

APPENDIX A

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 5

IN THE MATTER OF:)

Wpsc Manitowoc MGP Site)
Manitowoc, Wisconsin)

Wisconsin Public Service Corporation)

Respondent)

Proceeding Under Sections 104, 107, and)
122 of the Comprehensive, Environmental)
Response, Compensation, and Liability Act,)
42 U.S.C. §§ 9604, 9607 and 9622)
_____)

CERCLA Docket No. _____

V-W-19-C-005

**ADMINISTRATIVE SETTLEMENT
AGREEMENT AND ORDER ON
CONSENT FOR REMEDIAL DESIGN**

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I. JURISDICTION AND GENERAL PROVISIONS

1. This Administrative Settlement Agreement and Order on Consent (“Settlement”) is entered into voluntarily by the United States Environmental Protection Agency (“EPA”) and Wisconsin Public Service Corporation (“WPSC or Respondent”). This Settlement provides for the performance of a Remedial Design (“RD”) by Respondent and the payment of certain response costs incurred by the United States at or in connection with the “WPSC Manitowoc MGP Site” (the “Site”) generally located at 402 North Tenth Street, Manitowoc, Manitowoc County, Wisconsin.

2. This Settlement is issued under the authority vested in the President of the United States by Sections 104, 107, and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9604, 9607, and 9622 (“CERCLA”). This authority was delegated to the EPA Administrator on January 23, 1987 by Executive Order 12580, 52 Fed. Reg. 2923 (Jan. 29, 1987), and further delegated to the EPA Regional Administrators by EPA Delegation Nos. 14-14C (Administrative Actions Through Consent Orders, Jan. 18, 2017) and 14-14D (Cost Recovery Non-Judicial Agreements and Administrative Consent Orders, Jan. 18, 2017). These authorities were further redelegated by the Regional Administrator of EPA Region 5 to the Director, Superfund Division, EPA, Region 5 by Regional Delegation No. 14-14-C on May 2, 1996.

3. In accordance with Section 122(j)(1) of CERCLA, 42 U.S.C. § 9622(j)(1), EPA notified the National Oceanic and Atmospheric Administration (“NOAA”) and the U.S. Department of the Interior (“DOI”) on September 27, 2018 of negotiations with the potentially responsible party regarding the release of hazardous substances that may have resulted in injury to the natural resources under federal trusteeship and encouraged the trustee(s) to participate in the negotiation of this Settlement.

4. EPA and Respondent recognize that this Settlement has been negotiated in good faith and that the actions undertaken by Respondent in accordance with this Settlement do not constitute an admission of any liability. Respondent does not admit, and retains the right to controvert in any subsequent proceedings other than proceedings to implement or enforce this Settlement, the validity of the findings of facts, conclusions of law, and determinations in Sections IV (Findings of Fact) and V (Conclusions of Law and Determinations) of this Settlement. Respondent agrees to comply with and be bound by the terms of this Settlement and further agree that it will not contest the basis or validity of this Settlement or its terms.

II. PARTIES BOUND

5. This Settlement is binding upon EPA and upon Respondent and its successors, and assigns. Any change in ownership or corporate status of the Respondent including, but not limited to, any transfer of assets or real or personal property shall not alter the Respondent’s responsibilities under this Settlement.

6. The undersigned representative of Respondent certifies that he or she is fully authorized to enter into the terms and conditions of this Settlement and to execute and legally bind Respondent to this Settlement.

7. Respondent shall provide a copy of this Settlement to each contractor hired to perform the Work required by this Settlement and to each person representing Respondent with respect to the Site or the Work, and shall condition all contracts entered into under this Settlement on performance of the Work in conformity with the terms of this Settlement. Respondent or its contractors shall provide written notice of the Settlement to all subcontractors hired to perform any portion of the Work required by this Settlement. Respondent shall nonetheless be responsible for ensuring that its contractors and subcontractors perform the Work in accordance with the terms of this Settlement.

III. DEFINITIONS

8. Unless otherwise expressly provided in this Settlement, terms used in this Settlement that are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Settlement or its attached appendices, the following definitions shall apply:

“CERCLA” shall mean the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601-9675.

“Day” or “day” shall mean a calendar day. In computing any period of time under this Settlement, where the last day would fall on a Saturday, Sunday, or federal or State holiday, the period shall run until the close of business of the next working day.

“Effective Date” shall mean the effective date of this Settlement as provided in Section XXVI.

“EPA” shall mean the United States Environmental Protection Agency and its successor departments, agencies, or instrumentalities.

“EPA Hazardous Substance Superfund” shall mean the Hazardous Substance Superfund established by the Internal Revenue Code, 26 U.S.C. § 9507.

“Future Oversight Costs” shall mean that portion of Future Response Costs that EPA incurs in monitoring and supervising Respondent’s performance of the Work to determine whether such performance is consistent with the requirements of this Settlement, including costs incurred in reviewing deliverables submitted pursuant to this Settlement, as well as costs incurred in overseeing implementation of the Work; however, Future Oversight Costs do not include, *inter alia*: the costs incurred by EPA pursuant to Section VIII (Property Requirements), ¶ 82 (Access to Financial Assurance), ¶ 14 (Emergencies and Releases), and ¶ 59 (Work Takeover), or the costs incurred by the United States in enforcing the terms of this Settlement, including all costs incurred pursuant to Section XIII (Dispute Resolution) and all litigation costs.

“Future Response Costs” shall mean all costs, including, but not limited to, direct and indirect costs, that the United States incurs in reviewing or developing deliverables submitted pursuant to this Settlement, in overseeing implementation of the Work, or otherwise implementing, overseeing, or enforcing this Settlement, including but not limited

to, payroll costs, contractor costs, travel costs, laboratory costs, the costs incurred pursuant to Section VIII (Property Requirements) (including, but not limited to, cost of attorney time and any monies paid to secure or enforce access, including, but not limited to, the amount of just compensation), ¶ 59 (Work Takeover), ¶ 14 (Emergencies and Releases), ¶ 82 (Access to Financial Assurance),] ¶ 15 (Community Involvement Plan (including the costs of any technical assistance grant under Section 117(e) of CERCLA, 42 U.S.C. § 9617(e)], and the costs incurred by the United States in enforcing the terms of this Settlement, including all costs incurred in connection with Dispute Resolution pursuant to Section XIII (Dispute Resolution) and all litigation costs. Future Response Costs shall also include all Interim Response Costs.

“Interest” shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year. Rates are available online at <https://www.epa.gov/superfund/superfund-interest-rates>.

“Interim Response Costs” shall mean all costs, including, but not limited to, direct and indirect costs: (a) paid by the United States in connection with the Site between completion of the RI/FS for the Site and the Effective Date, or (b) incurred by the United States prior to the Effective Date, but paid after that date.

“National Contingency Plan” or “NCP” shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

“Paragraph” or “¶” shall mean a portion of this Settlement identified by an Arabic numeral or an upper or lower case letter.

“Parties” shall mean EPA and Respondent.

“Performance Standards” or “PS” shall mean the cleanup levels and other measures of achievement of the remedial action objectives, as set forth in the ROD.

“RCRA” shall mean the Solid Waste Disposal Act, 42 U.S.C. §§ 6901-6992 (also known as the Resource Conservation and Recovery Act).

“Record of Decision” or “ROD” shall mean the EPA Record of Decision relating to the Site, signed on September 21, 2018 by the Regional Administrator, EPA Region 5, or his/her delegate, and all attachments thereto. The ROD is attached as Appendix A.

“Remedial Action” or “RA” shall mean the remedial action selected in the ROD.

“Remedial Design” or “RD” shall mean those activities to be undertaken by Respondent to develop the final plans and specifications for the RA as stated in the SOW.

“Respondent” or “WPSC” shall mean the Wisconsin Public Service Corporation .

“Section” shall mean a portion of this Settlement identified by a Roman numeral.

“Settlement” shall mean this Administrative Settlement Agreement and Order on Consent and all appendices attached hereto (listed in Section XXIV (Integration/Appendices)). In the event of conflict between this Settlement and any appendix, this Settlement shall control.

“Site” shall mean the Manitowoc MGP Superfund Alternative Site, encompassing approximately 2 acres, located at 402 North Tenth Street, Manitowoc, Manitowoc County, Wisconsin and adjoining properties as depicted generally on the map attached as Appendix C.

“Manitowoc MGP Special Account” shall mean the special account within the EPA Hazardous Substance Superfund, established for the Site by EPA pursuant to Section 122(b)(3) of CERCLA, 42 U.S.C. § 9622(b)(3), and an Administrative Settlement Agreement and Order on Consent (AOC) that required WPSC to conduct a Remedial Investigation/Feasibility Study (RI/FS) at the Site (Docket No. V-W-06-C-847).

“State” shall mean the State of Wisconsin.

“Statement of Work” or “SOW” shall mean the document describing the activities Respondent must perform to implement the RD, which is attached as Appendix B.

“Supervising Contractor” shall mean the principal contractor retained by Respondent to supervise and direct the implementation of the Work under this Settlement.

“Transfer” shall mean to sell, assign, convey, lease, mortgage, or grant a security interest in, or where used as a noun, a sale, assignment, conveyance, or other disposition of any interest by operation of law or otherwise.

“United States” shall mean the United States of America and each department, agency, and instrumentality of the United States, including EPA and any federal natural resource trustee.

“Waste Material” shall mean (1) any “hazardous substance” under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); (3) any “solid waste” under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27); and (4) any “hazardous substance” under Wis. Stats. §§ 292.01(5), 299.01(6) or Wis. Admin. Code § NR 700.03(25).

“WDNR” shall mean the Wisconsin Department of Natural Resources.

“Work” shall mean all activities and obligations Respondent is required to perform under this Settlement, except those required by Section X (Record Retention).

IV. FINDINGS OF FACT

9. Based on available information and investigation, EPA has found:

a. The former Manitowoc MGP facility is located at 402 North Tenth Street, Manitowoc, Manitowoc County, Wisconsin. The property currently owned by WPSC is bounded on the northwest by City-owned property and the Manitowoc River, on the north by additional WPSC-owned parcels, on the east by North Tenth Street, on the south by Chicago Street, and on the west by North Eleventh Street. The property encompasses approximately 2 acres and is zoned for commercial and industrial use. A multi-tenant office building occupies much of the property, which was formerly used by Wisconsin Fuel & Light Company (WF&L). Areas north, east and west of the building are covered by asphalt pavement, whereas the south side area is mostly grass. The bottom floor of the building is used mainly for WPSC vehicle storage and contains the groundwater treatment system equipment. The former MGP structures were located mostly on-property, with the addition of a former gas holder located off-property to the south, on what is referred to as the Winter Property. The City owns property between the WPSC property's north property line and the river. The property located west of the subject property on the west side of Eleventh Street (along the river) is owned by Canadian National Railroad, formerly Wisconsin Central Railroad Ltd. To be consistent with past reports, the property will continue to be referred to as the Wisconsin Central Railroad Property. Braun Building Center Inc. is located south of Wisconsin Central Railroad's property. Braun Building appears to use Wisconsin Central Railroad's property to store lumber for their pre-fabricated building operations. The properties located south of the subject property, on the south side of Chicago Street, the Tom Kitzerow Enterprises LLC (parcel on the west), the 306 North Tenth Street Building LLC (parcels in middle), the Winter Property, owned by WPSC since 2017 (parcel on the east), and a small parcel owned by WPSC along the south side of Chicago Street. The building on the Winter Property, where an MGP gas holder was located, was an attorney's office and has been vacated as of February 2019. The properties described in this paragraph are zoned for heavy industrial use.

b. MGPs were industrial facilities that were found in every sizable town or city in the U.S. from the 1820s to right after World War II (WWII). MGPs heated coal in large industrial ovens to produce manufactured gas used for street and home lighting, heating, and cooking. After WWII, natural gas use replaced manufactured gas use because it was abundant and lower priced. Some MGPs continued to operate after WWII, and most ceased operations by the 1960s. Typically, the aboveground structures, such as buildings, tar/oil tanks, and storage sheds, were demolished and the foundations were backfilled, leaving hardly any visible traces of the former operations. Below ground structures such as underground piping and storage tanks, along with residual contaminants, were often left behind. Wisconsin Fuel and Light Company (WF&L) manufactured coal gas for lighting and heating from the turn of the century until 1947. The gas manufacturing facilities of the predecessor to WF&L, the Manitowoc Gas Company, were constructed between 1900 and 1906. The gas manufacturing facilities consisted of a carbureted water gas plant, retort, purifiers, and 100,000 and 300,000 cubic feet gas holders. The facilities were removed in the 1960's to make room for construction of the office building formerly used by WF&L. WPSC acquired WF&L in 2001.

c. The WPSC Manitowoc MGP site generated various byproducts and wastes, such as coal tar, wastewater sludge, and nonaqueous phase liquid (NAPL). NAPL is composed of liquids that do not readily mix with water, such as gasoline or tarry products, although the compounds may also partially dissolve in water. These materials contain polynuclear aromatic hydrocarbons (PAHs) such as naphthalene and benzo(a)pyrene; petroleum volatile organic compounds (PVOCs) such as benzene, toluene, ethylbenzene, and xylene (BTEX); metals such as arsenic and lead; cyanide; and phenolic compounds. Varying levels of these contaminants have been found in the site soil, groundwater, and soil vapor.

d. In August 1988, September through November 1991, and April and September 1993, WPSC conducted soil investigations under Wisconsin DNR oversight. The 1988 and 1991 soil investigations were generally focused within and adjacent to former MGP structures and operations areas, and in the area adjacent to the Manitowoc River. Analyses of data obtained during investigations completed through November 1991 indicated a soil remedial action was necessary. The purpose of the April 1993 investigation was to further define the extent of soil impacts and thereby approximate a volume of soil to be remediated. A final pre-remedial soil investigation in September 1993 was completed to characterize the material west and southwest of the building for anticipated excavation and disposal. Additional investigation work occurred under Wisconsin DNR oversight between 1995 and 1997 for the upland portion of the Site and between 2000 and 2003 for the Manitowoc River.

e. WPSC has performed a number of response actions at the Site, which include:

- Excavation for Sheet Pile Retaining Wall Reconstruction. As part of implementing in-situ solidification/stabilization (ISS), WPSC replaced the anchor system for the existing sheet pile wall. These activities included removal and segregation of the top 2 feet of overburden soil and removal of 3,051 cubic yards of contaminated soil and disposal at Ridgeview Landfill in Whitelaw, Wisconsin in June and July 1993. The wall is constructed of sheets that are approximately 36-feet in length. The elevation at the top of the wall is at approximately 585 feet and extends down to approximately 549 feet, which is near the till and/or bedrock surface.
- In-situ stabilization and solidification. In 1993-1994, WPSC treated approximately 13,772 cubic yards of soil through ISS on the north, west and south sides of the on-property building, the majority of the ISS area being located on City-owned land or right-of-way. Soils were treated to reported depths of 32 to 40 feet below ground surface, ending in native sand material. As part of this activity, 4,093 cubic yards of overburden soils (or material that expanded above ground during the ISS process) were required to be landfilled.
- Surface Soil Removal. WPSC excavated the top four feet of soil on the north side of the on-property building in 1994 (most likely). No documentation of this surface soil excavation was found in the 1995 Interim Closure Report with exception of a report figure showing this 4-foot excavation; therefore, the disposal of the soil is unknown. From the 1995 map, WPSC estimates that the surface area of the 4-foot excavation is 17,575 square feet, with an estimated volume of 2,600 cubic yards.
- Excavation and Disposal. In January 1994, WPSC had soil excavated in the following areas: 1) a small area located west of the storm sewer; and 2) a larger area located

west and south of the on-property building and east of the storm sewer. The majority of the soils were excavated in the right-of-way of North Eleventh Street and Chicago Street. Approximately 1,410 cubic yards of coal tar impacted soils were removed and disposed at Ridgeview Landfill. The final depth of the excavation was based on the depth to groundwater, ranging from 10 feet to 12 feet below ground surface.

- Backfilling and Surface Restoration. The 1994 (most likely) excavation performed west and south of the on-property building, and presumably the surface soil excavation performed north of the building, were backfilled with clean imported fill. Following this, asphalt or concrete pavement was restored in all areas that were disturbed during ISS and excavation.
- Groundwater remediation. In 1997, WPSC installed, and continues to maintain, a single groundwater extraction well (PW-1) and pre-treatment system (filtration followed by granular activated carbon) to address MGP residuals outside of the stabilized area (e.g. MW14 area). The well is located in the North Eleventh Street right-of-way. The system discharges to the City of Manitowoc wastewater treatment plant at flow rates ranging from 4 to 18 gallons per minute (gpm). Documents pertaining to the groundwater treatment system, including analytical results and transmittals to the City of Manitowoc are included in Appendix O of the RI (in the AR). The influent and effluent from the treatment system are sampled semi-annually to monitor performance.

f. The Site is not listed on the National Priorities List (NPL).

g. The Respondent is WPSC who is the owner of a portion of the Site and the successor to the owner and operator at the time of disposal of hazardous substances.

h. In May 2006, EPA and WPSC entered into an Administrative Settlement Agreement and Order on Consent (AOC) that required WPSC to conduct a Remedial Investigation/Feasibility Study (RI/FS) at six former MGP sites in Wisconsin (Docket No. V-W-06-C-847). WPSC completed the Manitowoc MGP Site RI report on January 22, 2014, and completed the FS report on March 29, 2018.

i. On September 21, 2018, EPA issued a Record of Decision to address Operable Unit 1 (OU 1 ROD) at the Site for soil and groundwater source control. A ROD for Operable Unit 2 (river sediment) and Operable Unit 3 (groundwater) will be issued at a future date. The OU 1 ROD calls for:

- *in-situ* stabilization (ISS) of highly-contaminated soil located in the Chicago Street and Winter Zones;
- maintaining existing and/or installing new (as required) direct contact barriers (such as paved parking lots and roadways) on top of surface soil that exceeds residential cleanup standards in all Site zones;
- a one-time placement of oxidizing compounds at the interface of highly-contaminated groundwater and soil (called *in-situ* chemical oxidation or ISCO);

- continued operation of an existing groundwater extraction well until a final groundwater remedy is selected; and
- the use of institutional controls (ICs) to restrict future land use to prevent human exposures to contamination remaining at the site, prevent interference with remedial components, and to help prevent future soil vapor intrusion risks.

V. CONCLUSIONS OF LAW AND DETERMINATIONS

10. Based on the Findings of Fact set forth above and the administrative record, EPA has determined that:

- a. The WPSC Manitowoc MGP Site is a “facility” as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).
- b. The contamination found at the Site, as identified in the Findings of Fact above, includes “hazardous substances” as defined by Section 101(14) of CERCLA, 42 U.S.C. §9601(14).
- c. The Respondent is a “person” as defined by Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).
- d. The Respondent is a responsible party under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a):
 - (1) Respondent is the “owner” and/or “operator” of the facility, as defined by Section 101(20) of CERCLA, 42 U.S.C. § 9601(20), and within the meaning of Section 107(a)(1) of CERCLA, 42 U.S.C. § 9607(a)(1).
 - (2) Respondent is the successor to the “owner” and/or “operator” of the facility at the time of disposal of hazardous substances at the facility, as defined by Section 101(20) of CERCLA, 42 U.S.C. § 9601(20), and within the meaning of Section 107(a)(2) of CERCLA, 42 U.S.C. § 9607(a)(2).
- e. The conditions described in ¶ 9 of the Findings of Fact above constitute an actual or threatened “release” of a hazardous substance from the facility as defined by Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).
- f. The RD required by this Settlement is necessary to protect the public health, welfare, or the environment and, if carried out in compliance with the terms of this Settlement, will be consistent with the NCP, as provided in Section 300.700(c)(3)(ii) of the NCP.

VI. SETTLEMENT AGREEMENT AND ORDER

11. Based upon the Findings of Fact, Conclusions of Law, and Determinations set forth above, and the administrative record, it is hereby Ordered and Agreed that Respondent shall comply with all provisions of this Settlement, including, but not limited to, all appendices to this Settlement and all documents incorporated by reference into this Settlement.

VII. PERFORMANCE OF THE WORK

12. Coordination and Supervision

a. Project Coordinators.

(1) Respondent's Project Coordinator must have sufficient technical expertise to coordinate the Work. Respondent's Project Coordinator may not be an attorney representing Respondent in this matter and may not act as the Supervising Contractor. Respondent's Project Coordinator may assign other representatives, including other contractors, to assist in coordinating the Work.

(2) EPA shall designate and notify Respondent of EPA's Remedial Project Manager ("RPM") and Alternate Remedial Project Manager. EPA may designate other representatives, which may include its employees, contractors and/or consultants, to oversee the Work. EPA's RPM will have the same authority as a remedial project manager and/or an on-scene coordinator, as described in the NCP. This includes the authority to halt the Work and/or to conduct or direct any necessary response action when he or she determines that conditions at the Site constitute an emergency or may present an immediate threat to public health or welfare or the environment due to a release or threatened release of Waste Material.

(3) Respondent's Project Coordinators shall meet with EPA's RPM at least monthly.

b. **Supervising Contractor.** Respondent's proposed Supervising Contractor must have sufficient technical expertise to supervise the Work and a quality assurance system that complies with ASQ/ANSI E4:2014, "Quality management systems for environmental information and technology programs - Requirements with guidance for use" (American Society for Quality, February 2014).

c. Procedures for Disapproval/Notice to Proceed

(1) Respondent shall designate, and notify EPA, within 10 days after the Effective Date, of the name[s], title[s], contact information, and qualifications of Respondent's proposed Project Coordinator and Supervising Contractor, whose qualifications shall be subject to EPA's review for verification based on objective assessment criteria (*e.g.*, experience, capacity, technical expertise) and do not have a conflict of interest with respect to the project.

(2) EPA shall issue notices of disapproval and/or authorizations to proceed regarding the proposed Project Coordinator and Supervising Contractor, as applicable. If EPA issues a notice of disapproval, Respondent shall, within 30 days, submit to EPA a list of supplemental proposed Project Coordinators and/or Supervising Contractors, as applicable, including a description of the qualifications of each. EPA shall issue a notice of disapproval or authorization to proceed regarding each supplemental proposed coordinator and/or contractor.

Respondent may select any coordinator/contractor covered by an authorization to proceed and shall, within 21 days, notify EPA of Respondent's selection.

(3) Respondent may change its Project Coordinator and/or Supervising Contractor, as applicable, by following the procedures of ¶¶ 12.c(1) and 12.c(2).

(4) Notwithstanding the procedures of ¶ 12.c(1) through 12.c(3), Respondent has proposed, and EPA has authorized Respondent to proceed, regarding the following Project Coordinator and Supervising Contractor:

As Project Coordinator

Robert Paulson
Principal Environmental Consultant
WEC Energy Group – Business Services
333 Everett Street – A231
Milwaukee, Wisconsin 53203

As Supervising Contractor

Tim Olean
O'Brien & Gere
234 W. Florida Street, Fifth Floor
Milwaukee, Wisconsin 53204

13. **Performance of Work in Accordance with SOW.** Respondent shall develop the RD in accordance with the SOW and all EPA-approved, conditionally-approved, or modified deliverables as required by the SOW. All deliverables required to be submitted for approval under the Settlement or SOW shall be subject to approval by EPA in accordance with ¶ 5.5 (Approval of Deliverables) of the SOW.

14. **Emergencies and Releases.** Respondent shall comply with the emergency and release response and reporting requirements under ¶ 3.8 (Emergency Response and Reporting) of the SOW. Subject to Section XVI (Covenants by EPA), nothing in this Settlement, including ¶3.8 of the SOW, limits any authority of EPA: (a) to take all appropriate action to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Material on, at, or from the Site, or (b) to direct or order such action to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Material on, at, or from the Site. If, due to Respondent's failure to take appropriate response action under ¶ 3.8 of the SOW, EPA takes such action instead, Respondent shall reimburse EPA under Section XII (Payment of Response Costs) for all costs of the response action.

15. **Community Involvement.** If requested by EPA, Respondent shall conduct community involvement activities under EPA's oversight as provided for in, and in accordance with, Section 2 (Community Involvement) of the SOW. Such activities may include, but are not limited to, designation of a Community Involvement Coordinator and implementation of a

technical assistance plan. Costs incurred by EPA under this Section constitute Future Response Costs to be reimbursed under Section XII (Payments for Response Costs).

16. **Modification of SOW or Related Deliverables**

a. If EPA determines that it is necessary to modify the work specified in the SOW and/or in deliverables developed under the SOW in order to carry out the RD, then EPA shall notify Respondent of such modification. If Respondent objects to the modification it may, within 30 days after EPA's notification, seek dispute resolution under Section XIII (Dispute Resolution).

b. The SOW and/or related work plans shall be modified: (1) in accordance with the modification issued by EPA; or (2) if Respondent invokes dispute resolution, in accordance with the final resolution of the dispute. The modification shall be incorporated into and enforceable under this Settlement, and Respondent shall implement all work required by such modification. Respondent shall incorporate the modification into the deliverable required under the SOW, as appropriate.

c. Nothing in this Paragraph shall be construed to limit EPA's authority to require performance of further response actions as otherwise provided in this Settlement.

VIII. PROPERTY REQUIREMENTS

17. **Agreements Regarding Access and Non-Interference.** Respondent shall, with respect to any Affected Property, use best efforts to secure an agreement, enforceable by Respondent and the EPA, providing (i) EPA, the State, Respondent, and their representatives, contractors, and subcontractors with access at all reasonable times to such Affected Property to conduct any activity regarding the Settlement, including those activities listed in ¶ 17.a (Access Requirements); and (ii) refrain from using such Affected Property in any manner that EPA determines will pose an unacceptable risk to human health or to the environment due to exposure to Waste Material, or that interferes with or adversely affects the implementation or integrity of the RD. Respondent shall provide a copy of such access agreement to EPA and the State.

a. **Access Requirements.** The following is a list of activities for which access is required regarding the Affected Property:

- (1) Monitoring the Work;
- (2) Verifying any data or information submitted to the United States or the State;
- (3) Conducting investigations regarding contamination at or near the Site;
- (4) Obtaining samples;
- (5) Assessing the need for planning, implementing, or monitoring response actions;

(6) Assessing implementation of quality assurance and quality control practices as defined in the approved quality assurance quality control plan as provided in the SOW;

(7) Implementing the Work pursuant to the conditions set forth in ¶ 59 (Work Takeover);

(8) Inspecting and copying records, operating logs, contracts, or other documents maintained or generated by Respondent or its agents, consistent with Section IX (Access to Information);

(9) Assessing Respondent's compliance with the Settlement;

(10) Determining whether the Affected Property is being used in a manner that is prohibited or restricted, or that may need to be prohibited or restricted under the Settlement; and

(11) Implementing, monitoring, maintaining, reporting on, and enforcing any land, water, or other resource use restrictions regarding the Affected Property.

18. **Best Efforts.** As used in this Section, "best efforts" means the efforts that a reasonable person in the position of Respondent would use so as to achieve the goal in a timely manner, including the cost of employing professional assistance and the payment of reasonable sums of money to secure access, as required by this Section. If Respondent is unable to accomplish what is required through "best efforts" in a timely manner, it shall notify EPA, and include a description of the steps taken to comply with the requirements. If EPA deems it appropriate, it may assist Respondent, or take independent action, in obtaining such access. All costs incurred by the United States in providing such assistance or taking such action, including the cost of attorney time and the amount of monetary consideration or just compensation paid, constitute Future Response Costs to be reimbursed under Section XII (Payment of Response Costs).

19. If EPA determines in a decision document prepared in accordance with the NCP that institutional controls in the form of state or local laws, regulations, ordinances, zoning restrictions, or other governmental controls or notices are needed, Respondent shall cooperate with EPA's and the State's efforts to secure and ensure compliance with such institutional controls.

20. In the event of any Transfer of the Affected Property, unless EPA otherwise consents in writing, Respondent shall continue to comply with its obligations under the Settlement, including its obligation to secure access.

21. **Notice to Successors-in-Title.** Respondent shall, prior to entering into a contract to Transfer its Affected Property, or 60 days prior to Transferring its Affected Property, whichever is earlier: (a) Notify the proposed transferee that EPA has determined that an RD must be performed at the Site, that a potentially responsible party has entered into an Administrative Settlement Agreement and Order on Consent requiring implementation of such RD, (identifying

the name, docket number, and the effective date of this Settlement); and (b) Notify EPA and the State of the name and address of the proposed transferee and provide EPA and the State with a copy of the above notice that it provided to the proposed transferee.

22. Notwithstanding any provision of the Settlement, EPA and the State retain all of their access authorities and rights, as well as all of their rights to require land, water, or other resource use restrictions, including enforcement authorities related thereto under CERCLA, RCRA, and any other applicable statute or regulations.

IX. ACCESS TO INFORMATION

23. Respondent shall provide to EPA and the State, upon request, copies of all records, reports, documents and other information (including records, reports, documents and other information in electronic form) (hereinafter referred to as "Records") within its possession or control or that of its contractors or agents relating to activities at the Site or to the implementation of this Settlement, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Respondent shall also make available to EPA and the State at reasonable times, for purposes of investigation, information gathering, or testimony, its employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

24. **Privileged and Protected Claims**

a. Respondent may assert all or part of a Record requested by EPA or the State is privileged or protected as provided under federal law, in lieu of providing the Record, provided Respondent complies with ¶ 24.b, and except as provided in ¶ 24.c.

b. If Respondent asserts such a privilege or protection, it shall provide EPA and the State with the following information regarding such Record: its title; its date; the name, title, affiliation (e.g., company or firm), and address of the author, of each addressee, and of each recipient; a description of the Record's contents; and the privilege or protection asserted. If a claim of privilege or protection applies only to a portion of a Record, Respondent shall provide the Record to EPA and the State in redacted form to mask the privileged or protected portion only. Respondent shall retain all Records that it claims to be privileged or protected until EPA and the State have had a reasonable opportunity to dispute the privilege or protection claim and any such dispute has been resolved in Respondent's favor.

c. Respondent may make no claim of privilege or protection regarding: (1) any data regarding the Site, including, but not limited to, all sampling, analytical, monitoring, hydrogeological, scientific, chemical, radiological, or engineering data, or the portion of any other Record that evidences conditions at or around the Site; or (2) the portion of any Record that Respondent is required to create or generate pursuant to this Settlement.

25. **Business Confidential Claims.** Respondent may assert that all or part of a Record provided to EPA and the State under this Section or Section X (Record Retention) is business confidential to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Respondent shall segregate and

clearly identify all Records or parts thereof submitted under this Settlement for which Respondent asserts business confidentiality claims. Records claimed as confidential business information will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies Records when they are submitted to EPA and the State, or if EPA has notified Respondent that the Records are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such Records without further notice to Respondent.

26. Notwithstanding any provision of this Settlement, EPA and the State retain all of their information gathering and inspection authorities and rights, including enforcement actions related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

X. RECORD RETENTION

27. Until 10 years after EPA provides notice pursuant to ¶ 3.10 of the SOW (Notice of Work Completion), that all work has been fully performed in accordance with this Settlement, Respondent shall preserve and retain all non-identical copies of Records (including Records in electronic form) now in its possession or control or that come into its possession or control that relate in any manner to its liability under CERCLA with respect to the Site, provided, however, that since Respondent is potentially liable as an owner or operator of the Site, it must retain, in addition, all Records that relate to the liability of any other person under CERCLA with respect to the Site. Respondent must also retain, and instruct its contractors and agents to preserve, for the same period of time specified above, all non-identical copies of the last draft or final version of any Records (including Records in electronic form) now in their possession or control or that come into their possession or control that relate in any manner to the performance of the Work, provided, however, that Respondent (and its contractors and agents) must retain, in addition, copies of all data generated during the performance of the Work and not contained in the aforementioned Records required to be retained. Each of the above record retention requirements shall apply regardless of any corporate retention policy to the contrary.

28. At the conclusion of the document retention period, Respondent shall notify EPA and the State at least 90 days prior to the destruction of any such Records and, upon request by EPA or the State, and except as provided for in ¶ 24 (Privileged and Protected Claims), Respondent shall deliver any such Records to EPA or the State.

29. Respondent certifies that to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed, or otherwise disposed of any Records (other than identical copies) relating to its potential liability regarding the Site since notification of potential liability by EPA or the State and that it has fully complied with any and all EPA and State requests for information regarding the Site pursuant to Sections 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927, and state law.

XI. COMPLIANCE WITH OTHER LAWS

30. Nothing in this Settlement limits Respondent's obligations to comply with the requirements of all applicable federal and state laws and regulations. Respondent must also

comply with all applicable or relevant and appropriate requirements of all federal and state environmental laws as set forth in the ROD and the SOW. The activities conducted pursuant to this Settlement, if approved by EPA, shall be considered consistent with the NCP.

31. **Permits.** As provided in Section 121(e) of CERCLA, 42 U.S.C. § 9621(e), and Section 300.400(c)(3) of the NCP, no permit shall be required for any portion of the Work conducted entirely on-site (i.e. within the areal extent of contamination or in very close proximity to the contamination and necessary for implementation of the Work). Where any portion of the Work that is not on-site requires a federal, state, or local permit or approval, Respondent shall submit timely and complete applications and take all other actions necessary to obtain and to comply with all such permits or approvals.

32. Respondent may seek relief under the provisions of Section XIV (Force Majeure) for any delay in performance of the Work resulting from a failure to obtain, or a delay in obtaining, any permit or approval referenced in ¶ 31 (Permits) and required for the Work, provided that it has submitted timely and complete applications and taken all other actions necessary to obtain all such permits or approvals. This Settlement is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

XII. PAYMENT OF RESPONSE COSTS

33. **Payments for Future Response Costs.** Respondent shall pay to EPA all Future Response Costs not inconsistent with the NCP.

a. **Periodic Bills.** On a periodic basis, EPA will send Respondent a bill requiring payment that includes an itemized cost summary, which includes direct and indirect costs incurred by EPA, its contractors, subcontractors, and the United States Department of Justice. Respondent shall make all payments within 30 days after Respondent's receipt of each bill requiring payment, except as otherwise provided in ¶ 35 (Contesting Future Response Costs).

b. If the payment amount demanded in the bill is for \$10,000 or greater, payment shall be made to EPA by Electronic Funds Transfer ("EFT") in accordance with current EFT procedures to be provided to Respondent by EPA Region 5. Payment shall be accompanied by a statement identifying the name and address of the party making payment, the Site name, EPA Region 5, the Site/Spill ID Number B5BW.

c. If the amount demanded in the bill is less than \$10,000, the Respondent may in lieu of the EFT procedures in Subparagraph 33.b, make all payments required by this Paragraph by a certified or cashier's check made payable to "EPA Hazardous Substance Superfund," referencing the name and address of the party making the payment, and the EPA Site/Spill ID Number B5BW. Respondent shall the check to:

U.S. Environmental Protection Agency
Superfund Payments
Cincinnati Finance Center
PO Box 979076
St. Louis, MO 63197-9000

At the time of payment, Respondent shall send notice that payment has been made to:

Peter Felitti
Site Attorney
Office of Regional Counsel
Mail Code C-14J
77 West Jackson Blvd
Chicago, Illinois 60604-3590

Margaret Gielniewski
Remedial Project Manager
Superfund Division
Mail Code SR-6J
77 West Jackson Blvd
Chicago, Illinois 60604-3590

d. **Deposit of Future Response Costs Payments.** The total amount to be paid by Respondent pursuant to ¶ 33.a (Periodic Bills) shall be deposited in the WPSC Manitowoc MGP Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site or to be transferred by EPA in the EPA Hazardous Substance Superfund.

34. **Interest.** In the event that any payment for Future Response Costs is not made by the date required, Respondent shall pay Interest on the unpaid balance. The Interest on Future Response Costs shall begin to accrue on the date of the bill. The Interest shall accrue through the date of Respondent's payment. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Respondent's failure to make timely payments under this Section, including but not limited to, payment of stipulated penalties pursuant to Section XV (Stipulated Penalties).

35. **Contesting Future Response Costs.** Respondent may initiate the procedures of Section XIII (Dispute Resolution) regarding payment of any Future Response Costs billed under ¶ 33 (Payments for Future Response Costs) if it determines that EPA has made a mathematical error or included a cost item that is not within the definition of Future Response Costs, or if it believes EPA incurred excess costs as a direct result of an EPA action that was inconsistent with a specific provision or provisions of the NCP. To initiate such dispute, Respondent shall submit a Notice of Dispute in writing to the EPA Remedial Project Manager within 30 days after receipt of the bill. Any such Notice of Dispute shall specifically identify the contested Future Response Costs and the basis for objection. If Respondent submits a Notice of Dispute, Respondent shall within the 30-day period, also as a requirement for initiating the dispute, (a) pay all uncontested Future Response Costs to EPA in the manner described in ¶ 33, and (b) establish, in a duly chartered bank or trust company, an interest-bearing escrow account that is insured by the Federal Deposit Insurance Corporation (FDIC) and remit to that escrow account funds equivalent to the amount of the contested Future Response Costs. Respondent shall send to the EPA Remedial Project Manager a copy of the transmittal letter and check paying the uncontested Future Response Costs, and a copy of the correspondence that establishes and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. If EPA prevails in the dispute, within 5 days after the resolution of the dispute, Respondent shall pay the sums due (with accrued interest) to EPA in the manner described in ¶ 33. If Respondent prevails concerning any aspect of the contested costs, Respondent shall pay that portion of the costs (plus associated accrued interest) for which they did not prevail to EPA in the manner described in ¶ 33. Respondent shall be disbursed any balance of the escrow account. The dispute resolution procedures set forth in this Paragraph in

conjunction with the procedures set forth in Section XIII (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding Respondent's obligation to reimburse EPA for its Future Response Costs.

XIII. DISPUTE RESOLUTION

36. Unless otherwise expressly provided for in this Settlement, the dispute resolution procedures of this Section shall be the exclusive mechanism for resolving disputes arising under this Settlement. The Parties shall attempt to resolve any disagreements concerning this Settlement expeditiously and informally.

37. **Informal Dispute Resolution.** If Respondent objects to any EPA action taken pursuant to this Settlement, including billings for Future Response Costs, it shall send EPA a written Notice of Dispute describing the objection(s) within 15 days after such action, unless the objection(s) has/have been resolved informally. EPA and Respondent shall have 30 days from EPA's receipt of Respondent's Notice of Dispute to resolve the dispute through informal negotiations (the "Negotiation Period"). The Negotiation Period may be extended at the sole discretion of EPA. Any agreement reached by the Parties pursuant to this Section shall be in writing and shall, upon signature by the Parties, be incorporated into and become an enforceable part of this Settlement.

38. **Formal Dispute Resolution.** If the Parties are unable to reach an agreement within the Negotiation Period, Respondent shall, within 20 days after the end of the Negotiation Period, submit a statement of position to EPA. EPA may, within 20 days thereafter, submit a statement of position. Thereafter, an EPA management official at the Superfund Branch Chief level or higher will issue a written decision on the dispute to Respondent. EPA's decision shall be incorporated into and become an enforceable part of this Settlement. Following resolution of the dispute, as provided by this Section, Respondent shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with EPA's decision, whichever occurs.

39. The invocation of formal dispute resolution procedures under this Section does not extend, postpone, or affect in any way any obligation of Respondent under this Settlement, except as provided by ¶ 35 (Contesting Future Response Costs), as agreed by EPA.

40. Except as provided in ¶ 49, stipulated penalties with respect to the disputed matter shall continue to accrue, but payment shall be stayed pending resolution of the dispute. Notwithstanding the stay of payment, stipulated penalties shall accrue from the first day of noncompliance with any applicable provision of this Settlement. In the event that Respondent does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XV (Stipulated Penalties).

XIV. FORCE MAJEURE

41. "Force Majeure" for purposes of this Settlement is defined as any event arising from causes beyond the control of Respondent, of any entity controlled by Respondent, or of Respondent's contractors that delays or prevents the performance of any obligation under this Settlement despite Respondent's best efforts to fulfill the obligation. The requirement that

Respondent exercises “best efforts to fulfill the obligation” includes using best efforts to anticipate any potential force majeure and best efforts to address the effects of any potential force majeure (a) as it is occurring and (b) following the potential force majeure such that the delay and any adverse effects of the delay are minimized to the greatest extent possible. “Force majeure” does not include financial inability to complete the Work or increased cost of performance.

42. If any event occurs or has occurred that may delay the performance of any obligation under this Settlement for which Respondent intends or may intend to assert a claim of force majeure, Respondent shall notify the EPA RPM orally or, in his or her absence, EPA’s Alternate RPM or, in the event both of EPA’s designated representatives are unavailable, the Director of the Waste Management Division, EPA Region 5, within 48 hours of when Respondent first knew that the event might cause a delay. Within 10 days thereafter, Respondent shall provide in writing to EPA an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Respondent’s rationale for attributing such delay to a force majeure; and a statement as to whether, in the opinion of Respondent, such event may cause or contribute to an endangerment to public health or welfare, or the environment. Respondent shall include with any notice all available documentation supporting their claim that the delay was attributable to a force majeure. Respondent shall be deemed to know of any circumstance of which Respondent, any entity controlled by Respondent, or Respondent’s contractors knew or should have known. Failure to comply with the above requirements regarding an event shall preclude Respondent from asserting any claim of force majeure regarding that event, provided, however, that if EPA, despite the late or incomplete notice, is able to assess to its satisfaction whether the event is a force majeure under ¶ 41 and whether Respondent has exercised its best efforts under ¶ 41, EPA may, in its unreviewable discretion, excuse in writing Respondent’s failure to submit timely or complete notices under this Paragraph.

43. If EPA agrees that the delay or anticipated delay is attributable to a force majeure, the time for performance of the obligations under this Settlement that are affected by the force majeure will be extended by EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the force majeure shall not, of itself, extend the time for performance of any other obligation. If EPA does not agree that the delay or anticipated delay has been or will be caused by a force majeure, EPA will notify Respondent in writing of its decision. If EPA agrees that the delay is attributable to a force majeure, EPA will notify Respondent in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure.

44. If Respondent elects to invoke the dispute resolution procedures set forth in Section XIII (Dispute Resolution), it shall do so no later than 15 days after receipt of EPA’s notice. In any such proceeding, Respondent shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Respondent complied with the requirements of ¶¶ 41 and 42. If Respondent

carries this burden, the delay at issue shall be deemed not to be a violation by Respondent of the affected obligation of this Settlement identified to EPA.

45. The failure by EPA to timely complete any obligation under the Settlement is not a violation of the Settlement, provided, however, that if such failure prevents Respondent from meeting one or more deadlines under the Settlement, Respondent may seek relief under this Section.

XV. STIPULATED PENALTIES

46. Respondent shall be liable to EPA for stipulated penalties in the amounts set forth in ¶ 47.a for failure to comply with the obligations specified in ¶ 47.a, unless excused under Section XIV (Force Majeure). “Comply” as used in the previous sentence includes compliance by Respondent with all applicable requirements of this Settlement, within the deadlines established under this Settlement. If (i) an initially submitted or resubmitted deliverable contains a material defect and the conditions are met for modifying the deliverable under ¶ 5.5(a)(2) of the SOW; or (ii) a resubmitted deliverable contains a material defect; then the material defect constitutes a lack of compliance for purposes of this Paragraph.

47. Stipulated Penalty Amounts: Payments, Financial Assurance, Major Deliverables, and Other Milestones.

a. The following stipulated penalties shall accrue per violation per day for any noncompliance with any obligation identified in ¶ 47.b:

Penalty Per Violation Per Day	Period of Noncompliance
\$100	1st through 14th day
\$200	15th through 30th day
\$1,000	31st day and beyond

b. **Obligations**

- (1) Payment of any amount due under Section XII (Payment of Response Costs).
- (2) Establishment and maintenance of financial assurance in accordance with Section XXIII (Financial Assurance).
- (3) Establishment of an escrow account to hold any disputed Future Response Costs under ¶ 35 (Contesting Future Response Costs).
- (4) Failure to submit timely or adequate plans, reports or other documents as required by Section VII (Work to be Performed).
- (5) Failure to implement the approved RD Work Plan.

48. In the event that EPA assumes performance of a portion or all of the Work pursuant to ¶ 59 (Work Takeover), Respondent shall be liable for a stipulated penalty in the amount of \$50,000. Stipulated penalties under this Paragraph are in addition to the remedies available to EPA under ¶¶ 59 (Work Takeover) and 82 (Access to Financial Assurance).

49. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. Penalties shall continue to accrue during any dispute resolution period, and shall be paid within 15 days after the agreement or the receipt of EPA's decision. However, stipulated penalties shall not accrue: (a) with respect to a deficient submission under ¶5.5 (Approval of Deliverables) of the SOW, during the period, if any, beginning on the 31st day after EPA's receipt of such submission until the date that EPA notifies Respondent of any deficiency; and (b) with respect to a decision by the EPA Management Official at the Superfund Branch chief level or higher, under Section XIII (Dispute Resolution), during the period, if any, beginning on the 21st day after the Negotiation Period begins until the date that the EPA Management Official issues a final decision regarding such dispute. Nothing in this Settlement shall prevent the simultaneous accrual of separate penalties for separate violations of this Settlement.

50. Following EPA's determination that Respondent has failed to comply with a requirement of this Settlement, EPA shall give Respondent written notification of the failure and describe the noncompliance. EPA may send Respondent a written demand for payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether EPA has notified Respondent of a violation of the Obligations specified in ¶47.b.(1),(2),(3), (4) and (5).

51. All penalties accruing under this Section shall be due and payable to EPA within 30 days after Respondent's receipt from EPA of a demand for payment of the penalties, unless Respondent invokes the Dispute Resolution procedures under Section XIII (Dispute Resolution) within the 30-day period. All payments to EPA under this Section shall indicate that the payment is for stipulated penalties and shall be made in accordance with ¶ 33 (Payments for Future Response Costs).

52. If Respondent fails to pay stipulated penalties when due, Respondent shall pay Interest on the unpaid stipulated penalties as follows: (a) if Respondent has timely invoked dispute resolution such that the obligation to pay stipulated penalties has been stayed pending the outcome of dispute resolution, Interest shall accrue from the date stipulated penalties are due pursuant to ¶ 49 until the date of payment; and (b) if Respondent fails to timely invoke dispute resolution, Interest shall accrue from the date of demand under ¶ 51 until the date of payment. If Respondent fails to pay stipulated penalties and Interest when due, the United States may institute proceedings to collect the penalties and Interest.

53. The payment of penalties and Interest, if any, shall not alter in any way Respondent's obligation to complete performance of the Work required under this Settlement.

54. Nothing in this Settlement shall be construed as prohibiting, altering, or in any way limiting the ability of EPA to seek any other remedies or sanctions available by virtue of Respondent's violation of this Settlement or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Section 122(f) of CERCLA, 42 U.S.C. § 9622(f), and punitive damages pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3), provided, however, that EPA shall not seek civil penalties pursuant to Section 122(f) of CERCLA or punitive damages pursuant to Section 107(c)(3) of CERCLA for any violation for which a stipulated penalty is provided in this Settlement, except in the case of a willful violation of this Settlement or in the event that EPA assumes performance of a portion or all of the Work pursuant to ¶ 59 (Work Takeover).

55. Notwithstanding any other provision of this Section, EPA may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this Settlement.

XVI. COVENANTS BY EPA

56. Except as provided in Section XVII (Reservation of Rights by EPA), EPA covenants not to sue or to take administrative action against Respondent pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606 and 9607(a), for the Work and Future Response Costs. These covenants shall take effect upon the Effective Date. These covenants are conditioned upon the complete and satisfactory performance by Respondent of its obligations under this Settlement. These covenants extend only to Respondent and do not extend to any other person.

XVII. RESERVATIONS OF RIGHTS BY EPA

57. Except as specifically provided in this Settlement, nothing in this Settlement shall limit the power and authority of EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants, or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing in this Settlement shall prevent EPA from seeking legal or equitable relief to enforce the terms of this Settlement, from taking other legal or equitable action as it deems appropriate and necessary, or from requiring Respondent in the future to perform additional activities pursuant to CERCLA or any other applicable law.

58. The covenants set forth in Section XVI (Covenants by EPA) above do not pertain to any matters other than those expressly identified therein. EPA reserves, and this Settlement is without prejudice to, all rights against Respondent with respect to all other matters, including, but not limited to:

- a. liability for failure by Respondent to meet a requirement of this Settlement;
- b. liability for costs not included within the definition of Future Response Costs;

- c. liability for performance of response action other than the Work;
- d. criminal liability;
- e. liability for violations of federal or state law that occur during or after implementation of the Work;
- f. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;
- g. liability arising from the past, present, or future disposal, release or threat of release of Waste Materials outside of the Site; and
- h. liability for costs incurred or to be incurred by the Agency for Toxic Substances and Disease Registry related to the Site not paid as Future Response Costs under this Settlement.

59. Work Takeover

- a. In the event EPA determines that Respondent: (1) has ceased implementation of any portion of the Work; (2) is seriously or repeatedly deficient or late in its performance of the Work; or (3) is implementing the Work in a manner that may cause an endangerment to human health or the environment, EPA may issue a written notice (“Work Takeover Notice”) to Respondent. Any Work Takeover Notices issued by EPA (which writing may be electronic) will specify the grounds upon which such notice was issued and will provide Respondent a period of 10 days after Respondent’s receipt of the notice within which to remedy the circumstances giving rise to EPA’s issuance of such notice.
- b. If, after expiration of the 10-day notice period specified in ¶ 59.a Respondent has not remedied to EPA’s satisfaction the circumstances giving rise to EPA’s issuance of the relevant Work Takeover Notice, EPA may at any time thereafter assume the performance of all or any portion(s) of the Work as EPA deems necessary (“Work Takeover”). EPA will notify Respondent in writing (which writing may be electronic) if EPA determines that implementation of a Work Takeover is warranted under this ¶ 59.b. Funding of Work Takeover costs is addressed under ¶ 82 (Access to Financial Assurance).
- c. Respondent may invoke the procedures set forth in ¶ 38 (Formal Dispute Resolution) to dispute EPA’s implementation of a Work Takeover under ¶ 59.b. However, notwithstanding Respondent’s invocation of such dispute resolution procedures, and during the pendency of any such dispute, EPA may in its sole discretion commence and continue a Work Takeover under ¶ 59.b until the earlier of (1) the date that Respondent remedies, to EPA’s satisfaction, the circumstances giving rise to EPA’s issuance of the relevant Work Takeover Notice, or (2) the date that a written decision terminating such Work Takeover is rendered in accordance with ¶ 38 (Formal Dispute Resolution).
- d. Notwithstanding any other provision of this Settlement, EPA retains all authority and reserves all rights to take any and all response actions authorized by law.

XVIII. COVENANTS BY RESPONDENT

60. Respondent covenants not to sue and agree not to assert any claims or causes of action against the United States, or its contractors or employees, with respect to the Work, Future Response Costs, and this Settlement, including, but not limited to:

a. any direct or indirect claim for reimbursement from the EPA Hazardous Substance Superfund through Sections 106(b)(2), 107, 111, 112, or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law;

b. any claim under Sections 107 and 113 of CERCLA, Section 7002(a) of RCRA, 42 U.S.C. § 6972(a), or state law relating to the Work, Future Response Costs, and this Settlement;

c. any claim arising out of response actions at or in connection with the Site, including any claim under the United States Constitution, the Wisconsin Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, or at common law; or

61. Except as expressly provided in ¶ 64 (Waiver of Claims by Respondent), these covenants not to sue shall not apply in the event the United States brings a cause of action or issues an order pursuant to any of the reservations set forth in Section XVII (Reservations of Rights by EPA), other than in ¶ 58.a (liability for failure to meet a requirement of the Settlement), 58.d (criminal liability), or 58.e (violations of federal/state law during or after implementation of the Work), but only to the extent that Respondent's claims arise from the same response action, response costs, or damages that the United States is seeking pursuant to the applicable reservation.

62. Nothing in this Settlement shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

63. Respondent reserves, and this Settlement is without prejudice to, claims against the United States, subject to the provisions of Chapter 171 of Title 28 of the United States Code, and brought pursuant to any statute other than CERCLA or RCRA and for which the waiver of sovereign immunity is found in a statute other than CERCLA or RCRA, for money damages for injury or loss of property or personal injury or death caused by the negligent or wrongful act or omission of any employee of the United States, as that term is defined in 28 U.S.C. § 2671, while acting within the scope of his or her office or employment under circumstances where the United States, if a private person, would be liable to the claimant in accordance with the law of the place where the act or omission occurred. However, the foregoing shall not include any claim based on EPA's selection of response actions, or the oversight or approval of Respondent's deliverables or activities.

64. Waiver of Claims by Respondent

a. Respondent agrees not to assert any claims and to waive all claims or causes of action (including but not limited to claims or causes of action under Sections 107(a) and 113 of CERCLA) that they may have:

(1) **De Micromis Waiver.** For all matters relating to the Site against any person where the person's liability to Respondent with respect to the Site is based solely on having arranged for disposal or treatment, or for transport for disposal or treatment, of hazardous substances at the Site, or having accepted for transport for disposal or treatment of hazardous substances at the Site, if all or part of the disposal, treatment, or transport occurred before April 1, 2001, and the total amount of material containing hazardous substances contributed by such person to the Site was less than 110 gallons of liquid materials or 200 pounds of solid materials.

b. **Exceptions to Waiver**

(1) The waiver under this ¶ 64 shall not apply with respect to any defense, claim, or cause of action that a Respondent may have against any person otherwise covered by such waiver[s] if such person asserts a claim or cause of action relating to the Site against such Respondent.

(2) The waiver under ¶ 64.a(1) (De Micromis Waiver) shall not apply to any claim or cause of action against any person otherwise covered by such waiver, if EPA determines that: (i) that the materials containing hazardous substances contributed to the Site by such person have contributed significantly, or could contribute significantly, either individually or in the aggregate, to the cost of response action or natural resource restoration at the Site; or (ii) such person has failed to comply with any EPA requests for information or administrative subpoenas issued pursuant to Section 104(e) or 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) or 9622(e), or Section 3007 of RCRA, 42 U.S.C. § 6927, or has impeded or is impeding, through action or inaction, the performance of a response action or natural resource restoration with respect to the Site; or if (iii) such person has been convicted of a criminal violation for the conduct to which this waiver would apply and that conviction has not been vitiated on appeal or otherwise.

XIX. OTHER CLAIMS

65. By issuance of this Settlement, the United States and EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondent. The United States or EPA shall not be deemed a party to any contract entered into by Respondent or its directors, officers, employees, agents, successors, representatives, assigns, contractors, or consultants in carrying out actions pursuant to this Settlement.

66. Except as expressly provided in ¶ 64 (Waiver of Claims by Respondent) and Section XVI (Covenants by EPA), nothing in this Settlement constitutes a satisfaction of or release from any claim or cause of action against Respondent or any person not a party to this Settlement for any liability such person may have under CERCLA, other statutes, or common law, including but not limited to any claims of the United States for costs, damages, and interest under Sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607.

67. No action or decision by EPA pursuant to this Settlement shall give rise to any right to judicial review, except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

XX. EFFECT OF SETTLEMENT/CONTRIBUTION

68. Except as provided in ¶ 64 (Waiver of Claims by Respondent), nothing in this Settlement shall be construed to create any rights in, or grant any cause of action to, any person not a Party to this Settlement. Except as provided in Section XVIII (Covenants by Respondent), each of the Parties expressly reserves any and all rights (including, but not limited to, pursuant to Section 113 of CERCLA, 42 U.S.C. § 9613), defenses, claims, demands, and causes of action that each Party may have with respect to any matter, transaction, or occurrence relating in any way to the Site against any person not a Party hereto. Nothing in this Settlement diminishes the right of the United States, pursuant to Section 113(f)(2) and (3) of CERCLA, 42 U.S.C. § 9613(f)(2)-(3), to pursue any such persons to obtain additional response costs or response action and to enter into settlements that give rise to contribution protection pursuant to Section 113(f)(2).

69. The Parties agree that this Settlement constitutes an administrative settlement pursuant to which each Respondent has, as of the Effective Date, resolved liability to the United States within the meaning of Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), and is entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, or as may be otherwise provided by law, for the “matters addressed” in this Settlement. The “matters addressed” in this Settlement are the Work, Interim Response Costs, Future Oversight Costs and Future Response Costs.

70. The Parties further agree that this Settlement constitutes an administrative settlement pursuant to which Respondent has, as of the Effective Date, resolved liability to the United States within the meaning of Section 113(f)(3)(B) of CERCLA, 42 U.S.C. § 9613(f)(3)(B).

71. Respondent shall, with respect to any suit or claim brought by it for matters related to this Settlement, notify EPA in writing no later than 60 days prior to the initiation of such suit or claim. Respondent also shall, with respect to any suit or claim brought against it for matters related to this Settlement, notify EPA in writing within 10 days after service of the complaint or claim upon it. In addition, Respondent shall notify EPA within 10 days after service or receipt of any Motion for Summary Judgment and within 10 days after receipt of any order from a court setting a case for trial, for matters related to this Settlement.

72. In any subsequent administrative or judicial proceeding initiated by EPA, or by the United States on behalf of EPA, for injunctive relief, recovery of response costs, or other relief relating to the Site, Respondent shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised in the subsequent proceeding were or should have been brought in the instant case; provided, however, that nothing in this Paragraph affects the enforceability of the covenant by EPA set forth in Section XVI (Covenants by EPA).

XXI. INDEMNIFICATION

73. The United States does not assume any liability by entering into this Settlement or by virtue of any designation of Respondent as EPA's authorized representatives under Section 104(e) of CERCLA, 42 U.S.C. § 9604(e), and 40 C.F.R. 300.400(d)(3). Respondent shall indemnify, save, and hold harmless the United States, its officials, agents, employees, contractors, subcontractors, employees, and representatives for or from any and all claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, or subcontractors, and any persons acting on Respondent's behalf or under their control, in carrying out activities pursuant to this Settlement. Further, Respondent agrees to pay the United States all costs it incurs, including, but not limited to attorneys' fees and other expenses of litigation and settlement arising from, or on account of, claims made against the United States based on negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Settlement. The United States shall not be held out as a party to any contract entered into, by, or on behalf of Respondent in carrying out activities pursuant to this Settlement. Neither Respondent nor any such contractor shall be considered an agent of the United States.

74. The United States shall give Respondent notice of any claim for which the United States plans to seek indemnification pursuant to this Section and shall consult with Respondent prior to settling such claim.

75. Respondent covenants not to sue and agrees not to assert any claims or causes of action against the United States for damages or reimbursement or for set-off of any payments made, or to be made, to the United States, arising from or on account of any contract, agreement, or arrangement between any one or more of Respondent and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, Respondent shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of, any contract, agreement, or arrangement between Respondent and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays.

XXII. INSURANCE

76. No later than 30 days before commencing any on-site Work, Respondent shall secure, and shall maintain until the first anniversary after issuance of Notice of Work Completion pursuant to ¶ 3.10 of the SOW, commercial general liability insurance with limits of liability of \$1 million per occurrence, and automobile insurance with limits of liability of \$1 million per accident, and umbrella liability insurance with limits of liability of \$5 million in excess of the required commercial general liability and automobile liability limits, naming EPA as an additional insured with respect to all liability arising out of the activities performed by or on behalf of Respondent pursuant to this Settlement. In addition, for the duration of the Settlement, Respondent shall provide EPA with certificates of such insurance and a copy of each insurance policy. Respondent shall resubmit such certificates and copies of policies each year on the anniversary of the Effective Date. In addition, for the duration of the Settlement, Respondent

shall satisfy, or shall ensure that their contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Respondent in furtherance of this Settlement. If Respondent demonstrates by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering some or all of the same risks but in a lesser amount, Respondent need provide only that portion of the insurance described above that is not maintained by the contractor or subcontractor. Respondent shall ensure that all submittals to EPA under this Paragraph identify the WPSC Marinette MGP Site, Marinette, Wisconsin and the EPA docket number for this action.

XXIII. FINANCIAL ASSURANCE

77. In order to ensure the completion of the Work, Respondent shall secure financial assurance, initially in the amount of \$500,000 ("Estimated Cost of the Work"), for the benefit of EPA. The financial assurance must be one or more of the mechanisms listed below, in a form substantially identical to the relevant sample documents available from EPA or under the "Financial Assurance - Settlements" category on the Cleanup Enforcement Model Language and Sample Documents Database at <https://cfpub.epa.gov/compliance/models/>, and satisfactory to EPA. Respondent may use multiple mechanisms if they are limited to surety bonds guaranteeing payment, letters of credit, trust funds, and/or insurance policies.

- a. A surety bond guaranteeing payment and/or performance of the Work that is issued by a surety company among those listed as acceptable sureties on federal bonds as set forth in Circular 570 of the U.S. Department of the Treasury;
- b. An irrevocable letter of credit, payable to or at the direction of EPA, that is issued by an entity that has the authority to issue letters of credit and whose letter-of-credit operations are regulated and examined by a federal or state agency;
- c. A trust fund established for the benefit of EPA that is administered by a trustee that has the authority to act as a trustee and whose trust operations are regulated and examined by a federal or state agency;
- d. A policy of insurance that provides EPA with acceptable rights as a beneficiary thereof and that is issued by an insurance carrier that has the authority to issue insurance policies in the applicable jurisdiction(s) and whose insurance operations are regulated and examined by a federal or state agency;
- e. A demonstration by Respondent that it meets the financial test criteria of ¶ 79, accompanied by a standby funding commitment, which obligates the Respondent to pay funds to or at the direction of EPA, up to the amount financially assured through the use of this demonstration in the event of a Work Takeover; or
- f. A guarantee to fund or perform the Work executed in favor of EPA by a company: (1) that is a direct or indirect parent company of Respondent or has a "substantial business relationship" (as defined in 40 C.F.R. § 264.141(h)) with Respondent; and (2) can demonstrate to EPA's satisfaction that it meets the financial test criteria of ¶ 79.

78. Respondent has selected, and EPA has found satisfactory, a demonstration by Respondent that it meets the financial test criteria of ¶ 79 as an initial form of financial assurance.

79. Respondent seeking to provide financial assurance by means of a demonstration or guarantee under ¶ 77.e or 77.f, must, within 30 days of the Effective Date:

a. Demonstrate that:

(1) The Respondent or guarantor has:

- i. Two of the following three ratios: a ratio of total liabilities to net worth less than 2.0; a ratio of the sum of net income plus depreciation, depletion, and amortization to total liabilities greater than 0.1; and a ratio of current assets to current liabilities greater than 1.5; and
- ii. Net working capital and tangible net worth each at least six times the sum of the Estimated Cost of the Work and the amounts, if any, of other federal, state, or tribal environmental obligations financially assured through the use of a financial test or guarantee; and
- iii. Tangible net worth of at least \$10 million; and
- iv. Assets located in the United States amounting to at least 90 percent of total assets or at least six times the sum of the Estimated Cost of the Work and the amounts, if any, of other federal, state, or tribal environmental obligations financially assured through the use of a financial test or guarantee; or

(2) The Respondent or guarantor has:

- i. A current rating for its senior unsecured debt of AAA, AA, A, or BBB as issued by Standard and Poor's or Aaa, Aa, A or Baa as issued by Moody's; and
- ii. Tangible net worth at least six times the sum of the Estimated Cost of the Work and the amounts, if any, of other federal, state, or tribal environmental obligations financially assured through the use of a financial test or guarantee; and
- iii. Tangible net worth of at least \$10 million; and
- iv. Assets located in the United States amounting to at least 90 percent of total assets or at least six times the sum of the

Estimated Cost of the Work and the amounts, if any, of other federal, state, or tribal environmental obligations financially assured through the use of a financial test or guarantee; and

b. Submit to EPA for the Respondent or guarantor: (1) a copy of an independent certified public accountant's report of the entity's financial statements for the latest completed fiscal year, which must not express an adverse opinion or disclaimer of opinion; and (2) a letter from its chief financial officer and a report from an independent certified public accountant substantially identical to the sample letter and reports available from EPA or under the "Financial Assurance - Settlements" subject list category on the Cleanup Enforcement Model Language and Sample Documents Database at <https://cfpub.epa.gov/compliance/models/>.

80. Respondent providing financial assurance by means of a demonstration or guarantee under ¶ 77.e or 77.f must also:

a. Annually resubmit the documents described in ¶79.b within 90 days after the close of the Respondent's or guarantor's fiscal year;

b. Notify EPA within 30 days after the Respondent or guarantor determines that it no longer satisfies the relevant financial test criteria and requirements set forth in this Section; and

c. Provide to EPA, within 30 days of EPA's request, reports of the financial condition of the Respondent or guarantor in addition to those specified in ¶79.b; EPA may make such a request at any time based on a belief that the affected Respondent or guarantor may no longer meet the financial test requirements of this Section.

81. Respondent shall diligently monitor the adequacy of the financial assurance. If Respondent becomes aware of any information indicating that the financial assurance provided under this Section is inadequate or otherwise no longer satisfies the requirements of this Section, Respondent shall notify EPA of such information within 7 days. If EPA determines that the financial assurance provided under this Section is inadequate or otherwise no longer satisfies the requirements of this Section, EPA will notify the Respondent of such determination. Respondent shall, within 30 days after notifying EPA or receiving notice from EPA under this Paragraph, secure and submit to EPA for approval a proposal for a revised or alternative financial assurance mechanism that satisfies the requirements of this Section. EPA may extend this deadline for such time as is reasonably necessary for the Respondent, in the exercise of due diligence, to secure and submit to EPA a proposal for a revised or alternative financial assurance mechanism, not to exceed 60 days. Respondent shall follow the procedures of ¶ 83 (Modification of Amount, Form, or Terms of Financial Assurance) in seeking approval of, and submitting documentation for, the revised or alternative financial assurance mechanism. Respondent's inability to secure financial assurance in accordance with this Section does not excuse performance of any other obligation under this Settlement.

82. Access to Financial Assurance

a. If EPA issues a notice of implementation of a Work Takeover under ¶ 59.b, then, in accordance with any applicable financial assurance mechanism and/or related standby funding commitment, EPA is entitled to: (1) the performance of the Work; and/or (2) require that any funds guaranteed be paid in accordance with ¶ 82.d up to the amount listed in ¶ 77.

b. If EPA is notified by the issuer of a financial assurance mechanism that it intends to cancel such mechanism, and the Respondent fails to provide an alternative financial assurance mechanism in accordance with this Section at least 30 days prior to the cancellation date, the funds guaranteed under such mechanism must be paid prior to cancellation in accordance with ¶ 82.d.

c. If, upon issuance of a notice of implementation of a Work Takeover under ¶ 59.b, either: (1) EPA is unable for any reason to promptly secure the resources guaranteed under any applicable financial assurance mechanism and/or related standby funding commitment, whether in cash or in kind, to continue and complete the Work; or (2) the financial assurance is a demonstration or guarantee under ¶ 77.e or 77.f, then EPA is entitled to demand an amount, as determined by EPA, sufficient to cover the cost of the remaining Work to be performed. Respondent shall, within 10 days of such demand, pay the amount demanded as directed by EPA.

d. Any amounts required to be paid under this ¶ 82 shall be, as directed by EPA: (i) paid to EPA in order to facilitate the completion of the Work by EPA or by another person; or (ii) deposited into an interest-bearing account, established at a duly chartered bank or trust company that is insured by the FDIC, in order to facilitate the completion of the Work by another person. If payment is made to EPA, EPA may deposit the payment into the EPA Hazardous Substance Superfund or into the WPSC Manitowoc MGP Site Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

e. All EPA Work Takeover costs not paid under this ¶ 82 must be reimbursed as Future Response Costs under Section XII (Payments for Response Costs).

83. Modification of Amount, Form, or Terms of Financial Assurance. Respondent may submit, on any anniversary of the Effective Date or at any other time agreed to by the Parties, a request to reduce the amount, or change the form or terms, of the financial assurance mechanism. Any such request must be submitted to EPA in accordance with ¶ 78, and must include an estimate of the cost of the remaining Work, an explanation of the bases for the cost calculation, and a description of the proposed changes, if any, to the form or terms of the financial assurance. EPA will notify Respondent of its decision to approve or disapprove a requested reduction or change pursuant to this Paragraph. Respondent may reduce the amount of the financial assurance mechanism only in accordance with: (a) EPA's approval; or (b) if there is a dispute, the agreement or written decision resolving such dispute under Section XIII (Dispute Resolution). Respondent may change the form or terms of the financial assurance mechanism

only in accordance with EPA's approval. Any decision made by EPA on a request submitted under this Paragraph to change the form or terms of a financial assurance mechanism shall not be subject to challenge by Respondent pursuant to the dispute resolution provisions of this Settlement or in any other forum. Within 30 days after receipt of EPA's approval of, or the agreement or decision resolving a dispute relating to, the requested modifications pursuant to this Paragraph, Respondent shall submit to EPA documentation of the reduced, revised, or alternative financial assurance mechanism in accordance with ¶ 78.

84. **Release, Cancellation, or Discontinuation of Financial Assurance.** Respondent may release, cancel, or discontinue any financial assurance provided under this Section only: (a) if EPA issues a Notice of Work Completion under ¶ 3.10 of the SOW; (b) in accordance with EPA's approval of such release, cancellation, or discontinuation; or (c) if there is a dispute regarding the release, cancellation, or discontinuance of any financial assurance, in accordance with the agreement or final decision resolving such dispute under Section XIII (Dispute Resolution)].

XXIV. INTEGRATION/APPENDICES

85. This Settlement and its appendices constitute the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Settlement. The parties acknowledge that there are no representations, agreements, or understandings relating to the settlement other than those expressly contained in this Settlement. The following appendices are attached to and incorporated into this Settlement:

- a. Appendix A is the ROD.
- b. Appendix B is the SOW.
- c. Appendix C is the description and/or map of the Site.

XXV. MODIFICATION

86. The EPA Remedial Project Manager may modify any plan, schedule, or SOW in writing or by oral direction. Any oral modification will be memorialized in writing by EPA promptly, but shall have as its effective date the date of the EPA Remedial Project Manager's oral direction. Any other requirements of this Settlement may be modified in writing by mutual agreement of the parties.

87. If Respondent seeks permission to deviate from any approved work plan, schedule, or SOW, Respondent's Project Coordinator shall submit a written request to EPA for approval outlining the proposed modification and its basis. Respondent may not proceed with the requested deviation until receiving oral or written approval from the EPA Project Coordinator pursuant to ¶ 86.

88. No informal advice, guidance, suggestion, or comment by the EPA Remedial Project Manager or other EPA representatives regarding any deliverable submitted by Respondent shall relieve Respondent of its obligation to obtain any formal approval required by

this Settlement, or to comply with all requirements of this Settlement, unless it is formally modified.

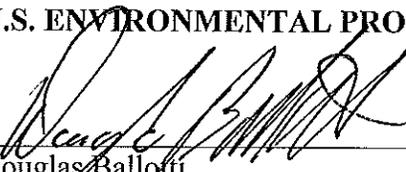
XXVI. EFFECTIVE DATE

89. This Settlement shall be effective 10 days after the Settlement is signed by the Regional Administrator or his/her designee.

IT IS SO AGREED AND ORDERED;

3/18/2019
Dated

U.S. ENVIRONMENTAL PROTECTION AGENCY:



Douglas Ballotti
Director
Superfund Division

Signature Page for Settlement regarding the Manitowoc Superfund Alternative Site

3/11/19

Dated

Elizabeth Stueck-Mullane

On behalf of Wisconsin Public Service Corporation

Elizabeth Stueck-Mullane
Vice President- Environmental
WEC Energy Group – Business Services
333 W. Everett St.
Milwaukee, WI 53203

APPENDIX B



Record of Decision

Wisconsin Public Service Corporation Manitowoc Former Manufactured Gas Plant Site Manitowoc, Wisconsin

EPA ID: WIN000509949



United States Environmental Protection Agency, Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

September 2018

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**Record of Decision – Wisconsin Public Service Corporation Manitowoc Former
Manufactured Gas Plant Site**

This Record of Decision (ROD) documents the soil and groundwater source control remedy that the United States Environmental Protection Agency (EPA), in consultation with the Wisconsin Department of Natural Resources, selected for the first Operable Unit (OU 1) of the Wisconsin Public Service Corporation (WPSC) Manitowoc Former Manufactured Gas Plant (MGP) Superfund Alternative Site (WPSC Manitowoc MGP Site, or Site) in Manitowoc, Wisconsin. Future RODs will address Site river sediment (OU 2) and groundwater (OU 3).

The ROD is organized into three parts. Part I contains the *Declaration*, Part II contains the *Decision Summary*, and Part III contains the *Responsiveness Summary*, which addresses the public comments EPA received in response to the Proposed Plan for cleanup of OU 1.

Acronyms and Definitions

§ NR	Wisconsin Administrative Code pertaining to the Department of Natural Resources
µg/L	Micrograms per liter (also equals parts per million)
µg/kg	Micrograms per kilogram (also equals parts per billion)
AOC	Administrative Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirement
BaP	Benzo(a)pyrene
BERA	Baseline Ecological Risk Assessment
BLRA	Baseline Risk Assessment
bgs	Below ground surface
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act (also known as Superfund)
CDI	Chronic Daily Intake
CFR	Code of Federal Regulations
City	City of Manitowoc
CO	Continuing Obligation
COC	Contaminant of Concern
CWG	Carbureted Water Gas
CY or Yd ³	Cubic Yards
DNAPL	Dense Non-Aqueous Phase Liquid
ELCR	Excess Lifetime Cancer Risk
EPA	United States Environmental Protection Agency
FS	Feasibility Study
ft	feet
ft ³	Cubic Feet
GIS	Geographic Information System
HHRA	Human Health Risk Assessment
HI	Hazard Index
HQ	Hazard Quotient
ICs	Institutional Controls
M	Million
MCL	Maximum Contaminant Level
mg/kg	Milligrams per kilogram
MGC	Manitowoc Gas Company
MGP	Manufactured Gas Plant
NAPL	Non-aqueous Phase Liquid
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
NR 140	Wisconsin NR 140 Groundwater Enforcement Standard
NRT	Natural Resource Technology, now O'Brien Gere, technical contractor to WPSC
O&M	Operation and Maintenance
OU	Operable Unit

PAHs	Polycyclic Aromatic Hydrocarbons
PRP	Potentially Responsible Party
PVOC	Petroleum Volatile Organic Compounds
RAO	Remedial Action Objectives
ROD	Record of Decision
RD	Remedial Design
RfD	Reference Dose
RG	Remediation Goal
RI	Remedial Investigation
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SEMS	Superfund Enterprise Management System
SF	Slope Factor
TBC	To-be Considered
USACE	United States Army Corps of Engineers
WAC	Wisconsin Administrative Code
WDNR	Wisconsin Department of Natural Resources
WF&L	Wisconsin Fuel and Light
WPSC	Wisconsin Public Service Corporation

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Record of Decision

Part I. Declaration

1.1 Site Name and Location

Wisconsin Public Service Corporation Manitowoc Former Manufactured Gas Plant Superfund Alternative Site (“WPSC Manitowoc MGP Site”), Manitowoc, Wisconsin

Superfund Enterprise Management System (SEMS) ID# WIN000509949

The WPSC Manitowoc MGP Site consists of three Operable Units (OU). Operable Unit 1 (OU1) addresses MGP soil and groundwater source area contaminants, OU2 addresses Manitowoc River sediment, and OU3 addresses groundwater.

1.2 Statement of Basis and Purpose

This Record of Decision (ROD) presents EPA’s selected remedy for soil and groundwater source control at the WPSC Manitowoc MGP Superfund Alternative Site, which was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision document addresses source area MGP waste in soil and groundwater, and is the first of three planned decision documents for the site. EPA anticipates that a second decision document will present a remedy for Manitowoc River sediment and a third decision document will present a final groundwater remedy.

This decision is based on the information contained in the Administrative Record for the WPSC Manitowoc MGP Site. The Administrative Record Index (see Appendix A) identifies each of the items comprising the Administrative Record upon which the selection of the remedial action is based. The Administrative Record file is available for review at the Manitowoc Public Library in Manitowoc, Wisconsin, and at the EPA Region 5 Records Center in Chicago, Illinois. Information on the Site can also be found at Wisconsin Department of Natural Resources’ (WDNR’s) Green Bay Office in Green Bay, Wisconsin.

The State of Wisconsin (Wisconsin DNR) has indicated concurrence with the selected remedy. EPA will place the State’s concurrence letter into the Site Administrative Record upon receipt.

1.3 Assessment of Site

EPA has determined that the response action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

1.4 Description of Selected Remedy for OU 1

EPA, in consultation with WDNR, has selected Alternative 3a to effectively treat non-aqueous phase liquid (NAPL) and polycyclic aromatic hydrocarbon (PAH)-contaminated soil and groundwater. The NAPL constitutes a principal threat waste since it acts as a reservoir for migration of contaminants to groundwater and sediment, while PAHs are a low-level threat waste that present low risk in the event of a release.

Alternative 3a consists of:

- *in-situ* stabilization (ISS) of highly-contaminated soil located in the Chicago Street and Winter Zones;
- maintaining existing and/or installing new (as required) direct contact barriers (such as paved parking lots and roadways) on top of surface soil that exceeds residential cleanup standards in all Site zones;
- a one-time placement of oxidizing compounds at the interface of highly-contaminated groundwater and soil (called *in-situ* chemical oxidation or ISCO);
- continued operation of an existing groundwater extraction well until a final groundwater remedy is selected; and
- the use of institutional controls (ICs) to restrict future land use to prevent human exposures to contamination remaining at the site, prevent interference with remedial components, and to help prevent future soil vapor intrusion risks.

The selected remedy is estimated to cost \$7.2 million (M), which includes an estimated capital cost of \$6.2M, an estimated present-worth operation and maintenance (O&M) cost of \$0.9M.

1.5 Statutory Determinations

The selected remedy is protective of human health and the environment, complies with Federal and State applicable or relevant and appropriate requirements (ARAR) to the remedial action (unless justified by a waiver), is cost-effective, and utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable.

This remedy also satisfies the statutory preference for treatment as a principal element of the remedy in that the selected remedy uses treatment to reduce the toxicity, mobility, and/or volume of hazardous substances, pollutants, or contaminants in soil and groundwater. Because this remedy only addresses source-area contamination and will result in hazardous substances, pollutants, or contaminants remaining on-Site above levels that allow for unlimited use and unrestricted exposure, EPA will conduct statutory reviews every five years after initiation of the remedial action until a remedy is selected and implemented that would allow for unlimited use and unrestricted exposure. This will ensure that the remedy is, or will be, protective of human health and the environment.

1.6 ROD Data Certification Checklist

The following information is included in the Decision Summary (Part 2) of this ROD, while additional information can be found in the Site Administrative Record file:

- Chemicals of concern (COCs) and their respective concentrations (see Part 2.7 Site Contaminants of Concern);
- Baseline risk represented by the COCs (see Part 2.7 - Summary of Site Risks under *Summary of the Human Health Risk Assessment*);
- Remediation goals (i.e., cleanup goals) established for the COCs and the basis for the goals (see Part 2.8 *Remedial Action Objectives* and Part 2.9 – *Remediation Goals*);
- How source materials constituting principal threats are addressed (see Part 2.12 - *Principal Threat Wastes*);
- Current and reasonably anticipated future land use assumptions used in the Human Health Risk Assessment and this ROD (see Part 2.5 – *Site Characteristics*);
- Potential land use that will be available at the Site as a result of the Selected Remedy (see Part 2.8 *Remedial Action Objectives*);
- Estimated capital, lifetime O&M, and total present worth costs; discount rate; and the number of years over which the remedy cost estimates are projected (see Part 2.10 – *Description of Alternatives*); and
- Key factor(s) that led to selecting the remedy (see Part 2.11 - *2.11 Comparative Analysis of Alternatives*).

1.7 Authorizing Signature



Douglas Ballotti, Acting Director
Superfund Division
U.S. EPA - Region 5

9/21/2018

Date

Part II. Decision Summary

2.1 Site Name, Location, and Brief Description

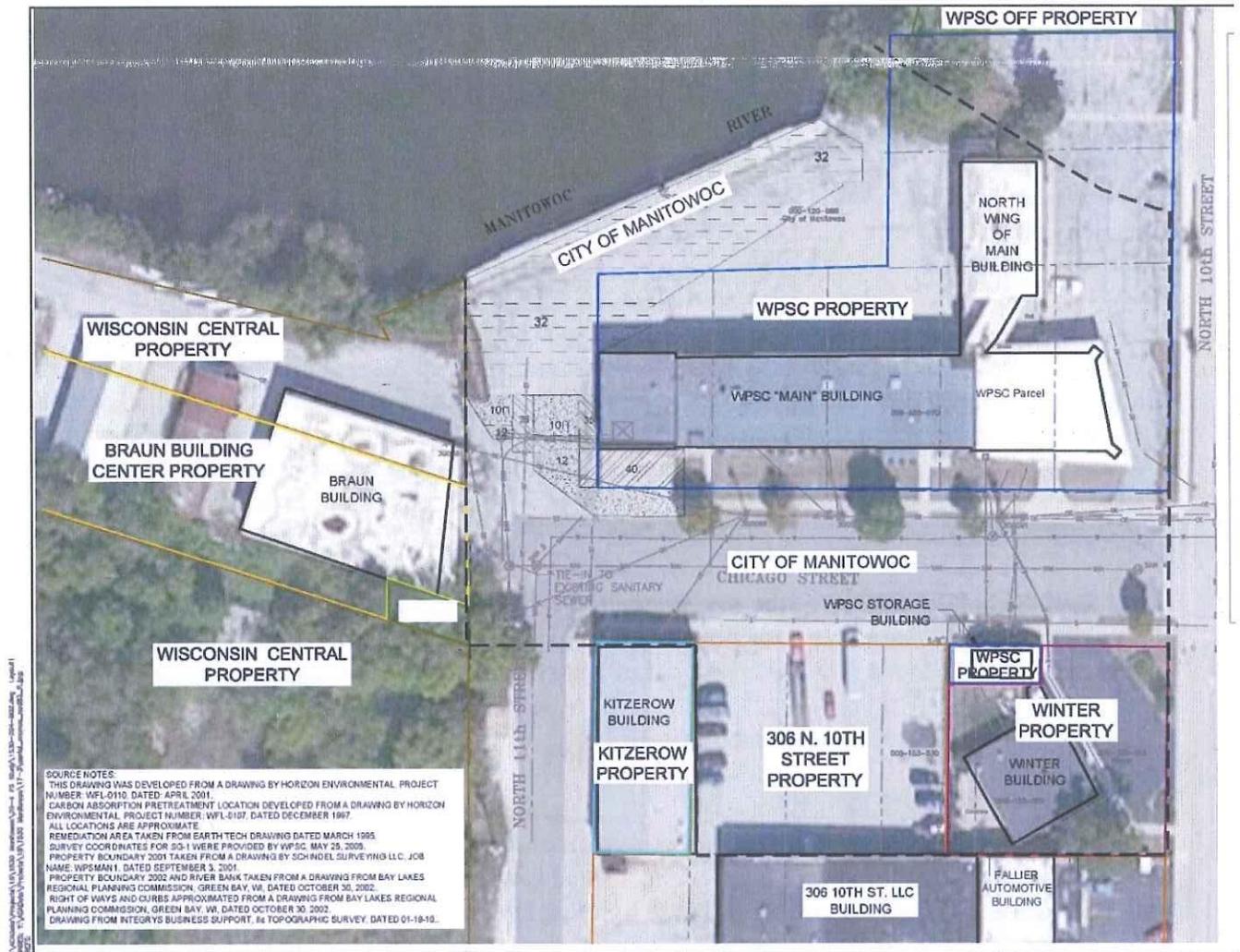
The nearly 2-acre WPSC Manitowoc MGP Site is in Manitowoc, Manitowoc County, Wisconsin (Figure 1), about 40 miles south of Green Bay, Wisconsin. The SEMS identification number is WIN000509949. EPA, as the lead agency, divided the site into three OUs, with OU1 addressing MGP source area contaminants, OU2 addressing river sediment, and OU3 addressing groundwater. WDNR is the support agency.

The Site consists of the 1.1-acre, WPSC-owned former Manitowoc MGP facility located at 402 North Tenth Street, which is bounded on the northwest by property owned by the City of Manitowoc (City) and the Manitowoc River; on the north by additional WPSC-owned parcels (“WPSC off-property”); on the east by North Tenth Street; on the south by Chicago Street; and on the west by North Eleventh Street (Figure 2, next page). The site area is zoned for multiple uses, including industrial and general business use.

Figure 1. Site Location Map



Figure 2. Site Property Boundaries



A multi-tenant office building (the “Main Building”) occupies much of the WPSIC MGP property, with the areas north, east and west covered by asphalt and the south area mostly covered with grass. The top floor of the Main Building is set up for office space, but is unoccupied, except for the top floor of the north wing of the Main Building, which is currently leased by an accounting firm. The bottom floor is used mainly for WPSIC vehicle storage and it also contains previously-installed groundwater treatment system equipment. The former MGP structures were located mostly on the WPSIC MGP property when operating, although a former gas holder was located to the south on the Winter property (Figure 2).

The City owns property between the WPSIC property’s north property line and the river (triangular-shaped property shown in Figure 2, above). The property located west of the subject property and on the west side of Eleventh Street along the river is owned by Canadian National Railroad and referred to as the Wisconsin Central Railroad Property to be consistent with previous site-related documents. This property is of interest to the City for redevelopment and the City is performing a Brownfields assessment prior to deciding whether or not to purchase the property.

The Braum Building Center, Inc. is located south of Wisconsin Central Railroad property and it uses the railroad property to store lumber for its pre-fabricated building manufacturing business.

Other site area properties include the Kitzerow property (see Figure 2, parcel on the west), the 306 N. Tenth Street property (parcels in middle), the Winter property, now owned by WPSC (parcel on the east), and a small parcel owned by WPSC along the south side of Chicago Street. The Winter Building and the WPSC Storage Building on the Winter Property will be razed once the lease of occupancy expires in December 2018. These properties are all zoned for commercial and heavy industrial use.

The Manitowoc River is approximately 400 feet across and is adjacent to the former MGP facility, and is utilized as a turning basin for large cargo ships. A sheet pile wall exists adjacent to the City Property and steep banks exist on both the north and west ends of the wall. There is no obvious location to easily access the river and only a limited distance out into the river is possible for wading. At approximately 60 feet from the shoreline, water depths are known to be more than 21 feet, the project depth within the U.S. Army Corps of Engineers (USACE) navigation channel.

Much of the upland portion of the Site is covered with pavement and buildings with a slope toward the Manitowoc River. Other site features include 28 monitoring wells and piezometers, plus the one pumping well installed as part of a previously-installed treatment system.

2.2 Site History and Enforcement Activities

Site History

MGPs were industrial facilities that were found in every sizable town or city in the U.S. from the 1820s to right after World War Two. MGPs heated coal in large industrial ovens to produce manufactured gas used for street and home lighting, heating, and cooking. After the war, natural gas use replaced manufactured gas use because it was abundant, lower priced, and overall cleaner for the environment. Some MGPs continued to operate after the war, and most ceased operations by the 1960s and were torn down. Typically, the aboveground structures, such as buildings, tar/oil storage tanks, and storage sheds, were demolished and the foundations were backfilled, leaving hardly any visible traces of the former operations. Belowground structures such as traces of underground piping and storage tanks, along with residual contaminants, were often left behind.

The former WPSC Manitowoc MGP facility was constructed by the Manitowoc Gas Company (MGC) between 1901 and 1906 and was operated through 1947, first by MGC until it was sold to and operated by the Wisconsin Fuel and Light Company (WF&L). MGC and WF&L both used the carbureted water gas (CWG) process to manufacture gas for fuel and lighting, which involved passing air and steam over incandescent coal in a brick-filled vessel to form a combustible gas, which was then enriched by squirting a fine mist of oil over the bricks. The gas was then purified and stored in large gas holders prior to distribution.

After the Manitowoc facility ceased operating, WF&L removed the above-ground MGP components and constructed the Main Building for their use. In 2001, WPSC purchased the property from WF&L.

History of Enforcement Actions

WPSC and WDNR addressed site contamination under the state's voluntary remediation program for several years before EPA became the lead agency. In 2006, WPSC signed an Administrative Order on Consent (AOC) with EPA. Under the 2006 AOC, WPSC agreed to prepare and perform a remedial investigation (RI) and feasibility study (FS) at six former MGP sites located in Manitowoc, Marinette, Green Bay, Two Rivers, Stevens Point, and Oshkosh, Wisconsin. The AOC entered the six sites into the Superfund Alternative Site Approach, which addresses eligible contaminated sites by following the requirements of Superfund law and the NCP without listing the site on the National Priorities List (NPL).

2.3 Community Participation

Since 2008, EPA conducted community interviews, created a community involvement plan, updated the information repository, revised the site's web page, and maintained a postal mailing list and email group. Although there was very little public interest in this site, EPA was ready to respond to inquiries from citizens and local officials. In summer 2018, EPA notified the public of the proposed plan for source area cleanup via a fact sheet, web page update, and a newspaper ad. EPA made the RI and FS Reports and the Proposed Plan available to the public in the site's Administrative Record file and information repository at the Manitowoc Public Library. These documents, along with other site-related material, can be found at the library and on the site's web page www.epa.gov/superfund/wpsc-manitowoc.

EPA published a notice of availability of the RI and FS Reports and Proposed Plan in the Manitowoc *Herald Times Reporter* on July 21, 2018 and announced that the public comment period on the Proposed Plan would run from July 23 to August 22, 2018. EPA indicated that it would accept public comments that were mailed, emailed, and faxed. The agency received comments from five community members and from WPSC and WDNR. Comments and responses can be found in Part III, the *Responsiveness Summary*.

2.4 Scope and Role of Response Action

This ROD addresses OUI, source area MGP contaminants in soil and groundwater, and will be the first decision document for the WPSC Manitowoc MGP Site. EPA anticipates that a second decision document will present a remedy for Manitowoc River sediment (OU2) and a third and final decision document will present a final groundwater remedy (OU3) once the source area contaminants have been addressed and are no longer a source of contamination to the sediment or groundwater.

2.5 Site Characteristics

The WPSC Manitowoc MGP Site is located along the southern bank of the Manitowoc River in Manitowoc, Wisconsin (Figures 1 and 2), which is on the western shore of Lake Michigan.

Area land use is mainly business or commercial and industrial, although some recreational fishing is done from the City property at the river. Single and multi-family dwellings may be located in general business districts, but they are not allowed in commercial or industrial areas.

The site contains topographic features related to the floodplains and bluffs of the river. The banks of the river are steep woody slopes and/or sheet pile walls and some of the site area is within the 100-year floodplain. Generally, the site area is flat with a mild slope towards the river. The nearsurface- geology of the Manitowoc area is characterized by poorly permeable glacial lake deposits of sand, silt, and clay that range up to 150 feet thick. Stratified sand and gravel alluvial deposits also occur along the river. Dolomite bedrock underlies the glacial soils around Manitowoc at depths between 50 and 200 feet below ground surface. At the site, the stratigraphy consists of three to ten feet of fill material (sand, silt and clay) overlying the glacial lake deposits that lie on top of the dolomite bedrock, which is found at a depth of 55 and 65 feet, depending on surface elevation.

There are two groundwater units present at the site - the glacial sand layer and the dolomite bedrock, which are separated by a continuous clay layer. Local groundwater flow is mostly influenced by water levels in the Manitowoc River and by the previously-installed on-Site pumping well. Depth to groundwater across the site is variable (between 5 and 22 feet) due to changes in surface elevation. Flow is generally north towards or into the Manitowoc River.

The City of Manitowoc receives municipal water from intake pipes located two miles off-shore in Lake Michigan as well as an underground standby well located about 3 miles from the site.

No documented wetlands were identified at the site and a review of the Natural Heritage Inventory Database identified of no federally-protected bird or fish species within a mile of the site. The severity of soil disturbance documented at the site over the last 50 years suggest that there are no historical or archeological features on the former MGP site as well.

Conceptual Site Model

A conceptual site model (CSM) describes potential contaminant sources, transport mechanisms, potentially exposed populations, exposure pathways, and routes of exposure at contaminated sites. A CSM was developed for the WPSC Manitowoc MGP Site based on site characteristics and results from the RI investigations and tells the story of how and where the MGP contaminants moved and what impacts such movement may have had upon human health and the environment (figures 4 and 5).

The media of concern at the site include soil, river sediment, and groundwater. As described in the CSM, EPA considers PAHs and petroleum volatile organic compounds (PVOCs) to be the primary contaminants of concern (COCs) at the site. Data show that human exposure via direct contact to or ingestion of PAH-contaminated soil and groundwater drive risks at the site, and that the management of risks due to PAH exposure will also address risks associated with other non-PAH constituents.

Soil Investigation

A total of 132 soil samples were collected and analyzed from 33 soil borings, one test pit, and from soil derived from six piezometers and four groundwater monitoring well installations. The lateral extent of MGP-impacted soil generally coincides with remaining former MGP structures still beneath the WPSC (100,000 ft³ gas holder) and Winter properties (300,000 ft³ gas holder, gas purifier and condenser). PAHs are most frequently found in soil samples and PVOCs were less frequently found but are generally collocated with elevated PAH levels. Visual observations noted oil-coated or oil-wetted soil samples.

Nine PAHs are found to exceed commercial/industrial soil screening levels (SLs). Naphthalene, benzo(a)pyrene, and benzo(a)anthracene were most frequently found, with naphthalene exceeding its SL (17 milligrams per kilogram (mg/kg) or parts per million (ppm)) in 27 samples, benzo(a)pyrene exceeding its SL in 24 samples, and benzo(a)anthracene exceeding its SL (3 mg/kg) in 14 samples.

Benzene, ethylbenzene, 1,2,4-trimethylbenzene, and xylene were the four PVOCs that exceeded industrial screening levels (SLs). Of the 132 soil samples analyzed for benzene and ethylbenzene, seven exceeded the benzene SL of 5 mg/kg and ten exceeded the ethylbenzene SL of 25 mg/kg. Of the 110 soil samples analyzed for 1,2,4-trimethylbenzene, six exceeded the industrial SL of 240 mg/kg, and of the 41 samples analyzed for xylene, one exceeded the industrial SL of 2,500 mg/kg.

Total cyanide and total lead exceeded industrial SLs for inorganic compounds in one instance each at SLs of 1,200 mg/kg and 800 mg/kg respectively.

When compared to residential screening levels, reported concentrations in surface soils from the WPSC Property exceeded the RSLs for seven PAHs including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and chrysene. Risk from surface soils at the WPSC Property calculated using the ratio method for a residential scenario along with the maximum observed concentrations yielded a cumulative cancer risk estimate of 5×10^{-4} (driven by benzo[a]pyrene), which is above EPA's target risk range. Calculations using the mean concentrations yielded a cumulative cancer risk estimate of 2×10^{-4} , which is also above EPA's target risk range.

When surficial soil concentrations were compared to residential screening levels at the Winter Property, concentrations exceeded RSLs for eight PAHs, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, chrysene and naphthalene. The maximum cumulative cancer risk yielded estimates of 2×10^{-3} for the maximum and 4×10^{-4} based on the mean, with both estimates being driven by benzo(a)pyrene.

Groundwater Investigation

Quarterly groundwater monitoring was done for the first year following installation of additional wells in 2009 and 2012. Outside of these quarterly monitoring periods, sampling was completed on a semi-annual basis for a total of 371 groundwater samples.

Of the samples collected from 27 wells and analyzed for VOCs, benzene, ethylbenzene, 1,2,4-trimethylbenzene, and xylene exceeded groundwater SLs in seven, two, four, and two wells, respectively.

Of the samples collected from 24 wells sampled for PAHs, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene exceeded groundwater SLs in 20, 18, 19, 19, 23, and 21 wells, respectively.

Arsenic and manganese exceeded groundwater SLs in two and six wells, respectively.

Groundwater samples were also evaluated for certain geochemical parameters to determine whether conditions in the aquifers are favorable for natural attenuation of the COCs. Results were inconclusive and further geochemical investigation is necessary. Results will be presented later as OU3.

Soil Gas Investigation

Vapor intrusion into buildings is commonly investigated when volatile contaminants are present either in groundwater and/or the subsurface soil near or beneath a building. The concern is the potential for VOCs, such as benzene, to be transferred into the spaces between soil particles (e.g. soil gas or soil vapor) beneath the building, which can then be transferred to the inside of the building through crack in the foundations, floors, or at junctions where utilities enter the building. Vapor intrusion can lead to chemicals contaminating indoor air, which can cause a health concern at elevated concentrations. Vapor intrusion is not a concern for chemicals that are not volatile, such as most metals and heavier organic chemicals such as most PAHs.

Four soil gas sampling events were completed during the RI from 2012-14. Soil gas samples were collected outside of buildings or beneath buildings where visual observations of MGP residuals (occurrence of NAPL as visual observations of oil-wetted or oil-coated media) were known to be present. Forty-two soil vapor probes were installed at 22 locations, including outside and inside buildings, and at various depths, to estimate attenuation effects in the soil column. Elevated concentrations of contaminants in soil gas were found around the Winter Building; therefore, EPA requires WPSC to conduct annual indoor air monitoring to make sure the occupants of the building are not breathing in contaminated air. Results from the indoor air sampling events show that no indoor air contamination is present. Of the 132 soil gas samples taken and analyzed, 27 exceeded the industrial SLs for naphthalene, 24 exceeded for benzo(a)pyrene, and 14 exceeded for benzo(a)anthracene.

Surface Water and Sediment Investigation

Surface water and sediment sampling data will be presented in OU2 documents, but in general, MGP waste such as tar containing PAHs is suspected to be present in river sediment near the former MGP properties.

2.6 Current and Potential Future Site and Resource Uses

The land use around the former MGP facility currently is used for commercial and industrial purposes; however, under general business zoning, the land can be used for residential purposes. Although the City of Manitowoc has interest in redeveloping its riverfront in this prime, downtown area, land-use will likely remain commercial/industrial into the future as WPSC owns the former MGP property and the Winter property. Presently, the City is conducting a Brownfields assessment on the railroad property and may purchase the property for commercial/recreational redevelopment.

Groundwater is not being used because the city derives its water supply mainly from Lake Michigan. Groundwater will be more fully addressed as OU3.

2.7 Summary of Site Risks

The following section establishes the basis for taking action at the WPSC Manitowoc MGP Site and briefly summarizes the relevant portions of the Human Health Risk Assessment (HHRA) and Baseline Ecological Risk Assessment (BERA), both found as appendices in the 2014 RI Report. The extent of contamination is depicted in Tables 1 (below) and 2 (next page).

Site Contaminants of Concern (COCs)

EPA identified PAHs, including naphthalene, benzo(a)pyrene, benzo(b)fluoranthene and chrysene, PVOCs, including benzene and ethylbenzene, and the inorganic material cyanide as COCs in soil at the Site. Based on past investigations and results from the RI, the source of the PAH and PVOOC contamination is the manufacture of gas processes undertaken at the WPSC Manitowoc MGP facilities, which operated from the 1900s through 1947. The COCs were also spread from the upland MGP facility into the Manitowoc River and have leached into the groundwater beneath the site.

Table 1. Summary of Soil COCs

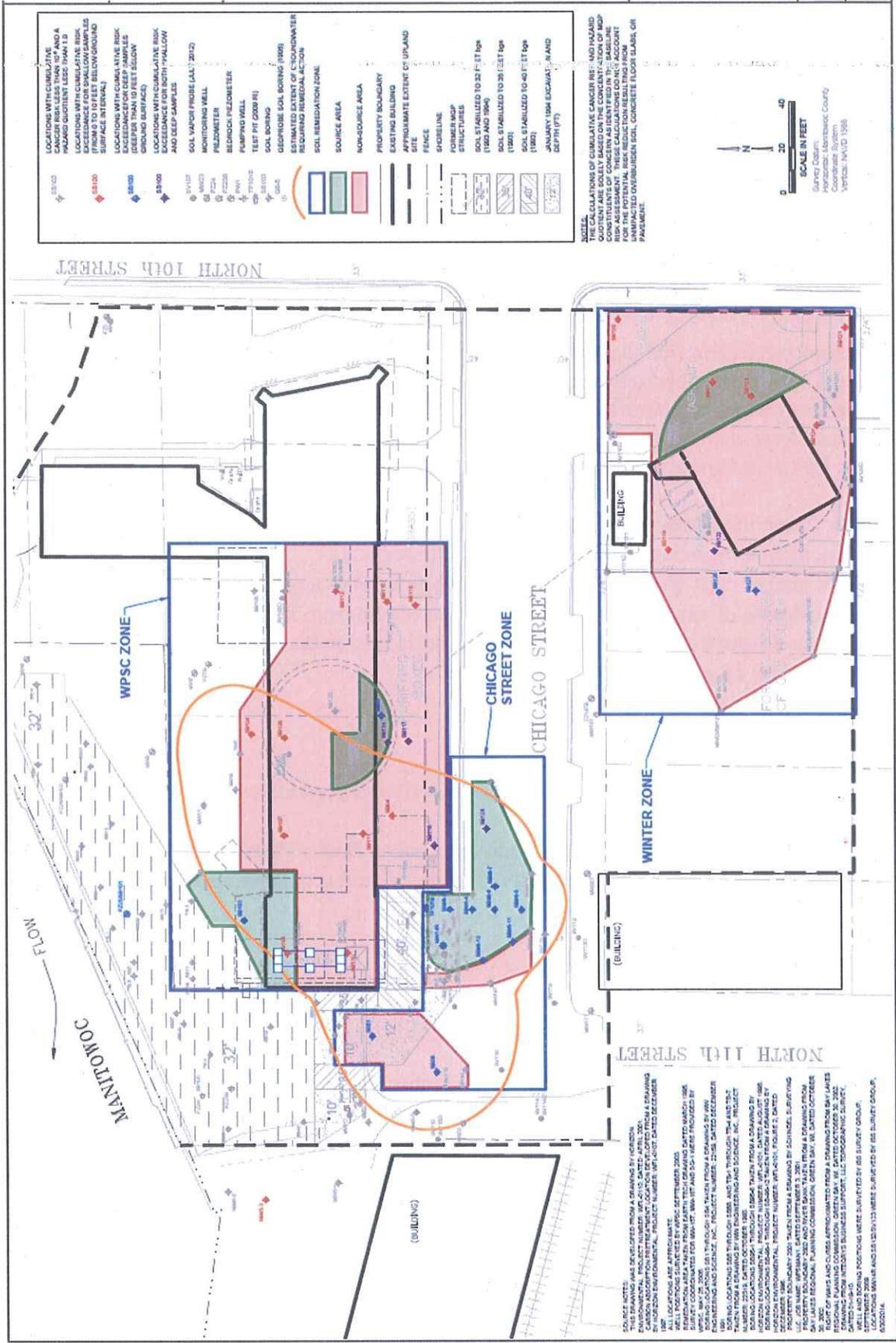
PAHs	PVOCs	Inorganics/Metals
Benz[a]anthracene	Benzene	Cyanide, Total
Benzo[a]pyrene	Ethylbenzene	Lead, Total
Benzo[b]fluoranthene	1,2,4-Trimethylbenzene	
Benzo[k]fluoranthene	Xylene, o	
Chrysene	Xylenes, m+ p	
Dibenz[a, h]anthracene	Total Xylenes	
Indeno[1,2,3-cd]pyrene		
Naphthalene		
1-Methylnaphthalene		
2-Methylnaphthalene		

Table 2. Summary of Groundwater COCs

PAHs	PAHs Continued	PVOCs	Inorganics/ Metals
Acenaphthene	Dibenz(a,h)anthracene	Benzene	Arsenic, Dissolved
Acenaphthylene	Fluoranthene	Ethylbenzene	Manganese, Dissolved
Anthracene	Fluorene	1,2,4-Trimethylbenzene	
Benzo(a)anthracene	Indeno(1,2,3-cd)pyrene	1,3,5-Trimethylbenzene	
Benzo(a)pyrene	Naphthalene	Toluene	
Benzo(b)fluoranthene	Phenanthrene	Xylene, o	
Benzo(ghi)perylene	Pyrene	Xylenes, m + p	
Benzo(k)fluoranthene	1-Methylnaphthalene	Total Xylenes	
Chrysene			
2-Methylnaphthalene			

Figure 3, next page, depicts the extent of COCs in soil and groundwater at the Site. The areas shaded green show the extent of NAPL source area contamination and the red shaded areas show the extent of PAH contamination in soil. The orange outline shows the estimated source area groundwater plume extent. Full extent of groundwater requiring remediation will be determined in the Remedial Investigation for OU3.

Figure 3. Estimated Extent of Source Areas Requiring Remedial Action



Conceptual Site Model (CSM)

The media of concern at the site include soil, groundwater, and river sediment. As described in the CSM, EPA considers PAHs and petroleum volatile organic compounds (PVOCs) to be the primary contaminants of concern (COCs) at the site. Data show that human exposure via direct contact to or ingestion of PAH-contaminated soil and groundwater will drive risks at the site, and that the management of risks due to PAH exposure will also address risks associated with other non-PAH constituents. PAH-contaminated soil and groundwater both can lead to PAH exposure to future site workers. The targeted remediation areas at the site are source areas of soil and groundwater contaminants exceeding human health risk criteria (see figures 4 and 5, next pages.)

Identification of Potentially Exposed Populations

Populations were identified that could be exposed to contaminants through a variety of activities consistent with current and potential future uses of the Site. The HHRA evaluated potential exposures of human receptors to COCs in soil, groundwater, and soil gas. Risks and hazards were characterized on an exposure area-specific basis for residents and commercial/industrial workers based on current and reasonably anticipated future land use.

Risks for future industrial or commercial workers include:

- Incidental ingestion of soil (surface and subsurface).
- Dermal contact with soil (surface and subsurface) as a result of soil disturbance.
- Inhalation of vapors as a result of vapor intrusion from MGP residuals in soil and groundwater into commercial/industrial buildings on the Site.
- Ingestion of groundwater.
- Dermal contact with groundwater.

Risks for construction workers include:

- Incidental ingestion of soil (surface and total) and groundwater associated with excavation activities.
- Dermal contact with soil and groundwater associated with excavation activities.
- Inhalation of vapors and dust derived from soil and groundwater associated with excavation activities.

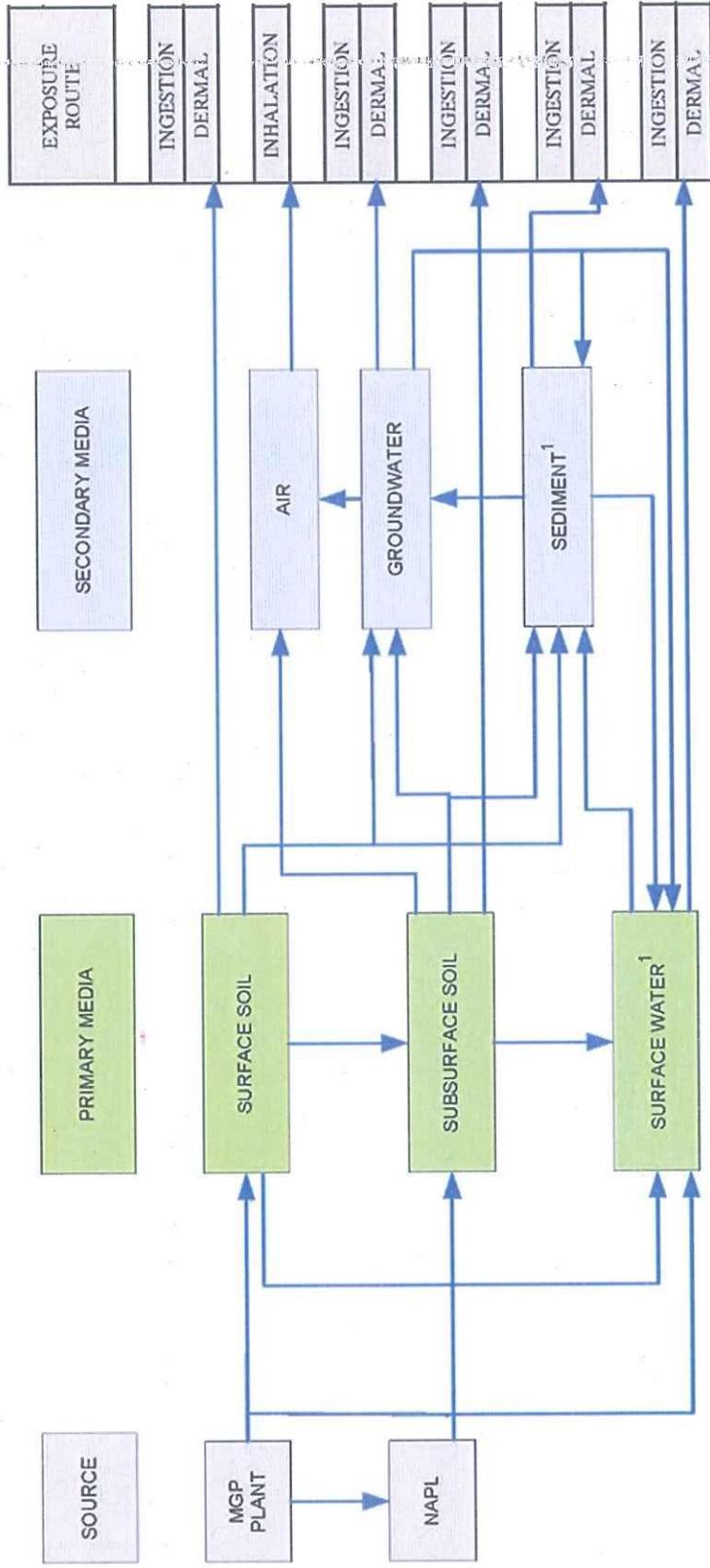
Risks for recreational visitors include:

- Incidental ingestion of surface soil.
- Dermal contact with surface soil.

Risks for residents, under a hypothetical future land-use scenario, include:

- Incidental ingestion of soil (surface and subsurface).
- Dermal contact with soil (surface and subsurface) as a result of soil disturbance.
- Inhalation of vapors and dust as a result of soil disturbance.
- Inhalation of vapors as a result of vapor intrusion from subsurface soils and groundwater into a future residential building constructed on the Site.
- Ingestion of groundwater.
- Dermal contact with groundwater.

Figure 4a. Conceptual Site Model Chart for the WPCSC Manitowoc Former MGP Site



GENERAL NOTES:
 This site-specific Conceptual Site Model was developed based on the Generalized Conceptual Site Model Revision 0 (August 5, 2007) and observations made during the July 17, 2009 site reconnaissance, and the results of the sediment remediation and remedial investigation.

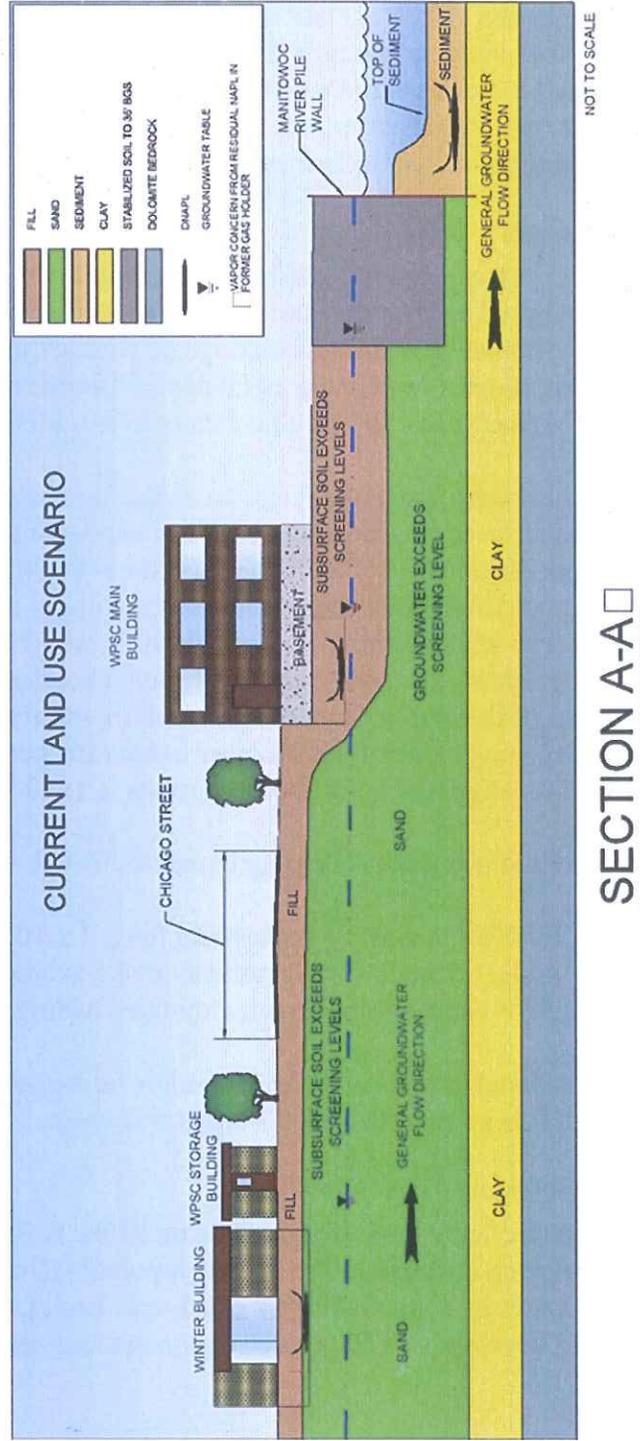
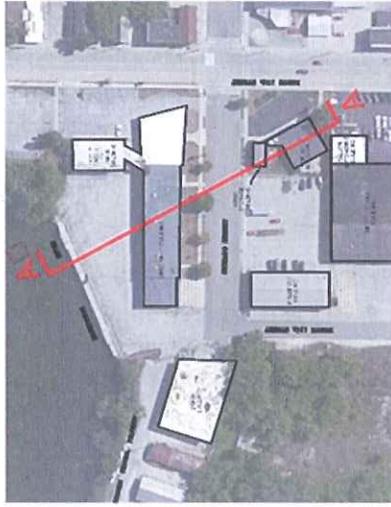
¹A qualitative exposure assessment found this pathway to be incomplete or insignificant under current and future scenarios. Refer to Section 2.3.4 Potential Exposure to Surface Water and Sediment of the BLRA for the details of this assessment.

Figure 4b. Conceptual Site Model Chart for the WPSC Manitowoc Former MGP Site, Continued

	EXPOSURE ROUTE	INDUSTRIAL, COMMERCIAL WORKER	CONSTRUCTION WORKER	RESIDENTIAL	RECREATIONAL	BIRDS	MAMMALS	FISH	BENTHIC INVERTEBRATES
Surface	INGESTION	Δ	Δ	●	○	○	○	N/A	N/A
Soil	DERMAL	Δ	Δ	●	○	○	○	N/A	N/A
Air	INHALATION	Δ	Δ	●	○	○	○	N/A	N/A
Ground-water	INGESTION	●	Δ	●	○	○	○	N/A	N/A
	DERMAL	●	Δ	●	○	○	○	N/A	N/A
Soil Sub-Surface	INGESTION	●	Δ	●	○	○	○	N/A	N/A
Surface	DERMAL	●	Δ	●	○	○	○	N/A	N/A
Sediment	INGESTION	○	○	○	○	Δ	○	Δ	Δ
	DERMAL	○	○	○	○	Δ	○	Δ	Δ
Surface	INGESTION	○	○	○	○	○	○	○	○
Water	DERMAL	○	○	○	○	○	○	○	○

Notes: Δ= pathway partially complete
 ●= pathway incomplete or insignificant under current land use—potentially complete under hypothetical future land use scenario
 ○= pathway incomplete

Figure 5. Visual Conceptual Site Model



Toxicity Assessment

A toxicity assessment determines whether exposure to COCs may result in adverse health effects in humans and the relationship between the magnitude of exposure (dose) and incidence and/or severity of adverse effects (response). For risk assessment purposes, chemicals are generally separated into categories based on whether the chemical exhibits carcinogenic or noncarcinogenic health effects. As appropriate, a chemical may be evaluated separately for both effects. Noncancer effects are evaluated using a reference dose (RfD), which is the dose below which adverse health effects are not expected. Carcinogenic effects are assessed using the cancer slope factor (SF), which is typically expressed in units of mg/kg-day. The SF represents an upper bound estimate on the increased cancer risk. SFs are generally accompanied by a weight of evidence descriptor, which expresses the confidence as to whether a specific chemical is known or suspected to cause cancer in humans.

Cancer Assessment

Potential cancer effects are expressed as the probability that an individual will develop cancer over a lifetime based on the exposure assumptions described in Section G.1.b. The cancer SF is a plausible upper bound estimate of carcinogenic potency used to calculate cancer risk from exposure to carcinogens by relating estimates of lifetime average chemical intake to incremental probability of an individual developing cancer over a lifetime.

For carcinogenic compounds, risk is given as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to a carcinogen. Values are expressed as "excess lifetime cancer risk" (ELCR) because the risk would be in addition to the risk of developing cancer from other causes such as smoking or exposure to too much sun. ELCRs are often expressed in scientific notation (e.g., 1×10^{-6}); an ELCR of 1×10^{-6} indicates that an individual experiencing the reasonable maximum chemical exposure estimate has an extra 1 in 1 million chances of developing cancer as a result of site-related exposure. The chance of an individual developing cancer from all other causes has been estimated to be as high as 1 in 3. EPA's target risk range for site-related exposures is 1×10^{-4} to 1×10^{-6} ELCR.

ELCR is calculated using the following equation: $ELCR = CDI \times SF$

where: ELCR = a unitless probability (e.g., 2×10^{-5})
 CDI = chronic daily chemical intake averaged over 70 years (mg/kg-day)
 SF = cancer slope factor, expressed as (mg/kg-day)⁻¹.

A COC is considered to present a current and/or future potential unacceptable risk if the calculated ELCR is greater than EPA's target risk range.

Noncancer Assessment

Noncancer health effects were evaluated using RfDs. A RfD is an estimate of a daily oral exposure for a given duration to the human population (including susceptible subgroups) that is likely to be without an appreciable risk of adverse health effects over a lifetime. Chronic RfDs are specifically developed to be protective against long-term exposure to COCs.

For non-carcinogens, EPA calculates a hazard quotient (HQ) for each COC. The HQ is the ratio of the estimated exposure level to a chemical compound over a specified period of time to a RfD of the same substance that may cause deleterious health effects over the same exposure period. The potential for non-carcinogenic effects is evaluated by comparing an exposure level over a specified time period (e.g., lifetime) with a RfD derived for a similar exposure period. An RfD represents a level that an individual may be exposed to that is not expected to cause any deleterious effect. The ratio of exposure to toxicity is called a HQ. An HQ>1 indicates that site-related exposures may present a risk to human health.

The HQ is calculated as follows: $HQ = CDI/RfD$

where: CDI = Chronic daily intake
RfD = reference dose

CDI and RfD are expressed in the same units and represent the same exposure period (i.e., chronic, sub-chronic, or short-term).

Risk Characterization

Risk characterization integrates the information from the exposure assessment and toxicity assessment, using a combination of qualitative and quantitative information. Risk characterization involves estimating the magnitude of the potential adverse health effects associated with the COCs. It also involves making judgments about the nature of the human health threat to the defined receptor populations. The risk characterization combines the results of the dose-response (toxicity assessment) and exposure assessment to calculate cancer risks and noncancer health hazards. In accordance with EPA's guidelines, this assessment assumes that the effects of all contaminants are additive through a specific pathway within an exposure scenario.

EPA's goal of protection for cancer risk is 1×10^{-6} , and risks greater than 1×10^{-4} typically will require remedial action. The potential for noncancer health effects is estimated by comparing the average daily dose of a chemical for adult, adolescent, and child with the RfD for the specific route of exposure (e.g., oral). The ratio of the intake (average daily dose, or ADD) to reference dose (ADD/RfD) for an individual chemical is the HQ. When an RfD is available for the chemical, these ratios are calculated for each chemical that elicits a noncancer health effect. Typically, chemical-specific HQs are summed to calculate an HI value for each exposure pathway. EPA's goal of protection for noncancer health effects is an HI equal to 1. When the HI exceeds 1, there may be a concern for health effects.

This approach can result in a situation where HI values exceed 1 even though no chemical-specific HQs exceed 1 (i.e., adverse systemic health effects would be expected to occur only if the receptor were exposed to several contaminants simultaneously). In this case, chemicals are segregated by similar effect on a target organ, and a separate HI value for each effect/target organ is calculated. If any of the separate HI values exceed 1, adverse, noncancer health effects are possible. It is important to note, however, that an HI exceeding 1 does not predict a specific disease.

Summary of the HHRA

The human health risk assessment (HHRA) component of the baseline risk assessment (BLRA) evaluated current land uses and exposure pathways and hypothetical future land-use scenarios of the site. Site-specific conditions, such as access (or lack thereof) to various media, or presence of NAPL, are also considered in the assessment. Because this Proposed Plan addresses only source area contaminants, the discussion below will focus on risks associated with the source areas. The risks posed by the other areas will be discussed and addressed in future decision documents.

Calculated human health risks by medium and property is presented in Table 3, below. Exposure routes for soils is through dermal contact and ingestion. Human health risks to contaminated groundwater are presented as inhalation resulting from vapor intrusion (soil gas and indoor air).

Table 3. Calculated Human Health Risks by Medium and Property

Surface Soils (0-2 ft)	Industrial/ Commercial	Residential	Surface Soils (0-2 ft)	Industrial/ Commercial	Residential
<u>Near WPSC Bldg.</u>	ELCR: 4×10^{-5} HI: <1	ELCR: 5×10^{-4} HI: <1	<u>Near Winter Bldg.</u>	ELCR: 1×10^{-4} HI: 0.4	ELCR: 4×10^{-4} HI: 0.2
Total Soils (0-10 ft)	Industrial/ Commercial	Residential	Total Soils (0-10 ft)	Industrial/ Commercial	Residential
<u>Near WPSC Bldg.</u>	ELCR: 6×10^{-4} HI: 4	ELCR: 9×10^{-3} HI: <1	<u>Near Winter Bldg.</u>	ELCR: 2×10^{-4} HI: <1	ELCR: 2×10^{-3} HI: 18
Soil Vapor Exterior Samples	Industrial/ Commercial	Residential	Soil Vapor Exterior Samples	Industrial/ Commercial	Residential
<u>WPSC Bldg. and Utilities</u>	ELCR: 2×10^{-5} HI: 1	ELCR: 1×10^{-4} HI: 5	<u>Braun Bldg.</u>	ELCR: $<1 \times 10^{-6}$ HI: <1	ELCR: $<1 \times 10^{-6}$ HI: <1
<u>Winter Bldg.</u>	ELCR: 1×10^{-1} HI: 2,000	ELCR: 7×10^{-1} HI: 10,000	<u>Fallier Auto. Bldg.</u>	ELCR: $<1 \times 10^{-6}$ HI: <1	ELCR: 1×10^{-4} HI: 2
<u>Kitzerow Bldg.</u>	ELCR: $<1 \times 10^{-6}$ HI: <1	ELCR: $<1 \times 10^{-6}$ HI: <1	<u>WPSC Storage</u>	ELCR: $<1 \times 10^{-6}$ HI: <1	ELCR: $<1 \times 10^{-6}$ HI: <1
Soil Vapor Sub-slab	Industrial/ Commercial	Residential	Indoor Air	Industrial/ Commercial	Residential
<u>WPSC Bldg.</u>	ELCR: 2×10^{-2} HI: 400	ELCR: 9×10^{-2} HI: 2,000	<u>Winter Bldg.</u>	ELCR: 1×10^{-6} HI: <1	ELCR: 7×10^{-6} HI: <1

Notes: ELCR = Excess Lifetime Cancer Risk HI = Hazard Index

ELCR and HI presented are maximum exposure risk values.

Yellow highlighting indicates that the ELCR is greater than 1×10^{-4} or the noncancer hazard index is above 1.

In addition to the table above, there are multiple exceedances of residential drinking water standards at the WPSC and Winter properties, which are presented in Table 4, below. After addressing source area contaminants, WPSC will conduct a RI to determine the remaining impacts to groundwater and associated risks, and EPA will select a final groundwater remedy that addresses those risks.

Table 4. Groundwater Exceedances of Residential Drinking Water Standards

Analyte	Maximum Detected Values (in µg/L)	RSL Tapwater (in µg/L)	MCL (in µg/L)	WI NR 140 ES (in µg/L)
PAHs				
Acenaphthene	5,150	400		
Acenaphthylene	79,400	400		
Anthracene	30,500	1,300		3,000
Benzo(a)anthracene	14,300	0.029		
Benzo(a)pyrene	11,300	0.0029	0.2	0.2
Benzo(b)fluoranthene	10,900	0.029		0.2
Benzo(ghi)perylene	9,200	87		250
Benzo(k)fluoranthene	13,300	0.29		
Chrysene	21,100	2.9		0.2
Dibenz(a,h)anthracene	2,030	0.0029		
Fluoranthene	45,200	630		400
Fluorene	27,000	220		400
Indeno(1,2,3-cd)pyrene	5.1	0.029		
1-Methylnaphthalene	150,000	0.97		
2-Methylnaphthalene	245,000	27		
Naphthalene	799,000	0.14		100
Phenanthrene	84,600	1,300		3,000
Pyrene	47,400	87		250
VOCs				
Benzene	470	0.39	5	5
Ethylbenzene	1,650	1.3	700	700
Toluene	1,370	860	1,000	800
1,2,4-Trimethylbenzene	675	15		480
1,3,5-Trimethylbenzene	194	87		480
Xylene, o	1,190	190		
Xylenes, m + p	2,210	190		
Total Xylenes	5,450	190	10,000	2,000
Inorganics				
Arsenic, Dissolved	19.5	0.045	3	3
Manganese, Dissolved	817	320		16

Notes: MCL= Maximum Contaminant Level RSL= Regional Screening Level

WI NR 140 ES= Wisconsin Chapter NR 140 Enforcement Standard

µg/L= micrograms per liter

Conclusions of the HHRA

Soil: The lateral extent of MGP-affected soil generally coincides with remaining former MGP structures on both the WPSC and Winter Properties. PAHs are the most frequent category of constituents detected above applicable screening levels. PVOC detections above applicable screening levels are less frequent than elevated PAH detections and are generally collocated with elevated PAH detections. Soil exceedances are closely associated with visual observations of oil-coated or oil-wetted soil. Most of the Site impacts are associated with the former 100,000 ft³ and 300,000 ft³ gas holders and Chicago Street directly south of the former purifier and condenser.

Groundwater: The BLRA evaluation calculated cumulative human health risks to potential exposure to site groundwater. Groundwater at the Site does not currently pose a risk to human receptors because it is not used as a drinking water source and there are no production wells within the delineated plume. Drinking water for the City of Manitowoc comes from Lake Michigan and, as necessary, supplemented by a well that is not affected by the Site. There is no city ordinance restricting the installation of drinking water wells; therefore, under the hypothetical future residential land use scenario, there is a potential for ingestion of affected groundwater. This situation would only occur if the hypothetical future resident were to install a potable water well rather than relying on potable water provided by the City of Manitowoc.

The BLRA also considered potential risk to construction workers who may excavate soil and potentially contact groundwater. Dermal exposure and incidental ingestion of groundwater during construction activities are potential exposure pathways since groundwater depth is relatively shallow and ranges from 5-22 feet below ground surface (bgs). If future construction in the area entails workers having direct physical contact with groundwater or associated vapors in excavations at or below the water table, there would be some potential for risks above the risk management range, as product has been observed in at least one well (MW-14). Contact with groundwater is likely to be very limited because of safety considerations other than those relating to chemical exposure, but potential risks should be managed appropriately.

Soil Gas: Vapor intrusion into buildings is commonly investigated when contamination is present either in groundwater and/or the subsurface soil near or beneath a building. The concern is the potential for VOCs, such as benzene, to be transferred into the spaces between soil particles (e.g. soil gas or soil vapor) beneath the building, which can then be transferred to the inside of the building through cracks in the foundations, floors, or at junctions where utilities enter the building. Vapor intrusion can lead to chemicals contaminating indoor air, which can cause a health concern at elevated concentrations. Vapor intrusion is not a concern for chemicals that are not volatile, such as most metals and heavier organic chemicals such as PAHs.

Four soil gas sampling events were completed during the RI from 2012-14. Soil gas samples were collected outside of buildings or beneath buildings where visual observations of MGP residuals were known to be present. The conclusions of the BLRA are summarized below.

Under the WPSC Building:

- Sub-slab samples collected beneath the WPSC building indicated risks within the risk management range under an industrial scenario, but above the risk management range for a hypothetical future residential scenario.

For deeper samples, risks were estimated to be above the risk management range for both an industrial and a hypothetical future residential scenario.

Sub-slab samples are considered more indicative of potential indoor air concentrations than the deeper samples and risks for these sub-slab samples were within the risk management range for the current industrial use.

Adjacent to the WPSC Building:

- Subsurface exterior soil vapor samples near the WPSC building, including utility corridors, and samples near the Fallier automotive building were associated with risks within the risk management range for the industrial scenario, but above the range for a hypothetical future residential scenario.

Kitzerow, Braun, and WPSC Storage Buildings:

- Subsurface exterior soil vapor samples near the Kitzerow, Braun, and WPSC storage buildings indicated all estimated risks under an industrial or hypothetical future residential scenario were within or below the risk management range.

Winter Building:

- Subsurface exterior soil vapor samples near the Winter building indicated risks above the risk management range under either an industrial or a hypothetical future residential scenario. An evaluation of the indoor air of the Winter building provided evidence that subsurface soil vapors are not intruding into the indoor air of the existing building, so the vapor intrusion pathway is incomplete. Annual indoor air sampling at the Winter Building will continue until it is vacated (December 2018) to confirm that indoor air quality continues to be below applicable screening levels.

The BLRA determined that risks from soil gas or indoor air are within the risk management range for current industrial land use. Annual sampling completed in 2015, 2016, and 2017 demonstrate the VI pathway is incomplete at the Winter Building.

Summary of the Baseline Ecological Risk Assessment (BERA)

Results of the BERA will be presented and discussed in the sediment cleanup decision document.

Basis for Taking Action

It is EPA's current judgment that the selected remedy identified in this ROD is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

2.8 Remedial Action Objectives

Remedial action objectives (RAOs) describe goals that the proposed remedial action is expected to accomplish. RAOs for the site were developed to protect human health and environmental receptors from unacceptable risk resulting from the soil and groundwater source materials at the site. The RAOs are listed below:

- RAO-1 – Prevent current and future human exposure to COCs in soils at levels that present a carcinogenic risk greater than 1×10^{-6} ELCR or a non-carcinogenic hazard quotient greater than 1 to current and future construction/utility work and residential/industrial/commercial uses.
- RAO-2 – Minimize current and future migration of COCs from soil to groundwater.
- RAO-3 – Stabilize or reduce the migration of COCs into groundwater by conducting source-control measures.
- RAO-4 – Prevent human exposure to indoor air (resulting from soil gas/vapors caused by MGP source material, MGP-impacted soil, and/or MGP-impacted groundwater) at levels greater than 1×10^{-6} ELCR or a non-carcinogenic hazard quotient greater than 1.

2.9 Remediation Goals

Preliminary Remediation Goals (PRGs) are risk-based or ARAR-based chemical-specific concentrations that help further define the RAOs. PRGs are considered “preliminary” remediation goals until a remedy is selected in a ROD. The ROD establishes the final remedial goals and/or cleanup levels. Remediation Goals are also used to define the extent of contaminated media requiring remedial action, and are the targets for the analysis and selection of long-term remedial goals.

The HHRA developed a series of risk-based concentrations (RBCs) for total PAHs intended to be protective of future workers. The RBCs are calculated, chemical-specific concentrations below which no significant health effects are anticipated for a receptor. For human receptors, the site RBCs correspond to a target risk for carcinogenic effects of 1×10^{-6} and a target HI of 1 for non-carcinogenic effects. For ecological receptors, RBCs correspond to a target HQ of 1. RBCs for ecological receptors represent a risk range based on “No Observed Adverse Effects Level” and “Lowest Observed Adverse Effects Level” risk estimates for each receptor group.

Soil Remediation Goals

The proposed Remediation Goals (RGs) for soil are generally based on EPA default exposure parameters and factors representing reasonable maximum exposure conditions for long-term/chronic exposures for ELCR of 1×10^{-6} with a corresponding hazard quotient of 1 under a hypothetical residential and industrial exposure scenario. Remediation of general business areas to residential RGs will result in unrestricted use and unrestricted exposures. Remediation to industrial RGs in industrial/commercial areas will be protective only if there are corresponding controls to prevent residential land use, unless additional remedial action is undertaken. As specified by Wisconsin DNR’s Update to RR-890 and RCL Spreadsheet (Wisconsin DNR, June 2014), certain EPA default exposure parameters were modified to match current Wisconsin DNR requirements (Tables 5 and 6, next page).

Groundwater Remediation Goals

The selected groundwater RG will eliminate the migration of NAPL into groundwater following remedial action implementation. Final groundwater RGs will be selected in the OU3 ROD after evaluation of post-OU1 remedy groundwater conditions.

Table 5. Soil Remediation Goals for Industrial/Commercial Areas

PAHs	Industrial Soil Screening Level	PVOCs	Industrial Soil Screening Level
Benz[a]anthracene	2,100 µg/kg	Benzene	5,400 µg/kg
Benzo[a]pyrene	210 µg/kg	Ethylbenzene	27,000 µg/kg
Benzo[b]fluoranthene	2,100 µg/kg	1,2,4-Trimethylbenzene	219,000 µg/kg
Benzo[k]fluoranthene	21,000 µg/kg	Xylene, o	434,000 µg/kg
Chrysene	210,000 µg/kg	Xylenes, m + p	2,500,000 µg/kg
Dibenz[a, h]anthracene	210 µg/kg	Total Xylenes	2,700,000 µg/kg
Indeno[1,2,3-cd]pyrene	2,100 µg/kg		
Naphthalene	18,000 µg/kg	Inorganics	
1-Methylnaphthalene	53,000 µg/kg	Cyanide, Total	1,000,000 µg/kg
2-Methylnaphthalene	2,200,000 µg/kg	Lead, Total	800,000 µg/kg

Note: µg/kg = micrograms per kilogram (parts per million)

Table 6. Soil Remediation Goals for General Business/Hypothetical Future Residential Areas

PAHs	Residential Soil Screening Level	PVOCs	Residential Soil Screening Level
Benz[a]anthracene	150 µg/kg	Benzene	1,100 µg/kg
Benzo[a]pyrene	15 µg/kg	Ethylbenzene	5,400 µg/kg
Benzo[b]fluoranthene	150 µg/kg	1,2,4-Trimethylbenzene	62,000 µg/kg
Benzo[k]fluoranthene	15,000 µg/kg	Xylene, o	434,000 µg/kg
Chrysene	15,000 µg/kg	Xylenes, m + p	388,000 µg/kg
Dibenz[a, h]anthracene	15 µg/kg	Total Xylenes	400,000 µg/kg
Indeno[1,2,3-cd]pyrene	150 µg/kg		
Naphthalene	3,600 µg/kg	Inorganics	
1-Methylnaphthalene	1,600 µg/kg	Cyanide, Total	78,000 µg/kg
2-Methylnaphthalene	230,000 µg/kg	Lead, Total	400,000 µg/kg

2.10 Description of Alternatives

CERCLA mandates that remedial actions must be protective of human health and the environment, be cost-effective, and use permanent solutions and alternative treatment technologies or resource recovery alternatives to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ, as a principal element, treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, and contaminants at a Site. CERCLA § 121(d), 42 U.S.C. § 9621(d), further specifies that a remedial action must require a level or standard of control of the hazardous substances, pollutants, and contaminants, which at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA § 121(d)(4), 42 U.S.C. § 9621(d)(4).

Seven alternatives were developed and evaluated for addressing the current and potential risks to human health or the environment. Detailed information about the remedial alternatives are provided in the FS Report (NRT 2018). The seven alternatives are:

Alternative 1 – No Action

Estimated Capital Cost: \$0

Estimated Annual Operation and Maintenance (O&M) Cost: \$0

Estimated Periodic Cost: \$20,000 (every five years)

Estimated Total Present Worth: \$50,000

Estimated Remedial Action Construction Timeframe: none – no construction would occur

Summary:

Regulations governing the Superfund program require that the “no action” alternative be evaluated generally to establish a baseline for comparison. Under this alternative, EPA would take no additional action to prevent exposure to site contaminants and NAPL in soils and contaminated groundwater would remain in place at the site. There would be periodic costs associated with five-year reviews, since the NCP requires five-year reviews as long as hazardous substances remain at the site at concentrations that do not allow for unlimited use and unrestricted exposure.

Alternative 2 – ISS in Chicago Street Zone, ICs

Estimated Capital Cost: \$2,300,000

Estimated Annual Operation and Maintenance (O&M) Cost: \$900,000

Estimated Periodic Cost: \$88,000

Estimated Total Present Worth: \$3,300,000

Estimated Remedial Action Construction Timeframe: 3-5 months

Summary:

ISS of Chicago Street Zone; maintenance of existing direct contact barriers and installation of new direct contact barriers, as required, over affected surficial soil in all zones; continued operation of groundwater pump and treat system for a defined period after ISS, monitoring of groundwater contaminant concentrations to evaluate the effectiveness of soil cleanup, and ICs to manage remaining risks associated with soil, groundwater, and vapor intrusion. A final groundwater remedy will be selected at a later date.

Alternative 2a– ISS in Chicago Street Zone, ISCO for Groundwater, ICs

Estimated Capital Cost: \$2,600,000

Estimated Annual Operation and Maintenance (O&M) Cost: \$900,000

Estimated Periodic Cost: \$88,000

Estimated Total Present Worth: \$3,600,000

Estimated Remedial Action Construction Timeframe: 3-5 months

Alternative 2a is identical to Alternative 2 with the addition of a one-time application through injection of oxidizing chemicals (ISCO) to reduce remaining groundwater impacts following source treatment.

Soil Summary:

ISS of Chicago Street Zone: Alternatives 2 and 2a include ISS of source material located beneath Chicago Street and North 11th Street.

The ISS process involves blending impacted soil with amendments (cement, bentonite, ground granulated blast furnace slag, etc.), to encapsulate and immobilize COCs. ISS will inhibit contact of the immobilized source material with groundwater.

The estimated surface area of source material to be treated using ISS in the Chicago Street Zone is approximately 2,200 square feet and is located between 14 feet below grade and 41 feet below grade, resulting in an estimated 2,200 cubic yards of material requiring ISS. There are implementation challenges associated with ISS of discrete zones below the ground surface, so the upper portion of the soil column may also be treated using ISS. For cost estimating, it was assumed that ISS would commence at 5 feet bgs and extends to approximately 41 feet bgs, bringing the total volume of stabilized material to approximately 3,000 cubic yards.

Non-source material with COCs above industrial RGs in the Chicago Street Zone is located under an active roadway at depths greater than 10 feet bgs and is not accessible for human exposure. Potential future risk resulting from the unlikely exposure to non-source material in the Chicago Street Zone will be managed through ICs.

Horizontal Engineered Surface Barriers: The Site is in an area with many surface improvements, including paved parking lots and paved roadways. Alternatives 2 and 2a will involve monitoring and maintaining existing surface barriers, which currently mitigate potential exposure to surficial soil containing COCs above the residential RGs. In areas of the Site where human exposure to surficial soil containing COCs above the residential RGs is not currently limited by an existing barrier, a barrier will be installed.

Conceptually, barrier installation would consist of excavating the top two feet of affected soil, disposing of excavated soil off-site, and backfilling the excavation with 18 inches of clean fill and six inches of clean topsoil. Alternative barrier approaches, including gravel or asphalt as backfill, will be evaluated during the remedial design phase.

Approximately 6,100 square feet of barrier will be installed, which will involve excavation and off-site disposal of approximately 350 cubic yards of soil. Both existing surface improvement as well as newly installed barriers will be regularly inspected and maintained based on the requirements of a Cover Monitoring and Maintenance Plan, to be developed during the remedial design. Modification to the existing and newly installed barriers will be managed through a Soil Management Plan and corresponding ICs.

Groundwater Summary

Monitoring: Alternatives 2 and 2a will involve groundwater monitoring following ISS. The existing pump and treat system at PW1 will be operated for a minimum period to allow for removal and treatment of one pore water volume in the affected area. Groundwater monitoring will continue and a final groundwater remedy will be selected at a later date.

ISS creates a low permeability zone that isolates source material and will force groundwater flow changes. A review of the existing well network remaining after remedial action will be performed to ascertain if additional wells will be required to adequately evaluate and monitor COCs in groundwater due to groundwater flow impacts from the ISS.

It is also assumed that groundwater use controls using the WDNR's Geographic Information System (GIS) Registry will be implemented to restrict groundwater use until the final groundwater cleanup standards are achieved.

Groundwater Treatment for 2a: Alternative 2a is identical to Alternative 2 with the addition of a one-time application of ISCO through injection to address groundwater contamination following source treatment. Chemical oxidation was selected due to its ability to rapidly degrade high concentrations of dissolved-phased COCs likely to remain present following ISS.

Institutional Controls for Soil, Groundwater, and Indoor Air: Following ISS of source material within the Chicago Street Zone and installation of horizontal engineered barriers throughout the Site, potential risks resulting from exposure to remaining soil, groundwater, and vapor intrusion will be managed through ICs. The boundary for institutional controls will be based on delineation of MGP-COCs on affected parcels to residential RGs.

WDNR's GIS Registry will be used to implement ICs; however, alternate continuing obligation (CO) mechanisms, including deed restrictions, may be considered as part of the remedial design. Requirements, limitations, or conditions relating to restrictions of sites listed on the WDNR GIS database are required to be met by all property owners [Wisconsin Statutes Section 292.12(5)]. WPSC owns the WPSC Property and Winter Property, and has authority to implement and enforce ICs on these properties.

State statute requires that the GIS database conditions be maintained for a property, regardless of changes in ownership. A violation of Section 292.12 is enforceable under Wisconsin Statutes Sections 292.93 and 292.99.

Approximately 1.48 acres will be subject to restrictions using the WDNR GIS Registry. The properties subject to restriction are owned by a variety of entities, as summarized in Table 6, below.

Table 6. Properties Requiring Institutional Controls

Property Name	Current Land Use	Current Zoning	Approximate Area Subject to ICs
City of Manitowoc	Right-of-way and Roadway	Heavy Industrial	0.50 Acres
WPSC Property	Storage	General Business	0.52 Acres
Winter Property	Business (until December 2018)	Heavy Industrial	0.30 Acres
306 N. 10th St. Property	Parking Lot	Heavy Industrial	0.16 Acres

Specific restrictions that will likely be included on the Wisconsin GIS Registry for these properties will include the following:

Soil - Any subsurface activity must be conducted in accordance with a Soil Management Plan to ensure proper management of subsurface soil disturbed through future site development, utility repairs, and other intrusive activities.

Indoor Air through Vapor Intrusion - Vapor intrusion risks must be reassessed should any of the following conditions be satisfied: modification of land use; construction of a new building; modification to existing buildings that may negatively affect the vapor intrusion pathway. In addition, annual indoor air sampling at the Winter Building will continue until it is vacated (December 2018) to confirm that indoor air quality continues to be below applicable screening levels.

Groundwater – Construction of potable water wells and consumption of groundwater will be prohibited until the groundwater is restored to drinking water standards.

An Institutional Control Implementation Plan will be developed to detail land-use restrictions and will document procedures for effectively implementing the institutional control.

Alternatives 3– ISS in Chicago Street and Winter Zones, Barriers, ICs

Estimated Capital Cost: \$5,900,000

Estimated Annual Operation and Maintenance (O&M) Cost: \$900,000

Estimated Periodic Cost: \$75,000

Estimated Total Present Worth: \$6,900,000

Estimated Remedial Action Construction Timeframe: 4-7 months

Summary:

ISS of Chicago Street Zone and Winter Zone; maintenance of existing direct contact barriers and installation of new direct contact barriers, as required, over affected surficial soil in all zones above residential screening levels; continued operation of groundwater pump and treat system for a defined period after ISS, monitoring of groundwater contaminant concentrations to evaluate the effectiveness of soil cleanup, and institutional controls to manage remaining potential risks associated with soil, groundwater, and vapor intrusion. A final groundwater remedy will be selected at a later date.

Alternative 3a is identical to Alternative 3 with the addition of a one-time application of in-situ chemical oxidation to promote cleanup of remaining groundwater contamination following soil source treatment. Alternatives 3 and 3a will include many of the same concepts as Alternative 2, above. The elements unique to and/or significantly different in Alternatives 3 and 3a are described in detail below.

Alternative 3a– ISS in Chicago Street and Winter Zones, Barriers, ISCO, ICs

Estimated Capital Cost: \$6,200,000

Estimated Annual Operation and Maintenance (O&M) Cost: \$900,000

Estimated Periodic Cost: \$75,000

Estimated Total Present Worth: \$7,200,000

Estimated Remedial Action Construction Timeframe: 4-7 months

Soil Summary

ISS of Winter Zone: The Winter Building parcel was sold to WPSC in December 2015. A stipulation in the property sale was that Mr. Winter would continue business operations in the building until approximately 2017, which was extended until December 2018.

After Mr. Winter's occupancy of the building ends, WPSC will implement remedial action. The building on the Winter Building area is centered on the former 300,000 cubic foot gas holder, which appears to be intact beneath ground surface. During RI activities, drill refusal likely indicating Gas Holder Bottom was identified at approximately 6 to 8 feet bgs. Soil borings contain some indication of source material in the form of residual NAPL in the bottom 1.5-foot interval of the holder. In addition, suspected crystalline naphthalene was identified in the 12-14 ft bgs interval of SB122, located immediately outside the western edge of the holder.

As part of Alternatives 3 and 3a, source material and soil with COCs above industrial RGs will be treated using ISS. For the 1×10^{-6} RG scenario, ISS is anticipated over a 14,500-square foot area to an estimated average depth of 45 feet below grade resulting in an estimated volume of 24,000 cubic yards.

It is not effective or practical to implement ISS in areas with significant obstructions or debris. The Winter Building and adjacent WPSC storage building would be demolished and the parcels would be pre-excavated to remove any building footings and other debris prior to remedial action implementation. In addition, the gas holder foundation itself would be demolished and removed from the Site. If source material is discovered on the gas holder bottom during pre-excavation activities, the source material will be removed from the Site for off-site landfill disposal.

Additional material may be removed from Site and disposed of off-site for the purpose of managing swell and to allow for placement of an estimated five feet of clean backfill to support future redevelopment.

Remaining areas with surficial soils above residential screening levels will receive horizontal engineered barriers to mitigate risk.

Groundwater Summary

Enhanced Groundwater Treatment: Alternative 3a is identical to Alternative 3 with the addition of a one-time application of ISCO through injection to promote cleanup of remaining groundwater contamination, prior to selection of a final groundwater remedy, and is described in Alternative 2a.

Alternative 4 –Multi-Zone In-Situ Thermal Treatment, Barriers, ICs

Estimated Capital Cost: \$12,800,000

Estimated Annual Operation and Maintenance (O&M) Cost: \$900,000

Estimated Periodic Cost: \$76,000

Estimated Total Present Worth: \$13,800,000

Estimated Remedial Action Construction Timeframe: 6-12 months

Summary:

In-situ thermal treatment of WPSC Zone Source Area, Chicago Street Zone, and Winter Zone;

maintenance of existing direct contact barriers and installation of new direct contact barriers, as required, over affected surficial soil in all zones; continued operation of groundwater pump and treat system for a defined period after treatment; monitoring groundwater; and ICs to manage remaining potential risks associated with soil, groundwater, and vapor intrusion.

Alternative 4 will include many of the same concepts presented in Alternatives 2 and 3. Only components unique to and/or significantly different in implementation are described below.

Treatment Summary

In-situ Thermal Treatment of WPSC Source, Chicago Street, and Winter Zone: In-situ thermal treatment involves increasing the temperature of the subsurface to enhance source material recovery, thermally destroy source material, or thermally solidify source material in-situ. Based on the high permeability of the soil, depth of contamination, and potential issues with subsidence/settling of soil beneath the WPSC building, adjacent Chicago Street, and other adjacent surface improvements, target temperature will be limited to 100 degrees Celsius. The proposed approach has been used at similar MGP sites and is often referred to as In-Situ Thermochemical Solidification. This approach would remove volatile and mobile components of the source area, and thereby reduce mobility and prevent further contaminant migration. The increased subsurface temperature would convert the more recalcitrant COCs to a solidified mass within the soil pore spaces, in a material similar to asphalt. This material would remain in place but is expected to be immobile and not leach appreciable amounts of COCs into groundwater.

Consideration must be given to increased subsurface temperatures on the subsurface infrastructure. Increasing the subsurface temperature to 100 degrees Celsius will often exceed the working temperature for common subsurface utility materials and utilities may need to be relocated as part of the project.

In addition, a suitable method to install wells inside the WPSC building will be identified during the RD. The ceiling clearance in the basement level of this building precluded use of a standard direct push drill rig as part of the RI investigation.

The potential inability to install thermal wells in preferred location in these the WPSC Zone represents an implementability challenge that could negatively affect the effectiveness of treatment. WPSC would implement remedial action in the Winter Zone by starting with pre-excavation of the gas holder.

It is estimated to take approximately 90 days of heating to achieve target temperature and approximately 90 additional days to meet the remedial objectives.

Success of remedial action will be determined through collection of soil samples within the treatment zone for comparison against industrial RGs for volatile constituents. Concentration of PAHs and the corresponding visual observation with sample will be recorded. After thermal treatment, equipment and subsurface wells and monitoring points would be abandoned.

Alternative 5—Excavation and Disposal, Barriers, ISCO of Source Materials, and ICs

Estimated Capital Cost: \$13,900,000

Estimated Annual Operation and Maintenance (O&M) Cost: \$900,000

Estimated Periodic Cost: \$73,000

Estimated Total Present Worth: \$14,900,000

Estimated Remedial Action Construction Timeframe: 4-6 months

Summary:

Excavation and offsite disposal of source material in Chicago Street Zone and source material and soil in Winter Zone; ISCO of source material in the WPSC Zone Source Area (both soil and groundwater); maintenance of existing direct contact barriers and installation of new direct contact barriers, as required, over affected surficial soil in all zones; continued operation of groundwater pump and treat system for a defined period after excavation; a one-time application of ISCO to address remaining groundwater impacts following source removal. Monitoring groundwater, and institutional controls to manage remaining potential risks associated with soil, groundwater, and vapor intrusion.

Treatment Summary

In-situ Chemical Oxidation of the WPSC Source Area: Alternative 5 involves introduction of chemical oxidants. For Alternative 5, ISCO is applied to degrade source material COCs in both soil and groundwater to inert or less toxic compounds. ISCO to address affected soil can be achieved through chemical injection at this Site; however, injection would be complicated and limited by the existence of physical obstructions in the subsurface. Note, chemical oxidation is an aqueous reaction and most effective on dissolved phase constituents; it is relatively ineffective on phase separated material or dense NAPL (DNAPL).

Chemical oxidants must come into and remain in contact with dissolved phase mass for the technology to be most effective in substantially reducing or degrading contaminant mass.

Injection activities would occur continuously for approximately six months to reduce source material and COCs to meet the RAOs. Confirmation samples will be collected throughout the horizontal and vertical extent of the treatment zone to verify the success of the chemical oxidation activities. The goal of ISCO of WPSC Zone is to oxidize source material such that it is no longer mobile.

Enhanced Groundwater Treatment

This Alternative also includes a one-time application of ISCO through injection to promote cleanup of remaining groundwater contamination.

Off-site Disposal of Soils

Excavation and Off-Site Disposal of Soils in Chicago Street and Winter Zones: Alternative 5 will involve excavation and off-site disposal of source material and soil containing COCs above RGs in the Chicago Street Zone and Winter Zone. Excavation below the water table is required and temporary shoring and dewatering will likely be necessary to support the proposed excavation activities. Constructability issues related to limited surface area of soil requiring excavation, proximity of the buildings, granular soil, and depth of excavations extending to 41 feet bgs will severely complicate excavation within the Chicago Street Zone.

Similar constructability issues are present in the Winter Zone, where excavation up to 44 feet bgs may be required to meet RGs. As a result, it is assumed that shallow excavation will be accomplished from the ground surface using an excavator.

Once the depth of excavation has exceeded the reach of the excavator, a crane equipped with a clamshell bucket would be used to continue excavation activities to the target depth. It is estimated that planning, site preparation, and excavation and backfilling activities using this approach will take approximately six months.

The success of remedial action will be determined by post-excavation samples, surveying the horizontal and vertical extent of the excavation, and comparing the extent of excavation against the soil cleanup goals.

2.11 Comparative Analysis of Alternatives

EPA uses nine criteria to evaluate remedial alternatives for the cleanup of a site. These nine criteria are categorized into three groups: threshold, balancing, and modifying. The threshold criteria must be met for an alternative to be eligible for selection. The threshold criteria are overall protection of human health and the environment and compliance with ARARs.

- Overall Protection of Human Health and the Environment - This criterion describes how the alternative as a whole achieves and maintains protection of human health and the environment.
- Compliance with ARARs - This criterion assesses how the alternative complies with ARARs unless a waiver is provided, in which case this criterion describes why the waiver is justified.

The balancing criteria are used to weigh major tradeoffs among alternatives. The five balancing criteria are long-term effectiveness and permanence; reduction of toxicity, mobility or volume through treatment; short-term effectiveness; implementability; and cost.

- Long-Term Effectiveness and Permanence - This criterion evaluates the long-term effectiveness of alternatives in maintaining protection of human health and the environment after RAOs have been achieved.
- Reduction of Toxicity, Mobility, and Volume through Treatment - This criterion evaluates the anticipated performance of the specific treatment technologies an alternative may employ.
- Short-Term Effectiveness - This criterion assesses the effectiveness of the alternative in protecting human health and the environment during the construction and implementation of a remedy until RAOs have been met. This criterion also evaluates the time required to implement and achieve the RAOs.
- Implementability - This criterion assesses the technical and administrative feasibility of the alternative as well as the availability of goods and services required to implement the remedy.
- Cost - This criterion assesses the capital and O&M costs of each alternative. In addition, the present worth of annualized costs associated with each alternative is calculated using a discount rate of 7 percent before taxes and after inflation. Costs are compared on a present-worth basis.

The level of detail in these cost estimates is appropriate for evaluating among alternatives, but the estimates are not intended for use in budgetary planning.

The modifying criteria are state acceptance and community acceptance.

- State Acceptance – This criterion reflects comments from all Wisconsin agencies with an interest in the Site.
- Community Acceptance - This criterion reflects the community's apparent preferences and/or concerns regarding the alternatives.

The following is a comparative analysis of the remedial alternatives other than the No Further Action Alternative.

Overall Protectiveness of Human Health and the Environment

Alternative 1 does not meet the requirement for overall protection of human health and the environment. Potential risks to human health will remain due to the presence of source material and MGP-affected media. As a result, Alternative 1 will not achieve RAOs. Further, this alternative will not implement ICs, monitoring programs, or contingencies to ensure that human health and the environment will be protected.

All other alternatives will provide overall protection of human health and the environment by eliminating, reducing, or controlling risk through treatment, engineering controls, and/or ICs. Alternatives 2 and 2a will provide a moderate to high degree of protection. Alternatives 3 and 3a will provide a high degree of protection. Alternatives 4 and 5 will provide a moderate degree of protection.

Compliance with Applicable or Relevant and Appropriate Requirements

Section 121(d) of CERCLA and NCP §300.430(f)(1)(ii)(B) require that remedial actions at CERCLA sites attain legally applicable or relevant and appropriate Federal and State requirements, standards, criteria, and limitations which are collectively referred to as ARARs, unless ARARs are waived under CERCLA section 121(d)(4). Compliance with ARARs addresses whether a remedy will meet all of the ARARs or provides a basis for invoking a waiver.

The NCP defines applicable requirements as:

“...those clean-up standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable.”

The NCP defines relevant and appropriate requirements as:

“...those clean-up standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws, that, while not 'applicable' to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are identified in a timely manner and are more stringent than federal requirements may be relevant and appropriate.”

In addition to ARARs, EPA may identify other relevant information, criteria, or guidance to be considered (TBC). TBCs may not be legally binding or enforceable but may be useful for consideration when developing remedial alternatives. Both ARARs and TBCs may be chemical-specific, location-specific, or action-specific. Appendix B summarizes preliminary federal and state ARARs and TBCs. ARARs and TBCs may be modified until a Record of Decision (ROD) is issued and may be reexamined during the five-year review process.

Alternative 1 would not meet ARARs related to soil, soil gas, and groundwater standards.

Alternatives 2, 2a, 3, 3a, 4, and 5 will comply with chemical-specific, location-specific, and action-specific ARARs.

Long-Term Effectiveness and Permanence

Alternative 1 may not provide effective protection of human health and the environment over time. The COCs in soil and groundwater will not naturally attenuate, there will be no monitoring provided to determine if protective levels are reached, and no ICs are implemented to provide protection.

Alternatives 2 and 2a will provide a moderate to high degree of long-term effectiveness and permanent control of potential human health risks from exposure to source material and soil with COCs above RGs through ISS of some source material; installation and/or maintenance of horizontal direct-contact barriers; restriction of land use and intrusive activities; and, for 2a exclusively, a one-time injection of oxidizing compounds to address COCs in groundwater.

Alternatives 3 and 3a will provide a high degree of long-term effectiveness and permanent control of potential human health risks from exposure to soil source material with COCs above RGs through ISS of source material; installation and/or maintenance of horizontal direct-contact barriers; restriction of land use and intrusive activities. Alternative 3a is an interim groundwater measure and will reduce the high concentrations of groundwater source material. A final groundwater remedy will be needed to achieve final groundwater remedial action objectives.

Alternative 4 will provide a moderate degree of long-term effectiveness and permanence through thermal treatment to extract or thermally destruct volatile contaminants and thermally solidify non-volatile contaminants. Thermal treatment is not effective at removal or destruction of non-volatile constituents, such as the high-molecular weight PAHs present at the site.

Alternative 5 will provide a high degree of long-term effectiveness and permanence through the removal of accessible source material and disposal at an off-site facility.

The deep depths of excavation, granular nature of soil, and constraints of adjacent buildings have the potential to limit the removal of additional material if discovered during the remedial action.

Reduction of Toxicity, Mobility, and Volume

Reduction of toxicity, mobility, or volume through treatment refers to the anticipated performance of the treatment technologies that may be included as part of a remedy.

Alternative 1 does not include treatment. Source material, soil, and groundwater will naturally attenuate, but attenuation alone is unlikely to reduce concentrations below RGs in a reasonable timeframe. In addition, risk from exposures to hazardous materials is not reduced, as Alternative 1 does not involve any engineering or administrative controls. As a result, this alternative will not achieve any of the RAOs.

Alternatives 2 and 2a will provide a moderate degree of reduction through in-situ treatment at the Chicago Street Zone, which is the area of the Site with the highest potential mobility and toxicity. Both alternatives will also rely on engineering and administrative controls to manage remaining lower-threat risks. Alternatives 2 and 2a rely more-heavily on engineering and administrative controls to mitigate risks compared to Alternatives 3, 3a, and 4. Alternatives 3, 3a, and 4 provide a high degree of reduction through treatment. Alternative 5 provides no treatment to reduce contaminant toxicity, mobility and volume, just relocates contamination elsewhere.

Short-Term Effectiveness

Short-term effectiveness addresses the period of time needed to implement the remedy and achieve RAOs; and any adverse impacts that may be posed to workers, the community and the environment during construction and operation of the remedy until cleanup levels are achieved.

Alternative 1 would have no effect during remedy implementation. Alternatives 2, 2a, 3, and 3a provide a high degree of short-term effectiveness because it is estimated to take six months to perform ISS activities and to obtain and implement necessary ICs. Closure of Chicago Street and the northern portion of North 11th Street is likely for six months to allow for utility relocation, completion of ISS treatment, and restoration activities. This represents a significant short-term impact to nearby businesses. Alternatives 4 and 5 share a similar impact to those streets for similar duration.

Alternative 4 provides a moderate degree of short-term effectiveness, because in addition to the three to six months for utility relocation and pre-excavation work, there will be an advancement of 200 borings for heating elements and vapor/liquid phase extraction points and then at least six months of operation of the heating and extraction system.

Alternative 5 provides a low degree of short-term effectiveness because it requires deep soil excavation, which will create potential for direct contact exposure, fugitive volatile emissions, and nuisance odors.

Transporting affected soil to a landfill creates a short-term impact to the community due to increased truck traffic, noise, and potential for increased accidents. Installation of shoring will be necessary to excavate to necessary depths.

Implementability

Implementability addresses the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered.

Alternative 1 would be implementable, though it does not address the Site risks.

Alternatives 2, 2a, 3, and 3a are easily implementable with the degree of implementability decreasing from 2 to 2a to 3 to 3a due to larger areas to be addressed and groundwater components being added.

Alternatives 4 and 5 have low degrees of implementability in comparison to the other Alternatives. Alternative 4 involves installation of over 200 soil borings to install heater wells, extraction wells, and for various monitoring points. Some of these points would have to be installed at an angle or horizontally to allow for treatment beneath the WPSC Main Building. Also, this work would involve pre-excavation down to 10 feet below grade and all subsurface utilities would have to be relocated so as not be damaged by the heat. Alternative 5 would require the deepest excavations below the water table, which is challenging to implement. Also, chemical oxidation to address source material beneath the WPSC Building add to the challenge.

Cost

The estimated total costs for each alternative are FS-level cost estimates that have an expected accuracy of +50% to -30%. A 7% discount factor was used to calculate present worth costs. This is done to help compare annual O&M and five-year review costs as a single amount of money that, if invested in the base year and disbursed as needed, would be sufficient to cover all costs associated with the remedial action over its planned life. This is consistent with EPA guidance for cost estimates. Costs for the alternatives range from zero to \$14,900,000 as listed in Table 7, below.

Alternative 1 is expected to cost \$50,000 for performing the Five-Year Review. Alternative 2 is estimated to cost \$3.3M and Alternative 2a is estimated to cost \$3.6M. Alternative 3 is estimated to cost \$6.9M and Alternative 3a is estimated to cost \$7.2M. Alternative 4 is estimated to cost \$13.8M. Alternative 5 is estimated to cost \$14.9M.

Table 7: Cost and Timeframes of Alternatives

	Alt. 1	Alt. 2	Alt. 2a	Alt. 3	Alt. 3a	Alt. 4	Alt. 5
Capital Costs	\$0	\$2.3M	\$2.6M	\$5.9M	\$6.2M	\$12.8M	\$13.9M
Annual O&M Costs/ LT Costs	\$50K	\$988K	\$988K	\$975K	\$975K	\$976K	\$973K
Total Present Worth Costs	\$50K	\$3.3M	\$3.6M	\$6.9M	\$7.2M	\$13.8M	\$14.9M
Construction/ Implementation/Meet RAOs	None	6 mos.	6 mos.	6+mos.	6+mos.	12 mos.	12 mos.

*Alt.=Alternative *O&M=Operation and Maintenance *LT=Long-term (30-year analysis period)
*M=Million *K=Thousand *Mos.=Months

The final cost estimate for the selected remedy will be developed and refined during the RD.

State Acceptance

Wisconsin DNR has indicated concurrence with the selection of Alternative 3a. The state concurrence letter will be added to the AR upon receipt.

Community Acceptance

The community provided comments during the public comment period, which ran from July 23 through August 22, 2018. Some commenters indicated support for the selected remedy, one commenter suggested no remedial action was needed, while others highlighted the importance of coordinating with nearby property owners to perform the remedial action due to presence of utility corridors and street closures (see *Responsiveness Summary*).

2.12 Principal Threat Wastes

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (NCP §300.430(a)(1)(iii)(A)). The “principal threat” concept is applied to the characterization of “source materials” at a Superfund site. Source materials are those that include or contain hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to groundwater, surface water or air, or act as a source for direct exposure.

The principal threat waste at the WPSC Manitowoc MGP Site is NAPL because the toxicity of the material poses a risk if exposure should occur and serves as a source to soil and groundwater contamination, as defined in *A Guide to Principal Threat and Low-Level Threat Wastes*, Office of Solid Waste and Emergency Response 9380.3-06FS, November 1991. The selected remedy treats the principal threat waste, including NAPL in soil and groundwater using ISS, and treats NAPL and highly contaminated groundwater with ISCO.

2.13 Selected Remedy

Based on consideration of the requirements of CERCLA, the detailed analysis of the remedial alternatives, and public comments, EPA has selected **Alternative 3a**.

The following subsections provide EPA’s rationale for the Selected Remedy and a description of its anticipated scope, how the remedy will be implemented, and its expected outcomes.

Summary of Rationale for the Selected Remedy

The Selected Remedy is protective of human health and the environment, complies with ARARs, and provides the best balance of tradeoffs among the balancing criteria.

It reduces risks within a reasonable time frame and provides for long-term reliability of the soil remedy. It will achieve substantial risk reduction by implementing ISS in both areas with the most contaminated soils and through installation of new and maintenance of existing horizontal engineered barriers on top of soil that exceeds residential cleanup standards.

Risk to groundwater is addressed with the interim remedy of in-situ groundwater source treatment and institutional controls. A final groundwater remedy to achieve final groundwater remedial action objectives will be selected in the future.

Although the Selected Remedy presents greater costs than Alternatives 2, 2a and 3, Alternative 3a achieves higher post-construction risk reduction for human receptors and will achieve RAOs in the shortest amount of time. The Selected Remedy ensures that the preference for treatment is achieved for the source area.

Expected Outcomes of Selected Remedy

The intent of the Selected Remedy is to be protective of human health and the environment by reducing risks from the following: direct contact with, and ingestion of, soil and groundwater. The Selected Remedy will actively address contaminated source soil and groundwater within the Site, thereby reducing the risk of exposure to contaminant concentrations in those media, which will significantly reduce human health risks at the Site.

2.14 Statutory Determinations

Under CERCLA §121 and the NCP §300.430(f)(5)(ii), the EPA must select remedies that are protective of human health and the environment, comply with ARARs (unless a statutory waiver is justified), are cost effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as a principal element and a bias against off-site disposal of untreated wastes. The following sections discuss how the Selected Remedy meets these statutory requirements.

Protection of Human Health and the Environment

Alternative 3a will protect human health and the environment by implementing ISS to stabilize and sequester COCs in soil in both major source zones (Chicago Street and Winter Zones); the maintenance of existing and installation of new (as required), direct contact barriers such as pavement, over impacted surficial soil in all zones; institutional and engineering controls to prevent exposure to contaminated soil and groundwater; and a one-time injection of in-situ oxidizers to the groundwater downgradient of the solidified soils to achieve a reduction of COCs.

Compliance with ARARs

The selected remedy will comply with all chemical-, location-, and action-specific ARARs.

Long-Term Effectiveness and Permanence

Alternative 3a will provide long-term effectiveness and permanent control of potential human health risk from exposure to soil source material with COCs above RGs by treating source material in the Chicago Street and the Winter Zones using ISS, maintaining existing and installing new horizontal direct contract barriers throughout the Site, restricting land use to industrial, and restricting intrusive activities.

It is expected that ISS, enhanced with a one-time injection of oxidizing compounds to the groundwater, as an interim groundwater measure, will reduce the flux of remaining contaminants into the dissolved phase and foster groundwater cleanup to achieve reduction in COCs.

Near-term risks resulting from affected groundwater will be managed through ICs and the effectiveness of the ICs will be documented through regular monitoring of groundwater quality with downgradient wells. The conditions of the WDNR GIS Registry are maintained for a property, regardless of future changes in ownership. A final groundwater remedy will be selected at a later date.

Reduction of Toxicity, Mobility, or Volume Through Treatment

Preferred Alternative 3a will involve ISS treatment of an estimated 2,200 cubic yards of source material from the Chicago Street Zone, thereby significantly reducing the mobility of the most toxic soil source contamination at the Site through treatment.

In addition, source material in the Chicago Street Zone is collocated with the well with the highest historic concentrations of benzene and naphthalene (MW14). Treatment of source material will remove the primary source contributing to the dissolved-phase groundwater plume, thereby reducing contaminant mobility. Up to an additional 24,000 cubic yards of ISS treatment will irreversibly reduce the potential for future exposure to subsurface MGP-residuals in the Winter Zone. One-time application of in-situ chemical oxidizers will foster groundwater cleanup and a reduction in COCs.

The Superfund law indicates preference for treatment as a principal element of a CERCLA cleanup action. The EPA generally views source material as a principal threat waste. Accessible source material that is the primary contributor to the dissolved-phase groundwater plume will be treated through ISS and through a one-time ISCO treatment, until a final groundwater remedy is selected.

Risks in soil and groundwater will also be mitigated through administrative and engineering controls, until a final groundwater remedy is selected. Therefore, Alternative 3a will satisfy the statutory preference for treatment as a principal element of the preferred cleanup plan.

Short-Term Effectiveness

As described above, Alternative 3a will result in manageable short-term impacts to the community during implementation.

Implementability

As described above, Alternative 3a is technically and administratively implementable.

Cost-Effectiveness

The present worth cost of the Preferred Alternative 3 is \$7,200,000.

The selected interim action is cost-effective because it represents a reasonable value for the money to be spent. The NCP requires that “a remedy shall be cost-effective if its costs are proportional to its overall effectiveness.” (See the NCP at 40 CFR §300.430(f)(1)(ii)(D)).

In evaluating this requirement, EPA evaluated the overall effectiveness of the alternative that satisfied the threshold criteria (i.e. was both protective of human health and the environment and ARAR-compliant) by assessing three of the five balancing criteria in combination (long-term effectiveness and permanence; reduction in toxicity, mobility, or volume through treatment; and short-term effectiveness). Overall effectiveness was then compared to costs to determine cost effectiveness. The relationship of the overall effectiveness of the Selected Remedy was determined to be proportional to its cost and hence the remedy represents a reasonable value for the money to be spent.

Preference for Treatment as a Principal Element

By treating the contaminated soil and groundwater using in-situ stabilization and injection of oxidizing chemicals into groundwater, Alternative 3a satisfies the statutory preference for remedies that employ treatment as a principal element. See Figure 6 on the next page to see areas to be remediated.

Documentation of Significant Changes

The Proposed Plan for the source area for the WPSC Manitowoc MGP Site was released for public comment on July 23, 2018 and ran through August 22, 2018. The Proposed Plan identified Alternative 3a as the preferred alternative for the Site. During the public comment period, comments were submitted by Wisconsin DNR that stated that the source soil control component of the remedy should be cleaned up to residential standards within areas of general business zoning, since those areas may be used for residential and industrial/commercial uses. The significant change to Alternative 3a will be that the grassy areas surrounding the WPSC property, an area zoned for general business, with soil above residential screening levels, will require additional horizontal engineered barriers to prevent exposure risk. The areas to receive additional horizontal engineered barriers is anticipated to be less than 0.5 acres in area, and should not exceed the estimated cost of the selected remedy by the plus 50% or minus 30% contingencies. If the costs are outside of the estimated range, EPA will properly document that decision in accordance with Agency guidance through an Explanation of Significant Differences.

Five-Year Review Requirements

CERCLA §121(c) and the NCP §300.430(f)(5)(iii)(C) provide the statutory and legal bases for conducting five-year reviews. Because this remedy will result in hazardous substances, pollutants, or contaminants in groundwater and soil to remain on-site above levels that allow for unrestricted use and unrestricted exposure, periodic reviews of the remedy will be conducted within five years after initiation of the remedial action, and each five years subsequent, to ensure that the remedy is, or will be, protective of human health and the environment.

Part III. Responsiveness Summary

In accordance with CERCLA Section 117, 42 U.S.C. Section 9617, EPA released the Proposed Plan and Administrative Record for public comment on July 23, 2018 and the public comment period ran through August 22, 2018 to allow interested parties to comment on the Proposed Plan.

EPA is not required to reprint the comments of the commenter verbatim and may paraphrase where appropriate. In this responsiveness summary, EPA has included large segments of the original comments. However, persons wishing to see the full text of the comment should refer to the commenter's submittal to EPA, which has been included in the Administrative Record. The comments EPA received are shown below in normal text and EPA's response is shown in italics.

3.1 Stakeholder Comments and Lead Agency Responses

EPA received several written public comments on the Proposed Plan. Summarized comments are found below.

Comments from Residents

1. Comments in Support for the Remedy.

EPA received comments from four community members in support of Alternative 3a.

However, two of the community members expressed concern for damage and disturbance to area businesses and residences and propose “generous compensation”.

EPA Response: EPA acknowledges your support for this remedy. With regards to area disturbance, the remedy will be implemented in a very specific area of Manitowoc located between 10th Street and 11th Street and between the Manitowoc River and the property on the south-east side of Chicago Street and 10th Street. EPA will work with the City, WPSC, and local property owners to minimize impact of street closures, estimated to last up to six months, while the remedy is implemented. Under CERCLA (the Superfund Law), EPA does not have federal funds to provide compensation for businesses or residences as a result of remedial work. Nor can EPA require the PRP to provide compensation. However, CERCLA does not prevent an injured landowner from seeking compensation under other laws that may be available for damage to their properties.

2. Comments in Support of Another Remedy.

EPA received one comment in support of Alternative 1. The community member states, “I think enough has been done. I fully support Alternative #1.”

EPA Response: Thank you for your comment. Alternative 1 is presented as a baseline for which all other alternatives are compared. Alternative 1 does not achieve the remedial action objectives and is not protective of human health and the environment; therefore, it cannot be selected as the final source control remedy for this site.

Comments from Wisconsin DNR

EPA received several comments from Wisconsin DNR. Below are the paraphrased comments and EPA's responses.

3. Site Risks Regarding Previously Stabilized Area Adjacent to the Bulkhead Wall

The basis for remediation of OU1 source areas are human health risks and the basis for remediation of OU2 sediments will include ecological risks. Based on existing data, the area previously stabilized through in-situ solidification adjacent to the sheet pile retaining wall may contain pockets of untreated MGP-residuals, including NAPL. Piezometer (PZ-25) was installed in one of these pockets.

This plan does not address the ecological risks to the Manitowoc River from potential seepage of unconsolidated MGP residuals through gaps/overlaps in the sheet pile wall or from future damage to the wall, which may result in the release of the MGP residuals. As previously commented by DNR, the FS for sediment cleanup of this site should include the provision for additional cleanup of upland soil adjacent to the bulkhead and shore that are discovered during the sediment portion of cleanup, as necessary, to address the unacceptable risks to human health and ecological receptors. The general integrity of the wall should also be evaluated during the sediment portion of the cleanup. It is unclear when the wall was inspected last and what its current condition is.

The City has been purchasing property along the Manitowoc River with intent to offer public access. The City of Manitowoc should be consulted regarding future property use. Risks should be minimized if future construction is to occur on North 11th Street and property adjacent to the Manitowoc River turning basin.

EPA Response: *The basis for this decision is human health risks. It is anticipated that ecological risks will drive sediment remediation because depth to river bottom is more than 10 feet deep next to the upland portion of the Site, and it is not anticipated that people can wade at that depth.*

EPA is aware that there are MGP residuals in PZ-25, within previously solidified area next to the bulkhead wall. EPA has communicated to WPSC that this area may need to be addressed as part of OU2 sediments. Included in OU2 will be the assessment of integrity of the wall and potential risks if the wall were to fail.

The anticipated future land use of the WPSC-owned property is commercial/industrial. The selected interim remedy assumes continued commercial/industrial use at these two properties, and there is an associated institutional control. As the site owner, WPSC will largely determine the future land uses, unless they choose to sell the property.

The bulk of the area that will receive ISS is owned by WPSC. WPSC owns their Main Building as well as the Winter Property. ISS will also be conducted in the streets and rights-of-way. The EPA will work with the City of Manitowoc to determine their perspective on future land use. Land adjacent to the WPSC-owned properties can be redeveloped by the City.

4. Requirements for Horizontal Engineered Surface Barriers for Direct Contact

Wisconsin Administrative Code Chapter (WAC Ch.) NR 720 direct contact soil residual contaminant levels (RCLs) apply to soils from 0-4 feet bgs. For areas not covered by concrete, soil excavation to 2 feet bgs and replacement with clean fill will not eliminate the need for remediation or a performance standard for case closure under WAC Ch. NR 726.

Unless it can be demonstrated that the soil from 2-4 feet bgs is below soil RCLs for the specified land use, and the soil to groundwater pathway for areas exceeding the DNR's groundwater protection RCLs has been addressed.

EPA Response: EPA understands the requirements of NR 720 and NR 726. The selected remedy was altered to include additional horizontal engineered barriers at the WPSC property and other areas zoned for general business that may have future residential uses and have soil contamination above residential risk range. This additional work, along with proper institutional controls, should result in compliance with the soil requirements of NR 720 and NR 726. The groundwater components of NR 726 will be reviewed and addressed during the final groundwater record of decision, along with EPA's Safe Drinking Water Act requiring groundwater contaminants to be cleaned up to maximum contaminant levels (MCLs) and State Safe Drinking Water Standards.

5. Requirements for Cleanup to Industrial Standards for Case Closure under WAC Ch. NR 726.

Under WAC Ch. NR 726, cleanup to industrial standards is not appropriate for the WPSC property, which is zoned for general business use. Cleanup to industrial standards may be appropriate for the Winter and Chicago Street Zones if land use is defined as industrial per WAC § NR 700.03.

Whether a remedial goal will meet the NR 720 industrial or non-industrial soil RCLs depends on land use, and may necessitate maintenance or an existing, or the construction of a new, protective horizontal barrier, as well as application of institutional controls in the form of continuing obligations (COs). Once appropriate land use cleanup standards are established and achieved, and remediation actions completed, COs will be implemented as needed.

EPA Response: It is EPA's understanding that General Business zoning can have residential and commercial/industrial uses; therefore, horizontal engineered barriers will be needed to cover areas exceeding residential screening levels that are not addressed through ISS (in general business areas only).

EPA has selected Alternative 3a as the source control remedy because it includes the use of ISS, horizontal engineered barriers, and ICs for soil. The remedial design will further delineate the areas that the remedial actions will be applied to. ICs will be put in place to restrict use to intended use only, based on zoning, and to be protective of human health and the environment.

Comments from WPSC

6. Inconsistencies between Proposed Plan and Approved FS

EPA received the following consistency comments from WPSC:

- WPSC will NOT demolish the WPSC Service Building for any of the alternatives.

WPSC will demolish the WPSC storage building and Winter building located on the southside of Chicago Street. WPSC may demolish these two buildings prior to implementing source-control remedial action. If they do so, they will do so in a way that prevents migration of contaminants.

- Excavations will not be backfilled to grade after subsurface structure demolition. In areas where ISS is to be performed, backfill will not occur until after ISS is complete.
- For Alternatives 2a and 3a as presented in EPA's July 23, 2018 Proposed Plan, it was stated that WPSC will perform a one-time placement of oxidizing materials at the interface of soil and groundwater following excavation activities. The alternatives as presented in the FS Rev. 3 and in Alternative 3a as presented in this ROD, WPSC will perform a one-time injection of oxidizing materials (ISCO) to treat groundwater.
- The proposed plan introduction does not describe the ISS component of the remedy as presented in the FS.
- The RAOs stated in the proposed plan are inconsistent with those presented in the approved FS.

EPA Response: *EPA acknowledges the first four points and has corrected the ROD text to match the FS Rev. 3.*

The Administrative Record does not substantiate that the groundwater RAOs presented in the FS Rev. 3 could be achieved with the proposed remedial actions; thus, the RAOs were adjusted. The selected groundwater remedy is an interim, not a final remedial action for groundwater. It will be measured against the RAOs in the proposed plan and ROD. A final groundwater remedial action is anticipated for future proposal and selection to achieve the groundwater RAOs presented in the FS Rev. 3. At that time, the AR will need to substantiate that the final groundwater remedy selected can achieve the groundwater RAO in the FS. Rev. 3 within a reasonable timeframe.

Comments from the City of Manitowoc

7. Communication with the City.

The City of Manitowoc requests that EPA keep them notified of the project since this area is slated for potential redevelopment.

EPA Response: *EPA will work closely with the City of Manitowoc throughout the cleanup process. Particularly, EPA will need City input during the design and implementation of this remedy. In addition, EPA will keep the City informed of the progress for the selection of the sediment and final groundwater remedies. EPA will also need input from area business owners that may be impacted from this remedy. They will also be part of the design and implementation process.*

8. Consideration for bio-remediation as an alternative.

The City of Manitowoc wonders why bio-remediation alternatives were not considered.

EPA Response: *An array of alternatives was considered for site remediation. It was determined that bio-remediation would not achieve remedial action objectives in a reasonable timeframe.*

9. Work in the rights-of-way requires City Permits.

The City understand that remedial action would likely extend to the adjacent rights-of-way and may require the relocation of public utilities.

As such, prior to conducting work in the rights-of-way, the City will require WPSC to obtain all applicable Right-Of-Way excavation permits from the City to allow the City Engineering Department and Manitowoc Public Utilities (water and electric) to oversee the work. In particular, it is the City's preference that soil stabilization activities in the rights-of-way terminate no less than nine feet below current ground surface and that the disturbed utilities be restored to their current locations and orientations.

EPA Response: *Remedial action work selected under Superfund (CERCLA, section 121) does not require federal, state, or local permits; however, all substantive permit requirements must and will be met. Also, the EPA and WPSC will work closely with the City to make sure utilities are relocated to desired depths, locations, and orientations.*

10. Future Redevelopment Opportunities.

The City of Manitowoc has concerns regarding redevelopment opportunities at the Winter property. They request that the Winter property be left in a state that would have the potential for cost-effective redevelopment, as redevelopment would be unlikely if the cost to develop on top of the ISS monolith is above average. Also, once the Winter building is razed and ISS is implemented, how will the site be finished (gravel? hard surface like concrete or asphalt? top soil and grass landscaping?).

EPA Response: *Presently, the Winter property is owned by WPSC. The selected remedy requires the Winter property to be remediated to residential cleanup standards and restored to current conditions. EPA can help facilitate discussions between the City and WPSC about the City's interest in redevelopment; however, the cleanup, as selected in this ROD, is the requirement under Superfund law.*

The details regarding how the Winter Property will be restored after ISS has not yet been determined. Those details will be prepared in a draft design. As discussed in the response to City of Manitowoc Comment #1, EPA will work with the City to understand and consider their input as the cleanup is designed and implemented.

Appendix A – Administrative Record Index

**U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION**

**ADMINISTRATIVE RECORD
FOR THE
Wpsc MANITOWOC MGP SITE
MANITOWOC, MANITOWOC COUNTY, WISCONSIN
ORIGINAL
JULY 17, 2018**

<u>NO.</u>	<u>SEMS ID</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	918152	7/25/07	Natural Resource Technology, Inc.	File	Completion Report	383
2	930642	10/23/14	Natural Resource Technology, Inc.	File	Remedial Investigation Report (Revision 0) (No Appendices)	302
3	941840	3/29/18	Paulson, R., Wisconsin Public Service Corporation	Gielniewski, M., U.S. EPA	Submittal of Feasibility Study Report Rev 3 & Response to US EPA's Feb 23, 2018 Comments on Data Required to Select the Proposed Remedy of Monitored Natural Attention for Groundwater (w/Attachment)	614
4	941842	5/2/18	Gielniewski, M., U.S. EPA	Paulson, R., Wisconsin Public Service Corporation	Letter Re: Review of Response to Comments Letter (RTC) & Feasibility Study Report Rev 3	2
5	941841	5/17/18	Paulson, R., Wisconsin Public Service Corporation	Gielniewski, M., U.S. EPA	Letter Re: Response to Comments - U.S. EPA Review Dated May 2, 2018 of Response to Comment Letter (RTC) & Feasibility Study Report Rev 3 (W/Attachments)	60
6	941053	7/1/18	U.S. EPA	File	Proposed Plan for Cleanup of Operable Unit #1, Wisconsin Public Service Corporation Manitowoc Manufactured, Gas Plant Superfund Alternative Site, Manitowoc, Wisconsin	45

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

ADMINISTRATIVE RECORD
FOR THE
WPSC MANITOWOC MGP SITE
MANITOWOC, MANITOWOC COUNTY, WISCONSIN

UPDATE 1
SEPTEMBER 21, 2018
SEMS ID: 943637

<u>NO.</u>	<u>SEMS ID</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	943638	8/14/18	U.S. EPA	Resident	Public Comments	3
2	941498	8/21/18	WDNR	Pastor, S., U.S. EPA	Letter re: Wisconsin Department of Natural Resources Remediation and Redevelopment Program Comments on the Proposed Plan for Cleanup of Operable Unit #1	2
3	943639	8/22/18	Paulson, R., U.S. EPA	Gielniewski, M., U.S. EPA	Letter re: Proposed Plan for Cleanup of Operable Unit #1	2

Appendix B – ARARs Tables

Chemical-Specific ARARs

Chemical-specific ARARs are generally health- or risk-based standards, defining concentration limits for environmental media or discharges. These requirements may be used to set cleanup levels for COC in environmental media.

REQUIREMENT, CRITERIA, STANDARD, LIMIT	RELEVANT ALTERNATIVES	CITATION	TYPE OF ARAR	RELATIONSHIP BETWEEN REQUIREMENT, CRITERIA, STANDARD AND/OR LIMIT AND ALTERNATIVE COMPONENT AND OTHER COMMENTS
FEDERAL				
Groundwater	Groundwater Quality Standards	40 CFR Part 141 – Safe Drinking Water Act of 1974	Applicable	The National Primary Drinking Water Regulations establish health-based standards for public drinking water systems [maximum contaminant levels (MCLs)]. MCLs are legally enforceable federal drinking water standards and relevant and appropriate to groundwater.
WISCONSIN				
Soil	Soil Cleanup Standards	Wis. Admin. § NR 720: Soil Cleanup Standards	Applicable	Soil Cleanup Standards are legally applicable to soil, preferred method for determining RCLs outlined based on EPA soil screening values and 10-6 for individual compounds and 10-5 for cumulative risk, alternate RCLs can be developed with input from WDNR.
Groundwater	Groundwater Quality Standards	Wis. Admin. § NR 140: Groundwater Quality	Applicable	NR 140 Groundwater Quality Standards are legally applicable to all groundwater, regardless of groundwater use <ul style="list-style-type: none"> o Generally, NR 140 PALs are the groundwater cleanup goal for all sites, however, flexible closure requirements in NR 726 may be used to set ESs as the primary ROD goal, provided that an adequate source control action is conducted and groundwater monitoring shows a stable or receding plume everywhere groundwater is monitored, including source and NAPL areas.
Soil Gas/Indoor Air – Chemical Specific	Indoor Air Quality and Vapor Migration	Wis. Admin. § NR 726: Case Closure	Relevant and Appropriate	NR 726 Case Closure Cleanup requirements are relevant and appropriate
		Wis. Admin. § NR 720: Soil Cleanup Standards	Applicable	NR 720: Soil Cleanup Standards are legally applicable.
		Wis. Admin. § NR 726: Case Closure	Relevant and Appropriate	NR 726 Cleanup for Closure is relevant and appropriate <ul style="list-style-type: none"> o Indoor Air Quality Standards are used to develop Vapor Action Levels for MGP COCs in indoor air and Vapor Risk Screening Levels for MGP COCs in sub slab and soil gas, and in groundwater. o Actions must be taken to ensure soil and groundwater are remediated such that indoor air from vapor intrusion is addressed;

					<p>the rule also requires vapor mitigation systems for occupied building if needed to address an immediate threat.</p> <ul style="list-style-type: none"> Note: Guidance (which would be a TBC) is planned to allow avoiding vapor mitigation systems in vacant buildings with VI issues provided a continuing obligation (CO) is put in place to require the RP to notify WDNR if the building use changes and possibly install a system.
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Location-Specific ARARs

Location-specific ARARs are based on the Site's characteristics or location, including natural Site features such as wetlands, floodplains, and endangered or threatened species and habitats. Location-specific ARARs may also apply to man-made features, such as cultural resource areas.

MEDIA	REQUIREMENT, CRITERIA, STANDARD, LIMIT	RELEVANT ALTERNATIVES	CITATION	TYPE OF ARAR	RELATIONSHIP BETWEEN REQUIREMENT, CRITERIA, STANDARD AND/OR LIMIT AND ALTERNATIVE COMPONENT AND OTHER COMMENTS
	FEDERAL				
	<i>NONE IDENTIFIED</i>				
	WISCONSIN				
	<i>NONE IDENTIFIED</i>				

Action-Specific ARARs

Action-specific ARARs are technology-based or activity-based limits used to guide implementation of the remedial action or guide how remedial waste may be handled.

Soil Action-Specific ARARs

MEDIA	REQUIREMENT, CRITERIA, STANDARD, LIMIT	RELEVANT ALTERNATIVES	CITATION	TYPE OF ARAR	RELATIONSHIP BETWEEN REQUIREMENT, CRITERIA, STANDARD AND/OR LIMIT AND ALTERNATIVE COMPONENT AND OTHER COMMENTS
FEDERAL					
NONE IDENTIFIED					
WISCONSIN					
Wastewater Discharges to POTW	Surface Water Effluent Standards, Criteria, and Limitations	Alternative 5	Wis. Stat. § 281.15, § 281.16, § 281.17: Water and Sewage	Applicable	Discharge to POTW is an offsite action, and any pretreatment requirements would need to be met.
Wastewater Discharges to Manitowoc River	Surface Water Effluent Standards, Criteria, and Limitations	Alternative 5	Wis. Stat. § 283: Pollution Discharge Elimination Subchapter III Standards: Effluent Limitations Wis. Admin. § NR 102: Water Quality Standards for Wisconsin Surface Waters Wis. Admin. § NR 105: Surface Water Quality Criteria and Secondary Values for Toxic Substances Wis. Admin. § NR 106.06, § NR 106 Subchapter V, § NR 106 Subchapter VI: Procedures for Calculating Water Quality Based Effluent Limitations	Applicable	Surface water quality effluent standards, criteria and limitations are Applicable where dewatering during soil remediation or extraction of groundwater may necessitate discharge to the Manitowoc River. Any discharge to the Manitowoc River would need to comply with the substantive requirements. Surface water quality effluent standards, criteria and limitations are Applicable where dewatering during soil remediation or extraction of groundwater may necessitate discharge to the Manitowoc River. Any discharge to the Manitowoc River would need to comply with the substantive requirements.

MEDIA	REQUIREMENT, CRITERIA, STANDARD, LIMIT	RELEVANT ALTERNATIVES	CITATION	TYPE OF ARAR	RELATIONSHIP BETWEEN REQUIREMENT, CRITERIA, STANDARD AND/OR LIMIT AND ALTERNATIVE COMPONENT AND OTHER COMMENTS
			<p>for Point Source Discharges to Surface Waters</p> <p>Wis. Admin. § NR 200.22 - Application for Discharge Permits and Water Quality Standards Variances</p> <p>Wis. Admin. § NR 207.03 to § NR 207.05: Water Quality Antidegradation</p> <p>Wis. Admin. § NR 218.05 to § NR 218.11: Method and Manner for Sampling</p> <p>Wis. Admin. § NR 219.04: Analytical Test Methods and Procedures</p>	<p>Applicable</p> <p>Applicable</p> <p>Applicable</p> <p>Applicable</p>	
Site Disturbance	Storm Water Runoff Requirements	Alternatives 2-5	<p>Wis. Stat. § 283: Pollution Discharge Elimination</p> <p>Wis. Admin. § NR 216: Storm water Discharge Permits</p> <p>Wis. Admin. § NR 151: Runoff Management</p>	<p>Applicable</p> <p>Applicable</p> <p>Applicable</p>	<p>All are Applicable. Storm water runoff requirements apply during excavation activities at sites equal to or greater than one acre that may result in discharge of storm water to the Manitowoc River.</p>
Site Disturbance In-Situ	Air Emissions Requirements, Criteria, Limitations	Alternatives 2-5	Wis. Admin. § 415 - Control of Particulate Emissions	Applicable	Air emission requirements will be applicable during soil excavation and blending activities that generate fugitive dust and/or vapors

MEDIA	REQUIREMENT, CRITERIA, STANDARD, LIMIT	RELEVANT ALTERNATIVES	CITATION	TYPE OF ARAR	RELATIONSHIP BETWEEN REQUIREMENT, CRITERIA, STANDARD AND/OR LIMIT AND ALTERNATIVE COMPONENT AND OTHER COMMENTS
Treatment of Soil that generates vapors			Wis. Admin. § 419 - Control of Organic Compound Emissions Wis. Admin. § 429 - Malodorous Emissions and Open Burning Wis. Admin. § 431 - Control of Visible Emissions Wis. Admin. § 445 - Control of Hazardous Pollutants	Applicable Applicable Applicable Applicable	Air emission requirements will be applicable to in-situ treatment alternatives that involve the generation of vapors.
In-Situ Treatment - injection of Fluids	Injection Well Requirements	Alternative 5	Wis. Stat. § 281: Water and Sewage Wis. Admin. § NR 815: Injection Wells	Applicable Applicable	Substantive requirements of the injection well regulation are applicable for in-situ treatment via injection of fluids.
Soil Excavation	Waste Disposal	Alternatives 2-5	Wis. Admin. § NR 718 Management of Solid Wastes Excavated During Response Actions	Applicable	Substantive requirements that relate to the generation and onsite management of the disposal of excavated soils deemed waste are applicable.

Groundwater Action-Specific ARARs

MEDIA	REQUIREMENT, CRITERIA, STANDARD, LIMIT	RELEVANT ALTERNATIVES	CITATION	TYPE OF ARAR	RELATIONSHIP BETWEEN REQUIREMENT, CRITERIA, STANDARD AND/OR LIMIT AND ALTERNATIVE COMPONENT AND OTHER COMMENTS
FEDERAL					
<i>NONE IDENTIFIED</i>					
WISCONSIN					
All Groundwater Alternatives	Groundwater Monitor Well Requirements	Alternatives 2-5	Wis. Stat. § 281: Water and Sewage	Applicable	Groundwater monitoring is required to demonstrate the effectiveness of any groundwater remedy on reducing concentrations of MGP COCs.
In-Situ Chemical or Thermal Treatment	Air Emissions Requirements, Criteria, Limitations	Alternatives 4 and 5	Wis. Admin. § NR 141: Groundwater Monitor Well Requirements	Applicable	Air Emission requirements, criteria and limitations will be applicable during remediation activities that generate vapors during injection, vapor recovery, and/or treatment of pumped groundwater.
			Wis. Stat. § 285: Air Pollution	Applicable	
			Wis. Admin. § 415- Control of Particulate Emissions	Applicable	
			Wis. Admin. § 419 - Control of Organic Compound Emissions	Applicable	
			Wis. Admin. § 429.03 - Malodorous Emissions and Open Burning	Applicable	
In-Situ Chemical Treatment In-Situ Enhanced Bioremediation	Injection Well Requirements	Alternative 5	Wis. Admin. § 431 - Control of Visible Emissions	Applicable	Substantive requirements of the injection well regulation are applicable for in-situ chemical treatment via injection of fluids.
			Wis. Admin. § 445 - Control of Hazardous Pollutants	Applicable	
			Wis. Stat. § 281: Water and Sewage	Applicable	
			Wis. Admin. § NR 815: Injection Wells	Applicable	
			Wis. Admin. § NR 140: Groundwater Quality	Applicable	

All Media Action-Specific ARARs

MEDIA	REQUIREMENT, CRITERIA, STANDARD, LIMIT	RELEVANT ALTERNATIVES	CITATION	TYPE OF ARAR	RELATIONSHIP BETWEEN REQUIREMENT, CRITERIA, STANDARD AND/OR LIMIT AND ALTERNATIVE COMPONENT AND OTHER COMMENTS
FEDERAL					
<i>NONE IDENTIFIED</i>					
WISCONSIN					
All Media – Chemical Specific	Laboratory Certification Requirement	Alternatives 2-5	Wis. Admin. § NR 149: Laboratory Certification and Registration Wis. Admin. § NR 299.01(4): Water Quality Certification	Applicable	Applicable. Any sampling during design and implementation must meet these requirements
Remediation Standards, Requirements, and Initiatives	Remedy selection, design, implementation and operation and maintenance requirements	Alternatives 1-5	Wis. Admin. § NR 724: Remedial and Interim Action Design, Implementation, Operation, Maintenance and Monitoring Requirements	Applicable	Applicable. The remedial action documents provide standards and requirements for remediation of contamination sites in Wisconsin. NR 722 is very similar to the NCP for remedy evaluation and selection.

Other Non-ARAR Requirements (Full Compliance is Required)

ALTERNATIVE COMPONENT	REQUIREMENT, CRITERIA, STANDARD, LIMIT	RELEVANT ALTERNATIVES	CITATION	RELATIONSHIP BETWEEN REQUIREMENT, CRITERIA, STANDARD AND/OR LIMIT AND ALTERNATIVE COMPONENT AND OTHER COMMENTS
FEDERAL				
<i>NONE IDENTIFIED</i>				
WISCONSIN				
Institutional Controls – any media	Continuing Obligation (CO) Requirements	Alternatives 2-5	Wis. Admin. § NR 725 and 726	Should WI CO responsibilities be used as additional ICs, then the rule requirements are applicable. To be enforceable, WDNR must issue an approval of a remedial action type plan with enforceable requirements for the continuing obligations. Enforcing COs at properties not controlled by the RP could be an issue.

To Be Considered Standards, Guidance, and Initiatives

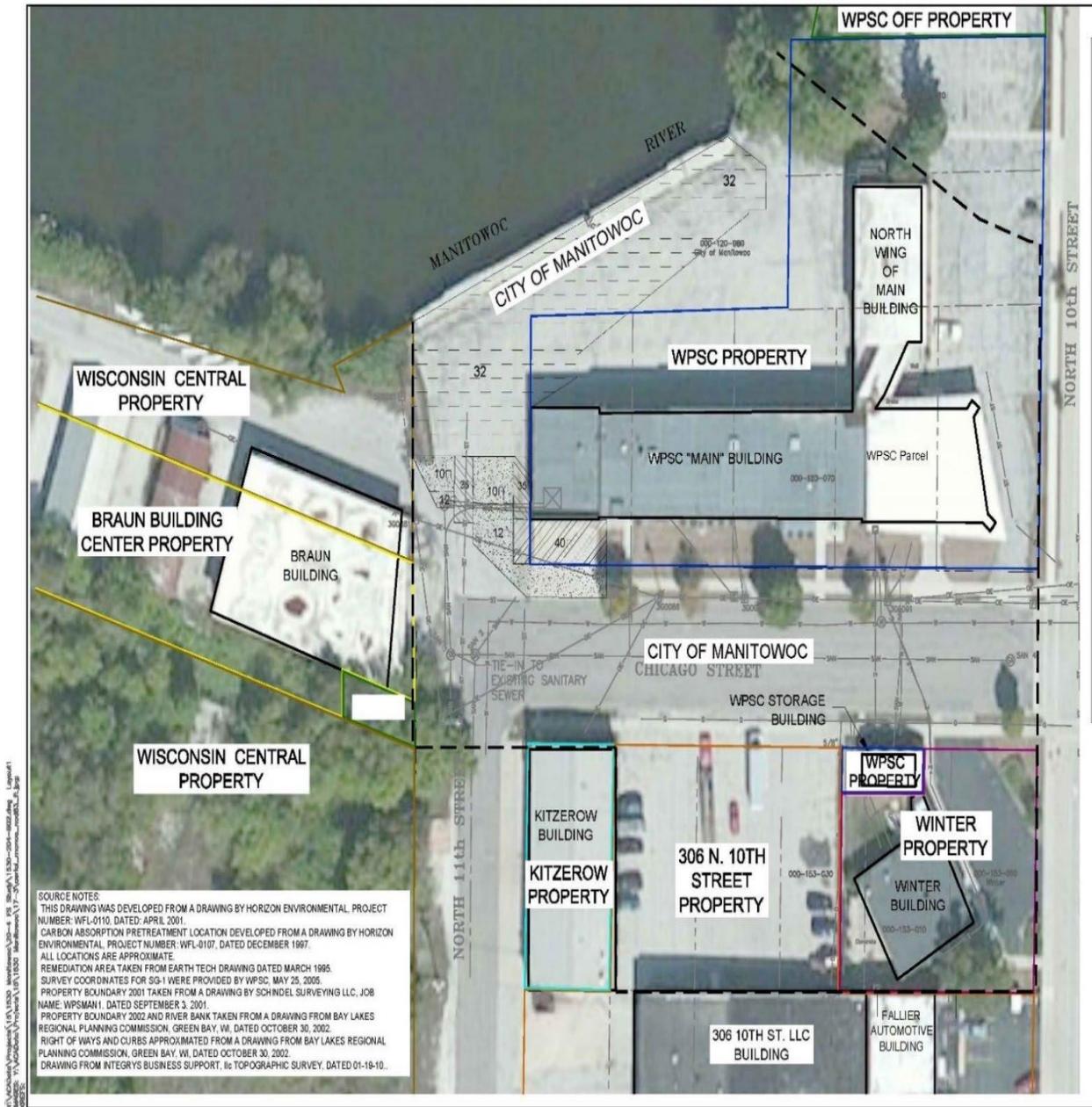
STANDARD, GUIDELINE, INITIATIVE	RELEVANT ALTERNATIVES	CITATION	Relationship between TBC and Alternative Component
FEDERAL			
<i>NONE IDENTIFIED</i>			
WISCONSIN			
Soil Cleanup Standards	Alternatives 2-5	<ul style="list-style-type: none"> • WDNR Guidance Document: "Soil Residual Contaminant Level Determinations Using the U.S. EPA Regional Screening Level Web Calculator" (WDNR PUBL-WR-890, January 23, 2014) • WDNR Guidance Document: "RR Program's RCL Spreadsheet Update" (WDNR-RR-052) 	These documents provide guidance on applying the U.S. EPA Screening Level Web Calculator to Wisconsin soils to calculate soil cleanup standards.
Air Management Guidelines Community Involvement	Alternatives 2-5	Wisconsin Bureau of Environmental and Occupational Health, Department of Health and Family Services: "Health-based Guidelines for Air Management and Community Involvement During Former Manufactured Gas Plant Clean-ups" (March 23, 2014)	This document provides guidance on developing Air Management Plans to protect human health during remedial activities at MGP sites in Wisconsin.
Soil Cover Guidance	Alternatives 2-5	WDNR Guidance Document: "Guidance for Cover Systems as Soil Performance Standard Remedies" (WDNR PUBL-RR-709, October 2013)	This document provides guidance on cover systems and soil performance standard remedies.
Remediation Standards, Requirements, and Initiatives	Alternatives 2-5	Wisconsin's Initiative for Sustainable Remediation and Redevelopment in the State of Wisconsin, A Practical Guide to Green and Sustainable Remediation in the State of Wisconsin. (WDNR Pub-RR-911, January 2012)	The Guide to Green and Sustainable Remediation provides guidance on implementing the US. EPA's Superfund Green Remediation Strategy (September 2010) at cleanup sites in Wisconsin.
Vapor Intrusion Guidance	Alternatives 2-5	<p>WDNR Guidance Document: "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (WDNR PUBL-RR-800, December 2010).</p> <p>WDNR Guidance Document: "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (WDNR PUBL-RR-800) Update (July 2012)</p> <p>WDNR Guidance Document: "Sub-slab Vapor Sampling Procedures" (WDNR PUBL-RR-986, July 2014).</p>	These documents provide guidance on the investigation and remediation of the vapor intrusion pathway at contamination sites in Wisconsin and the basis for calculating Indoor Air Vapor Action Levels and Vapor Risk Screening Levels.
Institutional Controls (Continuing Obligations) Requirements	Alternatives 2-5	<p>WDNR Guidance Document: "Guidance on Case Closure and the Requirements for Managing Continuing Obligations" (WDNR PUBL-RR-606, April 2014):</p> <p>WDNR Guidance Document: "DNR Case Closure Continuing Obligations: Vapor Intrusion" (WDNR PUBL-RR-042, Aug 2015)</p>	Also provided is guidance on how vapor intrusion is addressed through continuing obligations applied at case closure at contaminated sites in Wisconsin.
			These documents provide guidance on which vapor intrusion continuing obligations should be selected when preparing for case closure.

Acronyms

ARARs: Applicable or Relevant and Appropriate Requirements
 WDNR: Wisconsin Department of Natural Resources
 Wis. Stat.: Wisconsin Statute
 WPDES: Wisconsin Pollution Discharge Elimination System

CO: Continuing Obligation
 MGP COCs: Manufactured Gas Plant Compounds of Concern
 Wis. Admin.: Wisconsin Administrative Code

APPENDIX C



APPENDIX D

APPENDIX D

STATEMENT OF WORK

**FOR THE REMEDIAL ACTION AT THE WISCONSIN PUBLIC SERVICE
CORPORATION MANITOWOC FORMER MANUFACTURED GAS PLANT
SUPERFUND ALTERNATIVE SITE,
MANITOWOC, WISCONSIN**

EPA REGION 5

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1. INTRODUCTION

1.1 Purpose of the SOW. This Statement of Work (SOW) sets forth the procedures and requirements for implementing the Work.

1.2 Structure of the SOW.

- Section 2 (Community Involvement) sets forth EPA's and Settling Defendant's (SD's) responsibilities for community involvement.
- Section 3 (Remedial Action) sets forth requirements regarding the completion of the RA, including primary deliverables related to completion of the RA.
- Section 4 (Reporting) sets forth SD's reporting obligations.
- Section 5 (Deliverables) describes the content of the supporting deliverables and the general requirements regarding SD's submission of, and EPA's review of, approval of, comment on, and/or modification of, the deliverables.
- Section 6 (Schedules) sets forth the schedule for submitting the primary deliverables, specifies the supporting deliverables that must accompany each primary deliverable, and sets forth the schedule of milestones regarding the completion of the RA.
- Section 7 (State Participation) addresses State participation.
- Section 8 (Technical Assistance Plan) addresses the procedure for TAP grants.
- Section 9 (References) provides a list of references, including URLs.

1.3 The Scope of the Remedy includes the following actions described the ROD:

- *In-situ* stabilization (ISS) of highly-contaminated soil located in the Chicago Street and Winter Zones.
- Maintaining existing and/or installing new (as required) direct contact barrier (such as paved parking lots and roadways) on top of surface soil that exceeds residential cleanup standards in City of Manitowoc General Business District zoned properties and to industrial cleanup standards in City of Manitowoc Heavy Industrial/Heavy Manufacturing and Industrial Development zoned properties.
- One-time application of *in-situ* chemical oxidants through injection to promote cleanup of groundwater contamination, prior to the selection of a final groundwater remedy.
- Continued operation of an existing groundwater extraction well until the selection of a final groundwater remedy.
- Use of institutional controls (ICs) to restrict future land use to prevent human exposures to contamination remaining at the site, prevent interference with the remedial components, and to help prevent future soil vapor intrusion risks.

1.4 The terms used in this SOW that are defined in CERCLA, in regulations promulgated under CERCLA, or in the Consent Decree (CD), have the meanings assigned to them in

CERCLA, in such regulations, or in the CD, except that the term “Paragraph” or “¶” means a paragraph of the SOW, and the term “Section” means a section of the SOW, unless otherwise stated.

2. COMMUNITY INVOLVEMENT

2.1 Community Involvement Responsibilities

- (a) EPA has the lead responsibility for developing and implementing community involvement activities at the Site. Previously EPA developed a Community Involvement Plan (CIP) for the Site. Pursuant to 40 C.F.R. § 300.435(c), EPA shall review the existing CIP and determine whether it should be revised to describe further public involvement activities during the Work that are not already addressed or provided for in the existing CIP, including, if applicable, any Technical Assistance Grant (TAG), any use of the Technical Assistance Services for Communities (TASC) contract, and/or any Technical Assistance Plan (TAP).
- (b) If requested by EPA, SD shall participate in community involvement activities, including participation in (1) the preparation of information regarding the Work for dissemination to the public, with consideration given to including mass media and/or Internet notification, and (2) public meetings that may be held or sponsored by EPA to explain activities at or relating to the Site. SD’s support of EPA’s community involvement activities may include providing online access to initial submissions and updates of deliverables to (1) any Community Advisory Groups, (2) any Technical Assistance Grant recipients and their advisors, and (3) other entities to provide them with a reasonable opportunity for review and comment, such as the City of Manitowoc. EPA may describe in its CIP SD’s responsibilities for community involvement activities. All community involvement activities conducted by SD at EPA’s request are subject to EPA’s oversight. Upon EPA’s request, SD shall establish a community information repository at or near the Site to house one copy of the administrative record.
- (c) **SD’s CI Coordinator.** If requested by EPA, SD shall, within 15 days, designate and notify EPA of SD’s Community Involvement Coordinator (SD’s CI Coordinator). SD may hire a contractor for this purpose. SD’s notice must include the name, title, and qualifications of the SD’s CI Coordinator. SD’s CI Coordinator is responsible for providing support regarding EPA’s community involvement activities, including coordinating with EPA’s CI Coordinator regarding responses to the public’s inquiries about the Site.

3. REMEDIAL ACTION

3.1 RA Work Plan. SD shall submit a RA Work Plan (RAWP) for EPA approval that includes:

- (a) A proposed RA Construction Schedule;
- (b) An updated health and safety plan that covers activities during the RA; and

- (c) Plans for satisfying permitting requirements, including obtaining permits for off-site activity and for satisfying substantive requirements of permits for on-site activity.

3.2 Meetings and Inspections

- (a) **Preconstruction Conference.** SD shall hold a preconstruction conference with EPA and others as directed or approved by EPA and as described in the *Remedial Design/Remedial Action Handbook*, EPA 540/R-95/059 (June 1995). SD shall prepare minutes of the conference and shall distribute the minutes to all Parties.
- (b) **Periodic Meetings.** During the construction portion of the RA (RA Construction), SD shall meet regularly with EPA, and others as directed or determined by EPA, to discuss construction issues. SD shall distribute an agenda and list of attendees to all Parties prior to each meeting. SD shall prepare minutes of the meetings and shall distribute the minutes to all Parties.

- (c) **Inspections**

- (1) EPA or its representative shall conduct periodic inspections of or have an on-site presence during the Work. At EPA's request, the Supervising Contractor or other designee shall accompany EPA or its representative during inspections.
- (2) Upon notification by EPA of any deficiencies in the RA Construction, SD shall take all necessary steps to correct the deficiencies and/or bring the RA Construction into compliance with the approved Final RD, any approved design changes, and/or the approved RAWP. If applicable, SD shall comply with any schedule provided by EPA in its notice of deficiency.

3.3 Emergency Response and Reporting

- (a) **Emergency Response and Reporting.** If any event occurs during performance of the Work that causes or threatens to cause a release of Waste Material on, at, or from the Site and that either constitutes an emergency situation or that may present an immediate threat to public health or welfare or the environment, SD shall: (1) immediately take all appropriate action to prevent, abate, or minimize such release or threat of release; (2) immediately notify the authorized EPA officer (as specified in ¶ 3.3(c)) orally; and (3) take such actions in consultation with the authorized EPA officer and in accordance with all applicable provisions of the Health and Safety Plan, the Emergency Response Plan, and any other deliverable approved by EPA under the SOW.
- (b) **Release Reporting.** Upon the occurrence of any event during performance of the Work that SD is required to report pursuant to Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community

Right-to-know Act (EPCRA), 42 U.S.C. § 11004, SD shall immediately notify the authorized EPA officer orally.

- (c) The “authorized EPA officer” for purposes of immediate oral notifications and consultations under ¶ 3.3(a) and ¶ 3.3(b) is the EPA Project Coordinator, the EPA Alternate Project Coordinator (if the EPA Project Coordinator is unavailable), or the EPA Emergency Response Unit, Region 5 if neither EPA Project Coordinator is available.
- (d) For any event covered by ¶ 3.3(a) and ¶ 3.3(b), SD shall: (1) within 14 days after the onset of such event, submit a report to EPA describing the actions or events that occurred and the measures taken, and to be taken, in response thereto; and (2) within 30 days after the conclusion of such event, submit a report to EPA describing all actions taken in response to such event.
- (e) The reporting requirements under ¶ 3.3 are in addition to the reporting required by CERCLA § 103 or EPCRA § 304.

3.4 Off-Site Shipments

- (a) SD may ship hazardous substances, pollutants, and contaminants from the Site to an off-Site facility only if it complies with Section 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440. SD will be deemed to be in compliance with CERCLA § 121(d)(3) and 40 C.F.R. § 300.440 regarding a shipment if SD obtains a prior determination from EPA that the proposed receiving facility for such shipment is acceptable under the criteria of 40 C.F.R. § 300.440(b).
- (b) SD may ship Waste Material from the Site to an out-of-state waste management facility only if, prior to the initial shipment to a receiving facility, SD provides notice to the appropriate state environmental official in the receiving facility’s state and to the EPA Project Coordinator. This notice requirement will not apply to any off-Site shipments when the total quantity of all such shipments does not exceed 10 cubic yards. The notice must include the following information, if available: (1) the name and location of the receiving facility; (2) the type and quantity of Waste Material to be shipped; (3) the schedule for the shipment; and (4) the method of transportation. SD also shall notify the state environmental official referenced above and the EPA Project Coordinator of any major changes in the shipment plan, such as a decision to ship the Waste Material to a different out-of-state facility. SD shall provide the notice after the award of the contract for RA construction and before the Waste Material is shipped.
- (c) SD may ship Investigation Derived Waste (IDW) from the Site to an off-Site facility only if they comply with Section 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3), 40 C.F.R. § 300.440, *EPA’s Guide to Management of Investigation Derived Waste*, OSWER 9345.3-03FS (Jan. 1992), and any IDW-specific requirements contained in the ROD. Wastes shipped off-Site to a laboratory for

characterization, and RCRA hazardous wastes that meet the requirements for an exemption from RCRA under 40 CFR § 261.4(e) shipped off-site for treatability studies, are not subject to 40 C.F.R. § 300.440.

3.5 Certification of RA Completion

- (a) **RA Completion Inspection.** The RA is “Complete” for purposes of this ¶ 3.5 when it has been fully performed and the Performance Standards have been achieved. SD shall schedule an inspection for the purpose of obtaining EPA’s Certification of RA Completion. The inspection must be attended by SD and EPA and/or their representatives.
- (b) **RA Report/Monitoring Report.** Following the inspection, SD shall submit a RA Report/Monitoring Report to EPA requesting EPA’s Certification of RA Completion. The report must: (1) include certifications by a registered professional engineer and by SD’s Project Coordinator that the RA is complete; (2) include as-built drawings signed and stamped by a registered professional engineer; (3) be prepared in accordance with Chapter 2 (Remedial Action Completion) of EPA’s *Close Out Procedures for NPL Sites* guidance (May 2011); (4) contain monitoring data to demonstrate that Performance Standards have been achieved; and (5) be certified in accordance with ¶ 5.5 (Certification).
- (c) If EPA concludes that the RA is not Complete, EPA shall so notify SD. EPA’s notice must include a description of any deficiencies. EPA’s notice may include a schedule for addressing such deficiencies or may require SD to submit a schedule for EPA approval. SD shall perform all activities described in the notice in accordance with the schedule.
- (d) If EPA concludes, based on the initial or any subsequent RA Report/Monitoring Report requesting Certification of RA Completion, that the RA is Complete, EPA shall so certify to SD. This certification will constitute the Certification of RA Completion for purposes of the CD, including Section XV of the CD (Covenants by Plaintiffs). Certification of RA Completion will not affect SD’s remaining obligations under the CD.

3.6 Periodic Review Support Plan (PRSP). SD shall submit the PRSP for EPA approval. The PRSP addresses the studies and investigations that SD shall conduct to support EPA’s reviews of whether the RA is protective of human health and the environment in accordance with Section 121(c) of CERCLA, 42 U.S.C. § 9621(c) (also known as “Five-year Reviews”). SD shall develop the plan in accordance with *Comprehensive Five-year Review Guidance*, OSWER 9355.7-03B-P (June 2001), and any other relevant five-year review guidances.

3.7 Certification of Work Completion

- (a) **Work Completion Inspection.** SD shall schedule an inspection for the purpose of obtaining EPA’s Certification of Work Completion. The inspection must be attended by SD and EPA and/or their representatives.

- (b) **Work Completion Report.** Following the inspection, SD shall submit a report to EPA requesting EPA's Certification of Work Completion. The report must:
 - (1) include certifications by a registered professional engineer and by SD's Project Coordinator that the Work, including all O&M activities, is complete; and
 - (2) be certified in accordance with ¶ 5.5 (Certification). If the RA Report/Monitoring Report submitted under ¶ 3.5(b) includes all elements required under this ¶ 3.7(b), then the RA Report/Monitoring Report suffices to satisfy all requirements under this ¶ 3.7(b).
- (c) If EPA concludes that the Work is not complete, EPA shall so notify SD. EPA's notice must include a description of the activities that SD must perform to complete the Work. EPA's notice must include specifications and a schedule for such activities or must require SD to submit specifications and a schedule for EPA approval. SD shall perform all activities described in the notice or in the EPA-approved specifications and schedule.
- (d) If EPA concludes, based on the initial or any subsequent report requesting Certification of Work Completion, that the Work is complete, EPA shall so certify in writing to SD. Issuance of the Certification of Work Completion does not affect the following continuing obligations: (1) activities under the Periodic Review Support Plan; (2) XIX (Retention of Records), and XXVIII (Access to Information) of the CD; and (3) reimbursement of EPA's Future Response Costs under Section X (Payments for Response Costs) of the CD.

4. REPORTING

4.1 Progress Reports. Commencing with the first month following EPA's approval of the Final Remedial Design and until EPA approves the RA Construction Completion, SD shall submit progress reports to EPA on a monthly basis, or as otherwise requested by EPA. The reports must cover all activities that took place during the prior reporting period, including:

- (a) The actions that have been taken toward achieving compliance with the CD;
- (b) A summary of all results of sampling, tests, and all other data received or generated by SD;
- (c) A description of all deliverables that SD submitted to EPA;
- (d) A description of activities relating to RA Construction that are scheduled for the next six weeks;
- (e) An updated RA Construction Schedule, together with information regarding percentage of completion, delays encountered or anticipated that may affect the future schedule for implementation of the Work, and a description of efforts made to mitigate those delays or anticipated delays;

- (f) A description of any modifications to the work plans or other schedules that SD has proposed or that have been approved by EPA; and
- (g) A description of all activities undertaken in support of the Community Involvement Plan (CIP) during the reporting period and those to be undertaken in the next six weeks.

4.2 Notice of Progress Report Schedule Changes. If the schedule for any activity described in the Progress Reports, including activities required to be described under ¶ 4.1(d), changes, SD shall notify EPA of such change at least 7 days before performance of the activity.

5. DELIVERABLES

5.1 Applicability. SD shall submit deliverables for EPA approval or for EPA comment as specified in the SOW. If neither is specified, the deliverable does not require EPA's approval or comment. Paragraphs 5.2 (In Writing) through 5.4 (Technical Specifications) apply to all deliverables. Paragraph 5.5 (Certification) applies to any deliverable that is required to be certified. Paragraph 5.6 (Approval of Deliverables) applies to any deliverable that is required to be submitted for EPA approval.

5.2 In Writing. As provided in ¶ 85 of the CD, all deliverables under this SOW must be in writing unless otherwise specified.

5.3 General Requirements for Deliverables. All deliverables must be submitted by the deadlines in the RA Schedule, as applicable. SD shall submit all deliverables to EPA in electronic form. Technical specifications for sampling and monitoring data and spatial data are addressed in ¶ 5.4. All other deliverables shall be submitted to EPA in the electronic form specified by the EPA Project Coordinator. If any deliverable includes maps, drawings, or other exhibits that are larger than 8.5" by 11", SD shall also provide EPA with paper copies of such exhibits.

5.4 Technical Specifications

- (a) Sampling and monitoring data should be submitted in standard regional Electronic Data Deliverable (EDD) format. Other delivery methods may be allowed if electronic direct submission presents a significant burden or as technology changes.
- (b) Spatial data, including spatially-referenced data and geospatial data should be submitted; (1) in the ESRI File Geodatabase format; and (2) as unprojected geographic coordinates in decimal degree format using North American Datum 1983 (NAD83) or World Geodetic System 1984 (WGS84) as the datum. If applicable, submissions should include the collection method(s). Projected coordinates may optionally be included but must be documented. Spatial data should be accompanied by metadata, and such metadata should be compliant with the Federal Geographic Data Committee (FGDC) Content Standard for Digital Geospatial Metadata and its EPA profile, the EPA Geospatial Metadata Technical

Specification. An add-on metadata editor for ESRI software, the EPA Metadata Editor (EME), complies with these FGDC and EPA metadata requirements and is available at <https://edg.epa.gov/EME/>.

- (c) Each file must include an attribute name for each site unit or sub-unit submitted. Consult <http://www.epa.gov/geospatial/policies.html> for any further available guidance on attribute identification and naming.
- (d) Spatial data submitted by SD does not, and is not intended to, define the boundaries of the Site.

5.5 Certification. All deliverables that require compliance with this ¶ 5.5 must be signed by the SD's Project Coordinator, or other responsible official of SD, and must contain the following statement:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

5.6 Approval of Deliverables

(a) Initial Submissions

- (1) After review of any deliverable that is required to be submitted for EPA approval under the CD or the SOW, EPA shall: (i) approve, in whole or in part, the submission; (ii) approve the submission upon specified conditions; (iii) disapprove, in whole or in part, the submission; or (iv) any combination of the foregoing.
- (2) EPA also may modify the initial submission to cure deficiencies in the submission if: (i) EPA determines that disapproving the submission and awaiting a resubmission would cause substantial disruption to the Work; or (ii) previous submission(s) have been disapproved due to material defects and the deficiencies in the initial submission under consideration indicate a bad faith lack of effort to submit an acceptable deliverable.

- (b) **Resubmissions.** Upon receipt of a notice of disapproval under ¶ 5.6(a) (Initial Submissions), or if required by a notice of approval upon specified conditions under ¶ 5.6(a), SD shall, within 21 calendar days or such longer time as specified by EPA in such notice, correct the deficiencies and resubmit the deliverable for approval. After review of the resubmitted deliverable, EPA may: (1) approve, in

whole or in part, the resubmission; (2) approve the resubmission upon specified conditions; (3) modify the resubmission; (4) disapprove, in whole or in part, the resubmission, requiring SD to correct the deficiencies; or (5) any combination of the foregoing.

- (c) **Implementation.** Upon approval, approval upon conditions, or modification by EPA under ¶ 5.6(a) (Initial Submissions) or ¶ 5.6(b) (Resubmissions), of any deliverable, or any portion thereof: (1) such deliverable, or portion thereof, will be incorporated into and enforceable under the CD; and (2) SD shall take any action required by such deliverable, or portion thereof. The implementation of any non-deficient portion of a deliverable submitted or resubmitted under ¶ 5.6(a) or ¶ 5.6(b) does not relieve SD of any liability for stipulated penalties under Section XIV (Stipulated Penalties) of the CD.

5.7 Supporting Deliverables. Upon entry of the CD, all supporting deliverables submitted under and incorporated into the AOC shall be incorporated into the CD. Following EPA's notice that SD has completed its obligations under the 2019 AOC, SD shall update each of these supporting deliverables or develop new ones as necessary or appropriate during the course of the Work, and/or as requested by EPA. If warranted by changes to Site conditions and/or technical modifications to the remedy, SD shall update or develop the deliverables, which may include those listed below, in accordance with all applicable regulations, guidances, and policies (see Section 9 (References)).

- (a) **Health and Safety Plan.** The Health and Safety Plan (HASP) describes all activities to be performed to protect on site personnel and area residents from physical, chemical, and all other hazards posed by the Work. SD shall develop the HASP in accordance with EPA's Emergency Responder Health and Safety and Occupational Safety and Health Administration (OSHA) requirements under 29 C.F.R. §§ 1910 and 1926. The HASP should be, as appropriate, updated to cover activities during the RA and updated to cover activities after RA completion. EPA does not approve the HASP, but will review it to ensure that all necessary elements are included and that the plan provides for the protection of human health and the environment.
- (b) **Emergency Response Plan.** The Emergency Response Plan (ERP) must describe procedures to be used in the event of an accident or emergency at the Site (for example, power outages, water impoundment failure, treatment plant failure, slope failure, etc.). The ERP must include:
- (1) Name of the person or entity responsible for responding in the event of an emergency incident;
 - (2) Plan and date(s) for meeting(s) with the local community, including local, State, and federal agencies involved in the cleanup, as well as local emergency squads and hospitals;

- (3) Spill Prevention, Control, and Countermeasures (SPCC) Plan (if applicable), consistent with the regulations under 40 C.F.R. Part 112, describing measures to prevent, and contingency plans for, spills and discharges;
 - (4) Notification activities in accordance with ¶ 3.3(b) (Release Reporting) in the event of a release of hazardous substances requiring reporting under Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community Right-to-know Act (EPCRA), 42 U.S.C. § 11004; and
 - (5) A description of all necessary actions to ensure compliance with Paragraph 11 (Emergencies and Releases) of the CD in the event of an occurrence during the performance of the Work that causes or threatens a release of Waste Material from the Site that constitutes an emergency or may present an immediate threat to public health or welfare or the environment.
- (c) **Field Sampling Plan.** The Field Sampling Plan (FSP) addresses all sample collection activities. The FSP must be written so that a field sampling team unfamiliar with the project would be able to gather the samples and field information required. SD shall develop the FSP in accordance with *Guidance for Conducting Remedial Investigations and Feasibility Studies*, EPA/540/G 89/004 (Oct. 1988).
- (d) **Quality Assurance Project Plan.** The Quality Assurance Project Plan (QAPP) augments the FSP and addresses sample analysis and data handling regarding the Work. The QAPP must include a detailed explanation of SD's quality assurance, quality control, and chain of custody procedures for all treatability, design, compliance, and monitoring samples. SD shall develop the QAPP in accordance with *EPA Requirements for Quality Assurance Project Plans*, QA/R-5, EPA/240/B-01/003 (Mar. 2001, reissued May 2006); *Guidance for Quality Assurance Project Plans.*, QA/G-5, EPA/240/R 02/009 (Dec. 2002); and *Uniform Federal Policy for Quality Assurance Project Plans*, Parts 1-3, EPA/505/B-04/900A through 900C (Mar. 2005). The QAPP also must include procedures:
- (1) To ensure that EPA and the State and their authorized representative have reasonable access to laboratories used by SD in implementing the CD (SD's Labs);
 - (2) To ensure that SD's Labs analyze all samples submitted by EPA pursuant to the QAPP for quality assurance monitoring;
 - (3) To ensure that SD's Labs perform all analyses using EPA-accepted methods (i.e., the methods documented in *USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis*, ILM05.4 (Dec. 2006); *USEPA Contract Laboratory Program Statement of Work for Organic*

Analysis, SOM01.2 (amended Apr. 2007); and *USEPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods (Multi-Media, Multi-Concentration)*, ISM01.2 (Jan. 2010)) or other methods acceptable to EPA;

- (4) To ensure that SD's Labs participate in an EPA-accepted QA/QC program or other program QA/QC acceptable to EPA;
 - (5) For SD to provide EPA and the State with notice at least 28 days prior to any sample collection activity;
 - (6) For SD to provide split samples and/or duplicate samples to EPA and the State upon request;
 - (7) For EPA and the State to take any additional samples that they deem necessary;
 - (8) For EPA and the State to provide to SD, upon request, split samples and/or duplicate samples in connection with EPA's and the State's oversight sampling; and
 - (9) For SD to submit to EPA and the State all sampling and tests results and other data in connection with the implementation of the CD.
- (e) **Site Wide Monitoring Plan.** The purpose of the Site Wide Monitoring Plan (SWMP) is to obtain baseline information regarding the extent of contamination in affected media at the Site; to obtain information, through short- and long- term monitoring, about the movement of and changes in contamination throughout the Site, before and during implementation of the RA; to obtain information regarding contamination levels to determine whether Performance Standards (PS) are achieved; and to obtain information to determine whether to perform additional actions, including further Site monitoring. The SWMP must include:
- (1) Description of the environmental media to be monitored;
 - (2) Description of the data collection parameters, including existing and proposed monitoring devices and locations, schedule and frequency of monitoring, analytical parameters to be monitored, and analytical methods employed;
 - (3) Description of how performance data will be analyzed, interpreted, and reported, and/or other Site-related requirements;
 - (4) Description of verification sampling procedures;
 - (5) Description of deliverables that will be generated in connection with monitoring, including sampling schedules, laboratory records, monitoring reports, and monthly and annual reports to EPA and State agencies; and

- (6) Description of proposed additional monitoring and data collection actions (such as increases in frequency of monitoring, and/or installation of additional monitoring devices in the affected areas) in the event that results from monitoring devices indicate changed conditions (such as higher than expected concentrations of the contaminants of concern or groundwater contaminant plume movement).
- (f) **Construction Quality Assurance/Quality Control Plan (CQA/QCP).** The purpose of the Construction Quality Assurance Plan (CQAP) is to describe planned and systemic activities that provide confidence that the RA construction will satisfy all plans, specifications, and related requirements, including quality objectives. The purpose of the Construction Quality Control Plan (CQCP) is to describe the activities to verify that RA construction has satisfied all plans, specifications, and related requirements, including quality objectives. The CQA/QCP must:
- (1) Identify, and describe the responsibilities of, the organizations and personnel implementing the CQA/QCP;
 - (2) Describe the PS required to be met to achieve Completion of the RA;
 - (3) Describe the activities to be performed: (i) to provide confidence that PS will be met; and (ii) to determine whether PS have been met;
 - (4) Describe verification activities, such as inspections, sampling, testing, monitoring, and production controls, under the CQA/QCP;
 - (5) Describe industry standards and technical specifications used in implementing the CQA/QCP;
 - (6) Describe procedures for tracking construction deficiencies from identification through corrective action;
 - (7) Describe procedures for documenting all CQA/QCP activities; and
 - (8) Describe procedures for retention of documents and for final storage of documents.
- (g) **O&M Plan.** The O&M Plan describes the requirements for inspecting, operating, and maintaining the RA. SD shall develop the O&M Plan in accordance with *Operation and Maintenance in the Superfund Program*, OSWER 9200.1 37FS, EPA/540/F-01/004 (May 2001). The O&M Plan must include the following additional requirements:
- (1) Description of Performance Standards (PS) required to be met to implement the ROD;

- (2) Description of activities to be performed: (i) to provide confidence that PS will be met; and (ii) to determine whether PS have been met;
 - (3) **O&M Reporting.** Description of records and reports that will be generated during O&M, such as daily operating logs, laboratory records, records of operating costs, reports regarding emergencies, personnel and maintenance records, monitoring reports, and monthly and annual reports to EPA and State agencies;
 - (4) Description of corrective action in case of systems failure, including: (i) alternative procedures to prevent the release or threatened release of Waste Material which may endanger public health and the environment or may cause a failure to achieve PS; (ii) analysis of vulnerability and additional resource requirements should a failure occur; (iii) notification and reporting requirements should O&M systems fail or be in danger of imminent failure; and (iv) community notification requirements; and
 - (5) Description of corrective action to be implemented in the event that PS are not achieved; and a schedule for implementing these corrective actions.
- (h) **O&M Manual.** The O&M Manual serves as a guide to the purpose and function of the equipment and systems that make up the remedy. SD shall develop the O&M Manual in accordance with *Operation and Maintenance in the Superfund Program*, OSWER 9200.1 37FS, EPA/540/F-01/004 (May 2001).

6. SCHEDULES

6.1 Applicability and Revisions. All deliverables and tasks required under this SOW must be submitted or completed by the deadlines or within the time durations listed in the RA Schedules set forth below. SD may submit proposed revised RA Schedules for EPA approval. Upon EPA's approval, the revised RA Schedules supersede the RA Schedules set forth below, and any previously-approved RA Schedules.

6.2 RA Schedule

	Description of Deliverable / Task	¶ Ref.	Deadline
1	Award RA contract		60 days after EPA Notice of Authorization to Proceed with RA
2	RAWP	3.1	90 days after EPA Notice of Authorization to Proceed with RA
3	Pre-Construction Conference	3.2(a)	30 days after Approval of RAWP
4	Start of Construction		45 days after Approval of RAWP and obtaining access to third party parcels
5	Completion of Construction	3.5	
6	Inspection of RA Construction Completion	3.5(a)	30 days after completion of construction

7	Draft Report of RA Construction Completion	3.5(b)	60 days after completion of Inspection
8	Comments on Draft Report of RA Construction Completion	3.5(c)	90 days after receipt of draft report
9	Final RA Construction Completion Report	3.5(c)	60 days after receipt of comments on draft report
10	Issuance of RA Construction Completion Certificate	3.5(d)	60 days after approval of report of RA Construction Completion Report
11	Work Completion	3.7	
12	Inspection of Work Completion	3.7(a)	60 days after work completion
13	Draft Work Completion Report	3.7(b)	60 days after completion of Inspection
14	Comments on Draft Work Completion Report	3.7(c)	90 days after receipt of draft report
15	Final Work Completion Report	3.7(c)	60 days after receipt of comments on draft report
16	Issuance of Work Completion Certificate	3.7(d)	60 days after approval of Work Completion Report
17	Periodic Review Support Plan	3.6	Five years after Start of RA Construction

7. STATE PARTICIPATION

- 7.1 Copies.** SD shall, at any time it sends a deliverable to EPA, send a copy of such deliverable to the State. EPA shall, at any time it sends a notice, authorization, approval, disapproval, or certification to SD, send a copy of such document to the State.
- 7.2 Review and Comment.** The State will have a reasonable opportunity for review and comment prior to:
- (a) Any EPA approval or disapproval under ¶ 5.6 (Approval of Deliverables) of any deliverables that are required to be submitted for EPA approval; and
 - (b) Any approval or disapproval of the Construction Phase under ¶ 3.5 (c) (RA Construction Completion), any disapproval of, or Certification of RA Completion under ¶ 3.5 (Certification of RA Completion), and any disapproval of, or Certification of Work Completion under ¶ 3.7 (Certification of Work Completion).
- 7.3 Oversight.** Upon consulting with EPA prior to planned activity, the State may conduct field oversight of RA activities and operation of the remediation system at its discretion or at the request of EPA. Field oversight done by the State may include, but is not limited to, observing ongoing work, reviewing plans and modifications thereto, collection of samples (e.g split sampling) and analysis of samples collected.

8. TECHNICAL ASSISTANCE PLAN

SD's Responsibilities for Technical Assistance

- 8.1** If EPA requests, SD shall arrange for a qualified community group to receive the services of a technical advisor(s) who can: (i) help group members understand Site cleanup issues (specifically, to interpret and comment on Site-related documents developed under this SOW); and (ii) share this information with others in the community. The technical advisor(s) will be independent from the SD. SD's TAP assistance will be limited to \$50,000, except as provided in ¶8.4(c) and will end when EPA issues the Certification of Work Completion. SD shall implement this requirement under a Technical Assistance Plan (TAP).
- 8.2** If EPA requests, SD shall cooperate with EPA in soliciting interest from community groups regarding a TAP grant at the Site. If more than one community group expresses an interest in a TAP grant, SD shall cooperate with EPA in encouraging the groups to submit a single, joint application for a TAP grant.
- 8.3** If EPA requests, SD shall, within 30 days, submit a proposed TAP for EPA approval. The TAP must describe the SD's plans for the qualified community group to receive independent technical assistance. The TAP must include the following elements:
- a. For SD to arrange for publication of a notice in local media explaining how interested community groups may submit an application for a TAP grant. If EPA has already received a Letter of Intent to apply for a TAP grant from a community group, the notice should explain how other interested groups may also try to combine efforts with the LOI group or submit their own applications, by a reasonable specified deadline;
 - b. For SD to review the application(s) received and determine the eligibility of the community group(s). The proposed TAP must include eligibility criteria as follows:
 1. A community group is eligible if it is: (i) comprised of people who are affected by the release or threatened release at the Site; (ii) incorporated as a not-for-profit organization for the purposes of the Site or otherwise established as a charitable organization that operates within the geographical range of the Site and is already incorporated as a non-for-profit organization; and (iii) able to demonstrate its ability to adequately and responsibly manage TAP-related responsibilities.
 2. A community group is ineligible if it is: (i) a potentially responsible party (PRP) at the Site, represents such a PRP, or receives money or services from a PRP (other than through the TAP); (ii) affiliated with a national organization; (iii) an academic institution; (iv) a political subdivision; (v) a tribal government; or (vi) a group established or presently sustained by any of the above

ineligible entities; or (vii) a group in which any of the above ineligible entities is represented.

- c. For SD to notify EPA of its determination on eligibility of the applicant group(s) to ensure that the determination is consistent with the SOW before notifying the group(s);
 - d. If more than one community group submits a timely application, for SD to review each application and evaluate each application based on the following elements:
 - .d.1 The extent to which the group is representative of those persons affected by the Site; and
 - .d.2 The effectiveness of the group's proposed system for managing TAP-related responsibilities, including its plans for working with its technical advisor and for sharing Site-related information with other members of the community.
 - e. For SD to document its evaluation of, and its selection of, a qualified community group, and to brief EPA regarding its evaluation process and choice. EPA may review SD's evaluation process to determine whether the process satisfactorily follows the criteria in ¶8.3 TAP assistance may be awarded to only one qualified group at a time;
 - f. For SD to notify all applicant(s) about SD's decision;
 - g. For SD to designate a person (TAP Coordinator) to be their primary contact with the selected community group;
 - h. A description of SD's plans to implement the requirements of ¶8.4 (Agreement with Selected Community Group); and
- For SD to submit quarterly progress reports regarding the implementation of the TAP.

8.4 Agreement with Selected Community Group

- a. SD shall negotiate an agreement with the selected community group that specifies the duties of SD and the community group. The agreement must specify the activities that may be reimbursed under the TAP and the activities that may not be reimbursed under the TAP. The list of allowable activities must be consistent with 40 C.F.R. § 35.4070 (e.g., obtaining the services of an advisor to help the group understand the nature of the environmental and public health hazards at the Site and the various stages of the response action, and communicating Site information to others in the community). The list of non-allowable activities must be consistent with 40 C.F.R. § 35.4075 (e.g., activities related to litigation or political lobbying).

- b. The agreement must provide that SD's review of the Community Group's recommended choice for Technical Advisor will be limited, consistent with 40 C.F.R. § 35.4190 and § 35.4195, to criteria such as whether the advisor has relevant knowledge, academic training, and relevant experience as well as the ability to translate technical information into terms the community can understand.
- c. The agreement must provide that the Community Group is eligible for additional TAP assistance if it can demonstrate that it has effectively managed its TAP responsibilities to date, and that at least three of the following ten factors are satisfied:
 - 1. EPA expects that more than eight years (beginning with the initiation of the ROD) will pass before construction completion will be achieved;
 - 2. EPA requires treatability studies or evaluation of new and innovative technologies;
 - 3. EPA reopens the ROD;
 - 4. The public health assessment (or related activities) for the Site indicates the need for further health investigations and/or health-related activities;
 - 5. After SD's selection of the Community Group for the TAP, EPA designates additional Operable Units at the Site;
 - 6. EPA issues an Explanation of Significant Differences for the ROD;
 - 7. After SD's selection of the Community Group, a legislative or regulatory change results in significant new Site information;
 - 8. Significant public concern about the Site exists, as evidenced, e.g., by relatively large turnout at meetings, the need for multiple meetings, the need for numerous copies of documents to inform community members, etc;
 - 9. Any other factor that, in EPA's judgment, indicates that the Site is unusually complex; or
 - 10. A RA costing at least \$7.3 million was performed at the Site.
- d. SD is entitled to retain any unobligated TAP funds upon EPA's Certification of Work Completion.

- e. SD shall submit a draft of the proposed agreement to EPA for its comments.

9. REFERENCES

- 9.1** The following regulations and guidance documents, among others, apply to corresponding aspects of the Work. Any item for which a specific URL is not provided below is available on one of the two EPA Web pages listed in ¶ 9.2:
- (a) A Compendium of Superfund Field Operations Methods, OSWER 9355.0-14, EPA/540/P-87/001a (Aug. 1987).
 - (b) CERCLA Compliance with Other Laws Manual, Part I: Interim Final, OSWER 9234.1-01, EPA/540/G-89/006 (Aug. 1988).
 - (c) Guidance for Conducting Remedial Investigations and Feasibility Studies, OSWER 9355.3-01, EPA/540/G-89/004 (Oct. 1988).
 - (d) CERCLA Compliance with Other Laws Manual, Part II, OSWER 9234.1-02, EPA/540/G-89/009 (Aug. 1989).
 - (e) Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties, OSWER 9355.5-01, EPA/540/G-90/001 (Apr. 1990).
 - (f) Guidance on Expediting Remedial Design and Remedial Actions, OSWER 9355.5-02, EPA/540/G-90/006 (Aug. 1990).
 - (g) Guide to Management of Investigation-Derived Wastes, OSWER 9345.3-03FS (Jan. 1992).
 - (h) Permits and Permit Equivalency Processes for CERCLA On-Site Response Actions, OSWER 9355.7-03 (Feb. 1992).
 - (i) Guidance for Conducting Treatability Studies under CERCLA, OSWER 9380.3-10, EPA/540/R-92/071A (Nov. 1992).
 - (j) National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, 40 C.F.R. Part 300 (Oct. 1994).
 - (k) Guidance for Scoping the Remedial Design, OSWER 9355.0-43, EPA/540/R-95/025 (Mar. 1995).
 - (l) Remedial Design/Remedial Action Handbook, OSWER 9355.0-04B, EPA/540/R-95/059 (June 1995).
 - (m) EPA Guidance for Data Quality Assessment, Practical Methods for Data Analysis, QA/G-9, EPA/600/R-96/084 (July 2000).

- (n) Operation and Maintenance in the Superfund Program, OSWER 9200.1-37FS, EPA/540/F-01/004 (May 2001).
- (o) Comprehensive Five-year Review Guidance, OSWER 9355.7-03B-P, 540-R-01-007 (June 2001).
- (p) Guidance for Quality Assurance Project Plans, QA/G-5, EPA/240/R-02/009 (Dec. 2002).
- (q) Institutional Controls: Third Party Beneficiary Rights in Proprietary Controls (Apr. 2004).
- (r) Quality management systems for environmental information and technology programs -- Requirements with guidance for use, ASQ/ANSI E4:2014 (American Society for Quality, February 2014).
- (s) Uniform Federal Policy for Quality Assurance Project Plans, Parts 1-3, EPA/505/B-04/900A through 900C (Mar. 2005).
- (t) Superfund Community Involvement Handbook, EPA/540/K-05/003 (Apr. 2005).
- (u) EPA Guidance on Systematic Planning Using the Data Quality Objectives Process, QA/G-4, EPA/240/B-06/001 (Feb. 2006).
- (v) EPA Requirements for Quality Assurance Project Plans, QA/R-5, EPA/240/B-01/003 (Mar. 2001, reissued May 2006).
- (w) EPA Requirements for Quality Management Plans, QA/R-2, EPA/240/B-01/002 (Mar. 2001, reissued May 2006).
- (x) USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, ILM05.4 (Dec. 2006).
- (y) USEPA Contract Laboratory Program Statement of Work for Organic Analysis, SOM01.2 (amended Apr. 2007).
- (z) EPA National Geospatial Data Policy, CIO Policy Transmittal 05-002 (Aug. 2008), available at <http://www.epa.gov/geospatial/policies.html> and http://www.epa.gov/geospatial/docs/National_Geospatial_Data_Policy.pdf.
- (aa) Summary of Key Existing EPA CERCLA Policies for Groundwater Restoration, OSWER 9283.1-33 (June 2009).
- (bb) Principles for Greener Cleanups (Aug. 2009), available at <http://www.epa.gov/oswer/greenercleanups/>.
- (cc) Providing Communities with Opportunities for Independent Technical Assistance in Superfund Settlements, Interim (Sep. 2009).

- (dd) USEPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods (Multi-Media, Multi-Concentration), ISM01.2 (Jan. 2010).
- (ee) Close Out Procedures for National Priorities List Sites, OSWER 9320.2-22 (May 2011).
- (ff) Groundwater Road Map: Recommended Process for Restoring Contaminated Groundwater at Superfund Sites, OSWER 9283.1-34 (July 2011).
- (gg) Recommended Evaluation of Institutional Controls: Supplement to the “Comprehensive Five-Year Review Guidance,” OSWER 9355.7-18 (Sep. 2011).
- (hh) Construction Specifications Institute’s MasterFormat 2012, available from the Construction Specifications Institute, www.csinet.org/masterformat.
- (ii) Updated Superfund Response and Settlement Approach for Sites Using the Superfund Alternative Approach , OSWER 9200.2-125 (Sep. 2012)
- (jj) Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites, OSWER 9355.0-89, EPA/540/R-09/001 (Dec. 2012).
- (kk) Institutional Controls: A Guide to Preparing Institutional Controls Implementation and Assurance Plans at Contaminated Sites, OSWER 9200.0-77, EPA/540/R-09/02 (Dec. 2012).
- (ll) EPA’s Emergency Responder Health and Safety Manual, OSWER 9285.3-12 (July 2005 and updates), <http://www.epaosc.org/HealthSafetyManual/manual-index.htm>.
- (mm) Broader Application of Remedial Design and Remedial Action Pilot Project Lessons Learned, OSWER 9200.2-129 (Feb. 2013).
- (nn) Guidance for Evaluating Completion of Groundwater Restoration Remedial Actions, OSWER 9355.0-129 (Nov. 2013).
- (oo) Groundwater Remedy Completion Strategy: Moving Forward with the End in Mind, OSWER 9200.2-144 (May 2014).

9.2 A more complete list may be found on the following EPA Web pages:

Laws, Policy, and Guidance <http://www.epa.gov/superfund/policy/index.htm>

Test Methods Collections <http://www.epa.gov/fem/methcollectns.htm>

9.3 For any regulation or guidance referenced in the CD or SOW, the reference will be read to include any subsequent modification, amendment, or replacement of such regulation or

guidance. Such modifications, amendments, or replacements apply to the Work only after SD receives notification from EPA of the modification, amendment, or replacement.