STATE OF NEW YORK: DEPARTMENT OF ENVIRONMENTAL CONSERVATION

In the Matter of Implementation of Corrective Action for a Hazardous Waste Management Facility, Pursuant to Article 27, Titles 9 and 13; and Article 71, Title 27 of the Environmental Conservation Law of the State of New York by:

Tecumseh Redevelopment, Inc.
4020 Kinross Parkway
Richfield, Ohio 44286

Acid Tar Pits SWMU Group
Corrective Action
Order on Consent
File No. 10-09

Respondent.

WHEREAS,

1. The New York State Department of Environmental Conservation ("Department") is responsible for enforcing the Environmental Conservation Law of the State of New York ("ECL"). This Order is issued pursuant to the Department's authority under that law, including ECL Article 27, Titles 9 and 13; and ECL Article 71, Title 27.

2. Tecumseh Redevelopment, Inc. ("Respondent"), a subsidiary of ArcelorMittal USA, Inc., owns and operates property located along the west side of Route 5 in Lackawanna, New York, (the "Lackawanna Facility") a portion of which is the subject of this Corrective Action Order on Consent (the "Order").

3. For purposes of implementing this Order the portion of the property that is subject to this Order shall be referred to as the Acid Tar Pits Site ("ATP Site"). The ATP Site consists of Solid Waste Management Units ("SWMUs") S-11, S-22 and S-24. The ATP Site is depicted on the map attached hereto as Exhibit A.

4. Respondent's predecessor in interest, Bethlehem Steel Corporation ("Bethlehem"), conducted operations that subject a portion of the Lackawanna Facility, including the ATP Site, to ECL Article 27, Titles 9 and 13, and the regulations found at 6 NYCRR that were

promulgated pursuant thereto. The area of the Lackawanna Facility that includes the ATP Site meets the definition of a "Hazardous Waste Management Facility", as that term is defined at 6 NYCRR 370.2(b)(89), and is subject to the New York State laws and regulations governing hazardous waste.

5. The Department maintains that the portion of the Lackawanna Facility that includes the ATP Site is subject to interim status and corrective action pursuant to the Federal Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. § 6901 et seq., and the regulations promulgated thereunder. The Department received final delegation of RCRA authority from EPA on May 29, 1986.

6. On November 18, 1980, a Part A hazardous waste RCRA application was submitted to the United States Environmental Protection Agency ("EPA") by Bethlehem. The Lackawanna Facility never received a Part B permit and is considered an interim status facility for purposes of 6 NYCRR 373-1.3.

7. On August 13, 1990, the EPA issued to Bethlehem an Administrative Order on Consent Docket No. II RCRA 90-3008(h)-0201, pursuant to Section 3008(h) of RCRA, which required Bethlehem and its successors to conduct a RCRA Facility Investigation ("RFI").

8. On October 15, 2001, Bethlehem filed for protection under the United States Bankruptcy Code and, pursuant to an Asset Purchase Agreement that was approved by the United States Bankruptcy Court for the Southern District of New York on April 23, 2003 (Case No. 01-15288 (Jointly Administered)), sold certain assets, including the Lackawanna Facility, to ISG Acquisition Inc. ISG Acquisition Inc. caused Bethlehem to convey the Lackawanna Facility to Respondent pursuant to a Bargain and Sale Deed With Covenants Against Grantor's Acts dated May 6, 2003.

9. As part of its cleanup obligations, Respondent completed and submitted the RFI to the Department and EPA on January 7, 2005. On August 21, 2006, the EPA notified Respondent that its obligations under the RFI Order were terminated. The results of the RFI confirm that there has been a release of hazardous waste or constituents into the environment and that a Corrective Measures Study must be performed.

10. Respondent completed a Focused Corrective Measures Study of the ATP Site in May 2009. At the Department's public information meeting held on July 16, 2009, Respondent outlined its proposed remedial action plan for the ATP Site.

11. The Department has the power, inter alia, to provide for the prevention and abatement of all water, land, and air pollution. See e.g., ECL 3-0301.1(I).

12. Pursuant to ECL Section 71-2727(3)(b), the Commissioner of the Department may issue orders requiring corrective action, or such other measures as he deems necessary to protect human health and the environment, for all releases of hazardous waste or constituents from a Facility which has interim status according to regulations adopted pursuant to Title 7 or 9 of Article 27 of this chapter.

13. Respondent consents to the issuance of this Order to fulfill certain obligations under ECL Article 27, Titles 9 and 13, ECL 71-2727, and 6 NYCRR 373 relating to implementation of corrective action measures at the ATP Site.

14. The Department finds that resolution of issues relating to the implementation of corrective action measures at the ATP Site, undertaken in accordance with the terms of this Order, is in the public interest.

15. The Department and Respondent agree that the goal of this Order is for Respondent to implement corrective action measures for SWMUs S-11, S-22 and S-24 as set forth in the

"*Expedited Corrective Measures Workplan*" approved by the Department on April 27, 2010, and which is attached hereto as Exhibit B (the "Workplan").

16. Respondent consents to the issuance and entry of this Order and agrees to be bound by its terms. Respondent reserves all rights and defenses it may have regarding liability or responsibility for conditions at the ATP Site except that Respondent consents to and agrees not to contest the authority or jurisdiction of the Department to issue or enforce this Order, except as provided in Section VII, and agrees not to contest the validity of this Order or its terms. Respondent consents to the issuance of this Order in good faith without trial or adjudication of any issue of fact or law.

NOW, having considered this matter and being duly advised, IT IS ORDERED THAT:

I. Corrective Action

Respondent shall implement corrective action measures consistent with the Workplan attached hereto as Exhibit B. Respondent shall submit for Department approval corrective measures design documents, which shall address the engineering design; construction; and operation, monitoring and maintenance ("OM&M") for the ATP Site in accordance with the schedule set forth in the Workplan. This shall include construction QA/QC requirements and an overall schedule for implementation of the corrective action measures. Nothing in this Order shall be construed to require Respondent to conduct any work, or to take any action, that is inconsistent with the Workplan. The Workplan, all documents created thereunder, and all attachments thereto shall be incorporated in, and become an enforceable part of, this Order.

II. Financial Assurances

A. Providing Financial Assurances:

1. Respondent shall provide the Department with a line item estimate of the costs associated with the corrective action measures contained in the Workplan, including post-construction OM&M costs for the ATP Site in accordance with schedule specified in Order 03-73.

2. Respondent must maintain financial assurances for the ATP Site in accordance with the terms of Order 03-73. If Order 03-73 is terminated and this Order remains in effect, Respondent must continued to provide financial assurances for the ATP Site and closure/post closure requirements either by maintaining the financial assurances established for Order 03-73, or by establishing new financial assurances in accordance with 6 NYCRR section 373-3.8 *et seq.* Under no circumstances will Order 03-73 be terminated until Respondent has demonstrated that financial assurances for the remaining ATP Site work and closure/post closure requirements have been established.

B. Liability Requirements:

1. Pursuant to the terms of Order 03-73, Respondent must have and maintain liability coverage for the ATP Site in accordance with 6 NYCRR Section 373-3.8 *et seq.*

2. If Order 03-73 is terminated and this Order remains in effect, Respondent must continue to provide liability coverage for the ATP Site and closure/post closure requirements in accordance with 6 NYCRR Section 373-3.8 *et seq.* Under no circumstances will Order 03-73 be terminated until Respondent has demonstrated that liability insurance for the remaining ATP Site remedial program work and closure/post closure requirements has been established.

C. Adjustment for Inflation:

Pursuant to the terms of Order 03-73, the financial assurances for the ATP Site and closure/post closure requirements, will be subject to adjustment for inflation as provided for in 6 NYCRR Section 373-3.8(c)(2) and Section 373-3.8(e)(2).

III. Submittals

A. All reports and submissions required by this Order shall be made to the Regional Hazardous Materials Engineer and the Director, Hazardous Waste & Radiation Management at the respective addresses provided in Section XI. Respondent shall be responsible for the content of any submissions made pursuant to this Order.

B. All documents that Respondent submits are subject to Department approval. The Department shall review each of the submissions Respondent makes pursuant to this Order to determine whether it was prepared, and whether the work done to generate the data and other information in the submission was done in accordance with: the Workplan; this Order, including plans and reports approved pursuant to this Order; and with generally accepted technical/scientific principles. The Department shall notify Respondent in writing of its approval or disapproval of each submission. All Department-approved submissions shall be incorporated into and become an enforceable part of this Order. Approval by the Department shall not be unreasonably withheld or delayed by the Department.

C. If the Department disapproves a submission, it shall so notify Respondent in writing and specify the reasons for its disapproval. Within sixty (60) days after receiving written notice that Respondent's submission has been disapproved, Respondent shall make a revised submission to the Department that addresses all of the Department's stated reasons for disapproving the first submission. After receipt of the revised submission, the Department shall

notify Respondent in writing of its approval or disapproval. If the Department approves the revised submission, it shall be incorporated into and become an enforceable part of this Order. If the Department disapproves the revised submission, the Department and Respondent will conduct good faith negotiations to resolve the issues between them during the course of the next twenty-one (21) days. If the issues are not resolved to the Department's satisfaction, the Department shall so notify Respondent in writing within five days of the end of such twenty-one (21) day period. Respondent will thereafter be in violation of this Order unless, within thirty (30) days of receipt of the Department's written notice stating that issues regarding the submission have not been resolved, it invokes the dispute resolution mechanism set forth in Section VII of this Order.

D. Respondent shall modify and/or amplify and expand a submission upon the Department's direction to do so if the Department reasonably determines, as a result of reviewing data generated by an activity required under this Order or as a result of reviewing other relevant data or facts, that further work is necessary.

E. Respondent shall provide copies of all submissions in electronic format, in a form acceptable to the Department. In the event the Department establishes provisions for submission of electronic data deliverables for environmental sampling, Respondent shall, within ninety (90) days of receipt of such notice, provide all future data submissions in the form prescribed by the Department.

F. All approved work plans, reports, and remedial activities submitted under this Order shall be deemed to have fulfilled the corresponding requirements of 6 NYCRR Part 375.

IV. Stipulated Penalties

1. Respondent's failure to comply with any term of this Order constitutes a violation of this Order and the ECL. If the Department determines that Respondent has failed to comply with this Order, the Department shall notify Respondent in writing. Payment of any penalty shall not in any way alter Respondent's obligation to comply with any term of this Order or to complete performance under the terms of this Order. The payment of stipulated penalties as set forth below shall not limit the Department's right to seek such other relief as may be authorized by law.

2. If Respondent fails to comply with the terms of this Order, Respondent shall be liable for payment to the Department of the sums set forth below as stipulated penalties for each day, or part thereof, that Respondent is in violation of the terms of this Order. All penalties begin to accrue on the first day Respondent is in violation of the terms of this Order and continue to accrue through the final day of correction of any violation. Unless disputed pursuant to the terms of Section VII, such sums shall be due and payable within fifteen (15) days after receipt of notification from the Department assessing the penalties. If such payment is not received within fifteen (15) days after Respondent receives such notification from the Department, interest shall be payable at the rate specified by the New York Civil Practice Laws and Rules for interest on a judgment on the overdue amount from the day on which it was due through, and including, date of payment. Penalties shall be paid by certified check or money order, made payable to "New York State Department of Environmental Conservation" and shall be delivered personally or by certified mail, return receipt requested, to the Regional Attorney, Office of General Counsel, N.Y.S.D.E.C., 270 Michigan Avenue, Buffalo, New York 14203-2999. Payment of the penalties shall not in any way alter Respondent's obligation to complete

performance under the terms of this Order. Stipulated penalties shall be due and payable pursuant to the following schedule:

Period of Non-Compliance	Penalty Per Day
First through 15th day	$ 250
16th through 30th day	$ 1,000
31st day and thereafter	$ 5,000

V. Entry Upon ATP Site

Respondent hereby consents to entry to the ATP Site, and areas in the vicinity of the ATP Site that are under the control of Respondent, upon reasonable notice and at times reasonable under the circumstances, by any duly designated employee, consultant, contractor, or agent of the Department or any State agency for purposes of inspecting, sampling, and testing and to ensure Respondent's compliance with this Order. The Department shall abide by the health and safety rules in effect at the ATP Site. The Department may be accompanied by an employee, consultant, contractor, or agent of Respondent. Upon request, Respondent shall provide the Department with full access to all non-privileged records relating to matters addressed by this Order and to job meetings held in connection with work performed under this Order.

VI. Enforcement and Force Majeure

Respondent shall neither suffer any penalty under this Order nor be subject to any proceeding or action, and shall not be deemed to be in violation of this Order, if it cannot comply with any requirement of this Order because of the action of a national, state, or local government body or court, an act of God, war, strike, riot, catastrophe, fire, or any other fact or circumstance beyond Respondent's reasonable control (a "Force Majeure Event"). Respondent shall, within fifteen (15) days of when it obtains knowledge that a Force Majeure Event will prevent or delay

compliance with this Order, notify the Department in writing. Failure to give such notice within the fifteen (15) day period constitutes a waiver of any claim that Respondent's failure to comply is attributable to a Force Majeure Event. Written notification shall be sent to the Regional Hazardous Materials Engineer and the Director of Hazardous Waste and Radiation Management, at the respective addresses provided in Section XI. Respondent shall include in such notice, to the extent known at the time, the measures taken and to be taken by Respondent to prevent or minimize any delays, and shall request an appropriate extension or modification of this Order. Respondent shall have the burden of demonstrating by a preponderance of the evidence, that a Force Majeure Event has occurred and, consequently that the event is a defense to compliance with this Order. The Department shall not unreasonably deny or delay acknowledgment of such demonstration.

VII. Dispute Resolution

A. The Parties shall use their reasonable best effort and negotiate in good faith to resolve any disputes regarding this Order.

B. If any dispute shall arise between Respondent and the Department regarding the implementation or interpretation of any provision of this Order, or any revised submittal, Respondent may invoke the dispute resolution procedures contained in this Section.

C. To invoke these procedures, Respondent must, within thirty (30) days of receipt of notice of the Department's action or determination, submit a written request to meet with the Director of the Division of Solid and Hazardous Materials (the "Director") to discuss the Department's action or determination. The Director or the Director's designated agent must contact Respondent to schedule a meeting, and Respondent must be available to meet within fourteen (14) days thereafter. At the meeting, Respondent shall be given an opportunity to

present its response to the Department's action or determination, and the Director or the Director's designated agent shall have the authority to modify and/or withdraw such action or determination. The Director shall notify Respondent, in writing, of his or her specific comments as soon as reasonably practicable after the meeting.

D. Upon receipt of the Director's or the Director's designated agent specific comments on the disputed issue or issues, Respondent shall take whatever action is required under this Order as modified by the Director's comments (if any) pursuant to Section VII C. If Respondent fails to take the required action, Respondent shall be in violation of this Order and the Department may take any action or pursue whatever rights it has pursuant to any provision of statutory or common law.

E. The invocation of dispute resolution procedures under this Section shall not, of itself, extend, postpone, or affect in any way any obligation of Respondent under this Order, except that payment of stipulated penalties with respect to the disputed matter shall be stayed pending resolution of the dispute pursuant to this Section. Notwithstanding the stay of payment set forth above, stipulated penalties shall accrue from the first day of noncompliance with any applicable provision of this Order. In the event Respondent does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section IV. The Director, in his or her sole discretion, may waive stipulated penalties when Respondent does not prevail on the disputed issue, if the Director determines that Respondent had a reasonable basis for believing it would prevail on the disputed issue. If Respondent prevails on the disputed issue or issues, stipulated penalties shall not be assessed.

F. The Director's written specific comments shall be the Department's final decision. Nothing in this Order shall diminish or otherwise affect Respondent's statutory rights of appeal with respect to the Department's final decision.

VIII. Department Reservation of Rights

A. Nothing contained in this Order shall be construed as barring, diminishing, adjudicating, or in any way affecting any of the Department's civil, criminal, or administrative rights or authorities including, but not limited to nor exemplified by, the right to recover natural resource damages against any party, including Respondent and Respondent's defense thereto.

B. Nothing contained in this Order shall be construed to prohibit the Commissioner or his duly authorized representative from exercising any summary abatement powers pursuant to ECL 71-0301.

C. Except as specifically set forth herein, nothing in this Order shall be construed as a waiver by Respondent of any rights, claims, defenses, or agreements it now has or may have in the future regarding the ATP Site, including Respondent's defenses, if any, should the Department attempt to recover natural resource damages.

IX. Indemnification

To the fullest extent permitted by law, Respondent shall indemnify and hold the Department, the State of New York, and their representatives and employees harmless for all claims, suits, actions, damages, and costs of every name and description arising out of or resulting from the fulfillment or attempted fulfillment of this Order by Respondent and/or any of Respondent's employees, servants, agents, successors, or assigns. This indemnification does not extend to claims or causes of action arising from or on account of grossly negligent acts or the intentional misconduct of any employee of the Department performing work at the ATP Site.

X. Notification of Proposed Transfer

A. If Respondent proposes to convey the whole or any part of Respondent's ownership-interest in the ATP Site during the term of this Order, Respondent shall, not fewer than sixty (60) days before the date of conveyance, notify the Department in writing of the identity of the transferee and of the nature and proposed date of the conveyance, and shall notify the transferee in writing, with a copy to the Department, of the applicability to them of this Order and all attachments, and 6 NYCRR Part 373-3. Respondent shall further advise the transferee in writing that the ATP site will, in the future, be subject to an Environmental Easement.

B. Respondent, it's successors and assigns, shall retain liability for fulfilling the terms of this Order throughout the duration of the Order, even if during the duration of the Order, Respondent, it's successors and assigns, convey or transfer the whole or any part of their interest in the ATP Site.

XI. Communications

A. All written communications required by this Order shall be transmitted by United States Postal Service, first class mail, by private courier service, or hand delivered as follows:

1. Communication from Respondent shall be sent to:

Regional Hazardous Materials Engineer
Division of Solid and Hazardous Materials
New York State Department of Environmental Conservation
270 Michigan Avenue
Buffalo, New York 14203-2999; and

Director, Bureau of Hazardous Waste & Radiation Management
Division of Solid and Hazardous Materials
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7258; and

Regional Attorney
New York State Department of Environmental Conservation

270 Michigan Avenue
Buffalo, New York 14203-2999

2. Communication to Respondent shall be sent to:

Mr. Keith A. Nagel
Manager, Environmental Affairs
Tecumseh Redevelopment, Inc.
3250 Interstate Drive, 2nd Floor
Richfield, Ohio 44286-9000; and

Mr. Paul H. Werthman
TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Lackawanna, New York 14218; and

Mr. Dale E. Papajcik
Squire, Sanders & Dempsey L.L.P.
4900 Key Tower
127 Public Square
Cleveland, Ohio 44114

B. The Department and Respondent reserve the right to designate additional or different addresses for communication on written notice to the other given in accordance with this Section.

XII. Modifications

1. The terms of this Order constitute the complete and entire Order the Department issued to Respondent covering Corrective Action and remediation, as set forth in Appendix A, under ECL Article 27, Titles 9 and 13 for the ATP Site. No term, condition, understanding, or Order purporting to modify or vary any term of this Order shall be binding unless made in writing and subscribed by the party to be bound. No informal advice, guidance, suggestion, or comment by the Department regarding any report, proposal, plan, specification, schedule, or any other submissions shall be construed as relieving Respondent of its obligation to obtain such formal approvals as may be required by this Order.

2. If Respondent desires that any provision of this Order be changed, Respondent shall make timely written application to the Department setting forth reasonable grounds for the relief sought. Copies of such written application shall be delivered or mailed to the New York State Department of Environmental Conservation at the addresses provided in Section XI. No change or modification to this Order shall become effective except as specifically set forth in writing and approved by the Commissioner or a duly authorized representative.

XIII. Termination and Satisfaction

Respondent's obligations under this Order shall be deemed satisfied and shall terminate upon (i) a determination by the Department that Respondent has satisfactorily completed the corrective action measures at the ATP Site specified in the Workplan; (ii) a determination by the Department that the Respondent has sufficient finacial assurances to provide for all outstanding/remaining OM&M for the ATP Site; and (iii) a fully executed Order on Consent that binds Respondent to provide OM&M for the ATP Site, including but not limited to maintaining financial assurances and liability coverage for the ATP Site.

XIV. Miscellaneous

A. Respondent hereby certifies that it, to the best of its knowledge, has fully and accurately disclosed or made available to the Department all relevant information known to Respondent and all relevant information known to be in the possession or control of its officers, directors, employees, contractors, and agents which relates to, identifies or describes contamination of ATP Site soils and groundwater and any other environmental concerns.

B. Respondent shall retain professional consultants, contractors, laboratories, quality assurance/quality control personnel, third party data validators, and ELAP Certified Analytical Laboratories acceptable to the Department to perform the technical, engineering, and analytical

obligations required by this Order. The experience, capabilities, and qualifications of the firms or individuals selected by Respondent shall be submitted to the Department within thirty (30) days after the Effective Date of this Order or their selection by Respondent, whichever is later. The Department's approval of these firms or individuals shall be obtained before the start of any activities for which Respondent and such firms or individuals will be responsible. Such approval shall not unreasonably be withheld, and shall be deemed granted if Respondent has not received from the Department a written notice of disapproval within fifteen (15) days of Respondent submitting the credentials of the firms or individuals selected. The responsibility for the performance of the professionals retained by Respondent shall rest solely with Respondent.

C. The Department shall have the right to obtain split samples, duplicate samples, or both, of all substances and materials sampled by Respondent pursuant to this Order, and the Department also shall have the right to take its own samples at the ATP Site. Respondent shall make available to the Department the results of all sampling and/or tests or other data generated by Respondent with respect to implementation of this Order and shall submit these results in the progress reports required by this Order. Respondent shall have the right to obtain split samples, duplicate samples, or both of all substances and materials sampled by the Department, and the Department shall promptly make available to Respondent the results of all sampling, tests or other data generated by the Department with respect to this Order.

D. Respondent shall notify the Department at least ten (10) working days in advance of any field activities to be conducted pursuant to this Order.

E. Respondent shall obtain all permits, easements, rights-of-way, rights-of-entry, approvals, or authorizations necessary to perform Respondent's obligations under this Order.

F. Respondent, it's successors and assigns, shall be bound by this Order. Any change in ownership including, but not limited to, any transfer of assets or real or personal property at the ATP Site shall in no way alter Respondent's responsibilities under this Order.

G. Respondent shall be responsible for ensuring that its contractors and subcontractors perform the work in satisfaction of the requirements of this Order.

H. Respondent shall submit a monthly progress report by the last Friday of each month outlining the work performed since the last report.

I. All references to "days" in this Order are to calendar days unless otherwise specified. If a deadline falls on a weekend or holiday, such deadline shall automatically be extended to the next business day.

J. The Section headings set forth in this Order are included for convenience of reference only and shall be disregarded in the construction and interpretation of any of the provisions of this Order.

K. The Effective Date of this Order shall be the date that the Commissioner or his designee signs this Order. The Department will provide Respondent (or Respondent's counsel) with a fully executed copy of this Order as soon as practicable after the Commissioner or his designee signs it.

L. In the event of an inconsistency between the provisions of any attachment or appendix of this Order and any term, condition, or provision contained in Sections I through XIV of this Order, the term, condition, or provision contained in that Section, and not that in any attachment or appendix of this Order, shall control.

M. Respondent and Respondent's corporate successors and assigns hereby affirmatively waive any right they had, have, or may have to make a claim against New York

State pursuant to Article 12 of the Navigation Law with respect to the ATP Site, and further release and hold harmless the New York State Environmental Protection and Spill Compensation Fund from any and all legal or equitable claims, suits, causes of action, or demands whatsoever that any of the same has, or may have, with respect to the ATP Site.

N. The terms of any Orders on Consent Respondent has entered into with the Department pertaining to the Lackawanna Facility shall continue in full force and effect unless they conflict with or are otherwise addressed by the terms of this Order, in which case terms of this Order shall control.

DATED: May 10, 2010
Buffalo, New York

ALEXANDER B. GRANNIS
COMMISSIONER OF THE
NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

By: Abby M. Snyder
Abby M. Snyder
Regional Director

CONSENT BY RESPONDENT

Respondent hereby consents to the issuing and entering of this Order, waives respondent's right to a hearing herein as provided by law, and agrees to be bound by this Order.

By: _____
Keith A. Nagel

Title: Director, Environmental Affairs & Real Estate

Date: April 28, 2010

STATE OF OHIO)
) s.s.:
COUNTY OF SUMMIT)

On this 28th day of April, 2010, before me personally came Keith A. Nagel, to me known, who being duly sworn, did depose and say that he resides in Richfield, Ohio; that he is the Director of Environmental Affairs & Real Estate the corporation described in and which executed the foregoing instrument; that he knew the seal of said corporation; that the seal affixed to said instrument was such corporate seal; that it was so affixed by the order of the Board of Directors of said corporation and that he signed his name thereto by like order.

_____
Notary Public

Commission expires:
October 29, 2012

NOTARIAL SEAL
STATE OF OHIO

STEEL WINDS I BCP
± 29 ACRES

CMS AREA
± 488 ACRES

SFA ZONE 5
(includes Steel Winds IA
± 41.83 ACRES
less Steel Winds IA = ± 32.50

SFA ZONE 4
(includes Steel Winds I)
± 71.30 ACRES
less Steel Winds I = ± 59.77 ACRES

SFA ZONE 3
(includes Steel Winds I)
± 73.00 ACRES
less Steel Winds I = ± 55.52 ACRES

COAL/COKE/ORE STORAGE & COAL HANDLING AREA
± 137.11 ACRES

SFA ZONE 2
± 81.71 ACRES

TANK FARM AREA
± 67.58 ACRES

COKE PLANT & BY-PRODUCTS FACILITIES
± 45.31 ACRES

SWMU S-11
SWMU S-22
SWMU S-24

SFA ZONE 1
± 128.96 ACRES

ACID TAR SWMU GROUP AREA

PHASE III BPA
± 148.81 ACRES

PHASE I BPA
± 101.85 ACRES

PHASE II BPA
± 144.11 ACRES

BUFFALO OUTER HARBOR

MITTAL STEEL GALVANIZING MILL (± 87.4 ACRES)

REPUBLIC ENGINEERED PRODUCTS, INC. (± 84.9 ACRES)

MITTAL STEEL GALVANIZING MILL (± 82.2 ACRES)

1000' 0' 1000' 2000'

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

DATE: APRIL 2010
DRAFTED BY: WJM

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

TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0071-009-213

CMS SITE WITH ACID TAR PIT SWMU GROUP

ACID TAR PITS SWMU GROUP

TECUMSEH REDEVELOPMENT SITE
LACKAWANNA, NEW YORK

PREPARED FOR
TECUMSEH REDEVELOPMENT, INC.

EXHIBIT A

EXPEDITED CORRECTIVE MEASURE WORK PLAN

Acid Tar Pit SWMU Group
Former Bethlehem Steel Site
Lackawanna, New York

APRIL 2010 0071-007-140

Prepared For:

Tecumseh Redevelopment, Inc.

Prepared By:

TurnKey Environmental Restoration, LLC

Benchmark Environmental Engineering & Science, PLLC

2558 Hamburg Turnpike, Suite 300, Buffalo, New York | phone: (716) 856-0599 | fax: (716) 856-0583

EXPEDITED CORRECTIVE MEASURE WORK PLAN

ACID TAR PIT SWMU GROUP
(SWMUs S-11, S-22, & S-24)
FORMER BETHLEHEM STEEL SITE
LACKAWANNA, NY

APRIL 2010 0071-007-140

Prepared for:

Tecumseh Redevelopment, Inc.

Prepared By:

TurnKey Environmental Restoration, LLC

In Association With:

Benchmark Environmental Engineering & Science, PLLC

EXPEDITED CORRECTIVE MEASURES WORK PLAN
Acid Tar Pit SWMU Group (SWMUs S-11, S-22, & S-24)

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1.0 INTRODUCTION

1.1 Site History & Current Property Ownership

Tecumseh Redevelopment Inc. (Tecumseh) owns approximately 1,070 acres of property located along the west side of NYS Route 5, Lackawanna, New York (the "Tecumseh Property" or " Tecumseh Site") comprising a significant portion of the former Bethlehem Steel Corporation – Lackawanna Facility (the "former BSC Property" or "former BSC Site"). Site regional and vicinity maps are provided in Figures 1 and 2, respectively.

The former BSC property was used for iron and steel production since the beginning of the 20th century. 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 leaving only a galvanized products mill operating by BSC at the Site.

In 2001 BSC filed for bankruptcy protection. Tecumseh acquired the Tecumseh Property pursuant to an Asset Purchase Agreement that was approved by the United States Bankruptcy Court for the Southern District of New York in April 2003.

1.2 RCRA Corrective Action Program Status

Bethlehem Steel Corporation and the United States Environmental Protection Agency (USEPA) entered into an Administrative Order on Consent in August 1990 (Docket No. II RCRA-90-3008(h)-0201). Under terms of the 1990 USEPA Order, BSC agreed to perform a RCRA Facility Investigation (RFI) to identify the nature and extent of any releases of hazardous constituents from 104 Solid Waste Management Units (SWMUs). The potential impacts on water and sediment quality in six surface water bodies (watercourses) located on or adjacent to the former BSC property were also to be addressed in the RFI. As the RFI Report was incomplete when Tecumseh acquired (most of) the former BSC property in 2003, Tecumseh immediately initiated efforts to expeditiously complete the RFI. The Final RFI Report submitted to USEPA in January 2005 recommended 38 SWMUs (including the Acid Tar Pits SWMU Group) and three watercourses (i.e. Smokes Creek, South Return Water Trench, and Blasdell Creek) for further evaluation in a Corrective Measures Study (CMS). In a letter dated May 17, 2006, USEPA identified five additional SWMUs and two additional watercourses for further evaluation in the CMS. All of the other

SWMUs identified by USEPA in the 1990 Order were determined by USEPA to require no further assessment as they do not pose a significant potential risk to human health or the environment. Later, in September 2006, USEPA deemed the provisions of the 1990 Order to be satisfied and Tecumseh's obligations under the 1990 Order terminated.

An Order on Consent (Corrective Measures Study Order) between Tecumseh and the New York State Department of Environmental Conservation (NYSDEC) entered into on June 30, 2009 requiring Tecumseh to, amongst other things, complete a Corrective Measures Study (CMS) in accordance with Federal Resource Conservation and Recovery Act (RCRA and Title 6 NYCRR Part 373 on the roughly 500-acre CMS Site.

1.3 Smokes Creek

Smokes Creek is a natural water body that traverses the Site from east to west prior to discharging into Lake Erie (see Figure 3). On the Tecumseh Site, the Creek has been divided into two sections, the Upper Reach, measuring approximately 3,900 feet, from Route 5 to Site Highway 9 (bridge) and the Lower Reach, measuring approximately 2,600 feet from the Site Highway 9 bridge to Lake Erie (see Figure 3).

As part of the U.S. Flood Control Act of 1960 (Public Law No. 86-645), the USACE undertook channel improvements in Smokes Creek from its outlet to Lake Erie across the entire former Bethlehem Steel (now Tecumseh) Property and further upstream. The lower 2,600 linear feet of the Smokes Creek flood improvements were constructed by Bethlehem Steel Corporation in accordance with its Land Patent Agreements with the Federal and State governments, as this portion of Smoke's Creek and the adjacent lands were reclaimed from Lake Erie by placement of slag fill. BSC was also obligated by the Land Patent Agreements to operate and maintain the Smokes Creek flood channel along the lower 2,600 linear feet in accordance with an Operation and Maintenance Manual issued by the USACE in May 1972. The NYSDEC has responsibility to operate and maintain the balance of the Smokes Creek flood channel including approximately 3,900 linear feet on the former Bethlehem Steel property upstream of the Land Patent lands.

Little, if any, maintenance of the Creek was performed by BSC since the steel plant closed over 20 years ago. Tecumseh, as successor and assign to BSC on this property, has effectively assumed the maintenance obligations for this portion of the Smokes Creek flood channel. Sediment that had accumulated in Smokes Creek, particularly the Lower Reach,

was determined by the USACE to be reducing the hydraulic flood flow and contributing to the expansion of the 100-year flood plain in the City of Lackawanna First Ward. As such, Tecumseh completed an interim corrective measure (ICM) in January 2009 to dredge the lower reach of Smokes Creek to design elevations to mitigate the expansion of the 100-year flood plain in the City of Lackawanna First Ward and to fulfill its obligations under the Land Patent Agreement. Much of the sediment dredged contains contaminants that are believed to have migrated from the Acid Tar Pits (ATP) SWMU Group which includes SWMUs S-11, S-22 and S-24 (See Figure 3).

1.4 Purpose and Scope

In order to promptly mitigate the continued migration of contaminants from the high-priority ATP SWMUs to the Creek via groundwater discharge and surface water flow and thereby avoid recontamination of the Creek sediment, this Expedited Corrective Measure Work Plan is proposed to be undertaken by Tecumseh separately from the other SWMUs to be addressed in the broader and more comprehensive CMS for the remainder of the CMS Site.

The impetus to remediate all three ATP SWMUs collectively as soon as possible stems from: the recent dredging of Smokes Creek as an ICM and the need to protect the Creek from recontamination; the similar source(s) and nature of the wastes previously disposed in these SWMUs; and from the fact that these SWMUs are considered a high-priority for remediation due to the significant quantities of contaminants that are migrating via groundwater to Smokes Creek. If the ATP SWMU Group is not addressed promptly, their remediation will be delayed several years until the CMS is complete and comprehensive corrective measures are designed and constructed. For this reason, a Focused CMS was completed in May 2009 at the request of NYSDEC to evaluate several options addressing specifically SWMUs S-11, S-22, & S-24. Alternative 4 – Excavate SWMU S-24, Consolidate and Construct Combined In-Place ATP Containment System was the recommended remedial action, and as such, is the chosen approach for this Expedited Corrective Measure (ECM).

This Work Plan is intended to be appended to and thus become an integral part of an Order on Consent between Tecumseh and the NYSDEC for implementation of the ECM for the ATP SWMU Group. A description of the major remedial design elements are

provided in Section 4.0. Sections 5.0 and 6.0 describe the planned ECM construction and post-construction operation and maintenance, respectively. The proposed project schedule is included in Section 8.0.

1.5 Public Meeting

A public meeting was held on July 16, 2009 to seek public input on the Focused CMS. No substantive or negative comments were received.

2.0 EXPEDITED CORRECTIVE MEASURE OBJECTIVES

2.1 General

This proposed ECM for the ATP SWMU Group, in combination with the recently completed Smokes Creek dredging ICM, is anticipated to substantially and permanently address corrective measures necessary for the protection of public health and the environment related to these high-priority SWMUs and adjacent water body under the RCRA Corrective Action Program.

More specifically, the ATP SWMU Group ECM shall protect public health and the environment by consolidating and containing in-situ, the highly-contaminated fill and the soil/slag and impacted groundwater in, under, and immediately adjacent to it. In doing so, direct contact with the waste is eliminated, and further migration of fill constituents into the environment is substantially mitigated and controlled.

2.2 Corrective Action Management Units

The concept of Corrective Action Management Units (CAMUs) is embodied in the RCRA Hazardous and Solid Waste Amendments of 1984 (HSWA Amendments) that allows for the consolidation and management of remediation wastes from several SWMUs in one or more locations to reduce its volume, toxicity and/or mobility. On August 22, 2000 the USEPA published a rule (65 FR 51080) referred to as the CAMU Amendments that effectively "grandfathered" any "substantially complete" CAMU applications received by USEPA or an authorized state, such as New York, within 90 days of the rulemaking (i.e., on or before November 20, 2000). Consequently, in New York, a CAMU implemented pursuant to such a grandfathered application would be subject to the existing 1993 CAMU regulations set forth in 6 NYCRR Part 373-2.19. On November 16, 2000 Bethlehem Steel Corporation, as the waste generators and owner of the subject property at that time, submitted an application for two CAMUs to be located in the Slag Fill Area-Zone 2: a Solid Waste (SW) CAMU into which solid waste would be consolidated and contained; and a Hazardous Waste (HW) CAMU into which hazardous waste would be consolidated and contained. In a letter dated November 17, 2000 the NYSDEC deemed the CAMU application substantially complete and advised that the proposed CAMUs are subject to the 1993 CAMU regulations. The NYSDEC's letter went on to clarify that development of

detailed designs for the CAMUs would be addressed in the CMS. Accordingly, Tecumseh intends to develop detailed designs consistent with the 1993 regulations for the grandfathered CAMUs as part of the CMS.

In the BSC HW-CAMU application, waste/fill from the ATP SWMU Group was identified as one of the waste fill materials that may be considered for placement in the HW-CAMU. This ECM for the ATP SWMU Group obviates that need and reduces the size and fill volume of the contemplated HW-CAMU accordingly. At this point in time, Tecumseh continues to anticipate and support the concept of both SW – and HW – CAMUs in Slag Fill Area – Zone 2 adjacent to, or in the general vicinity of the consolidated ATP SWMU Group containment cell.

2.3 Groundwater Objectives

Groundwater impacts within, under and adjacent to the ATP SWMU Group are identified in Section 3 of this Work Plan. Broader groundwater objectives for the entire CMS Site will be addressed in the subsequent CMS and associated Long-Term Groundwater Monitoring (LTGWM) Plan. The objective of the LTGWM Plan is to monitor downgradient groundwater quality discharged from the entire CMS Area to adjacent surface water bodies Lake Erie, Smokes Creek, and the Lackawanna Ship Canal (Gateway Metroport).

Groundwater quality objectives specific to the ATP SWMU Group are to contain, collect and/or treat the heavily contaminated groundwater and/or source materials in, under or adjacent to the SWMUs such that downgradient groundwater quality will not further degrade and will eventually improve so as not to continue to significantly impact water and sediment quality in Smokes Creek.

3.0 SUMMARY OF RFI FINDINGS & SUBSEQUENT CHARACTERIZATION

Following are summaries of the ATP SWMU Group and Smokes Creek characterization data and associated RFI findings. In an effort to close data gaps identified in the RFI data, a post-RFI characterization of the ATP SWMU Group was conducted in order to delineate the vertical and lateral extent of each SWMU in the Group. The results of those investigations are also discussed in this section.

Figure 4 presents the approximate location of pre-RFI, RFI and post-RFI samples collected from various media (i.e., groundwater from monitoring wells, subsurface soil from borings, surface soil samples, sediment and surface water samples from watercourses etc.) in and adjacent to SWMUs S-11 and S-22.

3.1 RFI Characterization of the Acid Tar Pit SWMU Group

SWMUs S-11 and S-22 are located south of Smokes Creek in the eastern portion of SFA Zone 2 (see Figures 3 & 4). SWMU S-24 is located on the north bank of Smokes Creek approximately 2,600 feet upstream of the mouth (see Figures 4), and immediately west of the Highway #9 bridge. Although SWMU S-24 is not within SFA Zone 2, the waste material identified within this unit is consistent with materials placed within SWMUs S-11 and S-22; therefore, this unit has been included in the Acid Tar Pit SWMU Group. Due to different waste disposal histories, each SWMU is discussed separately in the following paragraphs.

3.1.1 SWMU S-11

The RFI describes SWMU S-11, is an elongated surface impoundment approximately 1.4 acres in area and filled with approximately 50,000 cubic yards of waste material by-products from steel and coke making operations deposited from the 1950s into the early 1970s. The waste material consists primarily of iron precipitator dust and waste lime, with lesser amounts of coke oven waste extending to a depth of approximately 20 to 30 feet below ground surface (fbgs). The surface is relatively level and only half covered with vegetation consisting of gravel-sized slag with smaller quantities of stone, bricks, and other debris. Several small mounds of slag exist in the immediate vicinity of the unit.

According to the RFA (USEPA 1988), materials placed within this unit included: discarded drums from plant operations containing various wastes, including condensate from burning of foul gas from the coke oven gas sulfur recovery process, oil from several water quality control stations, hydraulic oil, paint residues, paint house filters, solvent cleaning solutions, and various degreasing compounds, including 1,1,1-trichloroethane; open hearth precipitator dust from electrostatic precipitators installed to clean exhaust gases from open-hearth operations; and lime dust collected in a bag house associated with basic oxygen furnace (BOF) steel-making operations. SWMU S-11 is not an engineered containment structure and was constructed without a barrier baseliner and/or final cover system. A dense glacial till unit underlies this SWMU approximately 38 to 52 feet below ground surface which acts as a vertical confining unit to inhibit the downward flow of impacted groundwater.

The RFI data concluded the following regarding SWMU S-11:

- Numerous hazardous constituents (VOCs, SVOCs, and several metals) are present in slag/soil/fill and vary in concentration with waste type.
- Materials of high pH (>11 s.u.) are present, although pH levels vary with waste type.
- Due to the nature of the materials within the ATPs and surface topography a groundwater mound exists in the SWMU.
- RFI soil/slag/fill samples collected did not exhibit hazardous characteristics via TCLP; however, other soil/slag/fill sampling of SWMU S-11 exhibited hazardous characteristics for benzene.
- VOCs, SVOCs, and several metals were present in groundwater samples collected from both the upgradient and downgradient monitoring wells.

3.1.2 SWMU S-22

The RFI describes SWMU S-22 as an elongated group of three surface impoundments totaling approximately 1.4 acres in area and filled with approximately 50,000 cubic yards of waste by-products from steel and coke manufacturing deposited from the 1950s into the early 1970s. The unit is surrounded by an earthen and slag berm approximately 3 to 8 feet high while the surface of the SWMU is approximately 3 to 5 feet below the berm in most areas. The RFI reports the waste profile extends to an approximate

depth of 20 to 40 feet below ground surface with groundwater encountered within the fill at 10 to 20 feet below ground surface.

During the RFI, investigatory borings and various analyses identified five major waste types: spent pickle liquor, coal tar, coke oven gas/condensate, waste lime, and iron oxide precipitator dust. These wastes were observed to be co-mingled and partly stratified within the ATPs. All waste types except the lime and iron precipitator dust contained elevated concentrations of benzene ranging from 92 to 29,000 mg/kg. Each waste is described briefly below:

Waste Type	Physical Characteristics	Chemical Characteristics
Spent Pickle Liquor	Pink and olive green silt and fine sand-sized particles, occasional mottling, and exhibiting a pungent acid odor and a strong positive response on the photoionization detector (PID)	Very low pH (2.0 standard units (s.u.)
Coal Tar	Black, sticky, cohesive material often with a naphthalene-like odor (e.g., moth balls) and a strong positive PID response	Elevated concentrations of SVOCs: naphthalene (42,000 mg/kg), phenanthrene (18,000 mg/kg), phenol (1,600 mg/kg), pyrene (9,200 mg/kg); METALs: arsenic (21 mg/kg), barium (65 mg/kg), lead (90 mg/kg), nickel (29 mg/kg); OTHER: sulfide (1,020 mg/kg), British Thermal Units (BTU) content (11,500 BTU/lb)
Coke Oven Gas Condensate	Dark grey to black non-sticky material consisting of silt and fine sand-sized particles exhibiting hydrocarbon odors and a strong positive PID response	Elevated concentrations of SVOCs: fluorene (ND to 340 mg/kg), naphthalene (3.7 to 850 mg/kg), phenanthrene (<1 to 180 mg/kg); METALs: lead (12 to 108 mg/kg); OTHER: BTU content (<1,000 to 6,720 BTU/lb), pH (0.38 to 1.79 s.u.)
Waste Lime	White to pinkish-grey silt-sized material exhibiting a strong positive PID response	High pH (11 s.u.)
Iron Precipitator Dust	Brown to reddish-brown silt to fine sand-sized material with a lower positive PID response	High pH (11 s.u.)

SWMU S-22 is not an engineered containment structure and was constructed without a barrier baseliner and/or final cover system. A dense glacial till unit underlies this SWMU

approximately 38 to 52 feet below ground surface which acts as a vertical confining unit to inhibit the downward flow of impacted groundwater.

The RFI concluded the following regarding SWMU S-22:

- Several waste fill material samples exhibited hazardous characteristics for benzene and pyridine.
- Numerous hazardous substances (VOCs, SVOCs, and several metals) are present in waste fill and vary in concentration with waste type.
- Some waste fill samples exhibited a pH less than 2 which are considered a characteristic hazardous waste based upon corrosivity.
- Due to the physical nature of the materials within the ATPs and topography, a groundwater mound exists in the SWMU.
- Hazardous substance found in both the fill and sand units' groundwater has migrated horizontally from SWMU S-22 toward Smokes Creek.

3.1.3 SWMU S-24

SWMU S-24 is an oval-shaped disposal pit measuring approximately 1 acre in area, filled with acid tar (agitator) sludge generated from the Benzol Plant. Agitator sludge found within this unit was generated during benzene processing when the product (benzene) was washed with sulfuric acid to separate impurities. The resulting waste stream was neutralized with a caustic solution, which produced the agitator sludge.

The tar-like waste material extends to a depth of approximately 10 feet below ground surface (fbgs) with deeper zones extending to a depth of 20 feet; possibly the result of vertical migration of the tar material. An elongated mound of slag-fill and debris exists in the eastern portion of the SWMU. The surface slopes gently from west to east with areas of no and low vegetative cover. Although this unit is covered with slag, small localized areas of a tar-like substance have occasionally been observed at the surface during the summer months. SWMU S-24 is not an engineered containment structure and was constructed without a barrier baseliner and/or final cover system. Groundwater within the shallow fill unit is approximately 10 to 14 fbgs. The RFI concluded the following regarding SWMU S-24:

- Agitator sludge waste was disposed of in this SWMU from at least 1938 to 1950. Waste fill/slag samples collected after 1993 from the SWMU indicate the presence of 8 VOCs, 23 SVOCs, metals, and cyanide.

- Much of the waste fill material within SWMU S-24 is characteristically hazardous for benzene, pyridine, and nitrobenzene based upon Toxic Compound Leaching Protocol (TCLP) test results.
- In the 1994 samples, naphthalene was the only compound detected in the Synthesis Precipitation Leaching Protocol (SPLP) extract indicating that is the only waste fill constituent likely to migrate from the SWMU in groundwater.
- The pH of the waste material was determined to be as low as 0.63 standard units (SU) indicating that it is a characteristic hazardous waste exhibiting corrosivity.
- Four VOCs, 11 SVOCs, 15 metals, and cyanide were detected in the 2001 surface soil/fill samples.
- A November and December 1996 electrical imaging survey indicated the waste fill extends 5 to 10 fbgs, and in some areas as deep as 20 fbgs.

3.2 Post-RFI Characterization of the ATP SWMU Group

The RFI data collected from the ATP SWMUs was deemed insufficient to define the lateral and vertical extent of the SWMUs for purpose of remedy design and preparation of remedial cost estimates. A planned perimeter test pitting and boring program was implemented by TurnKey in April-May 2008 at the Agitator Sludge and ATPs SWMUs, respectively, to more adequately delineate the lateral and vertical extent of fill as well as to confirm the presence and depth to the confining soil unit beneath these SWMUs as identified during the RFI. The results of post-RFI investigations are discussed below.

3.2.1 SWMUs S-11 and S-22 Investigation

The ATP SWMU investigation boring program included the advancement of 14 perimeter borings around the combined perimeter of SWMUS S-11 and S-22. The completed boring locations, shown on Figure 5, were selected based upon a review of available data collected from the ATP SWMUs including, but not limited to, standard boring logs, resonant sonic boring logs, and an electrical imaging (EI) survey. Some boring locations required field modification from their planned locations to avoid surficial waste material exposed during preliminary clearing of the area and due to refusal. Borings where refusal was not encountered were advanced a minimum of 4 feet into the lower confining till

unit. In general, the depth to the lower confining unit ranged from approximately 38 to 52 feet below ground surface. Table 1 summarizes the boring data.

3.2.2 SWMU S-24 Investigation

The Agitator Sludge SWMU (S-24) test pit investigation included the excavation of 13 test pits (see Figure 6) to delineate the lateral and vertical extent of waste material within SWMU S-24 as well as to confirm the depth to the confining soil unit identified during the RFI. In general, test pits were excavated in a radial pattern starting at a known location of waste fill material. Upon visual confirmation of waste fill material (i.e., black with elevated PID readings), each test pit was extended outward until the waste fill was no longer observed. Periodically during lateral advancement of each test pit, the confining layer described in the RFI was confirmed and an average waste fill material vertical thickness was determined. With these more accurate measurements, it was calculated that approximately 28,000-35,000 CY of waste fill material exists within the SWMU S-24.

Concurrent with test pitting activities, nearby monitoring wells MWN-24A, MWN-24B, and MWN-44 were inspected for integrity, re-developed, sampled, and analyzed for TCL VOCs and TCL SVOCs (base-neutrals only). Monitoring wells MWN-24A and MWN-44A are screened within the fill material and well MWN-24B is screened within the underlying low-permeability till unit beneath the Agitator Sludge SWMU. Groundwater results for those monitoring wells are presented in Table 2. The analytical results reported from the April 2008 monitoring event are generally similar to the November 1999 RFI groundwater results as shown in the table. The till unit well, MWN-24B, continues to show no impact as a result of the overlying fill and waste within the SWMU. Groundwater quality at well MWN-44A appears to have greatly improved since November 1999 based upon VOC and SVOC concentrations reported for that location. Polycyclic aromatic hydrocarbons (PAHs), however, continue to persist at concentrations above the GWQS/GVs at monitoring well MWN-44A.

3.3 RFI Characterization of Smokes Creek Sediment

In conjunction with the soil/fill and groundwater investigations/assessments performed prior to and during the RFI at the Tecumseh Site, surface water bodies on or

proximate to the Tecumseh Site including Smokes Creek were also investigated for site-specific Constituents of Potential Interest (COPI) during the RFI through the analysis of surface water and sediment samples.

The RFI concluded the following relative to the lower reach of Smokes Creek:

- The TCLP extract concentrations indicate that the sediment in Smokes Creek is not characteristically hazardous.
- Analytical results of surface water and sediment indicate that the primary constituents of concern in the sediment are SVOC, PAHs, and several metals (e.g., As, Cr, Pb)

3.4 Post-RFI Smokes Creek Sediment Characterization

Sediment characterization sampling was performed by TurnKey in June 2007 on the lower 2,600 feet of Smokes Creek (Lower Reach) and in December 2007 on the remaining 3,900 feet of the Creek (Upper Reach). The supplemental sampling program conducted was determined by NYSDEC and the United States Army Corps of Engineers (USACOE) to have adequately characterized the sediments for purposes of dredging and dredge spoils disposal.

3.5 ATP SWMU Group Groundwater

The unconfined shallow water-bearing unit at the ATP SWMU Group area occurs within the lower portion of the soil/fill unit and the underlying sand unit. Recharge to these units is principally through infiltration of precipitation with the primary discharge north to Smokes Creek. The shallow water-bearing unit in the vicinity of the ATP SWMU Group is separated from the underlying bedrock groundwater unit by a silty clay and till aquitard (as identified across the Tecumseh Site). During the RFI, the shallow groundwater unit was determined to have a downward vertical hydraulic gradient between the soil/fill and sand units with a neutral or upward vertical hydraulic gradient near Smokes Creek (as expected near a receiving water body).

It is important to note that the hydrogeology of the ATP SWMU Group area differs from that of the rest of the Tecumseh Site due to the presence of the waste materials stored there. These materials have reduced the groundwater permeability of the ATP area, either directly or indirectly or both, causing a perched condition and resulting in a localized

mounding effect as identified during the RFI. The groundwater mound is attributed to multiple water-bearing zones of varying hydraulic conductivities within the waste materials which has created a localized radial groundwater flow pattern away from SWMUs S-11 and S-22. Although perched, the mounded groundwater is hydraulically connected to the underlying soil/fill and sand units and is thought to migrate slowly downward through discontinuous waste units of low permeability.

A 1996 investigation of the ATP SWMU Group area groundwater reported hydraulic conductivities of the ATP waste ranging from 2.1×10^{-5} cm/sec to 4.13×10^{-7} cm/sec. These conductivities are significantly lower than the geometric and arithmetic mean hydraulic conductivities of 2.14×10^{-3} cm/sec and 2.04×10^{-2} respectively, calculated for the slag fill unit and 2.04×10^{-4} cm/sec and 2.02×10^{-3} cm/sec, respectively, calculated for the sand unit during the RFI.

Due mainly to the localized disposal of similar waste materials resulting in geographic grouping of the SWMUs in conjunction with localized groundwater discharge patterns previously identified, groundwater quality is best characterized on a Discharge Area-by-Discharge Area basis with a special emphasis given to monitoring downgradient groundwater prior to discharge into adjacent surface water receptors (i.e., Lake Erie, Smokes Creek, and the Ship Canal). For purposes of this ECM Work Plan, groundwater quality only within Discharge Areas 2B (SWMUs S-11 and S-22) and 3A (SWMU S-24) is impacted by the ATP SWMU Group. Long-term monitoring requirements for the ATP SWMU Group will be determined in consultation with the NYSDEC. Additional monitoring wells or replacement of existing monitoring wells may be deemed necessary for post-remedial monitoring purposes.

4.0 PROPOSED EXPEDITED CORRECTIVE MEASURE

4.1 General

The overall objective of this proposed ECM is to consolidate the acid tar wastes previously disposed by BSC in the Agitator Sludge Area (SWMU S-24) and Acid Tar Pits (SWMU S-11 & S-22) into a singular on-site containment cell to mitigate continued migration of surface and subsurface contaminants into adjacent groundwater and Smokes Creek.

4.2 Construction Health & Safety

A project specific Health and Safety (H&S) Plan will be developed and adhered to throughout all ECM remedial construction activities. All on-site construction personnel will be required to follow independent and site-specific H&S Plans provided by their respective employers. All remedial construction workers will require, at a minimum, all appropriate training certifications, use of personnel protective equipment, and associated facilities as specified in the H&S Plans. As the location of the ECM is far-removed from any on-site commercial or industrial activities and from any off-site residential or community-related structures or activities, community air monitoring will only be conducted at an outlying perimeter of the work zone and not at the property boundaries. Temporary construction fencing and signage surrounding the work area will be used to warn potential trespassers and unauthorized site visitors of the remediation work activities.

4.3 Combined Agitator Sludge & Acid Tar Pits Containment System

4.3.1 General

The containment system that will be designed and constructed to isolate the Acid Tar Pits and consolidated waste from the Agitator Sludge Area will consist of the following three basic components:

- Bentonite/Soil Slurry Wall – a low-permeability vertical subsurface wall to provide lateral containment of waste and groundwater within the cell from the surrounding subsurface environment.

- Groundwater Collection System – to create an inward hydraulic gradient across the slurry wall to further enhance its effectiveness.

- Cover system – a low-permeability multi-layer geosynthetic and vegetated soil cover that will reduce the infiltration of precipitation, promote storm water runoff, and eliminate the potential for direct contact with the contained waste. The vegetated cover will consist of a seed mixture suitable for indigenous wildlife and as will be further specified by the design specifications.

4.3.2 Bentonite/Soil Slurry Wall

In-place lateral containment of the combined & consolidated Agitator Sludge and Acid Tar Pits soil/fill and groundwater will be accomplished by constructing a low-permeability subsurface vertical barrier wall around the perimeter for the entire consolidated waste area. The slurry wall will be constructed using off-site borrow soil amended with bentonite and/or other soil amendments (type and weight ratio to be based upon off-site borrow soil physical properties during design) to achieve a maximum hydraulic conductivity of $1x10^{-7}$ cm/sec. The proposed barrier wall will function as a physical and lateral hydraulic barrier to isolate the highly-impacted soil/fill and groundwater within the containment cell from the surrounding groundwater and soil/fill. The base of the barrier wall will be keyed a minimum of two feet into the underlying, native lacustrine clayey-silt soil and/or the dense glacial till, which will function as a vertical (i.e. bottom) confining layer.

The slurry wall alignment has been established based upon RFI findings, and field borings completed in 2008 by TurnKey Environmental Restoration (refer to Figure 5). All material excavated during construction of the slurry wall will be placed within the containment cell. Should refusal be encountered during construction of the slurry wall within the designed alignment, the alignment will be altered as necessary in an effort to provide a competent hydraulic barrier.

4.3.3 Agitator Sludge Excavation and Consolidation

Wastes and visibly-impacted surrounding slag and soil/fill from SWMU S-24 will be excavated, transported, and consolidated within a containment cell to be constructed surrounding SWMU S-11 & S-22. This proposed location of the containment cell for the consolidated wastes is preferred as it is: further from the Creek; has more desirable subsurface soil confining conditions; will result in less excavation and handling of hazardous materials than relocation of the combined impacted materials SWMU S-11, S-22, & S-24 to a separate location (e.g. proposed hazardous waste CAMU); can address both impacted soil/fill and groundwater at the ATPs; and is adjacent to the planned CAMUs in the Zone 2 elevated Slag Fill Area where other solid and hazardous wastes would be permanently contained in place.

4.3.3.1 Excavation & Consolidation

All visibly-impacted slag, soil and fill located within the designated Agitator Sludge Area (SWMU S-24) will be excavated and transported to the Acid Tar Pits Area (SWMU S-11 & S-22) for consolidation using conventional construction methods and equipment. It is estimated that approximately 28,000 – 35,000 cubic yards (CYs) of impacted soil/fill will be excavated from SWMU S-24, transported, and consolidated within the SWMU S-11 & S-22 containment cell. This material will be transported via designated on-site trucks and consolidated within the containment cell footprint. Trucks, excavators, or other heavy equipment used to handle contaminated soil/fill from these SWMUs shall be decontaminated prior to leaving the ATP SWMU Group project site. Approximately 600 LF of Site Highway 9 will be cordoned off, including the Smokes Creek Bridge, thus restricting traffic and roadway access for project-related travel only during transportation of the agitator sludge fill to the ATP containment cell. This restricted access roadway will be utilized during transport of materials from SWMU S-24 to SWMU S-11 & S-22. Additionally, this access roadway will continue to undergo regular and periodic maintenance, cleaning, and inspection to reduce potential for contaminated run-off impacts. Equipment decontamination facilities and/or methods will be further detailed in design documents.

The proximate location to Smokes Creek and estimated depth of waste/fill in SWMU S-24 dictate that storm water management measures and soil/sediment erosion controls be planned and employed during excavation and backfill. Details of such measures

and controls will be delineated in the design documents to mitigate the following short-term impacts during ECM construction:

- Transport of contaminated storm water and/or sediment to Smokes Creek;
- Intrusion of Creek water into the excavation, especially during storm events or flood conditions; and
- Groundwater management and handling during excavation;

4.3.3.2 Verification Testing

The lateral extent of SWMU-24 has been preliminarily defined (refer to Figures 4 and 6) based upon test pits, soil borings, surface soil samples, and electrical imaging survey performed in support of the RFI and/or other subsequent investigations. Following completion of all visibly-impacted soil/fill, verification sampling and analysis will be performed to determine residual concentrations of constituents of concern in soil/fill at the base and sidewalls of the excavation. Excavation and verification sampling may progress in stages as the excavation progresses. Sample collection and analytical protocols will be more fully described within the design documents.

4.3.3.3 Backfilling

Subgrade material used to backfill excavations shall meet the following criteria:

- On-site slag/fill mined from Slag Fill Area Zones 1, 4 or 5 having no evidence of disposal or releases of hazardous substances, hazardous or toxic wastes or petroleum and be covered under a Beneficial Use Designation (BUD) from NYSDEC.
- Off-site soil/fill will originate from known sources having no evidence of disposal or releases of hazardous substances, hazardous or toxic wastes, and petroleum or be tested and contain concentrations of constituents below 6NYCRR Part 375 Soil Cleanup Objectives for restricted commercial use.
- No off-site or on-site materials meeting the definition of a solid waste as defined in 6NYCRR, Part 360-1.2(a) shall be used as backfill.

All backfill material will be placed and compacted in approximate 12-inch lifts with a bulldozer or wheeled pay-loader. Open excavations will be surrounded with orange construction fencing and signage.

4.3.4 Groundwater/Leachate Collection System

To allow proper performance and effectiveness of the in-place slurry wall, some groundwater within the containment area will be required to be removed to create an inward hydraulic gradient across the slurry wall. To accomplish this, a groundwater/leachate collection system will be constructed. The proposed groundwater/leachate collection system will consist primarily of three basic components including:

- A network of collection/pumping wells will be installed within the containment area at intervals to be determined during design. These wells will be constructed to and screened within the sand lens currently present above the native till (confining layer) (refer to Figure 7).
- A network of borings located within the ATP Waste areas, will be advanced to the sand lense, and backfilled with washed drainage gravel or bank-run stone (refer to Figure 7). These wells will allow perched groundwater within the waste areas to slowly migrate vertically into the sand lense to be subsequently dewatered over time, also reducing direct waste collection within the pumping wells.
- Two secondarily contained storage vessels will be located in close proximity to the containment area. These tanks will be configured to allow for neutralized or pretreatment if necessary and for easy and periodic removal of stored groundwater/leachate for offsite treatment/disposal.

These components will be installed after construction of the low-permeability slurry wall around the perimeter of the cell, and prior to construction of the cover system to collect containment cell groundwater and/or leachate for treatment or offsite disposal.

During design, the existing wells within the footprint of the containment cell will be sampled and characterized to assess the requirements for management and treatment of the groundwater/leachate.

4.3.5 Final Cover System

A low-permeability geocomposite and vegetated soil cover system will be constructed over the containment cell to reduce the amount of surface infiltration and eliminate direct exposure to impacted soil/fill within the containment cell. The containment cell cover system will consist of (from the waste/fill upward): minimum of 6-inches of slag or soil cover , geosynthetic clay liner (GCL), HDPE geomembrane, geocomposite drainage layer, 18-inches of barrier soil, and 6-inches of topsoil with vegetation (Figure 8). Fill materials currently deposited in SWMUs S-11 and S-22 will be disturbed as little as possible.

The quantity of waste/fill that will be excavated from the agitator sludge area and consolidated within the SWMUs 11 & 12 will ultimately determine exact side slopes and containment cell capacity. However, it is estimate that side slopes will be greater than 2% and less than 25% at maximum.

5.0 CONSTRUCTION SEQUENCING & SCHEDULE

Major components of the containment cell system will be designed and approved by NYSDEC prior to the start of construction of each containment cell component. The design and construction may include modifications to concepts or details contained in this Work Plan to reflect design considerations and/or site conditions encountered but will, to the extent possible, remain consistent with the general intent of this Work Plan.

Construction will be initiated with the installation of the soil-bentonite low-permeability barrier wall surrounding SWMUs S-11 and S-22. Following completion and curing of the barrier wall, excavation, transport, and consolidation of the soil/fill within the containment cell will be completed. Installation of the groundwater/leachate collection system will be completed prior to placement of the final cover system to allow for placement of the drilling spoils within the containment cell and to facilitate engineered penetrations of the cover system barrier layer. Upon completion of all other construction activities, the final cover system will be installed in accordance with the design documents. The proposed schedule is provided in Figure 9.

6.0 POST-CONSTRUCTION O&M

6.1 General

Following construction, several of the proposed ECM components will require periodic and/or routine operations & maintenance. An Operation, Monitoring, and Maintenance Manual (OM&M Manual) will be prepared during construction and be submitted to NYSDEC prior to completion of construction. This OM&M Manual will include but not be limited to discussion of:

- the groundwater /leachate collection system operation and maintenance;
- collected groundwater/leachate pretreatment system (if required) OM&M;
- routine groundwater water level monitoring and reporting;
- groundwater quality monitoring up- and down-gradient of the containment cell;
- periodic inspection of the cover system; and
- maintenance and repair of the cover system, including repair of erosion and periodic mowing of the vegetative cover

6.2 Groundwater /Leachate Collection System Operation

An array of piezometers will be installed (in conjunction with the groundwater collection wells) within the containment cell and outside the barrier wall adjacent to the cell. Data loggers will be deployed within these piezometers and selected groundwater monitoring wells to provide high frequency monitoring of the effects of the groundwater/leachate withdrawal on the system during the initial evaluation phase. Long-term monitoring requirements for the ATP SWMU Group will be determined in consultation with the NYSDEC.

6.3 Groundwater/Leachate Treatment

Groundwater collected during initial and routine withdrawal from the collection system will be transported and treated off-site in a publically-operated treatment works (POTW), or other NYSDEC-approved treatment facility, as determined during the design. Pretreatment may be performed, if required, to meet discharge limits or other requirements established by the POTW. Acceptable alternative treatment facilities will be identified and evaluated during the design. If pretreatment is determined to be necessary, a pretreatment system will be designed and constructed prior to the actual withdrawal of groundwater/leachate.

6.4 ECM Monitoring and Reporting

Within two months following completion of construction of the ECM, record drawings and documentation will be submitted to the NYSDEC. Water levels in the recovery wells, groundwater monitoring wells, and piezometers will be measured quarterly to demonstrate the effectiveness of groundwater recovery system. The data will be used to develop isopotential maps and determine hydraulic gradients. The frequency for obtaining water level measurements may subsequently be modified after the first year, after consultation with and approval by NYSDEC, based on observed results.

Groundwater quality monitoring adjacent to the ECM Containment System will be performed in accordance with the Site-Wide Long-Term Groundwater Monitoring Plan that is currently being developed as part of the CMS. Long-term monitoring requirements for the ATP SWMU Group will be determined in consultation with the NYSDEC. All post-construction ECM monitoring data collected each calendar year will be summarized and presented in annual operation and monitoring reports to be issued by March 31st of the following year.

7.0 HEALTH AND SAFETY AND COMMUNITY AIR MONITORING

7.1 Site-Specific Health & Safety

A Site-Specific Health and Safety Plan (HASP) will be prepared and enforced by the contractor in accordance with the requirements of 29 CFR 1910.120. The HASP will cover all on-site remediation activities. TurnKey's HASP is provided for informational purposes in Appendix B. The contractor will be required to develop a HASP as or more stringent than TurnKey's HASP.

7.2 Community Air Monitoring

Real-time community air monitoring will be performed during cleanup activities at the Site. A Community Air Monitoring Plan (CAMP) is included with TurnKey's HASP. Although the nearest residential receptor is greater than 1 mile downwind of the property, particulate and VOC monitoring will be performed at upwind and downward locations during all intrusive activities (e.g., subgrade excavation, waste/fill grading, and waste/fill handling) in accordance with the CAMP. Accordingly, it follows procedures and practices outlined under NYSDOH's Generic Community Air Monitoring Plan (dated June 20, 2000) and NYSDEC Technical Assistance and Guidance Memorandum (TAGM) 4031: Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites.

7.2.1 Dust Controls

Dust suppression techniques will be employed as necessary to mitigate fugitive dust from unvegetated or disturbed areas to the extent practicable during construction and redevelopment. Dust suppression techniques will be initiated if the downwind PM-10 particulate level is 100 $\mu g/m^3$ above background (upwind perimeter). Techniques to be used may include one or more of the following:

- Wetting equipment and excavation faces.
- Spraying water on buckets during excavation and dumping.
- Hauling materials in properly tarped containers or vehicles.
- Restricting vehicle speeds on-site.
- Covering excavated areas and materials after excavation activity ceases.
- Reducing the excavation size and/or number of excavations.

All reasonable attempts will be made to keep visible and/or fugitive dust to an acceptable level.

8.0 REFERENCES

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

2. United States Environmental Protection Agency (USEPA), 1988. *RCRA Facility Assessment, Bethlehem Steel Corporation, Lackawanna Plant*, EPA-330/2-88-054. Denver CO: National Enforcement Investigations Center. September.

3. United States Environmental Protection Agency (USEPA), 1982. *Development Document for Effluent Limitations Guidelines and Standards for the Iron and Steel Manufacturing Point Source Category*, EPA-440/1-82/024, Volumes I through VI. May.

4. *Groundwater Monitoring, Sampling, and Analysis Plan, HWMU-1 and HWMU-2,* Bethlehem Steel Corporation (BSC), March 1994.

TABLES

Table 1

Major Components of the Containment Cell System

Major Component	Sub-Components	Notes
Bentonite/Soil Slurry Wall	- type and weight ratio of soil and bentonite - Bentonite admixture - Soil criteria	Low-permeability vertical subsurface wall to provide lateral containment of waste and groundwater within the cell from the surrounding subsurface environment.
Groundwater Collection System	- Installation of infrastructure - Wells and sumps - Pump design - Pre-treatment requirements and design	Creates an inward hydraulic gradient across the slurry wall to further enhance its effectiveness.

Cover system	- Geosynthetics
	  - geotextile
	  - geomembrane
	- Gas vents
	- Barrier protection soil
	- Topsoil
	- Vegetation
		Low permeability geosynthetic and vegetated soil cover that will reduce the infiltration of precipitation, promote stormwater runoff, and eliminate the potential for direct contact with the waste.

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 2

SUMMARY OF GROUNDWATER ANALYTICAL DATA

Agitator Sludge (SWMU S-24) Investigation
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Parameter [1]	Monitoring Well Location, Stratigraphic Unit, & Sample Date									GWQS/ GV [2]
	MWN-24A			MWN-24B			MWN-44A			
	fill, clayey silt			till			fill			
	11/02/99	04/09/08		11/02/99	04/09/08		11/02/99	04/09/08		
Field Measurements (units as indicated)										
pH (units)	**6.48**	**6.44**	**6.37**	6.58	6.56	6.60	8.30	7.36	7.35	**6.5 - 8.5**
Temperature (°C)	13.4	10.3	10.7	12.6	12.2	12.3	11.4	9.8	10.1	**--**
Specific Conductance (uS)	2750	2203	2308	1860	1426	1430	2400	1488	1330	**--**
Turbidity (NTU)	112	41.5	472	125	43.5	38	1000	> 1000	> 1000	**--**
Dissolved Oxygen (ppm)	2.6	2.49	2.31	0.4	0.68	0.73	--	2.16	2.09	**--**
ORP (mV)	378	-76	-48	-138	-167	-165	-83	-211	-169	**--**
Volatile Organic Compounds (VOCs) - ug/L										
Acetone	--	24		--	ND		--	1.4 J		**50***
Benzene	ND	0.65 J		ND	ND		**270**	**13**		**1**
2-Butanone (Methyl ethyl ketone)	--	4.2 J		--	ND		--	ND		**50***
Carbon Disulfide	--	0.44 J		--	ND		--	ND		**--**
Ethylbenzene	ND	ND		ND	ND		**6.8 J**	1.6		**5**
Toluene	ND	ND		ND	ND		**53**	ND		**5**
Xylenes, total	ND	ND		ND	ND		**53**	ND		**15**
TOTAL VOCs (ug/L)	**0**	**29.29**		**0**	**0**		**382.8**	**16**		**--**
Base-Neutral Semi-Volatile Organic Compounds (SVOCs - Method 8270) - ug/L										
Acenaphthene	--	ND		--	ND		--	**22 J**		**20***
Acenaphthylene	ND	ND		ND	ND		50	ND		**--**
Acetophenone	--	2 J		--	ND		--	ND		**--**
Anthracene	ND	ND		ND	ND		ND	17 J		**50***
Benzo(a)anthracene	ND	ND		ND	ND		**85 J**	**21 J**		**0.002***
Benzo(k)fluoranthene	--	ND		--	ND		--	**140**		**0.002***
Benzo(a)pyrene	ND	ND		ND	ND		**65 J**	**180**		**ND**
Biphenyl	--	ND		--	ND		--	6 J		**--**
Carbazole	--	ND		--	ND		--	4 J		**--**

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 2

SUMMARY OF GROUNDWATER ANALYTICAL DATA

Agitator Sludge (SWMU S-24) Investigation
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Parameter [1]	Monitoring Well Location, Stratigraphic Unit, & Sample Date						GWQS/ GV [2]
	MWN-24A		MWN-24B		MWN-44A		
	fill, clayey silt		till		fill		
	11/02/99	04/09/08	11/02/99	04/09/08	11/02/99	04/09/08	
Chrysene	ND	ND	ND	ND	**75**	**10 J**	**0.002***
Dibenzofuran	--	ND	--	ND	--	32 J	**--**
Di-n-butyl phthalate	--	0.3 BJ	--	ND	--	ND	**50**
Fluoranthene	ND	ND	ND	ND	**310 DJ**	47 J	**50***
Fluorene	ND	ND	ND	ND	**440 D**	39 J	**50***
Indeno(1,2,3-cd) pyrene	--	ND	--	ND	--	**190**	**0.002***
Phenanthrene	ND	ND	ND	ND	**760 D**	19 J	**50***
Phenol	**4.8 J**	ND	ND	ND	**13 J**	ND	**1**
Pyrene	ND	0.6 J	ND	ND	**220 DJ**	39 J	**50***
Pyridine	ND	ND	ND	ND	**100 J**	ND	**50***
TOTAL SVOCs (ug/L)	**4.8**	**2.9**	**0**	**0**	**2118**	**766**	**--**

Notes:

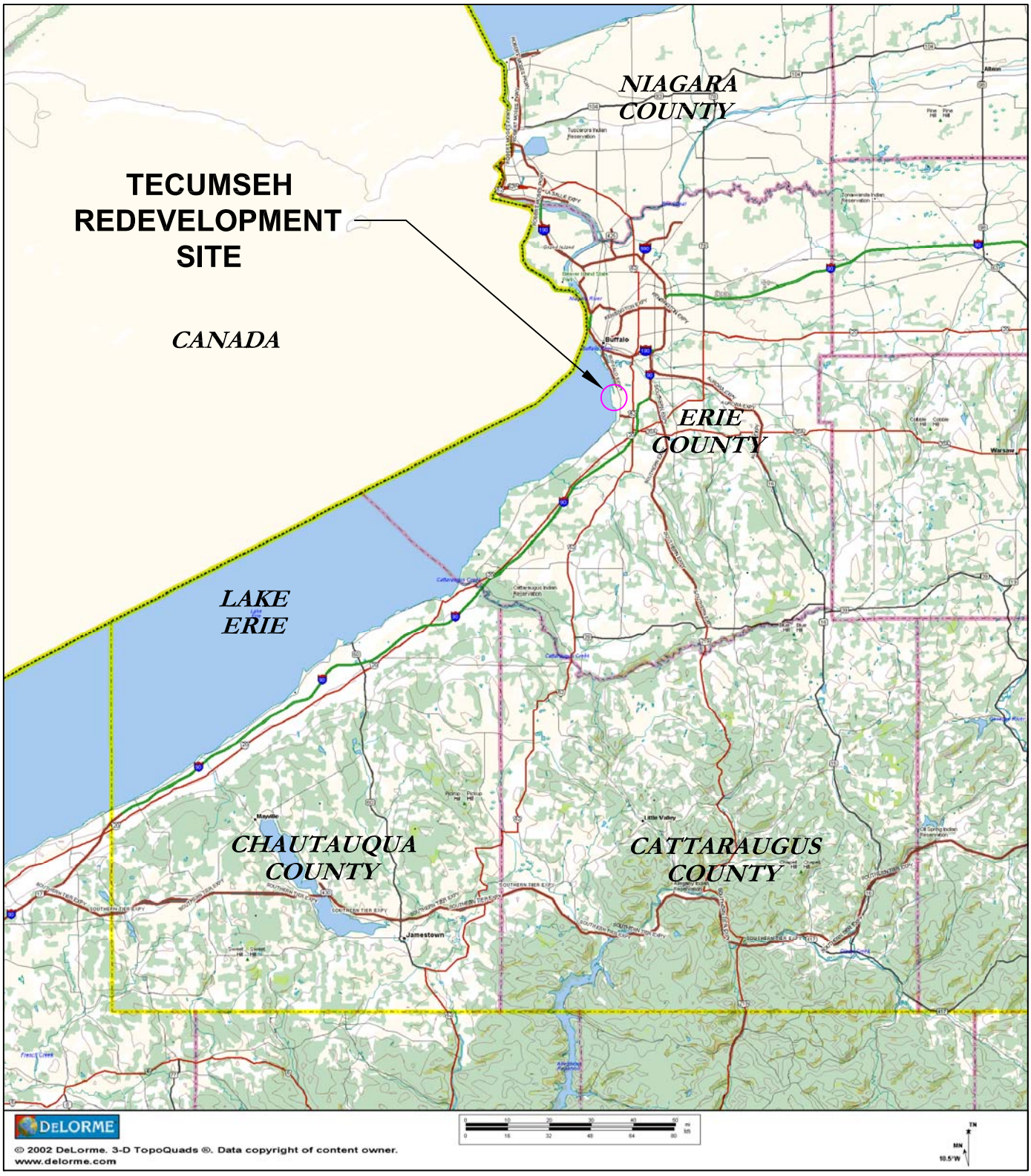
1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. NYSDEC Class "GA" Groundwater Quality Standards/Guidance Values (GWQS/GV) as per 6 NYCRR Part 703.
3. B = Analyte is found in the associated blank, as well as in the sample.
4. D = Analysis at the secondary dilution factor.
5. J = Estimated value; result is less than the sample quantitation limit but greater than zero.
6. ND = parameter not detected above laboratory detection limit.
7. " * " = Groundwater Quality Guidance Value
8. " -- " = Not analyzed for this parameter or GWQS or GV does not exist for this compound

Color Scheme:

BOLD = value exceeds individual GWQS/GV concentration

FIGURES

FIGURE 1



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

PROJECT NO.: 0071-009-213

DATE: OCTOBER 2009

DRAFTED BY: AJZ

FILEPATH

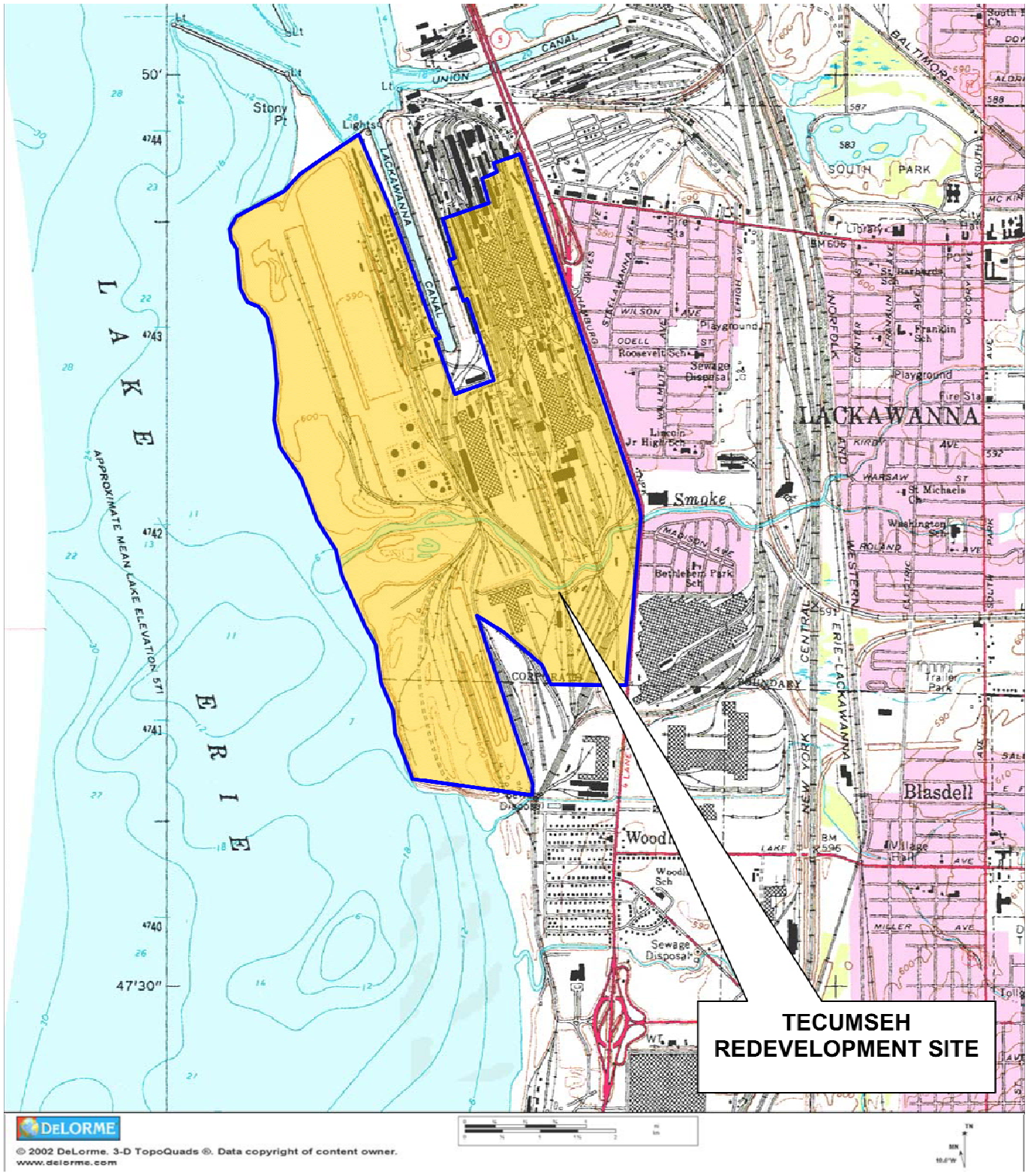
REGIONAL MAP

ACID TAR PITS SWMU GROUP

TECUMSEH REDEVELOPMENT SITE
LACKAWANNA, NEW YORK

PREPARED FOR
ARCELORMITTAL TECUMSEH REDEVELOPMENT, INC.

FIGURE 2



TURNKEY ENVIRONMENTAL RESTORATION, LLC

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

PROJECT NO.: 0071-009-213

DATE: OCTOBER 2009

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=I:\TurnKey\Clients\Tecumseh Redevelopment\RFI & CMS Order\FOCUSED CMS - ACID TAR PITS SWMU Group\CAD\Figure 2) site location and vicinity map.dwg

STEEL WINDS I BCP
± 29 ACRES

CMS AREA
± 488 ACRES

SFA ZONE 5
(includes Steel Winds IA
± 41.83 ACRES
less Steel Winds IA = ± 32.50

SFA ZONE 4
(Includes Steel Winds I)
± 71.30 ACRES
less Steel Winds I = ± 59.77 ACRES

SFA ZONE 3
(Includes Steel Winds I)
± 73.00 ACRES
less Steel Winds I = ± 55.52 ACRES

SFA ZONE 2
± 81.71 ACRES

COAL/COKE/ORE STORAGE & COAL HANDLING AREA
± 137.11 ACRES

TANK FARM AREA
± 67.58 ACRES

COKE PLANT & BY-PRODUCTS FACILITIES
± 45.31 ACRES

SWMU S-11
SWMU S-22
SWMU S-24

SFA ZONE 1
± 128.96 ACRES

ACID TAR SWMU GROUP AREA

PHASE III BPA
± 148.81 ACRES

PHASE I BPA
± 101.85 ACRES

PHASE II BPA
± 144.11 ACRES

MITTAL STEEL GALVANIZING MILL (± 87.4 ACRES)

REPUBLIC ENGINEERED PRODUCTS, INC. (± 84.9 ACRES)

MITTAL STEEL GALVANIZING MILL (± 82.2 ACRES)

LAKE ERIE

BUFFALO OUTER HARBOR

GATEWAY METROPORT SHIP CANAL

1000' 0' 1000' 2000'

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

DATE: MAY 2009
DRAFTED BY: BCH

2558 HAMBURG TURNPIKE
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(716) 856-0599

TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0071-009-213

CMS SITE WITH ACID TAR PIT SWMU GROUP

ACID TAR PITS SWMU GROUP

TECUMSEH REDEVELOPMENT SITE
LACKAWANNA, NEW YORK

PREPARED FOR
ARCELORMITTAL TECUMSEH REDEVELOPMENT, INC.

FIGURE 3

ACID TAR PITS SWMU GROUP
HISTORIC SAMPLE LOCATIONS

TECUMSEH REDEVELOPMENT SITE
LACKAWANNA, NEW YORK

PREPARED FOR
ARCELORMITTAL TECUMSEH REDEVELOPMENT, INC.

2558 HAMBURG TURNPIKE
SUITE 300
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TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0071-009-213

SWMU S-11

SWMU S-22

SWMU S-24

MWS-29A
MWS-21A
MWS-21B
MWS-10
MWS-10B
MWS-25B
MWS-25A
MW-11
MWS-22A
MWS-22B
MWS-17C
MWS-17B
MWS-19A
MWS-19B
MWS-18C
MWS-18A
MWN-17B
MWN-17A
MWS-23A
MWS-23B
MWS-20A
MWS-20B
MWN-44A
MWN-24A
MWN-24B

AREA 1
AREA 2
AREA 3
AREA 4

A1-08, A1-02, A1-01, A1-09, A1-03, A1-10, A1-13, A1-07, A1-15, A1-16, A1-04A, A1-14, A1-04, A1-11, A1-06, A1-05
S11-B, S11-2, S11-A, S11-1
S21-2, S21-1
S22B, S22A
A2-02, A2-01, A2-04, A2-03
A3-L, A3-06, A3-04, A3-03, A3-02, A3-05, A3-08, A3-10, A3-01
A4-04, A4-05, A4-03, A4-L, A4-02, A4-06, A4-08, A4-01, A4-07
RS-03, RS-02, RS-01
S24-09, S24-08, S24-10, S24-15, S24-07, S24-05, S24-06, S24(IIB), S24-03, S24-02, S24-04, S24-12, S24-14, S24-01, S24-13, S24-11, S24B, S24A

10 - CONCRETE BLOCKS
WALL
SMOKES CREEK
HIGHWAY

LEGEND:

- APPROXIMATE EXTENT OF WASTE BASED ON HISTORIC DATA
- MWN-15A — MONITORING WELL LOCATION
- SB-09 — SOIL BORING
- S01-1 — WASTE SAMPLE
- TP-2 or — TEST PIT

NOTES:

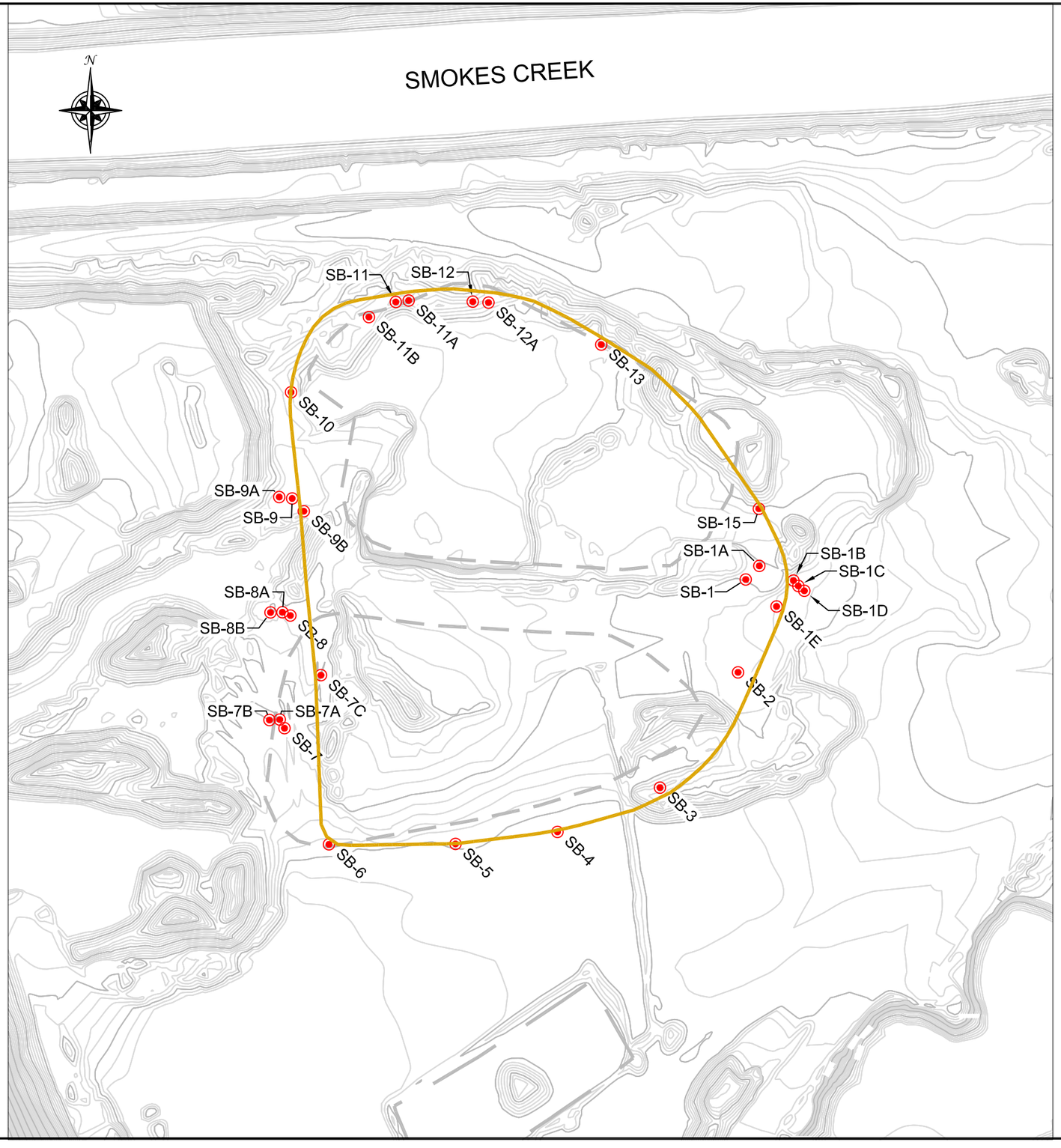
1. Building locations are based on historical surveys and maps, all locations should be considered approximate.
2. Historic sample locations were either collected during the RFI performed by URS or during pre-RFI investigations by others.

N

60' 0' 60' 120'
SCALE: 1 INCH = 120 FEET
SCALE IN FEET
(approximate)

DATE: MAY 2009
DRAFTED BY: BCH

FIGURE 4



Boring Data

Soil Boring Name	Depth	Water Table	Till Depth	Notes
SB-1	12	NA	NA	REFUSAL
SB-1A	14.5	NA	NA	REFUSAL
SB-1B	12	NA	NA	REFUSAL
SB-1C	20	NA	NA	REFUSAL
SB-1D	13	NA	NA	REFUSAL
SB-1E	14	NA	NA	REFUSAL
SB-2	46	22	42	
SB-3	17.5	NA	NA	REFUSAL
SB-4	42	22	39	
SB-5	46	22	41	
SB-6	48	24	44	
SB-7	24	NA	NA	REFUSAL
SB-7A	21	NA	NA	REFUSAL
SB-7B	24	NA	NA	REFUSAL
SB-7C	54	18.5	48	
SB-8	19	NA	NA	REFUSAL
SB-8A	8	NA	NA	REFUSAL
SB-8B	13	NA	NA	REFUSAL
SB-9	17	NA	NA	REFUSAL
SB-9A	13	NA	NA	REFUSAL
SB-9B	56	18	52	
SB-10	56	18	49	
SB-11	30	NA	NA	REFUSAL
SB-11A	21.5	NA	NA	REFUSAL
SB-11B	25	NA	NA	REFUSAL
SB-12	9	NA	NA	REFUSAL
SB-12A	48	27	42	
SB-13	42	11	38	
SB-14	NA	NA	NA	REFUSAL
SB-15	46	18.5	42	

LEGEND

- EXISTING MAJOR CONTOUR (5' INTERVALS)
- EXISTING MINOR CONTOUR (1' INTERVALS)
- APPROXIMATE LOCATIONS OF SWMUS S-11 AND S-22 PER RFI
- SB-6 SOIL BORING (BENCHMARK)
- PROPOSED SLURRY WALL ALIGNMENT

100 0' 100 200

SCALE: 1 INCH = 100 FEET
SCALE IN FEET
(approximate)

DATE: SEPTEMBER 2008
DRAFTED BY: AJZ

2558 HAMBURG TURNPIKE
SUITE 300
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(716) 856-0599

JOB NO.: 0071-008-111

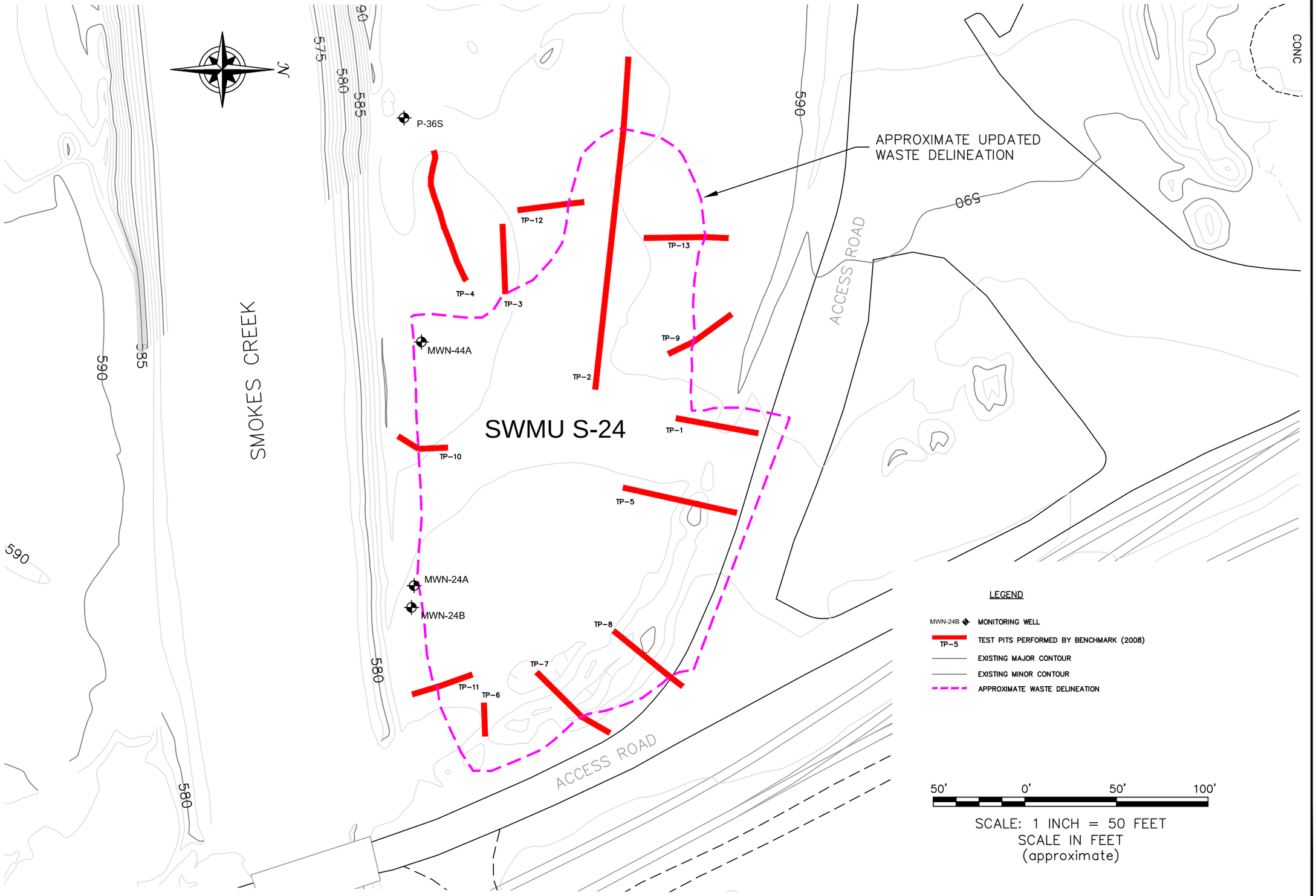
ACID TAR PIT SOIL BORINGS AND PROPOSED IN-PLACE CONTAINMENT BOUNDARY

ACID TAR PITS SWMU GROUP

TECUMSEH REDEVELOPMENT SITE
LACKAWANNA, NEW YORK

PREPARED FOR
ARCELORMITTAL TECUMSEH REDEVELOPMENT, INC.

FIGURE 5



DATE: AUG
DRAFTED BY:

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

JOB NO.: 0071-009-213

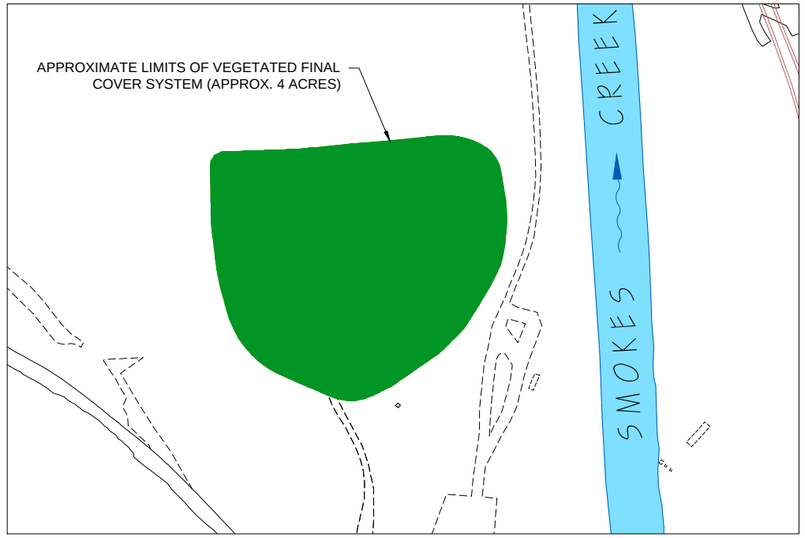
AGITATOR SLUDGE SWMU DELINEATION

ACID TAR PITS SWMU GROUP

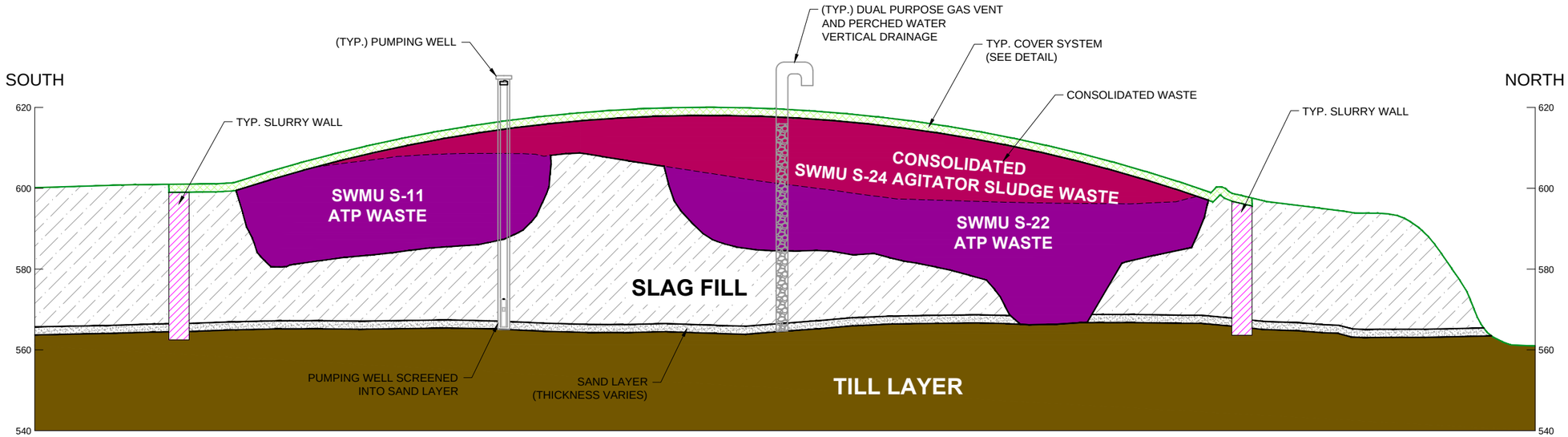
TECUMSEH REDEVELOPMENT SITE
LACKAWANNA, NEW YORK

PREPARED FOR
ARCELORMITTAL TECUMSEH REDEVELOPMENT, INC.

FIGURE 6



PLAN VIEW
CONSOLIDATION FOOTPRINT



CROSS-SECTION
CONSOLIDATION AREA

DATE: **DATE**
DRAFTED BY: **DRAFTED-BY**

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

JOB NO.: 0071-009-213

CONSOLIDATED ATP SWMU GROUP CONTAINMENT SYSTEM CONCEPTUAL FOOTPRINT AND CROSS-SECTION

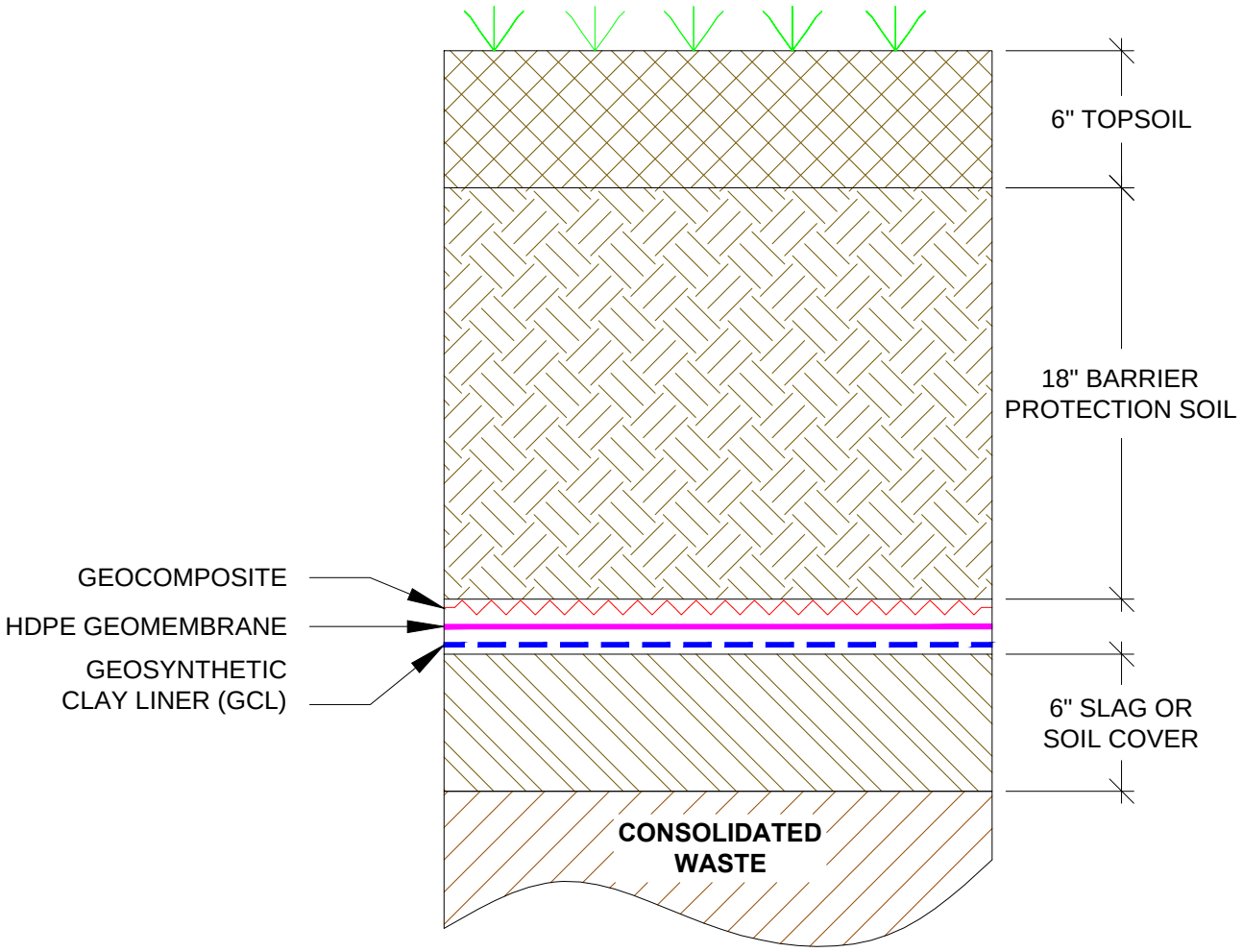
ACID TAR PITS SWMU GROUP

TECUMSEH REDEVELOPMENT SITE
LACKAWANNA, NEW YORK

PREPARED FOR
ARCELORMITTAL TECUMSEH REDEVELOPMENT, INC.

FIGURE 7

FIGURE 8



COVER SYSTEM DETAIL

NOT TO SCALE

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

PROJECT NO.: 0071-009-213

DATE: FEBRUARY 2010

DRAFTED BY: AJZ

COVER SYSTEM

ACID TAR PITS SWMU GROUP

TECUMSEH REDEVELOPMENT SITE
LACKAWANNA, NEW YORK

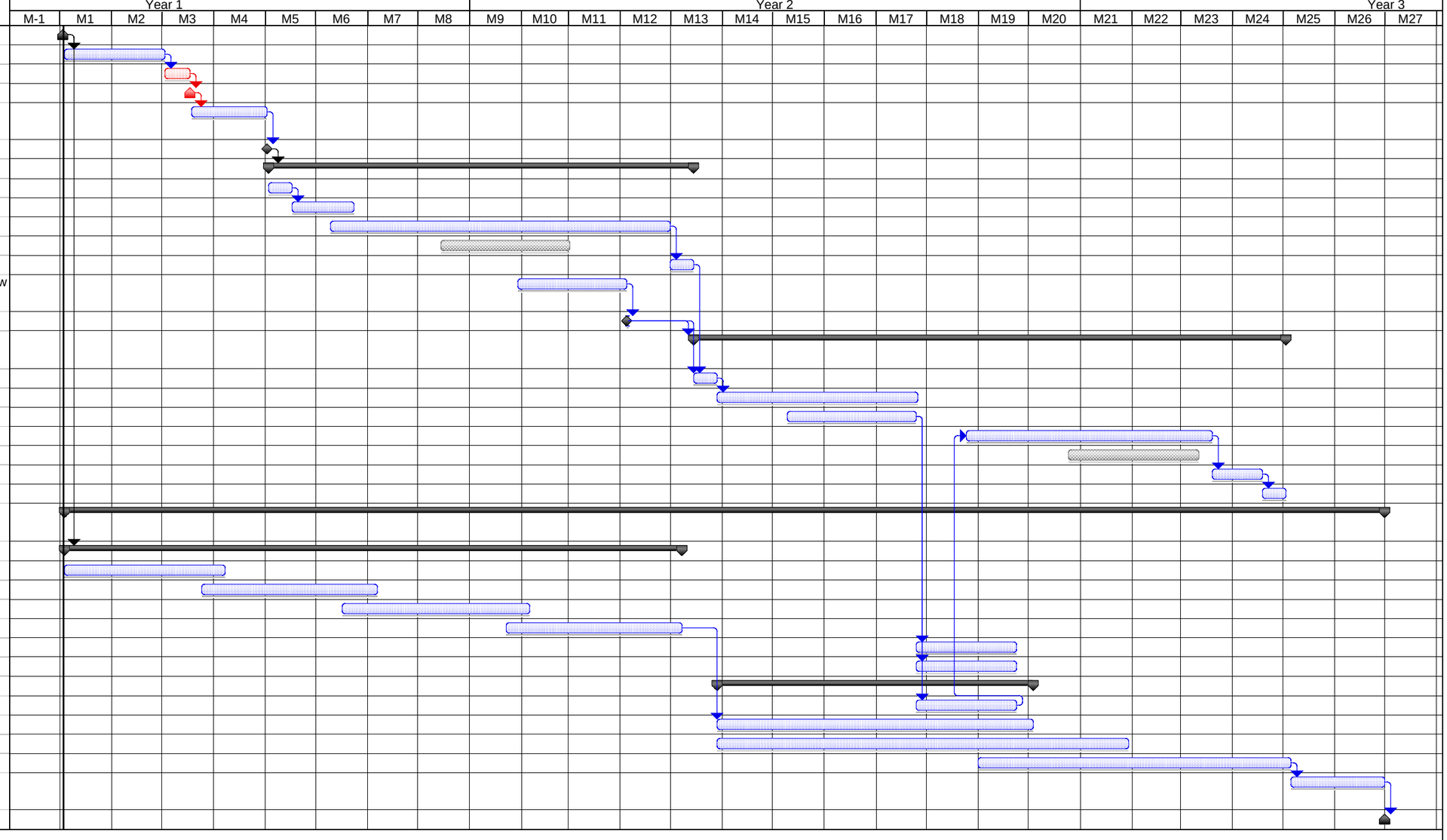
PREPARED FOR

ARCELORMITTAL TECUMSEH REDEVELOPMENT, INC.

FIGURE 9

PROPOSED CONSTRUCTION SCHEDULE
ATP SWMU GROUP

ID	Task Name
1	**Execute Consent Order**
2	Prepare and Submit Detailed Design
3	NYSDEC Plan Review and Revision
4	NYSDEC Approval of Design
5	Phase I (Slurry Wall) - Contractor Solicitation, RFP, Review & Recommendation
6	Phase I - Bid Award
7	**Phase I - Slurry Wall Construction**
8	Mobilization
9	Slurry Wall Preparation
10	Slurry Wall Construction
11	Winter Shutdown/Slowdown
12	Demobilization
13	Phase II (Consolidation) - Contractor Solicitation, RFP, Review & Recommendation
14	Phase II - Bid Award
15	**Phase II - Containment Consolidation & Final Cover Construction**
16	Mobilization
17	Agitator Sludge Excavation & Backfill
18	Subgrade Preparation for Final Cover
19	Cover System Installation
20	Winter Shutdown/Slowdown
21	Final Restoration
22	Demobilization
23	**Phase III - Groundwater/Leachate System Design & Construction**
24	**Design & Planning**
25	Groundwater/Leachate Characterization
26	Pretreatment Feasibility Analysis
27	Treatability Analysis
28	Equipment Selection & Sizing
29	Groundwater/Leachate Collection Well Installation
30	Vertical Conduit Installation
31	**Conveyance System Construction**
32	Conveyance System within Containment Cell
33	Conveyance System outside Containment Cell
34	Storage and Infrastructure Construction
35	Equipment Installation
36	Groundwater/Leachate Collection System Start-up & Shakedown
37	**Project Completed (Target)**



Project: Schedule (May 2010)
Date: Mon 4/26/10

Task
Split
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Split
Rolled Up Milestone
Rolled Up Progress
External Tasks
Project Summary
External Milestone
Deadline

APPENDIX A

COMMUNITY AIR MONITORING PLAN (CAMP)

COMMUNITY AIR MONITORING PLAN
for
EXPEDITED CORRECTIVE MEASURE WORK PLAN

ACID TAR PIT SWMU GROUP
TECUMSEH REDEVELOPMENT SITE
LACKAWANNA, NY

APRIL 2010 0071-007-140

Prepared for:

Tecumseh Redevelopment, Inc.

Prepared By:

TurnKey Environmental Restoration, LLC

In Association With:

Benchmark Environmental Engineering & Science, PLLC

COMMUNITY AIR MONITORING PLAN

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1.0 INTRODUCTION

This Community Air Monitoring Plan (CAMP) presents requirements for real-time community air monitoring and responses for the Acid Tar Pit SWMU Group Expedited Corrective Measure (hereafter referred to as the Site) located in Lackawanna, NY. This plan is generally consistent with the requirements for community air monitoring at remediation sites as established by the New York State Department of Health (NYSDOH) and the New York State Department of Environmental Conservation (NYSDEC). It follows procedures and practices outlined under the NYSDOH's generic Community Air Monitoring Plan dated June 20, 2000 and NYSDEC Technical Assistance and Guidance Memorandum (TAGM) 4031: Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites.

This CAMP requires real-time monitoring for particulates (i.e., dust) only at the downwind perimeter of the designated work area when certain activities are in progress at the Site. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community from potential airborne contaminant releases as a direct result of redevelopment or post-remediation monitoring and maintenance activities. The community, as referenced in this document, includes off-site residences, public buildings and grounds, and commercial or industrial establishments on or adjacent to the site (see Figure 1). The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, this CAMP helps to confirm that work activities did not spread contamination into the surrounding community.

2.0 MONITORING REQUIREMENTS

Real-time air monitoring for particulate levels at the perimeter of the work area will be conducted. Periodic monitoring for organic vapors will be required for all ground intrusive activities. Ground intrusive activities include, but are not limited to, subgrade soil/fill excavation, grading and handling, subgrade trench excavation and backfill.

"Periodic" monitoring will reasonably consist of taking at least one reading immediately following the installation of the above-referenced activities and taking at least one reading during intrusive activities. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include any subgrade excavation and backfilling within 100 feet of occupied structures or publicly-accessible locations.

2.1 Organic Vapors

VOCs must be monitored at the downwind perimeter of the site on a periodic basis or as otherwise specified throughout the site. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate.

2.1.1 Vapor Emission Response Plan

If the ambient air concentration of total organic vapors at the downwind perimeter of the site exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

If total organic vapor levels at the downwind perimeter of the site persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring

continued. After these steps, work activities can resume provided that the total organic vapor level 1000 feet downwind of the site or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less (but in no case less than 200 feet), is below 5 ppm over background for the 15-minute average.

If the organic vapor level is above 25 ppm at the perimeter of the site, the Site Safety and Health Officer (SSHO) must be notified and work activities shut down. The SSHO will determine when re-entry of the work zone is possible and will implement downwind air monitoring to ensure vapor emissions do not impact the nearest off-site residential or commercial structure at levels exceeding those specified under the Major Vapor Emission Monitoring program described below. All 15-minute readings must be recorded and be available for NYSDEC and NYSDOH personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

2.1.2 Major Vapor Emission Monitoring

If the organic vapor level is greater than 5 ppm over background 500 feet downwind from the site or half the distance to the nearest off-site receptor (residential or commercial structure), whichever is less, all work activities must be halted. If, following the cessation of the work activities or as the result of an emergency, organic levels persist above 5 ppm above background 500 feet downwind or half the distance to the nearest off-site residential or commercial structure from the site perimeter, then the air quality must be monitored within 20 feet of the perimeter of the nearest off-site receptor (20-foot zone).

If efforts to abate the emission source are unsuccessful and if organic vapor levels approach or exceed 5 ppm above background within the 20-foot zone for more than 30 minutes, or are sustained at levels greater than 10 ppm above background for longer than one minute, then the Major Vapor Emission Response Plan will automatically be placed into effect.

2.1.3 Major Vapor Emission Response Plan

Upon activation of Major Vapor Emission Response Plan, the following activities will

be undertaken:

1. All Emergency Response Contacts as listed below and in the Site-Specific Health and Safety Plan will be contacted.

2. The local police authorities will immediately be contacted by the SSHO and advised of the situation.

3. Frequent air monitoring will be conducted at 30-minute intervals within the 20-foot zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the SSHO.

4. The SSHO will determine if site workers can safely undertake source abatement measures. Abatement measures may include covering the source area with clean fill or plastic sheeting, or consolidating contaminated materials to minimize surface area. The SSHO will adjust worker personal protective equipment as necessary to protect workers from over-exposure to organic vapors.

The following personnel are to be notified by the SSHO in the listed sequence if the Major Vapor Emission Response Plan is activated:

Contact	**Phone**
Police/Fire Department	911
NYSDOH	(716) 847-4502
NYSDEC	(716) 851-7220
State Emergency Response Hotline	(800) 457-7362

In addition, the SSHO will provide these authorities with a description of the

apparent source of the contamination and abatement measures being taken by the contractor, if any.

2.2 Airborne Particulates

Fugitive dust suppression and airborne particulate monitoring shall be performed during any redevelopment or post-remediation activities involving disturbance or handling of site soil/fill. Fugitive dust suppression techniques will include the following minimum measures:

- Excavated stockpiles from post remediation site redevelopment activities that generate unacceptable dust levels, will be seeded, covered with synthetic materials (e.g., tarps, membranes, etc.), or watered, to reduce dust generation to acceptable levels.

- Stockpiles of soil/fill from post-remediation and redevelopment activities that are contaminated (i.e. are visually stained, discolored or produce elevated PID readings) and awaiting analytical results should be covered with tarps or poly membranes at the end of each day's work activities.

- All fill materials leaving the site will be hauled in properly covered containers or haul trailers.

Additional dust suppression efforts may be required as discussed below.

2.2.1 Particulate Monitoring

Particulate concentrations should be monitored at least periodically (i.e., not less than two times per day) at the upwind and downwind perimeters of the work zone at temporary particulate monitoring stations during work activities. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (ug/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 ug/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 ug/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures, such as those described in Section 2.2.3 are employed and are successful in reducing the downwind PM-10 particulate concentration to within 150 ug/m^3 of the upwind level and in ;preventing visible dust migration.

2.2.2 Visual Assessment

In conjunction with the real-time monitoring program, the property owner(s) or their agents will be responsible for visually assessing fugitive dust migration from the site. If airborne dust is observed leaving undeveloped portions of the Former Steel Manufacturing Site property (i.e., migrating onto off-site parcels or redeveloped areas of the site), the work will be stopped and supplemental dust suppression techniques will be employed.

2.2.3 Supplemental Dust Suppression

Supplemental dust suppression techniques may include but are not necessarily limited to the following measures:

- Reducing the excavation size, number of excavations or volume of material handled.
- Restricting vehicle speeds.
- Applying water on buckets during excavation and dumping.
- Wetting equipment and excavation faces.
- Wetting haul roads.

- Restricting work during extreme wind conditions.
- Use of a street sweeper on paved haul roads, where feasible.

Work can resume using supplemental dust suppression techniques provided that the measures are successful in reducing the downwind particulate concentration to below 150 ug/m^3 or 100 ug/m^3 above background, and in preventing visible dust migration off-site.

3.0 MONITORING EQUIPMENT

3.1 Particulate Monitoring Equipment

Particulate monitoring will be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

Size Range:	<0.1 to 10 microns
Sensitivity:	1 ug/m^3
Range:	0.001 to 10 mg/m^3
Overall Accuracy:	+/- 10% as compared to gravimetric analysis of stearic acid or reference dust
Battery Rating:	8-hour continuous operation
Operating Conditions:	
Temperature:	0-40°C
Humidity:	0-99% relative humidity

The device will be fitted with a microprocessor capable of calculating 15-minute moving average concentrations. An adjustable audible alarm will be provided to indicate exceedance of the action levels prescribed in Section 2.2.

4.0 QA/QC REQUIREMENTS

Quality Assurance/Quality Control (QA/QC) requirements for the particulate meter and organic vapor monitoring equipment include instrument calibration, training, and documentation/record keeping.

4.1 Instrument Calibration

Instrument calibration shall be performed in accordance with the manufacturer's instructions at the beginning of each workday. Following calibration and initial (upwind) measurement of background conditions, audio alarms shall be set so as to activate at the appropriate action levels based on a 15-minute moving average (i.e., short term exposure limit) concentration.

4.2 Training

All persons responsible for calibrating, handling and/or interpreting the meters or meter output data should be experienced with such work. As a minimum, the following training and experience will be required:

- 40-hour OSHA Hazwoper Training per 29 CFR 1910.120(e)(3) and 1910.120(e)(8).
- 8 hour supervisory training, in compliance with 29 CFR 1910.120(e)(4).
- Site-specific training, as required by the Site Health and Safety Plan.
- A minimum 40-hours field experience in the operation of same or similar equipment.

The Site Safety and Health Officer will designate the person(s) responsible for performing air-monitoring work. Construction activities involving disruption or handling of site fill soils will not be performed unless a qualified individual is available on site to perform the community air monitoring specified in this document.

4.3 Documentation and Reporting

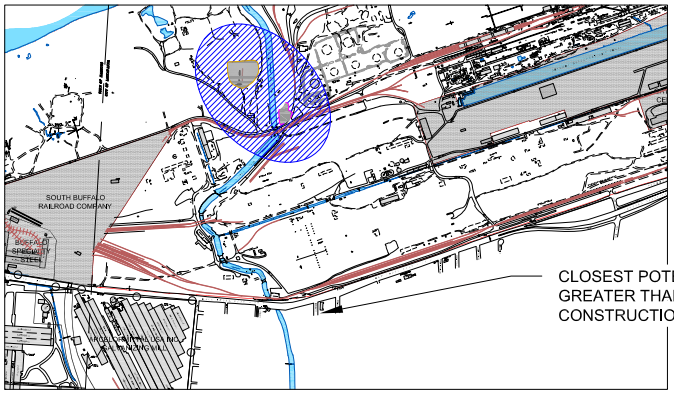
Documentation of community air monitoring information will be required to provide written record of the air monitoring results and response actions taken, and to allow for verification that the program was followed in accordance with this Community Air Monitoring Plan. Monitoring information will be recorded on forms presented in Figure 1 or on similar loose-leaf forms to facilitate photocopying. The following documentation schedule will be followed during typical site conditions (i.e., organic vapor and particulate concentrations below action levels).

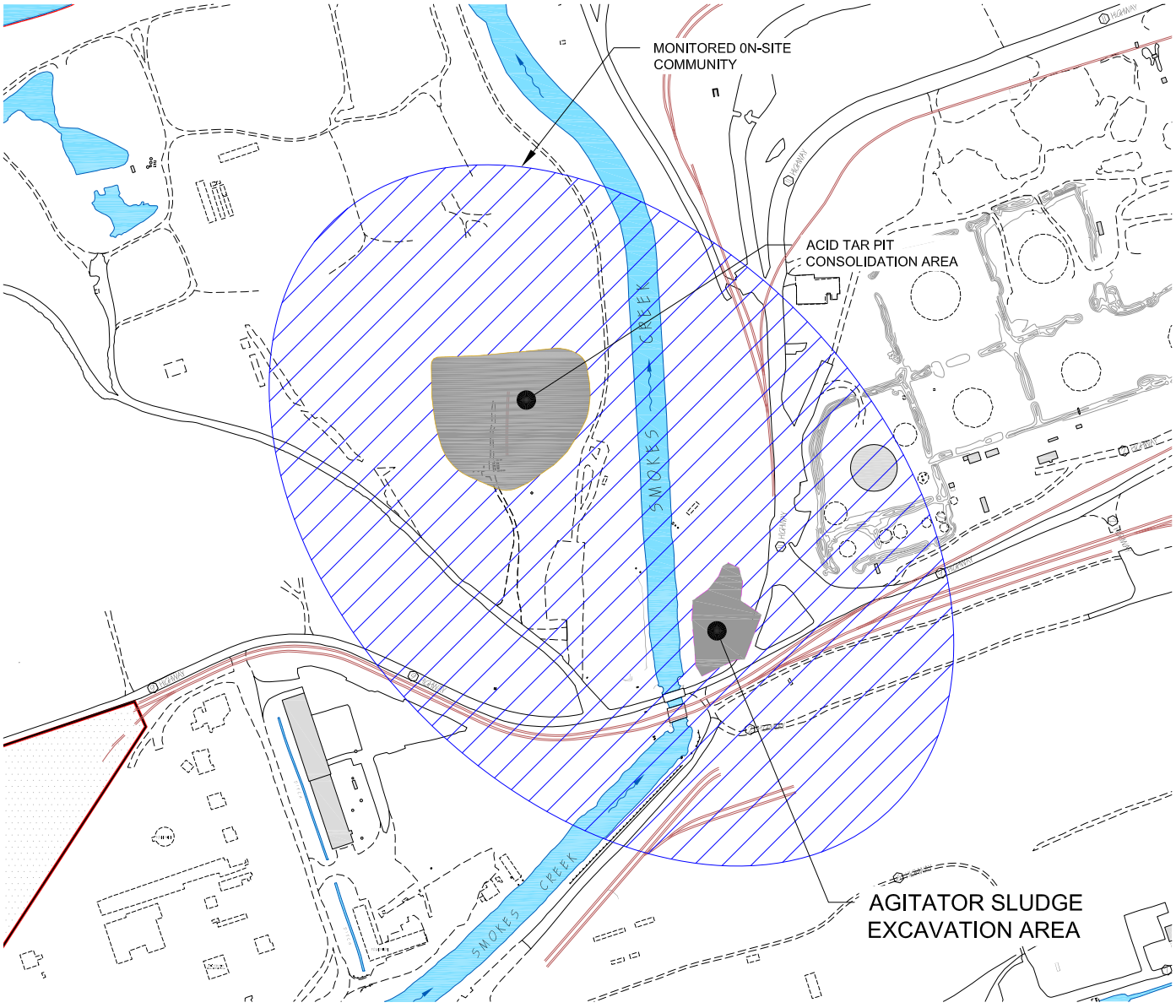
Item	Documentation Schedule
Instrument Calibration Results	Whenever calibration is performed (minimum once daily).
Background Monitoring Results	At beginning of work day and once every 4 hours thereafter.
Downwind Monitoring Results (15-minute moving average)	Hourly

All documentation records will be maintained in the project file for inspection by the NYSDEC and/or the NYSDOH upon request. NYSDEC will be provided copies of the monitoring results recorded during redevelopment activities as part of annual certification report for the site. During the redevelopment period, NYSDEC and NYSDOH will be contacted if will be contacted in writing within 5 days of exceeding the 150 ug/m3 respirable dust action level. These notifications will include a description of the control measures implemented to prevent further exceedances.

FIGURES

FIGURE 1





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

PROJECT NO.: 0071-009-213

DATE: APRIL 2010

DRAFTED BY: AJZ

COMMUNITY AIR MONITORING SITE PLAN

ACID TAR PITS SWMU GROUP

TECUMSEH REDEVELOPMENT SITE
LACKAWANNA, NEW YORK

PREPARED FOR
TECUMSEH REDEVELOPMENT, INC.

APPENDIX A

Community Air Monitoring Documentation Forms

COMMUNITY AIR MONITORING DAILY LOG

Date:

LOCATION of ACTIVITIES/MONITORING STATIONS (Provide Sketch on Attached Map):

DESCRIPTION OF SITE ACTIVITIES:

WEATHER CONDITIONS:

Time of Day:	A.M.	P.M.
Ambient Air Temp.:		
Wind Direction:		
Wind Speed:		
Precipitation:		

PARTICULATE MONITORING	Location	Time	Value	Duration	Corrective Measures Taken (Eng Controls/Work Stoppage, etc.)
Exceedence of 100 ug/m3 [1]					
Exceedence of 150 ug/m3 [1]					
Visual Observation of Fugitive Dust			NA		
			NA		
			NA		

VOC MONITORING	Location	Time	Value	Duration	Corrective Measures Taken (Eng Controls/Work Stoppage, etc.)
Exceedence of 5 ppm [1]					Temporarily halt Work and continue monitoring
Reading of 5 to 25 ppm [1]					Temporarily halt Work, abate emissions with corrective actions and continue monitoring 3
Exceedence of 25 ppm [2]					Shut Down Work Immediately and notify Site Safety & Health Officer

1. Above background for 15 minute moving average.
2. Above background at Site perimeter (indicate location on attached sketch)
3. Work may resume when total VOC conc. 200 ft downwind or half the distance to nearest receptor (whicever is less) is below 5 ppm for 15 min.

NOTE: All exceedences are to be reported to TurnKey within 15 minutes.

Completed By:
Checked By:

APPENDIX B

SITE-SPECIFIC HEALTH & SAFETY PLAN (HASP)

Health and Safety Plan (HASP)

Tecumseh Redevelopment Site
ATP SWMU Group
Lackawanna, New York

April 2010 0071-007-140

Prepared For:

Tecumseh Redevelopment, Inc.
Richfield, Ohio

Prepared By:

TurnKey Environmental Restoration, LLC

Benchmark Environmental Engineering & Science, PLLC

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

HEALTH AND SAFETY PLAN

TECUMSEH REDEVELOPMENT SITE
ATP SWMU GROUP AREA
LACKAWANNA, NEW YORK

April 2010 0071-008-140

Prepared for:

Tecumseh Redevelopment, Inc.

Prepared by:

TurnKey Environmental Restoration, LLC

In association with:

Benchmark Environmental Engineering & Science, PLLC

HEALTH AND SAFETY PLAN
TECUMSEH REDEVELOPMENT SITE
ATP SWMU GROUP AREA

ACKNOWLEDGEMENT

Plan Reviewed by (initial):

Corporate Health and Safety Director: _____

Project Manager: _____

Designated Site Safety and Health Officer: _____

Acknowledgement:
I acknowledge that I have reviewed the information contained in this site-specific Health and Safety Plan, and understand the hazards associated with performance of the field activities described herein. I agree to comply with the requirements of this plan.

NAME (PRINT)	SIGNATURE	DATE

HEALTH AND SAFETY PLAN
TECUMSEH REDEVELOPMENT SITE

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HEALTH AND SAFETY PLAN
TECUMSEH REDEVELOPMENT SITE

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1.0 INTRODUCTION

1.1 General

In accordance with OSHA requirements contained in 29 CFR 1910.120, this Health and Safety Plan (HASP) describes the specific health and safety practices and procedures to be employed by TurnKey Environmental Restoration, LLC and Benchmark Environmental Engineering & Science, PLLC employees (referred to jointly hereafter as "TurnKey-Benchmark") during RCRA Corrective Measures Study (CMS) activities on the Tecumseh Redevelopment Site (former Bethlehem Steel Lackawanna Works), located in the City of Lackawanna, New York.. This HASP presents procedures for TurnKey-Benchmark employees who will be involved with investigation and remedial field activities; it does not cover the activities of other contractors, subcontractors, or other individuals on the Site. These firms will be required to develop and enforce their own HASPs as discussed in Section 2.0. TurnKey-Benchmark accepts no responsibility for the health and safety of contractor, subcontractor, or other personnel.

This HASP presents information on known Site health and safety hazards using available historical information, and identifies the equipment, materials and procedures that will be used to eliminate or control these hazards. Environmental monitoring will be performed during the course of field activities to provide real-time data for on-going assessment of potential hazards.

1.2 Background

Tecumseh Redevelopment, Inc. (Tecumseh) owns approximately 1,100 acres of land at 1951 Hamburg Turnpike, approximately 2 miles south of the City of Buffalo (see Figure 1). The majority of Tecumseh's property is located in the City of Lackawanna (the City), with portions of the property extending into the Town of Hamburg. Tecumseh's property is bordered by: NY State Route 5 (Hamburg Turnpike) on the east; Lake Erie to the west and northwest; and other industrial properties to the south and the northeast. Figure 2 provides an overview of the Tecumseh Property, including major leased or licensed parcels, and adjacent parcels owned by others.

The Tecumseh property is located on a portion of the site of the former Bethlehem Steel Corporation (BSC) Lackawanna Works in a primarily industrial area. The former BSC-

Lackawanna Facility was used for iron and steel production since the beginning of the 20th century. 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 leaving only a galvanized products mill operating by BSC at the Site. Galvanizing operations were acquired by ISG Lackawanna LLC pursuant to the asset purchase agreement that was approved by the Bankruptcy Court in April 2003. ISG, Inc. merged with Mittal Steel Inc. in July 2005 to become Mittal Steel USA Inc. In June 2007, Mittal Steel merged with Arcelor Steel, with Mittal Steel USA, Inc. and Tecumseh Redevelopment, Inc. respectively becoming ArcelorMittal USA, Inc. and Tecumseh Redevelopment, Inc.

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

1.3 Known and Suspected Environmental Conditions

The CMS Areas were formerly used to house portions of BSC's steel making operations. The slag and other industrial fill materials contain highly variable and sometimes elevated concentrations of metals, as well as semi-volatile and volatile organic compounds (SVOCs and VOCs). In addition, groundwater in contact with the soil/fill materials described above may exhibit elevated concentrations of corresponding soluble COPCs (e.g., BTEX) in groundwater.

1.4 Parameters of Interest

Constituents of potential concern (COPCs) at the Site include:

- **Volatile Organic Compounds (VOCs)** – VOCs present at elevated concentration may include benzene, toluene, ethylbenzene, and xylene (i.e., BTEX). These VOCs are typically associated with storage and handling of petroleum products such as gasoline.

- **Semi-Volatile Organic Compounds (SVOCs) –** SVOCs present at elevated concentrations may include base-neutral semi-volatile organic compounds (SVOCs) from oils, greases, and fuels associated with the operation of locomotive engines, steel mills, petroleum bulk storage, and other historic steel manufacturing operations. Specifically, polynuclear aromatic hydrocarbons (PAHs), which are byproducts of incomplete combustion and impurities in petroleum products. Although PAHs are commonly found in urban soil environments, they may be present at the Site at concentrations that are elevated compared to typical "background" levels. Naphthalene is a natural component of fossil fuels such as petroleum and coal; it is also formed when natural products such as wood or tobacco are burned.

- **Inorganic Compounds** – Inorganic COPCs potentially present at elevated concentrations due to steel making activities may include arsenic, cadmium, chromium, lead, and mercury. Several of these parameters are components of coke and slag, which are prevalent in the planned work area.

In addition, groundwater in contact with the soil/fill materials described above may exhibit elevated concentrations of corresponding soluble COPCs (e.g., BTEX).

1.5 Overview of ECM Activities

TurnKey-Benchmark personnel will be on-site to observe ECM remedial activities. General field activities to be completed are described below. Detailed ECM activities are more fully described in the ECM Work Plan.

1. **Soil/Fill Excavation:** TurnKey-Benchmark will monitor all soil/fill excavations (e.g., test pit investigations, SWMU material excavation) and related activities to visually inspect soil/fill for evidence of contamination.

2. **Soil/Fill Sampling:** TurnKey-Benchmark may collect surface and subsurface soil/fill samples during and following excavation in accordance with any work plan requirements.

3. **Surface Water Management:** During excavation, surface water and/or perched groundwater infiltration may occur. TurnKey-Benchmark will direct the contractor to collect and characterize the surface water for proper disposal.

4. **Sediment and Surface Water Sampling:** TurnKey-Benchmark may collect sediment and surface water samples in accordance with any work plan requirements.

5. **Groundwater Monitoring Well Installation and Sampling:** TurnKey-Benchmark may install groundwater monitoring wells and collect samples for the long-term groundwater monitoring program in accordance with any work plan requirements.

6. **Groundwater Remediation:** TurnKey-Benchmark personnel will oversee all groundwater remediation at the Site, if any.

7. **Subgrade Work:** Significant grading of the Site may be required before implementation of remedial measures (e.g., cover system placement).

8. **Cover Soil Placement:** A soil cover system will be placed over select portions of the Site to reduce potential contact with impacted soil/fill. TurnKey-Benchmark will oversee installation of the cover system.

2.0 ORGANIZATIONAL STRUCTURE

This chapter of the HASP describes the lines of authority, responsibility, and communication as they pertain to health and safety functions at the Site. The purpose of this chapter is to identify the personnel who impact the development and implementation of the HASP and to describe their roles and responsibilities. This chapter also identifies other contractors and subcontractors involved in work operations and establishes the lines of communications among them for health and safety matters. The organizational structure described in this chapter is consistent with the requirements of 29 CFR 1910.120(b)(2). This section will be reviewed by the Project Manager and updated as necessary to reflect the current organizational structure at this Site.

2.1 Roles and Responsibilities

All Turnkey-Benchmark personnel on the ATP SWMU Group Area Site must comply with the minimum requirements of this HASP. The specific responsibilities and authority of management, safety and health, and other personnel on this site are detailed in the following paragraphs.

2.1.1 Corporate Health and Safety Director

The TurnKey-Benchmark Corporate Health and Safety Director is ***Mr. Thomas H. Forbes, P.E.*** The Corporate Health and Safety Director responsible for developing and implementing the Health and Safety program and policies for Benchmark Environmental Engineering & Science, PLLC and TurnKey Environmental Restoration, LLC, and consulting with corporate management to ensure adequate resources are available to properly implement these programs and policies. The Corporate Health and Safety Director coordinates TurnKey-Benchmark's Health and Safety training and medical monitoring programs and assists project management and field staff in developing site-specific health and safety plans.

2.1.2 Project Manager

The Project Manager for this site is ***Thomas H. Forbes, P.E.*** The Project Manager has the responsibility and authority to direct all TurnKey-Benchmark work operations at the

site. The Project Manager coordinates safety and health functions with the Site Safety and Health Officer, and bears ultimate responsibility for proper implementation of this HASP. He may delegate authority to expedite and facilitate any application of the program, including modifications to the overall project approach as necessary to circumvent unsafe work conditions. Specific duties of the Project Manager include:

- Preparing and coordinating the site work plan.
- Providing TurnKey-Benchmark workers with work assignments and overseeing their performance.
- Coordinating health and safety efforts with the Site Safety and Health Officer (SSHO).
- Reviewing the emergency response coordination plan to assure its effectiveness.
- Serving as the primary liaison with site contractors and the property owner.

2.1.3 Site Safety and Health Officer

The Site Safety and Health Officer (SSHO) for this site is ***Mr. Richard L. Dubisz***. The qualified alternate SSHO is ***Mr. Thomas Behrendt.*** The SSHO reports to the Project Manager. The SSHO is on-site or readily accessible to the site during all work operations and has the authority to halt site work if unsafe conditions are detected. The specific responsibilities of the SSHO are:

- Managing the safety and health functions for TurnKey-Benchmark personnel on the site.
- Serving as the point of contact for safety and health matters.
- Ensuring that TurnKey-Benchmark field personnel working on the site have received proper training (per 29 CFR Part 1910.120(e)), that they have obtained medical clearance to wear respiratory protection (per 29 CFR Part 1910.134), and that they are properly trained in the selection, use and maintenance of personal protective equipment, including qualitative respirator fit testing.
- Performing or overseeing site monitoring as required by the HASP.

- Assisting in the preparation and review of the HASP
- Maintaining site-specific safety and health records as described in this HASP
- Coordinating with the Project Manager, Site Workers and Contractor's SSHO as necessary for safety and health efforts.

2.1.4 Site Workers

Site workers are responsible for: complying with this HASP or a more stringent HASP, if appropriate (i.e., Contractor and Subcontractor's HASP); using proper PPE; reporting unsafe acts and conditions to the SSHO; and following the safety and health instructions of the Project Manager and SSHO.

2.1.5 Other Site Personnel

Other site personnel who will have health and safety responsibilities will include the Remedial Contractor, who will be responsible for developing, implementing and enforcing a Health and Safety Plan equally stringent or more stringent than TurnKey-Benchmark's HASP. TurnKey-Benchmark assumes no responsibility for the health and safety of anyone outside its direct employ. Each Contractor's HASP shall cover all non-TurnKey/ Benchmark site personnel. Each Contractor shall assign a SSHO who will coordinate with TurnKey-Benchmark's SSHO as necessary to ensure effective lines of communication and consistency between contingency plans.

In addition to TurnKey-Benchmark and Contractor personnel, other individuals who may have responsibilities in the work zone include subcontractors and governmental agencies performing site inspection work (i.e., the New York State Department of Environmental Conservation). The Contractor shall be responsible for ensuring that these individuals have received OSHA-required training (29 CFR 1910.120(e)), including initial, refresher and site-specific training, and shall be responsible for the safety and health of these individuals while they are on-site.

3.0 HAZARD EVALUATION

Due to the presence of certain contaminants at the Site, the possibility exists that workers will be exposed to hazardous substances during field activities. The principal points of exposure would be through direct contact with and incidental ingestion of soil/fill, and through the inhalation of contaminated particles or vapors, during test pit completion, monitoring well installation, and soil/fill excavation. In addition, the use of heavy construction equipment (e.g., dozer) will also present conditions for potential physical injury to workers. Further, since work will be performed outdoors, the potential exists for heat/cold stress to impact workers, especially those wearing protective equipment and clothing. Adherence to the medical evaluations, worker training relative to chemical hazards, safe work practices, proper personal protection, environmental monitoring, establishment work zones and site control, appropriate decontamination procedures and contingency planning outlined herein will reduce the potential for chemical exposures and physical injuries.

3.1 Chemical Hazards

As discussed in Section 1.3, historic activities related to the former steel-manufacturing operations and facilities have resulted in elevated concentrations of VOCs, SVOCs, and inorganic compounds in Site soils and groundwater. Table 1 identifies maximum concentrations of COPCs detected throughout the Tecumseh property. Table 2 lists exposure limits for airborne concentrations of the COPCs identified in Section 1.4 of this HASP. Brief descriptions of the toxicology of the prevalent constituents of potential concern and related health and safety guidance and criteria are provided below.

- **Arsenic (CAS #7440-38-2)** is a naturally occurring element and is usually found combined with one or more elements, such as oxygen or sulfur. Inhalation is a more important exposure route than ingestion. First phase exposure symptoms include nausea, vomiting, diarrhea and pain in the stomach. Prolonged contact is corrosive to the skin and mucus membranes. Arsenic is considered a Group A human carcinogen by the USEPA. Exposure via inhalation is associated with an increased risk of lung cancer. Exposure via the oral route is associated with an increased risk of skin cancer.

- **Benzene (CAS #71-43-2)** poisoning occurs most commonly through inhalation of the vapor; however, benzene can also penetrate the skin and poison in that way. Locally, benzene has a comparatively strong irritating effect, producing erythema and burning and, in more severe cases, edema and blistering. Exposure to high concentrations of the vapor (i.e., 3,000 ppm or higher) may result in acute poisoning characterized by the narcotic action of benzene on the central nervous system. In acute poisoning, symptoms include confusion, dizziness, tightening of the leg muscles, and pressure over the forehead. Chronic exposure to benzene (i.e., long-term exposure to concentrations of 100 ppm or less) may lead to damage of the blood-forming system. Benzene is very flammable when exposed to heat or flame and can react vigorously with oxidizing materials.

- **Cadmium** is a natural element and is usually combined with one or more elements, such as oxygen, chloride or sulfur. Breathing high levels of cadmium severely damages the lungs and can cause death. Ingestion of high levels of cadmium severely irritates the stomach, leading to vomiting and diarrhea. Long term exposure to lower levels of cadmium leads to a buildup of this substance in the kidneys and possible kidney disease. Other potential long term effects are lung damage and fragile bones. Cadmium is suspected to be a human carcinogen.

- **Chromium (CAS #7440-47-3)** is used in the production of stainless steel, chrome plated metals, and batteries. Two forms of chromium, hexavalent (CR+6) and trivalent (CR+3) are toxic. Hexavalent chromium is an irritant and corrosive to the skin and mucus membranes. Chromium is a potential occupational carcinogen. Acute exposures to dust may cause coughing, wheezing, headaches, pain and fever.

- **Ethylbenzene (CAS #100-41-4)** is a component of automobile gasoline. Over-exposure may cause kidney, skin liver and/or respiratory disease. Signs of exposure may include dermatitis, irritation of the eyes and mucus membranes, headache. Narcosis and coma may result in more severe cases.

- **Lead (CAS #7439-92-1)** can affect almost every organ and system in our bodies. The most sensitive is the central nervous system, particularly in children. Lead also damages kidneys and the immune system. The effects are the same whether it is breathed or swallowed. Lead may decrease reaction time, cause weakness in fingers, wrists or ankles and possibly affect memory. Lead may cause anemia.

- **Mercury (CAS #7439-97-6)** is used in industrial applications for the production of caustic and chlorine, and in electrical control equipment and apparatus. Over-exposure to mercury may cause coughing, chest pains, bronchitis, pneumonia, indecision, headaches, fatigue and salivation. Mercury is a skin and eye irritant.

- **Naphthalene (CAS #91-20-3)** is a white solid with a strong smell; is also called mothballs, moth flakes, white tar, and tar camphor. Naphthalene is a natural component of fossil fuels such as petroleum and coal; it is also formed when natural products such as wood or tobacco are burned. Acute exposure to naphthalene can cause systemic reactions, including nausea, headache, diaphoresis, hematuria, fever, anemia, liver damage, vomiting, convulsions, and coma. Acute exposure can also cause eye irritation, confusion, excitement, malaise, abdominal pain, irritation to the bladder, profuse sweating, jaundice, hematopoietic, hemoglobinuria, renal shutdown, and dermatitis. Exposure to a large amount of naphthalene can cause red blood cells to be damaged or destroyed, a condition called hemolytic anemia, which leads to fatigue, lack of appetite, restlessness, and a pale appearance. Poisoning may occur by ingestion of large doses, skin and/or eye contact, inhalation, or skin absorption.

- **Polycyclic Aromatic Hydrocarbons (PAHs)** are formed as a result of the pyrolysis and incomplete combustion of organic matter such as fossil fuel. PAH aerosols formed during the combustion process disperse throughout the atmosphere, resulting in the deposition of PAH condensate in soil, water and on vegetation. In addition, several products formed from petroleum processing operations (e.g., roofing materials and asphalt) also contain elevated levels of PAHs. Hence, these compounds are widely dispersed in the environment. PAHs are characterized by a molecular structure containing three or more fused, unsaturated carbon rings. Seven of the PAHs are classified by USEPA as probable human carcinogens (USEPA Class B2). These are: benzo(a)pyrene; benzo(a)anthracene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenzo(a,h)anthracene; and indeno(1,2,3-cd)pyrene. The primary route of exposure to PAHs is through incidental ingestion and inhalation of contaminated particulates. PAH's are characterized by an organic odor, and exist as oily liquids in pure form. Acute exposure symptoms may include acne-type blemishes in areas of the skin exposed to sunlight.

- **Toluene (CAS #108-88-3)** is a common component of paint thinners and automobile fuel. Acute exposure predominantly results in central nervous system depression. Symptoms include headache, dizziness, fatigue, muscular weakness, drowsiness, and coordination loss. Repeated exposures may cause removal of lipids from the skin, resulting in dry, fissured dermatitis.

- **Xylenes (o, m, and p) (CAS #95-47-6, 108-38-3, and 106-42-3)** are colorless, flammable liquids present in paint thinners and fuels. Acute exposure may cause central nervous system depression, resulting in headache, dizziness, fatigue, muscular weakness, drowsiness, and coordination loss. Repeated exposures may

also cause removal of lipids from the skin, producing dry, fissured dermatitis. Exposure of high concentrations of vapor may cause eye irritation and damage, as well as irritation of the mucus membranes.

With respect to the anticipated ECM activities discussed in Section 1.5, possible routes of exposure to the above-mentioned contaminants are presented in Table 3. The use of proper respiratory equipment, as outlined in Section 7.0 of this HASP, will minimize the potential for exposure to airborne contamination. Exposure to contaminants through dermal and other routes will also be minimized through the use of protective clothing (Section 7.0), safe work practices (Section 6.0), and proper decontamination procedures (Section 12.0).

3.2 Physical Hazards

ECM remedial activities at the Tecumseh site may present the following physical hazards:

- The potential for physical injury during heavy construction equipment use, such as grading equipment, excavators, and tandem trucks.
- The potential for heat/cold stress to employees during the summer/winter months (see Section 10.0).
- The potential for slip and fall injuries due to rough, uneven terrain and/or open excavations.

These hazards represent only some of the possible means of injury that may be present during investigation and remedial activities at the Site. Since it is impossible to list all potential sources of injury, it shall be the responsibility of each individual to exercise proper care and caution during all phases of the work.

4.0 TRAINING

4.1 Site Workers

All personnel performing investigation and remedial activities at the ATP SWMU Group Area Site (such as, but not limited to, equipment operators, general laborers, and supervisors) and who may be exposed to hazardous substances, health hazards, or safety hazards and their supervisors/managers responsible for the Site shall receive training in accordance with 29 CFR 1910.120(e) before they are permitted to engage in operations in the exclusion zone or contaminant reduction zone. This training includes an initial 40-hour Hazardous Waste Site Worker Protection Course, an 8-hour Annual Refresher Course subsequent to the initial 40-hour training, and 3 days of actual field experience under the direct supervision of a trained, experienced supervisor. Additional site-specific training shall also be provided by the SSHO prior to the start of field activities. A description of topics to be covered by this training is provided below.

4.1.1 Initial and Refresher Training

Initial and refresher training is conducted by a qualified instructor as specified under OSHA 29 CFR 1910.120(e)(5), and is specifically designed to meet the requirements of OSHA 29 CFR 1910.120(e)(3) and 1910.120(e)(8). The training covers, as a minimum, the following topics:

- OSHA HAZWOPER regulations.
- Site safety and hazard recognition, including chemical and physical hazards.
- Medical monitoring requirements.
- Air monitoring, permissible exposure limits, and respiratory protection level classifications.
- Appropriate use of personal protective equipment (PPE), including chemical compatibility and respiratory equipment selection and use.
- Work practices to minimize risk.
- Work zones and site control.
- Safe use of engineering controls and equipment.
- Decontamination procedures.
- Emergency response and escape.

- Confined space entry procedures.
- Heat and cold stress monitoring.
- Elements of a Health and Safety Plan.
- Spill containment.

Initial training also incorporates workshops for PPE and respiratory equipment use (Levels A, B and C), and respirator fit testing. Records and certification received from the course instructor documenting each employee's successful completion of the training identified above are maintained on file at TurnKey-Benchmark's Buffalo, NY office. Contractors and Subcontractors are required to provide similar documentation of training for all their personnel who will be involved in on-site work activities.

Any employee who has not been certified as having received health and safety training in conformance with 29 CFR 1910.120(e) is prohibited from working in the exclusion and contamination reduction zones, or to engage in any on-site work activities that may involve exposure to hazardous substances or wastes.

4.1.2 Site Training

ATP SWMU Group Area Site workers are given a copy of the HASP and provided a site-specific briefing prior to the commencement of work to ensure that employees are familiar with the HASP and the information and requirements it contains. The site briefing shall be provided by the SSHO prior to initiating field activities and shall include:

- Names of personnel and alternates responsible for site safety and health.
- Safety, health and other hazards present on the Site.
- The Site lay-out including work zones and places of refuge.
- The emergency communications system and emergency evacuation procedures.
- Use of PPE.
- Work practices by which the employee can minimize risks from hazards.
- Safe use of engineering controls and equipment on the site.
- Medical surveillance, including recognition of symptoms and signs of over-exposure as described in Chapter 5 of this HASP.
- Decontamination procedures as detailed in Chapter 12 of this HASP.
- The emergency response plan as detailed in Chapter 15 of this HASP.

- Confined space entry procedures, if required, as detailed in Chapter 13 of this HASP.
- The spill containment program as detailed in Chapter 9 of this HASP.
- Site control as detailed in Chapter 11 of this HASP.

Supplemental health and safety briefings will also be conducted by the SSHO on an as-needed basis during the course of the work. Supplemental briefings are provided as necessary to notify employees of any changes to this HASP as a result of information gathered during ongoing site characterization and analysis. Conditions for which the SSHO may schedule additional briefings include, but are not limited to: a change in Site conditions (i.e., based on monitoring results); changes in the work schedule/plan; newly discovered hazards; and safety incidents occurring during Site work.

4.2 Supervisor Training

On-site safety and health personnel who are directly responsible for or who supervise the safety and health of workers engaged in hazardous waste operations (i.e., SSHO) shall receive, in addition to the appropriate level of worker training described in Section 4.1, above, 8 additional hours of specialized supervisory training, in compliance with 29 CFR 1910.120(e)(4).

4.3 Emergency Response Training

Emergency response training is addressed in Appendix A of this HASP, Emergency Response Plan.

4.4 Site Visitors

Each Contractor's SSHO will provide a site-specific briefing to all site visitors and other non-TurnKey/Benchmark personnel who enter the ATP SWMU Group Area Site beyond the site entry point. The site-specific briefing will provide information about site hazards, the site layout including work zones and places of refuge, the emergency communications system and emergency evacuation procedures, and other pertinent safety and health requirements as appropriate.

Site visitors will not be permitted to enter the exclusion zone or contaminant reduction zones unless they have received the level of training required for site workers as described in Section 4.1.

5.0 MEDICAL MONITORING

Medical monitoring examinations are provided to TurnKey-Benchmark employees as stipulated under 29 CFR Part 1910.120(f). These exams include initial employment, annual and employment termination physicals for all TurnKey-Benchmark employees involved in hazardous waste site field operations. Post-exposure examinations are also provided for employees who may have been injured, received a health impairment, or developed signs or symptoms of over-exposure to hazardous substances or were accidentally exposed to substances at concentrations above the permissible exposure limits without necessary personal protective equipment. Such exams are performed as soon as possible following development of symptoms or the known exposure event.

Medical evaluations are performed by ADP Screening & Selection Services, an occupational health care provider under contract with TurnKey-Benchmark. ADP's local facility is Health Works WNY, Seneca Square Plaza, 1900 Ridge Road, West Seneca, New York 14224. The facility can be reached at (716) 823-5050 to schedule routine appointments or post-exposure examinations.

Medical evaluations are conducted according to the TurnKey-Benchmark Medical Monitoring Program and include an evaluation of the workers' ability to use respiratory protective equipment. The purpose of the medical evaluation is to determine an employee's fitness for duty on hazardous waste sites; and to establish baseline medical data. The examinations include:

- Occupational/medical history review.
- Physical exam, including vital sign measurement.
- Spirometry testing.
- Eyesight testing.
- Audio testing (minimum baseline and exit, annual for employees routinely exposed to greater than 85db).
- EKG (for employees >40 yrs age or as medical conditions dictate).
- Chest X-ray (baseline and exit, and every 5 years).
- Blood biochemistry (including blood count, white cell differential count, serum multiplastic screening).
- Medical certification of physical requirements (i.e., sight, musculoskeletal, cardiovascular) for safe job performance and to wear respiratory protection equipment.

In conformance with OSHA regulations, TurnKey-Benchmark will maintain and preserve medical records for a period of 30 years following termination of employment. Employees are provided a copy of the physician's post-exam report, and have access to their medical records and analyses.

6.0 SAFE WORK PRACTICES

All TurnKey-Benchmark employees shall conform to the following safe work practices during all on-site work activities conducted within the exclusion and contamination reduction zones:

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth contact is strictly prohibited.

- The hands and face must be thoroughly washed upon leaving the work area and prior to engaging in any activity indicated above.

- Respiratory protective equipment and clothing must be worn by all personnel entering the site as required by the HASP or as modified by the site safety officer. Excessive facial hair (i.e., beards, long mustaches or sideburns) that interferes with the satisfactory respirator-to-face seal is prohibited.

- Contact with surfaces/materials either suspected or known to be contaminated will be avoided to minimize the potential for transfer to personnel, cross contamination and need for decontamination.

- Medicine and alcohol can synergize the effects of exposure to toxic chemicals. Due to possible contraindications, use of prescribed drugs should be reviewed with the TurnKey-Benchmark occupational physician. Alcoholic beverage and illegal drug intake are strictly forbidden during the workday.

- All personnel shall be familiar with standard operating safety procedures and additional instructions contained in this Health and Safety Plan.

- On-site personnel shall use the "buddy" system. No one may work alone (i.e., out of earshot or visual contact with other workers) in the exclusion zone.

- Personnel and equipment in the contaminated area shall be minimized, consistent with effective site operations.

- All employees have the obligation to immediately report and if possible, correct unsafe work conditions.

- Use of contact lenses on-site will not be permitted. Spectacle kits for insertion into full-face respirators will be provided for TurnKey-Benchmark employees, as requested and required.

The recommended specific safety practices for working around the contractor's equipment (e.g., backhoes, bulldozers, excavators, etc.) are as follows:

- Although the Contractor and subcontractors are responsible for their equipment and safe operation of the site, TurnKey-Benchmark personnel are also responsible for their own safety.

- Subsurface work will not be initiated without first clearing underground utility services.

- Heavy equipment should not be operated within 20 feet of overhead wires. This distance may be increased if windy conditions are anticipated or if lines carry high voltage. The site should also be sufficiently clear to ensure the project staff can move around the heavy machinery safely.

- Care should be taken to avoid overhead wires when moving heavy-equipment from location to location.

- Hard hats, safety boots and safety glasses should be worn at all times in the vicinity of heavy equipment. Hearing protection is also recommended.

- The work site should be kept neat. This will prevent personnel from tripping and will allow for fast emergency exit from the site.

- Proper lighting must be provided when working at night.

- Construction activities should be discontinued during an electrical storm or severe weather conditions.

- The presence of combustible gases should be checked before igniting any open flame.

- Personnel shall stand upwind of any construction operation when not immediately involved in sampling/logging/observing activities.

- Personnel will not approach the edge of an unsecured trench/excavation closer than 2 feet.

7.0 PERSONAL PROTECTIVE EQUIPMENT

7.1 Equipment Selection

Personal protective equipment (PPE) will be donned when work activities may result in exposure to physical or chemical hazards beyond acceptable limits, and when such exposure can be mitigated through appropriate PPE. The selection of PPE will be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the Site, the task-specific conditions and duration, and the hazards and potential hazards identified at the site.

Equipment designed to protect the body against contact with known or suspect chemical hazards are grouped into four categories according to the degree of protection afforded. These categories designated A through D consistent with USEPA Level of Protection designation, are:

- **Level A:** Should be selected when the highest level of respiratory, skin and eye protection is needed.

- **Level B:** Should be selected when the highest level of respiratory protection is needed, but a lesser level of skin protection is required. Level B protection is the minimum level recommended on initial site entries until the hazards have been further defined by on-site studies. Level B (or Level A) is also necessary for oxygen-deficient atmospheres.

- **Level C:** Should be selected when the types of airborne substances are known, the concentrations have been measured and the criteria for using air-purifying respirators are met. In atmospheres where no airborne contaminants are present, Level C provides dermal protection only.

- **Level D:** Should not be worn on any site with elevated respiratory or skin hazards. This is generally a work uniform providing minimal protection.

OSHA requires the use of certain PPE under conditions where an immediate danger to life and health (IDLH) may be present. Specifically, OSHA 29 CFR 1910.120(g)(3)(iii) requires use of a positive pressure self-contained breathing apparatus, or positive pressure air-line respirator equipped with an escape air supply when chemical exposure levels present a substantial possibility of immediate serious injury, illness or death, or impair the ability to

escape. Similarly, OSHA 29 CFR 1910.120(g)(3)(iv) requires donning totally encapsulating chemical protective suits (with a protection level equivalent to Level A protection) in conditions where skin absorption of a hazardous substance may result in a substantial possibility of immediate serious illness, injury or death, or impair the ability to escape.

In situations where the types of chemicals, concentrations, and possibilities of contact are unknown, the appropriate level of protection must be selected based on professional experience and judgment until the hazards can be further characterized. The individual components of clothing and equipment must be assembled into a full protective ensemble to protect the worker from site-specific hazards, while at the same time minimizing hazards and drawbacks of the personal protective gear itself. Ensemble components are detailed below for levels A/B, C, and D protection.

7.2 Protection Ensembles

7.2.1 Level A/B Protection Ensemble

Level A/B ensembles include similar respiratory protection, however Level A provides a higher degree of dermal protection than Level B. Use of Level A over Level B is determined by: comparing the concentrations of identified substances in the air with skin toxicity data, and assessing the effect of the substance (by its measured air concentrations or splash potential) on the small area of the head and neck unprotected by Level B clothing.

The recommended PPE for level A/B is:

- Pressure-demand, full-face piece self-contained breathing apparatus (MSHA/-NIOSH approved) or pressure-demand supplied-air respirator with escape self-contained breathing apparatus (SCBA).
- Chemical-resistant clothing. For Level A, clothing consists of totally-encapsulating chemical resistant suit. Level B incorporates hooded one-or two-piece chemical splash suit.
- Inner and outer chemical resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

7.2.2 Level C Protection Ensemble

Level C protection is distinguished from Level B by the equipment used to protect the respiratory system, assuming the same type of chemical-resistant clothing is used. The main selection criterion for Level C is that conditions permit wearing an air-purifying device. The device (when required) must be an air-purifying respirator (MSHA/NIOSH approved) equipped with filter cartridges. Cartridges must be able to remove the substances encountered. Respiratory protection will be used only with proper fitting, training and the approval of a qualified individual. In addition, an air-purifying respirator can be used only if: oxygen content of the atmosphere is at least 19.5% in volume; substances are identified and concentrations measured; substances have adequate warning properties; the individual passes a qualitative fit-test for the mask; and an appropriate cartridge/canister is used, and its service limit concentration is not exceeded.

Recommended PPE for Level C conditions includes:

- Full-face piece, air-purifying respirator equipped with MSHA and NIOSH approved organic vapor/acid gas/dust/mist combination cartridges or as designated by the SSHO.
- Chemical-resistant clothing (hooded, one or two-piece chemical splash suit or disposable chemical-resistant one-piece suit).
- Inner and outer chemical-resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

An air-monitoring program is part of all response operations when atmospheric contamination is known or suspected. It is particularly important that the air be monitored thoroughly when personnel are wearing air-purifying respirators. Continual surveillance using direct-reading instruments is needed to detect any changes in air quality necessitating a higher level of respiratory protection.

7.2.3 Level D Protection Ensemble

As indicated above, Level D protection is primarily a work uniform. It can be worn in areas where only boots can be contaminated, where there are no inhalable toxic substances and where the atmospheric contains at least 19.5% oxygen.

Recommended PPE for Level D includes:

- Coveralls.
- Safety boots/shoes.
- Safety glasses or chemical splash goggles.
- Hardhat.
- Optional gloves; escape mask; face shield.

7.2.4 Recommended Level of Protection for Site Tasks

Based on current information regarding both the contaminants suspected to be present at the Site and the various tasks that are included in the investigation and remedial activities, the minimum required Levels of Protection for these tasks shall be as identified in Table 4.

8.0 EXPOSURE MONITORING

8.1 General

Based on the results of historic sample analysis and the nature of the proposed work activities at the Site, the possibility exists that organic vapors and/or particulates may be released to the air during intrusive construction activities. Ambient breathing zone concentrations may at times, exceed the permissible exposure limits (PELs) established by OSHA for the individual compounds (see Table 2), in which case respiratory protection will be required. Respiratory and dermal protection may be modified (upgraded or downgraded) by the SSHO based upon real-time field monitoring data.

8.1.1 On-Site Work Zone Monitoring

TurnKey-Benchmark personnel will conduct routine, real-time air monitoring during all intrusive construction phases such as excavation, backfilling, drilling, etc. The work area will be monitored at regular intervals using a photo-ionization detector (PID), combustible gas meter and a particulate meter. Observed values will be recorded and maintained as part of the permanent field record.

Additional air monitoring measurements may be made by TurnKey-Benchmark personnel to verify field conditions during subcontractor oversight activities. Monitoring instruments will be protected from surface contamination during use. Additional monitoring instruments may be added if the situations or conditions change. Monitoring instruments will be calibrated in accordance with manufacturer's instructions before use.

8.1.2 Off-Site Community Air Monitoring

In addition to on-site monitoring within the work zone(s), monitoring at the down-wind portion of the Site perimeter will be conducted. This will provide a real-time method for determination of substantial vapor and/or particulate releases to the surrounding community as a result of ground intrusive investigation work.

Ground intrusive activities are defined by NYSDOH Appendix 1A Generic Community Air Monitoring Plan (Reference 4) and attached as Appendix C. Ground intrusive activities include soil/waste excavation and handling, test pitting or trenching, and

the installation of soil borings or monitoring wells. Non-intrusive activities include the collection of soil and sediment samples or the collection of groundwater samples from existing wells. Continuous monitoring is required for ground intrusive activities and periodic monitoring is required for non-intrusive activities. Periodic monitoring consists of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring while bailing a well, and taking a reading prior to leaving a sampling location. This may be upgraded to continuous if the sampling location is in close proximity to individuals not involved in the site activity (i.e., on a curb of a busy street). The action levels below will be used during periodic monitoring. This will provide a real-time method for determination of substantial vapor and/or particulate releases to the surrounding community because of site investigation work.

8.2 Monitoring Action Levels

8.2.1 On-Site Work Zone Action Levels

The PID, explosimeter, or other appropriate instrument(s), will be used by TurnKey-Benchmark personnel to monitor organic vapor concentrations as specified in this HASP. In addition, fugitive dust/particulate concentrations will be monitored during major soil intrusion using a real-time particulate monitor as specified in this plan. In the absence of such monitoring, appropriate respiratory protection for particulates shall be donned. Sustained readings obtained in the breathing zone may be interpreted (with regard to other site conditions) as follows for TurnKey-Benchmark personnel:

- Total atmospheric concentrations of unidentified vapors or gases ranging from 0 to 1 ppm above background on the PID) - Continue operations under Level D (see Appendix A).

- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings from >1 ppm to 5 ppm above background on the PID (vapors not suspected of containing high levels of chemicals toxic to the skin) - Continue operations under Level C (see Appendix A).

- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings of >5 ppm to 50 ppm above background on the PID -

Continue operations under Level B (see Attachment 1), re-evaluate and alter (if possible) construction methods to achieve lower vapor concentrations.

- Total atmospheric concentrations of unidentified vapors or gases above 50 ppm on the PID - Discontinue operations and exit the work zone immediately.

The explosimeter will be used to monitor levels of both combustible gases and oxygen during RD activities involving deep excavation, if required. Action levels based on the instrument readings shall be as follows:

- Less than 10% LEL - Continue engineering operations with caution.
- 10-25% LEL - Continuous monitoring with extreme caution, determine source/cause of elevated reading.
- Greater than 25% LEL - Explosion hazard, evaluate source and leave the Work Zone.
- 19.5-21% oxygen - Proceed with extreme caution; attempt to determine potential source of oxygen displacement.
- Less than 19.5% oxygen - Leave work zone immediately.
- 21-25% oxygen - Continue engineering operations with caution.
- Greater than 25% oxygen - Fire hazard potential, leave Work Zone immediately.

The particulate monitor will be used to monitor respirable dust concentrations during all intrusive activities and during handling of site soil/fill. Action levels based on the instrument readings shall be as follows:

- Less than 50 $\mu g/m^3$ - Continue field operations.
- 50-150 $\mu g/m^3$ - Don dust/particulate mask or equivalent
- Greater than 150 $\mu g/m^3$ - Don dust/particulate mask or equivalent. Initiate engineering controls to reduce respirable dust concentration (i.e., wetting of excavated soils or tools at discretion of SSHO).

Readings with the organic vapor analyzer, combustible gas meter, and particulate monitor will be recorded and documented on the appropriate Project Field Forms. All instruments will be calibrated before use on a daily basis and the procedure will be documented on the appropriate Project Field Forms.

8.2.2 Community Air Monitoring Action Levels

In addition to the action levels prescribed in Section 8.2.1 for Benchmark personnel on-site, the following criteria shall also be adhered to for the protection of downwind receptors consistent with NYSDOH requirements (Appendix C):

- **ORGANIC VAPOR PERIMETER MONITORING:**
  - If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone exceeds 5 ppm above background, work activities will be halted and monitoring continued. If the sustained organic vapor decreases below 5 ppm over background, work activities can resume but more frequent intervals of monitoring, as directed by the SSHO, must be conducted.

  - If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone are greater than 5 ppm over background but less than 25 ppm, activities can resume provided that: the organic vapor level 200 feet downwind of the working site or half the distance to the nearest off-site residential or commercial structure, whichever is less, is below 5 ppm over background; and more frequent intervals of monitoring, as directed by the SSHO, are conducted.

  - If the sustained organic vapor level is above 25 ppm at the perimeter of the exclusion zone, the SSHO must be notified and work activities shut down. The SSHO will determine when re-entry of the exclusion zone is possible and will implement downwind air monitoring to ensure vapor emissions do not impact the nearest off-site residential or commercial structure at levels exceeding those specified in the ***Organic Vapor Contingency Monitoring Plan*** below. All readings will be recorded and will be available for New York State Department of Environmental Conservation (NYSDEC) and Department of Health (NYSDOH) personnel to review.

- **ORGANIC VAPOR CONTINGENCY MONITORING PLAN:**
  - If the sustained organic vapor level is greater than 5 ppm over background 200 feet downwind from the work area or half the distance to the nearest off-site residential or commercial property, whichever is less, all work activities must be halted.

  - If, following the cessation of the work activities or as the result of an emergency, sustained organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest off-site residential or commercial property from the work area, then the air quality must be monitored within 20 feet of the perimeter of the nearest off-site residential or commercial structure (20-foot zone).

  - If efforts to abate the emission source are unsuccessful and if sustained organic vapor levels approach or exceed 5 ppm above background within the 20-foot zone for more than 30 minutes, or are sustained at levels greater than 10 ppm above background for longer than one minute, then the ***Major Vapor Emission Response Plan*** (see below) will automatically be placed into effect.

- ***Major Vapor Emission Response Plan***:

  Upon activation, the following activities will be undertaken:

  1. All Emergency Response Contacts as listed in this Health and Safety Plan and the Emergency Response Plan (Appendix A) will be advised.

  2. The local police authorities will immediately be contacted by the SSHO and advised of the situation.

  3. Frequent air monitoring will be conducted at 30-minute intervals within the 20-foot zone. If two sustained successive readings below action levels are measured, air monitoring may be halted or modified by the SSHO.

The following personnel are to be notified in the listed sequence in the event that a Major Vapor Emission Plan is activated:

Responsible Person	Contact	Phone Number
SSHO	Police	911
SSHO	State Emergency Response Hotline	(800) 457-7362

Additional emergency numbers are listed in the Emergency Response Plan included as Appendix A.

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

- **Airborne Particulate Community Air Monitoring**

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

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter ($\mu g/m^3$) greater than the background (upwind perimeter) reading for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression provided that the downwind PM-10 particulate levels do not exceed 150 $\mu g/m^3$ above the upwind level and that visible dust is not migrating from the work area.
- If, after implementation of dust suppression techniques downwind PM-10 levels are greater than 150 $\mu g/m^3$ above the upwind level, work activities must be stopped and dust suppression controls re-evaluated. Work can resume provided that supplemental dust suppression measures and/or other controls

are successful in reducing the downwind PM-10 particulate concentration to within 150 μg/m^3 of the upwind level and in preventing visible dust migration.

Pertinent emergency response information including the telephone number of the Fire Department is included in the Emergency Response Plan (Appendix A).

9.0 SPILL RELEASE/RESPONSE

This chapter of the HASP describes the potential for and procedures related to spills or releases of known or suspected petroleum and/or hazardous substances on the Site. The purpose of this Section of the HASP is to plan appropriate response, control, counter-measures and reporting, consistent with OSHA requirements in 29 CFR 1910.120(b)(4)(ii)(J) and (j)(1)(viii). The spill containment program addresses the following elements:

- Potential hazardous material spills and available controls.
- Initial notification and evaluation.
- Spill response.
- Post-spill evaluation.

9.1 Potential Spills and Available Controls

An evaluation was conducted to determine the potential for hazardous material and oil/petroleum spills at this site. For the purpose of this evaluation, hazardous materials posing a significant spill potential are considered to be:

- CERCLA Hazardous Substances as identified in 40 CFR Part 302, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).

- Extremely Hazardous Substances as identified in 40 CFR Part 355, Appendix A, where such materials pose the potential for release in excess of their corresponding RQ.

- Hazardous Chemicals as defined under Section 311(e) of the Emergency Planning and Community Right-To-Know Act of 1986, where such chemicals are present or will be stored in excess of 10,000 lbs.

- Toxic Chemicals as defined in 40 CFR Part 372, where such chemicals are present or will be stored in excess of 10,000 lbs.

- Chemicals regulated under 6NYCRR Part 597, where such materials pose the potential for release in excess of their corresponding RQ.

Oil/petroleum products are considered to pose a significant spill potential whenever the following situations occur:

- The potential for a "harmful quantity" of oil (including petroleum and non-petroleum-based fuels and lubricants) to reach navigable waters of the U.S. exists (40 CFR Part 112.4). Harmful quantities are considered by USEPA to be volumes that could form a visible sheen on the water or violate applicable water quality standards.

- The potential for any amount of petroleum to reach any waters of NY State, including groundwater, exists. Petroleum, as defined by NY State in 6NYCRR Part 612, is a petroleum-based heat source, energy source, or engine lubricant/maintenance fluid.

- The potential for any release, to soil or water, of petroleum from a bulk storage facility regulated under 6NYCRR Part 612. A regulated petroleum storage facility is defined by NY State as a site having stationary tank(s) and intra-facility piping, fixtures and related equipment with an aggregate storage volume of 1,100 gallons or greater.

The evaluation indicates that, based on site history and decommissioning records, a hazardous material spill and/or a petroleum product spill is not likely to occur during Remedial efforts.

9.2 Initial Spill Notification and Evaluation

Any worker who discovers a hazardous substance or oil/petroleum spill will immediately notify the Project Manager and SSHO. The worker will, to the best of his/her ability, report the material involved, the location of the spill, the estimated quantity of material spilled, the direction/flow of the spill material, related fire/explosion incidents, if any, and any associated injuries. The Emergency Response Plan presented as Appendix A of this HASP will immediately be implemented if an emergency release has occurred.

Following initial report of a spill, the Project Manager will make an evaluation as to whether the release exceeds RQ levels. If an RQ level is exceeded, the Project Manager will notify the site owner and NYSDEC at 1-800-457-7362 within 2 hours of spill discovery. The Project Manager will also determine what additional agencies (e.g., USEPA) are to be

contacted regarding the release, and will follow-up with written reports as required by the applicable regulations.

9.3 Spill Response

For all spill situations, the following general response guidelines will apply:

- Only those personnel involved in overseeing or performing containment operations will be allowed within the spill area. If necessary, the area will be roped, ribboned, or otherwise blocked off to prevent unauthorized access.
- Appropriate PPE, as specified by the SSHO, will be donned before entering the spill area.
- Ignition points will be extinguished/removed if fire or explosion hazards exist.
- Surrounding reactive materials will be removed.
- Drains or drainage in the spill area will be blocked to prevent inflow of spilled materials or applied materials.

For minor spills, the Contractor will maintain a Spill Control and Containment Kit in the Field Office or other readily accessible storage location. The kit will consist of, at a minimum, a 50 lb. bag of "speedy dry" granular absorbent material, absorbent pads, shovels, empty 5-gallon pails and an empty open-top 55-gallon drum. Spilled materials will be absorbed, and shoveled into a 55-gallon drum for proper disposal (NYSDEC approval will be secured for on-site treatment of the impacted soils/absorbent materials, if applicable). Impacted soils will be hand-excavated to the point that no visible signs of contamination remains, and will be drummed with the absorbent.

In the event of a major release or a release that threatens surface water, a spill response contractor will be called to the site. The response contractor may use heavy equipment (i.e., excavator, backhoe, etc.) to berm the soils surrounding the spill site or create diversion trenching to mitigate overland migration or release to navigable waters. Where feasible, pumps will be used to transfer free liquid to storage containers. Spill control/cleanup contractors in the Western New York area that may be contacted for assistance include:

- The Environmental Service Group of NY, Inc.: (716) 695-6720
- Op-Tech: (716) 873-7680

9.4 Post-Spill Evaluation

If a reportable quantity of hazardous material or oil/petroleum is spilled as determined by the Project Manager, a written report will be prepared as indicated in Section 9.2. The report will identify the root cause of the spill, type and amount of material released, date/time of release, response actions, agencies notified and/or involved in cleanup, and procedures to be implemented to avoid repeat incidents. In addition, all re-useable spill cleanup and containment materials will be decontaminated, and spill kit supplies/disposable items will be replenished.

10.0 HEAT/COLD STRESS MONITORING

Since some of the work activities at the Site will be scheduled for both the summer and winter months, measures will be taken to minimize heat/cold stress to TurnKey-Benchmark employees. The SSHO and/or his or her designee will be responsible for monitoring TurnKey-Benchmark field personnel for symptoms of heat/cold stress.

10.1 Heat Stress Monitoring

Personal protective equipment may place an employee at risk of developing heat stress, a common and potentially serious illnesses often encountered at construction, landfill, waste disposal, industrial or other unsheltered sites. The potential for heat stress is dependent on a number of factors, including environmental conditions, clothing, workload, physical conditioning and age. Personal protective equipment may severely reduce the body's normal ability to maintain temperature equilibrium (via evaporation and convection), and require increased energy expenditure due to its bulk and weight.

Proper training and preventive measures will mitigate the potential for serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illness. To avoid heat stress, the following steps should be taken:

- Adjust work schedules.
- Modify work/rest schedules according to monitoring requirements.
- Mandate work slowdowns as needed.
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat (i.e., eight fluid ounces must be ingested for approximately every 1 lb of weight lost). The normal thirst mechanism is not sensitive enough to ensure that enough water will be consumed to replace lost perspiration. When heavy sweating occurs, workers should be encouraged to drink more.

- Train workers to recognize the symptoms of heat related illness.

Heat-Related Illness - Symptoms:

- Heat rash may result from continuous exposure to heat or humid air.

- Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include: muscle spasms; pain in the hands, feet and abdomen.

- Heat exhaustion occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include: pale, cool, moist skin; heavy sweating; dizziness; nausea; fainting.

- Heat stroke is the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Competent medical help must be obtained. Signs and symptoms are: red, hot, usually dry skin; lack of or reduced perspiration; nausea; dizziness and confusion; strong, rapid pulse; coma.

The monitoring of personnel wearing protective clothing should commence when the ambient temperature is 70 degrees Fahrenheit or above. For monitoring the body's recuperative ability to excess heat, one or more of the following techniques should be used as a screening mechanism.

- Heart rate may be measured by the radial pulse for 30 seconds as early as possible in the resting period. The rate at the beginning of the rest period should not exceed 100 beats per minute. If the rate is higher, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest periods stay the same. If the pulse rate is 100 beats per minute at the beginning of the nest rest period, the following work cycle should be further shortened by 33%.

- Body temperature may be measured orally with a clinical thermometer as early as possible in the resting period. Oral temperature at the beginning of the rest period should not exceed 99.6 degrees Fahrenheit. If it does, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest period remains the same. However, if the oral temperature exceeds 99.6 degrees Fahrenheit at the beginning of the next period, the work cycle may be further shortened by 33%. Oral temperature should be measured at the end of the rest

period to make sure that it has dropped below 99.6 degrees Fahrenheit. No TurnKey-Benchmark employee will be permitted to continue wearing semi-permeable or impermeable garments when his/her oral temperature exceeds 100.6 degrees Fahrenheit.

10.2 Cold Stress Monitoring

Exposure to cold conditions may result in frostbite or hypothermia, each of which progresses in stages as shown below.

- **Frostbite** occurs when body tissue (usually on the extremities) begins to freeze. The three states of frostbite are:

  1) **Frost nip** - This is the first stage of the freezing process. It is characterized by a whitened area of skin, along with a slight burning or painful sensation. Treatment consists of removing the victim from the cold conditions, removal of boots and gloves, soaking the injured part in warm water (102 to 108 degrees Fahrenheit) and drinking a warm beverage. Do not rub skin to generate friction/ heat.

  2) **Superficial Frostbite** - This is the second stage of the freezing process. It is characterized by a whitish gray area of tissue, which will be firm to the touch but will yield little pain. The treatment is identical for Frost nip.

  3) **Deep Frostbite** - In this final stage of the freezing process the affected tissue will be cold, numb and hard and will yield little to no pain. Treatment is identical to that for Frost nip.

- **Hypothermia** is a serious cold stress condition occurring when the body loses heat at a rate faster than it is produced. If untreated, hypothermia may be fatal. The stages of hypothermia may not be clearly defined or visible at first, but generally include:

  1) Shivering
  2) Apathy (i.e., a change to an indifferent or uncaring mood)
  3) Unconsciousness
  4) Bodily freezing

Employees exhibiting signs of hypothermia should be treated by medical professionals. Steps that can be taken while awaiting help include:

1) Remove the victim from the cold environment and remove wet or frozen clothing. (Do this carefully as frostbite may have started.)

2) Perform active re-warming with hot liquids for drinking (Note: do not give the victim any liquid containing alcohol or caffeine) and a warm water bath (102 to 108 degrees Fahrenheit).

3) Perform passive re-warming with a blanket or jacket wrapped around the victim.

In any potential cold stress situation, it is the responsibility of the Site Health and Safety Officer to encourage the following:

- Education of workers to recognize the symptoms of frostbite and hypothermia.
- Workers should dress warmly, with more layers of thin clothing as opposed to one thick layer.
- Personnel should remain active and keep moving.
- Personnel should be allowed to take shelter in a heated areas, as necessary.
- Personnel should drink warm liquids (no caffeine or alcohol if hypothermia has set in).
- For monitoring the body's recuperation from excess cold, oral temperature recordings should occur:
  - At the Site Safety Technicians discretion when suspicion is based on changes in a worker's performance or mental status.
  - At a workers request.
  - As a screening measure, two times per shift, under unusually hazardous conditions (e.g., wind chill less than 20 degrees Fahrenheit or wind chill less than 30 degrees Fahrenheit with precipitation).
  - As a screening measure whenever anyone worker on site develops hypothermia.

Any person developing moderate hypothermia (a core body temperature of 92 degrees Fahrenheit) will not be allowed to return to work for 48 hours without the recommendation of a qualified medical doctor.

11.0 WORK ZONES AND SITE CONTROL

Work zones around the areas designated for construction activities will be established on a daily basis and communicated to all employees and other site users by the SSHO. It shall be each Contractor's SSHO's responsibility to ensure that all site workers are aware of the work zone boundaries and to enforce proper procedures in each area. The zones will include:

- Exclusion Zone ("Hot Zone"): The area where contaminated materials may be exposed, excavated or handled and all areas where contaminated equipment or personnel may travel. The zone will be delineated by flagging tape. All personnel entering the Exclusion Zone must wear the prescribed level of personal protective equipment identified in Section 7.

- Contamination Reduction Zone: The zone where decontamination of personnel and equipment takes place. Any potentially contaminated clothing, equipment and samples must remain in the Contamination Reduction Zone until decontaminated.

- Support Zone: The part of the site that is considered non-contaminated or "clean." Support equipment will be located in this zone, and personnel may wear normal work clothes within this zone.

In the absence of other task-specific work zone boundaries established by the SSHO, the following boundaries will apply to all investigation and construction activities involving disruption or handling of site soils or groundwater:

- Exclusion Zone: 50 foot radius from the outer limit of the sampling/construction activity.

- Contaminant Reduction Zone: 100 foot radius from the outer limit of the sampling/construction activity.

- Support Zone: Areas outside the Contaminant Reduction Zone.

Access of non-essential personnel to the Exclusion and Contamination Reduction Zones will be strictly controlled by the SSHO. Only personnel who are essential to the completion of the task will be allowed access to these areas and only if they are wearing the prescribed level of protection. Entrance of all personnel must be approved by the SSHO.

The SSHO will maintain a Health and Safety Logbook containing the names of TurnKey-Benchmark workers and their level of protection. The zone boundaries may be changed by the SSHO as environmental conditions warrant, and to respond to the necessary changes in work locations on-site.

12.0 DECONTAMINATION

12.1 Decontamination for TurnKey-Benchmark Employees

The degree of decontamination required is a function of a particular task and the environment within which it occurs. The following decontamination procedure will remain flexible, thereby allowing the decontamination crew to respond appropriately to the changing environmental conditions that may arise at the site. All TurnKey-Benchmark personnel on-site shall follow the procedure below, or the Contractor's procedure (if applicable), whichever is more stringent.

Station 1 - Equipment Drop: Deposit visibly contaminated (if any) re-useable equipment used in the contamination reduction and exclusion zones (tools, containers, monitoring instruments, radios, clipboards, etc.) on plastic sheeting.

Station 2 - Boots and Gloves Wash and Rinse: Scrub outer boots and outer gloves.

Station 3 - Tape, Outer Boot and Glove Removal: Remove tape, outer boots and gloves. Deposit tape and gloves in waste disposal container.

Station 4 - Canister or Mask Change: If worker leaves exclusive zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot cover donned, and worker returns to duty.

Station 5 - Outer Garment/Face Piece Removal: Protective suit removed and deposited in separate container provided by Contractor. Face piece or goggles are removed if used. Avoid touching face with fingers. Face piece and/or goggles deposited on plastic sheet. Hard hat removed and placed on plastic sheet.

Station 6 - Inner Glove Removal: Inner gloves are the last personal protective equipment to be removed. Avoid touching the outside of the gloves with bare fingers. Dispose of these gloves in waste disposal container.

Following PPE removal, personnel shall wash hands, face and forearms with absorbent wipes. If field activities proceed for a duration of 6 consecutive months or longer, shower facilities will be provided for worker use in accordance with OSHA 29 CFR

1910.120(n).

12.2 Decontamination for Medical Emergencies

In the event of a minor, non-life threatening injury, personnel should follow the decontamination procedures as defined, and then administer first-aid.

In the event of a major injury or other serious medical concern (e.g., heat stroke), immediate first-aid is to be administered and the victim transported to the hospital in lieu of further decontamination efforts unless exposure to a site contaminant would be considered "Immediately Dangerous to Life or Health."

12.3 Decontamination of Field Equipment

Decontamination of heavy equipment will be conducted by the Contractor in accordance with his approved Health and Safety Plan in the Contamination Reduction Zone. As a minimum, this will include manually removing heavy soil contamination, followed by steam cleaning on an impermeable pad.

Decontamination of all tools used for sample collection purposes will be conducted by TurnKey-Benchmark personnel. It is expected that all tools will be constructed of nonporous, nonabsorbent materials (i.e., metal), which will aid in the decontamination effort. Any tool or part of a tool made of porous, absorbent material (i.e., wood) will be placed into suitable containers and prepared for disposal.

Decontamination of bailers, split-spoons, spatula knives, and other tools used for environmental sampling and examination shall be as follows:

- Disassemble the equipment.
- Water wash to remove all visible foreign matter.
- Wash with detergent.
- Rinse all parts with distilled-deionized water.
- Allow to air dry.
- Wrap all parts in aluminum foil or polyethylene.

13.0 CONFINED SPACE ENTRY

OSHA 29 CFR 1910.146 identifies a confined space as a space that is large enough and so configured that an employee can physically enter and do assigned work, has limited or restricted means for entry and exit, and is not intended for continuous employee occupancy. Confined spaces include, but are not limited to, trenches, storage tanks, process vessels, pits, sewers, tunnels, underground utility vaults, pipelines, sumps, wells, and excavations.

Confined space entry by TurnKey-Benchmark employees is not anticipated to be necessary to complete the investigation and remedial activities identified in Section 2.0. In the event that the scope of work changes or confined space entry appears necessary, the Project Manager will be consulted to determine if feasible engineering alternatives to confined space entry can be implemented. If confined space entry by TurnKey-Benchmark employees cannot be avoided through reasonable engineering measures, task-specific confined space entry procedures will be developed and a confined-space entry permit will be issued through TurnKey-Benchmark's corporate Health and Safety Director. TurnKey-Benchmark employees shall not enter a confined space without these procedures and permits in place.

14.0 FIRE PREVENTION AND PROTECTION

14.1 General Approach

Recommended practices and standards of the National Fire Protection Association (NFPA) and other applicable regulations will be followed in the development and application of Project Fire Protection Programs. When required by regulatory authorities, the project management will prepare and submit a Fire Protection Plan for the approval of the contracting officers, authorized representative or other designated official. Essential considerations for the Fire Protection Plan will include:

- Proper site preparation and safe storage of combustible and flammable materials.
- Availability of coordination with private and public fire authorities.
- Adequate job-site fire protection and inspections for fire prevention.
- Adequate indoctrination and training of employees.

14.2 Equipment and Requirements

Fire extinguishers will be provided by each Contractor and are required on all heavy equipment and in each field trailer. Fire extinguishers will be inspected, serviced, and maintained in accordance with the manufacturer's instructions. As a minimum, all extinguishers shall be checked monthly and weighed semi-annually, and recharged if necessary. Recharge or replacement shall be mandatory immediately after each use.

14.3 Flammable and Combustible Substances

All storage, handling or use of flammable and combustible substances will be under the supervision of qualified persons. All tanks, containers and pumping equipment, whether portable or stationary, used for the storage and handling of flammable and combustible liquids, will meet the recommendations of the NFPA.

14.4 Hot Work

If the scope of work necessitates welding or blowtorch operation, the hot work permit presented in Appendix B will be completed by the SSHO and reviewed/issued by the Project Manager.

15.0 EMERGENCY INFORMATION

In accordance with OSHA 29 CFR Part 1910, an Emergency Response Plan is attached to this HASP as Appendix A. The hospital route map is presented as Figure A-1.

16.0 REFERENCES

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

TABLES

TABLE 1

CONSTITUENTS OF POTENTIAL CONCERN

Health and Safety Plan
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Parameter[1]	CAS No.	Maximum Detected Concentration [2]			
		Groundwater [3] (mg/L)	Surface Soil/Fill (mg/kg)	Sub-Surface Soil/Fill (mg/kg)	LNAPL (mg/kg)
Volatile Organic Compounds (VOCs):					
Benzene	71-43-2	570	0.0047	2800	14,000
Ethylbenzene	100-41-4	25	*Note 4*	170	4,600
Toluene	108-88-3	77	0.001	1700	5,700
Xylene, Total	1330-20-7	390	0.0017	1100	31,000
Polycyclic Aromatic Hydrocarbons (PAHs):					
Acenaphthene	83-32-9	0.36	*Note 4*	*Note 4*	400
Acenaphthylene	208-96-8	0.09	*Note 4*	*Note 4*	570
Anthracene	120-12-7	0.27	0.23	*Note 4*	240
Benz(a)anthracene	56-55-3	0.28	0.7	*Note 4*	27
Benzo(a)pyrene	50-32-8	0.23	0.56	*Note 4*	ND
Benzo(b)fluoranthene	205-99-2	0.069	0.86	*Note 4*	12
Benzo(ghi)perylene	191-24-2	0.033	0.35	*Note 4*	ND
Benzo(k)fluoranthene	207-08-9	0.071	0.38	*Note 4*	ND
Chrysene	218-01-9	0.26	0.67	*Note 4*	17
Dibenz(ah)anthracene	53-70-3	0.022	0.08	*Note 4*	ND
Fluoranthene	206-44-0	0.76	1.3	*Note 4*	200
Fluorene	86-73-7	1.7	*Note 4*	*Note 4*	9,600
Indeno(1,2,3-cd)pyrene	193-39-5	0.04	0.36	*Note 4*	ND
Naphthalene	91-20-3	280	0.29	1100	49,000
Phenanthrene	85-01-8	0.94	0.87	*Note 4*	800
Pyrene	129-00-0	0.41	0.87	*Note 4*	220
Inorganic Compounds:					
Arsenic	7440-38-2	70.6	30.5	17.7	28.2
Cadmium	7440-43-9	20.6	9.7	3.7	0.03
Chromium	7440-47-3	306	1190	508	1.7
Lead	7439-92-1	26.3	160	224	0.34
Mercury	7439-97-6	0.22	4.2	0.99	ND

Notes:

1. Constituents were identified as parameters of interest during the RFI for the Benzol Plant Tank Storage Area (SWMU P-11).
2. Maximum detected concentrations as presented in the Final RFI Report for the Benzol Plant Tank Storage Area (SWMU P-11).
3. Groundwater analytical data collected from the Coke Oven Area of the Former Bethlehem Steel Lackawanna Coke Division Site.
4. Compounds with a detection frequency greater than 5% and a maximum concentration greater than the screening criteria were retained as potential parameters of interest during the RFI (Reference 1).

Acronyms:

NA = Not analyzed.
ND = Parameter not detected above method detection limits.

TABLE 2

TOXICITY DATA FOR CONSTITUENTS OF POTENTIAL CONCERN

Health and Safety Plan
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Parameter	Synonyms	CAS No.	Code	Concentration Limits [1]		
				PEL	TLV	IDLH
Volatile Organic Compounds (VOCs): ppm						
Benzene	Benzol, Phenyl hydride	71-43-2	Ca	1	0.5	500
Ethylbenzene	Ethylbenzol, Phenylethane	100-41-4	*none*	100	100	800
Toluene	Methyl benzene, Methyl benzol	108-88-3	C-300	200	50	500
Xylene, Total	o-, m-, p-isomers	1330-20-7	*none*	100	100	900
Polycyclic Aromatic Hydrocarbons (PAHs)[2] : ppm						
Acenaphthene	*none*	83-32-9	*none*	--	--	--
Acenaphthylene	*none*	208-96-8	*none*	--	--	--
Anthracene	*none*	120-12-7	*none*	--	--	--
Benz(a)anthracene	*none*	56-55-3	*none*	--	--	--
Benzo(a)pyrene	*none*	50-32-8	*none*	--	--	--
Benzo(b)fluoranthene	*none*	205-99-2	*none*	--	--	--
Benzo(ghi)perylene	*none*	191-24-2	*none*	--	--	--
Benzo(k)fluoranthene	*none*	207-08-9	*none*	--	--	--
Chrysene	*none*	218-01-9	*none*	--	--	--
Dibenz(ah)anthracene	*none*	53-70-3	*none*	--	--	--
Fluoranthene	*none*	206-44-0	*none*	--	--	--
Fluorene	*none*	86-73-7	*none*	--	--	--
Indeno(1,2,3-cd)pyrene	*none*	193-39-5	*none*	--	--	--
Naphthalene	Naphthalin, Tar camphor, White tar	91-20-3	*none*	10	10	250
Phenanthrene	*none*	85-01-8	*none*	--	--	--
Pyrene	*none*	129-00-0	*none*	--	--	--
Inorganic Compounds: mg/m³						
Arsenic	*none*	7440-38-2	Ca	0.01	0.01	5
Cadmium	*none*	7440-43-9	Ca	0.005	0.01	9
Chromium	*none*	7440-47-3	*none*	1	0.5	250
Lead	*none*	7439-92-1	*none*	0.05	0.15	100
Mercury	*none*	7439-97-6	C-0.1	0.1	0.05	10

Notes:

1. Concentration limits as reported by NIOSH Pocket Guide to Chemical Hazards, February 2004 (NIOSH Publication No. 97-140, fourth printing with changes and updates).
2. Individual parameters listed are those most commonly detected at steel/coke manufacturing sites.
3. " -- " = concentration limit not available; exposure should be minimized to the extent feasible through appropriate engineering controls & PPE.

Explanation:

Ca = NIOSH considers constituent to be a potential occupational carcinogen.
C-## = Ceiling Level equals the maximum exposure concentration allowable during the work day.
IDLH = Immediately Dangerous to Life or Health.
ND indicates that an IDLH has not as yet been determined.
TLV = Threshold Limit Value, established by American Conference of Industrial Hygienists (ACGIH), equals the max. exposure concentration allowable for 8 hr/d @ 40 hr/wk.
TLVs are the amounts of chemicals in the air that almost all healthy adult workers are predicted to be able to tolerate without adverse effects. There are three types.
TLV-TWA (TLV-Time-Weighted Average) which is averaged over the normal eight-hour day/forty-hour work week. (Most TLVs.)
TLV-STEL or Short Term Exposure Limits are 15 minute exposures that should not be exceeded for even an instant. It is not a stand alone value but is accompanied by the TLV-TWA.
TLV-C or Ceiling limits are the concentration that should not be exceeded during any part of the working exposure.
Unless the initials "STEL" or "C" appear in the Code column, the TLV value should be considered to be the eight-hour TLV-TWA.
PEL = Permissible Exposure Limit, established by OSHA, equals the maximium exposure conconcentration allowable for 8 hours per day @ 40 hours per week

TABLE 3

POTENTIAL ROUTES OF EXPOSURE TO CONSTITUENTS OF POTENTIAL CONCERN

Health and Safety Plan
Tecumseh Redevelopment, Inc
Lackawanna, New York

Activity [1]	Direct Contact with Soil/Fill	Inhalation of Vapors or Dust	Direct Contact with Groundwater
1. Soil/Fill Excavation	x	x	
2. Soil/Fill Sampling	**x**	**x**	
3. Surface Water Management			**x**
4. Sediment and Surface Water Sampling			**x**
5. Groundwater Monitoring Well Installation/Sampling	**x**	**x**	**x**
6. Groundwater Remediation	**x**	**x**	**x**
7. Subgrade Work	**x**	**x**	
8. Cover Soil Placement	**x**	**x**	

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

TABLE 4

REQUIRED LEVELS OF PROTECTION
FOR REMEDIAL ACTIVITIES

Health and Safety Plan
Tecumseh Redevelopment, Inc
Lackawanna, New York

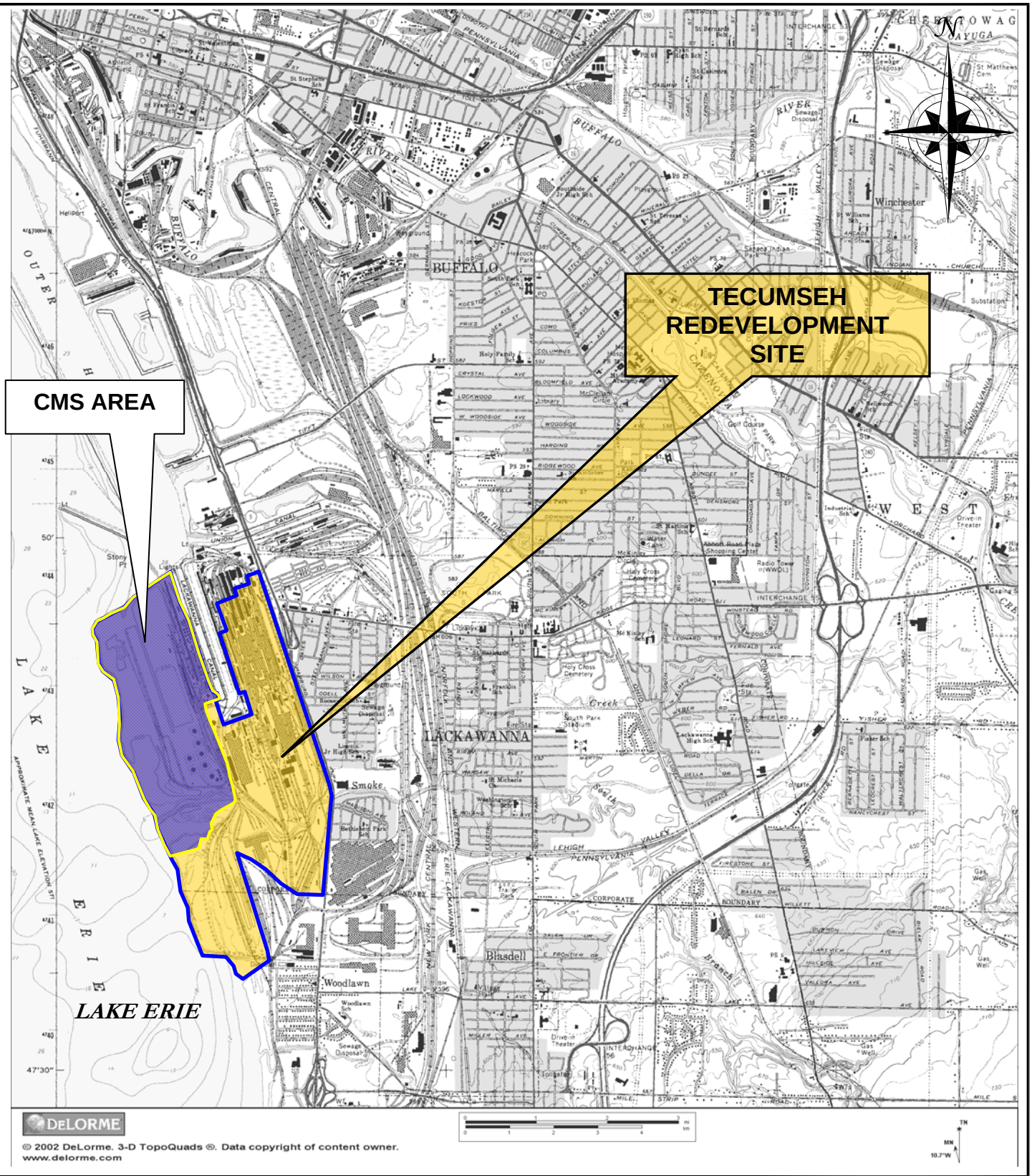
Activity	Respiratory Protection [1]	Clothing	Gloves [2]	Boots [2, 3]	Other Required PPE/Modifications [2, 4]
1. Soil/Fill Excavation	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L	outer: L inner: STSS	HH SGSS
2. Soil/Fill Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L	outer: L inner: STSS	HH SGSS
3. Surface Water Management	Level D (upgrade to Level C if necessary)	Poly-coated Tyvek or S	L/N	outer: L inner: STSS	HH SGSS
4. Sediment and Surface Water Sampling	Level D (upgrade to Level C if necessary)	Poly-coated Tyvek or S	L/N	outer: L inner: STSS	HH SGSS
5. Groundwater Monitoring Well Installation/Sampling	Level D (upgrade to Level C if necessary)	Poly-coated Tyvek or S	L/N	outer: L inner: STSS	HH SGSS
6. Groundwater Remediation	Level D (upgrade to Level C if necessary)	Poly-coated Tyvek or S	L	outer: L inner: STSS	HH SGSS
7. Subgrade Work	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L	outer: L inner: STSS	HH SGSS
8. Cover Soil Placement	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L	outer: L inner: STSS	HH SGSS

Notes:

1. Respiratory equipment shall conform to guidelines presented in Section 7.0 of this HASP. The Level C requirement is an air-purifying respirator equiped with organic compound/acid gas/dust cartridge.
2. HH = hardhat; L= Latex; L/N = latex inner glove, nitrile outer glove; N = Nitrile; S = Saranex; SG = safety glasses; SGSS = safety glasses with sideshields; STSS = steel toe safety shoes.
3. Latex outer boot (or approved overboot) required whenever contact with contaminated materials may occur. SSHO may downgrade to STSS (steel-toed safety shoes) if contact will be limited to cover/replacement soils.
4. Dust masks shall be donned as directed by the SSHO (site safety and health officer) or site safety technician whenever potentially contaminated airborne particulates (i.e., dust) are present in significant amounts in the breathing zone. Goggles may be substituted with safety glasses w/side-shields whenever contact with contaminated liquids is not anticipated.

FIGURES

FIGURE 1



TurnKey Environmental Restoration, LLC

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

PROJECT NO.: 0071-007-110

DATE: APRIL 2010

DRAFTED BY: AJZ

SITE LOCATION AND VICINITY MAP

HEALTH AND SAFETY PLAN

TECUMSEH REDEVELOPMENT SITE
LACKAWANNA, NEW YORK

PREPARED FOR
TECUMSEH REDEVELOPMENT, INC.

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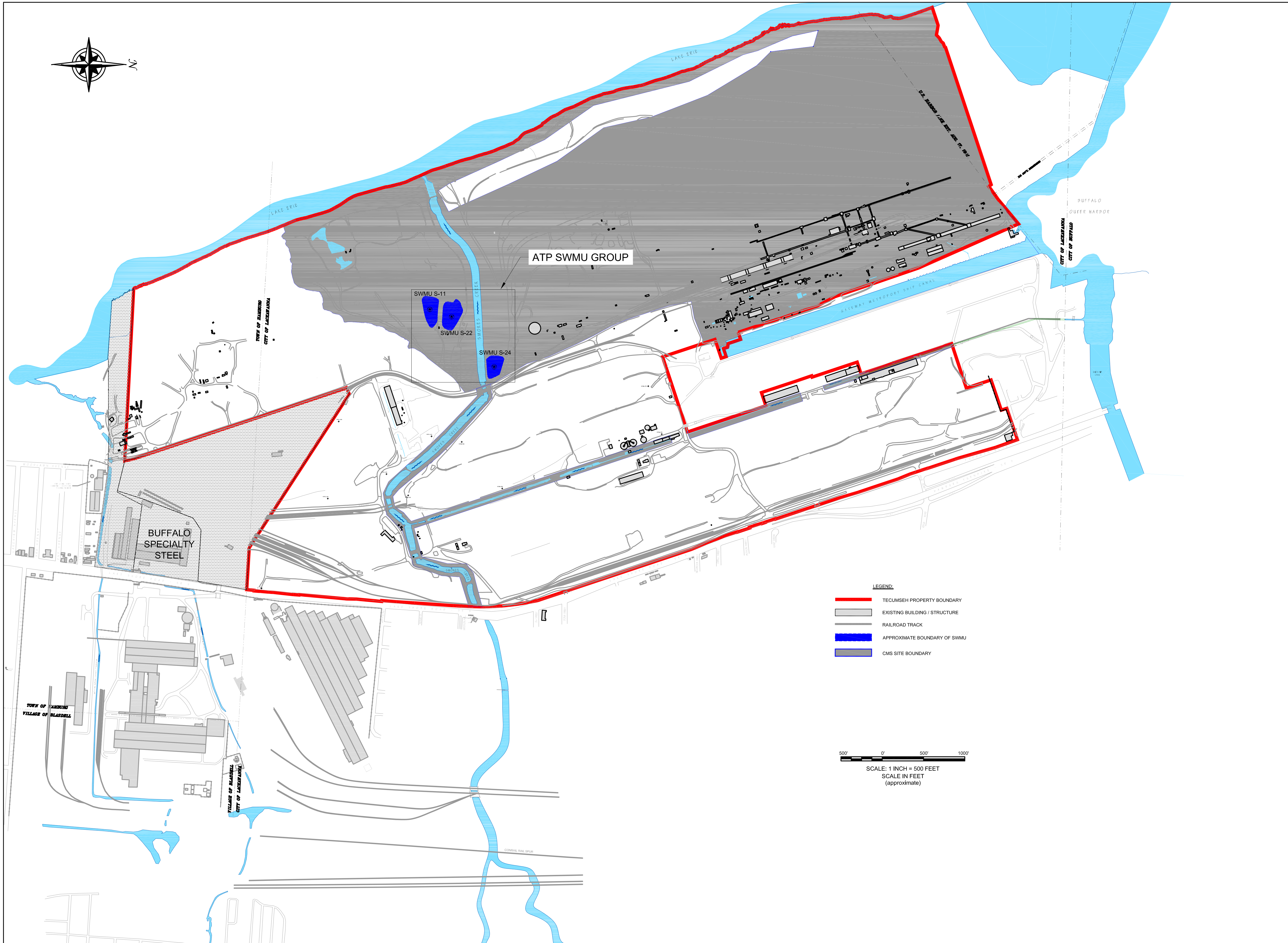

TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 HAMBURG TURNPIKE
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(716) 856-0599

JOB NO.: 0071-007-110

REVISIONS

NO.	BY	DATE	REMARKS

SEAL

DRAWN BY: BCH
DATE: APRIL 2010
CHECKED BY:
APPROVED BY:

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SITE PLAN

HEALTH AND SAFETY PLAN
TECUMSEH REDEVELOPMENT SITE
LACKAWANNA, NEW YORK

PREPARED FOR
TECUMSEH REDEVELOPMENT, INC.

FIGURE 2

APPENDIX A

EMERGENCY RESPONSE PLAN

EMERGENCY RESPONSE PLAN

TECUMSEH REDEVELOPMENT SITE

LACKAWANNA, NEW YORK

April 2010 0071-008-111

Prepared for:

Tecumseh Redevelopment, Inc.

Prepared by:

TurnKey Environmental Restoration, LLC

In association with:

Benchmark Environmental Engineering & Science, PLLC

TECUMSEH REDEVELOPMENT SITE
HEALTH AND SAFETY PLAN
APPENDIX A: EMERGENCY RESPONSE PLAN

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LIST OF FIGURES

1.0 GENERAL

This report presents the site-specific Emergency Response Plan (ERP) referenced in the Health and Safety Plan (HASP) prepared for CMS investigation and remedial activities conducted at the Tecumseh Redevelopment Site (former Bethlehem Steel Lackawanna Works), Lackawanna, New York. This appendix of the HASP describes potential emergencies that may occur at the Site; procedures for responding to those emergencies; roles and responsibilities during emergency response; and training all workers must receive in order to follow emergency procedures. This ERP also describes the provisions this Site has made to coordinate its emergency response planning with other contractors on-site and with off-site emergency response organizations.

This ERP is consistent with the requirements of 29 CFR 1910.120(l) and provides the following site-specific information:

- Pre-emergency planning.
- Personnel roles, lines of authority, and communication.
- Emergency recognition and prevention.
- Safe distances and places of refuge.
- Evacuation routes and procedures.
- Decontamination procedures.
- Emergency medical treatment and first aid.
- Emergency alerting and response procedures.
- Critique of response and follow-up.
- Emergency personal protective equipment (PPE) and equipment.

2.0 PRE-EMERGENCY PLANNING

This Site has been evaluated for potential emergency occurrences, based on site hazards, the required work tasks, the site topography, and prevailing weather conditions. The results of that evaluation indicate the potential for the following site emergencies to occur at the locations indicated.

Type of Emergency:

1. Medical, due to physical injury
2. Fire

Source of Emergency:

1. Slip/trip/fall
2. Fire

Location of Source:

1. Non-specific

3.0 ON-SITE EMERGENCY RESPONSE EQUIPMENT

Emergency procedures may require specialized equipment to facilitate worker rescue, contamination control and reduction, or post-emergency clean up. Emergency response equipment available on the Site is listed below. The equipment inventory and storage locations are based on the potential emergencies described above. This equipment inventory is designed to meet on-site emergency response needs and any specialized equipment needs that off-site responders might require because of the hazards at this Site but not ordinarily stocked.

Any additional personal protective equipment (PPE) required and stocked for emergency response is also listed in below. During an emergency, the Emergency Response Coordinator (ERC) is responsible for specifying the level of PPE required for emergency response. At a minimum, PPE used by emergency responders will comply with Section 7.0, Personal Protective Equipment, of this HASP. Emergency response equipment is inspected at regular intervals and maintained in good working order. The equipment inventory is replenished as necessary to maintain response capabilities.

Emergency Equipment	Quantity	Location
Spill Response Kit	2	Benzol Yard ICM Treatment Building; Wastewater Treatment Plant Garage
First Aid Kit	3	Site Vehicle; Benzol Yard ICM Treatment Building; Field Office in Coke Oven Office Building
Chemical Fire Extinguisher	2	All heavy equipment and Site Vehicle; Field Office in Coke Oven Office Building

Emergency PPE	Quantity	Location
Full-face respirator	1 for each worker	Site Vehicle
Chemical-resistant suits	4 (minimum)	Site Vehicle

4.0 EMERGENCY PLANNING MAPS

An area-specific map of the Tecumseh Redevelopment Site will be developed on a daily basis during performance of field activities. The map will be marked to identify critical on-site emergency planning information, including: emergency evacuation routes, a place of refuge, an assembly point, and the locations of key site emergency equipment. Site zone boundaries will be shown to alert responders to known areas of contamination. There are no major topographical features; however, the direction of prevailing winds/weather conditions that could affect emergency response planning are also marked on the map. The map will be posted at site-designated place of refuge and inside the TurnKey personnel field vehicle.

5.0 EMERGENCY CONTACTS

The following identifies the emergency contacts for this ERP.

Emergency Telephone Numbers:

Project Manager: ***Paul H. Werthman***
Work: (716) 856-0599
Mobile: (716) 998-4151

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

Site Safety and Health Officer (SSHO): ***Richard L. Dubisz***
Work: (716) 856-0635
Mobile: (716) 998-4334

Alternate SSHO: ***Thomas Behrendt***
Work: (716) 856-0635
Mobile: (716) 818-8358

MERCY HOSPITAL (ER):	(716) 826-7000
FIRE:	911
AMBULANCE:	911
BUFFALO POLICE:	911
STATE EMERGENCY RESPONSE HOTLINE:	(800) 457-7362
NATIONAL RESPONSE HOTLINE:	(800) 424-8802
NYSDOH:	(716) 847-4385
NYSDEC:	(716) 851-7220
NYSDEC 24-HOUR SPILL HOTLINE:	(800) 457-7252

The Site location is:
Tecumseh Redevelopment, Inc
1951 Hamburg Turnpike
Lackawanna, New York 14218
Site Phone Number: (Insert Cell Phone or Field Trailer): _____

6.0 EMERGENCY ALERTING & EVACUATION

Internal emergency communication systems are used to alert workers to danger, convey safety information, and maintain site control. Any effective system can be employed. Two-way radio headsets or field telephones are often used when work teams are far from the command post. Hand signals and air-horn blasts are also commonly used. Every system must have a backup. It shall be the responsibility of each contractor's SSHO to ensure an adequate method of internal communication is understood by all personnel entering the site. Unless all personnel are otherwise informed, the following signals shall be used.

1) Emergency signals by portable air horn, siren, or whistle: two short blasts, personal injury; continuous blast, emergency requiring site evacuation.

2) Visual signals: hand gripping throat, out of air/cannot breathe; hands on top of head, need assistance; thumbs up, affirmative/ everything is OK; thumbs down, no/negative; grip partner's wrist or waist, leave area immediately.

If evacuation notice is given, site workers leave the worksite with their respective buddies, if possible, by way of the nearest exit. Emergency decontamination procedures detailed in Section 12.0 of the HASP are followed to the extent practical without compromising the safety and health of site personnel. The evacuation routes and assembly area will be determined by conditions at the time of the evacuation based on wind direction, the location of the hazard source, and other factors as determined by rehearsals and inputs from emergency response organizations. Wind direction indicators are located so that workers can determine a safe up wind or cross wind evacuation route and assembly area if not informed by the emergency response coordinator at the time the evacuation alarm sounds. Since work conditions and work zones within the site may be changing on daily basis, it shall be the responsibility of the construction Site Health and Safety Officer to review evacuation routes and procedures as necessary and to inform all TurnKey-Benchmark workers of any changes.

Personnel exiting the site will gather at a designated assembly point. To determine that everyone has successfully exited the site, personnel will be accounted for at the assembly site. If any worker cannot be accounted for, notification is given to the SSHO (***Thomas***

Behrendt or ***Richard Dubisz***) so that appropriate action can be initiated. Contractors and subcontractors on this site have coordinated their emergency response plans to ensure that these plans are compatible and that source(s) of potential emergencies are recognized, alarm systems are clearly understood, and evacuation routes are accessible to all personnel relying upon them.

7.0 EXTREME WEATHER CONDITIONS

In the event of adverse weather conditions, the SSHO in conjunction with the Contractor's SSHO will determine if engineering operations can continue without sacrificing the health and safety of site personnel. Items to be considered prior to determining if work should continue include but are not limited to:

- Potential for heat/cold stress.
- Weather-related construction hazards (i.e., flooding or wet conditions producing undermining of structures or sheeting, high wind threats, etc).
- Limited visibility.
- Potential for electrical storms.
- Limited site access/egress (e.g., due to heavy snow)

8.0 EMERGENCY MEDICAL TREATMENT & FIRST AID

Personnel Exposure:

The following general guidelines will be employed in instances where health impacts threaten to occur acute exposure is realized:

- Skin Contact: Use copious amounts of soap and water. Wash/rinse affected area for at least 15 minutes. Decontaminate and provide medical attention. Eyewash stations will be provided on site. If necessary, transport to Mercy Hospital.

- Inhalation: Move to fresh air and, if necessary, transport to Mercy Hospital.

- Ingestion: Decontaminate and transport to Mercy Hospital.

Personal Injury:

Minor first-aid will be applied on-site as deemed necessary. In the event of a life threatening injury, the individual should be transported to Mercy Hospital via ambulance. The SSHO will supply available chemical specific information to appropriate medical personnel as requested.

First aid kits will conform to Red Cross and other applicable good health standards, and shall consist of a weatherproof container with individually sealed packages for each type of item. First aid kits will be fully equipped before being sent out on each job and will be checked weekly by the SSHO to ensure that the expended items are replaced.

Directions to Mercy Hospital (see Figure A-1):

The following directions describe the best route to Mercy Hospital:

- From Gate 2, proceed onto the Hamburg Turnpike (SR 5).

- Proceed east on Hamburg Turnpike (SR 5) to the Tifft Street Exit and turn right onto Tifft Street.

- Take Tifft Street east crossing South Park Avenue and McKinley Parkway. Bear left on Edgewood Avenue.

- Turn right on Abbott Road and Mercy Hospital will be on right hand side. Follow signs to emergency room (ER).

9.0 EMERGENCY RESPONSE CRITIQUE & RECORD KEEPING

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

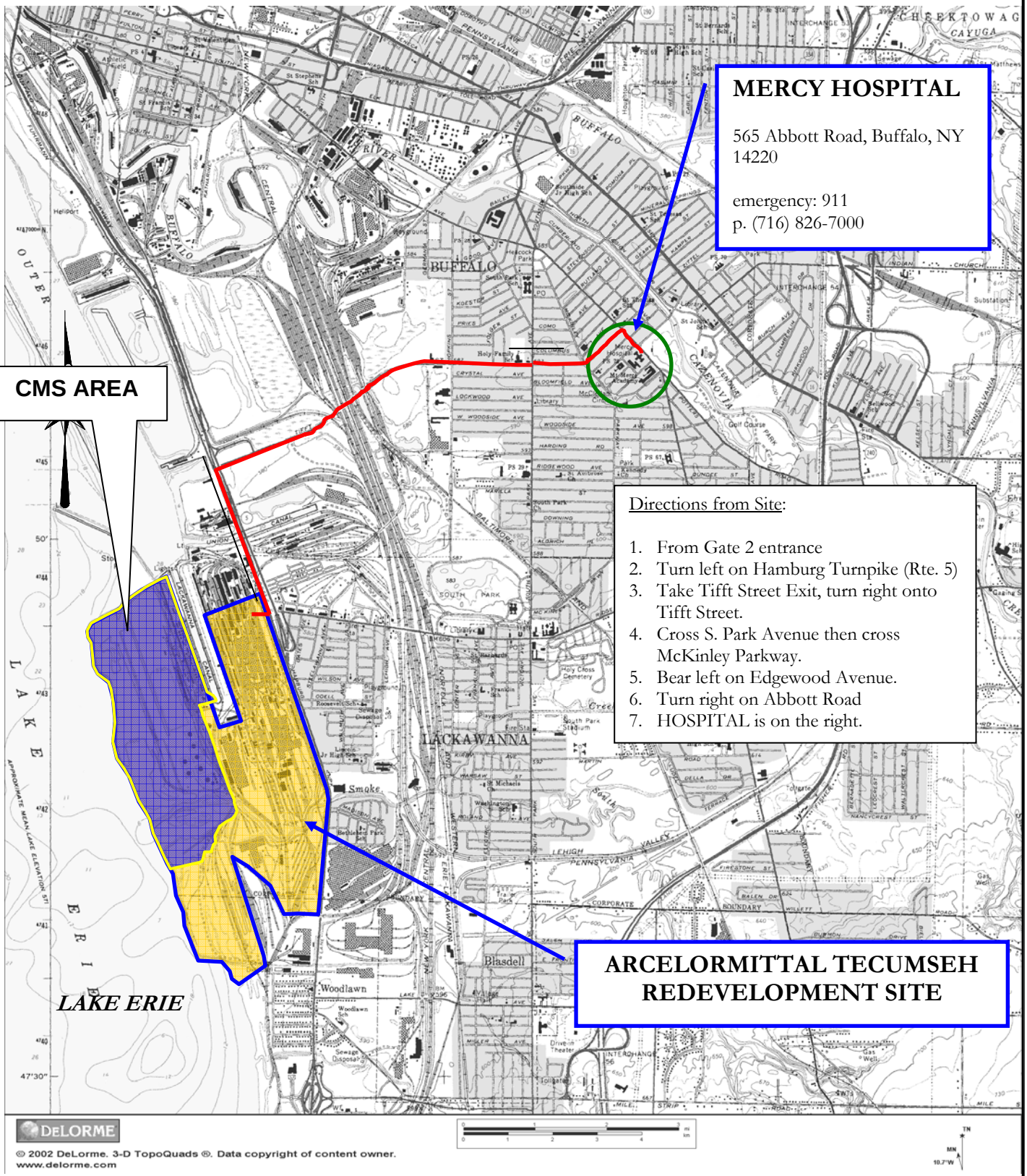
- Occupational injuries and illnesses.
- Accident investigations.
- Reports to insurance carrier or State compensation agencies.
- Reports required by the client.
- Records and reports required by local, state, federal and/or international agencies.
- Property or equipment damage.
- Third party injury or damage claims.
- Environmental testing logs.
- Explosive and hazardous substances inventories and records.
- Records of inspections and citations.
- Safety training.

10.0 EMERGENCY RESPONSE TRAINING

All persons who enter the worksite, including visitors, shall receive a site-specific briefing about anticipated emergency situations and the emergency procedures by the SSHO. Where this site relies on off-site organizations for emergency response, the training of personnel in those off-site organizations has been evaluated and is deemed adequate for response to this site.

FIGURES

FIGURE A-1



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TurnKey Environmental Restoration, LLC
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BUFFALO, NEW YORK 14210
(716) 856-0635

PROJECT NO.: 0071-006-110

DATE: DECEMBER 2008

DRAFTED BY: JCT

HOSPITAL ROUTE MAP

HEALTH AND SAFETY PLAN FOR CMS

TECUMSEH REDEVELOPMENT SITE
LACKAWANNA, NEW YORK

PREPARED FOR
ARCELORMITTAL TECUMSEH REDEVELOPMENT, INC.

APPENDIX B

HOT WORK PERMIT FORM

HOT WORK PERMIT

PART 1 - INFORMATION

Issue Date:	
Date Work to be Performed: Start:	Finish (permit terminated):
Performed By:	
Work Area:	
Object to be Worked On:	

PART 2 - APPROVAL

(for 1, 2 or 3: mark Yes, No or NA)*

Will working be on or in:	Finish (permit terminated):	
1. Metal partition, wall, ceiling covered by combustible material?	yes	no
2. Pipes, in contact with combustible material?	yes	no
3. Explosive area?	yes	no

* = If any of these conditions exist (marked "yes"), a permit will not be issued without being reviewed and approved by Thomas H. Forbes (Corporate Health and Safety Director). Required Signature below.

PART 3 - REQUIRED CONDITIONS**

(Check all conditions that must be met)

	PROTECTIVE ACTION		PROTECTIVE EQUIPMENT
	Specific Risk Assessment Required		Goggles/visor/welding screen
	Fire or spark barrier		Apron/fireproof clothing
	Cover hot surfaces		Welding gloves/gauntlets/other:
	Move movable fire hazards, specifically		Wellintons/Knee pads
	Erect screen on barrier		Ear protection: Ear muffs/Ear plugs
	Restrict Access		B.A.: SCBA/Long Breather
	Wet the ground		Respirator: Type:
	Ensure adequate ventilation		Cartridge:
	Provide adequate supports		Local Exhaust Ventilation
	Cover exposed drain/floor or wall cracks		Extinguisher/Fire blanket
	Fire watch (must remain on duty during duration of permit)		Personal flammable gas monitor
	Issue additional permit(s):		

Other precautions:

** Permit will not be issued until these conditions are met.

SIGNATURES

Orginating Employee:	Date:
Project Manager:	Date:
Part 2 Approval:	Date:

APPENDIX C

NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN

APPENDIX 1A

New York State Department of Health
Generic Community Air Monitoring Plan

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate NYSDEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

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

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

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

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