMU locations (S-18b/c, P-9 and P-18).

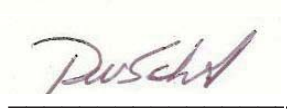
New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

June 23, 2015
Date



Robert W. Schick, P.E., Director
Division of Environmental Remediation

STATEMENT OF BASIS
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SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for Operable Unit 02 Solid Waste Management Units (SWMUs) S-18b/c, P-9, and P-18 at the above referenced site. The disposal or release of hazardous substances at these SWMUs, as more fully described in this document, has contaminated various environmental media. The remedy is intended to attain the remedial action objectives identified for the protection of public health and the environment. This Statement of Basis (SB) identifies the selected remedy, summarizes the other alternatives considered, and discusses the reasons for selecting the remedy.

The New York State Hazardous Waste Management Program (also known as the RCRA Program) requires corrective action for releases of hazardous substances to the environment. This facility is subject to this regulatory program. The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York; (6 NYCRR) Parts 373 (RCRA). This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repositories:

NYSDEC Region 9 Office
270 Michigan Avenue
Buffalo, NY 14203
Call 716-851-7220 for Appointment
Mr. Stanley Radon

Lackawanna Public Library
560 Ridge Road
Lackawanna, NY 14218
Call 716-823-0630

A public meeting was also conducted. At the meeting, findings from the site investigation and the corrective measures study were presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period was held, during which verbal or written comments were accepted on the proposed remedy.

Information about the comment period and citizen participation actions for this site is summarized in the Responsiveness Summary of the Statement of Basis (see Appendix A).

Receive Site Citizen Participation Information by Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html.

SECTION 3: SITE DESCRIPTION AND HISTORY

Location - The Tecumseh Redevelopment Inc. (Tecumseh) site is located at the east end of Lake Erie, just south of the City of Buffalo. The site is located between NYS Route 5 and the lake, in Lackawanna. The SWMUs addressed by this Statement of Basis are located in the northern part of the site.

Site Features - The Tecumseh site is an irregular parcel which extends from south of Smokes Creek and to the Buffalo Outer Harbor on the north, and from the east end of Lake Erie to the Lackawanna Ship Canal. The site consists of approximately 468 acres, and has approximately 2 miles of shoreline along Lake Erie. Smokes Creek passes westward across the site where it discharges to Lake Erie. The Lackawanna Ship Canal, located towards the northern end of the

site, extends approximately 3,000 feet southward into the site from the Buffalo Harbor. The western portion of the site was created by the placement of slag-fill materials from iron and steel-making within an area that was formerly within the boundaries of Lake Erie. The site is mostly undeveloped, especially the western slag fill portion.

Current Zoning and Land Use - This area of the site is currently zoned for industrial use and is currently used for slag reclamation, coal handling facilities, wood recycling facilities, and groundwater treatment facilities. Renewable energy, e.g., wind turbines, are located along the shoreline. The majority of the land is vacant/undeveloped.

Past Use of the Site - The former Bethlehem Steel Corporation (BSC) property was used for iron and steel production since the beginning of the 20th century. Iron and steel-making operations were discontinued by the end of 1983, and by the mid-1990s, most of the steel-making facilities on the west side of Hamburg Turnpike (NYS Route 5) had been demolished. In September 2001, BSC's coke oven operation was terminated. While some buildings remain, most structures have been razed. The western portion, that includes approximately two miles of Lake Erie waterfront, consists of a considerable area of manmade land (~440 acres) where iron and steel making slag and plant wastes were disposed.

Operable Units/Solid Waste Management Unit (SWMU) Groups:

The site has been divided into operable units/SWMU groups. These groupings represent a portion of a remedial program for a site that for technical or administrative reasons can be addressed separately to investigate, eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. At this facility, 43 SWMUs and 5 watercourses were carried forward into the Corrective Measures Study/Feasibility Study phase wherein remedial alternatives were identified and evaluated. The proposed remedy under consideration in this document is specific to Operable Unit 02 (OU02), described below.

Many of the operable units described below consist of groupings of Solid Waste Management Units (SWMUs). To date, the following operable units have been designated:

OU01 (Site-wide) – This operable unit is being used to track site-wide issues. It is also being used to track the interim remedial measures noted below. A final remedy decision for this operable unit has not been made yet. The final remedy for OU01 will address groundwater and all remaining SWMUs that have not been specifically addressed in the OUs listed below.

OU01A (Smokes Creek Interim Remedial Measure) – This interim measure (sediment removal action) was undertaken to partly address severe contamination attributable to historical discharges from Bethlehem Steel operations. The lower 2,600 feet of Smokes Creek sediment was dredged in 2009, removing approximately 40,000 cubic yards of material. In addition to removing severely contaminated material this action also improved the hydraulic capacity of the stream, reducing flooding potential and need for

flood insurance in a nearby, upstream residential neighborhood. Some sediment contamination outside of the dredge area remains.

OU02 SWMUs S-18 (Subareas B/C), P-9, and P-18) – This operable unit is the subject of this Statement of Basis. These SWMUs are located in the slag fill area of the site. These SWMUs contain materials from historic coke-making and blast furnace operations.

OU03 (Acid Tar Pit SWMUs S-11, S-22 and S-24) - This is an area on the south side of Smokes Creek, near the mouth on Lake Erie, where coking tar wastes were disposed. Releases have impacted groundwater and the adjacent creek. In 2010 DEC selected a final remedy for this operable unit. Tecumseh is implementing the remedy. As a consequence of the remedy proposed for OU02 (the subject of this decision document) the remedy for OU03/Acid Tar Pit SWMUs is also being modified as described in Exhibit D (Explanation of Significant Differences).

OU04 (Coke Oven Area Groundwater) **–** This operable unit is specific to the groundwater in the former coke oven and coke oven byproduct processing area along the west side and near the southern end of the Ship Canal. A final remedy decision for this operable unit has not been made yet.

OU04A (Benzol Yard Interim Remedial Measure) – This is an interim measure (groundwater pump and treat system) for groundwater is an area located near the south end of the Ship Canal, where historic coke oven by-product operations (SWMU P-11) caused impacts to the groundwater, including releases of non-aqueous phase liquid (benzol oil). This measure has been operating since 2005.

The following SWMU groupings are also present at the site. Operable units will be formally designated when processing remedy decisions for these areas.

Zone 2 Slag Fill Area (south of Smokes Creek) - This area consists of SWMUs S-1 through S-8, S-20, S-21, S-27 and the area in between known as Zone 2. This area includes wastes such as: ammonia still lime sludge, oily mill scale, slag, spent pickle liquor, lime dust, and hydrogen sulfide stripper solution.

Zone 4 Slag Fill Area (north of Smokes Creek) - This area consists of SWMUs S-12 through S-19, S-23, S-25, S-28 and the area in between known as Zone 4. This area includes waste disposal such as: asbestos, tar decanter sludge, slag, spent pickle liquor, acid tar waste, and drums.

Coke Oven Area – The involves the other media (non-groundwater, as this is covered by OU04 above) in the former coke oven and coke oven byproduct processing area along the west side and near the southern end of the Ship Canal.

Support Operations (Tank Storage) Area - This area consists of SWMUs P-8, P-74, P-75, S-10 and S-24 and the area in between. This area includes wastes such as: waste oil, coal tar and tank bottoms, coke breeze, slag, and ammonia liquor.

Site Geology and Hydrogeology – The predominant feature of this Site is the wedge-shaped slag fill area that extends into Lake Erie. This area extends from the former lake shore an average of 1,300 feet westward, and now forms the eastern shoreline of Lake Erie. The site geology beneath the slag-fill layer consists lake and glacial sediments overlying shale or limestone bedrock. In order beneath the slag-fill, there is a sand layer with occasional peat deposits, lake clay/silt deposits, and glacial till overlying shale or limestone bedrock.

The depth to groundwater is variable and depends upon the topography, and can vary in depths ranging from about 10 to over 60 feet below ground surface. Groundwater generally flows toward Lake Erie, Smokes Creek, or the Lackawanna Ship Canal. Groundwater occurs within the fill and sand layers in the overburden and in the bedrock beneath the site.

A site location map is attached as Figure 1 and a facility map is attached as Figure 2.

SECTION 4: LAND USE

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, an alternative which allows for industrial use of the site was selected.

SECTION 5: ENFORCEMENT STATUS

The Tecumseh site is subject to hazardous waste treatment, storage, and disposal facility (TSDF) permitting requirements under New York State (NYS) hazardous waste regulations (6 NYCRR Part 373) and has RCRA EPA ID No. NYD053585667. Under this regulatory program, Tecumseh is responsible for implementing Corrective Action to address releases to the environment from solid waste management units and areas of concern (e.g., watercourses). On June 30, 2009 the Department and Tecumseh signed an Order on Consent (the “Order”) to complete a Corrective Measures Study (CMS) for the facility. The Order also required that Tecumseh provide financial assurance for completing RCRA closure, post-closure and corrective action requirements for the site. The remedy for OU02 will be implemented through a legally binding enforcement mechanism (DEC Order on Consent or DEC permit).

The property that includes OU02 is also listed on the DEC Registry of Inactive Hazardous Waste Disposal Sites (Site No. 915009-Bethlehem Steel) and is currently classified as a Class 2 site as defined in the associated 6NYCRR Part 375 regulations. This draft Statement of Basis will serve as the Proposed Remedial Action Plan for OU02.

SECTION 6: SITE CONTAMINATION

6.1 Summary of the Site Investigation

The corrective action process began with evaluations and investigations to identify potential areas of the site that may have been impacted by hazardous wastes and/or hazardous constituents. Based on the results of numerous phases of investigations, the Department has determined that hazardous substances are present in the material disposed in the OU02 SWMUs. The nature of these materials was characterized and evaluated to identify contaminants of concern, migration potential, engineering properties and stabilization options.

Environmental assessments and investigations for OU02 have focused on the SWMU material itself. As noted earlier, evaluation of surrounding areas and environmental media will be addressed through a separate remedy selection action that will be made at a later date. A brief summary of these assessments and investigations of the OU02 SWMUs is included in Exhibit A.

The analytical data collected for OU02 includes data for:

- Soil/SWMU Material
- Groundwater (S-18)

Other environmental media have been tested in the vicinity of the OU02 SWMUs, however, those media will be addressed through a separate remedy selection action that will be made at a later date.

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the site investigations were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2 OU02 SWMU Investigation Results

The data have identified contaminants of concern. A “contaminant of concern” is a contaminant that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action (corrective measures). Based on the results, the Department determined that corrective measures were required to address the OU02 SWMU material. The

nature and extent of contamination and impacted environmental media are summarized in **Exhibit A**.

The contaminants of concern identified for the OU02 SWMUs are related to coking and steel-making operations and include:

- Lead
- Arsenic
- Benzene
- Ammonia
- Semi Volatile Organic Compounds (SVOCs)

As illustrated in **Exhibit A**, the contaminant(s) of concern exceed the cleanup objectives/guidance criteria for:

- Soil
- Groundwater

6.2 Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the OU02 SWMUs. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water. The reports listed in Appendix A present a more detailed discussion of existing and potential impacts from the site. A brief description of each SWMU is provided below.

6.2.1 SWMU S-18 Lime Dust and Kish Landfill (S-18 Sub-areas B and C)

SWMU S-18 Sub-areas B and C are the Lime Dust and Kish Landfill areas, respectively (note that this SB does not address SWMUS-18 Sub-area A). Material in Sub-areas B and C are basic oxygen furnace process-lime dust (calcium oxide) and kish (consisting principally of carbon fines associated with the site's historic steel-making operations) that were disposed in an unlined area. The two sub-areas are estimated to contain approximately 400 CY of material. The primary contaminant of concern for S-18 Sub-areas B and C is lead. Testing has shown the potential for lead to leach from this material. The SWMU material is exposed on the ground surface and currently has no controls or cover system to contain the material or reduce the leaching potential. Sub-areas B and C are the subject of this SB.

The contents of the remainder of the SWMU (i.e., Sub-area A) as well as the groundwater in the vicinity of SWMU S-18 will be addressed through a separate remedy selection action that will be made at a later date.

6.2.2 SWMU P-9 Tar Decanter Sludge Pit

SWMU P-9 is an abandoned Tar Decanter Sludge Pit near the former Ball Mill (P-10), and is located west of the Ship Canal near the northern end of the site. The SWMU P-9 consists of a

below grade reinforced rectangular concrete pit that was decommissioned and backfilled in 1960. The tar was associated with coke-making byproduct recovery operations. Borings showed that the bottom of the pit is approximately 15 feet below grade. P-9 contains an estimated 1,000 CY of material. Most of the fill is slag, but near the bottom the material includes residual tar from historic site operations.

The primary contaminant of concern for P-9 is benzene. Semi-volatile organic compounds (SVOCs) are also present in this material at elevated concentrations. Testing has shown the potential for benzene to leach from this material. The SWMU material is exposed on the ground surface and currently has no controls or cover system to contain the material or reduce the leaching potential.

Other environmental media have been tested in the vicinity of SWMU P-9 however, those media will be addressed through a separate remedy selection action that will be made at a later date.

6.2.3 SWMU P-18 Hot and Cold Wells

SWMU P-18 consists of two water filled, steel lined basins (Hot and Cold Wells) related to the former Blast Furnace (steel-making) Cooling Towers. These cooling towers served as the wastewater treatment system for the blast furnace operations' exhaust gas cleaning system. SWMU P-18 is located adjacent to the Gateway Metroport Ship Canal. The Cold Well (SWMU P-18A) is located at the southwest corner of the Canal. The Hot Well area (P-18B) is located south of the Canal. The Hot and Cold Wells consist of below grade water-filled sheet pile lined containments that were nominally 39 feet deep according to Bethlehem Steel design drawings. The Hot Well is an irregular shape measuring approximately 130 feet across the longest section and 16 feet across the narrowest section. The Cold Well is rectangular in shape measuring approximately 173 feet long by 23 feet wide. The Hot and Cold Wells have not received any wastewater since 1983 when the blast furnaces were shut down; water now contained within the wells is a combination of blast furnace wastewater, accumulated precipitation and possibly groundwater seepage. SWMU P-18 is underlain by low-permeability soils (over 30 feet of lacustrine clays and dense glacial till) and surrounded by steel sheet piling walls keyed into the bedrock. Based on coring within these wells, the estimated volume of solid residuals in the Cold Well is approximately 3,360 CY and approximately 3,850 CY in the Hot Well, for a total residual volume of approximately 7,200 CY for SWMU P-18 (A and B).

The primary contaminant of concern for SWMU P-18 is lead. Testing has shown the potential for lead to leach from the residual solids. These solids material is covered by overlying water that has accumulated in the well (likely from surface run-off, groundwater discharge and possible leakage from the abutting ship canal). The overlying water was tested and shown to meet NYS groundwater standards. SWMU P-18 currently has no controls or cover system to contain the material or reduce the leaching potential.

Other environmental media have been tested in the vicinity of the OU02 SWMUs, however, those media will be addressed through a separate remedy selection action that will be made at a later date.

6.3 Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to OU02 site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.*

The site is not completely fenced, and persons who enter the site could contact contaminants in the soil by walking on the site, digging or otherwise disturbing the soil. People are not expected to come into direct contact with contaminated groundwater unless they dig below the ground surface. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Because there are no occupied on-site buildings, inhalation of site contaminants in indoor air due to soil vapor intrusion does not represent a concern for the site in its current condition. However, the potential exists for the inhalation of site contaminants due to soil vapor intrusion for any future on-site development.

6.4 Summary of the Remediation Objectives

The objectives for the corrective measures have been established through the remedy selection process. The goal of the corrective measures is to protect public health and the environment. The remedial action objectives for OU02 are:

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or Surface water contamination.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

To be selected, the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies, or resource recovery technologies to the maximum extent practicable. The remedy must address potential routes of exposure to humans and the environment and attain the cleanup objectives identified above. Potential remedial alternatives for the OU02 were

identified, screened, and evaluated in the Corrective Measures Study Report. A summary of the identification and evaluation of the alternatives that were considered for OU02 is provided in Exhibit C.

The elements of the selected remedy are:

1. Stabilization of OU02 SWMU Material, Consolidation and Isolation within the Acid Tar Pit (ATP) Containment System located in OU03

   A final remedy was previously selected by DEC in 2010 for the Acid Tar Pit SWMU (OU03). This is an area on the south side of Smokes Creek, near its mouth on Lake Erie, where coking tar wastes were disposed. Releases were impacting groundwater and the adjacent creek. That remedy included installation of a slurry wall, consolidation of contaminated materials, and leachate/groundwater extraction with treatment. The remedy also includes placing an engineering cap over the containment area to minimize infiltration and reduce potential leaching of contaminants. Final capping is scheduled to be completed by the end of 2015.

   The remedy for OU02 involves consolidating the solids from SWMUs S-18 (Sub-areas B and C), P-9 and P-18 within the Acid Tar Pit containment system. Since this change involves consolidating an additional approximately 8,600 CY of material into the ATP Containment System, it affects the previously selected Acid Tar Pit remedy. An Explanation of Significant Differences (ESD) has been prepared to document these changes to the Acid Tar Pit OU03 remedy and is included in Exhibit D.

   The Acid Tar Pit OU03 remedy already includes a leachate extraction and treatment system. In conjunction with the remedy proposed for the additional SWMUs, the groundwater controls for the ATP will be enhanced to include extraction points between the Acid Tar Pit and Smokes Creek, outside of the slurry wall, to address groundwater contamination that had migrated historically from the acid tar pit area. These changes to the Acid Tar Pit remedy are more fully described in the ESD.

   The Acid Tar Pit OU03 remedy already includes site management provisions (long-term operation, maintenance and monitoring requirements) for the consolidation area, and those provisions will continue, to ensure that the engineering controls of that remedy are maintained, operate properly, and are effective.

   Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6NYCRR Part 375-6.7(d).

   In conjunction with a site-wide remedy decision that will be made in the future, a Site Management Plan will be required that will include institutional and engineering controls as may be necessary for contaminated media that may remain at the SWMUs S-18, P-9 and P-18 locations.

SWMU S-18 - The remedial approach for SWMU S-18 (specifically SWMU Sub-areas B and C – estimated 400 CY) includes in-place stabilization of the SWMU material using Portland cement, phosphoric acid or tri-sodium phosphate. The additive will be mechanically mixed with the residuals in Sub-areas B and C and water may be added to facilitate the mixing process and to control dust. The stabilized residuals will "cure" for at least 24 hours prior to testing. Confirmatory samples will be collected from the mixture to verify that the stabilization objectives have been achieved. Successfully stabilized residuals will be consolidated into the ATP Containment System. At SWMU S-18, perimeter and bottom slag/fill samples will be collected from the SWMU excavations and tested to ensure that all material SWMU with the potential to leach lead at >5 mg/L have been removed. This sampling will be performed to verify that the objectives have been attained. Other environmental media have been tested in the vicinity of SWMU S-18 however, that data will be addressed through a separate remedy selection action that will be made at a later date.

SWMU P-9 - The remedial approach for SWMU P-9 involves stabilizing the SWMU material (est. 1,000 CY) with a minimum 3% Portland cement and/or fly-ash within the SWMU. The stabilized material will "cure" for 24 hours and then tested. Samples will be tested for leachable benzene. If the stabilization criteria is not met (i.e., benzene leaches >0.5 mg/L), additional cement or fly-ash will be admixed. Once the stabilization criteria has been met, the material will be consolidated into the ATP Containment System. Once the SWMU material has been removed from SWMU P-9, the excavated area will be backfilled to grade with NYSDEC-approved backfill. (i.e., meeting ISCOs).

SWMU P-18 - The remedial approach for SWMU P-18 involves removal of the solid residuals using hydraulic or mechanical dredging, dewatering the residuals, stabilizing and solidifying the residuals so they can be consolidated into the ATP Containment System. The solid residuals would be dewatered and stabilized/solidified upon a temporary containment pad proximate to the SWMU. All water generated from this SWMU shall be treated prior to discharge. Stabilization and solidification tests demonstrated that Portland cement at concentrations equal or greater than 3% by weight can effectively control leaching of lead and also provides sufficient solidification/bearing strength. Verification testing will be performed to ensure that stabilization requirements are met, prior to consolidating the SWMU material into the ATP.

Once the residuals have been removed from one of the P-18 hot/cold wells, and the verification sampling has been completed and approved by the Department, the hot/cold well will be backfilled with NYSDEC-approved backfill. Backfilling will be done in a controlled manner to make sure that the containment structure does not overflow. The structures will be backfilled to existing grade, and the steel sheeting around the perimeter will be cut to existing grade. Any excess water that needs to be removed from the hot/cold wells during backfilling will be pre-treated (if necessary) and discharged under a temporary discharge permit with Erie County Sewer District 6.

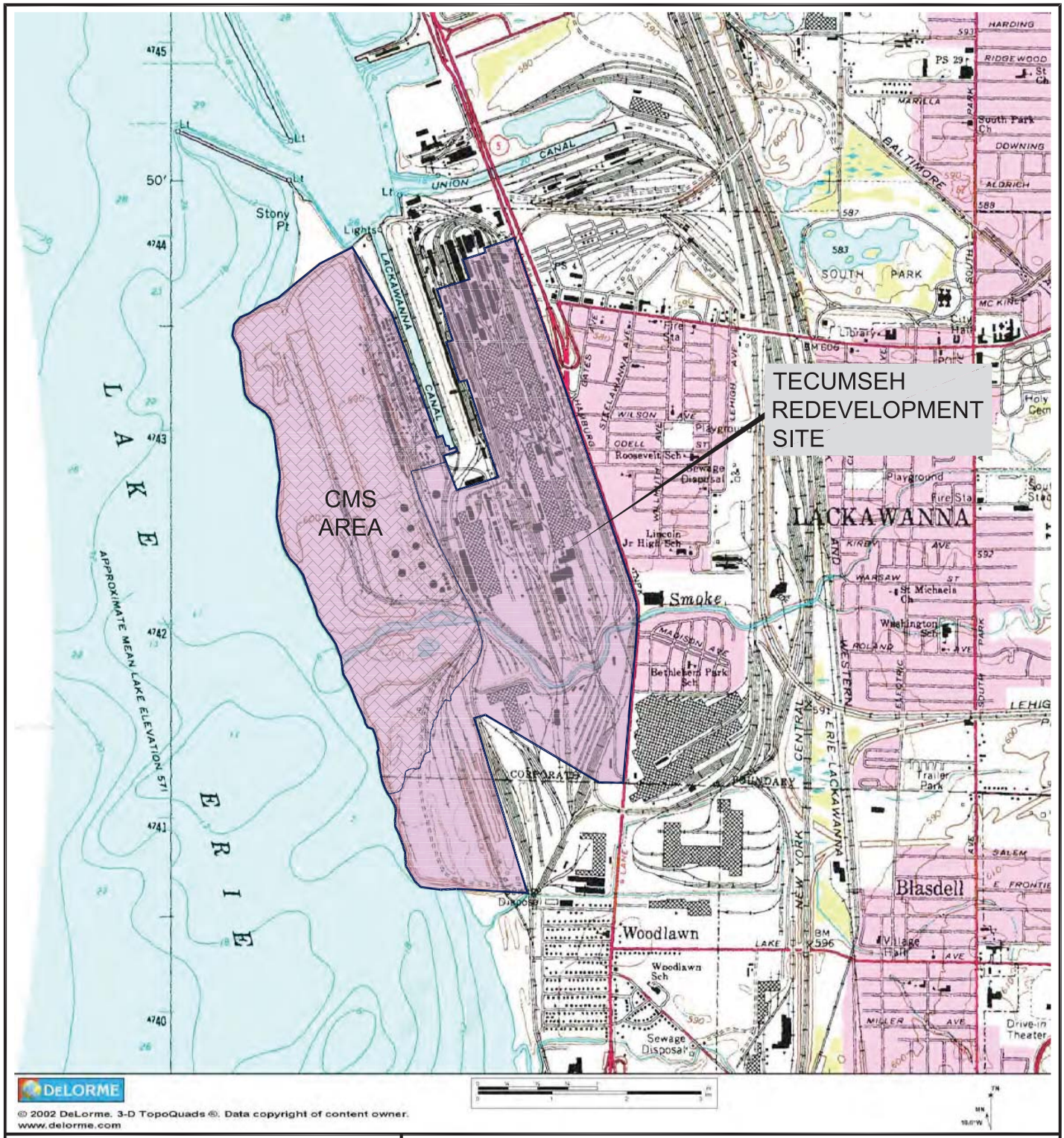
Tecumseh is required to submit a design document for Department approval that incorporates all elements of solidification, stabilization, transportation, and consolidation of all material into the ATP.

2. Green Remediation - Green remediation principals and techniques will be implemented to the extent feasible in the site management of the remedy as per DER-31. The major green remediation components are as follows:

   - Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
   - Reducing direct and indirect greenhouse gas and other emissions;
   - Increasing energy efficiency and minimizing use of non-renewable energy;
   - Conserving and efficiently managing resources and materials;
   - Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste.

F:\CAD\TurnKey\Tecumseh Redevelopment\Corrective Measures\OU 1 and OU 2\OU2 REPORT FIGURES\Figure 1; Site Vicinity & Location Map.dwg

FIGURE 1



BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

PROJECT NO.: 0071-013-217

DATE: APRIL 2014

DRAFTED BY: BCH

SITE VICINITY & LOCATION MAP

OPERABLE UNIT 2

SWMUs S-18, P-9, P-18

LACKAWANNA, NEW YORK

PREPARED FOR

TECUMSEH REDEVELOPMENT INC.

Site Features - OU-2 Figure 2

STEEL WINDS I BCP

SFA ZONE 5
(includes Steel Winds IA

SFA ZONE 4
(includes Steel Winds I)

SFA ZONE 3
(includes Steel Winds I)

SFA ZONE 2

COAL/COKE/ORE STORAGE & COAL HANDLING AREA

COKE PLANT & BY-PRODUCTS FACILITIES

TANK FARM AREA

SWMU S-11

SWMU S-22

SWMU S-24

SMOKES CREEK

LAKE ERIE

BUFFALO OUTER HARBOR

GATEWAY METROPARK SHIP CANAL

OPERABLE UNIT 2
SWMUs S-18b/c, P-9, P-18

ACID TAR SWMU GROUP AREA

MITTAL STEEL GALVANIZING MILL

REPUBLIC ENGINEERED PRODUCTS, INC.

MITTAL STEEL GALVANIZING MILL

1000' 0' 1000' 2000'

SCALE: 1 INCH = 1000 FEET
SCALE IN FEET
(approximate)

North

DATE: MAY 2009
DRAFTED BY: BCH

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

TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0071-009-213

SITE FEATURES - OPERABLE UNIT 2

TECUMSEH REDEVELOPMENT SITE
LACKAWANNA, NEW YORK

PREPARED FOR
ARCELORMITTAL TECUMSEH REDEVELOPMENT, INC.

STATEMENT OF BASIS

Exhibits A through D

Operable Unit 02
Solid Waste Management Units S-18b/c, P-9, P-18

Tecumseh Redevelopment, Inc.
Former Bethlehem Steel Corporation Site
Site No. 915009
EPA ID No. NYD002134880
City of Lackawanna, Erie County
June 2015

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the site investigations for the SWMU material that were evaluated. Samples were collected to characterize the contamination and nature of the SWMU material. For the SWMU material, tables present the range of contamination found and compares the data with the applicable Standard, Criteria, or Guidance (SCGs) for the contaminants of concern for the SWMUs which are primarily benzene and lead.

Groundwater and soil in the areas surrounding the subject SWMUs are not addressed in this Statement of Basis. They will be addressed through a separate remedy selection action that will be made at a later date (note that a groundwater extraction and treatment system for SWMU P-11, located in the coke oven area near P-9 and P-18, has been operating since 2005 as an interim measure – see OU04A described above in the Statement of Basis).

Waste/Source Areas

Material in SWMUs P-9, P-18, and S-18 were evaluated to determine the suitability for consolidation into the ATP containment cell. The following are the results of the sampling, analysis, and bench-scale stabilization testing of the material contained within the three SWMUs.

SWMU P-9:

SWMU P-9 Sampling Results

The RFI data indicates that slag and coal were backfilled over SWMU P-9 over 1-2 feet of residual tar on the bottom of the tank. SWMU P-9 was subject to additional characterization in July 2014 for the Operational Unit OU-2 ATP SWMU Group Engineering Report which included drilling three borings (P-9-1-14, P-9-2-14, and P-9-3-14) into the unit. Residual samples were collected in two foot increments from ground surface to refusal which ranged between 14 and 16 feet below ground surface (fbgs), consistent with the record drawing depth of the decanter pit. In general, the upper 6 to 14 feet (average of 10 feet thick) is filled with slag/coke fines/coal with only small amounts of intermingled tar and the lower 1 to 10 feet (average of 5 feet thick) of the pit is tar with some slag. RFI testing of the tar residuals in the bottom of SWMU P-9 contained showed leachable benzene. Residuals collected in July 2014 of both the upper and lower intervals were analyzed for total benzene and leachable benzene. The upper material contained total benzene at concentrations from non-detect (ND) to 0.046 mg/kg. These upper fill samples did not contain detectable levels of leachable benzene. A sample of the lower material contained total benzene at 79 mg/kg and showed leachable benzene, consistent with the RFI results.

SWMU P-9 is located in coke byproducts recovery area (see Exhibit A Figure 1), near the Lackawanna Ship canal. Groundwater and soil in this area has been affected by releases from the adjacent Benzol Yard (SWMU P-11). Groundwater and soil in the area surrounding SWMU P-9 area are not addressed in this Statement of Basis. They will be addressed through a separate remedy selection action that will be made at a later date (note that a groundwater extraction and treatment system for P-11 has been operating since 2005 as an interim measure – see OU04A described above in Section 3 of the Statement of Basis).

All material from P-9 will be removed and consolidated into the ATP. SWMU P-9 will be backfilled with NYSDEC-approved backfill that meet ISCOs to grade.

SWMU S-18 (Sub-areas B and C)

SWMU S-18 Sampling Results

SWMU S-18 includes three sub-areas, Sub-area A, Sub-area B and Sub-area C based on analytical test results from the RFI and CMS sampling and testing (note that the contents of Sub-area A are outside the scope of the proposed remedy for Sub-areas B and C, and will be addressed through a subsequent remedy selection action).

Sub-areas B and C, shown on Exhibit A Figure 2, contain approximately 400 cubic yards (CY) of material that exhibits elevated concentrations of total (>industrial SCO) and leachable lead. Two near-surface samples from Sub-area B and three near-surface samples were collected from Sub-area C during the RFI. These samples were consolidated into one composite sample for bench-scale stabilization assessment. An untreated sample from the composite sample showed leachable lead at 21 milligrams per liter (mg/l).

The CMS provided delineation of the material with a total of 35 test pits that were excavated in January/February 2011. The CMS test pits revealed lime and Kish waste/fill extending up to 2 feet below surrounding grade with a distinct boundary from the underlying slag. Based on this vertical assessment, test pit samples were obtained from the 0 to 1 fbgs and 2 fbgs intervals at each test pit location. All 35 samples were analyzed for total lead for the 0 to 1 fbgs interval, six of which were selected for TCLP analysis. Thirteen of the 35 samples collected from the 0 to 2 fbgs interval were selected for total lead analysis based on elevated lead results within the 0 to 1 fbgs interval.

SWMU P-18 Blast Furnace Hot and Cold Wells

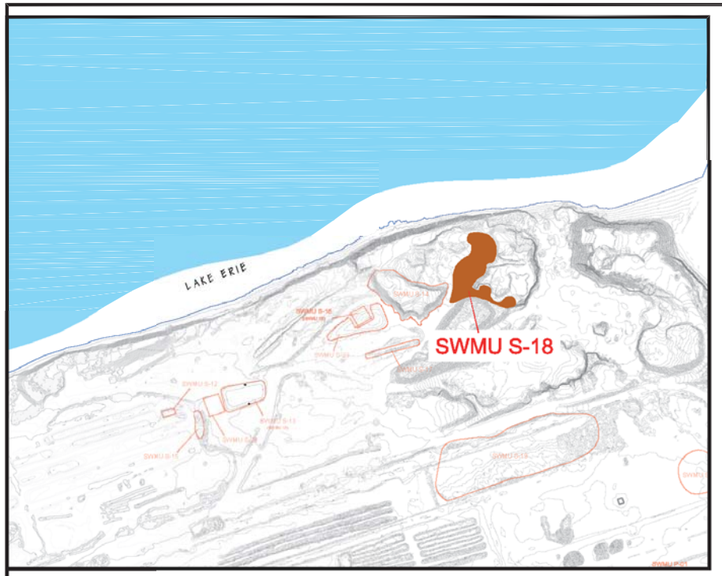
SWMU P-18 Sampling Results

The SWMU P-18 material exhibits elevated concentrations of total and leachable lead. VOCs, SVOCs, and metals were detected in the total constituent analyses of the SWMU material.

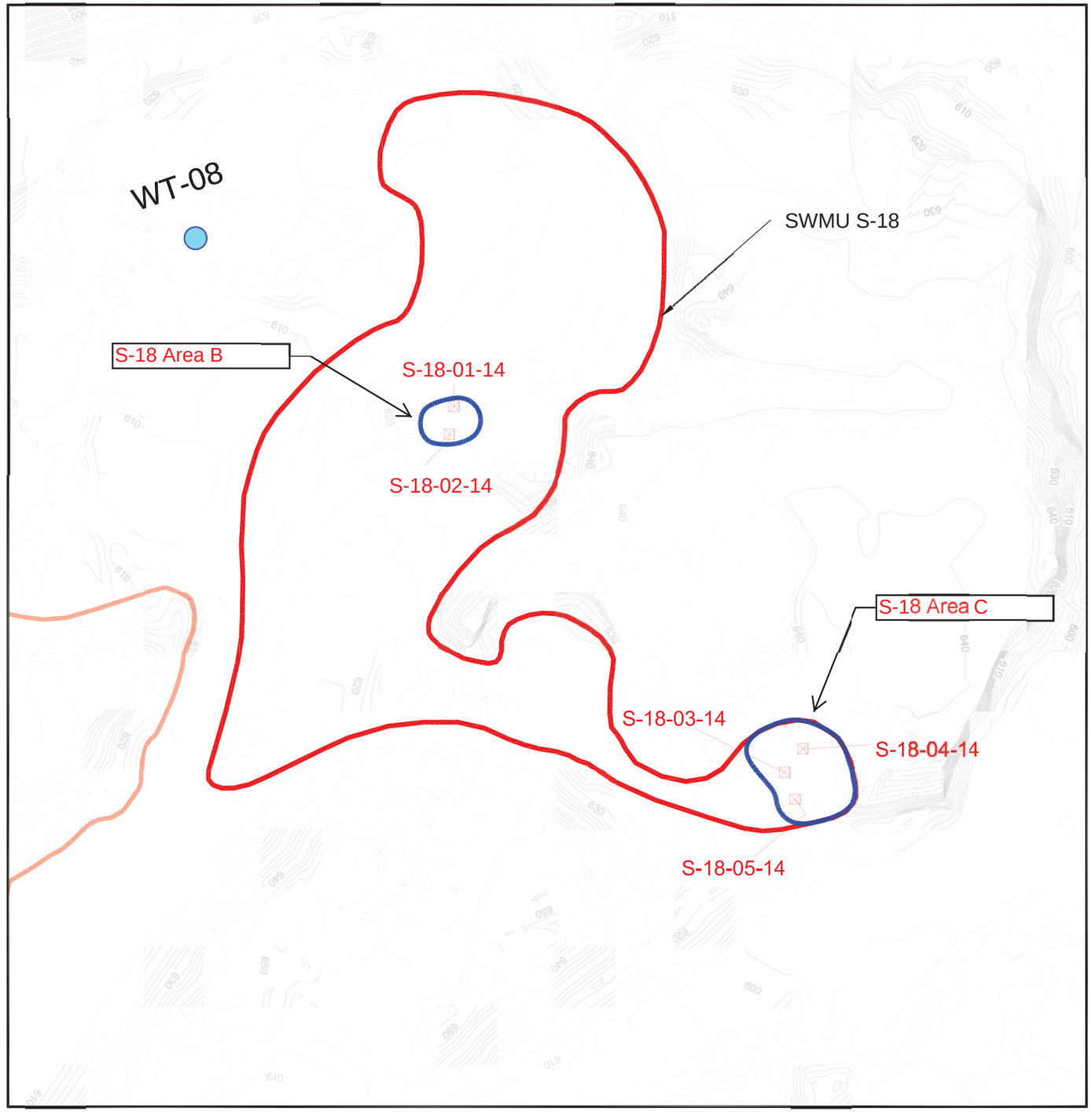
A considerable amount of water overlies the SWMU material. The water was tested to determine how it might need to be handled if dewatering is necessary to access the SWMU material. VOC and SVOC testing of the water did not detect any constituents other than acetone (acetone detections were l below ambient water quality criteria). Five metals (antimony, arsenic, chromium, copper, and zinc), cyanide, and ammonia were detected. Antimony (0.0411 mg/l) was the highest reported metal concentration. Ammonia and cyanide were detected at concentrations of 0.159 mg/l and 0.008 mg/l, respectively.

Sediment/fill thickness was assessed by advancing 6 borings, identified as P-18-01-14 to P-18-06-14 (3 in the Cold Well and 3 in the Hot Well), through unconsolidated residuals to the native lacustrine clay deposit with a barge-mounted drill rig. Based on the borings, the estimated volume of solid residuals in the Cold Well is approximately 3,360 CY and approximately 3,850 CY in the Hot Well, for a combined total residual volume of approximately 7,200 CY for SWMU P-18 (A and B).

All material from P-18 will be removed and consolidated into the ATP. SWMU P-18 will be backfilled with NYSDEC-approved slag that meet ISCOs to grade. See Exhibit A Figure 3 for SWMU location.



GENERAL LOCATION MAP 1"= Approx. 1,000 FT



LEGEND:

Area BOUNDARY

S-18-03-14 OU2 TREATABILITY SAMPLE LOCATION

N

50' 0' 50 100'

SCALE: 1 INCH = 50 FEET
SCALE IN FEET
(approximate)

DATE: AUGUST 2014
DRAFTED BY: RFL

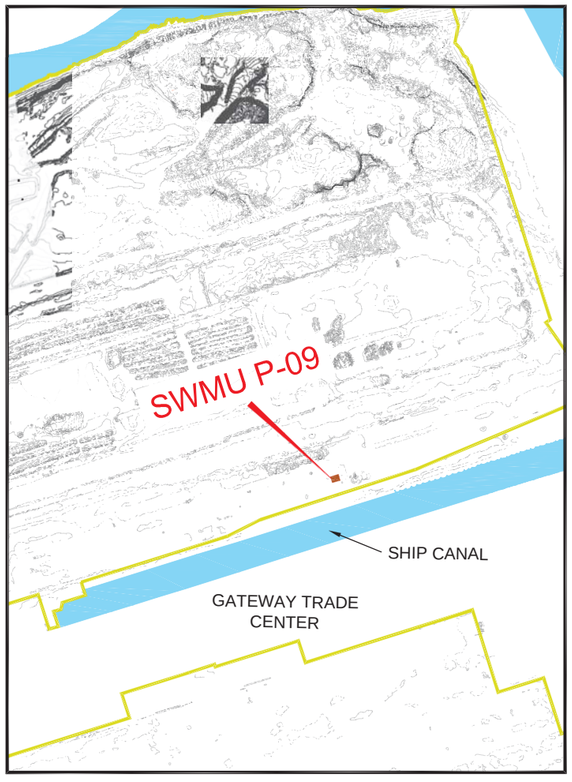
2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

TURNKEY ENVIRONMENTAL RESTORATION, LLC

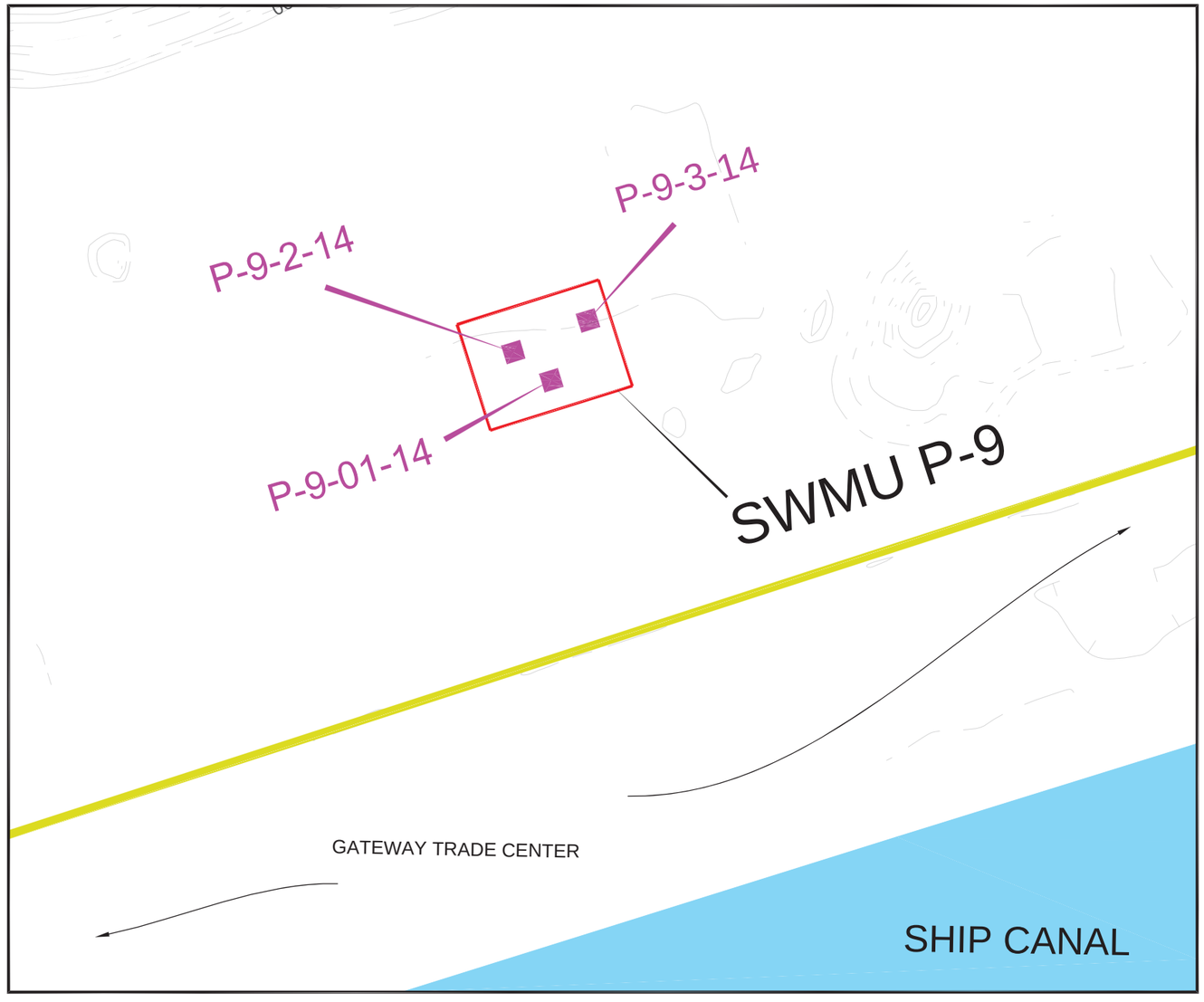
JOB NO.: 0071-013-217

OPERABLE UNIT 2
ATP WASTE CONSOLIDATION
LACKAWANNA, NEW YORK

PREPARED FOR
TECUMSEH REDEVELOPMENT, LLC



SITE LOCATION SCALE APPROX. 1= 1,000 FT



LEGEND:

SWMU BOUNDARY

PROPERTY BOUNDARY

P-9-2-14 ■ BORING LOCATION JULY 2014

N

50' 0' 50' 100'

SCALE: 1 INCH = 50 FEET
SCALE IN FEET
(approximate)

DATE: AUGUST 2014
DRAFTED BY: RFL

2558 HAMBURG TURNPIKE
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BUFFALO, NY 14218
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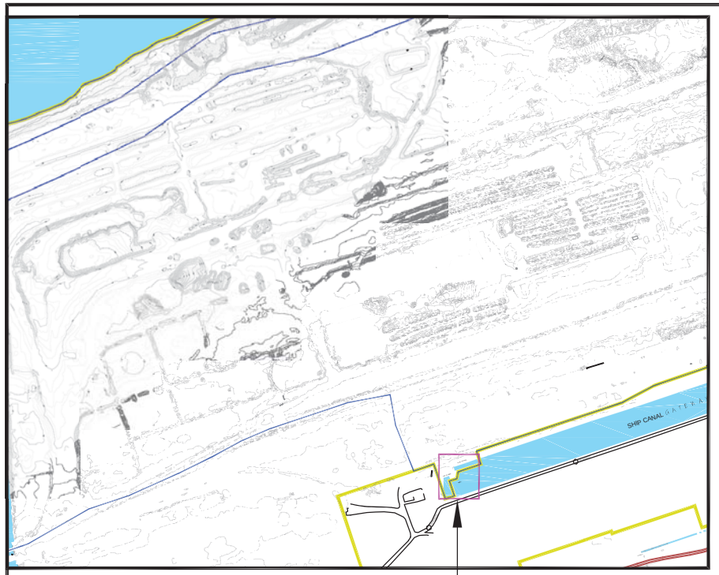
JOB NO.: 0071-013-217

OPERABLE UNIT 2
ATP WASTE CONSOLIDATION
LACKAWANNA, NEW YORK

PREPARED FOR
TECUMSEH REDEVELOPMENT, LLC

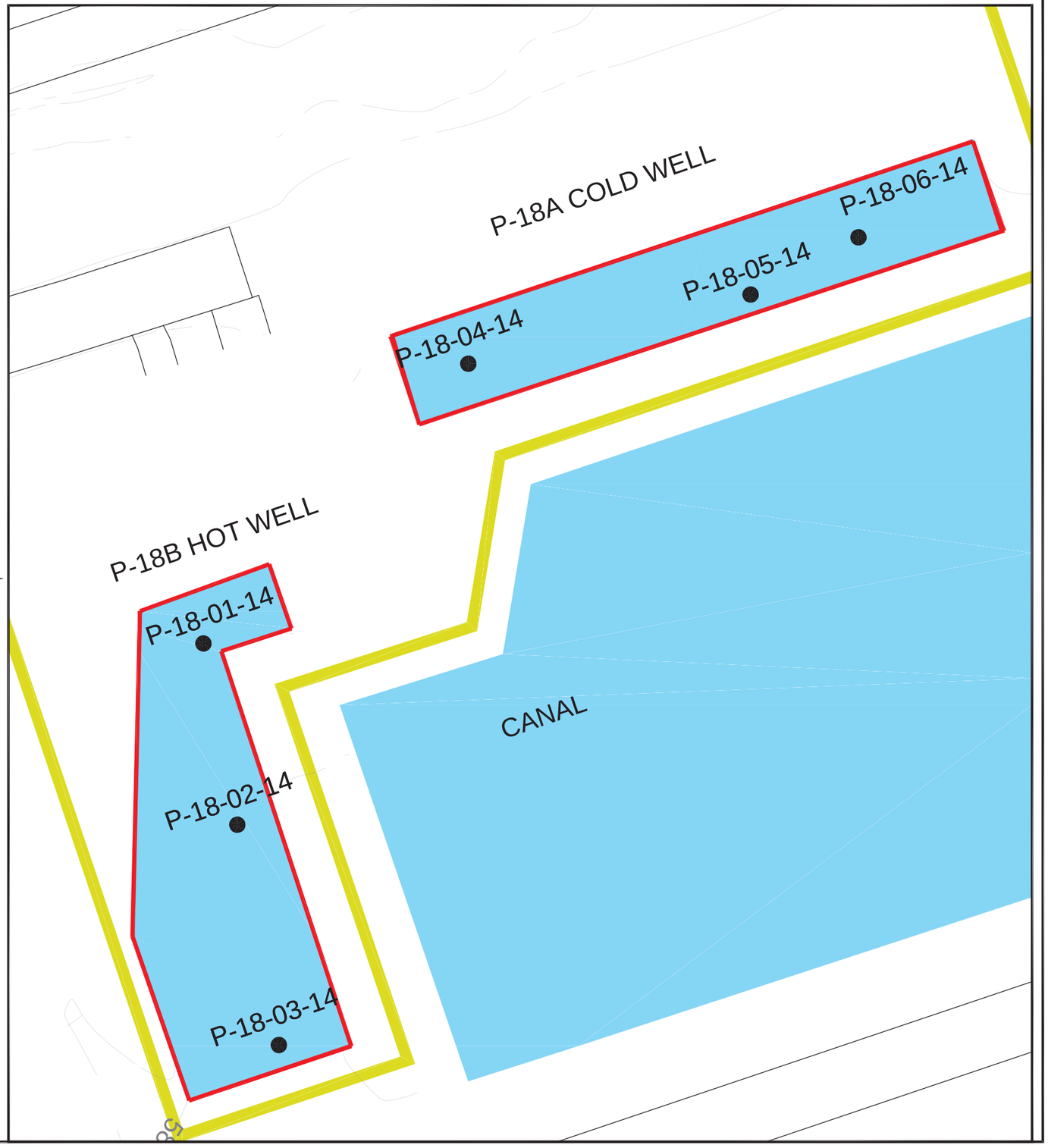
F:\CAD\TurnKey\Tecumseh Redevelopment\Corrective Measures\OU 1 and OU 2\OU2 REPORT FIGURES\Figure 7, Site Sampling Locations P18.dwg

OU-2 Statement of Basis - Exhibit A Figure 3 - SWMU P-18 Location



GENERAL SITE PLAN (1"~1,000 FT)

AREA OF INTEREST



LEGEND:

APPROX. SWMU BOUNDARY

APPROX. PROPERTY BOUNDARY

P-18-02-14 BORING LOCATION JULY 2014

N

30' 0' 30' 60'

SCALE: 1 INCH = 30 FEET
SCALE IN FEET
(approximate)

DATE: AUGUST 2014
DRAFTED BY: RFL

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

TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0071-013-217

OPERABLE UNIT 2
ATP WASTE CONSOLIDATION
LACKAWANNA, NEW YORK

PREPARED FOR
TECUMSEH REDEVELOPMENT, LLC

Exhibit B

SUMMARY OF THE CLEANUP OBJECTIVES

The goal for the corrective measure program is to achieve unrestricted use of the site to the extent feasible. At a minimum, the corrective measure(s) shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the facility through the proper application of scientific and engineering principles.

The established objectives for OU02 are 6NYCRR Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health - Values for Industrial Use.

Exhibit C

BASIS FOR FINAL CORRECTIVE MEASURES SELECTION

The Department's basis for selection of the remedy is summarized below.

Selected Remedy: SWMU Material Stabilization and Consolidation into ATP

This alternative involves the stabilizing, removing and consolidating the solids from SWMUs S-18, P-9, and P-18, and consolidating the material within the Acid Tar Pit (ATP) containment system. The scope of the proposed remedy would typically be considered an interim response action for source control. However, since the action involves permanent consolidation on the ATP OU03 site, DEC is processing the action as a final remedy.

Identification and Evaluation of Remedial Alternatives

In addition to the preferred remedy, the following alternatives were also considered: No Action; Close in Place; and Excavate and Offsite Disposal. The alternatives were evaluated against the selection criteria below. The No Action and Close in Place alternatives fail to meet the threshold selection criteria, so they were eliminated from further consideration. For the remaining alternatives, the selection of the preferred alternative was based on the other selection/balancing criteria provided below. Additional information regarding the alternatives analysis can be found in the administrative record.

Remedy Selection Criteria

Threshold Criteria

Protection of Human Health and the Environment

The remedy is protective of the environment because it includes stabilization and consolidation of waste material that reduces toxicity and mobility of contamination. The treated material will be placed into the ATP containment system and isolated from the environment. Future exposures will be mitigated by the ATP cover system, internal leachate collection system, and the external groundwater pumping system.

The remedy is protective of human health as the pathway for direct contact and potential leaching of contamination is eliminated by the stabilization and placement of SWMU material within the ATP containment system, collection and treatment of any leachate generated within the ATP system.

Achieve Cleanup Objectives for the Contaminated Media – Based on stabilization testing of the SWMU material, the potential for leaching of contaminants can be effectively controlled. Any contaminants derived from SWMU material (i.e., in the leachate removed

from the Acid Tar Pit consolidation area) can be effectively treated to comply with pre-treatment standards required under the associated Erie County sewer use permit.

Remediate the Sources of Releases – The remedy will isolate the contaminated SWMU/source material from the environment, and effectively eliminate/remove three source areas that are presently uncontrolled.

Comply with Standards for Management of Wastes – The consolidation of the SWMU material is consistent with the USEPA policy regarding handling of remediation waste. That policy allows for the consolidation of material within an area of contamination. Under that policy, the facility owner/operator can consolidate contiguous areas of contamination into a single area or engineered unit within the contaminated area without triggering the hazardous waste disposal restrictions or minimum technology requirements. As noted above, leachate generated from the Acid Tar Pit containment system will be pre-treated and discharged in compliance with a municipal sewer use permit, so that aspect of the remedy also complies with standards for the management of that waste.

Other Selection Criteria (Balancing)

Long-term Effectiveness and Permanence. The remedy includes actions that result in permanent isolation and treatment of the SWMU material and associated leachate. It also effectively removes uncontrolled source material from SWMUs S-18, P-9 and P-18. The consolidation area is subject to continuing site management requirements to ensure that the ATP containment system is operated, maintained and monitored, to ensure the long-term effectiveness of the remedy. Tecumseh has been required to provide DEC with financial assurance to cover these future costs. The remedy also includes actions that resulted in permanent treatment of residual contamination (in leachate) to reduce mobility and toxicity.

Reduction of Toxicity, Mobility, Volume. The remedy removes source material from the currently uncontrolled conditions at the SWMU locations, and consolidates it within an engineered containment system designed to limit mobility and migration potential of the SWMU material. The system also includes pre-treatment to reduce the toxicity of the leachate prior to discharge to the municipal sewer for additional treatment. The remedy will not necessarily reduce the volume of contaminated material but through consolidation, will reduce the areal footprint of the source material.
Short-term Impacts and Effectiveness. The remedy will include operating controls along with community air monitoring to ensure that potential impacts to the community, the workers, and the environment are effectively controlled during implementation of the remedy. These controls will be of primary importance during the consolidation phase of the remedy implementation.

Implementability. The remedy is readily implementable as it relies on readily available construction and material handling technologies. A modified sewer use permit from the Erie County Sewer District is expected to be necessary for the Acid Tar Pit pre-treatment system and should not pose a problem to secure. Permitting or temporary authorization

from the municipality or the State for management of water from the P-18 hot and cold wells may also be necessary depending on the design for the removal of the P-18 material, as de-watering may be necessary.

Cost-Effectiveness. The remedy is cost effective because the ATP containment system has already been substantially constructed and that area is already subject to long-term site management provisions, so the incremental cost associated with consolidation of the additional SWMU material is relatively small. The remedy also avoids the costs associated with off-site transport and disposal.

From a green remediation perspective, the remedy is also preferred relative to an off-site disposal alternative since considerably less energy will be used for the material transport. The remedy is also preferable to an alternative involving containment in place at each SWMU since it does not encumber/restrict future use of as much of the site. It also focuses future site management activities on one area where existing infrastructure is already place and where long-term monitoring is already required.

Summary

The remedy satisfies the threshold selection criteria, and has the potential to meet the remedial objectives for this site. The remedy is also viewed favorably when the other selection criteria outlined above are considered. The remedy provides an effective approach for eliminating the potential source of contamination for three SWMUs, protecting the environment and minimizing exposure potential, in a readily implementable, cost effective manner.

OPERABLE UNIT 02
STATEMENT OF BASIS

Exhibit D

Explanation of Significant Differences
Operable Unit 03 Remedy
(Acid Tar Pit SWMUs)

Tecumseh Redevelopment, Inc.
Former Bethlehem Steel Corporation
Site No. 915009
EPA ID No. NYD053585667
City of Lackawanna, Erie County
June 2015

EXPLANATION OF SIGNIFICANT DIFFERENCES
TECUMSEH REDEVELOPMENT INC. SITE

City of Lackawanna / Erie County / DEC Registry Site No. 915009 / May 2015

Prepared by the New York State Department of Environmental Conservation
Division of Environmental Remediation

1.0 INTRODUCTION

The purpose of this notice is to inform you about a change in the site remedy for the Acid Tar Pit (ATP) Operable Unit OU3 Solid Waste Management Units (SWMUs) located at the Tecumseh Redevelopment Inc. Site. In March 2010, the New York State Department of Environmental Conservation (the "Department") prepared a Statement of Basis selecting a final remedy for the ATP OU3 SWMUs. The main elements of the selected remedy included installation of a slurry wall, waste consolidation, leachate and groundwater extraction with treatment, and capping. The remedial design was completed in August 2010 and construction was initiated by Tecumseh in April 2011. Aside from final capping, the elements of the ATP OU3 SWMU remedy have been constructed and the leachate collection and treatment system is operating.

While this work was in progress, other remedial wastes present at the Site were identified as candidates for consolidation within the ATP OU3 remedy. The consolidation of this additional material was not contemplated when the remedial design for the ATP OU3 SWMU was originally prepared in 2010. The purpose of this Explanation of Significant Difference (ESD) is to describe and justify the changes that are being made to the ATP OU3 SWMU Remedy. This ESD will become part of the Administrative Record for this site. The information here is a summary of what can be found in documents that have been placed in the following repositories:

NYSDEC – Region 9 Office **270 Michigan Avenue** **Buffalo, NY 14203-2915** **Contact: Stan Radon** **Phone: 716-851-7220** **Call for Appointment** **stanley.radon@.dec.ny.gov**	**NYSDEC Central Office** **Division of Environmental Remediation** **625 Broadway, 12th Floor** **Albany, New York 12233-7017** **Contact: Larry Thomas** **Phone: 518-402-9813** **Call for Appointment** **lawrence.thomas@dec.ny.gov**

Although this is not a request for comments, interested persons are invited to contact the Department's Project Manager for this site to obtain more information or have questions answered.

2.0 Site Description

Location: The Tecumseh Redevelopment Inc. Site is located on the shore of Lake Erie in the Cities of Buffalo and Lackawanna, Erie County. The Site is located along the west side of Route 5, Lackawanna, comprising a significant portion of the former Bethlehem Steel Corporation - Lackawanna facility (see Figure 1).

Site Features: The Site features the remains of a sprawling former steel manufacturing complex. While some buildings remain, the majority of the structures have been razed. The western part of the site includes approximately 440 acres of manmade land where slag and plant wastes were disposed of on the shores of Lake Erie. The site includes approximately two miles of Lake Erie waterfront. The site also includes several other surface water features including: Smokes Creek, Blasdell Creek, the Gateway Metroport Ship Canal, the Union Ship Canal, and the North and South Water Return Trenches. Although not part of the site, the United State Army Corps of Engineers Sediment Disposal Area abuts the north end of the site. Environmental investigations identified 43 solid waste management units and several water courses as potentially requiring remedial action.

Current Zoning/Uses: The site is zoned for industrial use. The site is currently used for wind power generation, industrial manufacturing, and various material handling operations. These include slag reclamation activities.

Operable Units: The Tecumseh Redevelopment Inc. Site has been divided into a number of operable units. The ATP OU3 SWMU operable unit includes a grouping of three SWMUs and was recognized as a high priority area, due to the nature of the waste in these SWMUs, proximity to Smokes Creek, and the desire to protect the recently dredged Smokes Creek from recontamination (see Figure 2). Because of these concerns, the remedy decision for this operable unit was expedited and addressed ahead of the other SWMUs and watercourses at the site. An evaluation of remedial alternatives for the other SWMUs and watercourses is currently in progress and expected to be completed in late 2015, with remedy selection and implementation following in 2016.

The focus of this Explanation of Significant Differences (ESD) is to describe changes that are being made to the previously selected Acid Tar Pit OU3 SWMU Remedy.

3.0 March 2010 Acid Tar Pit OU3 SWMU Remedy

Hazardous wastes including volatile and semi-volatile organic compounds (VOCs) disposed of at the Acid Tar Pits have contaminated subsurface soils and groundwater. The 2010 Statement of Basis (SB) presents the remedy selected by the Department for OU3, and documents the information and rationale used to arrive at that decision. The OU3 remedy was finalized following public participation activities, including a public meeting.

The major elements of the March 2010 remedy consisted of:

- Construction of a bentonite/soil slurry wall around the perimeter of the SWMU S-11/S-22 footprint. A low-permeability vertical subsurface wall, extending to a depth of approximately 40 feet, will provide lateral containment of waste and groundwater from the surrounding subsurface environment (see Figure 3).
- Excavation and consolidation of the Agitator Sludge Area waste SWMU S-24 within the combined footprint of SWMUs S-11 and S-22. An estimated 23,000 to 35,000 cubic yards of visibly-impacted slag and soil/fill material would be excavated from SWMU S-24 and consolidated within the combined SWMU S-11 and S-22 footprint.
- Construction of Groundwater Collection System. To create an inward hydraulic gradient across the slurry wall extraction wells were installed inside the wall to collect leachate/groundwater and enhance the effectiveness of the containment system.

- Construction of Leachate/Groundwater Treatment System. The system treats/pre-treats extracted groundwater/leachate. The treated water is discharged to the sanitary sewer system under a municipal sewer use permit.
- Final Cover System. The cover system design consists of a geo-synthetic clay liner, high-density polyethylene geo-membrane liner, geo-composite drainage layer, 18-inch low-permeability barrier soil layer, and 6-inch vegetated soil cover. The final cover system will reduce infiltration of precipitation, promote storm water run-off, and eliminate the potential for direct contact with the waste fill. The cover system design also includes a gas venting system.
- Long-term Groundwater Monitoring. A monitoring program will be implemented to evaluate the continued hydraulic and chemical effectiveness of the remedy.
- The operation of the components of the remedy would continue until the remedial objectives have been achieved, or until the Department determined that further remediation was technically impracticable or not feasible.

Except for final capping, the elements of the ATP remedy listed above have been constructed and the leachate collection and treatment system is operating. This work was performed by Tecumseh under a consent order with the Department.

4.0 Description of Significant Differences

4.1 New Information – OU2 SB

Since the issuance of the OU3 remedy in 2010, additional site characterization has taken place at the Tecumseh site as part of the corrective measures study/feasibility study process. This involved further characterization of other SWMUs at the site to get information needed to evaluate possible remedial options. This work identified the SWMUs listed below as candidates to be incorporated into the ATP OU3 SWMU Remedial Design (see Figures 4 and 5 for SWMU locations). These SWMUs, designated OU2 and subject to a separate statement of basis, are located in the slag fill area, in the western part of the site, where iron and steel-making wastes were disposed for many decades.

OU2 Units	Description	Volume/Primary Contaminants
SWMU S-18 – Lime Dust and Kish Landfill R (SWMU S-18 Sub-areas B and C)	Comprised of 2 materials: Lime Dust Kish (particulate material from iron and steel making operations)	Volume ~400 cubic yards (CY) Contaminant: Lead
SWMU P-9: Tar Decanter Sludge	Primarily Slag/Coal Backfill with Tar Residue	Volume ~1,000 CY Contaminant: SVOCs, Benzene
SWMU P-18: P-18A and P-18B: Blast Furnace Cooling Tower Hot and Cold Wells	Solids from Blast Furnace Air Pollution Control	Volume ~7,200 CY Contaminant: Lead

Additional characterization and evaluation of the groundwater conditions in the vicinity of the ATP OU3 SWMU has also been performed since the 2010 remedy selection. This information

indicates a need to enhance the groundwater controls for the ATP OU3 remedy. Engineering controls for the ATP OU3 remedy initially included groundwater extraction only inside the slurry wall. However, monitoring results indicate the need expand the controls to include groundwater extraction outside of the slurry wall, in the area between the ATP OU3 and Smokes Creek (see Figure 6). Contamination from the ATP OU3 area migrated towards Smokes Creek prior to the installation of the slurry wall, and in order to address that remaining contamination extraction wells will need to be operated in that area. The existing pre-treatment system has capacity to handle this additional flow.

4.2 Comparison of Changes to the March 2010 Remedy

Explanation of Significant Difference – Similar to the March 2010 SB, this remedy includes consolidation and containment of remediation waste into the S-11/S-22 SWMU footprint. The footprint remains the same, but in order to accommodate the increased volume of material, the design for the cap has been modified to increase the available airspace. The final elevation of the cap has been increased by a maximum of thirteen (13) feet. Although this change increases the height of the cap, the steepness of the side slopes will remain unchanged. As noted in Section 4.1 above, the engineering controls for groundwater will be enhanced to include groundwater extraction outside of the slurry wall in the area between the ATP and Smokes Creek. Groundwater contamination in this area will discharge to Smokes Creek if this action is not taken. Groundwater extracted in this area will be treated at the existing ATP OU3 SWMU treatment plant, and then discharged to the sanitary sewer system. The ATP OU3 plant has the capacity and capability of handling this additional flow. The municipal sewer use permit for the ATP plant is currently administratively limited to 15,000 gallons per day which is below the plant design capacity. A modification of the sewer use permit, to increase the allowable flow, has been requested, to insure that there is sufficient capacity to manage leachate, groundwater and storm water associated with the ATP OU3 remedy.

The remedy, as modified by this ESD, is protective of human health and the environment and meets the goals originally included in the March 2010 SB.

4.3 Summary of Major Elements of the May 2015 ATP OU3 SWMU Remedy

The major elements of the amended remedy include:

- Construction of a bentonite/soil slurry wall around the perimeter of the SWMU S-11/S-22 footprint. A low-permeability vertical subsurface wall, extending to a depth of approximately 40 feet, was installed to provide lateral containment of waste and groundwater from the surrounding subsurface environment. *(unchanged/complete)*
- Excavation and consolidation of the Agitator Sludge Area waste SWMU S-24 within the combined footprint of SWMUs S-11 and S-22.Construction of Groundwater Collection System. To create an inward hydraulic gradient across the slurry wall extraction wells were installed inside the wall to collect leachate/groundwater and enhance the effectiveness of the containment system. *(unchanged/complete)*
- Construction of Leachate/Groundwater Treatment System. The system treats/pre-treats extracted groundwater/leachate. The treated water is discharged to the sanitary sewer system under a municipal sewer use permit. *(unchanged/complete)*
- Excavation and consolidation of the material from SWMUs S-18 (Sub-areas B&C), P-9, P-18 (A and B) within the combined footprint of SWMUs S-11 and S-22. An estimated

8,600 cubic yards of material would be excavated from the listed SWMUs and consolidated within the combined SWMU S-11 and S-22 footprint. *(new)*

- Construction and operation of an external groundwater extraction system to address contaminated groundwater in the area between the slurry wall and Smokes Creek. The objective is to intercept residual groundwater contamination in this area before it can migrate and discharge to Smokes Creek. *(new)*
- Final Cover System. The cover system design consists of a geo-synthetic clay liner, high-density polyethylene geo-membrane liner, geo-composite drainage layer, 18-inch low-permeability barrier soil layer, and 6-inch vegetated soil cover. The final cover system will reduce infiltration of precipitation, promote storm water run-off, and eliminate the potential for direct contact with the waste fill. The cover system design also includes a gas venting system. *(unchanged)*
- Long-term Groundwater Monitoring. A monitoring program has been implemented to evaluate the continued hydraulic and chemical effectiveness of the remedy. *(unchanged)*
- The operation of the components of the remedy would continue until the remedial objectives have been achieved, or until the Department determined that further remediation was technically impracticable or not feasible. *(unchanged)*

5.0 Project Schedule and More Information

Remedial construction activities for the amended ATP OU3 SWMU remedy are tentatively scheduled to begin in the summer of 2015. Final capping is expected to be substantially completed before the end of 2015. The external groundwater collection system is also scheduled to be installed and placed in operation before the end of 2015. This work is expected to be performed by Tecumseh under an amendment of the existing consent order with the Department.

The evaluation of remedial alternatives for the rest of the Tecumseh Site is also in progress and is expected to be completed later in 2015. The Department anticipates selecting a final remedy for the remainder of the Tecumseh Site in 2016.

For Technical Questions about the Explanation of Significant Differences, contact:

Stan Radon, Project Manager
New York State Department of Environmental Conservation
Region 9 Office
270 Michigan Avenue
Buffalo, New York 14203-2915
Telephone: 716-851-7220 Email: stanley.radon@dec.ny.gov

For Site-Related Health Questions about the Explanation of Significant Differences, Contact:

Matt Forcucci
New York State Department of Health
Western Region Office
584 Delaware Avenue
Buffalo, New York 14202
Telephone: 716-847-4501 Email: BEEI@health.ny.gov

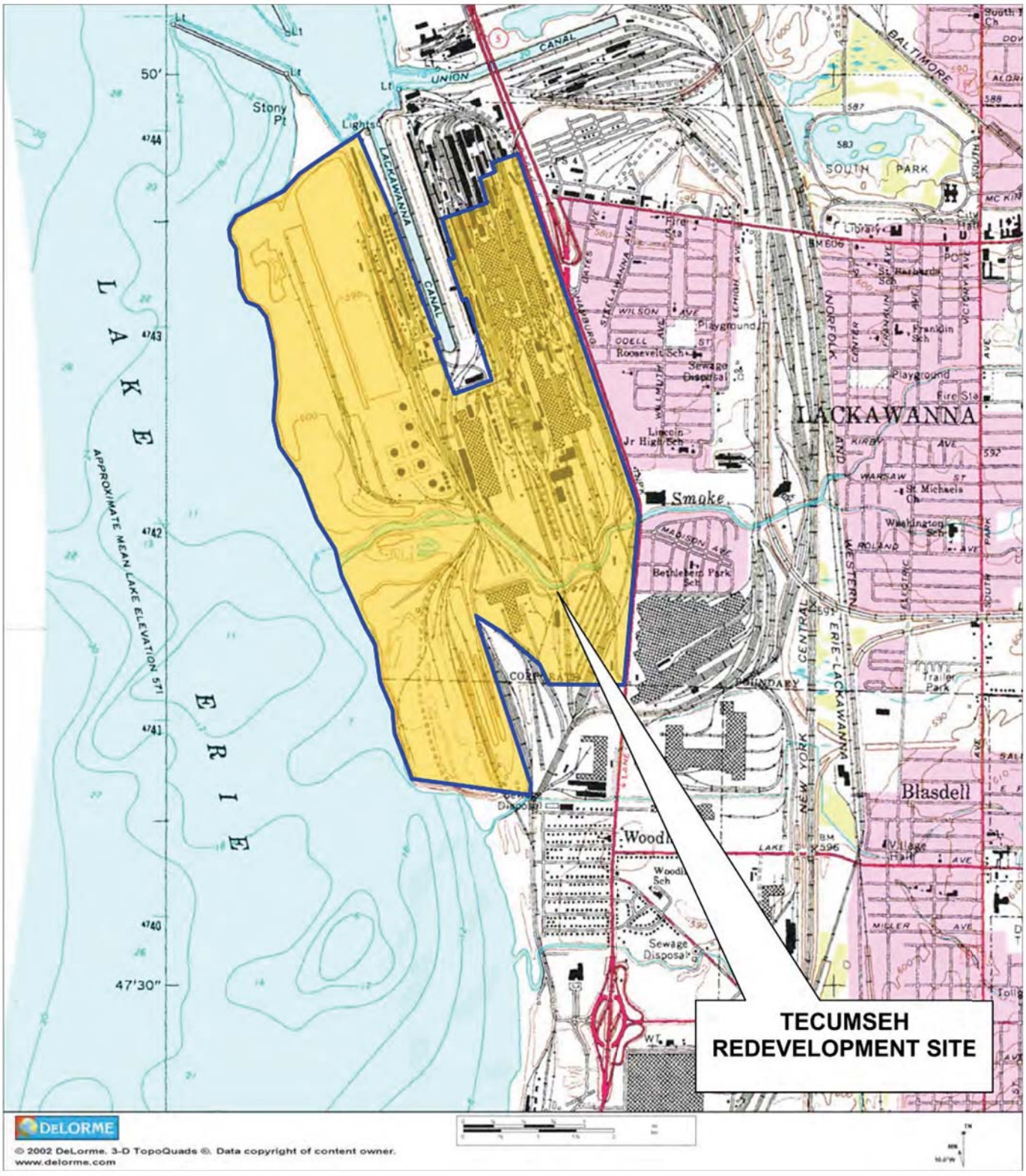
6.0 May 2015 Tecumseh Redevelopment Inc. Site - Acid Tar Pit OU3 SWMU Remedy ESD Declaration

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

May 6, 2015
Date

Robert W. Schick, Director
Division of Environmental Remediation



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

PROJECT NO.: 0071-009-213
DATE: FEBRUARY 2010
DRAFTED BY: AJZ

SITE LOCATION AND VICINITY MAP

ACID TAR PITS SWMU GROUP

TECUMSEH REDEVELOPMENT SITE
LACKAWANNA, NEW YORK

PREPARED FOR
ARCELORMITTAL TECUMSEH REDEVELOPMENT, INC.

FILEPATH=\CAD\TurnKey\Tecumseh Redevelopment\RFI-CMS ORDER\ATP - EXPEDITED CORRECTIVE MEASURE WORK PLAN\figure 2\ site location and vicinity map.dwg

STEEL WINDS I BCP

SFA ZONE 5
(includes Steel Winds IA

SFA ZONE 4
(includes Steel Winds I)

SFA ZONE 3
(includes Steel Winds I)

SFA ZONE 2

COAL/COKE/ORE STORAGE & COAL HANDLING AREA

COKE PLANT & BY-PRODUCTS FACILITIES

TANK FARM AREA

SWMU S-11

SWMU S-22

SWMU S-24

OPERABLE UNIT 2
SWMUs S-18, P-9, P-18

ACID TAR SWMU GROUP AREA

LAKE ERIE

BUFFALO OUTER HARBOR

MITTAL STEEL GALVANIZING MILL

REPUBLIC ENGINEERED PRODUCTS, INC.

MITTAL STEEL GALVANIZING MILL

1000' 0' 1000' 2000'

SCALE: 1 INCH = 1000 FEET
SCALE IN FEET
(approximate)

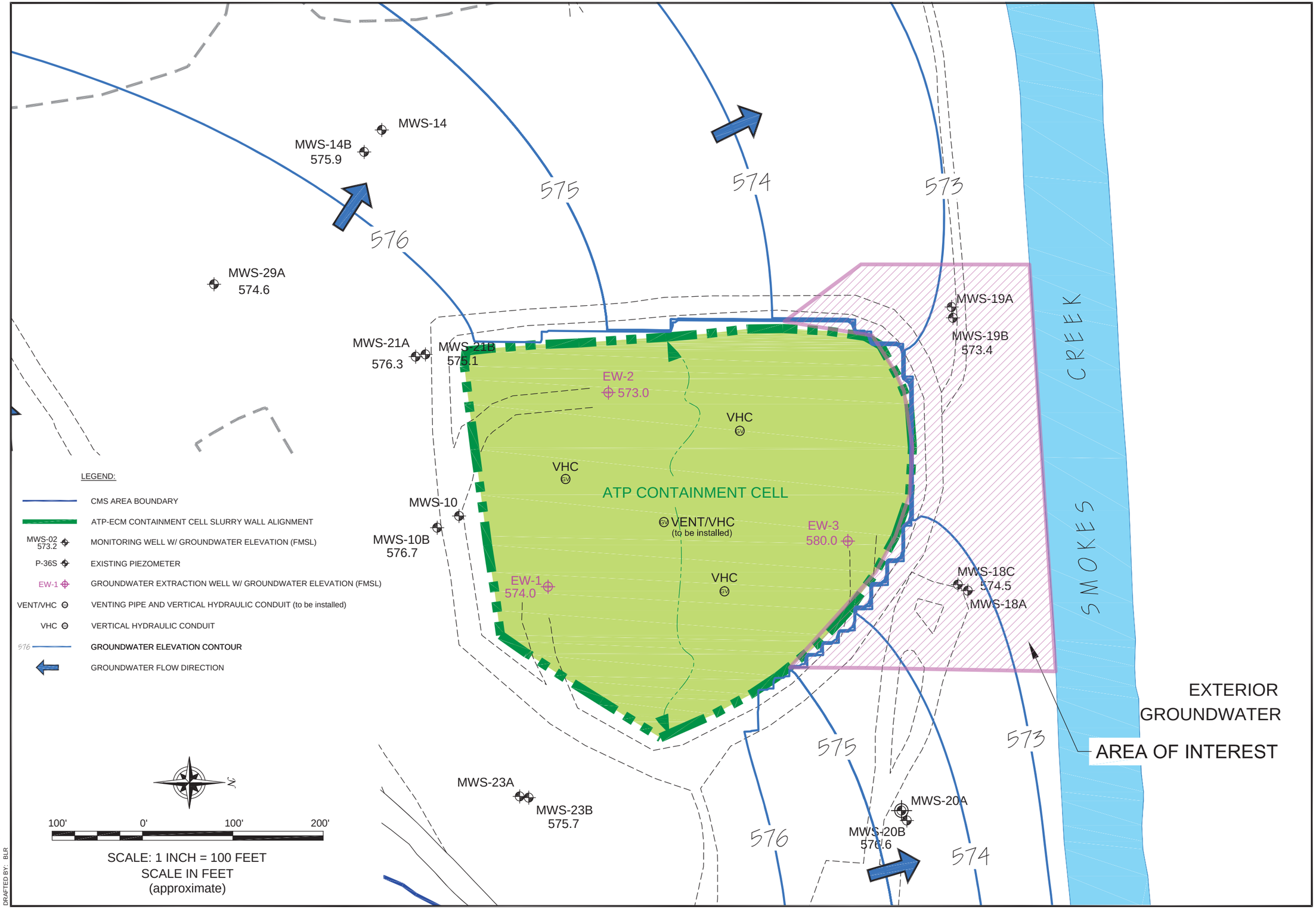
DATE: MAY 2009
DRAFTED BY: BCH

SITE FEATURES - OPERABLE UNIT 2

TECUMSEH REDEVELOPMENT SITE
LACKAWANNA, NEW YORK

PREPARED FOR
ARCELORMITTAL TECUMSEH REDEVELOPMENT, INC.

ATP SWMU Group Slurry Wall Footprint and Groundwater Containment Interest Area - ESD Figure 3



DATE: SEPTEMBER 2013
DRAFTED BY: BLR

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635
TURNKEY ENVIRONMENTAL RESTORATION, LLC

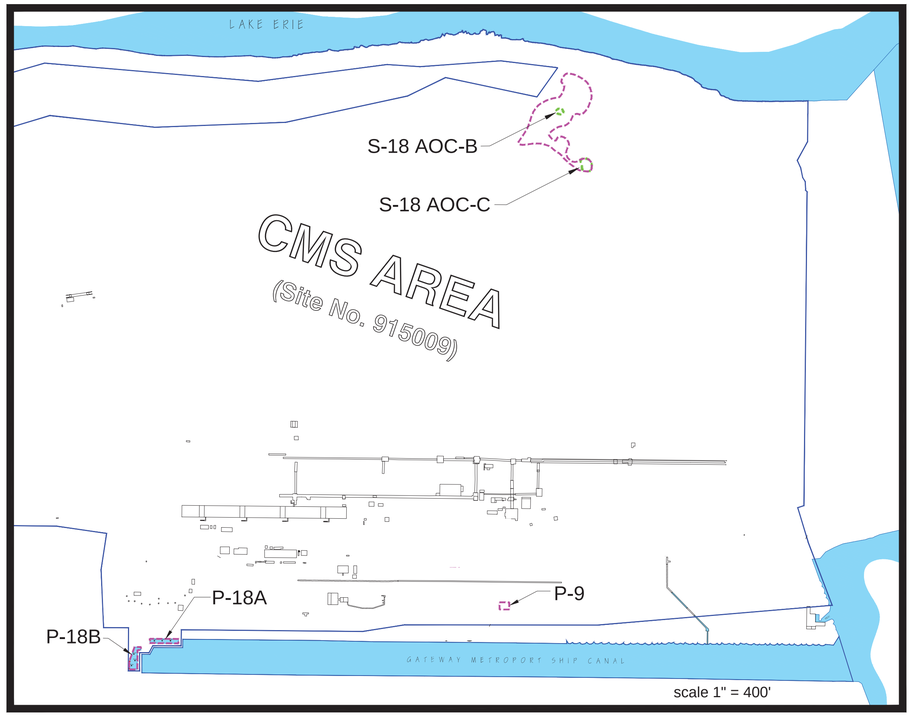
JOB NO.: 0071-013-217

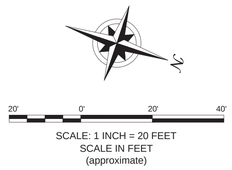
ATP-ECM EXTERIOR GROUNDWATER CORRECTIVE MEASURE
LACKAWANNA, NEW YORK

PREPARED FOR
TECUMSEH REDEVELOPMENT INC.

Location of OU-2 SWMUs (S-18, P-9, P-18) - ESD Figure 4

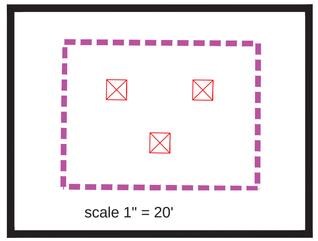
SITE PLAN:



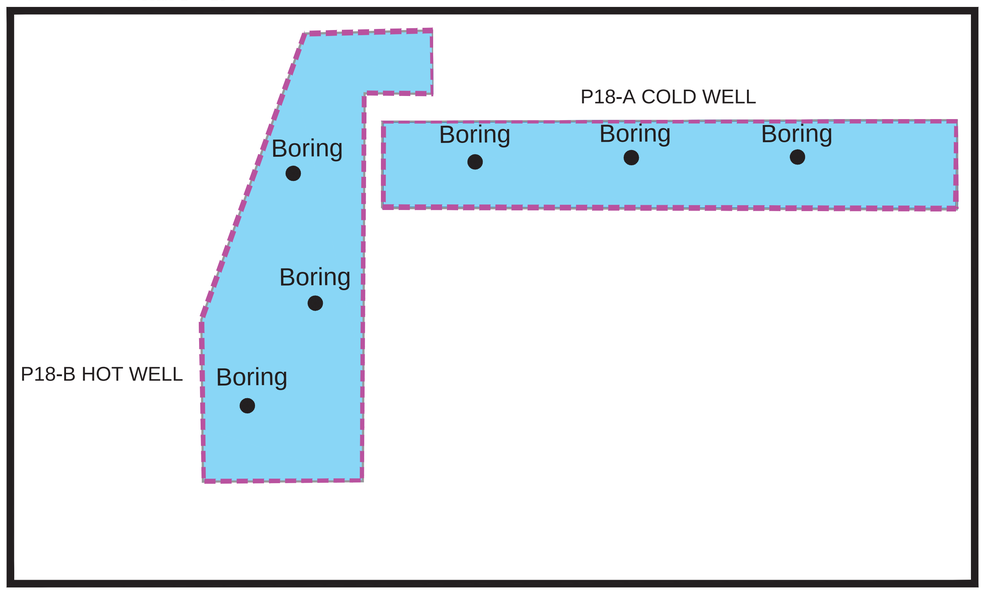


SCALE: 1 INCH = 20 FEET
SCALE IN FEET
(approximate)

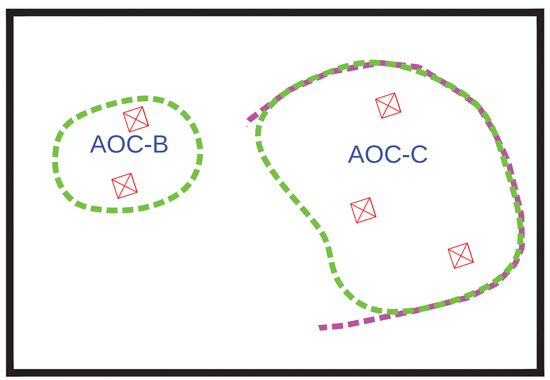
SWMU P9 ABANDONED
TAR DECANTER PIT



SWMU P-18 scale 1" = 20'



SWMU S-18 LIME AND KISH LANDFILL
AOC-B AND -C scale 1" = 20'



LEGEND:

- TECUMSEH PROPERTY BOUNDARY
- RAILROAD TRACK
- CMS AREA BOUNDARY
- APPROXIMATE BOUNDARY OF SOLID WASTE MANAGEMENT UNIT (SWMU) FROM RFI
- APPROXIMATE BOUNDARY OF AREA OF CONCERN (AOC) PER CMS
- APPROXIMATE SAMPLE LOCATION
- Boring ● PLANNED BORING FOR BENCH-SCALE TREATABIILTY SAMPLE LOCATION AND RESIDUAL DEPTH PROFILING

REVISIONS

NO.	BY	DATE	REMARKS

SEAL

OPERABLE UNIT 2 - SWMUs S-18, P-9, P-18

TECUMSEH LACKAWANNA SITE
LACKAWANNA, NEW YORK
PREPARED FOR:
TECUMSEH REDEVELOPMENT INC.

F:\CAD\TurnKey\Tecumseh Redevelopment\Corrective Measures\OU 1 and OU 2\OU2 REPORT FIGURES\Figure 3; OU-2 Work Limits.dwg

Overview of OU-2 SWMUs and Relationship to OU-3 ATP SWMU Group - ESD Figure 5

LEGEND:

- TECUMSEH PROPERTY BOUNDARY
- EXISTING BUILDING / STRUCTURE (see Note 1)
- CMS AREA BOUNDARY (EXCLUDING WATER COURSES)
- ATP ECM SLURRY WALL ALIGNMENT (APPROX.)
- APPROXIMATE SWMU BOUNDARY FROM RFI
- APPROXIMATE WORK LIMITS
- OU3 SWMUs

NOTES:
SWMU Location/Boundaries are approximate.

LAKE ERIE
STEEL WINDS I FACILITY (BCP)
(SITE NO. C915205)
SMOKES CREEK
U.S. HARBOR LINE EST. AUG. 17, 1903
GATEWAY METROPORT SHIP CANAL
ATP-ECM CONTAINMENT CELL
U.S
SEDIMENT D
LAND
GATEWAY T
CENTER (G

AOC-A, AOC-B, AOC-C, AOC-D, AOC-E, AOC-F, AOC-G, AOC-H, AOC-I

SWMU S-03 (HWMU 2)
SWMU S-04
SWMU S-07/S-20
SWMU S-08
SWMU S-10
SWMU S-12
SWMU S-13 (HWMU 1A)
SWMU S-14
SWMU S-15
SWMU S-16 (HWMU 1B)
SWMU S-17
SWMU S-18
SWMU S-19
SWMU S-21
SWMU S-23
SWMU S-25
SWMU S-26 (TECUMSEH)
SWMU S-28
SWMU P-02
SWMU P-03
SWMU P-04
SWMU P-05
SWMU P-06
SWMU P-07
SWMU P-08
SWMU P-09
SWMU P-10
SWMU P-11
SWMU P-11A
SWMU P-12
SWMU P-18A
SWMU P-18B
SWMU P-74A
SWMU P-74B
SWMU P-74C
SWMU P-74D
SWMU P-75 (~18.7 AC)

600' 0' 600' 1,200'

SCALE: 1 INCH = 600 FEET
SCALE IN FEET
(approximate)

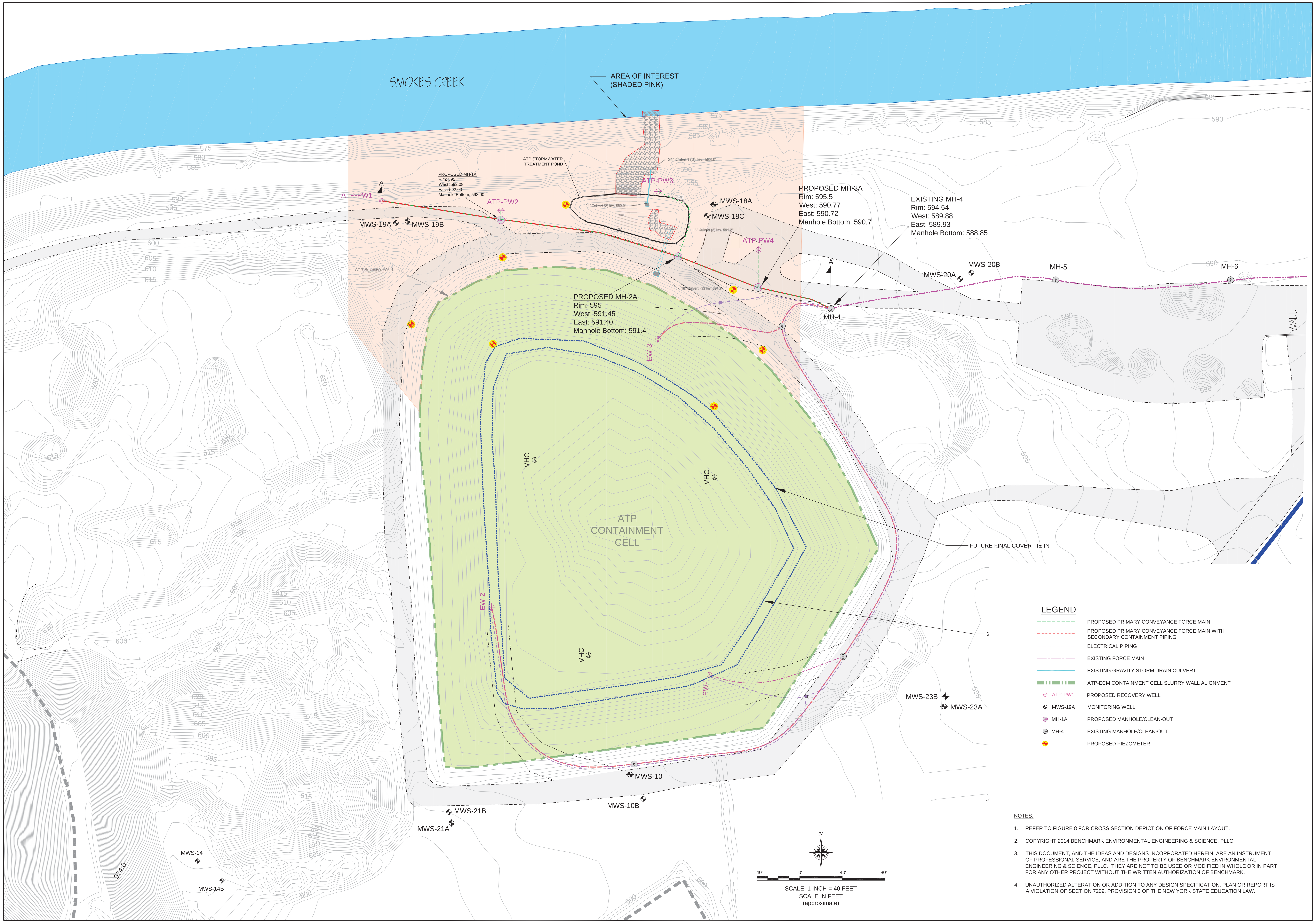
N

DATE: SEPTEMEBER 2014
DRAFTED BY: RFL/BCH

Site Features - Operable Unit Locations
OU2 SWMUs S-18, P-9, P-18; OU3 Acid Tar Pit SWMUs

LACKAWANNA, NEW YORK
PREPARED FOR
TECUMSEH REDEVELOPMENT INC.

Acid Tar Pit Exterior Groundwater Enhancements - ESD Figure 6



LEGEND

	PROPOSED PRIMARY CONVEYANCE FORCE MAIN
	PROPOSED PRIMARY CONVEYANCE FORCE MAIN WITH SECONDARY CONTAINMENT PIPING
	ELECTRICAL PIPING
	EXISTING FORCE MAIN
	EXISTING GRAVITY STORM DRAIN CULVERT
	ATP-ECM CONTAINMENT CELL SLURRY WALL ALIGNMENT
ATP-PW1	PROPOSED RECOVERY WELL
MWS-19A	MONITORING WELL
MH-1A	PROPOSED MANHOLE/CLEAN-OUT
MH-4	EXISTING MANHOLE/CLEAN-OUT
	PROPOSED PIEZOMETER

NOTES:

1. REFER TO FIGURE 8 FOR CROSS SECTION DEPICTION OF FORCE MAIN LAYOUT.
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TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0071-013-217

REVISIONS

NO.	BY	DATE	REMARKS

SEAL

DRAWN BY: RFL/BCH
DATE: APRIL 2014
CHECKED BY: PHW
APPROVED BY: PHW

ATP-ECM EXTERIOR GROUNDWATER CORRECTIVE MEASURE
LACKAWANNA, NEW YORK
PREPARED FOR
TECUMSEH REDEVELOPMENT INC.

APPENDIX A

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY

Tecumseh Redevelopment, Inc.
Operable Unit 02
Solid Waste Management Units S-18b/c, P-9, P-18
(Former Bethlehem Steel Corporation)

Site No. 915009
EPA ID No. NYD053585667
City of Lackawanna, Erie County
June 2015

The proposed Statement of Basis for the referenced site was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was released for public comment on May 6, 2015. The proposed Statement of Basis outlined the remedial measures proposed for the referenced site.

The proposed Statement of Basis was announced by releasing a fact sheet via listserv on May 6, 2015. An announcement was also posted on DEC's webpage for the Tecumseh Redevelopment Site. The web posting included a link enabling the public to directly download the proposed Statement of Basis.

The public comment period for the proposed remedy was held from May 6, 2015 through June 4, 2015. During the comment period, on May 20, 2015, DEC held a public meeting in Lackawanna to present the clean-up plan and answer questions about the proposal.

Questions and comments from the public meeting, are summarized and addressed in the Responsiveness Summary that follows. DEC did not receive any written comments on the remedy for OU02.

Comments from the Public Meeting:

COMMENT 1: How did you arrive at these three Solid Waste Management Units (SWMUs), instead of all 44?

RESPONSE 1: These three SWMUs (OU02) do not currently have any controls in place to isolate the waste material from the environment. The SWMU material has high concentrations of hazardous constituents, is directly exposed, and has the potential to leach those contaminants to the groundwater, so we want to isolate this material from the environment. The Acid Tar Pit (ATP) containment cell will provide controls (cover, containment, leachate collection and treatment) that will address these concerns.

The ATP also still has available volume for this consolidation. The known volume of SWMUs (S-18b/c, P-9, and P-18) and the nature of the materials made these three SWMUs good candidates for consolidation into the ATP. This action is being administered ahead of the remaining SMWUs in the interest of getting the final cover system/cap in place at the ATP.

The other SWMUs at the site will be addressed through future remedy selection actions. Those clean-up proposals will be made available to the public for review and comment, before the Department makes any final determination about remedy selection for the remaining areas.

COMMENT 2: Why are we taking all the bad dirt out of this area?

RESPONSE 2: See Response 1.

COMMENT 3: Are we opening the ATP back up?

RESPONSE 3: No. The ATP has not been fully closed (2016 is the closure date) so the consolidated material will be added on-top of the existing material, and then the final cover/capping system for the ATP will be installed.

COMMENT 4: Why are we limiting this site cleanup to just 3 sites?

RESPONSE 4: See Response 1.

COMMENT 5: City of Lackawanna always feels like they don't get updates, feels like they have to beg for updates. Can there be a continuously open dialogue with the City and DEC?

RESPONSE 5: Yes, the City can contact the Department anytime with questions regarding the site. The Department is also available to meet with the City to discuss the project in more detail. The City has, and will continue, to receive all site related fact sheets and reports relative to the former Bethlehem Steel property. Department records

show 45 documents related to the work to date were provided to the City on November 17, 2014. A list of these documents can be provide upon request.

COMMENT 6: What if the community wants a new plan?

RESPONSE 6: The community has the opportunity to provide written comments to the Department. The comments should be as specific as possible as to what you believe would be a preferable approach.

COMMENT 7: Was the meeting on social media?

RESPONSE 7: The Department issued a fact sheet for this action and meeting announcement electronically via an email listserv. The Department also posted the draft Statement of Basis on it's website.

COMMENT 8: Why was the meeting in the middle of the comment period? And not the very first day?

RESPONSE 8: The Department schedules in this way to provide a period of time for interested parties to review relevant records before the meeting. This helps interested parties better understand the proposed action, the material to be presented at the public meeting, and to be in a position to comment more effectively. The Department also wants there to be some time remaining in the comment period after the meeting so the public can submit any written comments.

COMMENT 9: Why aren't we talking about the entire site? Why just this small part?

RESPONSE 9: See Response 1.

COMMENT 10: We don't know how this fits in with the whole site. How can we comment on this small part when we don't know how this will fit in?

RESPONSE 10: This project will move waste material from three SWMUs, discrete area of site related contamination, currently with limited or no controls in place, into the existing ATP containment cell which will isolate the waste from the environment. The project also will not affect the physical controls in place at the ATP. In addition, these actions will not substantially limit possible clean-up options for the remainder of the site.

COMMENT 11: What other options were considered?

RESPONSE 11: The other options that were evaluated are summarized in Exhibit C of the Statement of Basis. Other options that were considered included: no action; leaving the waste in place at each SWMU location and capping individually; and, excavating the waste and shipping it off-site for disposal.

Much of this information is also contained in the draft Site-wide Corrective Measures Study (CMS) report that the Department has provided to the City of Lackawanna. The Department has offered to meet with the City to further discuss remedial actions for this Site.

COMMENT 12: How can we tell this is the best plan if we don't know the whole part yet?

RESPONSE 12: See Response Nos. 1, 10, and 11.

COMMENT 13: Does DEC take city zoning into consideration?

RESPONSE 13: Yes, the Department considers the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy. For example, for a site that is zoned for industrial use, the Department typically pursues a remedy that will achieve the industrial use recommended soil clean-up objectives specified in Part 375.

APPENDIX B

ADMINISTRATIVE RECORD

ADMINISTRATIVE RECORD

Operable Unit 02
Solid Waste Management Units S-18b/c, P-9, P-18

Tecumseh Redevelopment, Inc.
Former Bethlehem Steel Corporation Site
Site No. 915009
EPA ID No. NYD002134880
City of Lackawanna, Erie County

June 2015

Documents

1. URS Consultants, Inc. *RCRA Facility Investigation (RFI) Report for the Former Bethlehem Steel Corporation Facility, Lackawanna, New York, Parts I through VII*. October 2004.
2. TurnKey Environmental Restoration, LLC in association with Benchmark Environmental Engineering & Science, PLLC. *Corrective Measures Study Work Plan,Tecumseh Redevelopment Site, Lackawanna, New York.* May 2009.
3. TurnKey Environmental Restoration, LLC. *Focused CMS Work Plan for the Acid Tar Pit (ATP) SWMU Group, Tecumseh Redevelopment Site, Lackawanna, New York*. Revised May 2009.
4. Benchmark Environmental Engineering & Science, PLLC in association with TurnKey Environmental Restoration, LLC. *Expedited Corrective Measure Work Plan for Acid Tar Pit SWMU Group, Former Bethlehem Steel Site, Lackawanna, New York – Appendix B; Health and Safety Plan (HASP).* April 2010.
5. TurnKey Environmental Restoration, LLC in association with Benchmark Environmental Engineering & Science, PLLC. *Engineering Report, Operational Unit OU-2 ATP SWMU Group, Waste Consolidation into ATP-ECM: Waste Characterization Stabilization Assessment and Conceptual design, Tecumseh Redevelopment Site, Lackawanna, New York.* October 2014.