UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF INDIANA
HAMMOND DIVISION

980341

- x
UNITED STATES OF AMERICA
and STATE OF INDIANA

Plaintiffs,

Civil Action No. 2:22-cv-48

v.

Northern Indiana Public Service Company LLC

Defendant.
- x

REMEDIAL DESIGN/REMEDIAL ACTION

CONSENT DECREE

FOR OPERABLE UNIT 2 OF THE

TOWN OF PINES SUPERFUND SITE

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I. BACKGROUND

A. The United States of America ("United States"), on behalf of the Administrator of the United States Environmental Protection Agency ("EPA"), and the State of Indiana ("the State"), on behalf of the Commissioner of the Indiana Department of Environmental Management ("IDEM"), filed a complaint ("Complaint") in this matter pursuant to Sections 106 and 107 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended ("CERCLA"), 42 U.S.C. §§ 9606 and 9607, and pursuant to IC 13-12-3-2 and the Indiana Hazardous Substances Response Trust Fund at Indiana Code § 13-25-4 et seq.

B. The United States and the State, in the Complaint seek, *inter alia*: (1) reimbursement of costs incurred for response actions undertaken by EPA and the Department of Justice ("DOJ") and for costs incurred by IDEM and the Indiana Office of the Attorney General for response actions at the Town of Pines Superfund Site in Town of Pines, Indiana ("Site"), together with accrued interest; and (2) performance of response actions by the Northern Indiana Public Service Company LLC ("NIPSCO") ("Settling Defendant" or "SD") at the Site consistent with the National Contingency Plan, 40 C.F.R. Part 300 ("NCP").

C. The Settling Defendant that has entered into this CD does not admit any liability to Plaintiffs arising out of the transactions or occurrences alleged in the Complaint, nor does it acknowledge that the release or threatened release of hazardous substances at or from the Site constitutes an imminent and substantial endangerment to the public health or welfare or the environment.

D. In response to a release or a substantial threat of a release of hazardous substances at or from the Site, EPA, Brown, Inc., Ddalt Corp. and Bulk Transport Corp. (together Brown, Inc., Ddalt Corp. and Bulk Transport Corp. are referred to as "Brown") and SD signed an Administrative Order on Consent effective April 5, 2004, to perform a Remedial Investigation and Feasibility Study ("RI/FS") for the Site pursuant to 40 C.F.R. § 300.430.

E. SD and Brown completed a Remedial Investigation ("RI") Report on March 5, 2010, which EPA approved subject to conditions on May 28, 2010.

F. In accordance with Section 104(a)(1) of CERCLA, 42 U.S.C. § 9604(a)(1), and 40 C.F.R. § 300.415, on October 15, 2015, EPA issued an Action Memorandum requiring that a time-critical removal action at the Site be conducted. On March 17, 2016, EPA and SD entered into an Administrative Settlement Agreement and Order on Consent ("ASAOC"), requiring SD to conduct the certain response actions required in the October 15, 2015 Action Memorandum.

G. Since March 17, 2016, SD has been conducting work at the Site in accordance with the ASAOC. That work has included sampling properties at the Site to identify areas with coal ash residuals containing arsenic, thallium or lead at levels above designated cleanup levels. Of those properties sampled, nineteen (19) have been identified as containing arsenic, thallium or lead at levels above the designated cleanup levels and, therefore, requiring soil removal. Soil

removal work under the ASAOC has been completed at seventeen (17) properties. Of those properties, fourteen (14) required ongoing Institutional Controls.

H. SD and Brown completed a Feasibility Study ("FS") Report on May 2, 2016 for the Site, which EPA approved on May 3, 2016. Pursuant to Section 117 of CERCLA, 42 U.S.C. § 9617, EPA published notice of the completion of the FS and of the proposed plan for remedial action on May 11, 2016, in a major local newspaper of general circulation. EPA provided an opportunity for written and oral comments from the public on the proposed plan for remedial action. A copy of the transcript of the public meeting is available to the public as part of the administrative record upon which the Superfund Division Director, EPA Region 5, based the selection of the response action.

I. EPA selected a remedial action to be implemented at the Site in a final Record of Decision ("ROD"), issued on September 30, 2016, on which the State has given its concurrence. The ROD includes a responsiveness summary to the public comments. Notice of the final plan was published in accordance with Section 117(b) of CERCLA, 42 U.S.C. § 9617(b).

J. The ROD requires, among other things, that the removal work agreed to in the ASAOC be incorporated into the Site cleanup plan.

K. In accordance with the NCP and Section 121(f)(1)(F) of CERCLA, 42 U.S.C. § 9621(f)(1)(F), EPA notified the State on May 30, 2018, of negotiations with potentially responsible parties ("PRPs") regarding the implementation of the remedial design and remedial action ("RD/RA") for the Site, and EPA has provided the State with an opportunity to participate in such negotiations and be a party to this Consent Decree ("CD"), and the State has chosen to be a party.

L. In accordance with Section 122(j)(1) of CERCLA, 42 U.S.C. § 9622(j)(1), EPA notified the United States Department of Interior, Indiana Department of Environmental Management and Indiana Department of Natural Resources on or about May 30, 2018, of negotiations with PRPs regarding the release of hazardous substances that may have resulted in injury to the natural resources under federal trusteeship and encouraged the trustee to participate in the negotiation of this CD.

M. Pursuant to Section 117(c) of CERCLA, 42 U.S.C. § 9617, and 40 C.F.R. § 300.435(c)(2)(i), EPA issued an Explanation of Significant Differences ("ESD") to the ROD dated February 13, 2020 to which the State has also given its concurrence.

N. Based on the information presently available to EPA and the State, EPA and the State believe that the Work will be properly and promptly conducted by SD if conducted in accordance with this CD and its appendices.

O. For ease of implementation, EPA divided the Site into Operable Unit 1 and Operable Unit 2 in a memorandum dated September 28, 2021.

P. Solely for the purposes of Section 113(j) of CERCLA, 42 U.S.C. § 9613(j), the remedy set forth in the ROD, as modified by the ESD, and the Work to be performed by SD shall constitute a response action taken or ordered by the President for which judicial review shall be limited to the administrative record.

Q. The Parties recognize, and the Court by entering this CD finds, that this CD has been negotiated by the Parties in good faith and implementation of this CD will expedite the cleanup of the Site and will avoid prolonged and complicated litigation between the Parties, and that this CD is fair, reasonable, and in the public interest.

NOW, THEREFORE, it is hereby Ordered, Adjudged, and Decreed:

II. JURISDICTION

1. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331, 1367, and 1345, and 42 U.S.C. §§ 9606, 9607, and 9613(b). This Court also has personal jurisdiction over SD. Solely for the purposes of this CD and the underlying Complaint, SD waives all objections and defenses that it may have to jurisdiction of the Court or to venue in this District. SD shall not challenge the terms of this CD or this Court's jurisdiction to enter and enforce this CD.

III. PARTIES BOUND

2. This CD is binding upon the United States and the State and upon SD and its successors and assigns. Any change in ownership or corporate or other legal status of SD including, but not limited to, any transfer of assets or real or personal property, shall in no way alter SD's responsibilities under this CD.

3. SD shall provide a copy of this CD to each contractor hired to perform the Work and to each person representing SD with respect to the Site or the Work, and shall condition all contracts entered into hereunder upon performance of the Work in conformity with the terms of this CD. SD or its contractors shall provide written notice of the CD to all subcontractors hired to perform any portion of the Work. SD shall nonetheless be responsible for ensuring that its contractors and subcontractors perform the Work in accordance with the terms of this CD. With regard to the activities undertaken pursuant to this CD, each contractor and subcontractor shall be deemed to be in a contractual relationship with SD within the meaning of Section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3).

IV. DEFINITIONS

4. Unless otherwise expressly provided in this CD, terms used in this CD 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 CD or its appendices, the following definitions shall apply solely for purposes of this CD:

"Administrative Settlement Agreement and Order on Consent" or "ASAOC" shall mean the Administrative Settlement Agreement and Order on Consent issued by EPA on March 17, 2016 with number CERCLA V-w-16-c-008.

"ASAOC Completed Properties" shall mean Properties where soil removal has been completed prior to the Effective Date and institutional controls were not required.

"ASAOC Completed Properties with Institutional Controls" shall mean Properties where, prior to the Effective Date, soil removal has been completed and soils contaminated above cleanup levels have been left in place and require ongoing institutional controls.

"Affected Property" shall mean all real property located at Operable Unit 2 and any other real property where EPA determines, at any time, that access, land, water, or other resource use restrictions, and/or Institutional Controls are needed to implement the Remedial Action at Operable Unit 2.

"CD Properties Remaining to be Sampled" shall mean those Properties located within Operable Unit 2 that have not yet been sampled by SD as of the Effective Date.

"CD Properties to be Remediated" shall mean all Properties located within Operable Unit 2 that this Consent Decree and SOW require SD to remediate. These consist of Known Properties Requiring Remediation and CD Properties Remaining to be Sampled that show following sampling to exceed the cleanup level for arsenic, thallium, and/or lead as set forth in the ROD.

"CD Completed Properties" shall mean the Properties within Operable Unit 2 where soil remediation has been completed after the Effective Date and EPA has determined that contaminated soils above cleanup levels have not been left in place and therefore no institutional controls are required.

"CD Completed Properties with Institutional Controls" shall mean Properties where, after the Effective Date, soil removal has been completed and soils contaminated above cleanup levels have been left in place and require institutional controls.

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

"Coal Combustion Residuals" or "CCRs" shall mean the solid particles of non-combusted and noncombustible material resulting from the combustion of coal, including bottom ash and fly ash and any residual waste material from coal combustion. CCRs are also sometimes known as "coal ash."

"Consent Decree" or "CD" shall mean this consent decree and all appendices attached hereto (listed in Section XXII). In the event of conflict between this CD and any appendix, this CD shall control.

"Day" or "day" shall mean a calendar day. In computing any period of time under this CD, 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.

"Deliverable" or "deliverable" shall mean any report, notice, plan, proposal, schedule or other submission to EPA required by the CD or SOW.

"DOJ" shall mean the United States Department of Justice and its successor departments, agencies, or instrumentalities.

"Effective Date" shall mean the date upon which the Court approval of this CD is recorded on the Court's docket.

"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.

"2020 ESD" shall mean the Explanation of Significant Differences signed on February 13, 2020, by the Director of the Superfund and Emergency Management Division as delegate of the Regional Administrator, EPA Region 5, and all attachments thereto.

"Future Response Costs" shall mean: (a) all costs, including, but not limited to, direct and indirect costs, that the United States incurs in reviewing or developing Deliverables, in overseeing implementation of the Work, or otherwise implementing, overseeing, or enforcing this CD, including, but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, the costs incurred pursuant to ¶ 11 (Emergencies and Releases), ¶ 12 (Community Involvement) (including the costs of any technical assistance plan under Section 117(e) of CERCLA, 42 U.S.C. § 9617(e)), ¶ 33 (Access to Financial Assurance), Section VII (Remedy Review), Section VIII (Property Requirements) (including the cost of attorney time and any monies paid to secure or enforce access or land, water, or other resource use restrictions and/or to secure, implement, monitor, maintain, or enforce Institutional Controls including the amount of just compensation), and Section XIII (Dispute Resolution), and all litigation costs (b) all Interim Response Costs, and (c) all Interest on the Past Response Costs SD has agreed to pay under this CD that has accrued pursuant to 42 U.S.C. § 9607(a) during the period from May 1, 2019 to the Effective Date.

"IDEM" shall mean the Indiana Department of Environmental Management and any successor departments or agencies.

"Institutional Controls" or "ICs" shall mean Proprietary Controls and state or local laws, regulations, ordinances, zoning restrictions, or other governmental controls or notices that: (a) limit land, water, or other resource use to minimize the potential for human exposure to Waste Material at or in connection with the Site; (b) limit land, water, or other resource use to implement, ensure non-interference with, or ensure the protectiveness of the RA; and/or

(c) provide information intended to modify or guide human behavior at or in connection with the Site.

"Interim Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, (a) paid by the United States and the State in connection with the Site between May 1, 2019 and the Effective Date, or (b) incurred prior to the Effective Date but paid after that date. Interim Response Costs shall not include any costs paid by SD prior to the Effective Date.

"Interest" shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund, 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.

"Known Properties Requiring Remediation" shall mean the two (2) Properties within Operable Unit 2 that SD has identified under the ASAOC as exceeding the soil cleanup levels set forth in the ROD that have not been remediated as of the Effective Date. These Properties are identified by unique property identifier numbers as (1) GS028 and (2) GS072.

"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.

"Non-Settling Owner" shall mean any person, other than SD, that owns or controls any Affected Property. The clause "Non-Settling Owner's Affected Property" means Affected Property owned or controlled by Non-Settling Owner.

"Operable Unit 1" or "OU 1" shall mean those portions of the Town of Pines Superfund Site where contamination of groundwater from the disposal of CCRs at Yard 520 have or may have come to be located. Work associated with OU 1 includes but is not limited to groundwater and residential drinking water well monitoring north and east of the North area of Yard 520 and west of the main branch of Brown Ditch.

"Operable Unit 2" or OU 2" shall mean those portions of the Town of Pines Superfund Site where contamination of soil or groundwater from the disposal of CCRs outside of Yard 520 have or may have come to be located and those portions of the Town of Pines Superfund Site subject to ¶ 1.4(c) of the SOW. Work associated with OU 2 includes but is not limited to monitoring of groundwater in the areas north of the East Branch of Brown Ditch and east of the Main Branch of Brown Ditch; surface water and sediments of the East Branch of Brown Ditch; and residential drinking water wells in the area north of the East Branch of Brown Ditch, and east of the Main Branch of Brown Ditch. The OU 2 boundaries for addressing soil contamination and conducting groundwater monitoring are depicted on the map attached at Appendix C.

"Operation and Maintenance" or "O&M" shall mean all activities required to operate, maintain, and monitor the effectiveness of the RA as specified in the SOW or any EPA-approved O&M Plan.

"Paragraph" or "¶" shall mean a portion of this CD identified by an Arabic numeral or an upper or lower case letter.

"Parties" shall mean the United States, the State of Indiana, and SD.

"Past Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the United States paid at or in connection with the Site through April 30, 2019, plus Interest on all such costs that has accrued pursuant to 42 U.S.C. § 9607(a) through such date.

"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. For monitored constituents without established cleanup levels, the performance standards are the appropriate risk-based screening level or site-specific background concentration, whichever has a higher concentration and as set forth in RDRA Work Plan as required by Section 3.1 of the SOW.

"Plaintiffs" shall mean the United States and the State of Indiana.

"Properties" shall mean all real property at OU 2 including property that contains single and multi-family dwellings, commercial businesses, government-owned property, vacant lots, parks, and green ways. Multiple adjacent parcels under common ownership and same type of usage shall be deemed a single Property. Properties shall not include streets, roads, or any portion of a public right of way that lies outside the boundary of a parcel with a property identification number, as depicted on the Porter County GIS/Porter County Data Map https://portercogov.maps.arcgis.com/home/index.html.

"Proprietary Controls" shall mean easements or covenants running with the land that (a) limit land, water, or other resource use and/or provide access rights and (b) are created pursuant to common law or statutory law by an instrument that is recorded in the appropriate land records office.

"RCRA" shall mean the Solid Waste Disposal Act, as amended, 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 30, 2016, by the Superfund Division Director as delegate of the Regional Administrator, EPA Region 5, and all attachments thereto, as modified by the 2020 ESD. The ROD is attached as Appendix A.

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

"Remedial Action for OU 2" or "RA for OU 2" shall mean the portion of the remedial action selected in the ROD that pertains to OU 2.

"Remedial Design" or "RD" shall mean those activities to be undertaken by SD to develop final plans and specifications for the RA for OU 2 as stated in the SOW.

"SD Affected Property" shall mean Affected Property owned or controlled by SD.

"Section" shall mean a portion of this CD identified by a Roman numeral.

"Settling Defendant" or "SD" shall mean Northern Indiana Public Service Company LLC, and its successors or assigns.

"State" shall mean the State of Indiana.

"State Future Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs that the State incurs in reviewing or developing Deliverables, in overseeing implementation of the Work, or otherwise implementing, overseeing, or enforcing this CD, including, but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, costs incurred pursuant to ¶ 11 (Emergencies and Releases), ¶ 12 (Community Involvement) (including the costs of any technical assistance plan under Section 117(e) of CERCLA, 42 U.S.C. § 9617(e)), ¶ 33 (Access to Financial Assurance), Section VII (Remedy Review), Section VIII (Property Requirements) (including the cost of attorney time and any monies paid to secure or enforce access or land, water, or other resource use restrictions and/or to secure, implement, monitor, maintain, or enforce Institutional Controls including the amount of just compensation), and Section XIII (Dispute Resolution), and all litigation costs. State Future Response Costs shall also include all Interim Response Costs incurred or paid by the State that SD has agreed to pay under this CD.

"State Past Response Costs" shall mean all of the response costs that the State incurred at the Site before the Effective Date of this Consent Decree that were paid by EPA through a removal grant and that do not otherwise fall under the definition of Past Response Costs.

"Statement of Work" or "SOW" shall mean the document describing the activities SD must perform to implement the RD, the RA, and O&M regarding the Site, which is attached as Appendix B.

"Supervising Contractor" shall mean the principal contractor retained by SD to supervise and direct the implementation of the Work under this CD, selected in accordance with ¶ 9 of the Consent Decree

"Town of Pines Groundwater Plume 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 the April 5, 2004, Administrative Order on Consent.

"Town of Pines Superfund Site" or "Site" consists of various properties within the Town of Pines, Porter County, Indiana, or within the Area of Investigation, depicted on the map attached at Appendix C, where CCRs have or may have been deposited, often as fill, and areas of groundwater contaminated by such CCRs. The Site includes a landfill containing primarily coal ash (Yard 520) and all locations where hazardous substances from the Town of Pines Superfund Site related to CCRs have or may have come to be located. The Town of Pines Superfund Site

has been known by different names, including Town of Pines Groundwater Plume Site and Town of Pines Groundwater Contamination Site.

"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.

"Waste Material" shall mean (a) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (b) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); (c) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C.§ 6903(27); and (4) any "hazardous substance" under Indiana Statute IC 13-11-2-98 or "hazardous waste" under Indiana Statute IC 13-11-2-99.

"Work" shall mean all activities and obligations SD is required to perform under this CD, except the activities required under Section XIX (Retention of Records).

"Yard 520" shall mean the landfill located at or near the Town of Pines that contains primarily coal ash consisting of the South area which was constructed with a liner and the North area which was constructed without a liner and is currently being managed under IDEM's post-closure requirements for landfills as depicted on the map attached as Appendix C.

V. GENERAL PROVISIONS

5. **Objectives of the Parties**. The objectives of the Parties in entering into this CD are to protect public health or welfare or the environment by the design and implementation of response actions at the Site by SD, to pay response costs of Plaintiffs, and to resolve the claims of Plaintiffs against SD as provided in this CD.

6. **Commitments by SD**. SD shall finance and perform the Work in accordance with this CD, as well as in accordance with all Deliverables developed by SD and approved or modified by EPA pursuant to this CD. SD shall pay the United States for its response costs and the State for its response costs as provided in this CD.

7. **Compliance with Applicable Law**. Nothing in this CD limits SD's obligations to comply with the requirements of all applicable federal and state laws and regulations. SD 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 CD, if approved by EPA, shall be deemed to be consistent with the NCP as provided in Section 300.700(c)(3)(ii) of the NCP.

8. **Permits**.

a. As provided in Section 121(e) of CERCLA, 42 U.S.C. § 9621(e), and Section 300.400(e) 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 or state permit or approval, SD shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals.

b. SD may seek relief under the provisions of Section XII (Force Majeure) for any delay in the performance of the Work resulting from a failure to obtain, or a delay in obtaining, any permit or approval referenced in ¶ 8.a 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.

c. This CD is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

VI. PERFORMANCE OF THE WORK

9. **Coordination and Supervision**.

a. **Project Coordinators**.

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

(2) EPA shall designate and notify the SD of EPA's Project Coordinator and Alternate Project Coordinator. EPA may designate other representatives, which may include its employees, contractors and/or consultants, to oversee the Work. EPA's Project Coordinator/Alternate Project Coordinator 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) The State shall designate and notify EPA and the SD of its Project Coordinator and Alternate Project Coordinator. The State may designate other representatives, including its employees, contractors and/or consultants to oversee the Work. For any meetings and inspections in which EPA's Project Coordinator participates, the State's Project Coordinator also may participate. SD shall notify the State reasonably in advance of any such meetings or inspections.

(4) SD's Project Coordinator shall meet with EPA's and the State's Project Coordinator on a monthly basis, or such alternative frequency as may be determined by EPA.

b. **Supervising Contractor**. SD's proposed Supervising Contractors must have sufficient technical expertise to supervise the Work and a quality assurance system that complies with ANSI/ASQC E4-2004, Quality Systems for Environmental Data and Technology Programs: Requirements with Guidance for Use (American National Standard).

c. **Procedures for Disapproval/Notice to Proceed.**

(1) SD shall designate, and notify EPA, within 30 days after the Effective Date, of the names, titles, contact information, and qualifications of the SD'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, after a reasonable opportunity for review and comment by the State, 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, SD 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. SD may select any coordinator/contractor covered by an authorization to proceed and shall, within 21 days, notify EPA of SD's selection.

(3) SD may change its Project Coordinator and/or Supervising Contractor, as applicable, by following the procedures of ¶¶ 9.c(1) and 9.c(2).

10. **Performance of Work in Accordance with SOW**. SD shall: (a) develop the RD for OU 2; (b) perform the RA for OU 2; and (c) operate, maintain, and monitor the effectiveness of the RA for OU 2; all in accordance with the SOW and all EPA-approved, conditionally-approved, or modified deliverables as required by the SOW and in continuation with the process established under the ASAOC. All deliverables required to be submitted for approval under the CD or SOW shall be subject to approval by EPA in accordance with ¶ 5.6 (Approval of Deliverables) of the SOW.

11. **Emergencies and Releases**. SD shall comply with the emergency and release response and reporting requirements under ¶ 3.5 (Emergency Response and Reporting) of the SOW. Subject to Section XV (Covenants by Plaintiffs), nothing in this CD, including ¶ 3.5 of the SOW, limits any authority of Plaintiffs: (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, or seek an order from the Court, 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 SD's failure to take appropriate response action under ¶ 3.5 of the SOW, EPA or, as appropriate, the State, takes such action instead, SD shall reimburse EPA and the State under Section X (Payments for Response Costs) for all costs of the response action.

12. **Community Involvement**. If requested by EPA, SD 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 the United States and by the State under this Section constitute Future Response Costs and State Future Response Costs, respectively, to be reimbursed under Section X (Payments for Response Costs).

13. **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 achieve and/or maintain the Performance Standards or to carry out and maintain the effectiveness of the RA, and such modification is consistent with the Scope of the Remedy set forth in ¶ 1.4 of the SOW, then EPA may notify SD of such modification. If SD objects to the modification, it may, within 30 days after EPA's notification, seek dispute resolution under Section XIII.

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

14. Nothing in this CD, the SOW, or any deliverable required under the SOW constitutes a warranty or representation of any kind by Plaintiffs that compliance with the work requirements set forth in the SOW or related deliverable will achieve the Performance Standards.

VII. REMEDY REVIEW

15. **Periodic Review**. SD shall conduct, in accordance with ¶ 3.9 (Periodic Review Support Plan) of the SOW, studies and investigations to support EPA's reviews under Section 121(c) of CERCLA, 42 U.S.C. § 9621(c), and applicable regulations, of whether the RA is protective of human health and the environment.

16. **EPA Selection of Further Response Actions**. If EPA determines, at any time, that the RA is not protective of human health and the environment, EPA may select further response actions for the Site in accordance with the requirements of CERCLA and the NCP.

17. **Opportunity to Comment**. SD and, if required by Sections 113(k)(2) or 117 of CERCLA, 42 U.S.C. § 9613(k)(2) or 9617, the public, will be provided with an opportunity to comment on any further response actions proposed by EPA as a result of the review conducted pursuant to Section 121(c) of CERCLA, 42 U.S.C. § 9621(c) and to submit written comments for the record during the comment period.

18. **SD's Obligation to Perform Further Response Actions**. If EPA selects further response actions relating to the Site, EPA may require SD to perform such further response actions, but only to the extent that the reopener conditions in ¶ 68 or 69 (United States' Pre- and Post-Certification Reservations) are satisfied. SD may invoke the procedures set forth in Section XIII (Dispute Resolution) to dispute (a) EPA's determination that the reopener conditions of ¶ 68 or 69 are satisfied, (b) EPA's determination that the RA is not protective of human health and the environment, or (c) EPA's selection of the further response actions. Disputes regarding EPA's determination that the RA is not protective or EPA's selection of further response actions shall be resolved pursuant to ¶ 52 (Record Review).

19. **Submission of Plans**. If SD is required to perform further response actions pursuant to ¶ 18, it shall submit a plan for such response action to EPA for approval in accordance with the procedures of Section VI (Performance of the Work by SD). SD shall implement the approved plan in accordance with this CD.

VIII. PROPERTY REQUIREMENTS

20. **Agreements Regarding Access and Non-Interference.** SD shall, with respect to any Non-Settling Owner's Affected Property, use best efforts to secure from such Non-Settling Owner an agreement or agreements as required to implement the RD/RA for OU 2, enforceable by SD and by Plaintiffs, providing that such Non-Settling Owner shall, and SD shall, with respect to the SD's Affected Property, (i) provide Plaintiffs and SD, and its representatives, contractors, and subcontractors, with access at all reasonable times to such Affected Property to conduct any activity regarding the CD, including those listed in ¶ 20.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 interfere with or adversely affect the implementation, integrity, or protectiveness of the Remedial Action for OU 2, including the restrictions listed in ¶ 20.b (Land or Other Resource Use Restrictions). SD shall, with respect to its Affected Property, execute an access and use restriction agreement that complies with ¶ 20(i) and (ii), above. SD shall provide a copy of each fully executed access and use restriction agreement to EPA and the State. SD shall also use best efforts to work with local officials to implement a local ordinance or equivalent restriction consistent with the ROD as set forth in paragraph 1.4(c) of the SOW.

a. **Access Requirements**. The following is a list of activities for which access is required regarding any Non-Settling Owner's and SD's Affected Property:

(1) implementing the Work or any portion of the Work;

(2) monitoring the Work or any portion of the Work;

(3) verifying any data or information submitted to the United States or the State;

(4) conducting investigations regarding contamination at or near the Site;

(5) obtaining samples;

(6) assessing the need for, planning, or implementing additional response actions at or near OU 2 portion of the Site;

(7) assessing implementation of quality assurance and quality control practices as defined in the approved construction quality assurance quality control plan as provided in the SOW;

(8) implementing the Work pursuant to the conditions set forth in ¶ 72 (Work Takeover);

(9) inspecting and copying records, operating logs, contracts, or other documents maintained or generated by SD or its agents, consistent with Section XVIII (Access to Information);

(10) assessing SD's compliance with the CD;

(11) 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 CD;

(12) implementing, monitoring, maintaining, reporting on, and enforcing any land, water, or other resource use restrictions and Institutional Controls;

The scope of each access agreement or agreements with each Affected Property will include the activities listed in 20.a(1)-(12) necessary to implement the Remedial Action.

b. **Land or Other Resource Use Restrictions**. The following is a list of land or other resource use restrictions applicable to any Non-Settling Owner's and SD's CD Completed Properties with Institutional Controls:

(1) prohibiting the following activities that could result in exposure to contaminants in subsurface soils:

i. removal or damage of visible marker barriers or similar materials placed over (and meant to indicate the presence of) contaminants present above soil cleanup levels;

ii. digging or other soil disturbance where coal ash derived contaminants are present above soil cleanup levels;

(2) prohibiting disposal of contaminated soil in a manner that doesn't comply with the conditions in this CD or the workplans approved thereunder or in a manner approved by the EPA RPM or the On-Scene Coordinator; and

(3) prohibiting construction of new structures on the Site by a Non-Settling Owner without first notifying SD, SD preparing and implementing a plan consistent with the Remedial Design Remedial Action Workplan, as described in paragraph 3.1 of the SOW, and completing the Work in the plan.

21. **Resource Use Restrictions for SD Affected Properties**. SD shall ensure a restrictive covenant, enforceable by SD and by Plaintiffs that includes resource use restrictions listed in ¶ 20.b (Land or Other Resource Use Restrictions for Affected Properties), shall be executed and recorded in the event of the sale, to a Non-Settling Owner, of any of SD's Affected Property that is a CD Completed Property with Institutional Controls, a CD Property to be Remediated, or an ASAOC Completed Property with Institutional Controls.

22. **Best Efforts**. As used in this Section VIII (Property Requirements), "best efforts" means the efforts that a reasonable person in the position of SD 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 and/or use restriction agreements, Proprietary Controls, releases, subordinations, modifications, or relocations of prior encumbrances that affect the title to the Affected Property. If SD is unable to accomplish what is required through "best efforts" in a timely manner, it shall notify the United States and the State, and include a description of the steps taken to comply with the requirements. If the United States and the State deem it appropriate, the United States and/or the State may assist SD, or take independent action, in obtaining such access and/or use restrictions, Proprietary Controls, releases, subordinations, modifications, or relocations of prior encumbrances that affect the title to the Affected Property, as applicable. All costs incurred by the United States and the State 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 and State Future Response Costs, respectively, to be reimbursed under Section X (Payments for Response Costs).

23. SD agrees that all restrictive covenants recorded pursuant to the ASAOC prior to the Effective Date of this CD provide EPA and IDEM the right to enforce those restrictive covenants in accordance with their terms.

24. 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, SD shall cooperate with EPA's and the State's efforts to secure and ensure compliance with such Institutional Controls.

25. **Notice to Successors-in-Title**.

a. SD shall, within 30 days after the Effective Date, submit for EPA approval a notice to be filed regarding SD's Affected Property and SD's ASAOC Completed Properties with Institutional Controls in the appropriate land records. To the extent SD acquires Affected Property after the Effective Date, SD shall submit for EPA approval such notice within 30 days after Property acquisition. The notice must: (1) include a proper legal description of its Affected Property; (2) provide notice to all successors-in-title: (i) that its property is part of, or related to, the Site; (ii) that EPA has selected a remedy for the Site; and (iii) that potentially responsible parties have entered into a CD requiring implementation of such remedy; and (3) identify the U.S. District Court in which the CD was filed, the name and civil action number of this case, and the date the CD was entered by the Court. SD shall record the notice within 20 days after EPA's approval of the notice and submit to EPA, within 10 days thereafter, a certified copy of the recorded notice.

b. SD shall, prior to entering into a contract to Transfer SD's Affected Property or SD's ASAOC Completed Properties with Institutional Controls, or 60 days prior to transferring SD's Affected Property or SD's ASAOC Completed Properties with Institutional Controls, whichever is earlier:

(1) Notify the proposed transferee that EPA has selected a remedy regarding the Site, that potentially responsible parties have entered into a Consent Decree requiring implementation of such remedy, and that the United States District Court has entered the CD (identifying the name and civil action number of this case and the date the CD was entered by the Court); and

(2) 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 notice that it provided to the proposed transferee.

26. In the event of any Transfer of its Affected Property, unless the United States otherwise consents in writing, SD shall continue to comply with its obligations under the CD, including its obligation to secure access and ensure compliance with any land, water, or other resource use restrictions regarding the Affected Property and to implement, maintain, monitor, and report on Institutional Controls.

27. Notwithstanding any provision of the CD, Plaintiffs retain all of their access authorities and rights, as well as all of their rights to require land, water, or other resource use restrictions and Institutional Controls, including enforcement authorities related thereto, under CERCLA, RCRA, and pursuant to Indiana Code § 13-25-4-24 and any other applicable statute or regulations.

IX. FINANCIAL ASSURANCE

28. In order to ensure completion of the Work, SD shall secure financial assurance, initially in the amount of $11,790,000 ("Estimated Cost of the Work"), for the benefit of EPA. The financial assurance in the amount of $6,100,000 must be one or more of the mechanisms listed in ¶ 28 a. - c., 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. SD may use multiple mechanisms if they are limited to surety bonds guaranteeing payment, letters of credit, and/or trust funds. The remainder financial assurance in the amount of $5,690,000 can be provided through an insurance policy, demonstration, or guarantee pursuant to ¶ 28.d., 28.e. or 28.f.

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; or

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 a SD that it meets the relevant test criteria of ¶ 30 accompanied by a standby funding commitment, which obligates the affected SD 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 a SD or has a "substantial business relationship" (as defined in 40 C.F.R. § 264.141(h)) with a SD; and (2) can demonstrate to EPA's satisfaction that it meets the financial test criteria of ¶ 30.

29. SD shall, within 60 days of the Effective Date, obtain EPA's approval of the form of SD's financial assurance. Within 30 days of such approval, SD shall secure all executed and/or otherwise finalized mechanisms or other documents consistent with the EPA-approved form of financial assurance and shall submit such mechanisms and documents to the Regional Comptroller, with a copy to the Regional Accountant, and to the United States, EPA, and the State as specified in Section XX (Notices and Submissions).

30. SD seeking to provide financial assurance by means of a demonstration or guarantee under ¶ 28.e. or 28.f., must, within 30 days of the Effective Date:

a. Demonstrate that:

(1) the affected SD 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 affected SD 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 affected SD 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/ (or successor site).

31. SD providing financial assurance by means of a demonstration or guarantee under ¶28.e. or 28.f. must also:

a. Annually resubmit the documents described in ¶ 30.b. within 90 days after the close of the affected Respondent's or guarantor's fiscal year;

b. Notify EPA within 30 days after the affected 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 affected Respondent or guarantor in addition to those specified in ¶ 30.b.; EPA may make such a request at any time based on a belief that the affected SD or guarantor may no longer meet the financial test requirements of this Section.

32. SD shall diligently monitor the adequacy of the financial assurance. If SD 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, SD 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 affected SD of such determination. SD 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 affected SD, 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. SD shall follow the procedures of ¶ 34 (Modification of Financial Assurance) in seeking approval of, and submitting documentation for, the revised or alternative financial assurance mechanism. SD's inability to secure financial assurance in accordance with this Section does not excuse performance of any other obligation under this Settlement.

33. **Access to Financial Assurance**.

a. If EPA issues a notice of implementation of a Work Takeover under ¶ 72.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 ¶ 33.d.

b. If EPA is notified by the issuer of a financial assurance mechanism that it intends to cancel the mechanism, and the affected SD 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 ¶ 33.d.

c. If, upon issuance of a notice of implementation of a Work Takeover under ¶ 72.b, either: (1) EPA is unable for any reason to promptly secure the resources guaranteed under any applicable financial assurance mechanism, whether in cash or in kind, to continue and complete the Work; or (2) the financial assurance is a demonstration or guarantee under ¶ 28.e or 28.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. SD shall, within 30 days of such demand, pay the amount demanded as directed by EPA.

d. Any amounts required to be paid under this ¶ 33 shall be, as directed by EPA: (i) paid to EPA in order to facilitate the completion of the Work by EPA, the State, 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 Federal Deposit Insurance Corporation ("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 Town of Pines Groundwater Plume 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 ¶ 33 must be reimbursed as Future Response Costs under Section X (Payments for Response Costs).

34. **Modification of Amount, Form, or Terms of Financial Assurance**. SD 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 and the State in accordance with ¶ 29, 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 SD of its decision to approve or disapprove a requested reduction or change pursuant to this Paragraph. SD 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, final administrative decision, or final judicial decision resolving such dispute under Section XIII (Dispute Resolution). SD 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 SD pursuant to the dispute resolution provisions of this CD 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, SD shall submit to EPA documentation of the reduced, revised, or alternative financial assurance mechanism in accordance with ¶ 29.

35. **Release, Cancellation, or Discontinuation of Financial Assurance**. SD may release, cancel, or discontinue any financial assurance provided under this Section only: (a) if EPA issues a Certification of Work Completion under ¶ 3.10 (Certifications of Work Completion) 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, final administrative decision, or final judicial decision resolving such dispute under Section XIII (Dispute Resolution).

X. PAYMENTS FOR RESPONSE COSTS

36. **Payment by SD for United States' Past Response Costs**.

a. Within 30 days after the Effective Date, SD shall pay to EPA $619,632.16 in payment for Past Response Costs. Payment shall be made in accordance with ¶ 38.a (instructions for past response cost payments).

b. **Deposit of Past Response Costs Payment**. The total amount to be paid by SD pursuant to ¶ 36.a shall be deposited by EPA in the Town of Pines Groundwater Plume Special Account 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.

37. **Payments by SD for Future Response Costs**. SD shall pay to EPA and to IDEM and/or the Indiana Office of the Attorney General all Future Response Costs not inconsistent with the NCP.

a. **Periodic Bills**. On a periodic basis, EPA will send SD a bill requiring payment that includes an Itemized Cost Summary, which includes direct and indirect costs incurred by EPA, its contractors, subcontractors, and DOJ. SD shall make all payments within 30 days after SD's receipt of each bill requiring payment, except as otherwise provided in ¶ 39, in accordance with ¶ 38.b (instructions for future response cost payments).

b. **Deposit of Future Response Costs Payments**. The total amount to be paid by SD pursuant to ¶ 37.a (Periodic Bills) shall be deposited by EPA in the Town of Pines Groundwater Plume Special Account 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, provided, however, that EPA may deposit a Future Response Costs payment directly into the EPA Hazardous Substance Superfund if, at the time the payment is received, EPA estimates that the Town of Pines Groundwater Plume Special Account balance is sufficient to address currently anticipated future response actions to be conducted or financed by EPA at or in connection with the Site. Any decision by EPA to deposit a Future Response Costs payment directly into the EPA Hazardous Substance Superfund for this reason shall not be subject to challenge by SD pursuant to the dispute resolution provisions of this CD or in any other forum.

c. **Payments by SD to State**. SD shall pay to the State all State Future Response Costs not inconsistent with the NCP. On a periodic basis, IDEM and/or the Indiana Office of the Attorney General will send SD an invoice requiring payment that includes a cost summary. SD shall make payment within 60 days after SD's receipt of each bill requiring payment, except as otherwise provided in ¶ 39 (Contesting Future Response Costs). SD shall make all payments to IDEM required by this Paragraph by check made payable to the Indiana Hazardous Substances Response Trust Fund with a transmittal letter accompanying the check that references the name and address of the party making payment, the Site name [Town of Pines Superfund Site] and the IDEM site identification number [7500092] to

Indiana Department of Environmental Management
Attention: Cashier's Office – Mail Code 50-10C
100 North Senate Avenue
Indianapolis, IN 46204-2251

SD shall make all payments to the Indiana Office of the Attorney General required by this Paragraph by check made payable to the "State of Indiana" with a transmittal letter accompanying the check that references the name and address of the party making payment, the Site name [Town of Pines Superfund Site], and the Office of the Attorney General File number, 140276, to

Office of the Attorney General
Attn: Asset Recovery & Bankruptcy
302 W. Washington St.
IGCS 5th Floor
Indianapolis, IN 46204

38. **Payment Instructions for SD**.

a. **Past Response Costs Payments and Future Response Costs Prepayments**.

(1) The Financial Litigation Unit (FLU) of the United States Attorney's Office for the Northern District of Indiana shall provide SD, in accordance with ¶ 94, with instructions regarding making payments to DOJ on

behalf of EPA. The instructions must include a Consolidated Debt Collection System (CDCS) number to identify payments made under this CD.

(2) For all payments subject to this ¶ 38.a, SD shall make such payment by Fedwire Electronic Funds Transfer (EFT) / at https://www.pay.gov] to the U.S. DOJ account, in accordance with the instructions provided under ¶ 38.a(1), and including references to the CDCS Number, Site/Spill ID Number B5V9, and DJ Number 90-11-3-12060.

(3) For each payment made under this ¶ 38.a, SD shall send notices, including references to the CDCS, Site/Spill ID, and DJ numbers, to the United States, EPA, and the EPA Cincinnati Finance Center, all in accordance with ¶ 94.

b. **Future Response Costs Payments and Stipulated Penalties Payment Instructions**. For all payments subject to this ¶ 38.b, SD shall make such payments by Automatic Clearinghouse (ACH) / at https://www.pay.gov. Each payment shall include a reference to the Site/Spill ID and DJ numbers.

ACH:	PNC Bank 808 17th Street, NW Washington, DC 20074 Contact -Jesse White 301-887-6548 ABA = 051036706 Transaction Code 22 -checking Environmental Protection Agency Account 310006 CTX Format
https://www.pay.gov:	In accordance with instructions to be provided to SD by EPA following lodging of the CD.

c. **Notice of Payment**. For each payment made under ¶ 38, SD shall send notices, including references to the CDCS, Site/Spill ID, and DJ numbers, to the United States, EPA, and the EPA Cincinnati Finance Center, all in accordance with ¶ 94.

39. **Contesting Future Response Costs**. SD may submit a Notice of Dispute, initiating the procedures of Section XIII (Dispute Resolution), regarding any Future Response Costs or any State Future Response Costs billed under ¶ 37 (Payments by SD for Future Response Costs) if it determines that EPA or the State has made a mathematical error or included a cost item that is not within the definition of Future Response Costs or State Future Response Costs, or if it believes EPA or the State incurred excess costs as a direct result of an EPA or State action that was inconsistent with a specific provision or provisions of the NCP. Such Notice of Dispute shall be submitted in writing within 30 days after receipt of the bill and must be sent to the United States (if the United States' accounting is being disputed) or the State (if the State's accounting is being disputed) pursuant to Section XX (Notices and Submissions). Such Notice of Dispute shall specifically identify the contested Future Response Costs or State Future Response Costs and the basis for objection. If SD submits a Notice of Dispute, SD shall within the 30-day

period, also as a requirement for initiating the dispute, (a) pay all uncontested Future Response Costs to the United States and all uncontested State Future Response Costs to the State, and (b) establish, in a duly chartered bank or trust company, an interest-bearing escrow account that is insured by the FDIC, and remit to that escrow account funds equivalent to the amount of the contested Future Response Costs or State Future Response Costs. SD shall send to the United States or the State, as appropriate, as provided in Section XX (Notices and Submissions), a copy of the transmittal letter and check paying the uncontested Future Response Costs or State 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 the United States or the State prevails in the dispute, SD shall pay the sums due (with accrued interest) to the United States or the State, if State costs are disputed, within 7 days after the resolution of the dispute. If SD prevails concerning any aspect of the contested costs, SD shall pay that portion of the costs (plus associated accrued interest) for which it did not prevail to the United States or the State, if State costs are disputed, within 7 days after the resolution of the dispute. SD shall be disbursed any balance of the escrow account. All payments to the United States under this Paragraph shall be made in accordance with ¶ 38.b (instructions for future response cost payments). 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 SD's obligation to reimburse the United States and the State for their Future Response Costs.

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

XI. INDEMNIFICATION AND INSURANCE

41. **SD's Indemnification of the United States and the State**.

a. The United States and the State do not assume any liability by entering into this CD or by virtue of any designation of SD as EPA's authorized representatives under Section 104(e) of CERCLA, 42 U.S.C. § 9604(e). SD shall indemnify, save, and hold harmless the United States and the State and their officials, agents, employees, contractors, subcontractors, 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 SD, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on SD's behalf or under its control, in carrying out activities pursuant to this CD, including, but not limited to, any claims arising from

any designation of SD as EPA's authorized representatives under Section 104(e) of CERCLA. Further, SD agrees to pay the United States and the State all costs they incur 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 and the State based on negligent or other wrongful acts or omissions of SD, 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 CD. Neither the United States nor the State shall be held out as a party to any contract entered into by or on behalf of SD in carrying out activities pursuant to this CD. Neither SD nor any such contractor shall be considered an agent of the United States or the State.

b. The United States and the State, respectively, shall give SD notice of any claim for which the United States or the State plans to seek indemnification pursuant to this ¶ 41, and shall consult with SD prior to settling such claim.

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

43. **Insurance**. No later than 15 days before commencing any on-site Work, SD shall secure, and shall maintain until the first anniversary after issuance of EPA's Certification of RA Completion for OU 2 pursuant to ¶ 3.8 (Certification of RA Completion for OU 2) of the SOW commercial general liability insurance with limits of liability of $1 million per occurrence, automobile liability 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 the United States and the State as additional insureds with respect to all liability arising out of the activities performed by or on behalf of SD pursuant to this CD. In addition, for the duration of this CD, SD shall satisfy, or shall ensure that its 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 SD in furtherance of this CD. Prior to commencement of the Work, SD shall provide to EPA and the State certificates of such insurance and a copy of each insurance policy. SD shall resubmit such certificates and copies of policies each year on the anniversary of the Effective Date. If SD demonstrates by evidence satisfactory to EPA and the State that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering the same risks but in a lesser amount, then, with respect to that contractor or subcontractor, SD need provide only that portion of the insurance described above that is not maintained by the contractor or subcontractor. SD shall ensure that all submittals to EPA under

this Paragraph identify the Town of Pines Superfund Site, Town of Pines, Indiana and the civil action number of this case.

XII. FORCE MAJEURE

44. "Force majeure," for purposes of this CD, is defined as any event arising from causes beyond the control of SD, of any entity controlled by SD, or of SD's contractors that delays or prevents the performance of any obligation under this CD despite SD's best efforts to fulfill the obligation. The requirement that SD exercise "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 a failure to achieve the Performance Standards.

45. If any event occurs or has occurred that may delay the performance of any obligation under this CD for which SD intends or may intend to assert a claim of force majeure, SD shall notify EPA's Project Coordinator orally or, in his or her absence, EPA's and the State's Alternate Project Coordinator or, in the event both of EPA's designated representatives are unavailable, the Director of the Superfund and Emergency Management Division, EPA Region 5, within 5 days of when SD first knew that the event might cause a delay. Within 14 days thereafter, SD shall provide in writing to EPA and the State 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; SD's rationale for attributing such delay to a force majeure; and a statement as to whether, in the opinion of SD, such event may cause or contribute to an endangerment to public health or welfare, or the environment. SD shall include with any notice all available documentation supporting its claim that the delay was attributable to a force majeure. SD shall be deemed to know of any circumstance of which SD, any entity controlled by SD, or SD's contractors or subcontractors knew or should have known. Failure to comply with the above requirements regarding an event shall preclude SD 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 ¶ 44 and whether SD has exercised its best efforts under ¶ 44, EPA may, in its unreviewable discretion, excuse in writing SD's failure to submit timely or complete notices under this Paragraph.

46. If EPA, after a reasonable opportunity for review and comment by the State, agrees that the delay or anticipated delay is attributable to a force majeure, the time for performance of the obligations under this CD that are affected by the force majeure will be extended by EPA, after a reasonable opportunity for review and comment by the State, 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, after a reasonable opportunity for review and comment by the

State, does not agree that the delay or anticipated delay has been or will be caused by a force majeure, EPA will notify SD in writing of its decision. If EPA, after a reasonable opportunity for review and comment by the State, agrees that the delay is attributable to a force majeure, EPA will notify SD in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure.

47. If SD elects to invoke the dispute resolution procedures set forth in Section XIII (Dispute Resolution) regarding EPA's decision, it shall do so no later than 15 days after receipt of EPA's notice. In any such proceeding, SD 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 SD complied with the requirements of ¶¶ 44 and 45. If SD carries this burden, the delay at issue shall be deemed not to be a violation by SD of the affected obligation of this CD identified to EPA and the Court.

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

XIII. DISPUTE RESOLUTION

49. Unless otherwise expressly provided for in this CD, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes under this CD. However, the procedures set forth in this Section shall not apply to actions by the United States to enforce obligations of SD that have not been disputed in accordance with this Section.

50. A dispute shall be considered to have arisen when one party sends the other parties a written Notice of Dispute. Any dispute regarding this CD shall in the first instance be the subject of informal negotiations between the parties to the dispute. The period for informal negotiations shall not exceed 20 days from the time the dispute arises, unless it is modified by written agreement of the parties to the dispute.

51. **Statements of Position**

a. In the event that the parties cannot resolve a dispute by informal negotiations under the preceding Paragraph, then the position advanced by EPA shall be considered binding unless, within 45 days after the conclusion of the informal negotiation period, SD invokes the formal dispute resolution procedures of this Section by serving on the United States and the State a written Statement of Position on the matter in dispute, including, but not limited to, any factual data, analysis, or opinion supporting that position and any supporting documentation relied upon by SD. The Statement of Position shall specify SD's position as to whether formal dispute resolution should proceed under ¶ 52 (Record Review) or 53.

b. Within 45 days after receipt of SD's Statement of Position, EPA will serve on SD its Statement of Position, including, but not limited to, any factual data, analysis, or

opinion supporting that position and all supporting documentation relied upon by EPA. EPA's Statement of Position shall include a statement as to whether formal dispute resolution should proceed under ¶ 52 (Record Review) or 53. Within 30 days after receipt of EPA's Statement of Position, SD may submit a Reply.

c. If there is disagreement between EPA and SD as to whether dispute resolution should proceed under ¶ 52 (Record Review) or 53, the parties to the dispute shall follow the procedures set forth in the Paragraph determined by EPA to be applicable. However, if SD ultimately appeal to the Court to resolve the dispute, the Court shall determine which Paragraph is applicable in accordance with the standards of applicability set forth in ¶¶ 52 and 53.

52. **Record Review**. Formal dispute resolution for disputes pertaining to the selection or adequacy of any response action and all other disputes that are accorded review on the administrative record under applicable principles of administrative law shall be conducted pursuant to the procedures set forth in this Paragraph. For purposes of this Paragraph, the adequacy of any response action includes, without limitation, the adequacy or appropriateness of plans, procedures to implement plans, or any other items requiring approval by EPA under this CD, and the adequacy of the performance of response actions taken pursuant to this CD. SD shall not challenge, using the dispute resolution procedures under Section XIII, or judicially, EPA's remedial action selection embodied in the ROD.

a. An administrative record of the dispute shall be maintained by EPA and shall contain all statements of position, including supporting documentation, submitted pursuant to this Section. Where appropriate, EPA may allow submission of supplemental statements of position by the parties to the dispute.

b. The Director of the Superfund and Emergency Management Division, EPA Region 5, will issue a final administrative decision resolving the dispute based on the administrative record described in ¶ 52.a. This decision shall be binding upon SD, subject only to the right to seek judicial review pursuant to ¶¶ 52.c and 52.d.

c. Any administrative decision made by EPA pursuant to ¶ 52.b shall be reviewable by this Court, provided that a motion for judicial review of the decision is filed by SD with the Court and served on all Parties within 20 days after receipt of EPA's decision. The motion shall include a description of the matter in dispute, the efforts made by the parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of this CD. The United States may file a response to SD's motion.

d. In proceedings on any dispute governed by this Paragraph, SD shall have the burden of demonstrating that the decision of the Superfund and Emergency Management Division Director is arbitrary and capricious or otherwise not in accordance with law. Judicial review of EPA's decision shall be on the administrative record compiled pursuant to ¶ 52.a.

53. Formal dispute resolution for disputes that neither pertain to the selection or adequacy of any response action nor are otherwise accorded review on the administrative record under applicable principles of administrative law, shall be governed by this Paragraph.

a. The Director of the Superfund and Emergency Management Division, EPA Region 5, will issue a final decision resolving the dispute based on the statements of position and reply, if any, served under ¶ 51. The Superfund and Emergency Management Division Director's decision shall be binding on SD unless, within 20 days after receipt of the decision, SD files with the Court and serves on the parties a motion for judicial review of the decision setting forth the matter in dispute, the efforts made by the parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of the CD. The United States may file a response to SD's motion.

b. Notwithstanding ¶ P (CERCLA § 113(j) record review of ROD and Work) of Section I (Background), judicial review of any dispute governed by this Paragraph shall be governed by applicable principles of law.

54. The invocation of formal dispute resolution procedures under this Section does not extend, postpone, or affect in any way any obligation of SD under this CD, except as provided in ¶ 39 (Contesting Future Response Costs), as agreed by EPA, or as determined by the Court. Stipulated penalties with respect to the disputed matter shall continue to accrue, but payment shall be stayed pending resolution of the dispute, as provided in ¶ 62. Notwithstanding the stay of payment, stipulated penalties shall accrue from the first day of noncompliance with any applicable provision of this CD. In the event that SD does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XIV (Stipulated Penalties).

XIV. STIPULATED PENALTIES

55. SD shall be liable to the United States and the State for stipulated penalties in the amounts set forth in ¶¶ 56.a and 56.b for failure to comply with the obligations specified in ¶¶ 56.b and 57, unless excused under Section XII (Force Majeure). Fifty percent of the stipulated penalties shall be paid to the United States and fifty percent to the State. "Comply" as used in the first sentence of this Paragraph includes compliance by SD with all applicable requirements of this CD, within the deadlines established under this CD. If an initially submitted or resubmitted Deliverable contains a material defect, and the Deliverable is disapproved or modified by EPA under ¶ 5.6(a) (Initial Submissions) or 5.6(b) (Resubmissions) of the SOW due to such material defect, then the material defect shall constitute a lack of compliance for purposes of this Paragraph.

56. **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 the obligations identified in ¶ 56.b:

Period of Noncompliance	Penalty Per Violation Per Day
1st through 14th day	$1,500
15th through 30th day	$2,500
31st day and beyond	$5,000

b. **Obligations**

(1) Payment of any amount due under Section X (Payments for Response Costs).

(2) Establish and maintain financial assurance in accordance with Section IX (Financial Assurance).

(3) Establish and maintain an escrow account to hold any disputed Future Response Costs under ¶ 39 (Contesting Future Response Costs).

(4) Establish and maintain insurance pursuant to Section XI (Indemnification and Insurance).

(5) Designate Project Coordinators and Supervision Contractors in accordance with Section VI (Performance of the Work).

(6) Award RA contract(s) in accordance Section VI (Performance of the Work).

(7) Submit RDRAWP in accordance with Section 3 (Remedial Design/Remedial Action) of the SOW.

(8) Resubmit, if applicable, the RDRAWP in accordance with Section 5.6 (Approval of Deliverables) of the SOW.

(9) Complete Remedial Action Construction for OU 2 in accordance with Section 3 (Remedial Design/Remedial Action) of the SOW and approved RDRAWP.

(10) Submit Work Completion Report in accordance with Section 3 (Remedial Design/Remedial Action) of the SOW.

57. **Stipulated Penalty Amounts – Other Deliverables**. The following stipulated penalties shall accrue per violation per day for failure to submit timely or adequate Deliverables other than those specified in Paragraph 56.b:

Period of Noncompliance	Penalty Per Violation Per Day
1st through 14th day	$1,000
15th through 30th day	$2,000
31st day and beyond	$3,000

58. In the event that EPA assumes performance of a portion or all of the Work pursuant to ¶ 72 (Work Takeover), SD shall be liable for a stipulated penalty in the amount of $1,000,000. Stipulated penalties under this Paragraph are in addition to the remedies available under ¶¶ 33 (Access to Financial Assurance) and 72 (Work Takeover).

59. 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. However, stipulated penalties shall not accrue: (a) with respect to a deficient submission under ¶ 5.6 (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 SD of any deficiency; (b) with respect to a decision by the Director of the Superfund and Emergency Management Division, EPA Region 5, under ¶ 52.b or 53.a of Section XIII (Dispute Resolution), during the period, if any, beginning on the 21st day after the date that SD's reply to EPA's Statement of Position is received until the date that the Director issues a final decision regarding such dispute; or (c) with respect to judicial review by this Court of any dispute under Section XIII (Dispute Resolution), during the period, if any, beginning on the 31st day after the Court's receipt of the final submission regarding the dispute until the date that the Court issues a final decision regarding such dispute. Nothing in this CD shall prevent the simultaneous accrual of separate penalties for separate violations of this CD.

60. Following EPA's determination that SD has failed to comply with a requirement of this CD, EPA may give SD written notification of the same and describe the noncompliance. EPA and the State may send SD a written demand for payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether EPA has notified SD of a violation.

61. All penalties accruing under this Section shall be due and payable to the United States and the State within 30 days after SD's receipt from EPA of a demand for payment of the penalties, unless SD invokes the Dispute Resolution procedures under Section XIII (Dispute Resolution) within the 30-day period. All payments to the United States under this Section shall be made at https://www.pay.gov using the link for "EPA Miscellaneous Payments Cincinnati Finance Center," including references to the Site/Spill ID Number, the DJ Number, and the purpose of the payment. SDs shall send to DOJ and EPA, in accordance with ¶ 94, a notice of this payment including these references.

62. Penalties shall continue to accrue as provided in ¶ 59 during any dispute resolution period, but need not be paid until the following:

a. If the dispute is resolved by agreement of the parties or by a decision of EPA that is not appealed to this Court, accrued penalties determined to be owed shall be paid to EPA and the State within 15 days after the agreement or the receipt of EPA's decision or order;

b. If the dispute is appealed to this Court and the United States prevails in whole or in part, SD shall pay all accrued penalties determined by the Court to be owed to EPA and the State within 60 days after receipt of the Court's decision or order, except as provided in ¶ 62.c;

c. If the District Court's decision is appealed by any Party, SD shall pay all accrued penalties determined by the District Court to be owed to the United States and the State into an interest-bearing escrow account, established at a duly chartered bank or trust company that is insured by the FDIC, within 60 days after receipt of the Court's decision or order. Penalties shall be paid into this account as they continue to accrue, at least every 60 days. Within 15 days after receipt of the final appellate court decision, the escrow agent shall pay the balance of the account to EPA and the State or to SD to the extent that they prevail.

63. If SD fails to pay stipulated penalties when due, SD shall pay Interest on the unpaid stipulated penalties as follows: (a) if SD 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 ¶ 62 until the date of payment; and (b) if SD fails to timely invoke dispute resolution, Interest shall accrue from the date of demand under ¶ 61 until the date of payment. If SD fails to pay stipulated penalties and Interest when due, the United States or the State may institute proceedings to collect the penalties and Interest.

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

65. Nothing in this CD shall be construed as prohibiting, altering, or in any way limiting the ability of the United States or the State to seek any other remedies or sanctions available by virtue of SD's violation of this CD or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Section 122(*l*) of CERCLA, 42 U.S.C. § 9622(*l*), provided, however, that the United States shall not seek civil penalties pursuant to Section 122(*l*) of CERCLA for any violation for which a stipulated penalty is provided in this CD, except in the case of a willful violation of this CD.

66. Notwithstanding any other provision of this Section, the United States may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this CD.

XV. COVENANTS BY PLAINTIFFS

67. **Covenants for SD by United States and the State**.

a. By the United States. Except as provided in ¶ 71 (General Reservations of Rights), the United States covenants not to sue or to take administrative action against SD pursuant to Sections 106 and 107(a) of CERCLA for the Work, Past Response Costs, and Future Response Costs. These covenants shall take effect upon the Effective Date. These covenants are conditioned upon the satisfactory performance by SD of its obligations under this CD and SOW. These covenants extend only to SD and do not extend to any other person.

b. By the State. Except as provided in ¶ 71 (General Reservations of Rights), the State of Indiana covenants not to sue or to take administrative action against SD pursuant to Indiana Code §13-25-4 et seq. for the Work, Past Response Costs, and Future Response Costs. These covenants shall take effect upon the Effective Date. These covenants are conditioned upon the satisfactory performance by SD of its obligations under this CD. These covenants extend only to SD and do not extend to any other person.

68. **Plaintiffs' Pre-Certification Reservations**.

a. **United States' Pre-Certification Reservations**. Notwithstanding any other provision of this CD, the United States reserves, and this CD is without prejudice to, the right to institute proceedings in this action or in a new action, and/or to issue an administrative order, seeking to compel SD to perform further response actions relating to the Site and/or to pay the United States for additional costs of response if, (a) prior to Certification of RA Completion, (1) conditions at the Site, previously unknown to EPA, are discovered, or (2) information, previously unknown to EPA, is received, in whole or in part, and (b) EPA determines that these previously unknown conditions or information together with any other relevant information indicates that the RA is not protective of human health or the environment.

b. **State's Pre-Certification Reservations**. Notwithstanding any other provision of this CD, the State reserves, and this CD is without prejudice to, the right to institute proceedings in this action or in a new action, and/or to issue an administrative order, seeking to compel SD to perform further response actions relating to the Site and/or to pay the State for additional costs of response if, (a) prior to Certification of RA Completion, (1) conditions at the Site, previously unknown to the State, are discovered, or (2) information, previously unknown to the State, is received, in whole or in part, and (b) the State determines that these previously unknown conditions or information together with any other relevant information indicates that the RA is not protective of human health or the environment.

69. **Plaintiffs' Post-Certification Reservations**.

a. **United States' Post-Certification Reservations**. Notwithstanding any other provision of this CD, the United States reserves, and this CD is without prejudice to, the right to institute proceedings in this action or in a new action, and/or to issue an administrative order, seeking to compel SD to perform further response actions relating to the Site and/or to pay

the United States for additional costs of response if, (a) subsequent to Certification of RA Completion, (1) conditions at the Site, previously unknown to EPA, are discovered, or (2) information, previously unknown to EPA, is received, in whole or in part, and (b) EPA determines that these previously unknown conditions or this information together with other relevant information indicate that the RA is not protective of human health or the environment.

b. **State's Post-Certification Reservations.** Notwithstanding any other provision of this CD, the State of Indiana reserves, and this CD is without prejudice to, the right to institute proceedings in this action or in a new action, and/or to issue an administrative order, seeking to compel SD to perform further response actions relating to the Site and/or to pay the State for additional costs of response if, (a) subsequent to Certification of RA Completion, (1) conditions at the Site, previously unknown to the State, are discovered, or (2) information, previously unknown to the State, is received, in whole or in part, and (b) the State determines that these previously unknown conditions or this information together with other relevant information indicate that the RA is not protective of human health or the environment or (3) a Non-Settling Owner fails to comply with restrictions contained in an Environmental Restrictive Covenant, as defined pursuant to Indiana Code § 13-11-2-193.5 and recorded pursuant to Indiana Code § 13-25-4-24, which results in the RA no longer being protective of human health or of the environment.

70. For purposes of ¶ 68 (Plaintiffs' Pre-Certification Reservations), the information and the conditions known to EPA and the State will include only that information and those conditions known to EPA and the State as of the date the 2020 ESD was signed and set forth in the ROD for the Site and the administrative record supporting the ROD. For purposes of ¶ 69 (Plaintiffs' Post Certification Reservations), the information and the conditions known to EPA shall include only that information and those conditions known to EPA and the State as of the date of Certification of RA Completion and set forth in the ROD, the administrative record supporting the ROD, the post-ROD administrative record, or in any information received by EPA and the State pursuant to the requirements of this CD prior to Certification of RA Completion.

71. **General Reservations of Rights**. The United States and the State reserve, and this CD is without prejudice to, all rights against SD with respect to all matters not expressly included within Plaintiffs' covenants. Notwithstanding any other provision of this CD, the United States and the State reserve all rights against SD with respect to:

a. liability for failure by SD to meet a requirement of this CD;

b. liability arising from the past, present, or future disposal, release, or threat of release of Waste Material outside of the Site;

c. liability based on the ownership of the Site by SD when such ownership commences after signature of this CD by SD;

d. liability based on the operation of the Site by SD when such operation commences after signature of this CD by SD and does not arise solely from SD's performance of the Work;

e. liability based on SD's transportation, treatment, storage, or disposal, or arrangement for transportation, treatment, storage, or disposal of Waste Material at or in connection with the Site, other than as provided in the ROD, the Work, or otherwise ordered by EPA, after signature of this CD by SD;

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. criminal liability;

h. liability for violations of federal or state law that occur during or after implementation of the Work; and

i. liability, prior to achievement of Performance Standards, for additional response actions that EPA determines are necessary to achieve and maintain Performance Standards or to carry out and maintain the effectiveness of the remedy set forth in the ROD but that cannot be required pursuant to ¶ 13 (Modification of SOW or Related Deliverables);

j. liability arising from residual Waste Materials left in place at the Site at the conclusion of the Work;

k. liability for Properties contaminated with coal-ash related contamination that have not been addressed by the Work under this Consent Decree or ASAOC; and

l. liability for additional operable units at the Site or the final response action; and

m. liability for costs that the United States or State will incur regarding the Site but that are not within the definition of Future Response Costs or State Future Response Costs.

72. **Work Takeover**

a. In the event EPA determines that SD: (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 SD. Any Work Takeover Notice issued by EPA will specify the grounds upon which such notice was issued and will provide SD a period of 10 days 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 ¶ 72.a, SD 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 SD in writing (which writing may be electronic) if EPA determines that implementation of a Work Takeover is warranted under this ¶ 72.b. Funding of Work Takeover costs is addressed under ¶ 33 (Access to Financial Assurance).

c. SD may invoke the procedures set forth in ¶ 52 (Record Review), to dispute EPA's implementation of a Work Takeover under ¶ 72.b. However, notwithstanding SD'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 ¶ 72.b until the earlier of (1) the date that SD 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 final decision is rendered in accordance with ¶ 52 (Record Review) requiring EPA to terminate such Work Takeover.

73. Notwithstanding any other provision of this CD, the United States and the State retain all authority and reserve all rights to take any and all response actions authorized by law.

XVI. COVENANTS BY SD

74. **Covenants by SD**. Subject to the reservations in ¶ 76, SD covenants not to sue and agrees not to assert any claims or causes of action against the United States or the State with respect to the Work, past response actions regarding the Site, Past Response Costs, Future Response Costs, State Future Response Costs, and this CD, including, but not limited to:

a. any direct or indirect claim for reimbursement from the EPA Hazardous Substance Superfund through CERCLA §§ 106(b)(2), 107, 111, 112 or 113, or any other provision of law;

b. any claims under CERCLA §§ 107 or 113, RCRA Section 7002(a), 42 U.S.C. § 6972(a), or state law regarding the Work, past response actions regarding the Site, Past Response Costs, Future Response Costs, State Past Response Costs, State Future Response Costs, and this CD; or

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

75. Except as provided in ¶¶ 78 (Waiver of Claims by SD) and 85 (Res Judicata and Other Defenses), the covenants in this Section shall not apply if the United States or the State brings a cause of action or issues an order pursuant to any of the reservations in Section XV (Covenants by Plaintiffs), other than in ¶¶ 71.a (claims for failure to meet a requirement of the CD), 71.g (criminal liability), and 71.h (violations of federal/state law during or after implementation of the Work), but only to the extent that SD's claims arise from the same

response action, response costs, or damages that the United States or the State is seeking pursuant to the applicable reservation.

76. SD reserves, and this CD 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 SD's Deliverables or activities.

77. Nothing in this CD 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).

78. **Waiver of Claims by SD**.

a. SD 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 it may have:

(1) **De Micromis Waiver**. For all matters relating to the Site against any person where the person's liability to SD 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;

(2) ***De Minimis*/Ability to Pay Waiver**. For response costs relating to the Site against any person that has entered or in the future enters into a final CERCLA § 122(g) *de minimis* settlement, or a final settlement based on limited ability to pay, with EPA with respect to the Site.

(3) The waiver under ¶ 78.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) the materials containing hazardous substances contributed to the Site by such person contributed significantly or could contribute significantly, either individually or in the aggregate, to the cost of the

response action or natural resource restoration at the Site; or (ii) such person has failed to comply with any information request or administrative subpoena issued pursuant to Section 104(e) or 122(e)(3)(B) of CERCLA, 42 U.S.C. § 9604(e) or 9622(e)(3)(B), 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 the waiver would apply and that conviction has not been vitiated on appeal or otherwise.

b. **Exceptions to Waivers**

(1) The waivers under this ¶ 78 shall not apply with respect to any defense, claim, or cause of action that SD may have against any person otherwise covered by such waivers if such person asserts a claim or cause of action relating to the Site against SD.

79. SD agrees not to seek judicial review of the final rule listing the Site on the NPL based on a claim that changed site conditions that resulted from the performance of the Work in any way affected the basis for listing the Site.

XVII. EFFECT OF SETTLEMENT; CONTRIBUTION

80. Except as provided in ¶ 78 (Waiver of Claims by SD), nothing in this CD shall be construed to create any rights in, or grant any cause of action to, any person not a Party to this CD. Except as provided in Section XVI (Covenants by SD), 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 CD 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).

81. The Parties agree, and by entering this CD this Court finds, that this CD constitutes a judicially-approved settlement pursuant to which SD has, as of the Effective Date, resolved liability to the United States within the meaning of Section 113(f)(2) of CERCLA, 42 U.S.C. § 9613(f)(2), and is entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Section 113(f)(2) of CERCLA, or as may be otherwise provided by law, for the "matters addressed" in this CD. The "matters addressed" in this CD are the Work, Past Response Costs, Future Response Costs, State Past Response Costs, and State Future Response Costs.

82. The Parties further agree, and by entering this CD this Court finds, that the complaint filed by the United States and the State in this action is a civil action within the meaning of Section 113(f)(1) of CERCLA, 42 U.S.C. § 9613(f)(1), and that this CD constitutes a

judicially-approved settlement pursuant to which SD 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) and resolved liability to the State of Indiana regarding claims at the Site under IC 13-25-4 et seq.

83. SD shall, with respect to any suit or claim brought by it for matters related to this CD, notify the United States and the State in writing no later than 60 days prior to the initiation of such suit or claim.

84. SD shall, with respect to any suit or claim brought against it for matters related to this CD, notify in writing the United States and the State within 10 days after service of the complaint on SD. In addition, SD shall notify the United States and the State 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.

85. **Res Judicata and Other Defenses**. In any subsequent administrative or judicial proceeding initiated by the United States or the State for injunctive relief, recovery of response costs, or other appropriate relief relating to the Site, SD 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 by the United States or the State 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 covenants not to sue set forth in Section XV (Covenants by Plaintiffs).

XVIII. ACCESS TO INFORMATION

86. SD 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 SD's possession or control or that of its contractors or agents relating to activities at the Site or to the implementation of this CD, 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 regarding the Work. SD shall also make available to EPA and the State, for purposes of investigation, information gathering, or testimony, its employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

87. **Privileged and Protected Claims**.

a. SD may assert that all or part of a Record requested by Plaintiffs is privileged or protected as provided under federal law, in lieu of providing the Record, provided SD complies with ¶ 87.b, and except as provided in ¶ 87.c.

b. If SD asserts a claim of privilege or protection, SD shall provide Plaintiffs 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, SD shall provide the Record to Plaintiffs in redacted form to mask the privileged or protected portion only. SD shall retain all Records that it claims to be privileged or protected until Plaintiffs have had a reasonable opportunity to dispute the privilege or protection claim and any such dispute has been resolved in the SD's favor.

c. SD may make no claim of privilege or protection regarding: (1) any data regarding the Site, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, 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 SD is required to create or generate pursuant to this CD.

88. **Business Confidential Claims**. SD may assert that all or part of a Record provided to Plaintiffs under this Section or Section XIX (Retention of Records) 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). SD shall segregate and clearly identify all Records or parts thereof submitted under this CD for which SD asserts business confidentiality claims. Records that SD claims to be 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 SD 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 SD.

89. If relevant to the proceeding, the Parties agree that validated sampling or monitoring data generated in accordance with the SOW and reviewed and approved by EPA shall be admissible as evidence, without objection, in any proceeding under this CD.

90. Notwithstanding any provision of this CD, Plaintiffs 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.

XIX. RETENTION OF RECORDS

91. Until 10 years after EPA's Certification of Work Completion under ¶ 3.10 (Certification of Work Completion) of the SOW, SD 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 SD must retain, in addition, all Records that relate to the liability of any other person under CERCLA with respect to the Site. SD 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 its possession or control or that come into its possession or control that relate in any manner to the performance of the Work, provided, however, that SD (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.

92. At the conclusion of this record retention period, SD shall notify the United States and the State at least 90 days prior to the destruction of any such Records, and, upon request by the United States or the State, and except as provided in ¶ 87 (Privileged and Protected Claims), SD shall deliver any such Records to EPA or the State.

93. SD certifies, 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 the United States 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)(3)(B) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e)(3)(B), and Section 3007 of RCRA, 42 U.S.C. § 6927, and state law.

XX. NOTICES AND SUBMISSIONS

94. All approvals, consents, Deliverables, modifications, notices, notifications, objections, proposals, reports, and requests specified in this CD must be in writing unless otherwise specified. Whenever, under this CD, notice is required to be given, or a report or other document is required to be sent, by one Party to another, it must be directed to the person(s) specified below at the address(es) specified below. Any Party may change the person and/or address applicable to it by providing notice of such change to all Parties. All notices under this Section are effective upon receipt, unless otherwise specified. Notices required to be sent to EPA, and not to the United States, should not be sent to the DOJ. Except as otherwise provided, notice to a Party by email (if that option is provided below) or by regular mail in accordance with this Section satisfies any notice requirement of the CD regarding such Party.

As to the United States:

EES Case Management Unit
U.S. Department of Justice
Environment and Natural Resources Division
P.O. Box 7611
Washington, D.C. 20044-7611
eescdcopy.enrd@usdoj.gov
Re: DJ # 90-11-3-12060

As to EPA:	Douglas Ballotti Director, Superfund and Emergency Management Division U.S. Environmental Protection Agency Region 5 77 W. Jackson Boulevard Mail Code S-6J Chicago, Illinois 60604 Balotti.douglas@epa.gov
and:	Erik Hardin EPA Project Coordinator U.S. Environmental Protection Agency Region 5 77. W. Jackson Boulevard Mail Code SR-6J Chicago, Illinois 60604 Hardin.erik@epa.gov (312) 886-2402
As to the Regional Comptroller and Accountant:	Dale Meyer Comptroller, Resource Management Divison U.S. Environmental Protection Agency Region 5 77 W. Jackson Boulevard Mail Code MF-10J Chicago, Illinois 60604 meyer.dale@epa.gov Justin Abrams Accountant, Program Accounting and Analysis Section U.S. Environmental Protection Agency Region 5 77 W. Jackson Blvd. Mail Code MF-10J Chicago, Illinois 60604 abrams.justin@epa.gov
At to EPA Cincinnati Finance Center:	EPA Cincinnati Finance Center 26 W. Martin Luther King Drive Cincinnati, Ohio 45268 cinwd_acctsreceivable@epa.gov

As to the State:	Resa Ramsey State Project Coordinator Indiana Department of Environmental Management 100 North Senate Avenue Mail Code 66-31; IGCN 1101 rramsey@idem.in.gov
As to SD:	Daniel Sullivan SD's Project Coordinator Northern Indiana Public Service Company Attn: Environmental Department (Pines Site) 801 E. 86th Avenue Merrillville, IN 46410 dsullivan@nisource.com (219) 647-5248

XXI. RETENTION OF JURISDICTION

95. This Court retains jurisdiction over both the subject matter of this CD and SD for the duration of the performance of the terms and provisions of this CD for the purpose of enabling any of the Parties to apply to the Court at any time for such further order, direction, and relief as may be necessary or appropriate for the construction or modification of this CD, or to effectuate or enforce compliance with its terms, or to resolve disputes in accordance with Section XIII (Dispute Resolution).

XXII. APPENDICES

96. The following appendices are attached to and incorporated into this CD:

"Appendix A" is the ROD.

"Appendix B" is the SOW.

"Appendix C" map of Site with OU 2 delineated.

XXIII. MODIFICATION

97. Except as provided in ¶ 13 (Modification of SOW or Related Deliverables), material modifications to this CD, including the SOW, shall be in writing, approved by the State and signed by the United States and SD, and shall be effective upon approval by the Court. Except as provided in ¶ 13, non-material modifications to this CD, including the SOW, shall be in writing and shall be effective when signed by duly authorized representatives of the United States and SD. All modifications to the CD, other than the SOW, also shall be signed by the State, or a duly authorized representative of the State, as appropriate. A modification to the SOW

shall be considered material if it implements a ROD amendment that fundamentally alters the basic features of the selected remedy within the meaning of 40 C.F.R. § 300.435(c)(2)(ii). Before providing its approval to any modification to the SOW, the United States will provide the State with a reasonable opportunity to review and comment on the proposed modification.

98. Nothing in this CD shall be deemed to alter the Court's power to enforce, supervise, or approve modifications to this CD.

XXIV. LODGING AND OPPORTUNITY FOR PUBLIC COMMENT

99. This CD shall be lodged with the Court for at least 30 days for public notice and comment in accordance with Section 122(d)(2) of CERCLA, 42 U.S.C. § 9622(d)(2), and 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent if the comments regarding the CD disclose facts or considerations that indicate that the CD is inappropriate, improper, or inadequate. SD consents to the entry of this CD without further notice.

100. If for any reason the Court should decline to approve this CD in the form presented, this agreement is voidable at the sole discretion of any Party and the terms of the agreement may not be used as evidence in any litigation between the Parties.

XXV. SIGNATORIES/SERVICE

101. Each undersigned representative of Defendant certify that he or she is fully authorized to enter into the terms and conditions of the Consent Decree and to execute and legally bind the Party he or she represents to this document. The Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice identified on the DOJ signature page below, is fully authorized to enter into the terms and conditions of this Consent Decree and to legally bind the United States to this document.

102. SD agrees not to oppose entry of this CD by this Court or to challenge any provision of this CD unless the United States has notified SD in writing that it no longer supports entry of the CD.

103. SD shall identify, on the attached signature page, the name, address, and telephone number of an agent who is authorized to accept service of process by mail on behalf of that Party with respect to all matters arising under or relating to this CD. SD agrees to accept service in that manner and to waive the formal service requirements set forth in Rule 4 of the Federal Rules of Civil Procedure and any applicable local rules of this Court, including, but not limited to, service of a summons. SD needs not file an answer to the complaint in this action unless or until the Court expressly declines to enter this CD.

XXVI. FINAL JUDGMENT

104. This CD and its appendices constitute the final, complete, and exclusive agreement and understanding among the Parties regarding the settlement embodied in the CD.

The Parties acknowledge that there are no representations, agreements, or understandings relating to the settlement other than those expressly contained in this CD.

105. Upon entry of this CD by the Court, this CD shall constitute a final judgment between and among the United States, the State, and SD. The Court enters this judgment as a final judgment under Fed. R. Civ. P. 54 and 58.

106. Upon the effective date of this CD and upon EPA approval of the RDRAWP, as set forth in Sections 3 and 5 of the SOW, and upon the agreement of all Parties, the ASAOC may be terminated. Any such termination, by itself, shall not be considered a modification of this Consent Decree.

SO ORDERED THIS 12th DAY OF SEPTEMBER, 2022.

/s/ Philip P. Simon
United States District Judge

Signature Page for CD regarding the Town of Pines Superfund Site

FOR THE UNITED STATES OF AMERICA:

TODD KIM
Assistant Attorney General
U.S. Department of Justice
Environment and Natural Resources Division
Washington, D.C. 20530

2/28/2022
Dated

STEVEN ELLIS Digitally signed by STEVEN ELLIS Date: 2022.02.28 14:58:18 -05'00'

STEVEN D. ELLIS
Senior Counsel
U.S. Department of Justice
Environment and Natural Resources Division
Environmental Enforcement Section
P.O. Box 7611
Washington, D.C. 20044-7611

Signature Page for CD regarding the Town of Pines Superfund Site

FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY:

02/02/22
Dated

Digitally signed by DOUGLAS BALLOTTI
Date: 2022.02.02 07:00:16 -06'00'

DOUGLAS BALLOTTI
Director
Superfund & Emergency Management Division.
Region 5
U.S. Environmental Protection Agency
77 W. Jackson Blvd.
Chicago, Illinois 60604

02/01/22
Dated

TAMARA CARNOVSKY
Digitally signed by TAMARA CARNOVSKY
Date: 2022.02.01 14:08:07 -06'00'

TAMARA E. CARNOVSKY
Associate Regional Counsel
U.S. Environmental Protection Agency
Region 5
77 W. Jackson Boulevard
Chicago, Illinois 60604

Signature Page for CD regarding the Town of Pines Superfund Site

FOR THE STATE OF INDIANA:

January 27, 2022
Dated

PATRICIA ERDMANN
Chief Counsel for Litigation
Office of Attorney General Todd Rokita
302 West Washington Street
IGCS-5th Floor
Indianapolis, IN 46204

Signature Page for CD regarding the Town of Pines Superfund Site

FOR THE STATE OF INDIANA ON BEHALF OF THE INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT:

12/3/2021
Dated

PEGGY DORSEY
Assistant Commissioner, Office of Land Quality
100 N. Senate Avenue
IGCN Rm 1104
Indianapolis, IN 46204

Signature Page for CD regarding the Town of Pines Superfund Site

FOR NORTHERN INDIANA PUBLIC SERVICE COMPANY, LLC:

12-13-2021
Dated

Name (print): Michael W. Hooper
Title: President, NIPSCO
Address: 801 E. 86th Avenue
Merrillville, IN 46410

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): Gabriel M. Rodriguez
Title: Attorney of Record
Company: Schiff Hardin LLP
Address: 233 South Wacker Drive - Ste 7100
Chicago, Illinois 60606
Phone: 312-258-5500
email: grodriguez@schiffhardin.com

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF INDIANA
HAMMOND DIVISION

UNITED STATES OF AMERICA,	)	
	)	
and	)	
	)	Civil Action No. 2:22-cv-48
STATE OF INDIANA,	)	
	)	
Plaintiffs,	)	
	)	
v.	)	
	)	
NORTHERN INDIANA PUBLIC SERVICE COMPANY LLC,	)	
	)	
Defendant.	)	

APPENDIX A TO CONSENT DECREE
RECORD OF DECISION

Town of Pines Superfund Site

Town of Pines, Porter County, Indiana

Record of Decision

United States Environmental Protection Agency

Region 5

September 2016

Table of Contents

Tables

Figures

Appendices

LIST OF ACRONYMS

AOC	Administrative Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
COPEC	Chemicals of Potential Ecological Concern
EPA	U.S. Environmental Protection Agency
ESV	Ecological Screening Value
FS	Feasibility Study
HHRA	Human Health Risk Assessment
HI	Hazard Index
HQ	Hazard Quotient
IDEM	Indiana Department of Environmental Management
IDNL	Indiana Dunes National Lakeshore
MCL	Maximum Contaminant Level
MEP	Maximum Extent Practicable
MSW	Municipal Solid Waste
MW	Monitoring Well
MWSE	Municipal Water Service Extension
N/A	Not Applicable
NCP	National Contingency Plan
NIPSCO	Northern Indiana Public Service Company
NPS	National Parks Service
O&M	Operation and Maintenance
OU	Operable Unit
P.I.N.E.S.	People in Need of Environmental Safety
PRP	Potentially Responsible Party
RACER	Remedial Action Cost Engineering and Requirements
RAL	Removal Action Level
RAO	Remedial Action Objective
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RML	Removal Management Level
ROD	Record of Decision
RSL	Regional Screening Level
SARA	Superfund Amendments and Reauthorization Act
SERA	Screening Ecological Risk Assessment
TMV	Toxicity, Mobility, Volume
UTL	Upper Threshold Limit

PART 1: THE DECLARATION

1.0 Site Name and Location

The Town of Pines Superfund Site ("Pines Site" or "Site"), National Superfund Database identification number INN000508071, is located in Town of Pines, Porter County, Indiana. The Site has not been proposed for, or listed, on the National Priorities List, as EPA has chosen to use the "Superfund alternative approach," which relies on EPA's enforcement authorities to investigate and implement response actions through settlement agreements with responsible parties. The Site has not been divided into operable units.

2.0 Statement of Basis and Purpose

This Record of Decision (ROD) presents the remedial action (the "Selected Remedy") selected by the U.S. Environmental Protection Agency (EPA) for the Site. EPA selected the Remedy in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, by the Superfund Amendments and Reauthorization Act of 1986, and, to the extent practicable, the National Contingency Plan (NCP). This decision is based on the Administrative Record File for this Site.

The State of Indiana concurs with the Selected Remedy. A letter of concurrence from the State of Indiana can be found in Appendix 1.

3.0 Assessment of Site

The response actions selected in the ROD are necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances, pollutants, or contaminants from the Site.

4.0 Description of Selected Remedy

This remedial action involves phytoremediation[1] to treat contaminated groundwater; excavation of contaminated soils and replacement with clean, matching fill, as well as continuation of ongoing soil testing as requested by property owners; long-term groundwater monitoring; and environmental covenants to ensure protectiveness of the implemented remedy. The contamination addressed by this remedial action derives from coal ash generated by the combustion of coal at a nearby power generating station that was later disposed of at a landfill (Yard 520) or deposited at various locations within the Town of Pines and/or within the Area of Investigation, as described below, and groundwater contaminated by such coal ash. The Site includes the area of contaminated groundwater, various properties within the Town of Pines and/or the Area of Investigation with contaminated soil, and the landfill (Yard 520).

The following are the major components of the soil remedy selected in this ROD (Alternative 3):

[1] Phytoremediation is the use of plants to remove contaminants.

- **Investigation of soil** on additional properties in the vicinity of the Site will be conducted as needed to identify soil contamination above cleanup levels caused by the use of coal ash as landscaping fill.

- **Excavation and off-site disposal** of contaminated soil will be conducted where coal ash-derived contamination is above EPA's selected clean-up levels (see Table 1).

- **Restoration** of excavated properties will be completed using clean backfill.

- **Institutional Controls** to prevent exposure to soil contamination left at depth.

The following are the major components of the groundwater remedy selected in this ROD (Alternative 4):

- **Phytoremediation** will be used to remove Site-related contaminants from groundwater. The specific plants to be used will be determined after additional evaluation, though poplar trees are one example of a plant type that may be used. Plants used for phytoremediation of groundwater intercept groundwater flow and remove contaminants via fixation, transpiration, and other processes. Regardless of the plant species used, regular maintenance will be required, which could involve routine harvesting and disposal of biomass (such as leaves) to control the potential reintroduction of retained contaminants. The phytoremediation will occur in an area to the east of the northernmost cell of Yard 520.

- **Long-term groundwater monitoring** will be conducted to measure and demonstrate the effectiveness of the groundwater remedy. EPA expects that additional monitoring wells will need to be added to the existing network to adequately monitor Site-wide groundwater conditions.

- **Land use controls** will be implemented to legally restrict the installation of new drinking water wells in the areas where coal ash-derived contamination is present.

5.0 Statutory Determinations

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to this action, and is cost-effective. The remedial action utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. The selected remedial action for groundwater satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element. However, the selected remedial action for soil does not satisfy the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element, because the contaminants are elemental metals and removal from the properties is the only technically viable option. The coal ash-contaminated fill areas presenting a significant risk are the source materials that constitute a principal threat at the Site.

Because the remedy will result in hazardous substances, pollutants, or contaminants remaining on-Site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of the remedial action and every five years subsequent to ensure that the selected remedy continues to be protective of human health and the environment.

6.0 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 administrative record file for this Site:

- Contaminants of concern (COCs), EPA's selected cleanup levels, and the basis for these levels (Table 1 and Section 14.A.1.)
- Baseline risk represented by the COCs (Section 14.A.)
- How source materials constituting principal threats will be addressed (Sections 18 and 19.B.)
- Current and reasonably anticipated future land use assumptions, and current and potential future uses of groundwater used in the Baseline Human Health Risk Assessment and this ROD (Sections 13.A. and 13.B.)
- Potential land and groundwater use that will be available at the Site as a result of the selected actions (Section 13.B.)
- Estimated capital, operation and maintenance (O&M), total present worth costs, and the number of years over which the remedy cost estimates are projected (Section 16.A)
- Key factor(s) that led to selecting the remedy (Section 2.10)

7.0 Authorizing Signature

EPA is the lead agency for developing and preparing this ROD. The State of Indiana has submitted a letter of concurrence for the implementation of the selected remedy.

for Douglas Ballotti, Acting Director
Superfund Division

9/30/2016
Date

PART 2: THE DECISION SUMMARY

8.0 Site Name, Location, and Brief Description

The Town of Pines Superfund Site (Site or Pines Site), National Superfund Database identification number INN000508071, is located in Town of Pines, Porter County, Indiana. The Site has also been referred to by several different names. The initial federal legal agreement for a removal action at the Site (AOC I described in Section 9.B.) listed the subject of the action as "Town of Pines, Indiana." The next federal legal agreement (AOC II described in Section 9.B.), which included a requirement to conduct the remedial investigation and feasibility study (RI/FS), simply refers to the Site as "Pines Site." Various documents generated by the responsible parties that conducted the investigation refer to the "Pines Area of Investigation." Finally, the recently issued AOC (the "Removal AOC" described in Section 9.B.) refers to the Site as "Town of Pines Groundwater Plume Site."

The Site includes a landfill containing primarily coal ash (Yard 520), various properties within the Town of Pines, Porter County, Indiana, and/or within the Area of Investigation, described below, where coal ash was deposited, often as fill, and areas of groundwater contaminated by such coal ash. The Town of Pines is a predominantly residential area of several hundred homes and surrounding areas. It is located in a dune and wetland area immediately west of Michigan City, Indiana and approximately 4,500 feet (ft) south of the southern shore of Lake Michigan. The "Area of Investigation" was established for the Site in initial RI/FS documents, as illustrated in Figure 1 and Figure 2 below. There is significant, although not complete, overlap between the boundaries of the Town of Pines and the Area of Investigation. The Indiana Dunes National Lakeshore (IDNL), managed by the National Park Service (NPS), is located between Lake Michigan and the Town of Pines. A small portion of the IDNL is included within the Area of Investigation.

The EPA is the lead agency for this Site, and IDEM is the support agency. The RI/FS was conducted at the Site in accordance with a legal agreement (AOC II) between EPA and four potentially responsible parties (the PRPs): Northern Indiana Public Service Company (NIPSCO); Brown, Inc.; Ddalt Corp.; and Bulk Transport Corp. EPA expects to negotiate with the PRPs for an agreement to implement this remedial action and would consider pursuing an enforcement action, if necessary.

9.0 Site History and Enforcement Activities

A. Site History

Between 2000 and 2003, IDEM and EPA responded to homeowners' complaints of bad taste in the water from their private wells by conducting sampling in a portion of the Town of Pines. Some of these samples contained boron and molybdenum at concentrations above EPA's Removal Action Levels (RALs). These elevated concentrations in groundwater were later found

to be derived from the coal ash disposed of in Yard 520 and used as fill material throughout surrounding areas[2].

Yard 520 was owned by Ddalt, Corp. and operated by Brown, Inc. Materials accepted by Brown for disposal at Yard 520 were primarily[3] coal ash materials generated from the combustion of coal at NIPSCO's Michigan City Generating Station. In addition, at least one other company, Bulk Transport Corp., was involved in the transport of the coal ash to Yard 520.

Yard 520 consists of two separate areas:

- The South area (a "Type III" landfill) which was constructed with a liner, spans approximately 10.5 acres, contains roughly 300,000 cubic yards of waste material and stopped receiving waste materials in the early 2000s.
- The North area (a "Type II" landfill) which was not constructed with a liner, spans approximately 27 acres, contains approximately 750,000 cubic yards of waste material, and stopped receiving waste materials in the mid-1980s.

For the purposes of this ROD, all further references to Yard 520 refer specifically to the North area as it is the source of the groundwater contamination associated with the landfill. A 2 ½ foot thick compacted clay cap was installed on most of the North area in the mid-1990s, and in 2005 and 2006, the cap was extended to cover all wastes.

Yard 520 is currently being managed under IDEM's post-closure requirements for landfills. This includes monitoring and maintaining the compacted clay cap and conducting semi-annual groundwater and surface water monitoring. As part of the post-closure process, IDEM approved an October 2013 report evaluating the landfill cap. This report determined that the compacted clay cap was adequately restricting infiltration of precipitation into the landfill.

B. Enforcement Activities

2003 AOC I to Address Drinking Water

On January 24, 2003, in response to the boron and molybdenum concentrations above the EPA RALs found in drinking water wells in the early 2000's, EPA and the PRPs as Respondents entered into an Administrative Order on Consent (referred to as "AOC I") that required the Respondents to extend municipal water service from Michigan City to a portion of the residences in the Town of Pines. Under an April 5, 2004 amendment to AOC I, the Respondents agreed to extend municipal water service to a larger area serviced by private wells and to provide bottled water service to all residences within the designated investigation area that did not receive municipal water service.

During the municipal water service extension (MWSE), it was confirmed that coal ash materials were used extensively throughout the Town of Pines. Road beds and some road surfaces were

[2] Most of the coal ash present at the Site as fill material was placed or otherwise disposed of in the 1970's.
[3] Less than 5 percent of the materials disposed of in this landfill consisted of construction and demolition waste and wastes generated from the steel making process.

found to contain coal ash, and coal ash was found to have been used extensively as fill material, including landscaping fill.

2004 AOC II to Conduct RI/FS

In April 2004, EPA and the PRPs as Respondents entered into an Administrative Order on Consent (AOC II) to conduct the RI/FS at the Site under the Superfund alternative approach[4]. The objectives of the RI, as described in the Statement of Work attached to AOC II, included, in part, determining the nature and extent of the contamination and determining whether additional cleanup measures were needed to protect the public and the environment from coal ash-related exposures. An RI report was issued on March 5, 2010, and a human health and an ecological risk assessment were issued in July 2012.

2016 Removal AOC to Address Coal Ash Fill

Sampling conducted later in the Remedial Investigation identified that fly ash (a type of coal ash) was used as landscaping fill in and around the Town of Pines, and some fill areas have concentrations of constituents that present an unacceptable exposure risk to human health. Some concentrations are above Removal Management Levels. As a result, an Action Memorandum was issued in October 2015 requiring a time critical removal action be conducted. In March 2016, NIPSCO and EPA signed an Administrative Settlement Agreement and Order on Consent (referred to as the "removal AOC") for NIPSCO to conduct this time-critical removal work. Under the removal AOC, NIPSCO has agreed to identify areas within the Town of Pines and/or within the Area of Investigation where areas with coal ash present unacceptable exposure risks, remove the contaminated soil, dispose of it properly off-site, and restore the property using clean fill materials. This ROD requires that this removal work be incorporated into the Site cleanup plan.

10.0 Community Participation

The RI and FS Reports and Proposed Plan for the Site were made available to the public on May 16, 2016. They can be found with other pertinent documents in the Administrative Record file which can be accessed on EPA's website for the Site (https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0508071), the Region 5 Superfund Records Center at 77 W. Jackson Boulevard in Chicago, Illinois, and the Michigan City Public Library located at 100 E. 4th Street in Michigan City, Indiana. The notice of the availability of these documents was published in The Michigan City News-Dispatch on May 11, 2016. A public comment period was held from May 16, 2016 to July 15, 2016, after an extension to the requisite 30 day comment period was requested. A public meeting was held on June 8, 2016 to present the Proposed Plan to the community. A transcript from this meeting has been added to the Administrative Record file. At this meeting, representatives from EPA and IDEM answered

[4] The Superfund alternative approach uses the same investigation and cleanup process and standards that are used for sites listed on the National Priorities List (the list of sites commonly known as "Superfund sites"). The Superfund alternative approach is used because it can potentially save the time and resources associated with listing a site on the NPL. As long as a PRP enters into a Superfund alternative approach agreement with EPA, there is no need for EPA to list the site on the NPL (although the site qualifies for listing on the NPL).

questions about the Site and the remedial alternatives. EPA also used this meeting to solicit formal comments on the Proposed Plan. EPA's response to the comments received during the entirety of the public comment period is included in the Responsiveness Summary, which is Part 3 of this Record of Decision.

In addition, EPA held periodic public meetings about the progress of the RI/FS at the Pines Site in January 2003, April 2004, April 2005, June 2007, and March 2010. In September 2015, EPA held a public meeting to discuss a time critical removal action at the Site that is related to the soil contamination further addressed by this ROD. EPA also provided an update of the RI/FS during the September 2015 meeting.

In April 2005, the Respondents reached an agreement for a technical assistance plan with the community group People in Need of Environmental Safety (P.I.N.E.S.). The agreement provides a mechanism for the Respondents to provide funding for P.I.N.E.S. to hire independent technical advisors to help interpret Site-related information and documents.

EPA and IDEM will continue to work with the local community to keep them informed of the progress and new information related to the Site. In addition, EPA's website for the Site contains updates and documents, including those in the Administrative Record.

11.0 Scope and Role of the Response Action

Most of the investigation of the Site was focused on groundwater contamination derived from coal ash. Initial soil sampling for coal ash-derived contamination did not reveal unacceptable health risks. However coal ash-derived soil contamination was found at levels posing an unacceptable risk late in the investigation. The soil contamination was elevated enough on certain properties to trigger EPA's time critical removal process. This removal action is currently ongoing, and EPA expects most, if not all, of the properties with coal ash-derived soil contamination above cleanup levels to be addressed by this action.

The remedial action for soil selected in this ROD will continue the ongoing investigative and, if necessary, excavation and replacement activities being conducted under the time critical removal action. The remedial action for groundwater selected in this ROD will address the small, isolated areas of coal ash-derived groundwater contamination above cleanup levels.

Though the soil and groundwater contamination are being addressed by two different remedial alternatives, EPA does not find it necessary to separate these two types of contamination into different operable units.

12.0 Site Characteristics

The Site includes the Town of Pines and the "Area of Investigation" as illustrated in Figures 1 and 2 below. The Town of Pines is a predominantly residential town located in Porter County, Indiana, immediately west of Michigan City and approximately 4500 feet from the shore of Lake Michigan. According to the 2010 census, the Town of Pines consisted of 353 housing units, had a population of 708 people, and covered an area of 2.25 square miles. The northern portion of the

Area of Investigation extends into a portion of the Indiana Dunes National Lakeshore (IDNL), managed by the National Park Service (NPS). IDNL is an area of particular ecological importance and extends to the shores of Lake Michigan.

The Yard 520 landfill is located in the southwest portion of the Town of Pines and covers an area of nearly 40 acres. Over 1 million cubic yards of waste (largely coal ash) are contained within the two cells of this landfill. Though the entire landfill is covered by a compacted clay cap, the northern portion of the landfill was not constructed with any barrier material at the bottom. However, the southern portion was constructed by connecting clay walls to the basal clay layer (reported to be approximately 30 feet thick). The southern portion covers less than half of the area and contains less than half of the amount of waste material as the northern portion.

The Area of Investigation includes most of the Town of Pines with the exception of some portions of the town to the north and the west. The Area of Investigation extends beyond the town boundaries to the south and a small portion to the east.

A. Summary of Remedial Investigation

1. Hydrology, Geology, and Hydrogeology

Groundwater is present beneath the Pines Site in the shallow surficial aquifer made up primarily of wind-blown sands associated with the current and former shores of Lake Michigan. The base of the surficial aquifer is formed by a clay confining unit. The surficial aquifer is thickest beneath upland dune areas, is thinner beneath low-lying wetlands areas between the dunes (such as the Great Marsh in the IDNL), and pinches out completely to the south against the silts and clays of the Valparaiso Moraine and/or lacustrine sediments of Glacial Lake Chicago. Regionally, groundwater is also present in deeper, confined aquifers in the area. The investigation focused primarily on the shallow, surficial groundwater aquifer because the coal ash has only affected this aquifer.

Groundwater characteristics in this shallow, surficial aquifer are typical of such aquifers. Groundwater in this aquifer occurs at depths ranging from near the ground surface (in wetland areas) to approximately 25 feet beneath upland dune areas. Groundwater flow is generally from the upland areas to Brown Ditch, a creek that flows along the edge of the landfill known as Yard 520 and into the IDNL, and its tributaries and wetlands located in the low-lying areas, including within the IDNL. In general, during both wet and dry periods, groundwater discharges to the Brown Ditch system (including associated tributaries and wetlands) throughout the Pines Site. A groundwater contour map is shown on Figure 3 (Figure 6 from the FS report). While there might be a few instances where this gradient is variable, these conditions are short-term and local and do not affect the overall groundwater flow.

Groundwater levels fluctuate approximately one to two feet seasonally, with water levels lower in the summer and fall, and higher in the winter and spring. Based on data collected during and after the RI, the hydraulic gradients and directions of groundwater flow do not change seasonally.

The hydraulic conductivity[5] of the surficial aquifer was tested during the RI (slug testing), and estimated values ranged from approximately 5 to 50 feet/day, with a geometric mean of 14.7 feet/day. This is consistent with the fine sands of the surficial aquifer. An average linear groundwater velocity of approximately 0.5 feet/day was calculated.

2. Nature and Extent of Contamination

The contamination associated with the Site and addressed by the cleanup measures presented in this ROD is derived from coal ash. In most of the Site reports, coal ash is also referred to as coal combustion byproducts or CCBs. There are three types of coal ash based on how and where they are generated in the coal combustion process:

- Bottom ash settles to the bottom of the combustion chamber.
- Boiler slag is material that has been melted during combustion in cyclone boilers. It is collected at the base of the boilers and is quenched with water causing it to shatter into black, angular particles that have a smooth glassy appearance.
- Fly ash is also generated in the combustion chamber, but it is lighter and finer than the bottom ash and boiler slag and so is transported in the flue gas. Some fly ash is captured by air pollution controls (e.g., electrostatic precipitators, baghouses, or mechanical collectors) and collected for off-site disposal.

Contaminant levels in fly ash are significantly higher than levels found in bottom ash and boiler slag. As such, fly ash is the primary source of the contaminants of concern (COCs) associated with the Site, which include arsenic, thallium, lead and hexavalent chromium for soil, and boron, arsenic, and molybdenum in groundwater, discussed in more detail below.

a. Yard 520

Coal ash is present in Yard 520 and is the primary source of groundwater contamination discussed below. Direct contact with the coal ash in this landfill does not pose a risk as it is covered by a 2 ½ foot thick compacted clay cover, 6 inches of topsoil, and shallow rooting vegetation.

b. Fill Materials

During the excavation work associated with the MWSE, suspected coal ash was observed in roadbeds and other areas in certain portions of the Pines Site, including residential yards. Composite soil samples were taken at three depths in yards containing coal ash fill materials; 0 to 6 inches, 6 to 18 inches, and 18 to 60 inches. Analyses of these samples found that some properties had concentrations (at various depths) of arsenic, lead, and thallium that pose an unacceptable risk. Preliminary data also indicates that hexavalent chromium may also pose an unacceptable risk, but this is still being evaluated. This contamination on these properties is being mitigated under an ongoing removal action being conducted under the March 2016 removal AOC.

[5] Hydraulic conductivity is a measure of the ease with which groundwater travels in the aquifer.

The coal ash observed during the MWSE is not the same as the coal ash present in Yard 520 nor the coal ash used as landscaping fill in residential yards at the Site. The material observed during the MWSE included a large percentage of coarse grained material (larger than silt and clay), and the sidewalls of the trenches stayed upright during the utility work. In contrast, the material in Yard 520 was observed to be predominantly very fine grained, soupy or muddy, and would not stay upright on an open face. Based on descriptions from Brown Inc., the material brought to Yard 520 was a wet slurry which needed draining/dewatering. The observed differences indicated that the coal material in Yard 520 is primarily fly ash, while the suspected coal ash material along roadways consists primarily of bottom ash and/or boiler slag.

These different coal ash materials have different physical and chemical characteristics. Fly ash generally has higher concentrations of the COCs for the Site than do bottom ash or boiler slag, which has been demonstrated in comparisons of samples collected from Yard 520 and samples collected during the MWSE.

It was initially assumed that the types of coal ash used as landscaping fill were the same as those found along roadways during the MWSE. However, late RI investigative work revealed that the landscaping fill it is primarily fly ash. This sampling, which involved compositing samples from discrete depths within some property quadrants, demonstrated that arsenic and thallium (Tl) concentrations were above removal management levels (RMLs) in some samples collected.

Contaminant	RML	Highest Composited Quadrant Sample Result
Arsenic	67 ppm	888 ppm
Thallium	2.3 ppm	12.1 ppm

Though work was conducted at various stages of the investigation to identify properties with coal ash fill materials at the Site, it is unclear if all properties within the Site containing these fill materials have been identified. Additional property owners continue to request to have their properties sampled for the presence of coal ash and the COCs associated with the Site. This ROD requires the continued sampling and, where appropriate, abatement of additional properties at the Site in accordance with the procedures prescribed by the work plan approved for the removal action.

c. Groundwater

Coal ash-derived constituents in groundwater include boron, sulfate, calcium, magnesium, strontium, and molybdenum. Arsenic also appears to migrate from coal ash to groundwater but data indicates that it has not transported any significant distance with the groundwater. Iron and manganese may also have the potential to migrate from coal ash to groundwater, and their mobility in groundwater is controlled by redox conditions, which are variable at this Site. Boron, molybdenum, sulfate, arsenic, iron, and manganese were present at concentrations above acceptable human health risk-based levels in at least one groundwater sample. Other constituents detected included selenium, chloride, and nitrate. Chloride and nitrate are not likely Site-related

contamination,[6] and selenium was only detected at an elevated level at a single well early in the investigation. It is no longer detected above what would be the applicable cleanup standard (the MCL) so it is not included as a COC[7].

Site background groundwater includes many minerals, typical of most natural fresh waters in the world. These include major ions such as calcium, magnesium, sodium, silicon, bicarbonate, sulfate, chloride, and minor and trace elements such as aluminum, barium, boron, manganese, strontium, and nitrate. Based on RI sampling, background concentrations of boron and molybdenum in the surficial aquifer have been found to be as high as 0.119 milligrams per liter (mg/L) and 0.012 mg/L, respectively[8]. Background concentrations were determined by sampling monitoring wells upgradient of the Site (i.e., wells not affected by the Site-related contamination).

Migration of contaminants from coal ash to groundwater appears to occur where large volumes of coal ash are present, such as at Yard 520. The relationship between the presence of suspected coal ash and boron in groundwater is shown in Figure 8 of the FS report.

The selected remedy will address the groundwater contamination associated with the Site above human health levels of concern, which is limited to three small areas of the surficial aquifer, characterized by monitoring wells MW106, MW111, and MW122 (See Figure 4). The groundwater in MW106 is above the applicable risk based standard for molybdenum. MW111 is above the Maximum Contaminant Level (MCL)[9] for arsenic, and groundwater in MW122 is above the applicable risk based standard for boron.

In at least one monitoring well location (MW111), elevated coal ash-derived groundwater contamination (arsenic) occurs in an area with suspected and known coal ash material, including larger accumulations of coal ash adjacent to this well (to the east of Illinois Avenue). Locations upgradient of MW111 have also been found to have as much as seven feet of fill material. These fill materials could likely be contributing to the elevated arsenic in groundwater samples from this well.

Concentrations of boron, sulfate, calcium, magnesium, strontium, and molybdenum are elevated (i.e., above background levels,) within the Yard 520 monitoring network, but only three other wells at the Site[10] had coal ash-derived constituents above human health risk-based levels. This includes an area downgradient and to the east of the landfill (MW122 with elevated boron), an area to the east by northeast of the landfill that is not affected by groundwater from Yard 520 (MW106 with elevated molybdenum), and another area to the east not affected by groundwater from Yard 520 (MW111 with elevated arsenic).

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[6] Nitrate and chloride are likely from other sources not related to the Site, such as septic systems or a municipal solid waste landfill.

[7] EPA does intend to include it as an analyte in the long term groundwater monitoring required by this ROD.

[8] The applicable cleanup level for boron is the risk-based Regional screening level of 4.0 mg/l and for molybdenum is the MCL of 0.10 mg/l.

[9] MCLs are established under the Safe Drinking Water Act, and though they apply to public drinking water supplies, the MCL for arsenic sets a relevant and appropriate limit to ensure protection of human health.

[10] As Yard 520 is considered a "waste management unit" and is regulated by IDEM's hazardous waste landfill post-closure requirements, this remedial action does not address Yard 520 nor the groundwater directly under Yard 520.

Groundwater migrating from Yard 520 flows into Brown Ditch and its related tributaries and wetlands in the immediate vicinity of Yard 520. Hydrogeologic studies performed as part of the RI demonstrate that groundwater does not flow from Yard 520 to the south. The groundwater contamination in MW111 is localized, and sampling data has shown that it is not migrating to adjacent areas.

Coal ash-derived constituents in groundwater do not extend northward from Yard 520 into the IDNL. Coal ash-derived constituents in groundwater do not extend to areas where residents depending on private water wells are located.

Groundwater in the surficial aquifer beneath the Pines Site shows evidence of other possible sources of impact, including septic system discharges, road salt, and a municipal solid waste (MSW) landfill (i.e., a landfill other than Yard 520). Elevated concentrations of a number of non-coal ash-derived constituents, such as sodium, chloride, nitrate, ammonia (NH_4), and bacteriological parameters, were detected in many samples. In particular, the results of groundwater sampling from wells directly south of Yard 520 and Brown Ditch have shown possible MSW landfill impacts. The RI/FS attributes concentrations of boron in monitoring wells in this area to MSW landfill impacts, but the boron concentrations do not exceed the selected cleanup levels. Iron and manganese are elevated in a number of wells, including from one background well (MW113), for reasons unrelated to coal ash. Natural levels of iron and manganese are common in groundwater in many areas of the country, including in northern Indiana, and are commonly the cause of unpleasant taste and appearance of well water.

For five years after completion of the RI sampling, the Respondents continued to sample a subset of monitoring wells to identify whether coal ash-derived constituents in groundwater are migrating farther northward. The data gathered during this monitoring demonstrates that the extent of coal ash-derived constituents in groundwater has not expanded northward. In fact, concentrations have decreased in some of the wells. For example, boron concentrations at MW101 and MW105 have decreased significantly since their maximum concentrations measured during the RI (from 1.79 mg/L to 0.322 mg/L in MW101 and from 2.02 mg/L to 0.0342 mg/L in MW105). MW110 and MW123 are the northernmost wells, located north of West Dunes Highway and upgradient from the IDNL. The concentration of boron in these wells has consistently remained low, indicating that coal ash-related constituents have not migrated to the IDNL. Furthermore, the hydraulic gradients in the Pines Site determined during the greater than 10 year period that such RI/FS data was gathered, indicate that coal ash contamination from the Pines Site migrates in a consistent pathway and does not reach the IDNL. Table 8 of the FS report includes a summary of boron data from both pre- and post-RI sampling, and the post-RI groundwater data are included in Appendix B3 of the FS Report. Also, Section 4.6.1 of the FS Report provides an updated and expanded discussion of the post-RI monitoring results.

In the spring of 2015, EPA required that the Respondents offer to sample and analyze all remaining private drinking water wells in the Pines Site at residences continuing to receive bottled water service provided by the Respondents under AOC I amended. The primary purpose of this sampling was to determine whether any coal ash-derived contaminants were present at levels exceeding the applicable drinking water standards. Additional constituents were also

included in the analysis that could serve as indicators of other impacts to drinking water quality (e.g. septic systems). None of the samples from these private wells were found to have coal ash-derived contaminants above applicable drinking water standards. Other potential impacts were identified in certain wells, and the data were provided to well owners. However, these other impacts are not subject to this CERCLA action and will not be addressed in this ROD.

13.0 Current and Potential Future Land and Resource Uses

A. Current Conditions

The area in and around the Town of Pines and the Site Area of Investigation consists primarily of residential properties, with some business and industrial use, parks, undeveloped areas, including a number of wetlands, a variety of roadways, and a closed landfill (Yard 520) that contains primarily coal ash. Many residential properties in the area contain coal ash previously used as landscaping fill material.

Though most of the residences at the Site were put on municipal water service as part of early response activities associated with the Site, approximately 40 to 50 residences in the area are still on individual private drinking water wells; none of which have been found to have Site-related contamination above cleanup levels. Most of these wells are believed to be completed in the surficial aquifer at issue, however, there are no remaining drinking water wells in use downgradient of the landfill nor in the vicinity of monitoring wells where samples exceed groundwater cleanup levels. The PRP Respondents have been providing bottled water service to these 40 to 50 residences with private drinking water wells as required by AOC II. Due to the data showing a lack of site-related contamination in these wells, this ROD discontinues the requirement for the PRP Respondents to provide bottled water to these residences.

B. Assessment of Potential Future Use

The current land uses for the area in and around the Town of Pines and Site Area of Investigation is expected to continue in the future. Institutional controls will help ensure that additional drinking water wells not be installed in this aquifer in the areas surrounding known groundwater contamination. The development of infrastructure during the MWSE has expanded the area that could potentially be served by municipal water, should additional development occur.

14.0 Summary of Site Risks

The contaminants of concern (COC) for the Site are all metals derived from coal ash. These include arsenic, boron, and molybdenum in groundwater and arsenic, thallium, lead, and hexavalent chromium in soils. The most current sampling of all monitoring wells associated with the site found that COCs are above selected cleanup levels in groundwater samples from only the monitoring wells in the Yard 520 monitoring network (MW-3, MW-6, MW-8, and MW-10) and three monitoring wells outside of the network (MW106, MW111, and MW122). These three monitoring wells are each in different areas. As of September 15, 2016, COCs above soil cleanup levels had been identified on 15 properties (out of 128 properties sampled); however, investigation of individual properties is ongoing.

The response action selected in this ROD is necessary to protect public health and welfare and the environment from actual or threatened releases of pollutants or contaminants from this site that may present an imminent and substantial endangerment to public health or welfare.

C. Human Health Risk Summary

A baseline human health risk assessment (HHRA) estimates potential human health risks posed by a site if no cleanup action is taken. It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. This section of the ROD summarizes the results of the baseline HHRA for this site.

It is important to note that significant data gathering activities were conducted after the HHRA was completed, and some of the conclusions drawn in the HHRA are no longer valid. Specifically, the extent of groundwater contamination is more limited than what was used for the HHRA, and the Site-related soil contamination values used for the HHRA were based on samples taken of primarily bottom ash materials. Subsequent testing has shown that Site-related soil contamination is much higher than that used for the HHRA so the conclusions drawn in the HHRA regarding soil contamination are no longer valid. Because the new results were clearly above levels representing acceptable risk, EPA chose to conservatively select default risk-based screening levels for cleanup levels rather than delaying the cleanup process by requiring revisions of the HHRA.

In making cleanup decisions, EPA assesses both cancer risks and non-cancer hazards. The likelihood of any kind of cancer resulting from exposure to carcinogens at a Superfund site is generally expressed as an upper bound of incremental probability, such as a "1 in 10,000 chance" (expressed in scientific notation as 1×10^{-4} or simply 10^{-4}). In other words, for every 10,000 people exposed to the Site contaminants under reasonable maximum exposure conditions, one additional cancer may occur as a result of Site-related exposure. This is referred to as an "excess lifetime cancer risk" because it would be in addition to the risk of cancer individuals face from other causes such as smoking or too much sun.

The potential for non-cancer health effects is evaluated by comparing an exposure level over a specified time period (such as a lifetime) with a "reference dose" derived for a similar exposure period. A reference dose represents a level that is not expected to cause any harmful effect. The ratio of exposure to toxicity for a specific contaminant is called a hazard quotient (HQ). An HQ < 1 indicates that the dose from an individual contaminant is less than the reference dose, so non-cancer health effects are unlikely. The hazard index (HI) is generated by adding the HQs for all contaminants within a given exposure pathway or pathways. An HI < 1 indicates that, based on the sum of all HQs from different contaminants and exposure routes, non-cancer health effects from all contaminants are unlikely. An HI > 1 indicates that Site-related exposures may present a risk to human health. EPA's acceptable risk range is defined as a cancer risk range of 10^{-6} to 10^{-4} and an HI < 1. Generally, remedial action at a Site is warranted if cancer risks exceed 10^{-4} and/or if non-cancer hazards exceed an HI of 1. In Indiana, IDEM establishes cleanup criteria based on the levels corresponding to a 10^{-5} increased lifetime risk of cancer.

The HHRA was completed in 2012 and assessed a number of different possible exposure pathways (See Table 2 of this ROD). The HHRA found that exposure to contaminated soil and groundwater from certain wells posed a potentially unacceptable human health risk. Additional soil and groundwater investigations conducted after the HHRA revealed that some of the findings in the HHRA were no longer accurate. EPA also changed some of the risk based screening levels for the COCs as it does regularly when updated health information becomes available. The following summary considers the most recent data and the current risk-based screening levels.

1. Identification of Contaminants of Concern

Soil

The COCs for soil (see Table 1) are arsenic, thallium, lead, and hexavalent chromium. It should be noted that hexavalent chromium was not identified as a COC in the 2012 HHRA. Sampling has identified total chromium levels above background. However, the hexavalent fraction of total chromium has not been thoroughly evaluated. Additional chromium speciation samples are being collected to verify whether hexavalent chromium will continue to be identified as a soil COC. The risk based screening level for hexavalent chromium that EPA and IDEM have selected is 4.3 ppm, which is based on a 10^{-5} excess lifetime risk of cancer.

EPA and IDEM have established risk based screening levels for direct contact to arsenic and thallium in soils; however, these levels are within the range of concentrations seen in background soils in the area. Therefore, EPA is selecting cleanup levels for arsenic and thallium based on the 95 percent upper threshold limit (UTL) for the range of background values: 30.1 ppm for arsenic and 1.9 ppm for thallium. EPA has established an acceptable concentration for residential exposure to lead (400 ppm) based on its Integrated Exposure Uptake Biokinetic Model.[11]

The soil investigation analyzed in the HHRA did not identify these contaminants as a concern in soil. This investigation mistakenly assumed that soil samples taken along roadways were representative of soil samples taken from fill areas further away from roadways. It is now known that the fill materials along roadways are primarily comprised of coal bottom ash; whereas, the fill materials within residential and other properties is primarily comprised of coal fly ash. Therefore, the cleanup values identified in the HHRA are not valid, and EPA is using the agreed-upon values described above.

Due in part to the requirement to obtain access from owners for each property, soil sampling is ongoing and is expected to continue after issuance of this ROD. As of September 15, 2016, 15 out of 128 properties sampled had been found to have arsenic, thallium, or lead levels above these selected cleanup levels. Arsenic is the primary soil COC and has been detected as high as 888 ppm. Thallium occurs above cleanup levels where arsenic also exceeds selected cleanup levels, but to a lesser magnitude. Lead has been detected over 400 ppm in some instances where arsenic and thallium are above cleanup levels. It has also been detected over 400 ppm on some properties without exceedances of arsenic and thallium. Because there are other common

[11] https://www.epa.gov/superfund/lead-superfund-sites-software-and-users-manuals

sources of lead contamination in soil, investigations are ongoing to determine if the lead contamination on these properties is Site-related (i.e. from coal ash).

Groundwater

The COCs for groundwater are boron, molybdenum, and arsenic (See Table 1) because these are the only Site-related groundwater contaminants outside of Yard 520 above cleanup levels.

Under the Safe Drinking Water Act, EPA has established a maximum contaminant level (MCL) of 0.010 mg/l for arsenic. EPA has not established MCLs for boron or molybdenum, but it has established a human health risk-based screening level of 4.0 mg/l for boron and 0.10 mg/l for molybdenum[12]. Concentrations of each of these COCs have been detected above these exposure levels in just three wells (MW106, MW111, and MW122) outside of the Yard 520 monitoring well network.

Boron is currently detected above EPA's human health risk based screening level in only a single well outside of Yard 520 (MW122). Elevated boron has consistently been detected in this well since 2006, with the highest result detected at 20.8 mg/l, from a sample taken in April 2014, and the lowest level detected at 13.2 mg/l, from the most recent sample taken (May 2015).

Molybdenum is currently detected above EPA's human health risk based screening level in only a single monitoring well outside of Yard 520 (MW106). Elevated molybdenum has been detected in this well since 2006, with the highest result detected at 0.162 mg/l, from a sample taken in August 2006, and the lowest result detected at 0.102 mg/l, from a sample taken in January 2007. The most recent sample from this well was taken in May 2015, and molybdenum was detected at 0.128 mg/l.

Arsenic has been detected above the MCL in groundwater samples from two wells outside of the Yard 520 monitoring network (MW111 and MW122). In October 2006, a sample from MW122 was just above the MCL at 0.0115 mg/l. The results from none of the other 9 samples taken from this well between August 2006 and May 2015 have been above the MCL for arsenic. The result from the most recent sample taken from MW111 in May 2015 is 0.034 mg/l. Four samples taken from this well in April 2014 are all above the MCL for arsenic (ranging from 0.143 to 0.193 mg/l), and two samples taken from this well is October 2006 were just at and above the MCL (0.010 and 0.0114 mg/l). The results of 12 other samples taken from this well between August 2006 and April 2013 are all below the MCL for arsenic.

2. Exposure Assessment

[12] More specifically, these are the Regional Screening Levels set for these two pollutants. Each are based on levels that limit the non-cancer HQ to no more than 1.

Table 2 includes the exposure pathways assessed in the HHRA (from Table 5-1 in the HHRA). Refer to Tables 5-3 through 5-6 of the HHRA for more detail on the exposure assumptions for each receptor and pathway.

Soil

Though the HHRA did identify limited potential concerns with exposure to coal ash materials in soil, the assumption that samples of coal ash materials taken during the municipal water service extension were representative of the coal ash materials used as landscaping fill in residential yards was found to be incorrect after the HHRA was completed. Therefore, the conclusions drawn in the HHRA regarding soil contamination are largely incorrect. For this reason, soil-based risks and hazards from the HHRA are not summarized in the ROD.

Investigations supplemental to the HHRA identified various properties within the Pines Site with concentrations of contaminants from coal ash fill material (including arsenic, thallium, and lead) that clearly present an unacceptable risk[13]. Recent sampling has also revealed that total chromium is above background, and further analysis is necessary to determine if the fraction of the total chromium posing the biggest threat to human health, hexavalent chromium, is at concentrations posing an unacceptable risk to human health.

Rather than delaying the Site cleanup and redoing entire sections of the HHRA, EPA has established cleanup levels based on the appropriate default risk-based screening levels for the removal action. In the case of arsenic, thallium, and hexavalent chromium, the appropriate screening levels should be based on IDEM's residential soil screening levels[14] because chronic residential exposure to contaminated soil is the exposure scenario that poses the biggest exposure risk for these soil contaminants. In the case of lead, the screening level is based on EPA's Integrated Exposure Uptake Biokinetic Model, and the residential child exposure scenario that poses the biggest risk.

Those properties with exposure point concentrations (EPC) of Site-related contaminants above cleanup levels present an unacceptable future human health risk and a potentially unacceptable current human health risk if the fill materials are at the surface or being disturbed at depth.

There are no issues with the quality of the soil data gathered after the HHRA was completed. EPCs were determined using a composite sampling approach. Each property was divided into four quadrants (where present, garden or play areas were treated as another quadrant) and composite samples were analyzed for each quadrant. As of September 15, 2016, potentially unacceptable exposures had been identified for one or more quadrants on 15 individual properties. However, not all properties in and around the Site have been sampled. Therefore, EPA expects that exposure assessments for additional properties will be forthcoming, and the remedy selected in this ROD includes continued sampling of additional properties as requested by the property owners.

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[13] The EPCs detected are well above the EPCs used in the HHRA as well as EPA's regional, risk-based screening levels.

[14] These correspond to a 10^{-5} increased lifetime risk of cancer for carcinogens and a HQ of one for non-carcinogens.

Groundwater

The HHRA evaluates exposures to contaminated groundwater via potable use from private wells (based on comparison of well-specific concentrations to contaminant-specific tapwater regional screening levels [RSL]), as well as dermal contact and incidental ingestion by construction workers involved in excavation activities. The assessment of ingestion from private wells was limited to those residences outside of the area provided with municipal water and required to use private wells for drinking water. Though these residences were already being provided with bottled water service at the time the HHRA was written, the exposure assessment did not take this into account as this is a limited and potentially temporary protective measure.
The HHRA found potential future unacceptable exposures from the consumption of groundwater near two wells, MW111 and MW122. After the HHRA was completed, additional sampling was conducted to give a more current understanding of groundwater conditions, and the risk-based screening level for molybdenum decreased. Currently, groundwater is above acceptable human health risk-based exposure levels in three isolated locations outside of the Yard 520 monitoring well network (See Figure 4):

MW106 is located in an area north and east of Yard 520. Though this is a residential area, there are no known current exposures as this area has been provided with municipal water.

MW122 is located east of Yard 520 in an undeveloped wetland area that has not been provided with municipal water. No drinking water wells are located in this area, though there are currently no prohibitions for the installation of wells if the area were to be developed.

MW111 is located even further east of Yard 520 than MW122, on the other side of Brown Ditch. This area is also undeveloped and some of it is wetland. There are no drinking water wells near MW111, though there are no prohibitions for the installation of wells if the area were to be developed. The nearest residences (located to the north) are in an area that has been provided municipal water.

The exposure point concentrations used for each groundwater pollutant is the actual result of discreet groundwater grab samples. There are no issues with the quality of the groundwater data gathered to date.

The potential future use of groundwater from these areas as drinking water poses an unacceptable potential risk.

3. Toxicity Assessment

Soil

The unacceptable actual or potential exposures to Site-related soil contamination are all based on chronic exposures.

Arsenic poses both carcinogenic and non-carcinogenic[15] human health risks. The arsenic toxicity evaluation in the HHRA and the FS report is based on toxicity data from EPA's Integrated Risk Information System (IRIS). Arsenic is naturally present in soils (background) at concentrations that correspond with EPCs posing a cancer risk in EPA's risk range of 10^{-4} to 10^{-6} (0.8 to 80 ppm). The arsenic concentration that results in a HQ of 1 is 41 ppm. The State of Indiana has set its default risk-based cleanup levels at concentrations corresponding to a cancer risk of 10^{-5}, which corresponds to a concentration of 8 ppm for arsenic. The risk-based cleanup level of 8 ppm was then compared with the soil background threshold value (BTV) for arsenic, which was calculated as the 95% UTL for background concentrations) - 30.1 ppm. The arsenic soil BTV, 30.1 ppm, was selected as the arsenic soil cleanup level because CERCLA response authorities do not extend to naturally occurring substances; and arsenic concentrations in soil below 30.1 ppm are considered naturally occurring. Although higher than the 10^{-5} risk-based concentration (8.1 ppm), the arsenic soil BTV (30.1 ppm) does correspond to an arsenic cleanup concentration in EPA's acceptable risk range of 10^{-4} to 10^{-6} (0.8 to 80 ppm).

Thallium is not recognized as posing a carcinogenic human health risk. The non-carcinogenic toxicity evaluation for thallium[16] in the HHRA and the FS report is based on EPA's 2010 Published Provisional Peer Reviewed Toxicity Value. The exposure point concentration of thallium that poses a non-cancer HQ of 1 is 1.1 ppm. As described for arsenic, the risk-based value of 1.1 ppm was compared to the thallium BTV of 1.9 ppm. The thallium cleanup level in soil was selected as 1.9 ppm – the higher of the risk-based concentration (1.1 ppm) and the thallium BTV (1.9 pm) because CERCLA response authorities do not extend to naturally occurring substances; and thallium concentrations in soil below 1.9 ppm is considered naturally occurring.

Lead was not identified as a contaminant of potential concern in the HHRA so its toxicity was not evaluated. EPA typically uses its Integrated Exposure Uptake Biokinetic model to determine lead cleanup levels in soil[17]. This model determined that a soil concentration of 400 ppm of lead poses less than a 5% risk that an exposed child's blood lead level will exceed 10 micrograms per deciliter (µg/dl). EPA has also set this as its RSL default value.

Hexavalent chromium poses primarily a carcinogenic human health risk though it also poses some non-carcinogenic health risks. The hexavalent chromium toxicity values in the HHRA and FS report are based on EPA's IRIS. A hexavalent chromium concentration of 0.43 to 43 ppm corresponds to a cancer risk range of 10^{-4} to 10^{-6}. Indiana's default risk-based cleanup level is based on a risk of 10^{-5}, which corresponds to a hexavalent chromium concentration of 4.3 ppm. The hexavalent chromium concentration that corresponds with a non-carcinogenic HQ of 1 is 296 ppm. EPA is setting its cleanup level for hexavalent chromium in soil as 4.3 ppm -- the lower of the cancer-based (4.3 ppm) and the non-cancer-based (296 ppm) values.

Groundwater

[15] The non-carcinogenic health risks from arsenic exposure involve the skin and the circulatory system.
[16] The health risks from thallium exposure involve hair follicle atrophy.
[17] Specifically, lead has been found to cause cognitive developmental issues, specifically in school-aged children.

The unacceptable actual or potential exposures to Site-related groundwater contamination are all based on chronic exposures.

Consumption of arsenic in drinking water poses both carcinogenic and non-carcinogenic health risks. Under the Safe Drinking Water Act, EPA has determined that 0.10 mg/l is a safe concentration of arsenic for drinking water for all receptors.

There are no limits established under the Safe Drinking Water Act for boron or molybdenum in drinking water. However, EPA has set Regional Screening Levels (RSLs) for boron and molybdenum in drinking water. These limits are set using IRIS and an assessment of all receptors. The RSLs correspond with a cancer risk of 10^{-6} or a non-cancer risk with an HQ of one. EPA has set the drinking water RSL for boron at 4.0 mg/l based on a non-carcinogenic HQ of 1[18], and for molybdenum at 0.10 mg/l based on a non-carcinogenic HQ of 1[19].

4. Risk Characterization

Soil

Arsenic concentrations on at least 15 properties contaminated with coal ash pose a cancer risk deemed unsafe by the State of Indiana and are higher than background soils. On some properties, arsenic concentrations are 10 or more times greater than the upper range of background levels. Similarly, arsenic concentrations on several properties pose non-cancer health risks resulting in an HQ of greater than one and are sometimes 10 or more times greater than the level corresponding to an HQ of one.

Thallium concentrations on certain properties contaminated with coal ash are higher than background levels, and have levels above the concentration that poses a non-cancer health risk corresponding to an HQ of one.

Some properties contaminated with coal ash have been found to have lead concentrations that pose a risk of greater than 5% that blood lead levels of exposed children could be 10 µg/dl or higher. However, further evaluation is being conducted to determine if all of these elevated lead concentrations are related to the coal ash as there are numerous other possible sources of lead in soil (e.g. lead paint).

Groundwater

There are currently no drinking water wells in the vicinity of monitoring wells MW106, MW111, and MW122. However, there is currently nothing that prohibits installation of drinking water wells in these areas in the future. MW106 is in an area that has already been provided with municipal water service making the installation of new drinking water wells in this surficial aquifer less likely but still possible.

[18] Boron's toxicity involves developmental effects in children.
[19] Molydenum's toxicity involves the excretory system, with children being the most sensitive receptor.

Table 3 is a summary of the HHRA findings of the risks posed by Site-related groundwater contamination (from the risk and hazard results Table 6-81 in the HHRA). The HHRA found that potential future exposures to boron concentrations in groundwater from the vicinity of MW122, molybdenum concentrations in groundwater from the vicinity of MW106[20], and manganese and thallium from the vicinity of MW111 pose non-cancer health risks corresponding to an HQ of greater than one. The HHRA also found that potential future exposure to arsenic concentrations in groundwater from the vicinity of MW111 and MW122 pose cancer human health risks above levels deemed safe by EPA.

Since the HHRA was completed, the nature and extent of the Site-related groundwater contamination has changed. Thallium is no longer detected in MW111, nor any of the monitoring wells. Arsenic is now below the cleanup level (MCL) in MW122 and no longer poses an unacceptable risk in this well.

Though manganese was identified as posing an unacceptable risk in the HHRA, it is known to occur naturally in groundwater and has been detected in background wells associated with the Site at levels similar to those analyzed in the HHRA and above the current RSL of 430 ppb. In the most recent groundwater sampling, manganese was detected in monitoring well MW105 above levels seen in background wells (2,490 ppb). All previous sampling results for manganese in this well were significantly lower with the highest result at 14.4 ppb. Because this well is located in an area already provided with municipal water and manganese has been shown to occur naturally in this area at elevated levels, and EPA finds that manganese does not pose a current risk at the Site but that it should be included in the long term monitoring plan.

D. Ecological Risk Summary

A Screening Level Ecological Risk Assessment (SLERA) was conducted to evaluate potential risks to ecological receptors posed by coal ash-derived constituents of potential ecological concern (COPECs) in environmental media at the Pines Site. The Pines Site has three geographic areas within or adjacent to it that may substantially account for ecological significance and potential for exposure from Site environmental contaminants: Brown Ditch; Kintzele Ditch; and the IDNL. The IDNL is considered a significant regional ecological resource.

Potential ecological receptors and habitats within the Pines Site, and particularly attributable to these three geographic areas, underwent an environmental assessment and were characterized and evaluated with available maps, historical information, existing field data, literature results, concentrations of environmental contaminants in abiotic matrices, available biological inventories that included consideration for Federal and State listed threatened and endangered species, regulatory agency information regarding other sensitive species and quality of available habitats. A reconnaissance and environmental assessment was conducted as part of the SLERA to identify local biota and habitats that focused the SLERA on areas of potentially significant ecological habitat within the Pines Site and also provided context for the development of the Site model. This environmental assessment identified several potential aquatic exposure areas (Brown Ditch, and open water pond habitats, and wetland areas associated with Brown Ditch), as

[20] Molybdenum was not specifically identified as posing an unacceptable risk in the HHRA; however, had the updated risk-based screening level been used at that time, it would have been identified as such.

well as terrestrial exposure areas where coal ash or coal ash-derived constituents were suspected to be present.

The SLERA used the maximum detected concentrations of coal ash constituent contamination in sediment and surface water and for suspected coal ash samples collected within the Pines Site. COPECs were selected by comparing media concentrations against established criteria or screening benchmarks, referred to as ecological screening values (ESVs), and an evaluation of those values against existing background contaminant concentrations. COPECs were further evaluated using food web models to assess potential risks to wildlife receptors that occupied important aquatic and terrestrial habitats. Table 4 of this ROD is the summary of COPECs selected for the SLERA. For more details on the ESVs used, see Table 3-9 of the SLERA. For more details on the selection of the COPECs, see Tables 4-1 through 4-6 of the SLERA.

The evaluation of potential risks to receptors in the IDNL is discussed separately from the other potential aquatic exposure areas in the SLERA because the IDNL is a particularly significant ecological resource.

Based on the results of the SLERA, currently available data and information indicate that ecological receptors experience low or minimal potential risk from exposure to individual coal ash derived environmental contaminants associated with the Pines Site. However, some uncertainty remains for ecological receptors experiencing possible synergistic, antagonistic, or additive effects from possible exposure to COPEC mixtures occurring in soils, sediments, and surface water. This could potentially result in unacceptable risk to ecological receptors at or associated with the Site. This uncertainty will be addressed by future monitoring of the health and well-being of ecological receptors associated with the Site.

E. Basis for Taking Action

The response actions selected in this Record of Decision are necessary to protect public health or welfare or the environment from actual or threatened releases of pollutants or contaminants from the Site which may present an imminent and substantial endangerment to public health or welfare.

15.0 Remedial Action Objectives

Remedial Action Objectives (RAOs) are goals for protecting human health and the environment from risks associated with current or potential future exposures.

Based on the results of the HHRA as summarized above, there is future risk from exposure to Site-related contaminants in groundwater in two separate areas east of Yard 520. These are small areas of groundwater contamination close to, but above EPA's selected cleanup levels.

RAO 1: Protect humans from unacceptable exposure to Site-related COCs in groundwater.

The surficial aquifer in the Pines Site where suspected coal ash-contamination has been identified is classified as "drinking water class." The MWSE has been sufficient to protect residents from exposure to unacceptable levels of coal ash-derived constituents in drinking water and only a small area within the MWSE area has the potential for drinking water risk. Though there are currently no drinking water wells in the vicinity of wells with unacceptable levels of Site-related contamination, there are no controls in place that would restrict installation of such wells.

> **RAO 2:** Restore groundwater to drinking water standards and/or background levels (whichever is higher)[21] for Site-related COCs within a timeframe that is reasonable.

The following RAO is based on consideration of the selected cleanup levels for solid media (soils).

> **RAO 3:** Protect humans from exposure to unacceptable concentrations of Site-related COCs in contaminated fill areas.

These RAOs were developed based on the current and reasonably anticipated future use of the area in and around the Site. They will address the potential risk to current and future residential, commercial/industrial, and recreational users identified in the human health risk assessment.

16.0 Description of Alternatives

A. Description of Remedy Components

Three soil and five groundwater remedial alternatives were evaluated for cleaning up the Pines Site. Soil Alternative 3 (excavation, off-site disposal, and institutional controls for contaminants left in place) and Groundwater Alternative 4 (phytoremediation, institutional controls, and long-term monitoring) are EPA's selected alternatives.

No action was considered as both a soil and a groundwater alternative to serve as a baseline for comparison of other alternatives. A comparative analysis of the alternatives can be found in Section 17.0 and Appendix 4. The following are the alternatives evaluated for the Site:

Soil Remedial Alternatives

The following soil remedial alternatives were evaluated.

1. Soil Alternative 1 – No Action

No remedial activities would be implemented under this alternative. Inclusion of this alternative is required by the NCP and serves as a baseline against which all other alternatives are compared.

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[21] CERCLA response action authorities are limited, and with rare exception, cannot address naturally occurring substances, thus EPA generally does not require the cleanup of material below background levels.

- Estimated Capital Cost[22] - $0
- Estimated 30-Year[23] Operation and Maintenance (O&M) Cost - $0
- Estimated Present Worth Cost - $0
- Estimated Construction Timeframe - Not Applicable (N/A)
- Estimated Time to Achieve RAO[24] – RAO would not be met.

2. Soil Alternative 2 – Land Use Controls

This alternative includes implementation of land use controls in the form of restrictive covenants that would prohibit digging or other soil disturbances where coal ash-derived contaminants are present at concentrations above the selected cleanup levels.

- Estimated Capital Cost - $10,000 per property, total unknown
- Estimated 30-Year O&M Cost - $10,000 per property, total unknown
- Estimated Present Worth Cost - $13,000 per property
- Estimated Construction Timeframe - N/A[25]
- Estimated Time to Achieve RAO – RAO would not be met on properties where contamination is at the surface. RAO for other properties would be met in approximately one year.

3. Soil Alternative 3 – Excavation & Off-Site Disposal

This alternative includes outreach to gain access to all properties not addressed by the current removal action and testing to determine if the properties are contaminated. Contaminated materials would be excavated and disposed of off-site. Sampling would be conducted at surface soil (0 - 6 inches below ground surface), near-surface soil (6 - 18 inches below ground surface), and/or subsurface soil (18 - 36 inches below ground surface). Soil with coal ash-derived contamination above selected cleanup levels will be excavated. Excavated soil would be replaced with clean soil backfill from an off-site source and graded to match the surrounding topography. If concentrations above the selected cleanup levels extend beyond target excavation depths (36 inches), the soil backfill would serve as a direct-contact barrier, and restrictive covenants on the property would be applied to mitigate potential exposure risks associated with any deeper contamination left in place. A barrier material such as a geotextile fabric or the like would also be put in place to serve as a visual indicator on top of contaminated soils left at depth. Excavated soils would be tested to determine disposal options and then transported via truck to an appropriate off-site disposal facility approved by

[22] Supporting documentation for all cost estimates is provided in Appendix D of the FS report.
[23] The Respondents estimated the total O&M costs over a 30 year period so that the total costs for each alternative are more comparable. Typically, these costs are presented as annual costs, but several of the alternatives evaluated would not incur the same O&M costs each year.
[24] Only RAO 3 is applicable to the soil remedial alternatives.
[25] No construction is involved in this alternative. It could be implemented very quickly depending on the acceptance of the restrictions from property owners.

EPA. It is expected that the excavated soils will meet requirements for disposal in a RCRA Subtitle D landfill (i.e., a standard, municipal solid waste landfill).

- Estimated Capital Cost - $156 per cubic yard of material removed[26] and $1,800 to $6,900 per property for sampling
- Estimated 30-Year O&M Cost - $0
- Estimated Present Worth Cost - $156 per cubic yard of material removed and $1,800 to $6,900 per property for sampling
- Estimated Construction Timeframe – Approximately one year[27]
- Estimated Time to Achieve RAO - Approximately one year

Groundwater Remedial Alternatives

The following alternatives for groundwater were evaluated:

1) Groundwater Alternative 1 – No Action

No remedial activities would be implemented under this alternative. Inclusion of this alternative is required by the NCP and serves as a baseline against which all other alternatives are compared.

- Estimated Capital Cost - $0
- Estimated 30-Year O&M Cost - $0
- Estimated Present Worth Cost - $0
- Estimated Construction Timeframe - N/A
- Estimated Time to Achieve RAOs – RAOs would not be met.

2) Groundwater Alternative 2 – Land Use Controls

This alternative involves the implementation of institutional controls in the form of a groundwater use restrictive ordinance or restrictive covenants for areas where groundwater is above cleanup levels, or both, primarily in the small areas east and north of Yard 520. This alternative would prohibit the use or installation of private drinking water wells on specific properties or within a designated groundwater management area. Groundwater is currently not used as a source of drinking water in these areas, and these restrictions would mitigate future use of the groundwater in these areas as a drinking water source.

- Estimated Capital Cost - $697,000
- Estimated 30-Year O&M Cost - $644,000

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[26] Using the estimated volume of the first 12 properties identified as needing cleanups, this equates to $7,956,000. However, additional properties have since been identified as needing cleanups so this is likely to be an underestimate.

[27] EPA expects most of the applicable properties will be addressed by the concurrent removal action within one year. Additional properties identified subsequent to the removal action will be addressed on a case by case basis but actual time spent removing and replacing soil in a yard could be several days to several weeks. However, it could be several months between the date of sampling and the date that actual cleanup work begins.

- Estimated Present Worth Cost - $868,000
- Estimated Construction Timeframe - N/A
- Estimated Time to Achieve RAOs – The groundwater restoration RAO would not be met. The RAO to prevent (future potential) exposure to contaminated groundwater would be met in approximately one year.

3) Groundwater Alternative 3 – Long-Term Monitoring

This alternative includes the land use controls described in Groundwater Alternative 2 and adds long-term groundwater monitoring north and east of Yard 520. This remedial action would provide continued assessment of groundwater conditions to evaluate the protectiveness and appropriateness of response actions completed previously (MWSE and Yard 520 Closure). Selected monitoring and private wells within the MWSE Area and east of Yard 520 would be included, in addition to the wells monitored as part of the on-going groundwater monitoring conducted under the approved Post-Closure Plan for Yard 520. Additionally, this alternative includes monitoring upgradient of the IDNL to identify any future potential impacts to this area before they might occur, and periodic monitoring of some residential drinking water wells. The specific constituents to be included in this monitoring will not just include the COCs but will also include constituents such as manganese, thallium, and selenium that have also been detected at levels above background and can be associated with the coal ash present at the Site to assure they will be below health-based limits in the long-term.

- Estimated Capital Cost - $872,000[28]
- Estimated 30-Year O&M Cost - $3,930,000
- Estimated Present Worth Cost - $2,477,000
- Estimated Construction Timeframe - 0 - 6 months[29]
- Estimated Time to Achieve RAOs - The groundwater restoration RAO would not be met. The RAO to prevent (future potential) exposure to contaminated groundwater would be met in approximately one year.[30]

4) Groundwater Alternative 4 – Phytoremediation

This alternative includes the land use controls and long-term monitoring described in Groundwater Alternatives 2 and 3. In addition, this alternative includes phytoremediation which uses specific plant species to intercept groundwater flow and remove contaminants via fixation, transpiration, and other processes. Appropriate plant species (most likely trees) are planted and maintained. Routine harvesting and disposal of biomass (such as leaves) will be implemented as specified in the work plans for the remedial action if needed to control the

[28] The cost estimates provided in the FS report and in this ROD include all facets of each alternative. In this instance, the estimated costs include both the costs of long-term monitoring and land use controls.
[29] Most monitoring wells needed are already installed such that sampling could begin right away. The installation of additional wells is expected to take several months.
[30] If natural processes are found to be reducing concentrations of coal ash-derived groundwater contamination, compliance with RAOs may eventually be possible with this remedy alone. However, there is insufficient evidence to make this determination at this time.

potential reintroduction of retained contaminants. The layout evaluated is shown on Figure 19 of the FS report and focuses primarily on groundwater flowing to the east from the landfill towards monitoring well MW122, which is the only well outside of the landfill monitoring network consistently showing elevated levels of boron, and the only area where Site-related groundwater contamination is migrating from Yard 520.

- Estimated Capital Cost - $1,305,000
- Estimated 30-Year O&M Cost - $6,086,000
- Estimated Present Worth Cost - $3,660,000
- Estimated Construction Timeframe - 2-3 years before plants reach maturity
- Estimated Time to Achieve RAOs - The RAO to prevent (future potential) exposure to contaminated groundwater would be met in approximately one year. The RAO to restore groundwater would be eventually be met, though it could take 20 or more years to achieve.[31]

5) Groundwater Alternative 5 – Barrier Wall

This alternative includes the land use controls and long-term monitoring described in Groundwater Alternatives 2 and 3. It also includes installation of a barrier wall (slurry wall) along the east side of the North Area of Yard 520, as shown on Figure 20 of the FS report. The slurry wall would be keyed (connected together to prevent groundwater flow) into the existing barrier wall of the South Area of Yard 520 and would be extended to the underlying low-permeability clay confining unit to control potential flow under the wall. Groundwater recovery from within the walled area would be performed via a french drain, as needed to control the potential for accumulation of groundwater behind the wall. The groundwater recovery system would be designed to control groundwater flow and mitigate the potential for inducing flow around the north end of the barrier wall. Recovered groundwater would be treated using an appropriate treatment process (adsorption/ion exchange, precipitation/flocculation, or reverse osmosis/membrane filtration). Treated water would then be discharged to groundwater or the surface/wetland in accordance with the appropriate permit requirements.

- Estimated Capital Cost - $7,004,000
- Estimated 30-Year O&M Cost - $21,549,000
- Estimated Present Worth Cost - $14,700,000
- Estimated Construction Timeframe - Approximately 1 year
- Estimated Time to Achieve RAOs – The RAO to prevent (future potential) exposure to contaminated groundwater would be met in approximately one year. The RAO to restore groundwater would be eventually be met, though it could take 20 or more years to achieve.[32]

[31] It is difficult to estimate this until the phytoremediation plants have reached maturity and the rate at which boron is migrating to this area at that time is known.
[32] Compliance with RAOs could happen very quickly, but it is not possible to estimate this until the rate of coal ash-derived contaminants continuing to leave the landfill is measured.

B. Expected Outcomes of Each Alternative

Soil Alternative 1 and Groundwater Alternative 1 do nothing to improve the situation at the Site. Nothing is currently in place to prevent installation of drinking water wells in areas with COCs in groundwater above human health risk-based or drinking water standards. Though there is an ongoing action under EPA's removal program to clean up soil on properties that have been identified as having unacceptably high levels of COCs, not all properties within the Site have been tested for the presence of coal ash-derived COCs above the selected cleanup levels.

Soil Alternative 2 would only have the potential to prevent exposures if contamination existed at depth; however, several properties have been identified as having COC concentrations above cleanup levels in the most surficial layer tested (0 to 6 inches).

Soil Alternative 3 involves removal of contaminated soil and replacement with clean fill on properties with COC concentrations above cleanup levels. Some contaminated soil may remain at depth (3 feet or greater), but digging restrictions and a visual barrier should limit future exposure to these soils.

Groundwater Alternatives 2 and 3 will do nothing to restore the aquifer to below drinking water or human health risk-based standards, though it is possible that natural processes might eventually return this aquifer to acceptable levels. Groundwater Alternative 3 includes monitoring that would track these natural processes if they are occurring.

Both Groundwater Alternatives 4 and 5 will actively treat the area of contaminated groundwater in the vicinity of MW122 (immediately east of Yard 520). Either remedy should return this portion of the aquifer to below cleanup levels for boron, though this will likely take decades[33]. Groundwater Alternative 5 is potentially disruptive to the hydrogeological characteristics of the area and requires partial removal of the protective cap on the landfill; therefore, this action could have deleterious, unintended consequences.

Groundwater Alternatives 2, 3, 4, or 5 would prevent the installation of drinking water wells in areas with groundwater COCs above human health risk-based or drinking water standards. This should prevent potential future exposures to unacceptably high Site-related groundwater contamination.

17.0 Comparative Analysis of Alternatives

Nine criteria are used to evaluate the different remediation alternatives individually and against each other in order to select a remedy. Any selected remedy must meet criteria 1) and 2) below; criteria 3) through 7) are balancing criteria; and criteria 8) and 9) are considered as modifying criteria in the remedy selection process. This section of the Record of Decision profiles the relative performance of each alternative against the nine criteria, noting how it compares to the

[33] Boron is particularly difficult to remove from water, and the available treatment technologies are all of low efficiency compared to options for other metals in water.

other options under consideration. The nine evaluation criteria are described below. The "Detailed Analysis of Alternatives" can be found in the FS.

1) **Overall Protectiveness of Human Health and the Environment** determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.

2) **Compliance with ARARs** evaluates whether the alternative meets applicable or relevant and appropriate requirements (ARARs) of Federal and State environmental statutes and regulations, or whether a waiver is justified.

3) **Long-term Effectiveness and Permanence** considers the ability of an alternative to maintain protection of human health and the environment over time.

4) **Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment** evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

5) **Short-term Effectiveness** considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.

6) **Implementability** considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.

7) **Cost** includes estimated capital and annual operation and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 and -30 percent.

8) **State/Support Agency Acceptance** considers whether the State agrees with the EPA's analysis, recommendations and selected remedy, as described in the Proposed Plan and Record of Decision.

9) **Community Acceptance** considers whether the local community agrees with the EPA's analysis and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

Comparison of Alternatives to the Nine Criteria

A. Soil Alternatives

1. Overall Protection of Human Health and the Environment

Soil Alternative 1, No Action and Soil Alternative 2, Land Use Controls are not fully protective. Soil Alternative 3 (Soil Excavation and Off-Site Disposal) is fully protective of human health.

2. *Compliance with ARARs*

A complete list of ARARs can be found in Appendices 2 and 3. There are no ARARs that apply to the actions in Soil Alternative 1, No Action and Soil Alternative 2, Land Use Controls. Soil Alternative 3 would comply with ARARs that apply to the disposal of contaminated soil, as the contaminated soil will be characterized and disposed of in a landfill that corresponds with its waste characterization.

3. *Long-Term Effectiveness and Permanence*

Soil Alternative 3 (Excavation and Disposal) would be effective and permanent. Excavation and disposal activities result in full removal of soil from the top three feet of a property with contaminant concentrations above selected cleanup levels. Soil Alternative 2 (Land Use Controls) is effective and permanent only where a surficial barrier is in place that can reasonably be expected to be maintained in compliance with the restriction terms (e.g., surface soil/landscaping remains in place, pavement is maintained). There is concern that some properties have contamination at the surface; thus, Soil Alternative 2 is not a long-term, effective, and permanent remedy. Further, land use controls are a less long-term, effective, and permanent remedy than removing contamination from properties.

4. *Reduction of Toxicity, Mobility, or Volume through Treatment*

None of the soil alternatives provide for treatment of the contaminants. There is no practical, cost-effective treatment for this type of contamination.

5. *Short-term Effectiveness*

Soil Alternative 1 (No Action) and Soil Alternative 2 (Land Use Controls) have no negative impact during implementation because only administrative actions would be taken. In contrast, Soil Alternative 3 (Soil Excavation and Off-Site Disposal) would have short-term impacts to workers, residents, and the community during excavation and off-site disposal activities. These potential impacts can be mitigated by implementing a project-specific health and safety plan, keeping excavation areas properly wetted (dust control), planning truck routes to minimize disturbances to the surrounding community, and other construction best-management practices. Risk reduction is immediate upon completion of the cleanup action.

6. *Implementability*

Land use controls in Alternative 2 and 3 will provide challenges associated with securing agreements from the local community and/or land owners for implementation, with Alternative 2 requiring more land use controls than Alternative 3. Soil Alternative 3 will have implementation challenges associated with excavation restrictions associated with properties that may contain mature trees, septic systems, shallow utilities, and other structures.

7. *Cost*

There are no costs associated with Soil Alternative 1 (No Action).

The estimated cost for Soil Alternative 2 is $13,000 present worth per property, with total present worth value at $182,000[34]. The estimated cost for Soil Alternative 3 is $156 per cubic yard of material addressed. The total present worth value for Soil Alternative 3 presented in the FS (when only 12 properties had been identified) was $7,956,000.

8. State Acceptance

The State of Indiana concurs with the selection of Soil Alternative 3.

9. Community Acceptance

Though some community members have expressed concern with the environmental covenants necessary for contamination left at depth, individual property owners have expressed a clear preference for this soil alternative as it is the only one that removes contamination.

Groundwater Alternatives

1. Overall Protection of Human Health and the Environment

All of the groundwater alternatives are currently protective of human health and the environment. Response actions already implemented (MWSE) have eliminated the current groundwater exposure pathway. Alternative 1, the No Action Alternative is not protective in the long-term because it does not provide protection against future exposure to contaminated groundwater.

2. Compliance with ARARs

Groundwater Alternatives 1, 2, and 3 do nothing to comply with chemical-specific ARARs in the areas currently above cleanup standards. Although there is no associated ARAR for boron, Alternatives 4 and 5 will treat contaminated groundwater in the vicinity of MW122 such that it will eventually comply with the tapwater Regional Screening Level for boron. Contaminants in the groundwater above Safe Drinking Water MCLs will be appropriately monitored until the groundwater achieves ARARs.

3. Long-Term Effectiveness and Permanence

Alternative 1, the No Action Alternative, is not permanent nor protective in the long term. Alternatives 2 and 3 do provide long-term protectiveness but rely on administrative controls to provide protection, therefore, they are not as permanent as Alternatives 4 and 5. Groundwater Alternatives 4 and 5 propose measures to remove coal ash-derived contamination from groundwater. Groundwater Alternative 5 would require substantial long-term operation.

[34] As of September 15, 2016, 15 properties had been identified as needing these soil clean-up activities.

4. Reduction of Toxicity, Mobility, or Volume through Treatment

Alternatives 1, 2, and 3 provide no reduction in toxicity, mobility, or volume of contaminants through treatment. Groundwater Alternatives 4 (Phytoremediation) and 5 (Barrier Wall) would result in coal ash-derived contaminant treatment, reducing the mobility and volume of the contaminants in the groundwater.

5. Short-term Effectiveness

Alternatives 1, 2, and 3 would present little/no negative impact to Site workers, residents, and the Town of Pines community during implementation.

Alternative 4 would present some minor short term impacts to the community during implementation of the remedy as the vegetation is planted and maintained.

Groundwater Alternative 5 requires construction efforts, including partial removal of the landfill cap and excavation/grading of coal ash materials. These activities would result in increased risk of human exposure to coal ash, airborne particulate matter, increased mobility of coal ash-derived contaminants due to partial cap removal, and general disruption to the residents and infrastructure within the Town of Pines.

6. Implementability

There are no significant constraints on implementability for Groundwater Alternatives 1 through 3. Implementability considerations for Groundwater Alternatives 4 and 5 include the difficulties associated with construction on the closed landfill in proximity to US Highway 20, on privately-owned properties, in public rights-of-way, and in wetlands as well as the limitations of available technologies to treat boron in recovered groundwater to regulatory criteria (Alternative 5). These implementability issues are more significant with Groundwater Alternative 5 than Alternative 4.

7. Cost

Groundwater Alternative 1 (No Further Action) is the lowest cost option, with no associated costs. The most costly option is Groundwater Alternative 5 (Barrier Wall), with an estimated present worth cost of $14,700,000. Estimated total present worth costs for Groundwater Alternative 2 is $868,000, for Alternative 3 is $2,477,000, and for Alternative 4 is $3,660,000.

8. State Acceptance

The State of Indiana concurs with the selection of Groundwater Alternative 4 in this ROD.

9. Community Acceptance

The overwhelming concern that the community has expressed regarding the Site is with the groundwater in the area that is still used for drinking water. Municipal water service was

extended to most of the community within the designated Area of Investigation; however, several dozen residences still have drinking water wells in this aquifer. In accordance with AOC I, the companies that conducted the RI/FS have been providing bottled water service to those residences within the Area of Investigation that were not extended municipal water service.

Because the data shows that there are no drinking water wells affected by Site-related contamination, EPA is no longer requiring the provision of bottled water service. This was met with concern at the public meeting for the Proposed Plan. It is important to note that the quality of the water in this aquifer is likely adversely affected by other factors not related to the Site (e.g. septic systems). Periodic monitoring of some residential drinking water wells for the COCs and other constituents associated with the coal ash at the Site will be part of the long-term monitoring plan.

Some citizens also expressed disagreement with the phytoremediation alternative, referring to it as a "do nothing" alternative and questioning its effectiveness. Groundwater Alternative 5 would likely be better accepted by the community, provided that disruptions from construction activities were well managed. However, this preference does not justify the additional energy and resources for a remedy that would not likely perform measurably better than the selected groundwater alternative (treatment options for boron have poor removal efficiencies) and that would likely change the hydrogeological conditions in a manner that could complicate the cleanup.

18.0 Principal Threat Wastes

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (40 CFR §300.430(a)(1)(iii)(A)). The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to groundwater, surface water or air, or acts as a source for direct exposure.

The coal ash fill materials in soils that pose a significant human health risk are considered principal threat wastes. EPA is requiring that these materials be excavated and disposed of properly so as to no longer pose an unacceptable risk. However, this does not meet the NCP expectation to use treatment to address principal threats. Treatment of these soils to remove the metal contaminants posing the human health risk is impractical.

19.0 Selected Remedy

A. Summary of the Rationale for the Selected Remedy

Based on considerations of the requirements of CERCLA, the NCP, and balancing of the nine criteria, U.S. EPA has determined that Soil Alternative 3 and Groundwater Alternative 4 are the most appropriate remedial alternatives for the Pines Site.

Soil Alternative 3 and Groundwater Alternative 4 are protective of human health and the environment, meet all Federal and State ARARs, provide the best balance of the modifying evaluation criteria, and collectively meet all RAOs. These remedial actions are cost-effective and use permanent solutions and alternative treatment technologies to the maximum extent practicable. Soil Alternative 3 does not meet the statutory preference for the selection of a remedy that involves treatment as a principal element because no practical treatment is available for the contaminated fill materials. Groundwater Alternative 4 does meet the statutory preference for the selection of a remedy that involves treatment as a principal element through the phytoremediation treatment of contaminated groundwater.

Soil Alternative 3 was selected because it results in removal of contaminated soil from properties with Site-related contamination that exceeds the selected cleanup levels.

Groundwater Alternative 4 was selected because it is the most cost-effective and least disruptive (to both the local community and hydrogeology) of the two groundwater alternatives that involve active treatment. The other groundwater alternatives were not selected as they do nothing to actively restore the aquifer to beneficial use.

Because Soil Alternative 3 and Groundwater Alternative 4 will leave some hazardous substances, pollutants, or contaminants on-site above levels that allow unrestricted use and unlimited exposure, periodic five-year reviews will be required. The selected alternatives rely, in part, on institutional controls to restrict Site use to control exposure to hazardous substances, pollutants, or contaminants.

B. Description of the Selected Remedy

EPA's selected remedial alternative for soil, Soil Alternative 3, will achieve RAO 3 and involves:

- Access to additional properties at the Site will be gained, and outreach activities will continue.
- These properties will be tested for contamination using the quadrant and composite sampling approach utilized in previous sampling.
- Where testing shows coal ash-derived contaminants above the selected cleanup levels, the contamination will be excavated to a target depth of three feet for off-site disposal; if such contamination extends below three-feet the contamination would be left in place.
- Contaminated soils will be disposed of off-site.
- Excavated areas will be replaced with clean fill to match the existing grade and other conditions.
- Institutional controls will be implemented (specifically the implementation of restrictive covenants), and a visual barrier will be put in place as an indicator of contaminated soils left in place. Each of these measures will serve to restrict digging or other disturbance of any contaminated soil left in place at depth (no less than 3 feet below ground surface).

These sampling and remediation procedures are currently documented in the removal AOC and removal work plan with the removal AOC Respondent (NIPSCO) leading this portion of the Site clean-up.

EPA's selected remedial alternative for groundwater, Groundwater Alternative 4, will achieve RAOs 1 and 2 and involves:

- Phytoremediation will be implemented east of the North (Type II) area of Yard 520, in the direction of groundwater flow from this portion of the landfill towards MW122. The plants used will probably be a type of tree, but the specific tree or other plant used will be selected during the remedial design process based on its ability to uptake boron.
- All or part of the phytoremediation plants will be routinely harvested to remove the boron from the system.
- The harvested plants or plant material will be appropriately disposed of off-site.
- Long term monitoring of ground water will be conducted to measure the effectiveness of phytoremediation and to monitor Site conditions. In addition to monitoring groundwater in monitoring wells in and around the Site, concentrations of coal ash-derived contaminants in surface water, sediments, and, as needed, in local biota will be monitored to ensure that ecological habitats continue to not be adversely affected by Site contamination. This strategy will be especially focused on protection of the IDNL. In addition, periodic monitoring of some identified residential drinking water wells will continue to ensure drinking water wells are not impacted by Site contaminants.
- Institutional controls (local ordinance or restrictive covenants) will be implemented to prohibit the installation of new drinking water wells in the vicinity of the three wells with Site-related contamination above cleanup levels (MW106, MW122, and MW111).

The phytoremediation will only be implemented in the vicinity of MW122 where it appears that groundwater contamination from the landfill continues to or has recently migrated. The other wells located outside of the Yard 520 monitoring network with groundwater above cleanup levels, MW111 and MW106, show an exceedance of the selected cleanup level for arsenic and molybdenum, respectively. This contamination is localized and is not migrating. There are no drinking water wells near MW111. MW106 is located in the area that has been provided with municipal water. This localized contamination will be monitored as long as the groundwater exceeds the selected cleanup levels for arsenic and molybdenum. The institutional controls (local ordinances or restrictive covenants prohibiting installation of new drinking water wells in these areas) will prevent human exposure to contaminated groundwater.

C. Summary of the Estimated Remedy Costs

Soil Alternative 3

Based on estimates from the contractors conducting the soil excavation and replacement work under the current removal action at the Site, a cost of $156 per cubic yard of contaminated soil removed is estimated. Based on the estimated volume of material to be removed from the first 12 properties identified, this works out to a total present worth cost of $7,956,000. However, the

total volume of contaminated soil that will be required to be removed in accordance with the soil remedy required by this ROD is unknown at this time.

Similarly, it is estimated that the present net worth of the cost to sample a property is $1,800 to $6,900 per property and to obtain a deed restriction is $13,000 per property. However, the number of properties where sampling will occur or deed restrictions will be required by this ROD is unknown at this time.

No operation and maintenance costs are expected under this alternative.

Groundwater Alternative 4

The estimated capital cost to implement this remedial alternative $1,305,000. The total estimated 30-year operation and maintenance cost is $6,086,000. This equates to a present worth cost of $3,660,000. These costs were provided in the FS report and were generated using the 2012 version of EPA's Remedial Action Cost Engineering and Requirements System software (RACER).

The information in this cost estimate summary is based on the best available information regarding the anticipated scope of the remedial alternatives. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternatives. Any changes may be documented in the form of a memorandum in the Administrative Record file, an Explanation of Significant Differences, or a ROD amendment depending on the extent of the change. This is an order-of-magnitude engineering cost estimate that is expected to be within +50 to -30 percent of the actual project cost.

D. Expected Outcomes of the Selected Remedy

At the completion of the remedial action for soil, exposures to contaminated soil should be controlled on each property tested and, if needed, cleaned up. However, this remedial action is currently not fully determined, as only those properties for which owners provide access will be tested. It is possible that the only properties sampled and cleaned up under the removal action and identified as having Site-related contaminants in excess of the selected cleanup levels, will be those properties cleaned up. It is also possible that some properties will be identified for cleanup under the removal action but cleaned up under the remedial action. Once these properties are cleaned up, the only limited use will be excavation activities below 3 feet in depth on any of the properties with soil contamination left at or below that depth. However property owners will be able to arrange to have additional project-specific excavation performed should they choose to take on their own improvements.

At the completion of the remedial action for groundwater, EPA expects that the aquifer will be restored to drinking water and other health-based standards for all Site-related groundwater contaminants. However, potential exposure to Site-related groundwater contaminants should be controlled within several months of the initiation of this remedial action as institutional controls will prevent the installation of drinking water wells in the areas where these contaminants exceed selected cleanup levels.

20.0 Statutory Determinations

The selected remedy must satisfy the requirements of Section 121(a) through (f) of CERCLA to:

1. Protect human health and the environment;
2. Comply with ARARs or justify a waiver;
3. Be cost effective;
4. Utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and
5. Satisfy a preference for treatment that reduces toxicity, mobility, or volume as a principal element of the remedy.

The implementation of the selected remedy at the Pines Site satisfies these requirements of CERCLA Section 121 as follows:

A. Protection of Human Health and the Environment

Implementation of the selected remedy will reduce future risk to human health and the environment from exposure to soil and groundwater with Site-related contamination. Protection of human health and the environment will be achieved through phytoremediation, soil excavation, and the implementation of institutional controls. The cleanup levels for Site-related contaminants will attain or exceed the $1x10^{-4}$ to $1x10^{-6}$ cancer risk level or the HQ of one non-cancer risk level as required by the NCP.

No unacceptable short-term risks are anticipated by implementation of the remedy. Some short-term risks will be created by on-site construction and off-site disposal activities, but these risks can be minimized through proper mitigation measures during construction.

B. Compliance with Applicable or Relevant and Appropriate Requirements

CERCLA §121(d) states that remedial actions must attain or exceed ARARs. The location-specific, chemical-specific, and activity-specific ARARs for the Site can be found in Appendices 2 and 3.

The selected remedy of soil excavation and phytoremediation will comply with all federal and any more stringent state ARARs that are applicable or relevant and appropriate to the Site. The soil excavation remedial activities will comply with ARARs that apply to the disposal of contaminated soil because the contaminated soil will be characterized and disposed of in a landfill that corresponds with its waste characterization. Although there are no ARARs for boron in groundwater, the selected remedy will treat contaminated groundwater in the vicinity of MW122 such that it will eventually comply with the tapwater Regional Screening Level for boron. Contaminants in the groundwater above Safe Drinking Water MCLs will be appropriately monitored until the groundwater achieves these ARARs.

C. Cost Effectiveness

The selected remedy is cost-effective and represents a reasonable value for the money to be spent. In making this determination, the following definition was used: "A remedy shall be cost effective if its costs are proportional to its overall effectiveness." (NCP §300.430(f)(1)(ii)(D)). This was accomplished by evaluating the "overall effectiveness" of those alternatives that satisfied the threshold criteria (i.e., were both protective of human health and the environment and ARAR-compliant). Overall effectiveness was evaluated by assessing the following three of the five balancing criteria used in the detailed analysis of alternatives: (1) Long-term effectiveness and permanence; (2) Reduction of toxicity, mobility and volume (TMV) through treatment; and, (3) Short-term effectiveness. Overall effectiveness was then compared to costs to determine cost-effectiveness. The relationship of the overall effectiveness of these remedial alternatives were determined to be proportional to their costs and hence these alternatives represent a reasonable value for the money to be spent.

The estimated present worth cost of the selected groundwater remedy is $3,660,000. EPA believes that the additional cost to implement this groundwater remedy compared to simply monitoring or implementing institutional controls is justified as it is expected to meet the RAO to restore the aquifer. EPA also believes that this groundwater remedial alternative is more cost effective than the alternative involving the installation of a barrier wall as it is expected to achieve the same outcome at much lower cost and with less risk.

The present worth cost of the selected soil remedy cannot be fully determined, though the estimate to clean up the first 12 properties is $7,956,000. The selected soil remedy removes or reduces the unacceptable risk to exposure to contaminated soils at the surface, EPA finds its costs to be justified.

D. Utilization of Permanent Solutions and Alternative Treatment (or Resource Recovery) Technologies to the Maximum Extent Practicable

EPA has determined that the Selected Remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at the Site. Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA has determined that the Selected Remedy provides the best balance of trade-offs in terms of the five balancing criteria, while also considering the statutory preference for treatment as a principal element, bias against off-site treatment and disposal, and considering State and community acceptance.

The Selected Remedy best treats the materials constituting a potential risk to human health at the Site, achieving significant reductions in arsenic, molybdenum, and boron in ground water at the Site. The Selected Remedy satisfies the criteria for long-term effectiveness by treating groundwater contamination and removing soil contamination. The 3 foot layer of clean fill material backfilled over areas where contaminated soil is left in place will reduce mobility of and potential for direct contact with contaminants from these soils. The Selected Remedy poses little short-term risk.

E. Preference for Treatment as a Principal Element

By treating the contaminated groundwater at the Site, the selected Groundwater Alternative addresses the potential risk posed by contaminated groundwater at the Site through the use of treatment technologies. By utilizing treatment as a significant portion of the groundwater remedy, the statutory preference for remedies that employ treatment as a principal element is satisfied.

The selected Soil Alternative does not meet the statutory preference for treatment technologies. However, there are no practical treatment technologies available for removing metals from soils.

F. Five-Year Review Requirements

Because this remedy will result in hazardous substances, pollutants or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of remedial action, and every five years subsequent, to ensure that the remedy is, or will be, protective of human health and the environment.

G. Summary

Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA has determined that the selected remedy provides the best trade-offs in terms of long-term effectiveness and permanence; reduction in toxicity, mobility, or volume achieved through treatment; short-term effectiveness; implementability; cost; and consideration of state and community acceptance.

The selected remedy offers a high degree of long-term effectiveness and permanence. These benefits are achieved at a reasonable cost.

21.0 Documentation of Significant Changes

There are no significant changes between the Selected Alternatives and the preferred alternatives listed in the Proposed Plan that was issued on May 16, 2016.

PART 3: RESPONSIVENESS SUMMARY

Overview

The Proposed Plan (PP) for the Pines Site was released for public comment on May 16, 2016. A 30 day extension was requested so the public comment period lasted until July 15, 2016.

The PP identified the Preferred Alternative of phytoremediation for groundwater contamination and excavation of soils with Site-related contamination posing an unacceptable human health risk followed by replacement with clean fill material.

EPA held a public meeting regarding the PP on Wednesday, June 8th, 2016 at the Clarion Inn, 8802 Franklin Street, Michigan City, Indiana. Approximately 30 people attended the public meeting. Representatives from EPA and IDEM were present at the public meeting. The transcript from the entire public meeting is included in the Administrative Record for the Site.

Comments were received from five individuals during the comment portion of the public meeting in addition to another six sets of written comments received during the public comment period. EPA has included all of these comments in the Administrative Record for the Site.

The responses to these comments have been divided into two parts. The first part includes the responses to most of the comments grouped by common theme. The second part includes the full comment and response to a single set of comments submitted by the PRP respondents. The nature of this set of comments was such that the full comment is needed for context.

Responses to Comments Grouped by Common Theme

Common Theme 1: Concern regarding the Devaluation of Homes and Property Values
One or more commenters discussed concerns regarding the devaluation of homes and/or property values within the Town of Pines as well as financial compensation for homeowners.

Response:
EPA recognizes that environmental contamination impacts communities in a variety of ways, including potentially impacting property values. There are also a number of other factors that affect property values unrelated to environmental contamination, including the current economy and the local housing market. EPA is an environmental regulatory agency that does not have a role in determining impacts to property values. EPA is responsible for making sure that environmental laws and regulations are implemented and followed.

However, EPA is aware that economists have been interested in the relationship between housing prices and hazardous waste sites, such as Superfund sites, for quite a while. Researchers typically gather data about single-family, owner-occupied, detached homes located near sites with hazardous substances on them, usually NPL[35] sites. The data they gather includes sales price and

[35] The National Priorities List. Inclusion on this list is what gives sites the common moniker of "Superfund site."

date, home location, size, age, and sometimes neighborhood data like typical income levels and racial makeup. Each study typically uses information about thousands of homes near one or a few nearby sites. The economists then apply statistical methods (called regression analyses) to separate the effect of being close to the hazardous waste site from other effects, such as inflation and differences in house size.

The results of these studies vary quite a bit, partly because they try to answer different questions, partly because they use data from different places, and partly because they use slightly different methods. Nonetheless, some general findings do seem to emerge:

- The value of homes close to NPL sites is decreased, and the effect varies with distance. Homes right next to NPL sites suffer a larger effect, while the effect seems to disappear at two to three miles away.
- The discovery of the problem is what causes home prices to decline. The reason for this is simple: home buyers and real estate agents learn about the presence of hazardous substances at sites from the media faster than EPA can act.
- Cleaning up the site tends to restore the value of nearby homes. The housing market seems to respond to signs that the site will be cleaned up, such as issuance of an interim plan for cleanup, and not to the cleanup itself. The reason for this seems to be that home buyers take movement toward clean up as a signal that the site eventually will be cleaned up and not left to pose continued health risks or contribute to ongoing blight.

As a result of regulatory actions, EPA believes that any potential detrimental impact that environmental contamination has on property values near this Site will be mitigated.

Common Theme 2: Concerns regarding Human Health and Medical Complications
One or more commenters expressed concerns regarding human health and medical complications of residents living within or near the Town of Pines.

Response:
EPA has thoroughly reviewed the threats posed to human health by Site-related contamination within the Town of Pines and the Area of Investigation. EPA finds that the clean-up procedures (removal of contaminated soil, groundwater use restrictions, and phytoremediation) prescribed by this ROD will effectively reduce any remaining threats to human health posed by such Site-related contamination. EPA notes that there are some property owners within the Town of Pines or the Area of Investigation that have refused consent for access to EPA for sampling soils for Site-related contamination. While EPA would be authorized to seek a warrant from the courts to sample such properties without the owner's consent, Site-related groundwater contamination above cleanup levels has not been found to originate from these properties and EPA has not sought warrants in these cases. (See the discussion in response to Common Themes 3 and 22, below, regarding groundwater contamination.)

Common Theme 3: Blocking the flow of Contaminants from Yard 520
One or more commenters discussed the lack of clean up for contaminated groundwater in the impacted areas beneath residences, and the implications of consequent deed restrictions.

Response:
Groundwater contamination above cleanup levels is only found in three monitoring wells that represent three different areas (MW106, MW111, and MW122). MW106 is located in an area that has already been provided with municipal water, therefore exposures to Site-related groundwater contamination in this area is controlled. MW111 and MW122 are located in two separate undeveloped, wetland areas. Though no exposures are currently present, future development – while not currently anticipated - could lead to an exposure risk if drinking water wells were to be installed. Environmental covenants required by this record of decision (ROD) will prohibit the installation of drinking water wells in these specific areas. In addition, long-term groundwater monitoring required by this ROD will determine if the area affected by site-related contamination increases and additional usage restrictions or cleanup activities are needed.

Common Theme 4: Maintenance of Remediation and Prevention of Future Contamination
One or more commenters discussed the maintenance of remedial actions and prevention of future contamination of properties in Pines.

Response:

Under the terms of the remedial action selected by the ROD, long term groundwater monitoring (including the monitoring of some drinking water wells) will demonstrate whether the extent of groundwater contamination changes. Environmental covenants will prevent future exposures from groundwater contamination by preventing the installation of new drinking water wells in the specific areas where contamination is found.

Through its five-year review process, EPA regularly evaluates the effectiveness of implemented remedies. If the extent of groundwater contamination changes or becomes a concern, EPA has the ability to require the implementation of additional remedies or modification of implemented remedies.

Common Theme 5: Issues and Concerns regarding connection to Municipal Water
One or more commenters expressed concerns that additional connections to Municipal Water should be provided for residents in the Remedial Investigation area of Pines.

Response:
EPA is generally not authorized to proceed with a response action like providing additional municipal water service connections without evidence showing risks to human health, for example, from actual or potential exposures to site-related groundwater contamination above cleanup levels. Groundwater has been extensively sampled at the Site, and Site-related groundwater contamination above cleanup levels has not been found in the vicinity of properties at the Site not previously offered a municipal water service connection (primarily an area to the northeast and to the south within the Area of Investigation).

If long term monitoring detects an exacerbation of site-related groundwater contamination, the addition of expanded municipal water service connections may be evaluated. However, the data gathered to date would suggest that this is not expected.

Common Theme 6: Issues and Concerns Regarding Well Water Monitoring
One or more commenters expressed the need for monitoring of well water for Pines' residents.

Response:
EPA agrees that long term monitoring should include the sampling of some private drinking water wells and has included this in the ROD. Wells will be selected based on a hydrogeological evaluation of contaminant migration, and will represent areas of concern. Final selection of wells for long term monitoring will be determined during design.

Common Theme 7: Restorations of Wetlands and Changes in Water Levels
One or more commenters expressed concerns related to changes in water table levels caused by the provision of municipal water and the restoration of wetlands, including specifically the concern that the water table could rise and cause local flooding.

Response:
EPA has reviewed a hydrogeological evaluation from a consultant for a group of PRPs of the effects of the provision of municipal water to the Town of Pines on the elevation of the water table. EPA concurs with the findings that the impact to water table levels caused by the cessation of drinking water well usage is insignificant compared to changes in groundwater recharge rates caused by changes in precipitation rates.

Furthermore, as one commenter mentions, this is an area with a large amount of wetlands and the water table is already relatively close to the ground surface. It is expected that large precipitation events could lead to increased water infiltration into underground structures such as basements.

EPA does not agree that restoration of wetlands could lead to an increase in water table elevation. Wetland vegetation provides additional storage volume for precipitation, which limits the amount of water entering the surficial aquifer; though this too would be insignificant compared to even small changes in precipitation rates.

Common Theme 8: Detection of all Properties Containing Fly Ash
One or more commenters called for further investigation to determine all properties containing fly ash materials.

Response:
All properties within the Town of Pines and/or Pines Area of Investigation are eligible to be tested for coal ash-derived soil contamination upon request from the property owner. As of September 15, 2016, 128 such properties had been sampled, and Site-related contamination above cleanup levels have been discovered at 15 properties. (See response to Common Theme 2 above regarding property owners that have refused consent for access to sample their properties.) It is doubtful whether the flyover investigatory technique proposed by a commenter would be effective at identifying properties containing the coal ash materials because of the relatively low difference between the radioactivity found in coal ash and that of background soil, as concluded from a thorough investigation of Site-related radioactivity.

Common Theme 9: Concerns Regarding the Depth of Soil Cleanups and Deed Restrictions for the Materials Left in Place
One or more commenters expressed concern regarding the depth of the excavation of contaminated soil, and the implementation of deed restrictions for the materials left in place.

Response:
EPA guidance generally provides that cleaning up contaminated soils to a two-foot depth is protective of human health. In this case, however, when preparing the work plan for the removal action, NIPSCO proposed to excavate contaminated soils to a depth of three feet, rather than two feet, based on the following goals: 1) controlling the exposure pathway by removing surface impacts; 2) allowing complete removal of target contaminants at many properties, which would limit the need for (and cost of) implementing institutional controls (called AULs in the removal work plan); 3) allowing most routine activities such as gardening and landscaping; and 4) complying with local building codes. (The removal work plan also noted that excavating deeper than three feet increased the risk of compromising the integrity of structures adjacent to the excavation.) The ROD for this Site carries over the three-foot target depth for excavation of contaminated soils from the removal action.

One or more comments expressed the view that excavation of contaminated soils should go deeper than three feet, drawing comparisons to cleanup of soil contaminated by radionuclides. The comparison that the commenters drew to sites cleaned up due to radioactive contamination is inappropriate, however, since radiation can affect human beings and environmental receptors through soils at depth; whereas, the non-radioactive contamination present at the Pines Site requires direct contact, inhalation, or ingestion risk to have a negative impact on human beings and environmental receptors. These exposures will be controlled by a 3 foot barrier of clean soils.

The proposed deed restrictions for contaminated soils remaining at depth after the remedial action has been completed will require the PRPs and their successors (provided EPA is successful in negotiating an acceptable cleanup agreement with the PRPs) or another party acceptable to EPA to safely excavate and dispose the material if greater than 3 feet of excavation is necessary. The State of Indiana will also be a party to these restrictions.

Common Theme 10: Cleanup of Bottom Ash
One or more commenters expressed concerns regarding the presence of bottom ash materials not addressed by this cleanup.

Response:
EPA concurs with the investigation findings discussed in the feasibility study report (located in the Administrative Record) that coal ash materials consisting primarily of bottom ash, such as those found in and along roadways, do not pose an unacceptable risk and do not require cleanup action. It was later in the investigation when it was determined that coal ash materials used as landscaping fill (i.e. in yards) are primarily flyash, which pose a more significant human health risk due to higher concentrations of constituents such as arsenic and thallium. Properties with

this fill were separately and thoroughly evaluated, and some were found to pose an unacceptable human health risk such that removal of the contaminated soil is necessary.

Common Theme 11: Clarification Regarding Efficacy and Maintenance of Phytoremediation
One or more commenters expressed concerns regarding the efficacy of phytoremediation and the maintenance of the phytoremediation action for future generations.

Response:
Phytoremediation is a technology with demonstrated effectiveness at other sites, and the uptake of boron by plants is well documented[36]. The specific requirements for harvesting all or portions of the phytoremediation plants will be determined by EPA in the remedial design phase.

Common Theme 12: Issues Regarding Yard 520
One or more commenters discussed the integrity of the cap on Yard 520, containment of seeps and contaminant flow to groundwater, fencing, and warning signage around the area.

Response:
The cap on Yard 520 consists of 2.5 feet of compacted clay, with 6 inches of topsoil and shallow-rooted vegetation on top of the cap. EPA and IDEM find this to be a sufficient barrier to protect direct contact exposures and that this cap significantly reduces the rate of infiltration of precipitation into the waste materials in the landfill. Maintenance of this cap is mandated by post-closure regulations enforced by IDEM.

Seeps did occur in the past, but the Respondents have taken protective measures to correct these and prevent future seeps. Seeps have not been observed in over 5 years, despite the occurrence of heavy rain events.

EPA agrees that a fence around the Yard 520 landfill would be a more effective barrier to prevent access. However, due to the final extent of the cap, there is not sufficient area to safely place a fence between the landfill and US 20. Damage to the landfill cap and the possible increased infiltration of precipitation into the landfill far outweigh the benefit of access prevention. Access roads are gated and no trespassing signage is posted. Most importantly, the cap itself provides a barrier to direct contact, inhalation, or ingestion of the waste materials in the landfill.

EPA concurs with the investigative findings that the flow of contamination in groundwater from the landfill is limited to the area under and immediately surrounding the landfill but for a single easterly flow towards MW122. The phytoremediation element of the groundwater portion of the remedy addresses this area of the groundwater contamination. The long-term monitoring element of the groundwater portion of the remedy will detect any other potential future contaminant flow pathways from the landfill, though the large amount of data collected to date suggests this is unlikely.

[36] Boron is actually a micronutrient that many organisms, including species of plants, require for survival.

Common Theme 13: Community Relations in Pines, Concern Regarding Access and Full Cleanup
One or more commenters discussed issues regarding public opinion on cleanup actions, obtaining residents' permission to access properties, and the extent of property cleanup.

Response:
The current process being used to clean up soils is EPA's time critical removal process. EPA has been using this process to remove soils posing an unacceptable threat to human health so that the remedial process can safely reach the point where these activities can be conducted using this more deliberate but slower process. The time critical removal process is designed to be a relatively quick response to an environmental threat so it does not have a public comment process. The soil removal activities were incorporated into the proposed plan thus opportunity to comment on those activities was provided within the 60 day public comment period.

See EPA's response to Common Theme 8 for further explanation of the properties to be sampled and cleaned up. EPA and the Respondents have made numerous efforts to inform property owners in the area of the possible contamination. Should any new requests be made, this ROD requires Respondents to continue sampling properties where owners have granted access.

Common Theme 14: Clarification as to Which Contaminants are to be Included in Remedial Actions
One or more commenters called for clarification regarding which contaminants are included in remedial actions.

Response:
The contaminants of concern for groundwater at the Site are arsenic, molybdenum, and boron. EPA concurs with the findings of the remedial investigation that the areas contaminated with molybdenum and arsenic, in the vicinity of MW111 and MW106, respectively, are localized and not migrating. The active treatment required by this ROD (phytoremediation) will only address the area with elevated boron contamination.

Exposures to unacceptable levels of arsenic and molybdenum will be protected by environmental covenants prohibiting drinking water wells in these areas. Long term monitoring of groundwater will determine if the Site-related contamination in these areas decreases to acceptable levels or increases such that other treatment or protective measures need to be considered.

Though it is often associated with coal ash, selenium was only detected at elevated levels in a single well. It is no longer detected above what would be the applicable cleanup level (the MCL of 0.05 mg/l) so it is not included as a contaminant of concern.

The contaminants of concern for soil are arsenic, thallium, lead, and hexavalent chromium. Arsenic is the primary contaminant of concern that has led to the ongoing removal activities involving soil excavation and replacement, but excessive thallium contamination has been associated with the coal ash as well. Lead has been detected above acceptable cleanup levels and can be associated with some coal ash; however, additional analysis is ongoing to determine if the elevated lead levels found on properties that do not also have elevated arsenic and thallium are

from coal ash and are Site-related. The ROD calls for excavation off-site disposal of soils with Site-related arsenic, thallium, and lead contamination above cleanup levels.

Soil samples have been analyzed for total chromium and some were above background levels. The hazardous form of chromium is hexavalent chromium. Additional soil samples have recently been taken and are being analyzed for hexavalent chromium to determine if properties not already identified for cleanup (i.e. those with soil COC concentrations above cleanup levels) are above hexavalent chromium levels. If properties at the Site are found to contain coal ash-derived hexavalent chromium above cleanup levels, these properties will be cleaned up using the soil excavation and replacement procedures required by this ROD.

Common Theme 15: Land Controls-Local Ordinances versus Parcel-by-Parcel Approach
One or more commenters discussed the benefits and drawbacks of local ordinances as compared to a parcel-to-parcel approach for land controls and for groundwater restrictions.

Response:
EPA notes the input on the type of land use control mechanism to implement for groundwater restrictions. The ROD simply requires implementation of land use controls to restrict the installation of new drinking water wells in specific areas, but it does not specify the mechanism to be used. The full suite of possible institutional control mechanisms will be evaluated and selected in the design plan, and will be based on the type of contamination or risk present.

Common Theme 16: Town of Pines' role as PRP and Responsibility for Maintenance of Remedial Cleanup
One or more commenters discussed the roles and responsibilities in remedial cleanup for the Town of Pines.

Response:
To date, EPA has not identified the Town of Pines as a PRP. However, the Town of Pines could still be involved in some portion of the remedial activities, such as implementation of land use controls.

Common Theme 17: Division of Remediation into 2 Parts: Questions, Clarification, and Purpose
One or more commenters requested an explanation of the division of the response actions at the Site into two parts.

Response:
The remedial action will involve both groundwater and soil components. However, EPA believes the commenters were referring to the fact that the soil cleanup activities have begun as a removal action and will continue as a remedial action.

The removal action was implemented to begin soil cleanup activities as quickly as possible, and the remedial action will include these same activities.

Common Theme 18: Scope of the Removal Action

One or more commenters questioned the identification of properties to be cleaned up under the removal action.

Response:
Soil sampling activities are ongoing. This ROD requires that additional properties within the Site boundaries be sampled upon request from the property owners. The ROD also requires that properties identified under the sampling program (either during the removal or the remedial action) as having Site-related contamination above cleanup levels which were not cleaned up during the removal action, shall be cleaned up under the remedial action.

As of September 15, 2016, 15 properties had been identified with Site-related soil contamination above cleanup levels. Cleanup of several of these properties is ongoing under the removal action. EPA expects that all of these properties, and possibly several others identified under subsequent testing, will be cleaned up under the removal process.

The linkage of sampling data results with specific private property is considered personally identifiable information that is entitled to certain protections under current law so EPA cannot provide a detailed list of all properties identified. Some of the comments expressed concerns about specific properties that might contain deposits of coal ash materials. All such properties have been screened by EPA and most if not all such properties have been found to contain bottom ash. EPA concurs with the findings from testing conducted early in investigation that fill materials consisting primarily of bottom ash, such as those found in and along roadways, do not pose an unacceptable health risk

Common Theme 19: Concerns with Radiation
One or more commenters discussed concerns with radiation.

Response:
Coal ash is known to have a slightly elevated level of radioactivity compared to the radioactivity of some native soils. Under EPA's oversight, the PRPs thoroughly analyzed exposures to radiation and determined that radiation is well below the cleanup levels EPA would establish (located in 40 CFR Part 192).

Common Theme 20: Preference of Barrier Wall
One or more commenters expressed a preference for the barrier wall groundwater alternative.

Response:
EPA finds that the installation of a barrier wall with pumping and treatment of groundwater will provide little to no additional benefit compared to phytoremediation. The treatment technologies that are available for boron are of limited efficiency, and it is unclear that this technology would achieve cleanup levels any sooner than would phytoremediation.

The installation of a barrier wall could have also deleterious effects on groundwater flow. Since the groundwater contamination at issue is in a limited, undeveloped area, the significant added

energy, disruption, and cost[37] of constructing and maintaining a barrier wall system compared to phytoremediation is not justified.

Common Theme 21: Quality of Water from the Surficial Aquifer
One or more commenters discussed general concerns with the quality of water from the surficial aquifer under the Town of Pines.

Response:
Though this remedial action is limited to addressing Site-related contamination, EPA notes that there are likely other issues that adversely affect water quality in this aquifer. Respondents were only required to analyze groundwater samples for Site-related contaminants; however, contaminants from other possible sources were included in some analyses. Monitoring well data are included in the Administrative Record, and private well data have been provided to individual property owners.

Common Theme 22: Further Contamination of Groundwater from Flyash used as Fill
One or more commenters expressed concerns with additional groundwater contamination from flyash used as landscaping fill.

Response:
Much of this fly ash material will be removed under the ongoing removal action, and EPA expects that the long term monitoring plan required by this ROD would identify any groundwater contamination or area of contamination at the Site from flyash fill materials not already identified and removed. Additionally, flyash materials used as landscaping fill were deposited over 40 years ago, and EPA expects that groundwater contamination from these materials would already have been detected and identified in the thorough sampling conducted under this Site investigation. The groundwater at this Site has been extensively investigated with only one area of contamination above cleanup levels that is not localized. Specifically, boron in monitoring well MW122 is indicative of contamination migrating from Yard 520. The other monitoring wells with Site-related contamination above cleanup levels appear to be localized and not posing a risk to human health. Long-term monitoring will test the accuracy of these findings and provide data for any potential necessary decision changes in the future.

Common Theme 23: Yard 520 Liners
One or more commenters commented on the liner material for Yard 520.

Response:
The south cell of Yard 520 was reported to have been constructed by keying in clay walls to the underlying clay strata. The north cell of Yard 520 was not reported to have been constructed in such a manner or with a bottom liner. Therefore, the north cell is assumed to be the primary source for contamination. Regardless, monitoring conducted under the remedial investigation would have detected any groundwater contamination from either cell of Yard 520, and the

[37] It is important to note cost would not by itself be the deciding factor in selecting a remedy if EPA found the more costly remedy would be more protective to human health and the environment, but is one of several factors that would be considered.

phytoremediation is to be located in the path of the only well outside of the landfill monitoring network from which groundwater samples exceed cleanup levels for site related contaminants.

Common Theme 24: Efficacy of Phytoremediation and Constructed Wetlands
One or more commenters expressed concerns with the efficacy of phytoremediation, and one commenter further suggested the use of constructed wetlands.

Response:
See EPA's response to Common Theme 20. EPA finds that phytoremediation will be of equivalent effectiveness to a more involved capture and control technology (the installation of a barrier wall with pump and treat technologies). EPA agrees that constructed wetlands would provide additional benefits to this area where historically wetlands have been drained and filled. However, EPA finds that the phytoremediation required by this ROD will adequately address the groundwater contamination at issue at the Site and that requiring construction or restoration of wetlands at the Site is not necessary to address the potential threats posed by the groundwater contamination.

Common Theme 25: Provision of Bottled Water Implies Site-related Contamination has affected these Properties.
One or more commenters asserted that the provision of bottled water services indicates that these properties were affected by Site-related groundwater contamination.

Response:
Out of an abundance of caution, bottled water service was provided to all residents within the Area of Investigation who did not receive municipal water service extensions. EPA now has investigative data that shows the Site-related contamination is not detected in groundwater for these properties above cleanup levels. Additionally, groundwater from Yard 520, the primary if not sole source of Site-related groundwater contamination, does not migrate towards properties at the Site that were not offered municipal water service. Therefore, there is no need to continue providing bottled water.

Common Theme 26: Phytoremediation Details
One or more commenters requested more details about the phytoremediation techniques to be employed.

Response:
The species of the plants and techniques to be used will be determined during the remedial design phase of the site cleanup. EPA will continue to conduct community outreach moving forward with site activities.

Common Theme 27: Superfund Alternative Status Allows for Poor Quality Submittals
One or more commenters expressed concern that the fact that the Site is a Superfund Alternative Site allows the Respondents to submit poor quality information.

Response:
EPA's oversight role at a Superfund Alternative Site is the same as that in connection with a Site led by responsible parties listed on the National Priorities List. The cleanup process and the Site oversight, management, data collection and verification procedures are all the same.

Common Theme 28: Contaminant Spread
One or more commenters expressed concern that Site-related contamination would spread, and that sampling of only those properties identified with coal ash fill materials is not enough.

Response:
EPA is requiring the sampling of all properties whose owners request it, regardless of any known or suspected coal ash fill materials. Even if no fill materials are visible, surface samples are collected and analyzed for Site-related contaminants.

Groundwater contamination from coal ash materials associated with the Site is very limited. The coal-ash derived groundwater contaminants are of limited solubility and the coal ash fill materials have been in place for more than 40 years. EPA expects that much of the flyash fill material will be removed under the removal action and, possibly, the remedial action. Regardless, the long term monitoring required by this ROD will allow EPA to detect whether fill materials are leading to previously unidentified areas of Site-related groundwater contamination above cleanup levels.

Common Theme 29: Life Expectancy of Geotextile Material
One or more commenters expressed concern that geotextile barriers are generally expected to only be effective for 30 years.

Response:
The geotextile fabric used to demarcate contaminated soils left at depth are only a visual indicator and are not serving as a barrier to prevent infiltration of liquids or other materials. EPA expects the geotextile fabric to remain visually apparent well after 30 years.

Comments from PRP Respondents with EPA Responses

Comment 1
Page 1, footnote 2
The definition provided should be clarified so a reader does not mistakenly interpret a low permeability unit or a confining unit as an aquifer to consist of a cave or lake below the ground surface and to include the characteristic of groundwater yield. We suggest rewording as follows:

An aquifer refers to a geologic unit below the ground that contains water (groundwater) and easily transmits water, for example, to wells ~~body of water located in the spaces below ground~~.

Response:
While EPA agrees that this would have been a more accurate definition in the proposed plan, the term "aquifer" is not defined again in the ROD.

Comment 2
Page 2, paragraph 2, sentence 1
The specific constituents of concern are also naturally-occurring elements and are only considered "contaminants" under specific conditions. As such, the term "contaminants" should be amended to "coal-ash-derived constituents" in this paragraph, consistent with the terminology in the approved FS.

Response:
While EPA agrees that the contaminants of concern for the Site can be naturally occurring, these metals are exceeding clean-up levels because they were introduced into the environment. Therefore, they are contamination.

Comment 3
Page 2, paragraph 3, sentence 1
This statement should clarify that coal ash is being remediated only where specific conditions exist. Specifically, we recommend the sentence be revised to read:

EPA is proposing the following soils cleanup plan for specific areas of the coal ash fill where the fill contains constituent concentrations above EPA's approved Remedial Cleanup Levels in the area of the Pines site.

Response:
EPA concurs that this change would have made the Proposed Plan statement more accurate. Though this statement is not found in the ROD, EPA believes that the ROD is clear that soil cleanups are only required where Site-related contamination is above cleanup levels and that the presence of coal ash in and of itself does not necessarily require a yard to be cleaned up.

Comment 4
Page 4, section 2003 AOC I to Address Drinking Water, paragraph 2, sentence 1
The use of coal ash as road bed and landscaping fill material within the Town of Pines was well-documented prior to installation of the MWSE. We recommend the term "discovered" be replaced with "confirmed" to accurately convey this information.

Response:
EPA concurs that the use of confirmed is a more accurate statement. This wording change was made to similar language in the ROD.

Comment 5
Page 4, section 2004 AOC II to Conduct RI/FS, paragraph 2
We recommend that a statement be added to reflect that the group was provided with two funding awards from the Respondents.

Response:
The proposed plan included a statement that a technical assistance plan agreement had been reached between P.I.N.E.S. and the PRP Respondents in April 2005. EPA did not intend to

include specific details about the funding of the agreement as part of the proposed plan nor is it included in this ROD.

Comment 6
Page 4, section 2016 Removal AOC to Address Coal Ash Fill, paragraph 1, sentence 1 and sentence 2
The use of the terms "contaminants" is not accurate in this context and should be replaced with "coal ash-derived constituents."

Response:
See response to Comment 2.

Comment 7
Page 5, section Hydrology, Geology, and Hydrogeology, paragraph 3
Groundwater elevations and flow patterns have been reviewed in detail. A copy of the technical memorandum, dated January 6, 2015, is attached for your reference.

Response:
EPA has previously reviewed this technical memorandum and concurs with the general finding that changes in the depth to the water table caused by the provision of municipal water to much of the Town of Pines (and subsequent cessation of private well usage) are insignificant compared to changes in precipitation levels. This is also addressed in EPA's response to Comment Theme 7 above.

Comment 8
Page 6, section Nature and Extent of Contamination, paragraph 1, sentence 1
This sentence, as stated, is not clear with respect to contaminants present in the Town of Pines groundwater that are not related to coal ash (see paragraph 9 of the Groundwater section of the Proposed Plan and the approved FS). We recommend the sentence be revised to state:

~~All~~ The contamination ~~associated with the site is~~ addressed in this proposed plan is derived from coal ash where constituents are present at concentrations above Remedial Cleanup Levels.

Response:
EPA agrees that this wording would have made the Proposed Plan clearer. EPA made similar changes to an equivalent sentence at the beginning of Section 12.A.2. of the ROD, though these changes are not identical to those suggested in this comment.

Comment 9
Page 6, section Nature and Extent of Contamination, paragraph 1, bullet 2
The definition of boiler slag is not correct. We recommend the definition be revised to state:

Boiler slag represents material that has been melted during combustion in cyclone boilers. It is collected at the base of the boilers and is quenched with water causing it to shatter into black, angular particles that have a smooth glassy appearance ~~accumulates on surfaces within the boiler and tends to be collected with the bottom ash~~.

Response:
EPA agrees that this is better definition of boiler slag and has changed the definition for the ROD (Section 12.A.2.).

Comment 10
Page 6, footnote 6
Groundwater flow rate depends on a combination of factors, only one of which is hydraulic conductivity. This sentence should be revised to state:

Hydraulic conductivity is a measure of the ~~rate at~~ ease with which groundwater travels in the aquifer.

Response:
EPA concurs that this is a more accurate definition of hydraulic conductivity and has corrected this definition in the ROD (footnote in Section 12.A.1.)

Comment 11
Page 7, table
We suggest adding a note to the table clarifying that the "Contaminants" listed are also naturally-occurring and are only of concern where the concentrations are above the USEPA-approved Remedial Cleanup Levels.

Response:
While EPA agrees that arsenic and thallium are naturally occurring, these two metals are present at elevated levels because of coal ash that was placed in soils, making them contaminants. EPA finds that a discussion of their natural occurrence would be misleading in this section. Note that their natural occurrence is addressed in the discussion of background concentrations.

Comment 12
Page 7, first paragraph following the table, sentence 2
This statement is incomplete and somewhat misleading. Properties that contained "coal ash fill materials" were identified during early stages of the Remedial Investigation.
Subsequent testing conducted during the Remedial Investigation revealed that elevated levels of coal ash-related contaminants were present on a few of those properties, indicating the type of fill on those properties are mainly fly ash, in contrast to the coal ash used as road base (and as fill on other properties), which is mainly bottom ash and boiler slag. In addition to the properties previously identified in the Remedial Investigation, 61 property owners requested that their properties be inspected and tested. Of those 61 properties, 12 were found to have coal ash fill materials present, but testing has shown that none have yet been found to contain coal ash requiring removal.

Response:
EPA agrees that the language in this statement in the Proposed Plan is not entirely clear, and reworded similar language found in Section 12.A.2.b. of the ROD.

Comment 13
Page 13, paragraph 2
The PRG and cancer risk level noted are incorrect. Per the FS, the PRG should be 4.3 ppm and the cancer risk level should be 10^{-5}.

Response:
EPA agrees that, in this case, the cleanup level should be set at the 10^{-5} risk level, per IDEM guidelines. EPA is setting the cleanup level for hexavalent chromium at 4.3 ppm, though it is still unclear if hexavalent chromium will remain a contaminant of concern as very limited hexavalent chromium data has been gathered to date.

Comment 14
Page 14, section "2) Soil Alternative 2 – Land Use Controls", bullets 1 through 3
These cost estimates are "per property." Clarifying notation should be added.

Response:
EPA agrees that this is an important clarification and has added it to the equivalent language in the ROD in Section 16.A.2.

Comment 15
Page 14, section "2) Soil Alternative 2 – Land Use Controls", bullet 5, sentence 2
The implementation schedule for this alternative will be subject to acceptance by property owners. The statement should be revised to state:

RAOs for other properties would be met upon acceptance of the restrictions from property owners ~~in approximately one year~~.

Response:
While EPA recognizes that acceptance by property owners is necessary for the implementation of the restrictive covenants, the burden of implementation of the restrictive covenants will fall upon the parties conducting the cleanup work. The suggested rewording is misleading in that it could be construed as passing that burden on to property owners. Therefore, EPA does not find necessary any revision to similar language found in the ROD. Discussion of the possibility of property owners refusing access is discussed in the Response to Common Theme 8.

Comment 16
Page 22, section Compliance with ARARs (under Soil Alternative 3)
Page 29, section Compliance with ARARs (under Soil Alternatives)
Soil Alternative 3 complies with ARARs, not just those specific to off-site disposal. The sentence should be revised to state:

Soil Alternative 3 complies with chemical-, location-, and action-specific ARARs ~~associated with the off-site disposal of contaminated soil~~.

Response:

EPA concurs with this added specificity and has made the change in the equivalent language in Section 17.A.2. of the ROD.

Comment 17
Page 23, section Compliance with ARARs (under Groundwater Alternative 1), sentence 2
MCLs are relevant and appropriate, but are not applicable, as outlined in Table 4 of the FS. Therefore, MCLs should not be cited as the chemical-specific ARAR. Rather, the applicable chemical-specific ARAR, IDEM Groundwater Quality Standards (327 IAC 2-11) should be cited.

Response:
This language is not found in the ROD. However, it should be noted that EPA would typically require restoration of a potable aquifer to MCLs even if the aquifer is not a public water supply because it would be relevant and appropriate to do so. Under CERCLA a requirement under federal or state law qualifies as an ARAR if it is "relevant and appropriate" or if it is "applicable". Further there can be more than a single chemical-specific ARAR. In such cases, the remedy would need to satisfy the most stringent of the chemical-specific ARARs. Safe Drinking Water Act MCLs are chemical specific ARARs for the groundwater.

Comment 18
Page 23, section Compliance with ARARs (under Groundwater Alternative 1), sentence 2
COC concentrations above PRGs are not found "throughout the Pines Site," but rather in "very small areas of the surficial aquifer," as stated on page 7 of the Proposed Plan.
Therefore, this phrase should be deleted.

Response:
EPA agrees that this statement could be seen as misleading and that the groundwater exceedances of PRGs (now selected cleanup levels) are limited to just three areas. This language is not in the ROD.

Comment 19
Page 24, section Compliance with ARARs (under Groundwater Alternative 2), sentence 2
Page 25, section Compliance with ARARs (under Groundwater Alternative 3), sentence 2
Page 26, section Compliance with ARARs (under Groundwater Alternative 4), sentence 2
As noted in comment 75, the IDEM Groundwater Quality Standards should be cited as the applicable chemical-specific ARAR.

Further, the addition of institutional controls that would prohibit the use of groundwater as a drinking water source would meet applicable ARARs specific to groundwater quality at points of use. We recommend the sentence be revised, consistent with the language in the approved FS, to state:

Chemical-specific ARARs ~~(Safe Drinking Water Act Maximum Contaminant Levels)~~ would ~~not~~ be met at points of use ~~throughout the Pines Site groundwater~~.

Response:

This language is not found in the ROD. However, EPA again notes that the RAO (and NCP goal) to restore the aquifer, which is a current source of drinking water, to drinking water quality makes drinking water standards (such as MCLs) relevant and appropriate. Limiting the installation of drinking water wells in areas not meeting cleanup levels is a temporary protective measure.

Comment 20
Page 28, section Compliance with ARARs (under Groundwater Alternative 5), paragraph 1
As noted in comment 75, the IDEM Groundwater Quality Standards should be cited as the applicable chemical-specific ARAR.

Response:
See responses to Comments 17 and 19.

Comment 21
Page 31, section Compliance with ARARs (under Groundwater Alternatives), sentence 1
As noted in the comments above, the statement regarding the alternatives' compliance with ARARs should be consistent with the summary in the approved FS. Therefore, this sentence should be revised to state:

Groundwater Alternatives 1, 2, and 3 would do nothing to enhance compliance with the chemical ARARs where they are not currently met within specific areas (note that there are currently no drinking water wells in these areas) ~~do not comply with ARARs as the groundwater is not restored to drinking water standards~~.

Response:
EPA has changed the equivalent language in the ROD to read that these alternatives do nothing to comply with chemical-specific ARARs in the areas currently above cleanup standards.

Comment 22
Page 34, section Ecological Monitoring
Ecological monitoring was not included as a component of the Feasibility Study as it was not necessary based on the results of the USEPA-approved Ecological Risk Assessment Report. It is understood that protection of the IDNL is a priority. This section should indicate that surface water sampling and analysis of Brown Ditch are included as a component of the Yard 520 monitoring program. If the results of the Brown Ditch monitoring indicate that surface water concentrations are at levels that would pose an ecological risk (evaluated in the context of the approved ecological risk assessment), additional actions will be discussed with EPA.

Response:
Though EPA did approve the screening level ecological risk assessment (SERA), the uncertainties in the SERA coupled with the details in the cleanup plan, have led EPA to determine that the monitoring of some ecological parameters will need to be conducted. EPA is not suggesting that duplicative monitoring be required if it determines that the necessary parameters are being monitored as part of the Yard 520 monitoring program.

Comment 23
Figures 1 through 4
For consistency, we recommend EPA use the figures from the approved FS, dated May 2016, rather than earlier versions.

Response:
EPA did pull these figures from an earlier version of the FS. However, as they did not change, EPA did not feel it was necessary to change them in the proposed plan. The most current versions are in the ROD.

Comment 24
Page 1, paragraph 4, line 2
IDNL's location is non-specific in this description and may be clarified as "about four miles west of Michigan City," consistent with USEPA's Pines web site.

Response:
EPA included more detail in the description of the site location in the ROD. This should allow readers to determine the location of the IDNL.

Comment 25
Page 1, paragraph 4, second bullet
The term "numerous" is non-specific and unnecessary to convey the information accurately; the term may be struck.

Response:
EPA agrees that the word "numerous" is unnecessary. Similar language is not found in the ROD.

Comment 26
Page 15, footnote 12
There is a typographic error in the phrase "… contamination about EPA's PRGs." The word "about" should be "above."

Response:
EPA concurs that this is a mistake. Similar language is not found in the ROD.

Comment 27
Page 27, The first sentence under "Implementability
"Phytoremediation" is misspelled – it is missing the "e"

Response:
EPA notes this mistake.

Table 1

Contaminants of Concern (COCs) and Selected Cleanup Levels

COC	Medium Contaminated	Selected Cleanup Level	Basis for Cleanup Level
Arsenic	Soil	30.1 ppm	95% UTL for the background dataset
Thallium	Soil	1.9 ppm	95% UTL for the background dataset
Lead	Soil	400 ppm	EPA's Integrated Exposure Uptake Biokinetic Model and the RSL
Hexavalent Chromium	Soil	4.3 ppm	Indiana's Default Risk-Based Screening Level based on a 10^{-5} Cancer Risk
Boron	Groundwater	4.0 mg/l	EPA's RSL based on a HQ of 1
Arsenic	Groundwater	0.10 mg/l	EPA's Drinking Water MCL
Molybdenum	Groundwater	0.10 mg/l	EPA's RSL based on a HQ of 1

Table 2

Receptors and Exposure Pathways Considered for the Human Health Risk Assessment

Receptor	Medium	Pathway
Resident (Adult and Child)		
	Surface Suspected CCBs	Incidental Ingestion Inhalation of Particulates Dermal Contact External Exposure to Gamma Radiation
	Groundwater (a)	Currently incomplete where municpal water or bottled water is supplied
	Sediment (b)	Incidental Ingestion Dermal Contact External Exposure to Gamma Radiation
	Surface Water (b)	Incidental Ingestion (c) Dermal Contact
	Produce	Ingestion (d)
	Fish Fillets	Ingestion (e)
Recreational Child		
	Surface Suspected CCBs	Inhalation of Particulates External Exposure to Ionizing Radiation
	Sediment	Incidental Ingestion Dermal Contact External Exposure to Gamma Radiation
	Surface Water	Incidental Ingestion (c) Dermal Contact
	Fish Fillets	Ingestion (e)
Recreational Fisher		
	Surface Suspected CCBs	Inhalation of Particulates External Exposure to Gamma Radiation
	Fish Fillets	Ingestion (e)
	Sediment	Incidental Ingestion (e) Dermal Contact (e) External Exposure to Gamma Radiation (e)
	Surface Water	Dermal Contact (e)
Construction/Utility Worker		
	Combined Surface and Subsurface Suspected CCBs	Incidental Ingestion Inhalation of Particulates Dermal Contact External Exposure to Gamma Radiation
	Groundwater	Incidental Ingestion Dermal Contact
Outdoor Worker		
	Surface Suspected CCBs	Incidental Ingestion Inhalation of Particulates Dermal Contact External Exposure to Gamma Radiation

Notes:
CCB - Coal Combustion By-Product.
(a) - Pathway potentially complete only in areas using private water wells under the current scenario: however, groundwater in areas serviced by private water wells has been shown not to be significantly impacted by CCBs, thus, this pathway has been determined not to be complete (see Section 6.4). Pathway could become complete in the future if private wells are installed in areas impacted by CCBs. Figure 16 indicates where groundwater concentrations exceed regulatory targets.
(b) - Potential risks for the residential child were included with the residential calculations. Potential risks for the adult were included with the Recreational Fisher and are added into the residential totals.
(c) - Ponds only, under the swimming scenario.
(d) - Pathway potentially complete where gardens exist in areas containing CCBs. See Appendix H (Produce) for evaluation of potential chemical risks.
(e) - Potential risks and hazards calculated for this pathway for the recreational child and recreational fisher will also be added to the residential receptor totals.

Table 3

Summary of the HHRA Findings for Site-related Risks from Groundwater

Well	Cancer Risk	Non-cancer Risk (HI)
MW106	NA	*
MW111	2.38E-04 (arsenic [2.38E-04])	8.39 (Manganese** [1.59] and Thallium [4.05])
MW122	2.56E-04 (arsenic [2.56E-04])	5.53 (Boron [2.79])

* After a reduction in the EPA tapwater risk-based screening level, molybdenum now poses a HI of greater than 1 at MW106.
**Manganese is identified in background wells at levels that pose an unacceptable risk

Table 4

Summary of COPECs Evaluated in the SLERA

	Brown Ditch Exposure Area							Pond Exposure Area				Terrestrial Exposure Area	
	Benthic Community		Aquatic Community (c)		Brown Ditch Aquatic Food Web (d)	Root Zone Exposure		Benthic Community	Aquatic Community (c)		Pond Exposure Area Aquatic Food Web (d)	Terrestrial Plant and Invertebrate Community (g)	
Constituent	Sediment (a)	Groundwater (b)	Surface Water-Dissolved	Surface Water-Total Recoverable		Sediment (e)	Groundwater (f)	Sediment (a)	Surface Water - Dissolved	Surface Water - Total Recoverable		Suspected CCBs	Terrestrial Food Web (h)
ALUMINUM	YES	YES	YES		YES		YES		YES	YES	YES		
ANTIMONY													
ARSENIC	YES				YES	YES	YES	YES			YES	YES	YES
BARIUM	YES	YES			YES			YES			YES	YES	YES
BERYLLIUM													
BORON	YES	YES		YES	YES	YES	YES			YES	YES	YES	YES
CADMIUM													
CALCIUM													
CHROMIUM						YES						YES	YES
CHROMIUM (HEXAVALENT)												YES	YES
COBALT												YES	YES
COPPER	YES				YES			YES			YES		
IRON	YES	YES		YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
LEAD								YES			YES		
MAGNESIUM													
MANGANESE	YES	YES			YES	YES		YES	YES	YES	YES		
MERCURY													YES
MOLYBDENUM	YES				YES	YES						YES	YES
NICKEL	YES				YES			YES			YES	YES	YES
POTASSIUM													
SELENIUM	YES				YES	YES		YES			YES	YES	YES
SILICA													
SILICON													
SILVER													
SODIUM													
STRONTIUM	YES	YES			YES	YES	YES	YES			YES		
THALLIUM												YES	YES
URANIUM-TOTAL		YES											
VANADIUM	YES	YES			YES	YES		YES			YES	YES	YES
ZINC	YES				YES	YES		YES			YES		

Notes:
CCB - Coal Combustion By-Product.
COPEC - Constituent of Potential Ecological Concern.
ESV - Ecological Screening Value.
YES - Constituent was retained as a COPEC.
Blank cells within the table indicate these constituents were not included as chemicals of potential concern and will not be carried forward in the risk assessment for that specific media of concern.
(a) Sediment COPEC selection for Brown Ditch and Pond Exposure Area benthic community receptors presented in Table 4-1. Constituents retained after comparison to ESVs and background
(b) Groundwater COPEC selection for Brown Ditch benthic community receptors presented in Table 4-2. Constituents retained after comparison to surface water ESVs.
(c) Surface water COPEC selection for Brown Ditch and Pond aquatic community receptors presented in Table 4-3. Constituents retained after comparison to ESVs and background.
(d) COPECs retained for food web model were based on COPECs retained in sediment or total recoverable fraction of surface water.
(e) Sediment COPEC selection for root zone exposure presented in Table 4-4 Constituents retained after comparison to ESVs and background
(f) Groundwater COPEC selection for root zone exposure presented in Table 4-5. Constituents retained after comparison to phytotoxicity-based ESVs
(g) Suspected CCB COPEC selection for terrestrial plant and invertebrate community receptors presented in Table 4-6. Constituents retained after comparison to ESVs and background
(h) COPECs retained for food web model were based on COPECs retained in suspected CCBs Mercury retained due to status as Bioaccumulative Chemical of Concern (BCC) in 40 CFR 132.6 Table 6.

Figure 1

Town of Pines Site Area of Investigation

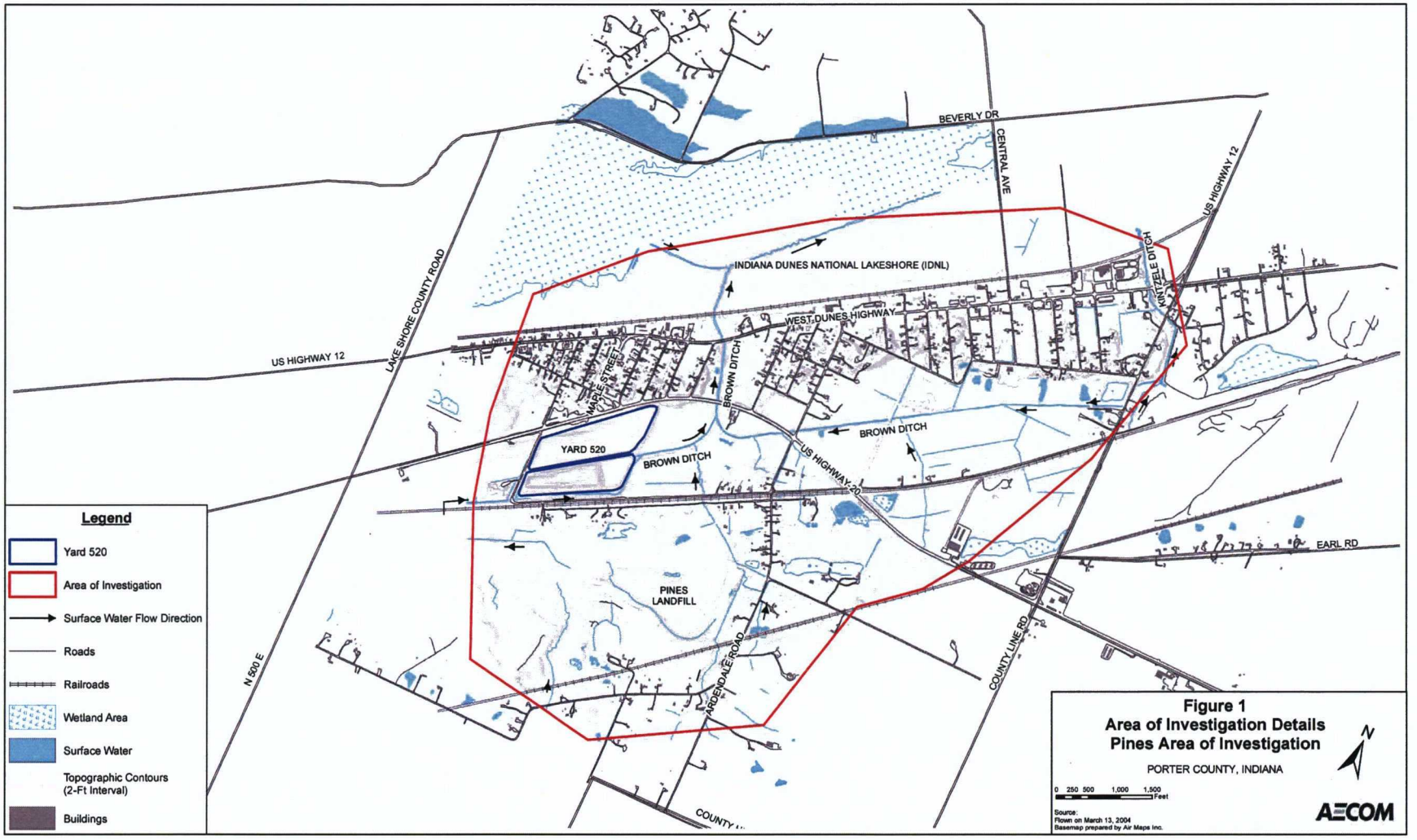


Figure 2

Town of Pines Site Area of Investigation Shown on a USGS Topographical Map

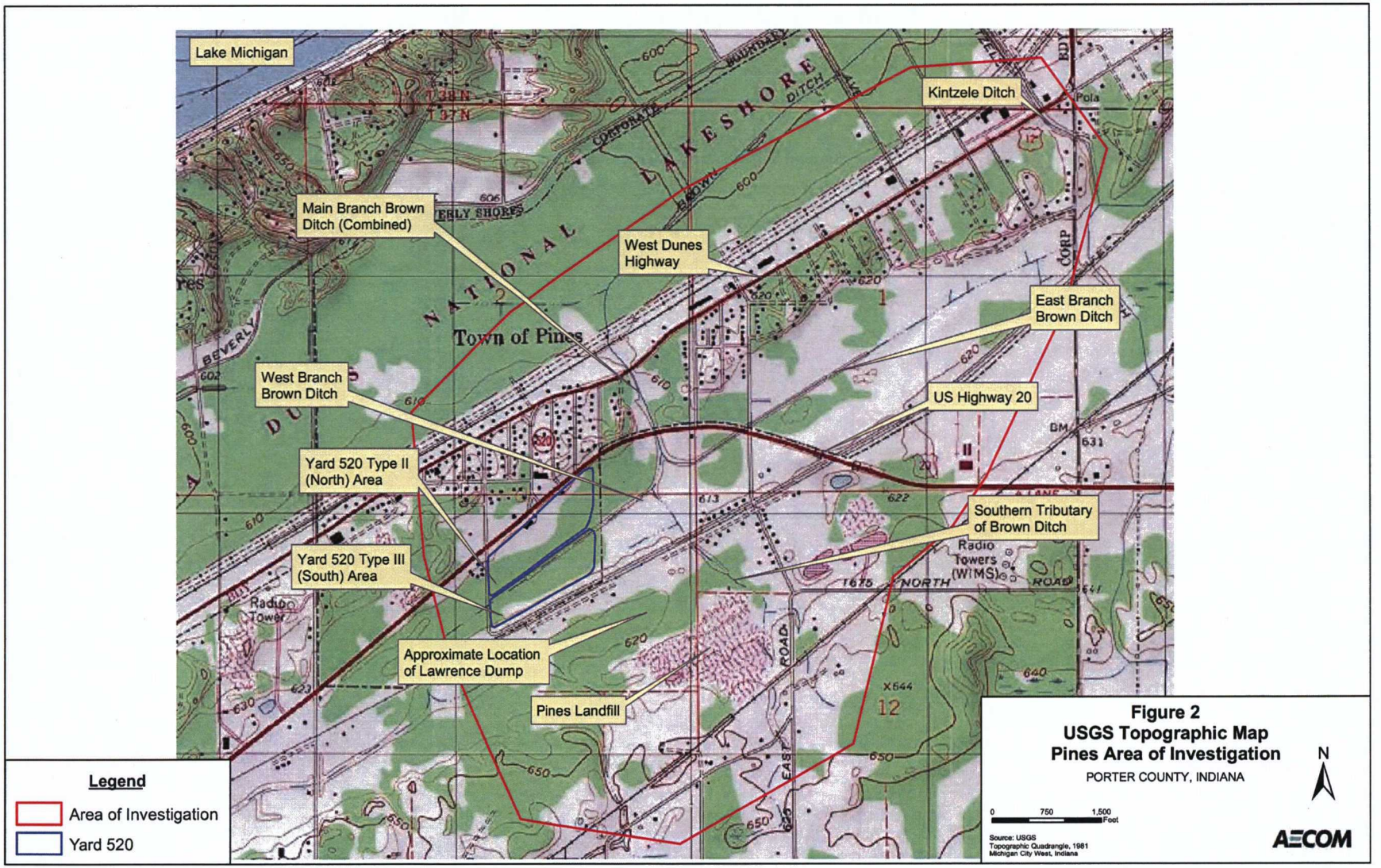


Figure 3

Town of Pines Site Groundwater Contour Map

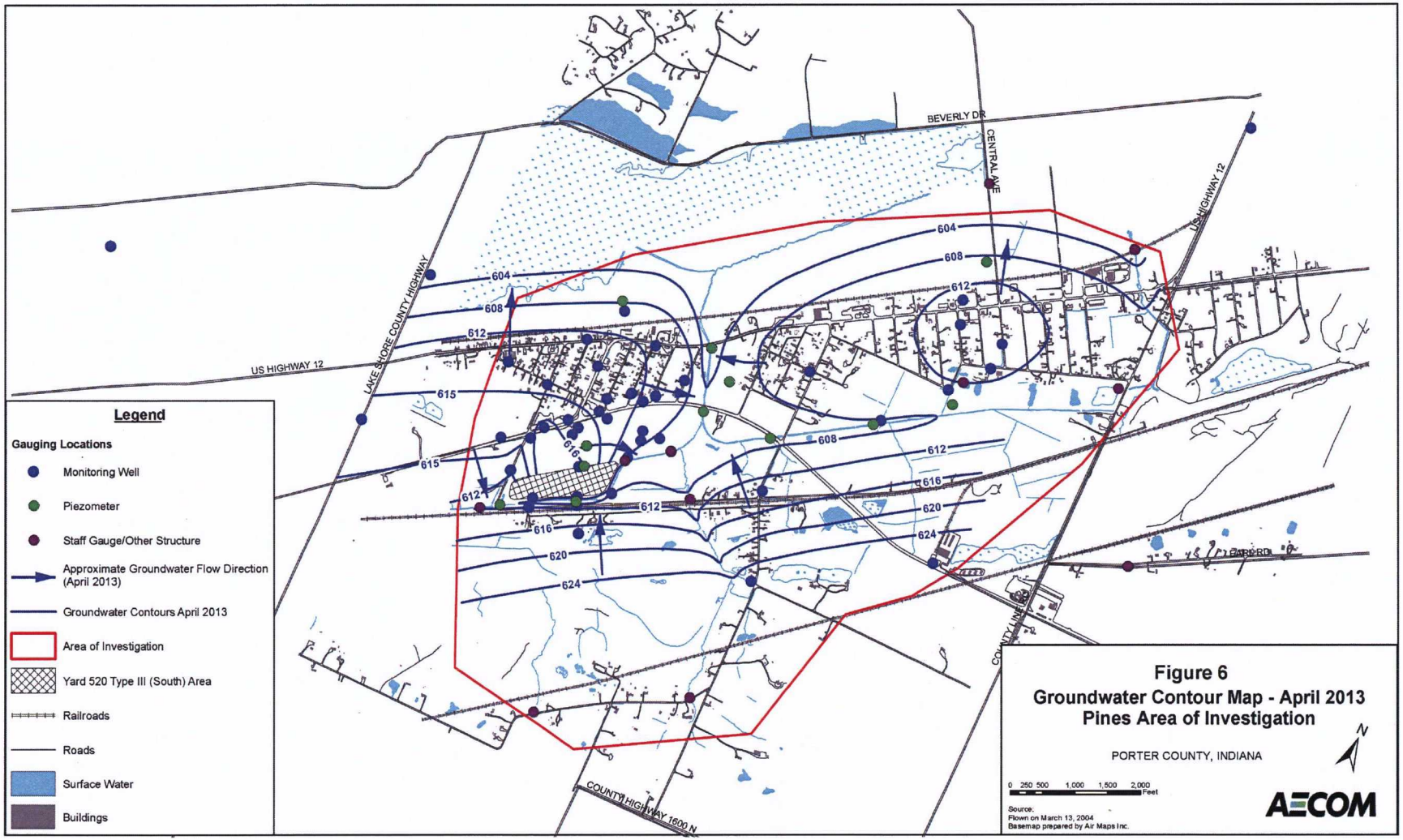
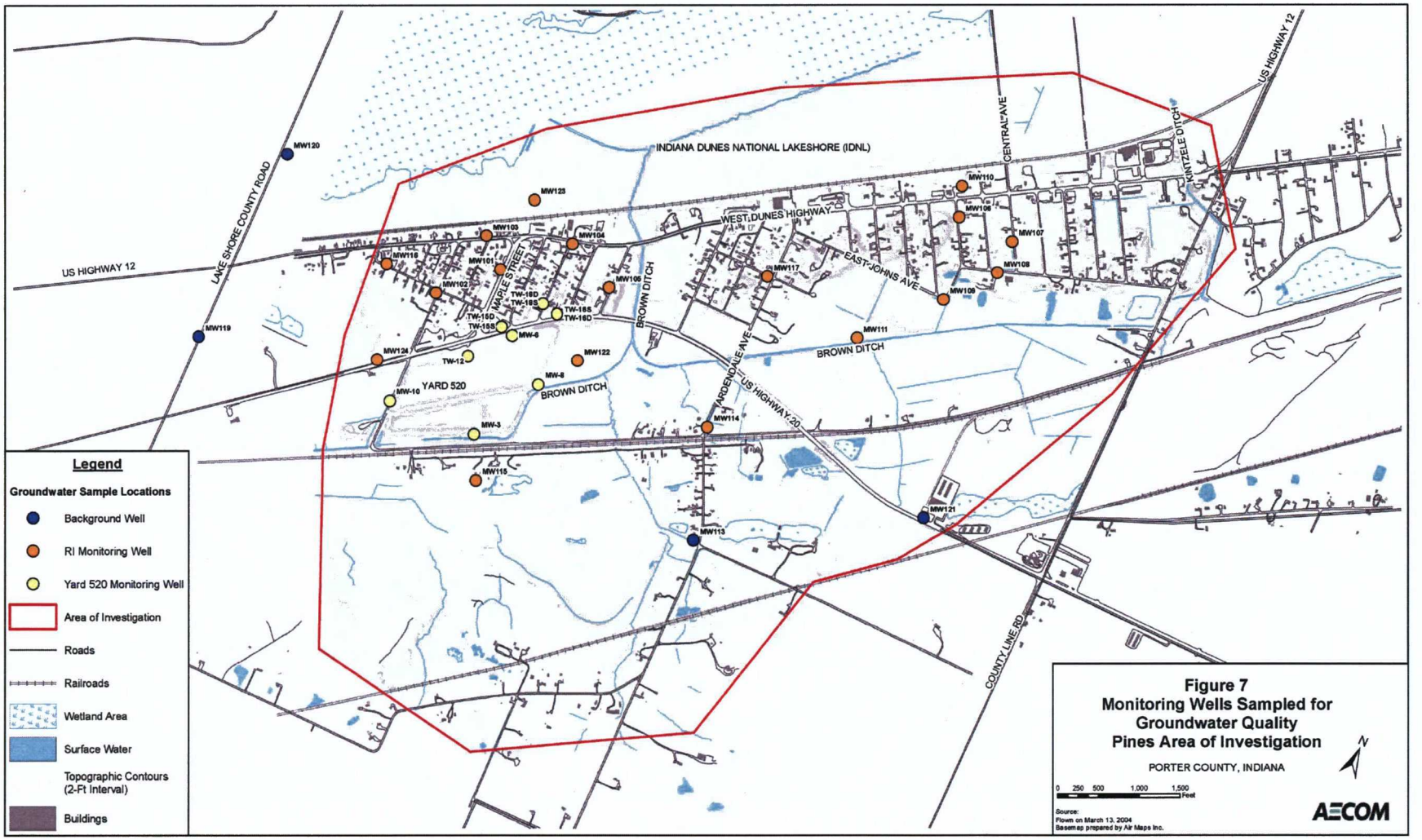


Figure 4

Groundwater Wells Associated with the Town of Pines Site



Appendix 1

Letter of Concurrence on Remedy from IDEM

Indiana Department of Environmental Management
We Protect Hoosiers and Our Environment.
100 N. Senate Avenue • Indianapolis, IN 46204
(800) 451-6027 • (317) 232-8603 • www.idem.IN.gov

Michael R. Pence
Governor

Carol S. Comer
Commissioner

August 29, 2016

Mr. Robert Kaplan
Acting Regional Administrator
U.S. EPA, Region V
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Dear Mr. Kaplan:

Re: Draft Record of Decision (ROD)
Town of Pines
Superfund Alternative Site
Town of Pines, Indiana

The Indiana Department of Environmental Management (IDEM) has reviewed the U.S. Environmental Protection Agency's draft Record of Decision (ROD) document for the Town of Pines Superfund Alternative site located in the Town of Pines, Indiana. IDEM is in full concurrence with the major components of the selected remedy outlined in the document which include the following:

- Excavation and off-site disposal of contaminated soil where coal ash-derived contamination is above EPA's selected clean-up levels;
- Restoration of excavated properties using clean backfill;
- Use of phytoremediation to remove site-related contaminants from ground water;
- Performance of long-term ground water monitoring to measure and demonstrate the effectiveness of the ground water remedy; and
- Implementation of Environmental Restrictive Covenants to legally restrict the installation of new drinking water wells in areas where coal ash–derived contamination is present.

IDEM staff agree that the selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. IDEM staff have been working closely with EPA Region V staff in the selection of an appropriate remedy and are satisfied with the selected alternative.

Please be assured that IDEM is committed to accomplish cleanup at all Indiana sites on the National Priorities List and intends to fulfill all obligations required by law to achieve that goal. We look forward to the beginning of remediation work on this project.

Sincerely,

Peggy Dorsey
Deputy Assistant Commissioner
Office of Land Quality

PD:DP:tr
cc: Bruce Oertel, IDEM
Rex Osborn, IDEM
Erik Hardin, EPA

Appendix 2

Letter from IDEM Listing Potential State ARARs for the Pines Site

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We Protect Hoosiers and Our Environment.
100 N. Senate Avenue • Indianapolis, IN 46204
(800) 451-6027 • (317) 232-8603 • www.idem.IN.gov

Michael R. Pence
Governor

Thomas W. Easterly
Commissioner

August 11, 2015

Mr. Erik Hardin
U.S. EPA, Region V
77 West Jackson Blvd.
Chicago, IL 60604
Mail Code: SR-6J

Dear Mr. Hardin:

Re: Applicable or Relevant and Appropriate Requirements (ARARs)
Town of Pines Superfund Alternative Site
Town of Pines, Indiana

In accordance with your request, Indiana Department of Environmental Management (IDEM) staff have determined the State's ARARs for the Remedial Action (RA) at the Town of Pines Superfund Alternative Site in the Town of Pines, Indiana based on the following potential activities to be performed at the site:

- Perform soil sampling to determine which yards will require remediation;
- Excavate site soils exceeding the remedial action levels to the necessary depth for off-site disposal;
- Transport and dispose off-site those soils excavated from the site;
- Place clean soil in yards requiring remediation, and then re-vegetate the yards.
- Perform groundwater sampling associated with Monitored Natural Attenuation (MNA).
- Perform the systematic planting of trees at the edge of Yard 520 for phytoremediation.
- Install a slurry wall along the eastern side of Yard 520, with a groundwater recovery system treating the collected ground water ex situ prior to discharge back to the groundwater or surface water.

IDEM staff recognize this list includes only potential Remedial Action activities, and that the site may require one or a combination of these activities to complete an action that is protective of human health and the environment. The following is a list of ARARs identified by IDEM as pertinent to the aforementioned remedial action activities proposed for the site:

Action Specific:

1. Pursuant to 326 IAC 6-4-2(4), visible fugitive dust must not cross an adjacent property line.
2. Pursuant to 326 IAC 6-4-4, any vehicle driven on any public right of way must not allow its contents to escape and form fugitive dust.
3. 312 IAC 10 regulates the construction, excavation, or filling within a floodway and would be applicable for such activities within the floodway of a stream or other flowing waterbody which has a drainage area of one square mile or greater.
4. If the remedial action will result in leaving contamination in place such that unrestricted land use is not permitted (i.e., residential land use remediation objectives are not achieved), an Environmental Restrictive Covenant (ERC) should be recorded for the property per Indiana Code (IC) 13-25-4-24.

Chemical Specific:

1. 329 IAC 3.1 regulates the management of hazardous wastes. Indiana rule 329 IAC 3.1-1-1 adopts RCRA regulations of 40 CFR 260 through 40 CFR 270. More specifically:

   - 40 CFR 262.11 (329 IAC 3.1-6) requires that a proper hazardous waste determination must be made on all wastes generated from remedial actions.

   - 40 CFR 262.12 (329 IAC 3.1-6) requires a generator of hazardous waste to obtain an EPA identification number before treatment, storage, disposal, or offering for transport.

   - All hazardous waste must be properly packaged, with labels, markings and placards, prior to transport (40 CFR 262.30, 262.31, 262.32, and 262.33)(329 IAC 3.1-7 and 329 IAC 3.1-8).

   - Hazardous waste stored onsite in containers for 90 days or less shall be managed in accordance with the standards of 40 CFR 265, Subpart I (329 IAC 3.1-10). Hazardous waste stored onsite in containers for greater than 90 days shall be managed in accordance with 40 CFR 264, Subpart I (329 IAC 3.1-9).

   - 40 CFR 261, Subpart B requires that hazardous waste must be manifested as such for transport to a permitted treatment, storage, or disposal facility (TSDF) in accordance with 40 CFR 262, Subpart B (329 IAC 3.1-7 and 329 IAC 3.1-8).

   - For all hazardous waste related equipment, remove or decontaminate all hazardous waste residues, contaminated containment components, contaminated soils, and structures and equipment contaminated with waste, and manage them as hazardous waste unless 40 CFR 261.3(d) applies.

   - Any excavated soils determined to be hazardous must not be placed back on the ground so as to create a waste pile as defined in 40 CFR 264, Subpart L. Covered roll-offs may be used.

- Hazardous waste destined for land disposal (as defined in 40 CFR 268.2) must meet the applicable Land Disposal Restrictions of 40 CFR 268.

2. 329 IAC 10 regulates the management of solid wastes.

   - 329 IAC 10-7.2-1 requires all wastes to undergo a waste determination, and if found to be nonhazardous, be disposed of in a permitted solid waste disposal facility.

3. 327 IAC 2-11 regulates groundwater quality impacts and would be relevant if private drinking water wells exist in the area of the remedial action. More specifically:

   - 327 IAC 2-11-2(e) states that no person shall cause the groundwater in a drinking water supply well to have a contaminant concentration that results in an exceedance of numeric criteria contained within the rule for drinking water class groundwater, creates a condition that is injurious to human health, creates an exceedance of specific indicator criteria levels contained within the rule, or renders the well unusable for normal domestic use.

4. In the event that the remedial option selected results in a direct discharge to a water of the State or a tributary thereof, the substantive requirements of 327 IAC 5, pertaining to the National Pollutant Discharge Elimination System (NPDES), would need to be followed.

Thank you for the opportunity to provide the State's ARARs. If you have any questions, or wish to discuss this matter further, please contact me at your convenience at (317) 234-7179.

Sincerely,

Douglas Petroff

Douglas Petroff, Project Manager
Federal Programs Section
Office of Land Quality

DP:rr
cc: Rex Osborn, IDEM

Appendix 3

Tables 4, 5, and 6 from the Pines Site Feasibility Study Report Listing Potential Chemical-, Location-, and Action-Specific ARARs for the Site

TABLE 4
SUMMARY OF CHEMICAL-SPECIFIC ARARS

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

Media	Requirement	Requirement Synopsis	Action to be Taken to Attain Requirement	Status
Surface Water	Surface Water Quality Standards 327 IAC 2-1.5	The State of Indiana has promulgated SWQS for surface waters within the Great Lakes System (327 IAC 2-1.5) and waters not within the Great Lakes System (327 IAC 2-1). Surface waters within the Pines Area of Investigation are within the Great Lakes System, thus 327 IAC 2-1.5 apply.	The State regulations state that the chemical, physical, and biological integrity of the waters within the Great Lakes system shall be maintained or restored; thus, the discharge of toxic substances in toxic certain amounts is prohibited, and persistent and bioaccumulating toxic substances shall be reduced or eliminated (these are further discussed below). Further, for all surface waters of the Great Lakes system, existing instream water uses and the level of water quality necessary to protect existing uses shall be maintained and protected. Because the State of Indiana has promulgated surface water standards, they replace the federal WQC as ARARs for surface water in the Pines Area of Investigation.	Applicable
Groundwater	Groundwater Quality Standards 327 IAC 2-11	These regulations provide groundwater protection to drinking-water and non-drinking-water wells and allow for the classification of groundwater. The rule states that all groundwater of the state shall be classified as "drinking water class" groundwater unless it is classified as "limited class" groundwater or "impaired drinking water class" groundwater. The regulations also provide qualitative and quantitative groundwater quality standards for compounds of concern.	Groundwater in the Pines Area of Investigation has not been classified as "limited class" or "impaired drinking water class"; so is considered a drinking water class groundwater. Thus, for the Pines Area of Investigation, the Indiana GQS are applicable to drinking-water and non-drinking-water wells in the Area of Investigation.	Applicable
Groundwater and Surface Water	NPDES and NPDES General Permit Rule 327 IAC 5 327 IAC 15	These regulations establish NPDES general permit rules for certain classes or categories of point source discharges by prescribing the policies, procedures, and technical criteria to operate and discharge under the requirements of a NPDES general permit rule.	These requirements will be met if a discharge from a groundwater treatment system is made to surface waters. However, it is noted that such a remedial action would be considered "on-site" as per the CERCLA On-Site Policy, and so only substantive requirements must be complied with to the maximum extent practicable.	Relevant and Appropriate
Groundwater	Safe Drinking Water Act MCLs 40 CFR Part 141 Subpart B (141.11 – 141.13)	MCLs are enforceable standards that regulate the concentration of specific organic and inorganic constituents, radionuclides, and other contaminants that have been determined to adversely affect human health in public drinking water supplies. They may be considered relevant and appropriate for groundwater aquifers potentially used for drinking water.	MCLs are only applicable where groundwater undergoing a CERCLA cleanup is delivered through a public water supply system, if that system has at least 15 service connections or serves at least 25 year-round residents. Groundwater in the Area of Investigation is tapped by some households for potable use (other households have access to a municipal water supply). However, groundwater is typically tapped for potable use on an individual basis, and, no well serves more than 25 year-round residents. Thus the federal MCLs are not applicable. MCLs are potentially relevant and appropriate for groundwater this is a current or potential source of drinking water (USEPA, 1991a). Groundwater in the Pines Area of Investigation is considered by the State of Indiana a drinking water class groundwater; thus, the federal MCLs are relevant and appropriate.	Relevant and Appropriate

TABLE 4
SUMMARY OF CHEMICAL-SPECIFIC ARARS

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

Media	Requirement	Requirement Synopsis	Action to be Taken to Attain Requirement	Status
Groundwater, Soil, and Sediment	Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings 40 CFR §192.12	This statute was established to protect human health and the environment from mining and milling activities associated with the nation's nuclear program at 24 sites that were identified by name in the statute.	While these regulations are only applicable to the control of residual radioactive material at designated processing or depository sites under Section 108 of UMTRCA, USEPA has suggested (and provided guidance) where these criteria should be considered relevant and appropriate at other CERCLA sites. These regulations identify a standard of 5 pCi/g above background for use in assessing the combined levels of Ra-226 and Ra-228. Further, these regulations state that if either uranium-234 or uranium-238 is a constituent of concern in groundwater that is current or potential sources of drinking water, and the site is not a Title I UMTRCA site, then the uranium UMTRCA standard of 30 pCi/L is a potentially relevant and appropriate requirement. http://www.epa.gov/superfund/health/contaminants/radiation/pdfs/umtrcagu.pdf	Relevant and Appropriate
Groundwater and Soil	USEPA RSL for Chemical Constituents at Superfund Sites, June 2015	RSLs are developed by the USEPA using risk assessment guidance from the USEPA Superfund program. They are risk-based concentrations derived from standardized equations combining exposure information assumptions with USEPA toxicity data. RSLs are generic; they are calculated without site-specific information. They may be re-calculated using site-specific data.	An RSL is typically used for initial site "screening". An RSL is not a de facto cleanup standard and should not be applied as such. The role of an RSL in site "screening" is to help identify areas, constituents, and conditions that require further attention at a particular site. Generally, where a constituent concentration falls below an RSL, no further action or study is warranted under the Superfund program. A constituent concentration above an RSL would not automatically call for a response action. RSLs have been included as a TBC criterion for the Pines Area of Investigation, in the consideration of establishing RAOs.	To Be Considered
Soil	IDEM Remediation Closure Guide, March 2012, Updated July 2012	The Remediation Closure Guide is a non-rule policy document intended to clarify for the public IDEM's interpretation of relevant environmental statutes and rules. It does not have the effect of law. The Remediation Closure Guide became effective on March 22, 2012. It is a revision of the 2001 RISC Technical Resource Guidance Document.	The Remediation Closure Guide is a non-rule policy document, which means that it does not have the force and effect of law and is not an ARAR for the Pines Area of Investigation. It is classified only as a TBC criterion. The Closure Guide provides soil direct contact screening levels for several exposure scenarios. As stated in the Guide, "A comparison....of [exposure point concentrations]...derived from site analytical data against appropriate screening levels is usually the first step when evaluating potential exposure risk. Appropriate screening levels depend on the likely exposure scenario."	To Be Considered
Groundwater, Soil, and Sediment	Hazardous Waste Management 329 IAC 3.1	This regulation establishes hazardous waste management programs for Indiana consistent with federal RCRA Subtitle C regulations, including applicable sections of 40 CFR 260-270 (see Action-Specific ARARs for additional details).	These regulations, along with their federal counterpart, establish requirements for identifying any hazardous wastes that may be generated in the course of the remedial action. Further, if an alternative involves the off-site transportation of hazardous wastes, the material must be managed and shipped/transported in accordance with these regulations.	Applicable

TABLE 4
SUMMARY OF CHEMICAL-SPECIFIC ARARS

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

Media	Requirement	Requirement Synopsis	Action to be Taken to Attain Requirement	Status
Groundwater, Soil, and Sediment	Hazardous Waste Determination 329 IAC 10-7.2-1	This regulation provides generator responsibilities for waste information. Specifically, a person who generates a solid waste is required to carry out the hazardous waste determination required by 40 CFR Part 262, which is incorporated by reference at 329 IAC 3.1.	Remediation alternatives that involve soil excavation or generation of other remediation wastes will include a determination of whether the wastes generated are hazardous or non-hazardous. If the wastes are determined to be non-hazardous, they may be disposed at a permitted disposal facility, per this regulation.	Applicable

Acronyms and Abbreviations:

ARAR – Applicable or Relevant and Appropriate Requirements

CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act

CFR – Code of Federal Regulations

GQS – Groundwater Quality Standards

IAC – Indiana Administrative Code

IDEM – Indiana Department of Environmental Management

MCL – Maximum Contaminant Level

pCi/g – PicoCuries per gram

RSL – Regional Screening Level

SWQS – Surface Water Quality Standard

TBC – To Be Considered

UMTRCA – Uranium Mill Tailings Radiation Control Act

USEPA – United States Environmental Protection Agency

WQC – Water Quality Criteria

AECOM

TABLE 5
SUMMARY OF LOCATION-SPECIFIC ARARS

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

Media	Requirement	Requirement Synopsis	Action to be Taken to Attain Requirement	Status
Wetlands	Fish and Wildlife Coordination Act Regulations 33 CFR Part 320.3 (16 USC 661 et seq.)	Requires that the U.S. Fish and Wildlife Services and National Marine Fisheries Service be consulted prior to structural modification of any stream or other water body (e.g., wetland). It also requires adequate protection of fish and wildlife resources, and consultation with state agencies to develop measures to prevent, mitigate, or compensate for project-related losses to fish and wildlife.	If wetlands within the Area of Investigation are subject to investigation or remediation activities, then these regulations may apply. A proposed action would have to show that "no practicable alternative exists" to the work proposed, and construction activities will be conducted in such a manner to mitigate impacts to fish and wildlife resources. Relevant federal and state agencies must be provided with the engineering design and/or work plan for the proposed action for review prior to implementation of the work.	Relevant and Appropriate
Wetlands	Clean Water Act Guidelines for Specification of Disposal Sites for Dredged or Fill Material CWA Section 404(b)(1) 40 CFR Part 230	These guidelines apply to all existing, proposed, or potential disposal sites for discharges of dredged or fill material into U.S. waters (including wetlands). A discharge is not allowed if there is a practicable alternative that would have a less adverse impact on the aquatic ecosystem. Also, a discharge is not allowed unless appropriate and practicable steps are taken to minimize potential adverse impacts on the aquatic ecosystem. These guidelines must be met before a CWA Section 404 permit can be issued. These guidelines also include specifications for compensatory mitigation.	If a remedial action for the Area of Investigation requires the discharge of dredged or fill material into a wetland, or the excavation of material from a wetland, and there is no practicable alternative that would have a less adverse impact on the aquatic ecosystem, the remedial action would have to minimize potential adverse impacts to the aquatic ecosystem and any adverse impacts would have to be mitigated.	Applicable to actions that may involve the discharge of dredged materials to a wetland or the excavation of material from a wetland
Wetlands	CWA Section 401 Water Quality Certification	These regulations provide for the state Water Quality Certification as per Section 401 of the CWA. These regulations cover dredging, filling, excavation and placement of structures in all wetlands, tidal waters, and navigable freshwaters.	If wetlands within the Area of Investigation are subject to investigation or remediation activities, and CWA Section 404 applies, then a Section 401 WQC must be obtained from IDEM.	Applicable
Water	CWA Section 404	These regulations provide the Federal wetlands and navigable waters regulatory program, which is administered by the USACE. It covers dredging, filling, excavation and placement of structures in all wetlands, tidal waters, and navigable freshwaters. Issuance of these permits requires compliance with Section 401 WQC (of which the IDEM has been given the authority to implement), and compliance with the Federal Endangered Species Act and Section 106 of the National Historic Preservation Act (Historic and Archaeological Features).	If wetlands within the Area of Investigation are subject to investigation or remediation activities, then these regulations would apply. The investigation or remedial actions would be considered "on-site" as per the CERCLA On-Site Policy, and so only substantive requirements must be complied with to the maximum extent practicable. A proposed action must show that "no practicable alternative exists" to the work being proposed, and that any construction activities will be conducted in such a manner to mitigate impacts and minimize harm to the wetlands.	Relevant and Appropriate

AECOM

TABLE 5
SUMMARY OF LOCATION-SPECIFIC ARARS

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

Media	Requirement	Requirement Synopsis	Action to be Taken to Attain Requirement	Status
Floodplains	Flood Control Act and Flood Plain Management Rule 312 IAC 10	These requirements regulate certain activities within the floodway produced by the regulatory flood. The "regulatory flood" is equivalent to the base flood or the 100-year frequency flood. "Floodway" means "the channel of a river or stream and those portions of the flood plains adjoining the channel that are reasonably required to efficiently carry and discharge the peak flow of the regulatory flood of any river or stream." These regulations are intended to control and minimize the extent, height, and force of potential floods. Regulated activities include vegetation clearing in buffers, and the placement of structures within the floodway, flood fringe, or flood plain.	Projects or portions of projects are not subject to Indiana regulation if a waterway's drainage area at the downstream end of the project site is less than one square mile (640 acres), or if the total length of the stream or drain is less than or equal to 10 miles. If these regulations apply, impacts against the following criteria should be reviewed: 1) whether or not the project will adversely affect the efficiency of, or unduly restrict the capacity of, the floodway; 2) whether or not the project will constitute an unreasonable hazard to the safety of life or property; and 3) whether or not the project will result in unreasonably detrimental effects upon fish, wildlife, or botanical resources.	Potentially applicable
Floodplains	Indiana Drainage Code IC 36-9-27 Section 53.5	Section 53.5 states that if a reconstruction or maintenance project is subject to regulation under the Indiana Flood Control Act, or if it requires a permit under Section 404 of the federal CWA, the county surveyor or drainage board shall request an on-site field review of the project. The on-site field review is conducted by one or more staff representatives from the county, the IDNR, including one engineer each from the Division of Water, IDEM, and the local Soil and Water Conservation District, if applicable.	If floodplains within the Area of Investigation are subject to investigation or remediation activities, then these regulations may apply.	Potentially applicable
Endangered Species	Endangered Species Act 50 CFR 17	These regulations provide for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The U.S. Fish and Wildlife Service maintains the list of endangered and threatened species. These regulations prohibit any action, administrative or real, that results in a "taking" of a listed species, or adversely affects habitat.	If endangered or threatened species are present within areas that may be subject to investigation or remediation activities, then these regulations may apply. Precautions to prevent impacts to identified habitats would be imposed during investigation or remediation activities.	Applicable

AECOM

TABLE 5
SUMMARY OF LOCATION-SPECIFIC ARARS

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

Media	Requirement	Requirement Synopsis	Action to be Taken to Attain Requirement	Status
Endangered Species	Non-Game and Endangered Species Conservation IC 14-22-34	These regulations provide for the conservation of threatened and endangered plants and animals and the habitats in which they are found. These regulations prohibit any action, administrative or real, that results in a "taking" of a listed species, or adversely affects habitat.	If endangered or threatened species are present within areas that may be subject to investigation or remediation activities, then these regulations may apply. Precautions to prevent impacts to identified habitats would be imposed during investigation or remediation activities.	Potentially Applicable

Acronyms and Abbreviations:

ARAR – Applicable or Relevant and Appropriate Requirements.
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
CFR – Code of Federal Regulations
CWA – Clean Water Act
IAC – Indiana Administrative Code
IC – Indiana Code
IDEM – Indiana Department of Environmental Management
IDNR – Indiana Department of Natural Resources
USACE – United States Army Corps of Engineers
USC – United States Code
WQC – Water Quality Certification

TABLE 6
SUMMARY OF ACTION-SPECIFIC ARARS

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

AECOM

Requirement	Requirement Synopsis	Action to be Taken to Attain Requirement	Status
Federal Regulatory Requirements			
Fish and Wildlife Coordination Act Regulations 33 CFR Part 320.3 (16 USC 661, et seq.)	Requires that the U.S. Fish and Wildlife Services and National Marine Fisheries Service be consulted prior to structural modification of any stream or other water body (e.g., wetland). It also requires adequate protection of fish and wildlife resources, and consultation with state agencies to develop measures to prevent, mitigate, or compensate for project-related losses to fish and wildlife.	If a remedy includes excavation of material from a wetland or construction of extraction wells or treatment system components (e.g. piping) in the wetlands, these regulations are relevant and appropriate. Such activities would be necessary to meet Remedial Action Objectives (RAOs), and thus, no practicable alternative to this construction exists. Such a remedy would be considered "on-site" as per the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) On-Site Policy, and so only substantive requirements must be complied with to the maximum extent practicable. Any excavation or construction activities under such a remedy will be conducted in a manner to mitigate impacts to fish and wildlife resources. Relevant federal and state agencies will be provided with the engineering design and/or work plan for the proposed action for review prior to implementation of the work.	Relevant and Appropriate
Clean Water Act (CWA) National Pollutant Discharge Elimination System (NPDES) 40 CFR Parts 122 and 125	These regulations establish discharge limitations, monitoring requirements, and best management practices for any direct discharge from a point source, such as a treatment system, into surface waters, including wetlands.	These requirements will be met if a discharge from a groundwater treatment system is made to surface waters.	Applicable

TABLE 6
SUMMARY OF ACTION-SPECIFIC ARARS

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

AECOM

Requirement	Requirement Synopsis	Action to be Taken to Attain Requirement	Status
CWA Section 404	These regulations provide the Federal wetlands and navigable waters regulatory program, which is administered by the U.S. Army Corps of Engineers. It covers dredging, filling, excavation and placement of structures in all wetlands, tidal waters, and navigable freshwaters. Issuance of these permits requires compliance with Section 401 Water Quality Certification (WQC) (of which the Indiana Department of Environmental Management or IDEM has been given the authority to implement), and compliance with the Federal Endangered Species Act and Section 106 of the National Historic Preservation Act (Historic and Archaeological Features).	If a remedy includes excavation of material from a wetland or construction of extraction wells or treatment system components (e.g. piping) in the wetlands, these regulations are relevant and appropriate. Such activities would be necessary to meet RAOs, and thus, no practicable alternative to this construction exists. Such a remedy would be considered "on-site" as per the CERCLA On-Site Policy, and so only substantive requirements must be complied with to the maximum extent practicable. Any excavation or construction activities under such a remedy will be conducted in a manner to mitigate impacts and minimize harm to the wetlands.	Relevant and Appropriate
CWA Section 401 Water Quality Certification	These regulations provide for the state Water Quality Certification as per Section 401 of the CWA. These regulations cover dredging, filling, excavation and placement of structures in all wetlands, tidal waters, and navigable freshwaters.	If wetlands within the Area of Investigation are subject to remediation activities, and CWA Section 404 applies, then a Section 401 WQC must be obtained from IDEM.	Applicable
Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs) 40 CFR Part 141 Subpart B (141.11 – 141.13)	MCLs are enforceable standards that regulate the concentration of specific organic and inorganic contaminants that have been determined to adversely affect human health in public drinking water supplies. They may be considered relevant and appropriate for groundwater aquifers potentially used for drinking water.	MCLs are potentially relevant and appropriate for groundwater this is a current or potential source of drinking water (USEPA, August 1991, PB 9234.2-15/FS). Groundwater in the Pines Area of Investigation is considered by the State of Indiana a drinking water class groundwater; thus, the federal MCLs are relevant and appropriate. MCLs will be met if a discharge from a groundwater treatment system is made to groundwater.	Relevant and Appropriate
SDWA Underground Injection Control 40 CFR 124, 144, 146, 148	These regulations establish minimum program and performance standards for underground injection programs. Technical criteria and standards for siting, operation, maintenance, reporting, and recordkeeping are included, as well as provisions for protection of underground sources of drinking water.	Discharge of treated water, by well injection, must be in accordance with all criteria and standards in these regulations. Treated groundwater must meet all SDWA standards for reinjection prior to well injection. In Indiana, the UIC Program is administered by the US Environmental Protection Agency (EPA) in accordance with these regulations for Class I, III, IV and V wells.	Applicable

TABLE 6
SUMMARY OF ACTION-SPECIFIC ARARS

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

AECOM

Requirement	Requirement Synopsis	Action to be Taken to Attain Requirement	Status
Resource Conservation and Recovery Act (RCRA) Identification and Listing of Hazardous Waste 40 CFR 261	This rule defines those solid wastes that are subject to regulation as hazardous waste under 40 CFR Parts 262-265.	These regulations establish requirements for identifying any hazardous wastes that may be generated in the course of the remedial action. If a remedial alternative involves the excavation of soil or generation of other remediation wastes, a determination of whether the wastes are hazardous or non-hazardous will be made.	Applicable
RCRA Standards Applicable to Generators of Hazardous Waste 40 CFR 262	These regulations establish standards for generators of hazardous waste that address waste accumulation, preparation for shipment, and completion of the uniform hazardous waste manifest.	If an alternative involves generation of hazardous wastes, the generator will have an EPA generator ID number prior to treatment, storage, disposal, or transporting the wastes. If an alternative involves the off-site transportation of hazardous wastes, the material must be managed, manifested, packaged, labeled, and placarded in accordance with these regulations.	Applicable
RCRA Standards Applicable to Transporters of Hazardous Waste 40 CFR 263	These regulations establish procedures for transports of hazardous waste with the US if the transportation requires a manifest under 40 CFR Part 262.	If an alternative involves the off-site transportation of hazardous wastes, the waste must be shipped/transported in accordance with these regulations. Further, if a remedial alternative involves the management of hazardous waste, the equipment used to excavate or manage hazardous wastes will be decontaminated and the removed residue will be managed as hazardous, unless 40 CFR Part 261.3(d) applies.	Applicable
RCRA Standards Applicable to Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities – Use and Management of Containers 40 CFR 264, Subpart I	These regulations apply to owners and operators that store containers of hazardous waste.	If a remediation alternative includes excavating soil or generating other remediation wastes, and that waste is determined to be hazardous per 40 CFR Part 261, the waste will not be placed back on the ground so as to create a waste pile as defined by 40 CFR Part 264, Subpart I. If a remediation alternative includes excavating soil or generating other remediation wastes, and that waste is determined to be hazardous per 40 CFR Part 261, and that hazardous waste is managed in a container, and the container is being stored on the site for greater than 90 days, the container will be managed in accordance with 40 CFR 264 Subpart I.	Applicable

TABLE 6
SUMMARY OF ACTION-SPECIFIC ARARS

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

AECOM

Requirement	Requirement Synopsis	Action to be Taken to Attain Requirement	Status
RCRA Interim Status Standards Applicable to Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities – Use and Management of Containers, 40 CFR 265, Subpart I	These regulations provide minimum national standards that define the acceptable management of hazardous waste during the period of interim status and until certification of final closure or until post-closure responsibilities are fulfilled.	If a remediation alternative includes excavating soil or generation of other remediation wastes, and that waste is determined to be hazardous per 40 CFR Part 261, and that hazardous waste is managed in a container, and the container is being stored on the site for less than 90 days, the container will be managed in accordance with 40 CFR 265 Subpart I.	Applicable
RCRA Land Disposal Restrictions 40 CFR 268	These regulations define hazardous wastes that are restricted from land disposal and defines those limited circumstances under which an otherwise prohibited waste may continue to be land disposed.	If a remediation alternative includes excavating soil that is determined to be hazardous per 40 CFR Part 261, the waste will be managed in accordance with these land disposal requirements.	Applicable
Clean Air Act National Primary and Secondary Ambient Air Quality Standards 40 CFR 50	This rule provides emission standards, which are promulgated to attain the National Ambient Air Quality Standards, and monitoring requirements.	Engineering controls are required to reduce emissions associated with excavation and transportation as needed to maintain ambient air quality standards.	Relevant and Appropriate

TABLE 6
SUMMARY OF ACTION-SPECIFIC ARARS

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

AECOM

Requirement	Requirement Synopsis	Action to be Taken to Attain Requirement	Status
State Regulatory Requirements			
Surface Water Quality Standards 327 IAC 2-1.5	The State of Indiana has promulgated Surface Water Quality Standards for surface waters within the Great Lakes System (327 IAC 2-1.5) and waters not within the Great Lakes System (327 IAC 2-1). Surface waters within the Pines Area of Investigation are within the Great Lakes System, thus 327 IAC 2-1.5 apply. Because the State of Indiana has promulgated surface water standards, they replace the federal Water Quality Criteria as applicable or relevant and appropriate requirements for surface water in the Pines Area of Investigation.	If a remedy includes discharge of treated water to surface water, these standards apply. This rule states that the chemical, physical, and biological integrity of the waters within the Great Lakes system shall be maintained or restored; thus, the discharge of toxic substances in certain amounts is prohibited, and persistent and bioaccumulating toxic substances shall be reduced or eliminated. Further, for all surface waters of the Great Lakes system, existing instream water uses and the level of water quality necessary to protect existing uses shall be maintained and protected.	Applicable
Groundwater Quality Standards 327 IAC 2-11	These regulations provide groundwater protection to wells and allow for the classification of groundwater. The rule states that all groundwater of the state shall be classified as "drinking water class" groundwater unless it is classified as "limited class" groundwater or "impaired drinking water class" groundwater. The regulations also provide qualitative and quantitative groundwater quality standards for compounds of concern. Groundwater in the Pines Area of Investigation has not been classified as "limited class" or "impaired drinking water class"; so is considered a drinking water class groundwater.	If a remedy includes the discharge of treated water to groundwater, these standards apply.	Applicable

TABLE 6
SUMMARY OF ACTION-SPECIFIC ARARS

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

AECOM

Requirement	Requirement Synopsis	Action to be Taken to Attain Requirement	Status
Wastewater Treatment Facilities 327 IAC 3	This regulation prescribes policies, procedures, and technical criteria for the construction of water pollution treatment/control facilities. Per 3-1-2, "water pollution treatment/control facility" means any equipment, device, unit, or structure at a site that is used to control, prevent, pretreat, or treat any discharge or threatened discharge of pollutants into any waters of the state of Indiana including public or private sewerage systems.	If a remedy includes the construction of a treatment system for extracted groundwater, this rule would apply. However, it is noted that such a remedial action would be considered "on-site" as per the CERCLA On-Site Policy, and so only substantive requirements must be complied with to the maximum extent practicable.	Applicable
NPDES and NPDES General Permit Rule 327 IAC 5 327 IAC 15	These regulations establish NPDES general permit rules for certain classes or categories of point source discharges by prescribing the policies, procedures, and technical criteria to operate and discharge under the requirements of a NPDES general permit rule.	These requirements will be met if a discharge from a groundwater treatment system is made to surface waters or for stormwater discharges associated with construction or soil excavation activities. However, it is noted that such a remedial action would be considered "on-site" as per the CERCLA On-Site Policy, so only substantive requirements must be complied with to the maximum extent practicable.	Relevant and Appropriate
Water Well Drilling Requirements 312 IAC 12-3-1	This regulation establishes standards for the installation of water wells.	The remedial alternatives being evaluated may require installation of water wells (such as extraction wells). This rule provides construction standards for water wells drilled in unconsolidated aquifers.	Applicable
Water Well Driller Licensing Requirements 312 IAC 13	This regulation provides for licensing of water well drillers.	Installation of water wells (such as extraction wells) may be required under the selected remedy.	Applicable
Classification of Underground Injection Wells 329 IAC 3.1-10-3	This rule provides definitions for the classes of underground injection wells.	If a remedy includes injection of treated groundwater via well, such a well would be a Class V well per this rule. Indiana regulates the Underground Injection Control Program for Class II wells; otherwise, EPA administers the program for Class I, III, IV and V wells under the SDWA.	Applicable

TABLE 6
SUMMARY OF ACTION-SPECIFIC ARARS

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

AECOM

Requirement	Requirement Synopsis	Action to be Taken to Attain Requirement	Status
Hazardous Waste Management 329 IAC 3.1	This regulation establishes hazardous waste management programs for Indiana consistent with federal RCRA Subtitle C regulations.	These regulations, along with their federal counterpart, establish requirements for identifying any hazardous wastes that may be generated in the course of the remedial action. Further, if an alternative involves the off-site transportation of hazardous wastes, the material must be managed and shipped/transported in accordance with these regulations.	Applicable
Hazardous Waste Determination 329 IAC 10-7.2-1	This regulation provides generator responsibilities for waste information. Specifically, a person who generates a solid waste is required to carry out the hazardous waste determination required by 40 CFR Part 262, which is incorporated by reference at 329 IAC 3.1.	Remediation alternatives that involve soil excavation or generation of other remediation wastes will include a determination of whether the wastes generated are hazardous or non-hazardous. If the wastes are determined to be non-hazardous, they may be disposed at a permitted disposal facility, per this regulation.	Applicable
Solid Waste Land Disposal Facilities Restricted Waste Sites Waste Criteria 329 IAC 10-9-4	329 IAC Article 10 establishes solid waste management programs for Indiana consistent with federal RCRA Subtitle D regulations. Specifically, 329 IAC 10-9-4 provides regulations for Restricted Waste Sites (RWS), which includes the regulation of the landfill disposal of coal ash (CCBs).	For remediation alternatives that involve off-site disposal of CCBs or soil with concentrations of CCB-derived COCs exceeding the PRGs, which are determined to be non-hazardous, the receiving facility should be in compliance with these regulations.	Applicable
Solid Waste Land Disposal Facilities Restricted Waste Site Closure and Post Closure Monitoring 329 IAC 10-30 and 10-31 (Type II) 329 IAC 10-38(Type III)	329 IAC Articles 30, 31, and 38 provide Closure and/or Post Closure Requirements for Type II and Type III RWS.	Yard 520 is a permitted, closed RWS facility regulated by IDEM and subject to IDEM Regulations for RWS. Yard 520 is in compliance with applicable IDEM regulations, including groundwater impact regulations. Remediation alternatives that involve disturbance and/or repair of the landfill cap should comply with these regulations. The on-going Post-Closure Monitoring activities (which are considered a component of the baseline conditions in this evaluation) should also be performed in accordance with these regulations.	Applicable

TABLE 6
SUMMARY OF ACTION-SPECIFIC ARARS

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

AECOM

Requirement	Requirement Synopsis	Action to be Taken to Attain Requirement	Status
Indiana Air Quality Standards 326 IAC 6-4-2, 6-4-4	This rule provides emission standards, which are promulgated to attain the Indiana Ambient Air Quality Standards, and monitoring requirements.	Engineering controls are required to reduce emissions associated with excavation and transportation as needed to maintain ambient air quality standards. Pursuant to 326 IAC 6-4-2, visible fugitive dust must not cross an adjacent property line. Pursuant to 326 IAC 6-4-4, any vehicle driven on any public right of way must not allow its contents to escape in the form of fugitive dust.	Relevant and Appropriate
Restrictive Covenants Indiana Code 13-25-4-24	This law applies to real property on which a hazardous substance has been deposited, stored or disposed and that is or was listed on CERCLIS.	Remediation alternatives that do not achieve residential land use remediation objectives will require an Environmental Restrictive Covenant to be recorded on the property.	Applicable
Flood Control Act and Flood Plain Management Rule 312 IAC 10	These requirements regulate certain activities within the floodway produced by the regulatory flood. The "regulatory flood" is equivalent to the base flood or the 100-year frequency flood. "Floodway" means "the channel of a river or stream and those portions of the flood plains adjoining the channel that are reasonably required to efficiently carry and discharge the peak flow of the regulatory flood of any river or stream." These regulations are intended to control and minimize the extent, height, and force of potential floods. Regulated activities include vegetation clearing in buffers, and the placement of structures within the floodway, flood fringe, or flood plain.	Projects or portions of projects are not subject to Indiana regulation if a waterway's drainage area at the downstream end of the project site is less than one square mile (640 acres), or if the total length of the stream or drain is less than or equal to 10 miles. If these regulations apply, impacts against the following criteria should be reviewed: 1) whether or not the project will adversely affect the efficiency of, or unduly restrict the capacity of, the floodway; 2) whether or not the project will constitute an unreasonable hazard to the safety of life or property; and 3) whether or not the project will result in unreasonably detrimental effects upon fish, wildlife, or botanical resources.	Potentially applicable

TABLE 6
SUMMARY OF ACTION-SPECIFIC ARARS

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

AECOM

Requirement	Requirement Synopsis	Action to be Taken to Attain Requirement	Status
Acronyms and Abbreviations: CCB – Coal Combustion By-product CERCLA – Comprehensive Environmental Response, Compensation and Liability Act CFR – Code of Federal Regulations CWA – Clean Water Act USEPA – US Environmental Protection Agency IDEM – Indiana Department of Environmental Management MCL – Maximum Contaminant Level NPDES – National Pollutant Discharge Elimination System RAO – Remedial Action Objective RCRA – Resource Conservation and Recovery Act RWS – Restricted Waste Site SDWA – Safe Drinking Water Act WQC – Water Quality Certificate			

Appendix 4

Tables 22 and 23 from the Pines Site Feasibility Study Report, Comparative Analysis of Soil and Groundwater Remedial Alternatives

TABLE 22
COMPARATIVE ANALYSIS OF SOIL REMEDIAL ALTERNATIVES

AECOM

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

Evaluation Criterion	Soil Alternative 1 No Action	Soil Alternative 2 Land Use Controls	Soil Alternative 3 Excavation & Off-Site Disposal
THRESHOLD CRITERIA			
Overall Protection of Human Health and the Environment	Not protective at specific properties where CCB-derived constituents are above PRGs, as identified during Supplemental Soil Characterization.	Not protective at specific properties identified during the Supplemental Soil Characterization with CCB-derived COC above PRGs at depths where exposure could reasonably be expected to occur unless a surficial barrier (e.g., soil/vegetation, pavement) is in place and can be expected to remain in place/be maintained.	Protective.
Criterion (Pass or Fail)	Fail	Fail	Pass
Compliance with ARARs	Does not comply with ARARs at specific properties identified during the Supplemental Soil Characterization with CCB-derived COC above PRGs at depths where exposure could reasonably be expected to occur.	Does not comply with ARARs at specific properties identified during the Supplemental Soil Characterization with CCB-derived COC above PRGs at depths where exposure could reasonably be expected to occur.	Complies with ARARs.
Criterion (Pass or Fail)	Fail	Fail	Pass
BALANCING CRITERIA			
Long-Term Effectiveness and Permanence	Ineffective at specific properties where CCB-derived COCs are above PRGs, as identified during the Supplemental Soil Characterization.	Ineffective at specific properties where CCB-derived COCs are above PRGs in surface soil, as identified during the Supplemental Soil Characterization. Effective and permanent, provided that deed restrictions are maintained and complied with.	Soil excavation is effective and permanent; soil cover and deed restriction components would be permanent and effective provided that they are maintained and complied with.
Criterion Score (1-5)	1	3	5

TABLE 22
COMPARATIVE ANALYSIS OF SOIL REMEDIAL ALTERNATIVES

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

Evaluation Criterion	Soil Alternative 1 No Action	Soil Alternative 2 Land Use Controls	Soil Alternative 3 Excavation & Off-Site Disposal
Reduction of Toxicity, Mobility, and Volume (TMV) Through Treatment	Does not reduce TMV.	Does not reduce TMV.	Reduces mobility at the remediated property via excavation/placement of a soil cover; toxicity and volume are not reduced because no treatment is conducted.
Criterion Score (1-5)	1	1	3
Short-Term Effectiveness	Effective; no worker or public impacts during implementation, as there is no construction element of this alternative. Does not provide any short-term risk reduction.	Effective; no worker or public impacts during implementation, as there is no construction element of this alternative. Is immediately effective upon implementation.	Moderately effective; implementation of excavation could extend over a period of months depending on areas identified during the property sampling. Worker risks associated with excavation include moderate dermal contact, inhalation, and ingestion of dust. Risks are controllable. Community impacts associated with dust, noise, traffic. Risk reduction at treated properties is immediate upon implementation.
Criterion Score (1-5)	1	5	3
Implementability	Easy	Easy to Moderate	Easy to Moderate; excavation on private and/or public properties; heavy equipment and traffic; possible interference with buried or surficial features are limiting factors.
Criterion Score (1-5)	5	3	2
Estimated Unit Future Cost (Present-Worth)	$ 0	$13,000 [1]	$11,000 [2]
Criterion Score (1-5)	5	3	2

TABLE 22
COMPARATIVE ANALYSIS OF SOIL REMEDIAL ALTERNATIVES

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

Evaluation Criterion	Soil Alternative 1 No Action	Soil Alternative 2 Land Use Controls	Soil Alternative 3 Excavation & Off-Site Disposal
ADDITIONAL CRITERIA			
Green and Sustainable Remediation	Sustainable; no action.	Sustainable; only administrative actions.	Not a sustainable option during excavation phase: heavy equipment, off-site disposal. Sustainable in the long-term, no additional actions after implementation.
Criterion Score (1-5)	5	5	3
Alternative Total Score	NA Fails protectiveness and compliance with ARARs criteria for specific properties identified during the Supplemental Soil Characterization	NA Fails protectiveness and compliance with ARARs criteria for specific properties identified during the Supplemental Soil Characterization	NA This is the only alternative that passes the threshold criteria of protectiveness and compliance with ARARs.

Notes:

The Threshold Criteria are evaluated on a pass/fail basis. An alternative must pass both threshold criteria in order to be considered as a remedial action. Alternatives that fail either threshold criterion are marked as "not applicable" (NA) for the alternative total score.

Balancing and Additional Criteria are scored on a scale of 1-5, with 1 being the least favorable and 5 being the most favorable.

Rank is based on overall score for each alternative, with 1 indicating the most favorable.

As the Supplemental Soil Characterization work is on-going, the alternatives are assessed based on property sampling data obtained as of September 2015.

[1] The cost for this alternativerepresents a unit cost for obtaining the necessary land use controls for 1 assumed typical residential property.

[2] The cost for this alternative represents a unit cost for removing soil from one yard unit that is approximately 1,076 square feet (100 m2) to a depth of 18 inches, hauling the excavated material to an off-site disposal facility, backfilling with clean soil material/ fill from a local borrow source, and grass seeding. If residual soils remain in place after excavation, then Soil Alternative 2 costs would also apply. A 1-acre lot may be comprised of up to 40 100 m² units.

Acronyms and Abbreviations:

ARAR – Applicable or Relevant and Appropriate Requirements

CCB – Coal Combustion By-products

COC – Constituents of Concern

NA – Not Applicable

PRG – Preliminary Remediation Goal

TMV – Toxicity, Mobility, and Volume

TABLE 23
COMPARATIVE ANALYSIS OF GROUNDWATER REMEDIAL ALTERNATIVES

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

AECOM

Evaluation Criterion	Groundwater Alternative 1 No Action	Groundwater Alternative 2 Land Use Controls	Groundwater Alternative 3 Long-Term Monitoring	Groundwater Alternative 4 Phytoremediation	Groundwater Alternative 5 Barrier Wall
Overall Protection of Human Health and the Environment	Protective	Protective	Protective	Protective	Protective
Criterion Score (Pass or Fail)	Pass	Pass	Pass	Pass	Pass
Compliance with ARARs	Does not comply with chemical-specific ARARs	Complies with ARARs.	Complies with ARARs.	Complies with ARARs.	Complies with ARARs
Criterion Score (Pass or Fail)	Fail	Pass	Pass	Pass	Pass
Long-Term Effectiveness and Permanence	No long-term effectiveness or permanence.	Effective and Permanent	Effective and Permanent; see Groundwater Alternative 2; also requires long term groundwater monitoring.	Effective and Permanent; see Groundwater Alternative 3.	Effective and Permanent; see Groundwater Alternative 3; may interfere with natural processes, if occurring, that may be reducing TMVs outside Yard 520; also requires long-term O&M and performance monitoring.
Criterion Score (1-5)	1	3	4	5	4

TABLE 23
COMPARATIVE ANALYSIS OF GROUNDWATER REMEDIAL ALTERNATIVES

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

Evaluation Criterion	Groundwater Alternative 1 No Action	Groundwater Alternative 2 Land Use Controls	Groundwater Alternative 3 Long-Term Monitoring	Groundwater Alternative 4 Phytoremediation	Groundwater Alternative 5 Barrier Wall
Reduction of Toxicity, Mobility, and Volume (TMV) Through Treatment	Does not reduce TMV.	See Groundwater Alternative 1; Groundwater Ordinance does not reduce TMV..	See Groundwater Alternative 2; Monitoring does not reduce TMV, but documents TMV reductions, if they occur naturally.	Reduces TMV. Estimated mass reduction at 30 years: 10-20%.	Reduces TMV; may interfere with natural processes, if occurring, that may be reducing TMVs outside Yard 520. Estimated mass reduction at 30 years: 10-20%.
Criterion Score (1-5)	1	1	1	3	3
Short-Term Effectiveness	Effective; no worker or public impacts during implementation, as there is no construction element of this alternative. Does not control against potential groundwater use in areas where CCB-derived COCs are above PRGs. .	Effective; no additional actions except administrative filings. Residual risk associated with potential groundwater use is addressed upon implementation.	Effective; no additional actions except administrative filings and monitoring. See Groundwater Alternative 2.	Effective; no limited short term risk associated with grading and plantings. See also Groundwater Alternative 3.	Limited effectiveness; significant construction activities; increased potential for CCB-derived COCs migration during construction. See also Groundwater Alternative 3.
Criterion Score (1-5)	3	4	5	4	3

TABLE 23
COMPARATIVE ANALYSIS OF GROUNDWATER REMEDIAL ALTERNATIVES

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

AECOM

Evaluation Criterion	Groundwater Alternative 1 No Action	Groundwater Alternative 2 Land Use Controls	Groundwater Alternative 3 Long-Term Monitoring	Groundwater Alternative 4 Phytoremediation	Groundwater Alternative 5 Barrier Wall
Implementability	Easy	Easy to Moderate	Easy to Moderate	Moderate	Difficult; construction on closed landfill; construction in proximity to Town of Pines infrastructure, wetlands, and private properties; limited effectiveness of available boron treatment technologies.
Criterion Score (1-5)	5	4	4	3	1
Estimated Future Cost (Present-Worth)	$0	$868,000	$2,477,000	$3,660,000	$14,700,000
Criterion Score (1-5)	5	4	3	3	1
Green and Sustainable Remediation	Sustainable.	Sustainable; no additional actions other than maintenance and limited monitoring.	Sustainable; no additional actions other than maintenance and monitoring, and possible installation of a limited number of monitoring wells.	Sustainable; limited additional actions; low-impact energy, waste, and water demands.	Not a sustainable option during construction phase: heavy equipment, off-site disposal. Moderate sustainability for O&M component: requires electrical energy consumption, some process waste.
Criterion Score (1-5)	5	5	5	5	1

TABLE 23
COMPARATIVE ANALYSIS OF GROUNDWATER REMEDIAL ALTERNATIVES

PINES AREA OF INVESTIGATION
FEASIBILITY STUDY

AECOM

Evaluation Criterion	Groundwater Alternative 1 No Action	Groundwater Alternative 2 Land Use Controls	Groundwater Alternative 3 Long-Term Monitoring	Groundwater Alternative 4 Phytoremediation	Groundwater Alternative 5 Barrier Wall
Alternative Total Score	NA Fails Compliance with ARARs Criterion	21	22	23	13
Overall Rank		3	2	1	4

Notes:

The Threshold Criteria are evaluated on a pass/fail basis. An alternative must pass both threshold criteria in order to be considered as a remedial action. Alternatives that fail either threshold criterion are marked as "not applicable" (NA) for the alternative total score.

Balancing and Additional Criteria are scored on a scale of 1-5, with 1 being the least favorable and 5 being the most favorable.

Rank is based on overall score for each alternative, with 1 indicating the most favorable.

Acronyms and Abbreviations:

ARAR – Applicable or Relevant and Appropriate Requirements

NA – Not Applicable

O&M – Operation and Maintenance

PRG – Preliminary Remediation Goal

TBD – To Be Determined (following completion of Property Sampling and USEPA approval of PRGs and BTVs)

TMV – Toxicity, Mobility, and Volume

Appendix 5

Administrative Record Index

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

ADMINISTRATIVE RECORD
FOR THE
PINES GROUNDWATER CONTAMINATION SITE
TOWNSHIP OF PINES, PORTER COUNTY, INDIANA

ORIGINAL
JUNE 21, 2001
SEMS ID: 179938

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	179939	2/1/01	Atkinson, H., IDEM	Nachowicz, L., U.S. EPA	Letter re: IDEM's Request for U.S. EPA Assistance to Conduct a Removal Assessment for the Town of Pines	1
2	926445	5/30/01	Tetra Tech EM, Inc.	U.S. EPA	Letter Report for the Pines Groundwater Site (Analytical Results for VOCs, SVOCs and Metals Attached) ***(Privacy information has been redacted)***	123
3	179941	6/21/01	Theisen, K., U.S. EPA	Karl, R., U.S. EPA	Action Memorandum re: Request for an Emergency Removal Action at the Pines, Indiana Groundwater Contamination Site (Signed) ***(Redacted)***	9

UPDATE 1
AUGUST 8, 2002
SEMS ID: 179934

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	179935	1/7/02	U.S. EPA	File	Tables: Sampling Data for the Pines, Indiana Groundwater Contamination Site	4
2	179937	8/8/02	Theisen, K., U.S. EPA	Karl, R., U.S. EPA	Action Memorandum re: Request for a Second Emergency Removal Action at the Pines, Indiana Groundwater Contamination Site (Signed) (Redacted)	9

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
3	926446	12/30/02	Tetra Tech EM, Inc.	U.S. EPA	Final Site Investigation Report for the Groundwater Contamination Site in the Township of Pines ***(Privacy information has been redacted)***	251

UPDATE 2
APRIL 13, 2006
SEMS ID: 249418

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	255857	1/1/84	U.S. Geological Survey	File	Shallow Groundwater Flow and Drainage Characteristics of the Brown Ditch Basin Near the East Unit, Indiana Dunes National Lakeshore 1982	28
2	255858	1/1/94	U.S. Geological Survey	File	Hydrogeology and Hydrochemistry of Dunes and Wetlands Along the Southern Shore of Lake Michigan	20
3	926449	6/30/01	IDEM	U.S. EPA	Integrated Assessment Report (PA/SI Equivalent) for the Town of Pines Groundwater Plume Site Volume I ***(Portions of this document have been redacted)***	79
4	255861	6/30/01	IDEM	U.S. EPA	Integrated Assessment Report (PA/SI Equivalent) for the Town of Pines Groundwater Plume Site Volume II ***(Portions of this document have been redacted)***	549
5	339528	6/14/02	U.S. Dept. of Health and Human Services/ATSDR	U.S. EPA	Health Consultation for the Town of Pines Groundwater Plume Site	24
6	926450	12/7/02	IDEM	U.S. EPA	Expanded Site Inspection Report for the Town of Pines Groundwater Plume Site Volume I ***(Portions of this document have been redacted)***	389
7	255863	12/7/02	IDEM	U.S. EPA	Expanded Site Inspection Report for the Town of Pines Groundwater Plume Site Volume II	579

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
8	171789	1/24/03	U.S. EPA	Respondents	Administrative Order by Consent (V-W-03-C-730) for the Town of Pines Groundwater Contamination (Signed)	33
9	255864	2/9/03	Severn Trent Laboratories	Indiana Dunes National Lakeshore	Indiana Dunes National Lakeshore Drinking Well Locations (Analytical Report Attached)	229
10	207481	5/4/04	U.S. EPA	Respondents	Administrative Order by Consent (V-W-04-C-784) for the Town of Pines Groundwater Contamination (Signed)	47
11	926447	5/4/04	U.S. EPA	Respondents	Amendment to the Administrative Order by Consent (V-W-03-C-730) for the Town of Pines Groundwater Contamination Site (Signed) ***(Portions of this document have been redacted)***	9
12	255865	10/19/04	ENSR International	U.S. EPA	Municipal Water Service Extension Sampling and Analysis Plan for the Pines Area of Investigation	165
13	255866	1/4/12	Tetra Tech EM Inc.	U.S. EPA	Final Community Involvement Plan for the Town of Pines Groundwater Plume Site	25
14	255867	1/1/05	ENSR International	U.S. EPA	Site Management Strategy for the Pines Area of Investigation Volume I Main Text	97
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16	255869	2/9/05	ENSR International	U.S. EPA	Yard 520 Sampling and Analysis Plan for the Pines Area of Investigation	568
17	253861	9/16/05	ENSR International	U.S. EPA	RI/FS Study Work Plan for the Pines Area of Invetigation Volume 1 Work Plan Overview	168

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19	253863	9/16/05	ENSR International	U.S. EPA	RI/FS Study Work Plan for the Pines Area of Invetigation Volume 3 QAPP	729
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1	925620	1/12/95	Weaver Boos Consultants, Inc.	File	Clay Barrier Wall CQA Report	12
2	171789	1/24/03	Muno, W., U.S. EPA	Northern Indiana Public Service Company, et al.	Administrative Order by Consent VW-03-C-730 (Signed)	33
3	207481	5/4/04	Karl, R., U.S. EPA	Northern Indiana Public Service Company, et al.	Administrative Order on Consent for Remedial Investigation/Feasibility Study	47
4	207610	5/4/04	Karl, R., U.S. EPA	Northern Indiana Public Service Company, et al.	Amendment to Administrative Order on Consent for Groundwater Removal Action (Signed)	9

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5	926442	4/13/04	Marilyn M. Jones & Associates, Ltd.	U.S. EPA	Transcript of Public Meeting for the Town of Pines Superfund Site ***(Privacy information has been redacted)***	95
6	925618	4/20/04	Severn Trent Laboratories	Town of Pines Resident	Analytical Report- Brown Ditch	18
7	339498	7/28/04	Rundio, L., McDermott, Will, & Emery	Theissen, K., U.S. EPA	Final Report Town of Pines Groundwater Remedial Action AOC V-W-03-C-730 (With Cover Letter Attached)	7
8	926418	12/8/04	Weaver Boos Consultants, Inc.	File	Supplemental Closure and Post Closure Plan	55
9	255867	1/1/05	ENSR	File	Site Management Strategy Volume 1 Main Text	97
10	926443	1/1/05	ENSR	File	Site Management Strategy Volume 2 Appendices ***(Privacy information has been redacted)***	459
11	926426	1/18/05	ENSR	Brown, Inc.	RI/FS Work Plan Volume 3 QAPP	674
12	919291	5/4/05	U.S. EPA	File	Technical Assistance Plan	99
13	926427	5/23/05	ENSR	Brown, Inc.	RI/FS Work Plan Volume 3 QAPP Revision 1	727
14	926423	3/6/05	ENSR	Brown, Inc.	QAPP Yard 520 Sampling and Analysis Plan	458
15	925619	7/20/05	ENSR	File	Summary of Changes Made to the May 23, 2005 Submittal of the Yard 520 SAP and RI/FS Work Plan	7
16	926424	2/9/05	ENSR	Brown, Inc.	QAPP Yard 520 Sampling and Analysis Plan Revision 1	458
17	926380	9/14/05	ENSR	U.S. EPA	Municipal Water Service Extension Sampling and Analysis Plan	236
18	253863	9/16/05	ENSR	U.S. EPA	Remedial Investigation/Feasibility Study Work Plan- Volume 3 QAPP	729

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19	926378	11/30/05	ENSR	U.S. EPA	Remedial Investigation/Feasibility Study Work Plan- Pines Area of Investigation AOC II Docket No. V-W-04-C-784 Addendum to Volume 4 Health and Safety Plan	7
20	926377	2/5/06	U.S. EPA	File	MWSE SAP Validated Sample Results for Arsenic	2
21	926428	9/8/06	ENSR	Brown, Inc.	RI/FS Work Plan Volume 3 QAPP Revision 3	143
22	926417	10/6/10	Perry, E., ENSR	Drexler, T., U.S. EPA and K. Herron, IDEM	Memo re: Groundwater Monitoring Program	5
23	925616	2/16/07	Archer, C. and D. Mitchell, ENSR	Drexler, T. and E. Karecki, U.S. EPA	Memo re: Evaluation of Ecological Screening Levels and Risk Values for Boron in Surface Water	6
24	926407	2/16/07	Archer, C. and D. Mitchell, ENSR	Drexler, T. and E. Karecki, U.S. EPA	Memo re: Uranium Screening Levels	2
25	925621	2/16/07	Archer, C. and D. Mitchell, ENSR	Drexler, T. and E. Karecki, U.S. EPA	Memo re: Dioxin/Furan Screening Levels	5
26	926416	7/3/07	Perry, A., ENSR	Drexler, T., U.S. EPA and K. Herron, IDEM	Memo re: Proposed Adjustments to Field Sampling Plan	4
27	926393	6/25/07	Perry, A., ENSR	Drexler, T. and E. Karecki, U.S. EPA	Technical Memo re: Work Plan, Groundwater Flow Modeling	6
28	926434	7/27/10	U.S. EPA	File	Yard 520 Landfill Photographs	4
29	919282	7/31/07	ENSR	File	Town of Pines Groundwater Superfund Site Chemical Analysis Data	234
30	925609	8/24/07	Perry, A., ENSR	Drexler, T., U.S. EPA and K. Herron, IDEM	Memo re: Information about Origins of CCBs Pines Area of Investigation	1
31	926386	9/18/07	Perry, A., ENSR	Drexler, T., U.S. EPA and K. Herron, IDEM	Technical Memo re: Revised Work Plan, Groundwater Flow Modeling	37
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34	926403	10/22/07	Spindler, K., IDEM	Herron, K., IDEM	Memo re: Revised Groundwater Modeling QAPP and Response to Comments	4
35	926387	4/7/12	Perry, A., ENSR	Drexler, T., U.S. EPA and K. Herron, IDEM	Technical Memo re: Revision 1 Work Plan, Groundwater Flow Modeling	40
36	926404	4/7/12	Perry, A., ENSR	Drexler, T., U.S. EPA and K. Herron, IDEM	Memo re: Response to Comments on Groundwater Flow Modeling Work Plan	6
37	925608	2/21/08	Perry, A., ENSR	Drexler, T., U.S. EPA and K. Herron, IDEM	Memo re: Results of Additional Soil Sampling for Arsenic Pines Area of Investigation	2
38	926429	3/31/08	ENSR	Brown, Inc.	RI/FS Work Plan Volume 3 QAPP Revision 4	798
39	926425	4/18/08	ENSR	Brown, Inc.	QAPP Yard 520 Sampling and Analysis Plan Revision 2	505
40	926385	8/8/10	Perry, A., ENSR	Drexler, T., U.S. EPA and K. Herron, IDEM	Draft Technical Memo re: Discussion of Hydrogeologic Conditions In and Around Yard 520	8
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42	926394	3/19/09	Perry, A., ENSR	Drexler, T., U.S. EPA and K. Herron, IDEM	Memo re: Miscellaneous Requested Information	35
43	376388	5/5/09	PINES	Northern Indiana Public Service Company, et al.	First Amendment to Technical Assistance Plan Agreement	5
44	926453	9/8/09	Burden, D., U.S. EPA	Drexler, T., U.S. EPA	Memo re: Additional Comments of the Numerical Ground-Water Flow Model for the Town of Pines, IN Ground-Water Plume	4

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47	925611	1/25/10	Bradley, L., and E. Perry, AECOM	Drexler, T., U.S. EPA	Letter re: Pines Area of Investigation- Response to Comments on Numerical Groundwater Model	2
48	925610	10/2/10	Drexler, T., U.S. EPA	Waters, B., Indiana Dunes National Lakeshore	Letter re: Comments to the January 14, 2010 Draft Final RI Report	3
49	926419	2/25/10	Maxwell, M., and T. Perkins, Weaver Boos Consultants	Snyder, A., IDEM	Letter re: Inspection Summary Yard 520 RWS	4
50	926452	5/3/10	AECOM	File	Remedial Investigation Report ***(Privacy information has been redacted)***	3742
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52	926408	3/17/10	Snyder, A., IDEM	Perkins, T., Weaver Boos Consultants	Letter re: Remediation Plan Yard 520 Landfill	2
53	926411	7/28/10	Simmons, J., IDEM	Blumenfeld, V., Brown, Inc.	Letter re: Revised Summary/Violation Letter Yard 520 Landfill	10
54	926376	12/11/10	Jensen, L., PINES	File	Letter re: Comment on Review of PINES Radiation Survey	3
55	926439	1/1/12	AECOM	File	Technical Memo re: Remedial Action Objectives ***(Privacy information has been redacted)***	60
56	926391	2/29/12	Ohl, M., U.S. EPA	Kysel, P., PINES	Letter re: Response to October 12, 2011 Comments and October 2009 Risk Assessment Comments	9
57	926396	4/18/12	Ohl, M., U.S. EPA	Bradley, L., AECOM	Letter re: Remedial Action Objectives	10

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59	926382	1/7/12	AECOM	U.S. EPA	Human Health Risk Assessment	1865
60	926383	1/7/12	AECOM	U.S. EPA	Screening Level Ecological Risk Assessment	1068
61	925613	8/31/12	Ohl, M., U.S. EPA	Bradley, L., AECOM	Letter re: AOC Docket No. V-W-04-C-784 Alternatives Screening Technical Memorandum	16
62	926406	12/9/12	Ohl, M., U.S. EPA	Kysel, P., PINES	Letter re: Response to July 9, 2012 Comments on the Alternative Screening Technical Memorandum	6
63	926389	3/20/13	Ohl, M., U.S. EPA	Kysel, P., PINES	Letter re: AOC Docket No. V-W-04-C-784	12
64	926392	9/30/13	Krowitz, L., and K., Vosnakis, AECOM	Hardin, E., U.S. EPA	Memo re: Use of J Qualified Data	12
65	926420	1/13/11	AECOM	File	QAPP Addendum Supplemental Soil Characterization Work Plan	125
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70	926431	1/14/11	AECOM	U.S. EPA	Supplemental Soil Characterization Work Plan-Appendices	426
71	925623	6/14/11	Hardin, E., U.S. EPA	Murray, C. People in Need of Environmental Safety	Letter re: AOC Docket No. V-W-04-C-784	13
72	926422	7/14/11	AECOM	U.S. EPA	Supplemental Soil Characterization Work Plan Revision 2	246

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73	926381	11/19/14	U.S. EPA	File	Table 1 Validated Radiological Results Supplemental Soil Characterization	27
74	925622	4/13/15	Hardin, E., U.S. EPA	Murray, C. People in Need of Environmental Safety	Email re: Pines RAD Data	2
75	926414	4/28/15	Perry, A., AECOM	Hardin, E., U.S. EPA	Memo re: Pines Area of Investigation, Groundwater and Private Well Sampling QAPP Addendum, Spring 2015	275
76	926413	7/5/15	U.S. EPA	File	Validated Data Table	1
77	926432	8/5/15	AECOM	U.S. EPA	Appendix H- Expanded Properties Sampling and Analysis Plan	189
78	926401	5/21/15	Jensen, L., PINES	Hardin, E., U.S. EPA	Letter re: Comments on the NIPSCO/Brown and PINES Soil Radiation Data	1
79	925624	5/27/15	Hardin, E., U.S. EPA	Jensen, L., PINES	Email re: Comments on Pines Radiation Data	2
80	926400	5/27/15	Jensen, L., PINES	Hardin, E., U.S. EPA	Letter re: Comments on the Feasibility Study	3
81	926398	11/8/15	Petroff, D., IDEM	Hardin, E., U.S. EPA	Letter re: Applicable or Relevant and Appropriate Requirements (ARARs)	3
82	925614	8/26/15	Hardin, E., U.S. EPA	Gahala, A., USGS	Email re: Pines Groundwater Data Review and Meeting Availability	3
83	926384	10/15/15	-	File	All Groundwater Results	1
84	922152	10/15/15	Hassan, J., U.S. EPA	Karl, R., U.S. EPA	Enforcement Action Memorandum re: Determination of Threat to Public Health, Welfare or Environment, Town of Pines Groundwater Plume Site, Town of Pines (Signed) (Redacted)	27
85	926402	10/20/15	Gahala, A., USGS	Hardin, E., U.S. EPA	Letter re: Pines FS Review and Selection of Remedy	6

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87	926409	5/2/16	Wegrzyn, J. U.S. EPA	Hardin, E., U.S. EPA	Email re: Town of Pines NPL Site	2
88	926395	2/3/16	Petroff, D., IDEM	Hardin, E., U.S. EPA	Letter re: Draft Proposed Plan	3
89	925328	3/17/16	Karl, R., U.S. EPA	Northern Indiana Public Service Company	Administrative Settlement Agreement and Order on Consent for Removal Action- Soil Removal Action Docket No. V-W-16-C-008 (Redacted Version)	42
90	926026	4/29/16	U.S. EPA	Public	Fact Sheet- EPA Proposes Cleanup Plan for Soil, Groundwater	8
91	926433	2/5/16	AECOM	U.S. EPA	Feasibility Study	5642
92	926405	5/16/16	U.S. EPA	Public	Proposed Plan for the Town of Pines Superfund Alternative Site	39
93	925617	-	U.S. EPA	File	Lognormal Background Statistics for Full Data Sets	1
94	926415	-	USGS	-	Evaluation of Ground-Water and Boron Sources by Use of Boron Stable-Isotope Ratios, Tritium, and Selected Water-Chemistry Constituents Near Beverly Shores, Northwestern Indiana, 2004	60
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SEPTEMBER, 2016
SEMS ID:

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1	928089	8/6/16	Marilyn M. Jones & Associates, Ltd.	U.S. EPA	Transcript of Proceedings re: The Matter of the Coal Ash Issue (Arsenic & Thallium Contamination)	107

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2	928420	1/6/15	Perry, E., AECOM	Hardin, Erik U.S. EPA	AECOM Memorandum - Pines Area of Investigation, Groundwater Levels	18
3	928421	12/1/95	IDEM	-	Request for Alternative Restricted Waste Type Designation - Town of Pines Groundwater Plume (Partial Document)	5
4	928425	4/1/16	Haley & Aldrich, Inc.	U.S. EPA	HAI - Removal Work Plan - Soil Removal Action - Town of Pines Groundwater Plume (***Redacted***)	377
5	928427	5/16/16	Brown, Inc	U.S. EPA	Brown, Inc Re: Comments on U.S. EPA Proposed Plan for Town of Pines	7
6	928428	7/15/16	Concerned Citizen	U.S. EPA	Email Re: Citizen Comments on Proposed Cleanup Plan in Town of Pines	2
7	928429	7/10/16	Norris, C.H., Geo-Hydro Inc.	Hardin, Erik U.S. EPA	Geo-Hydro, Inc. Letter Re: Comments on EPA Proposed Cleanup Plan for Soil and Groundwater at Town of Pines Prior to the June 8 Meeting	2
8	928430	6/13/16	Public	U.S. EPA	Citizen 2 Comments on U.S. EPA Proposed Cleanup Plan for Soil, Groundwater	4
9	928431	7/11/16	Public	U.S. EPA	Citizen 3 Comments on U.S. EPA Proposed Cleanup Plan for Soil, Groundwater	4
10	928432	5/16/16	NIPSCO, Brown, Inc., Ddalt Corp., Balk Transport Corp.	U.S. EPA	Respondents to AOC II - Comments on the U.S. EPA Proposed Plan	5
11	-	-	Ballotti, D., U.S. EPA	File	Record of Decision (ROD) ***(Pending)***	-

Explanation of Significant Differences Town of Pines Superfund Site

Site Name:	**Town of Pines Superfund Site**
CERCLA ID #:	**INN000508071**
Site Location:	**Town of Pines, Indiana**
Support Agency:	**Indiana Department of Environmental Management**
Lead Agency:	**EPA, Region 5**

I. Introduction

This decision document presents an Explanation of Significant Differences (ESD) for the Town of Pines Superfund Site (Site), also known as the Town of Pines Groundwater Plume Site or Pines Groundwater Contamination Site, located in Town of Pines, Indiana. The Record of Decision (ROD) addressed by this ESD was issued on September 30, 2016.

The ESD is issued in accordance with § 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9617, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), § 300.435(c)(2)(i). The Director of the Superfund & Emergency Management Division has been delegated the authority to sign this ESD.

This ESD will become part of the Administrative Record for the Town of Pines Superfund Site, which has been developed in accordance with § 113(k) of CERCLA, 42 U.S.C. § 9613(k) and NCP § 300.825(a)(2).

The Administrative Record is available for review at the Michigan City Public Library located at 100 East Fourth Street in Michigan City, Indiana, the EPA, Region 5 Superfund Records Center at 77 W. Jackson Boulevard in Chicago, Illinois, or www.epa.gov/superfund/town-pines-groundwater.

II. Statement of Purpose

The purpose of this ESD is to document the addition of potential institutional controls (ICs) to allow for more flexibility as part of the soil remedy for the Site and to provide access to the Site to conduct the soil and groundwater remedies, remove hexavalent chromium as a contaminant of concern (COC) for soil, and clarify the scope of the selected soil remedy in the ROD.

EPA prepares an ESD when it is determined by the Agency that changes to the original selected remedy are significant, but do not fundamentally alter the remedy selected in the ROD with respect to scope, performance, or cost.

III. Site History and Contamination

Site History

The Site is located in and around the Town of Pines, Indiana. Contamination at the Site stems from coal ash that was disposed at a landfill (Yard 520) on Site (now closed) and was used as landscaping fill material at an unknown number of properties in and around the town.

Yard 520 was owned by Ddalt, Corp. and operated by Brown, Inc. Materials accepted by Brown for disposal at Yard 520 were primarily coal ash materials generated from the combustion of coal at Northern Indiana Power Service Company's (NIPSCO's) Michigan City Generating Station. In addition, at least one other company, Bulk Transport Corp., was involved in the transport of the coal ash to Yard 520.

EPA and the Indiana Department of Environmental Management (IDEM) found boron and molybdenum above removal action levels (RALs) in private wells near Yard 520 after property owners complained of a bad taste in their water. In 2003, EPA entered into an Administrative Order on Consent (AOC) with the potentially responsible parties (PRPs) that required the PRPs to extend municipal water service to residents potentially impacted by Yard 520. The AOC was modified in 2004, to extend municipal water service to additional properties and to provide bottled water service to properties in the larger investigation area without municipal water service.

In 2004, EPA and the PRPs entered into a second AOC that required the PRPs to conduct a remedial investigation (RI) and feasibility study (FS) using the Superfund Alternative Approach.

EPA issued the RI report for the Site on March 5, 2010, and human health and ecological risk assessments in July 2012. In 2012, groundwater was the only contaminated media of concern. However, in post-RI sampling, EPA found that the coal ash used as landscaping fill resulted in coal ash-derived contaminants in the soil that exceeded EPA's RALs.

EPA issued an Action Memorandum in October 2015, to initiate a time critical removal. The response actions included: (1) sampling properties, subject to landowner consent, within the Town of Pines or the Area of Investigation as defined in the RI; (2) excavating site-related contaminated soil above site-specific clean-up levels to a depth of three feet; (3) replacing excavated soil with clean fill; and, (4) restoring the property. On March 17, 2016, EPA entered into an Administrative Settlement Agreement and Order on Consent (ASAOC) with NIPSCO to conduct these soil sampling and excavation activities. To date, NIPSCO continues to conduct the soil excavation and sampling activities.

EPA issued the FS report for the site on May 2, 2016, and the proposed plan on May 16, 2016. EPA issued the ROD on September 30, 2016, in which it selected a remedy for groundwater and soil.

Site Contamination

The contaminants found at the Site include boron, molybdenum, and arsenic in groundwater, and arsenic, thallium and lead in soil. Some or all of the contaminants identified are hazardous substances as defined in § 101(14) of CERCLA, 42, U.S.C. § 9601(14), and 40 C.F.R. § 302.4.

IV. Selected Remedy

A ROD for the entire Site was signed on September 30, 2016.

This document is available in the Superfund Document Management System (SDMS) under Record Number 508886.

The selected groundwater remedy in the ROD included:

- phytoremediation in one area of groundwater contamination;
- long-term groundwater monitoring; and,
- institutional controls prohibiting the use or installation of private drinking water wells on specific properties or within a designated groundwater management area using a restrictive ordinance or environmental covenants or both.

The selected soil remedy in the ROD included:

- access to and soil sampling on individual properties;
- excavation of three feet of coal ash derived contaminated soil;
- installation of a visual barrier as an indicator of contaminated soil left in place below three feet;
- restoration of properties by replacing excavated soil with clean backfill; and
- restrictive covenants to restrict digging or other disturbance of any contaminated soil left in place.

The soil cleanup levels established in the ROD are summarized in Table 1 below:

COC	Clean-up Level
Arsenic	30.1 parts per million (ppm)
Thallium	1.9 ppm
Lead	400 ppm
Hexavalent Chromium	4.3 ppm

The groundwater cleanup levels established in the ROD are summarized in Table 2 below:

COC	Clean-up Level
Boron	4.0 milligrams/liter (mg/l)
Molybdenum	0.10 mg/l
Arsenic	0.010 mg/l

V. Description of Significant Differences and Basis for the ESD

The remedial action provided in the ROD calls for ICs in the form of restrictive covenants to address contaminated soil post cleanup. A landowner may be unwilling to enter into a restrictive covenant, e.g. if the owner refuses to allow EPA to proceed with its remedy. Accordingly, an explanation of significant differences is needed that involves additional institutional controls, to the extent permissible under local law, as part of the soil remedy for the Site. Such institutional controls may include deed notices or an ordinance to ensure the remedy is protective.

The remedial action provided in the ROD calls for a restrictive ordinance or environmental covenants or both for the groundwater remedy. To carry out this remedy, as well as the soil remedy, easements are needed to gain access to each property within the Site boundaries to sample, inspect, monitor, carry out the remedial actions, and ensure the short and long-term effectiveness of the remedy.

Before the ROD was issued, EPA found total chromium concentrations in soil samples above the hexavalent chromium risk-based screening levels. However, these samples were not analyzed specifically for hexavalent chromium (a subset of total chromium). EPA included hexavalent chromium as a COC for soil in the ROD with the intention of additional analyses would be conducted to determine if hexavalent chromium should remain a COC for soil. After reviewing the results of hundreds of samples, including soil with and without coal ash contamination and direct samples of coal ash materials, EPA has not identified a single sample with hexavalent chromium above the clean-up level of 4.3 ppm. As a result, EPA is removing hexavalent chromium as a COC for soil for the Site.

As part of this ESD, EPA is clarifying that the selected soil remedy is to be conducted consistent with the technical approach taken for previous and ongoing removals under the March 17, 2016 ASAOC, including, but not limited to, the following:

- Each property shall be restored to pre-remedial conditions to the extent practicable. Such restoration shall include, but not be limited to, repairing damage to structures from excavating the soil.
- Property specific design details, such as the location of a septic system or presence of groundwater less than 3 feet from the surface, may result in contaminated soils with COCs

above cleanup levels left at a depth of less than 3 feet as long as the contamination does not present a risk to human health or the environment. The landowner will be notified of the contamination's location through the installation of a physical barrier, institutional control, and letter. In situations where installation of a barrier is not feasible, the landowner will receive notification of the contamination's location by other means. Such other means may include, but not be limited to, an institutional control and/or letter.

- Removal, excavation, or disturbance of contaminated soils left in place will be managed in accordance with a property specific plan. The landowner will receive information regarding such plan in an institutional control.

VI. Support Agency Comments

EPA consulted with IDEM and provided it the opportunity to comment on this ESD in accordance with NCP § 300.435(c)(2) and § 300.435(c)(2)(i) and CERCLA § 121(f). IDEM concurred with this ESD in a letter dated January 15, 2020, and email dated February 7, 2020.

VII. Statutory Determinations

EPA determined that these significant changes comply with the statutory requirements of CERCLA § 121, 42 U.S.C. § 9621, are protective of human health and the environment, comply with Federal and State requirements that are applicable or relevant and appropriate to the remedial action, are cost-effective, and utilize permanent solutions and alternative treatment technologies to the maximum extent practicable.

Since this remedy will result in hazardous substances, pollutants, or contaminants remaining on site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted no less often than every five years after the initiation of the remedial action to ensure that the remedy is, or will be, protective of human health and the environment.

VIII. Public Participation

The public participation requirements set out in the NCP § 300.435(c)(2) have been met by publishing this ESD, making it available to the public on EPA's website at www.epa.gov/superfund/town-pines-groundwater and in the Administrative Record, publishing a notice summarizing the ESD in a major local newspaper, and emailing the ESD to a group of citizens and stakeholders whom have informed EPA they are interested in obtaining more information about the Site.

IX. Authorizing Signature

I have determined the remedy for the Site, as modified by this ESD, is protective of human health and the environment, and will remain so provided the actions presented in this report are implemented as described above.

This ESD documents the significant changes related to the remedy at the Site. U.S. EPA selected these changes with the concurrence of IDEM. I therefore approve this ESD for the Town of Pines Superfund Site.

U.S. Environmental Protection Agency

By:

2/13/2020

X 

Douglas Ballotti, Director
Superfund & Emergency Managment Division
Signed by: DOUGLAS BALLOTTI

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF INDIANA
HAMMOND DIVISION

UNITED STATES OF AMERICA,	)	
	)	
and	)	
	)	Civil Action No. 2:22-cv-48
STATE OF INDIANA,	)	
	)	
Plaintiffs,	)	
	)	
v.	)	
	)	
NORTHERN INDIANA PUBLIC SERVICE COMPANY LLC,	)	
	)	
Defendant.	)	

APPENDIX B TO CONSENT DECREE
STATEMENT OF WORK FOR OPERABLE UNIT 2

REMEDIAL DESIGN REMEDIAL ACTION

STATEMENT OF WORK

FOR OPERABLE UNIT 2 OF THE

TOWN OF PINES SUPERFUND SITE

Town of Pines, Porter County, State of Indiana

TABLE OF CONTENTS

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 SD's responsibilities for community involvement.
- Section 3 (Remedial Design/Remedial Action) sets forth the process for developing the RD, which includes the submission of specified primary Deliverables and the requirements for the completion of the RA for OU 2 which includes the submission of specified primary Deliverables and supporting Deliverables.
- 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 (References) provides a list of references, including URLs.

1.3 The terms used in this SOW that are defined in CERCLA, in regulations promulgated under CERCLA, or in the 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.

1.4 The Scope of the Remedy for OU 2. The Scope of Remedy for OU 2 consists, with respect to the CD Properties Remaining to be Sampled, CD Properties to be Remediated, and CD Completed Properties with Institutional Controls of a soil component ("OU 2 RA Soil Component") which includes the following soil components identified here and described below: (1) the soil remedial action components described in Part 1, Section 4.0 and Part 2, Section 19.0, Subsection B of the ROD; (2) continuation of the process established under the ASAOC and Section V of the 2020 ESD; and (3) with respect to the ASAOC Completed Properties with Institutional Controls, the remedy includes the ongoing obligations related to contingencies of such Properties. The Scope of the Remedy for OU 2 also includes a groundwater, surface water, and sediment monitoring component ("OU 2 RA Groundwater, Surface Water, and Sediment Component"). Specifically, it involves groundwater monitoring for the area north of the East Branch of Brown Ditch, and east of the Main Branch of Brown Ditch, and surface water and sediment sampling in the East Branch of Brown Ditch, as described below.

OU 2 RA Soil Component

(a) SD shall conduct the OU 2 RA Soil Component which shall include, but is not limited to, the following activities listed in (1) – (6) below.

(1) **Outreach and sampling**. These activities include:

(i) conducting outreach to owners of CD Properties Remaining to be Sampled to gain access to sample soil for contaminants of concern ("COCs") arsenic, thallium, and lead at such Properties;

(ii) sampling for arsenic, thallium, and lead in accordance with the EPA Field Sampling Plan for Soil required by ¶ 5.7(d) of this SOW; and

(iii) using the sampling results to identify CD Properties to be Remediated.

(2) **Plans and other documentation**. At each CD Property to be Remediated, SD shall:

(i) initiate discussion with owner to obtain access;

(ii) conduct a title search and land surveying activities to locate boundaries and other pertinent features as needed for the preparation of property-specific RD drawings ("Remedial Design Package");

(iii) prepare and implement plans for site security and access control, erosion, and sedimentation controls, decontamination activities, staging, support area, and site preparation activities;

(iv) prepare Remedial Design Package for submittal to EPA and IDEM prior to initiation of soil remediation;

(v) submit to EPA for review a proposed letter to the owner documenting pre- and post-excavation conditions and remediation performed, including post-excavation confirmatory soil sampling, the activities conducted at such Property, and all laboratory data gathered before, during, and after the RA activities; and

(vi) following EPA review of the proposed letter and approval of presentation of data (excludes validation of data), submit the letter to the owner.

(3) **Excavation and disposal activities**. At each CD Property to be Remediated, SD shall:

(i) excavate and stage for off-site disposal contaminated soil at a target depth of no less than three feet where sampling shows arsenic, thallium, and/or lead above soil cleanup levels of 30.1 ppm, 1.9 ppm, and 400 ppm, respectively ("soil cleanup levels"), in accordance with the Remedial Design/Remedial Action Work Plan ("RDRAWP") approved under this SOW, as described in Section 3.1;

(ii) due to specific Property design details, if applicable and approved by EPA, leave contaminated soils with COCs above soil cleanup levels at a depth of less than three feet as long as the contamination does not present a risk to human health or the environment;

(iii) due to specific Property design details, leave contaminated soils with COCs above cleanup levels in place if they are located (1) under or immediately adjacent to buildings, roadways, in-ground pools, or utilities and removal will compromise the structural integrity of these features; (2) in inaccessible areas, including under paved driveways and walkways; or (3) in rights of way to the extent the excavation of such soils will compromise the physical integrity or function of an adjacent street or utilities.

(iv) install a permanent, water-permeable visual barrier in the excavation area to demarcate the presence of contaminated soils with COCs above soil cleanup levels left at depth or, in situations where installation of a barrier is not feasible, document the contamination's location by other means such as an institutional control and/or letter;

(v) dispose of contaminated soils at a RCRA/CERCLA approved disposal facility in accordance with the EPA Off-Site Rule (40 C.F.R. § 300.440);

(vi) take such other actions as may be necessary or appropriate to complete excavation of soils contaminated with arsenic, thallium, and/or lead in excess of soil cleanup levels; and

(vii) safely stage and dispose of the excavated soils.

(4) **Restoration activities**.

At each CD Property to be Remediated, SD shall restore Property to pre-remedial conditions to the extent practicable or, if the Property owner agrees, provide payment to the Property owners sufficient to cover the costs of restoring Property to pre-remedial conditions. Restoration shall include but not be limited to backfilling excavated areas with clean fill

material and topsoil; laying sod or planting other appropriate ground cover, shrubs, trees, or other vegetation; ensuring that restoration of vegetation is successful, repairing or replacing concrete or other paved areas and repairing damage to structures or appurtenances caused from soil remedial activities.

(5) **Contingencies**.

(i) Upon notification from an owner or Easement Holder of CD Completed Properties with Institutional Controls or ASAOC Completed Properties with Institutional Controls that he or she wishes to remove, excavate, or disturb any soil, structure, utility fixture, facility, or improvement located in soil with COCs above soil cleanup levels, SD shall prepare and implement a soil management, excavation, and disposal plan for such Property consistent with the ROD, the ESD, this SOW, the RDRAWP, and as required by applicable law. SD shall provide written notice via email to EPA to review, comment, and make changes to the plan. After providing EPA with no less than 7 business Days to comment and taking up to 7 business Days to incorporate any comments from EPA, SD shall implement the soil management, excavation, and disposal plan. SD shall only be responsible for the portions of the restoration work that are necessary due solely to the work needed as a result of the presence of CCRs.

(ii) In addition to the obligations in the preceding paragraph, if removal, excavation, or disturbance of any soil, structure, utility fixture, facility, or improvement located in soil with COCs above soil cleanup levels will require obtaining a permit from the appropriate permitting authority to repair, modify, or replace an existing septic system or to install a new septic system at such Property, and such septic system project will require replacing contaminated soil with COCs above soil cleanup levels or the clean fill material previously placed on the CD Completed Properties with Institutional Controls or ASAOC Completed Properties with Institutional Controls by SD, then SD's obligations shall be limited to:

(A) properly excavating and replacing the contaminated soils and/or clean fill material at such Property, as required by the permitting authority, and requested by the Property owner's licensed contractor;

(B) providing the Property owner with clean replacement fill for the project;

(C) coordinating with the Property owner's licensed contractor or the Property owner regarding the scheduling for excavation and backfilling work;

(D) disposing of the contaminated soils and/or clean fill material; and

(E) reimbursing the Property owner for the incremental costs incurred in obtaining and/or implementing a septic system permit, which costs are due to the contaminated nature of the soils with COCs above soil cleanup levels, or the physical characteristics of clean fill material placed by SD as part of the RA.

(iii) SD's obligations related to a septic system project, as described in (ii) above, shall continue until the replacement of an existing septic system or installation of a new septic system at such Property would not necessitate excavating any additional contaminated soils or clean fill materials and replacing them with a replacement fill, as required by applicable law or the permitting authority.

(6) **Institutional Controls**.

(i) SD shall execute an Environmental Restrictive Covenant ("ERC") enforceable by SD, EPA, as third-party beneficiary, and IDEM, with each owner of a CD Completed Properties with Institutional Controls. Each ERC shall be consistent with the ROD and this SOW and shall:

(A) restrict digging or other disturbance of any contaminated soils with COCs above soil cleanup levels that remain in place following the conclusion of the soil RA at such Property;

(B) restrict any disturbance of the visual barrier used to demarcate the presence of contaminated soils with COCs above soil cleanup levels left at depth;

(C) inform, if applicable, the owner of the location of contaminated soils with COCs above soil cleanup levels where installation of a barrier is not feasible; and

(D) inform the owner of SD's obligations if the owner wishes to remove, excavate, or disturb any soil, structure, utility fixture, facility, or improvement located in contaminated soil with COCs above soil cleanup levels.

(ii) If an owner is unwilling to enter into an ERC, then SD shall coordinate with EPA, IDEM, and/or local authorities to execute deed notices or an ordinance, as appropriate and to the extent permissible under local law, to ensure the remedy is protective.

(iii) SD shall also include access to CD Completed Properties with Institutional Controls in the ERC for SD, EPA, and IDEM to sample, inspect, monitor, carry out the RA, and ensure the short- and long-term effectiveness of the remedy and for carrying out obligations under Sections VIII of the CD (Property Requirements), ICs obligations as provided in the Institutional Control Implementation and Assurance Plan ("ICIAP"), and obligations to address contingencies at CD Completed Properties with Institutional Control as summarized in ¶ 1.4(a)(5), as applicable.

(iv) SD shall prepare and submit to EPA for approval an ICIAP that describes how the ICs shall be implemented, maintained enforced, modified, and terminated (if applicable) as required by ¶ 5.7(i) of this SOW, including SD's obligations at ASAOC Completed Properties with Institutional Controls.

OU 2 RA Groundwater, Surface Water, and Sediment Component.

(b) SD shall conduct OU 2 RA Groundwater, Surface Water, and Sediment Component including conducting the activities set forth in (1)-(5) below. Groundwater, surface water and sediment shall be monitored for COCs and other contaminants, which shall be set forth in the RDRAWP, that are associated with coal ash present at the Site ("CCR Constituents") in the area of the East Branch of Brown Ditch, and east of the Main Branch of Brown Ditch. COCs include arsenic, boron, and molybdenum in groundwater. The OU 2 RA Groundwater, Surface Water and Sediment Component includes:

(1) establishing a network of groundwater monitoring wells that extends in the area north of the East Branch of Brown Ditch, and east of the Main Branch of Brown Ditch within the Area of Investigation (as defined in the RI) and the nearby vicinity as approved by EPA, which shall include existing monitoring wells and additional monitoring wells, as necessary or appropriate;

(2) conducting annual long-term groundwater monitoring for COCs and other CCR Constituents to ensure that COCs are decreasing to below "Groundwater Cleanup Levels" of 4 milligrams per liter ("mg/L') boron, 0.01 mg/L for arsenic, and 0.1 mg/L for molybdenum as specified in the ROD and that COCs and other CCR Constituents are not increasing in concentration, expanding in extent, or migrating off-site, particularly

toward the Indiana Dunes National Lakeshore and areas where drinking water wells are located; continued groundwater monitoring will be evaluated no less frequently than every five years; such monitoring will be conducted in accordance with the Field Sampling Plan for Groundwater, Surface Water, and Sediments required by ¶ 5.7(c) of the SOW;

(3) conducting annual monitoring of surface water and sediments for groundwater COCs and other CCR Constituents, as determined by EPA following a reasonable opportunity for review and comment by IDEM, to ensure that ecological habitats continue to not be adversely affected by Site contamination;

(4) conducting periodic monitoring at certain residential drinking water wells identified by EPA for COCs and other CCR Constituents, following a reasonable opportunity for review and comment by IDEM. Selection of wells for long term monitoring will initially be determined during the RD, but the list of wells to be monitored may be expanded or contracted as determined by EPA review of the data following a reasonable opportunity for review and comment by IDEM; and

(5) submitting annual reporting of monitoring data submitted to EPA and IDEM.

(c) SD shall use best efforts to work with local officials to implement a local ordinance, and/or use best efforts to implement equivalent restrictions, consistent with the ROD and this SOW that prohibits the use or installation of private drinking water wells in the vicinity of the two wells identified in the ROD that are located within OU 2 — MW106 and MW111—and anywhere else in the OU 2 groundwater monitoring area where groundwater contamination from CCR migrating from the Town of Pines Superfund Site has come to be located, to the extent groundwater contamination exists in those areas above Performance Standards.

2. COMMUNITY INVOLVEMENT

2.1 Community Involvement Responsibilities

(a) EPA has the lead responsibility for developing and implementing community involvement activities at the Site. EPA issued a Community Involvement Plan ("CIP") for the Site in December 2004 and updated it in August 2013. Pursuant to 40 C.F.R. § 300.435(c), EPA shall review the existing CIP and determine whether it shall 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, the use of a Technical Assistance Plan.

(b) EPA's revised CIP may require SD to conduct community involvement activities. SD shall implement any community involvement activities that the CIP delegates to it. All community involvement activities conducted by SD pursuant to EPA's CIP are subject to EPA's oversight.

(c) SD shall conduct the following actions set forth in (1)-(9) below to address the OU 2 RA Soil Component, as described in Section 3 of this SOW:

(1) using tax maps for the county, identify the CD Properties Remaining to be Sampled and the owners, and addresses;

(2) of the CD Properties Remaining to be Sampled, identify those Properties that are developed and those that are not developed; and

(3) conduct a community notification program that follows up on previous efforts to inform the community of the soil sampling program and to recruit Properties to be sampled, that includes:

(i) publishing a notice in the local newspapers about the soil sampling program;

(ii) sending a community mailing about the soil sampling program; and

(iii) in conjunction with EPA, conducting a community meeting about the soil sampling program.

(4) For CD Properties Remaining to be Sampled within OU 2, SD shall transmit a written communication to the owner of each such Property requesting access to sample soils at the Property in accordance with the ROD, ESD, and this SOW. The communication shall include an access agreement that the owner can execute to grant access for soil sampling. The written communication shall be subject to advance approval by EPA. As requested by EPA, SD shall provide follow-up, written communication to Property owners if the first attempt is not successful.

(5) For CD Properties Remaining to be Sampled, SD shall make best efforts to conduct telephone or video communication with the owner of the Property to discuss soil sampling and potential remediation of soils contaminated with Site contaminants at the Property and to request that the owner give written consent to access for such sampling. If these efforts are not successful, SD shall make best efforts to conduct face-to-face communications with the owner. As requested by EPA, SD shall provide follow-up communication to Property owners if needed.

(6) After using best efforts in Section 2.1(c)(5) above to obtain access for soil sampling, SD will report to EPA those Properties where access has not been granted, the attempts made to obtain access and the response or lack of response to SD's communication for access.

(7) For CD Properties Remaining to be Sampled where sampling is initiated, SD shall communicate regularly with the owner of such Property about specific sampling plans.

(8) SD will use best efforts to gain access to CD Properties to be Remediated, to conduct excavation, disposal, and restoration activities, which may include written, telephone or video, or face-to-face communication. For CD Properties to be Remediated where access is not granted following such best efforts, SD will report those Properties to EPA.

(9) For CD Properties to be Remediated for which access is granted to conduct excavation, disposal, and restoration activities, SD shall also communicate regularly with the owner of such Property, regarding soil excavation plans if any, and restoration plans for such Property, prior to, during and after such activities.

(d) If requested by EPA, SD shall participate in additional community involvement activities, including participation in (1) preparing information regarding the Work for dissemination to the public, with consideration given to including mass media and/or Internet notification; (2) preparing and placing newspaper notices; (3) personal contact with owners of Property within OU 2 in addition to the personal contact described in ¶ 2.1(c) above; and (4) public meetings that may be held or sponsored by EPA to explain activities at or relating to OU 2. SD's support of EPA's community involvement activities may include providing online access to initial submissions and updates of Deliverables to any Community Advisory Groups and any other entities specified by EPA to provide them with a reasonable opportunity for review and comment.

(e) Upon EPA's request, SD shall establish a community information repository at or near the Site to house one copy of the administrative record or add Site documents to an existing information repository as specified by EPA.

(f) **SD's CI Coordinator**. If requested by EPA, SD shall, within 15 Days of the date of EPA's issuance of such request, 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 OU 2.

2.2 SD's Responsibilities for Technical Assistance

(a) 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 OU 2 cleanup issues (specifically, to interpret and comment on OU 2-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 ¶ 2.2(d)(3), and will end when EPA issues the Certification of Work Completion under ¶ 3.10. SD shall implement this requirement under a Technical Assistance Plan ("TAP").

(b) If EPA requests, SD shall cooperate with EPA in soliciting interest from community groups regarding a TAP at OU 2. If more than one community group expresses an interest in a TAP, SD shall cooperate with EPA in encouraging the groups to submit a single, joint application for a TAP.

(c) 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:

(1) For SD to arrange for publication of a notice in local media that they have received a Letter of Intent ("LOI") to submit an application for a TAP. The notice shall 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;

(2) 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:

(i) A community group is eligible if it is: (a) comprised of people who are affected by the release or threatened release at OU 2, and (b) able to demonstrate its ability to adequately and responsibly manage TAP-related responsibilities.

(ii) A community group is ineligible if it is: (a) a potentially responsible party ("PRP") at OU 2, represents such a PRP, or receives money or services from a PRP (other than through the TAP); (b) affiliated with a national organization; (c) an academic institution; (d) a political subdivision; (e) a tribal government; or (f) a group established or presently sustained by any of the above ineligible entities; or (g) a group in which any of the above ineligible entities is represented.

(3) 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);

(4) 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:

(i) the extent to which the group is representative of those persons affected by OU 2; and

(ii) 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 OU 2-related information with other members of the community.

(5) For SD to document their evaluation of, and their selection of, a qualified community group, and to brief EPA regarding their evaluation process and choice. EPA may review SD's evaluation process to determine whether the process satisfactorily follows the criteria in ¶ 2.2(c)(4). TAP assistance may be awarded to only one qualified group at a time;

(6) For SD to notify all applicant(s) about SD's decision;

(7) For SD to designate a person (TAP Coordinator) to be their primary contact with the selected community group;

(8) A description of SD's plans to implement the requirements of ¶ 2.2(d) (Agreement with Selected Community Group); and

(9) For SD to submit quarterly progress reports regarding the implementation of the TAP.

(d) **Agreement with Selected Community Group**

(1) SD shall negotiate an agreement with the selected community group ("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 OU 2 and the various stages of the response action, and communicating OU 2 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).

(2) 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.

(3) 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 10 factors are satisfied:

(i) EPA expects that more than eight years (beginning with the initiation of the RI/FS) will pass before construction completion will be achieved;

(ii) EPA requires treatability studies or evaluation of new and innovative technologies;

(iii) EPA reopens the ROD;

(iv) the public health assessment (or related activities) for the Site indicates the need for further health investigations and/or health-related activities;

(v) after SD's selection of the Community Group for the TAP, EPA designates additional operable units at the Site;

(vi) EPA issues an Explanation of Significant Differences for the ROD;

(vii) after SD's selection of the Community Group, a legislative or regulatory change results in significant new Site information;

(viii) significant public concern about the OU 2 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.;

(ix) any other factor that, in EPA's judgment, indicates that the OU 2 is unusually complex; or

(x) a RI/FS costing at least $2 million was performed at the Site.

(4) SD is entitled to retain any unobligated TAP funds upon EPA's Certification of Work Completion under ¶ 3.10.

(5) SD shall submit a draft of the proposed agreement to EPA for its comments.

3. REMEDIAL DESIGN/REMEDIAL ACTION

3.1 Remedial Design/Remedial Action Work Plan ("RDRAWP"). SD shall submit a RDRAWP for the OU 2 Soil Component to EPA for approval. The RDRAWP must include:

(a) plans for implementing all RD activities identified in this SOW, in the RDRAWP, or required by EPA to be conducted to develop the RD;

(b) a description of the overall management strategy for performing the RD, including a proposal for phasing of design and construction, if applicable;

(c) a description of the proposed general approach to contracting, construction, operation, maintenance, and monitoring of the RA as necessary to implement the Work;

(d) a description of the responsibility and authority of all organizations and key personnel involved with the development of the RD/RA;

(e) descriptions of any applicable permitting requirements and other regulatory requirements;

(f) plans for satisfying permitting requirements, including obtaining permits for off-site activity and for satisfying substantive requirements of permits for on-site activity;

(g) a description of plans for obtaining access in connection with the Work, such as Property acquisition, Property leases, and/or easements;

(h) the following supporting Deliverables described in ¶ 5.7 ("Supporting Deliverables"): Health and Safety Plan; Emergency Response Plan; Field Sampling Plans for Soil and for Groundwater, Surface Water, and Sediments; Affected Property Dust Monitoring Plan; Construction Quality Assurance/Quality Control Plan; and Transportation and Off-Site Disposal Plan;

(i) a description of any areas requiring clarification and/or anticipated problems (e.g. data gaps);

(j) identification of all COCs and other CCR Constituents to be monitored in groundwater, surface water, and/or sediments and the Performance Standards for these monitored constituents;

(k) a description of how the RA for OU 2 will be implemented in a manner that minimized environmental impacts in accordance with EPA's Principles for Greener Cleanups (Aug. 2009);

(l) a description of monitoring and control measures to protect human health and the environment, such air monitoring and dust suppression, during the construction and implementation of the RA for OU 2;

(m) a proposed schedule for outreach of all RA activities and Deliverables for OU 2;

(n) a specification for photographic documentation of the RA for OU 2;

(o) an operational list to be provided to EPA and IDEM quarterly or as otherwise specified by EPA or IDEM of CD Properties Remaining to be Sampled, CD Properties to be Remediated, CD Completed Properties, CD Completed Properties with Institutional Controls, and any other Affected Properties, including Properties already sampled under the CD, with a schedule for periodically updating the list to include Properties that will be subsequently identified;

(p) a list of ASAOC Completed Properties and ASAOC Completed Properties with Institutional Controls as of the due date of the RDRAWP;

(q) a provision that ongoing obligations related to contingencies extends to ASAOC Completed Properties with Institutional Controls;

(r) provisions to address contingencies at CD Completed Properties with Institutional Control; and

(s) an updated health and safety plan that covers activities during the RA per ¶5.7(a).

3.2 SDs shall meet regularly with EPA to discuss RD/RA issues as necessary, as directed or determined by EPA.

3.3 RD Packages. For CD Properties to be Remediated, a RD Package will be prepared, subsequent to SD being granted access to each Property, that will include:

(a) a complete set of construction drawings that are: (1) certified by a registered professional engineer; and (2) suitable for construction;

(b) a survey and engineering drawings showing existing OU 2 features, such as utilities, Property boundaries, easements, and OU 2 conditions;

(c) location of perimeter air monitoring stations;

(d) haul routes for off-site disposal and borrow transportation; and

(e) a proposed schedule to complete the RA for OU 2 ("RA Schedule").

3.4 Meetings and Inspections.

(a) **Preconstruction Conference**. SD shall hold a preconstruction conference with EPA, IDEM, 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 RA for OU 2, SD shall meet regularly with EPA and others as directed or determined by EPA, to discuss project 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, IDEM, or their representatives may conduct periodic inspections of and/or have an on-site presence during the soil removal component of the Work. At EPA's or IDEM's request, the Supervising Contractor or other designee shall accompany EPA, IDEM, or their representatives 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 Work into compliance with the approved Final RDRAWP, and/or any approved Remedial Design Package changes. If applicable, SD shall comply with any schedule provided by EPA in its notice of deficiency.

3.5 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 ¶ 3.5(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, in addition to the National Response Center if applicable.

(c) The "authorized EPA officer" for purposes of immediate oral notifications and consultations under ¶ 3.5(a) and ¶ 3.5(b) is the EPA Project Coordinator, the EPA Alternate Project Coordinator (if the EPA Project Coordinator is unavailable), or IDEM's Site Manager (if neither EPA Project Coordinator is available).

(d) For any event covered by ¶ 3.5(a) and ¶ 3.5(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 ¶ 3.5 are in addition to the reporting required by CERCLA § 103 or EPCRA § 304.

3.6 Off-Site Shipments

(a) SD may ship hazardous substances, pollutants, and contaminants 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), 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 any shipment, it 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. SDs 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 C.F.R. § 261.4(e) shipped off-site for treatability studies, are not subject to 40 C.F.R. § 300.440.

3.7 RA Construction Completion for OU 2.

(a) **OU 2 RA Groundwater, Surface Water, and Sediment Component**. For purposes of the OU 2 Groundwater, Surface Water, and Sediment Component of the remedy, "RA Construction Completion" includes the long-term groundwater, surface water, and sediment monitoring system, and EPA's determination that the system is functioning properly and as designed.

(1) EPA will determine if the groundwater, surface water, and sediment monitoring system meets the requirements of the Field Sampling Plan for Groundwater, Surface Water, and Sediment ("Groundwater, Surface Water, and Sediment FSP") as in ¶5.7(c).

(2) If new wells are required to be installed for the OU 2 Groundwater, Surface Water, and Sediment Component, a "Groundwater Construction Completion Report" will be submitted requesting EPA's determination that construction for the long-term monitoring system has been completed. The Groundwater Construction Completion Report will include the information on the construction of the new groundwater monitoring wells, and the information on the assessment of the existing monitoring wells. The Groundwater Construction Completion Report must: (1) include statements by registered professional engineer or geologist and by SD's Project Coordinator that construction of the long-term monitoring system is complete and that the system is functioning properly and as designed; (2) included well diagrams and boring logs for all wells used for the long-term monitoring system; (3) be prepared in accordance with Chapter 2 (Remedial Action Completion) of EPA's *Close Out Procedures for NPL Site* guidance (May 2011), as supplemental *Guidance for Management of Superfund Remedies in Post Construction*, OLEM 9200.3-105 (Feb. 2017); and (4) be certified in accordance with ¶5.5.

(3) If EPA determines that construction of the OU 2 RA Groundwater, Surface Water, and Sediment Component is not complete, EPA shall so notify SD. EPA's notice shall include a description of, and schedule for, the activities that SD must perform to complete the Groundwater and Surface Water Component. EPA's notice may include a schedule for completion of such activities or may require SD to submit a proposed schedule for EPA approval. SD shall perform all activities described in the EPA notice in accordance with the schedule.

(4) If EPA determines, based on an initial or any subsequent Groundwater Construction Completion Report, that the construction of the OU 2 RA

Groundwater, Surface Water, and Sediment Component is complete, EPA shall so notify SD.

(b) **Soil Component of the Remedy.** For purposes of the soil component, RA Construction Completion marks the completion of remedial activities at a specific Property that has been remediated as part of CD Properties to be Remediated and, if applicable, that has an ERC as part of CD Completed Properties with Institutional Controls. Construction shall be deemed complete at a particular CD Property to be Remediated or CD Completed Property with Institutional Controls after all soil excavation, replacement fill, restoration, confirmation sampling, and, if applicable, institutional controls have been implemented and validated results received for that Property.

(c) Following completion of the OU 2 RA Soil Component at a CD Property to be Remediated, and, if requested by EPA, an inspection under ¶3.8(a)(1), SD shall submit a report ("RA Report") for this particular Property to EPA requesting EPA's approval of the completion of the OU 2 Soil Component for the specific Property. The RA Report for each Property must: (1) include certifications by a registered professional engineer and by SD's Project Coordinator that the soil portion of 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), as supplemented by Guidance for Management of Superfund Remedies in Post Construction, OLEM 9200.3-105 (Feb. 2017); and (4) be certified in accordance with ¶5.5.

(d) After construction is completed at such properties, SD shall prepare and provide to EPA for review and comment, in accordance with Section 5 of this SOW, a confirmation letter addressed to the Property owner(s) summarizing all activities that were conducted and including all sampling data.

(e) SD shall provide the EPA-approved confirmation letter to the Property owner for such Property.

3.8 Certification of RA Completion for OU 2.

(a) **OU 2 RA Groundwater, Surface Water, and Sediment Component of the Remedy**.

(1) **Final Monitoring Report**. The OU 2 RA Groundwater, Surface Water, and Sediment Component is "Complete" for purposes of this ¶ 3.8(a) when it has been fully performed and the Performance Standards have been achieved and sufficient data have been gathered to demonstrate the Performance Standards will be maintained. SD shall submit a Final Monitoring Report to EPA requesting EPA's approval of Completion of the OU 2 RA Groundwater, Surface Water, and Sediment Component.

The report must: (1) include certifications by a registered professional engineer or geologist and by SD's Project Coordinator that the OU 2 RA Groundwater, Surface Water, and Sediment Component is complete; (2) be prepared in accordance with Chapter 2 (Remedial Action Completion) of EPA's *Close Out Procedures for NPL Sites* guidance (May 2011), as supplemented by *Guidance for Management of Superfund Remedies in Post Construction*, OLEM 9200.3-105 (Feb. 2017); (3) contain monitoring data to demonstrate that Performance Standards have been achieved and will continue to be maintained; and (4) be certified in accordance with ¶ 5.5 (Certification).

(b) **Soil Component of the Remedy**.

(1) The OU 2 RA Soil Component is "Complete" for purposes of this ¶ 3.8(b) when it has been fully performed and the Performance Standards have been achieved at all CD Properties Remaining to be Sampled, CD Properties to be Remediated, and CD Completed Properties with Institutional Controls through cleanup activities, restoration activities, and/or institutional controls for those Properties where access has been provided. For those CD Properties Remaining to be Sampled within OU 2, CD Properties to be Remediated, and CD Completed Properties with Institutional Controls where access has not been provided, the OU 2 RA Soil Component is Complete (1) after EPA and IDEM determine that SD has made best efforts to secure access, and use restriction agreements and proprietary controls; or (2) if EPA or IDEM have taken independent action to secure access and SD has fully performed the OU 2 RA Soil Component and the Performance Standards have been achieved. If directed by EPA, SD shall schedule an inspection of such Properties for the purpose of obtaining EPA's approval of the Completion of the OU 2 RA Soil Component of the RA for OU 2. The inspection must be attended by SD and EPA and/or their representatives. IDEM shall also be notified in advance of the inspection.

(2) **RA Report for OU 2 RA Soil Component**. Following the completion of the soil sampling, soil excavations, restoration activities and/or implementation of institutional controls under ¶ 3.8(b) and, if requested by EPA, an inspection under ¶ 3.8(b)(1), SD shall submit an RA Report to EPA for approval of the completion of the OU 2 RA Soil Component. The report must include: (1) a list of all CD Properties Remaining to be Sampled, CD Properties to be Remediated and sampling/remedial action status of each, (2) compilation of the result letters for all CD Properties Remaining to be Sampled, (3) a list of the CD Completed Properties and CD Completed with Institutional Controls and (4) the report must be marked as containing personally identifiable information.

(c) If EPA concludes that either the soil or groundwater, surface water, and sediment OU 2 RA is not complete, EPA shall notify SD. EPA's notice shall 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 and Monitoring Report, that both the soil and groundwater, surface water and sediment OU 2 RA is complete, EPA shall issue a Certification of RA Completion for OU 2. This certification will constitute the Certification of RA Completion for OU 2 for purposes of the CD for the completed media only, e.g., soil, groundwater, surface water or sediment including Section XV of the CD (Covenants by Plaintiff). Certification of RA Completion for OU 2 will not affect SD's remaining obligations, including other media obligations, ICs obligations, under the CD and in the ICIAP.

3.9 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 for OU 2 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.

3.10 Certifications of Work Completion

(a) **Work Completion Inspection(s).** SD shall schedule inspection(s) for the purpose of obtaining EPA's Certification of Work Completion ("Work Completion Inspection "). A separate inspection may be conducted for the OU 2 RA Groundwater, Surface Water, and Sediment and the OU RA Soil Components. The inspection(s) must be attended by SD and EPA and/or their representatives.

(b) **Work Completion Report(s)**. Following the inspection(s), SD shall submit a report(s) to EPA requesting EPA's Certification of Work Completion. A separate report may be submitted for the OU 2 RA Groundwater, Surface Water, and Sediment and OU 2 RA Soil Components. The report(s) must: (1) include certifications by a registered professional engineer or geologist and by SD's Project Coordinator that the Work is complete; including all site restoration activities, is complete; and (2) be certified in accordance with ¶ 5.5(Certification). If the Monitoring Report and RA Report submitted under ¶ 3.8(a)(1)and ¶ 3.8(b)(2), respectively, include all elements required under these ¶¶, then the Monitoring Report and RA Report suffice to satisfy all requirements under this ¶ 3.10(b).

(c) If EPA concludes that the Work is not complete for either or both the OU 2 RA Soil or Groundwater, Surface Water, and Sediment Component, EPA shall so notify SD. EPA's notice shall include a description of the activities that SD must perform to complete the Work. EPA's notice shall include specifications and a schedule for such activities or shall 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) obligations under Sections VIII (Property Requirements), XIX (Retention of Records), and XVIII (Access to Information) of the CD; (3) ICs obligations as provided in the ICIAP; (4) obligations to address contingencies at CD Properties with Institutional Control and ASAOC Properties with Institutional Controls as summarized in ¶ 1.4(a)(5); and (5) reimbursement of EPA's and the State's Future Response Costs under Section X (Payments for Response Costs) of the CD.

4. REPORTING

4.1 **Progress Reports**. Commencing with the month following lodging of the CD and until EPA approves the RA Completion for both the OU 2 RA Groundwater, Surface Water and Sediment and OU 2 RA Soil Components, SD shall submit Progress Reports to EPA on a monthly basis, or as otherwise required by EPA. The reports must cover all activities that took place during the prior reporting period, and shall include:

(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 list of all Deliverables that SD submitted to EPA;

(d) a description of all activities relating to the RA Construction for OU 2 that are expected to be scheduled for the next two months;

(e) an updated RA 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 CIP during the reporting period and those to be undertaken in the next two months.

4.2 **Notice of Progress Report Schedule Changes**. If the schedule changes for any activity described in a Progress Report, including activities required to be described under ¶ 4.1(d), SDs 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. ¶¶ 5.2 (In Writing) through 5.4 (Technical Specifications) apply to all Deliverables. ¶ 5.5 (Certification) applies to any Deliverable that is required to be certified. ¶ 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 ¶ 94 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 RDRAWP, as applicable. SDs 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, if requested by EPA, also provide EPA with paper copies of such exhibits.

5.4 **Technical Specifications**

(a) Sampling and monitoring data shall be submitted in standard regional Electronic Data Deliverable format, Excel. 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, shall 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 shall include the collection method(s). Projected coordinates may optionally be included but must be documented. Spatial data shall be accompanied by metadata, and such metadata shall 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 https://www.epa.gov/geospatial/geospatial-policies-and-standards 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 OU 2.

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. SD shall incorporate any comments received from EPA.

(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 of an initial submission under ¶ 5.6(a), or if required by a notice of approval upon specified conditions

under ¶ 5.6(a), SD shall, within 30 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 of an initial submission submitted under ¶ 5.6(a) or a resubmission under ¶ 5.6(b), of any Deliverable or any portion thereof: (1) such Deliverable, or portion thereof, will be incorporated into and enforceable under the CD and SOW; 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. SD shall develop and submit each of the following supporting Deliverables for EPA approval, except as specifically provided. SD shall develop the Deliverables in accordance with all applicable regulations, guidance, and policies. *See* Section 8 (References). SD shall update each of these supporting Deliverables as necessary or appropriate during the course of the Work and/or as requested by EPA.

(a) **Health and Safety Plan**. The Health and Safety Plan ("HASP") shall describe 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 requirements under 29 C.F.R. §§ 1910 and 1926. The HASP shall cover RD activities and shall be updated, as appropriate, to cover activities during the RA and to cover activities after RA completion. SD must ensure that all necessary elements are included and that the plan provides for the protection of human health and the environment. EPA will review the HASP, though it does not approve the HASP. SD shall incorporate any comments from EPA into the HASP.

(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 SD shall submit the ERP to EPA for comment, though not for approval. Nevertheless, the SD shall incorporate into the ERP any comments from EPA and include:

(1) the name of the person or entity responsible for responding in the event of an emergency incident;

(2) the 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) a 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 ¶ 3.5(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 ¶ 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 for the OU 2 RA Groundwater, Surface Water, and Sediment Component**. The Groundwater, Surface Water, and Sediment FSP must identify the wells to be included in the groundwater monitoring for the north of the East Branch of Brown Ditch and east of the Main Branch of Brown Ditch, and identify any new wells that are to be constructed for the monitoring. The Groundwater, Surface Water, and Sediment FSP shall address all groundwater sample collection activities, including those from private wells, as well as all surface water and sediment sampling activities in the East Branch of Brown Ditch. The Groundwater, Surface Water, and Sediment 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 Groundwater, Surface Water, and Sediment FSP in accordance with Guidance for Conducting Remedial Investigations and Feasibility Studies, EPA/540/G 89/004 (Oct. 1988). The Groundwater, Surface Water, and Sediment FSP shall include a provision for SD to provide EPA and IDEM with notice at least 21 Days prior to any sample collection activity (unless EPA and IDEM agree to a more expedited schedule).

(1) SD will assure access to monitoring wells for the SD, EPA, and IDEM to sample, inspect, monitor, carry out the RA for OU 2, and ensure the short- and long-term effectiveness of the remedy.

(2) SD shall report private well results to each owner of the private well in a letter that is approved by EPA that includes, but is not limited to, all sampling data gathered.

(3) Should CCR-derived groundwater impacts in private wells above Groundwater Cleanup Levels be identified, SD shall immediately provide the homeowner with bottled water service, work with EPA, IDEM, and the homeowner to address the exceedance, and work with EPA and IDEM to investigate the root cause(s) thereof.

(d) **Field Sampling Plan for the OU 2 RA Soil Component.** The Soil FSP shall address all sample collection activities for all CD Properties Remaining to be Sampled. The Soil 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 in accordance with *Guidance for Conducting Remedial Investigations and Feasibility Studies*, EPA/540/G 89/004 (Oct. 1988). The Soil FSP shall include a provision for SD to provide EPA and IDEM with notice at least 14 Days prior to any sample collection activity (unless EPA and IDEM agree to a more expedited schedule). SD shall report soil results from sampled CD Properties Remaining to be Sampled to each owner of the Property in a letter that is approved by EPA and includes, but is not limited to, all sampling data gathered.

(e) **Quality Assurance Project Plan**. The Quality Assurance Project Plan ("QAPP") augments the FSPs 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 though 900C (Mar. 2005). The QAPP also must include procedures:

(1) to ensure that EPA, IDEM, and their authorized representatives 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 perform all analyses using EPA-accepted methods (i.e., the methods documented in *USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis*, ILMO5.4 (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;

(5) to ensure that SD's Labs participate in an EPA-accepted Quality Assurance/Quality Control ("QA/QC") program or other program QA/QC acceptable to EPA;

(6) for SD to provide split samples and/or duplicate samples to EPA and IDEM upon request;

(7) for EPA and IDEM to take any additional samples that they deem necessary;

(8) for EPA and IDEM to provide to SD, upon request, split samples and/or duplicate samples in connection with EPA's and/or IDEM's oversight sampling; and

(9) for SD to submit to EPA and IDEM all sampling and tests results and other data in connection with the implementation of the CD.

(f) **Affected Property Dust Monitoring Plan**. A Dust Monitoring Plan will be prepared as a component of the RDRAWP. The Dust Monitoring Plan will be tailored for work at CD Properties to be Remediated and, if further soil excavation is needed to address contingencies, at CD Properties with Institutional Controls and ASAOC Properties with Institutional Controls for which access is provided to conduct the remedy; the specifics will be included in the Remedial Design Package ¶ 3.3.

(g) **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 Performance Standards required to be met to achieve Completion of the RA;

(3) describe the activities to be performed: (i) to provide confidence that Performance Standards will be met; and (ii) to determine whether Performance Standards 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.

(h) **Transportation and Off-Site Disposal Plan**. The Transportation and Off-Site Disposal Plan ("TODP") describes plans to ensure compliance with ¶ 3.6 (Off-Site Shipments). The TODP must include:

(1) the proposed routes for off-site shipment of Waste Material;

(2) an identification of communities affected by shipment of Waste Material; and

(3) a description of plans to minimize impacts on affected communities.

(i) **Institutional Controls Implementation and Assurance Plan**. The ICIAP shall describe plans to implement, maintain, and enforce the ICs at the Site. SD shall develop the ICIAP in accordance with *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), and *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). The ICIAP must include the following additional requirements:

(1) the locations of recorded real Property interests (e.g., easements, liens) and resource interests in the Property that may affect ICs (e.g., surface, mineral, and water rights) including accurate mapping and geographic information system (GIS) coordinates of such interests;

(2) the legal descriptions and survey maps that are prepared according to current American Land Title Association (ALTA) Survey guidelines and certified by a licensed surveyor;

(3) provisions regarding implementation, maintenance, enforcement, and modification of Section VIII of the CD and ¶¶1.4(a)(5), 1.4(a)(6) and 1.4(c) of this SOW; and

(4) a provision that states SD will use best efforts to secure non-settling owner's cooperation in executing and recording Proprietary Controls that grant a right of access to conduct any activity identified in the CD or this SOW and grant the right to enforce the land, water, or other resource use restrictions in the CD or this SOW.

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 RD/RA Schedules set forth below. SD may submit proposed revised RD/RA Schedules for EPA approval. Upon EPA's approval, the revised RD/RA Schedules supersede the RD/RA Schedules set forth below, and any previously approved RD/RA Schedules.

6.2 RD/RA Schedule.

Item No.	Description of Deliverable, Task	¶ Reference	Deadline
1	RDRAWP for OU 2 Soil Component	3.1	90 Days after EPA's Authorization to Proceed regarding Supervising Contractor under CD
2	HASP	5.7(a)	With the RDRAWP
3	ERP	5.7(b)	With the RDRAWP
4	Soil FSP	5.7(d)	With the RDRAWP
5	Dust Monitoring Plan	5.7(f)	With the RDRAWP
6	CQA/QCP	5.7(g)	With the RDRAWP
7	TODP	5.7(h)	With the RDRAWP

8	revised RDRAWP	3.1	45 Days after receipt of comments from EPA on the RDRAWP and associated Plans
9	Groundwater, Surface Water, and Sediment FSP	5.7(c)	45 Days after EPA approval of the RDRAWP
10	QAPP	5.7(e)	45 Days after EPA approval of the RDRAWP
11	ICIAP	5.7(i)	45 Days after EPA approval of the RDRAWP
12	RD Package for CD Properties to be Remediated	3.3	90 Days after access is obtained for removal activities; but no sooner than 90 Days after approval of Final RDRAWP.
13	start of soil removal CD Properties to be Remediated where access is provided	--	As allowed by each Property owner and as identified in the Final Remedial Design Package, weather permitting but no later than 180 Days after access is granted or as otherwise approved by EPA
14	OU 2 RA Soil Component RA Report for CD Properties to be Remediated	3.7(c)	To EPA for review 90 Days after completion of activity including restoration at the Property; to Property owners 14 Days after EPA approval of the report
15	Work Completion Inspection	3.10(a)	Within 15 Days after completion of soil removal work, if required by EPA
16	Work Completion Report for OU 2 RA Soil Component	3.10(b)	90 Days after completion of the OU 2 RA Soil Component, or after the final Completion Inspection, if required by EPA

17	Work Completion Report for OU 2 RA Groundwater, Surface Water, and Sediment Component	3.10(b)	90 Days after EPA's approval of the Final Monitoring Report, or after the final Completion Inspection, if required by EPA
18	OU 2 Groundwater, Surface Water, and Sediment Component Groundwater Construction Completion Report	3.7(a)(2)	If necessary, 45 Days after completion of monitoring well construction
19	annual reporting of monitoring data	1.4(b)(5)	90 Days after completion of the annual groundwater monitoring event
20	report of private well results	5.7(c)(2)	Preliminary data provided to EPA ASAP but no later than 14 Days of receipt by SD. Report to EPA 90 Days after completion of the private well sampling. Report to each owner 14 Days after approval of the report by EPA.
21	Final Monitoring Report of the OU 2 RA Groundwater, Surface Water, and Sediment Component	3.8(a)(1)	90 Days after all RA performance Standards have been met,
22	Periodic Review Support Plan	3.9	Four (4) years after groundwater monitoring construction is complete
23	Progress Reports	4.1	Monthly, on the 15th Day after the end of each month, or as otherwise required by EPA

7. STATE PARTICIPATION

7.1 **Copies**. SD shall, at any time they send a Deliverable to EPA, send a copy of such Deliverable to IDEM. EPA shall, at any time it sends a notice, authorization, approval, disapproval, or certification to SD, send a copy of such document to IDEM.

7.2 **Review and Comment**. IDEM 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 ¶ 3.7 (RA Construction Completion for OU 2), any disapproval of, or Certification of RA Completion under ¶ 3.8 (Certification of RA Completion for OU 2), and any disapproval of, or Certification of Work Completion under ¶ 3.10 (Certification of Work Completion).

8. REFERENCES

8.1 Website Locations.

A more complete list of references provided in 8.3 may be found on the following EPA Web pages:

Laws, Policy, and Guidance:
https://www.epa.gov/superfund/superfund-policy-guidance-and-laws

Test Methods Collections:
https://www.epa.gov/measurements/collection-methods

8.2 Applicability

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.

8.3 Specific References.

The following regulations and guidance documents, among others, apply to 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 though 900C (Mar. 2005).

(t) Superfund Community Involvement Handbook, SEMS 100000070 (January 2016) available at https://www.epa.gov/superfund/community-involvement-tools-and-resources.

(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 https://www.epa.gov/geospatial/geospatial-policies-and-standards and https://www.epa.gov/geospatial/epa-national-geospatial-data-policy.

(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 https://www.epa.gov/greenercleanups/epa-principles-greener-cleanups.

(cc) USEPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods (Multi-Media, Multi-Concentration), ISM01.2 (Jan. 2010).

(dd) Close Out Procedures for National Priorities List Sites, OSWER 9320.2-22 (May 2011).

(ee) Groundwater Road Map: Recommended Process for Restoring Contaminated Groundwater at Superfund Sites, OSWER 9283.1-34 (July 2011).

(ff) Recommended Evaluation of Institutional Controls: Supplement to the "Comprehensive Five-Year Review Guidance," OSWER 9355.7-18 (Sep. 2011).

(gg) Construction Specifications Institute's MasterFormat 2012, available from the Construction Specifications Institute, http://www.csiresources.org./home.

(hh) Updated Superfund Response and Settlement Approach for Sites Using the Superfund Alternative Approach, OSWER 9200.2-125 (Sep. 2012)

(ii) 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).

(jj) 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).

(kk) EPA's Emergency Responder Health and Safety Manual OSWER 9285.3-12

https://www.epaosc.org/_HealthSafetyManual/manual-index.htm.

(ll) Broader Application of Remedial Design and Remedial Action Pilot Project Lessons Learned, OSWER 9200.2-129 (Feb. 2013).

(mm) Guidance for Evaluating Completion of Groundwater Restoration Remedial Actions, OSWER 9355.0-129 (Nov. 2013).

(nn) Groundwater Remedy Completion Strategy: Moving Forward with the End in Mind, OSWER 9200.2-144 (May 2014).

(oo) Providing Communities with Opportunities for Independent Technical Assistance in Superfund Settlements, Interim (Sep. 2009).

(pp) Guidance for Management of Superfund Remedies in Post Construction, OLEM 9200.3-105(Feb. 2017), https://www.epa.gov/superfund/superfund-post-construction-completion.

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF INDIANA
HAMMOND DIVISION

UNITED STATES OF AMERICA,	)	
	)	
and	)	
	)	Civil Action No. 2:22-cv-48
STATE OF INDIANA,	)	
	)	
Plaintiffs,	)	
	)	
v.	)	
	)	
NORTHERN INDIANA PUBLIC SERVICE COMPANY LLC,	)	
	)	
Defendant.	)	

APPENDIX C TO CONSENT DECREE
MAP OF SITE BOUNDARIES

Indiana Dunes
National Park

Yard 520
Landfill

Indiana Waste Systems,
Inc. (Waste Management)
Landfill

1,100 550 0 1,100 Feet

Legend

- OU1 Groundwater Monitoring Area Boundary
- OU2 Groundwater Monitoring Area Boundary
- OU2 Soil Area/Site Boundary
- Municipal Water Service Extension; Installed under Administrative Order on Consent I, 2003
- Yard 520 Landfill
- Indiana Waste Systems (Waste Management) Landfill
- Indiana Dunes National Park
- Parcel Boundaries (2020)
- Surface Water

FIGURE

TOWN OF PINES SUPERFUND SITE OPERABLE UNITS (OU)

Parcel information from Porter & La Porte Counties, Indiana 2020 GIS records obtained 05-June-2020.