IN THE UNITED STATES DISTRICT COURT
FOR WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

UNITED STATES OF AMERICA and THE STATE OF MICHIGAN Plaintiffs, v. NCR CORPORATION, Defendant.	Civil Action No. 1:19-cv-1041

CONSENT DECREE WITH NCR CORPORATION

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I. BACKGROUND

A. Plaintiffs filed a complaint in this matter against NCR Corporation (the "Settling Defendant" or "SD") pursuant to Sections 106 and 107 of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. §§ 9606 and 9607 at the Allied Paper/Portage Creek/Kalamazoo River Superfund Site, EPA ID# MID006007306 (the "Site"). The responsible Natural Resource trustees also contend that they have claims for recovery of Natural Resource Damages (including for recovery of Natural Resources Damages assessment costs) against the Settling Defendant.

B. The United States of America ("United States"), on behalf of the Administrator of the United States Environmental Protection Agency ("EPA") and the State of Michigan ("State"), through the Michigan Department of Environment, Great Lakes, and Energy ("EGLE"),[1] in their complaint seek, *inter alia*: (1) reimbursement of a portion of the costs incurred by EPA, the Department of Justice ("DOJ"), and the State for response actions at the Site in Kalamazoo County, Michigan, together with accrued interest; and (2) performance of response actions by the defendants at the Site consistent with the National Contingency Plan, 40 C.F.R. Part 300 ("NCP").

C. The responsible Natural Resources trustees include the State of Michigan, acting through its co-trustees designated by the Governor of Michigan: EGLE, the Michigan Department of Natural Resources ("MDNR"), and the Michigan Department of the Attorney General ("MDAG"); the United States Department of Interior ("DOI"), acting through the Fish and Wildlife Service ("FWS"); and, the Department of Commerce ("DOC"), acting through the National Oceanic and Atmospheric Administration ("NOAA") (collectively, the "Kalamazoo River Natural Resource Trustee Council" or "Trustees")). 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 of negotiations with potentially responsible parties ("PRPs") regarding the implementation of response actions at the Site, and the State has participated in such negotiations and agreed to be a party to this Consent Decree ("CD").

D. In accordance with Section 122(j)(1) of CERCLA, 42 U.S.C. § 9622(j)(1), EPA notified the Trustees, as represented by the Kalamazoo River Natural Resource Trustee Council, of negotiations with PRPs regarding the release of hazardous substances that may have resulted in injury to the Natural Resources under federal and state trusteeship. The Trustees have participated in the negotiation of this Consent Decree and support this Consent Decree.

E. The United States initiated this suit on behalf of EPA and is entering into this Consent Decree on behalf of EPA, DOI, and DOC.

F. The State initiated this action at the request of EGLE, and is entering into this Consent Decree on behalf of EGLE, MDNR, and MDAG (collectively, the "State Trustees").

G. The Settling Defendant does not admit any liability to Plaintiffs arising out of the transactions or occurrences alleged in the complaint, nor do they acknowledge that the release or

[1] Pursuant to Executive Order 2019-06, effective April 22, 2019, the Michigan Department of Environmental Quality was renamed the Department of Environment, Great Lakes, and Energy. https://www.michigan.gov/documents/whitmer/EO_2019-06_Creating_EGLE_646953_7.pdf

threatened release of hazardous substance(s) at or from the Site constitutes an imminent and substantial endangerment to the public health or welfare or the environment.

H. Pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed the Site on the National Priorities List, set forth at 40 C.F.R. Part 300, Appendix B, by publication in the Federal Register on August 30, 1990, 55 Fed. Reg. 35502.

I. The Site is located in and along the Kalamazoo River and Portage Creek, which is a tributary of the river, and includes sediments in the river and creek, river and creek banks and flood plains, and former paper mill property and papermaking waste disposal areas located near the river and creek.

J. The Site has been divided into geographically-defined Operable Units ("OUs") as depicted in Appendix A to this CD: OU1 – Allied Paper, Inc./Bryant Mill Pond; OU2 – Willow Boulevard/A-Site Landfill; OU 3 – King Highway Landfill; OU4 – 12th Street Landfill; OU5 – 80 miles of the Kalamazoo River and 3 miles of Portage Creek; and OU7 – Former Plainwell Paper Mill Property.

K. Georgia Pacific, LLC ("GP") has completed the remedial actions ("RAs") implementing records of decisions ("RODs") for OU 2 and OU 3. An Environmental Custodial Trust Trustee established in *In re: Lyondell Chemical Company, et al*., is currently performing a Remedial Design at OU1. The Weyerhaeuser Company ("Weyerhaeuser") has completed the RA for OU4 and is performing the RA for OU7.

L. Pursuant to 40 C.F.R. § 300.430 and a February 21, 2007 Administrative Order on Consent, GP is conducting a Supplemental Remedial Investigation and Feasibility Study ("SRI/FS") for OU5 of the Site. The 2007 SRI/FS AOC divided OU5 into seven areas ("Areas 1, 2, 3, 4, 5, 6, and 7"). That AOC requires separate SRI/FS reports for each of the seven OU5 areas. GP has completed the SRI/FS reports for Areas 1 and 2. GP has completed the SRI for Area 3 and has submitted an FS report for EPA's approval in January 2018. GP has also begun the SRI for Areas 4 and 5. The primary contaminant of concern at OU5 is polychlorinated biphenyls ("PCBs").

M. Between 2007 and 2011, EPA selected three separate time-critical removal actions ("TCRAs") to address conditions presenting imminent and substantial endangerment at Area 1 of OU5. GP implemented two of the three TCRA response actions; EPA implemented the third. In 2015, EPA issued a ROD for Area 1. GP and International Paper Company ("IP") are implementing the remedy set forth in the Area 1 ROD pursuant to a Unilateral Administrative Order issued by EPA to GP, IP, and Weyerhaeuser.

N. In 2010, GP commenced a lawsuit concerning the Site against IP, NCR and Weyerhaeuser in the United States District Court for the Western District of Michigan captioned *Georgia Pacific Consumer Products, LP, et al. v. NCR Corporation, et al,* Case No. 1:11-CV-483. The litigation in this case has yielded a decision on liability finding, among other things, that by at least 1969, NCR arranged for the disposal of PCB-contaminated carbonless copy paper broke and that NCR is a liable party at the Site. On June 19, 2018, the district court entered final judgment, in relevant part finding NCR liable for 40% of a portion of the past response costs incurred by GP (NCR's 40% share is $19,826,752.67) and entering a declaratory judgment that NCR is liable for

future costs at the Site.[2] The district court did not allocate GP's response costs after September 2014. The district court decisions are on appeal. After judicial approval of this Consent Decree, NCR will withdraw its appeal within 30 days and satisfy the $19,826,752.67 judgment in favor of GP within 60 days.

O. Pursuant to Section 117 of CERCLA, 42 U.S.C. § 9617, EPA published notice of the completion of the FS for Area 2 and of the proposed plan for the Area 2 RA on June 30, 2017, 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 the Area 2 RA. A copy of the transcript of the public meeting is available to the public as part of the administrative record upon which the Director of the EPA Region 5 Superfund Division based the selection of the response action.

P. The decision by EPA on the remedial action to be implemented at Area 2 is embodied in a final ROD, executed on September 28, 2017. The ROD includes a responsiveness summary to the public comments. The State of Michigan, after a reasonable opportunity to review and comment, concurred with EPA's decision in the ROD. Notice of the final plan was published in accordance with Section 117(b) of CERCLA, 42 U.S.C. § 9617(b).

Q. Upon approval of the Area 3 FS, EPA plans to publish notice of the completion of the FS, issue a proposed plan for Area 3, and provide an opportunity for written and oral comments from the public on the proposed plan. Thereafter, EPA plans to issue a final Area 3 ROD that will include a response to public comment. EPA will provide the State an opportunity to review and concur on the final Area 3 ROD.

R. Based on information provided to EPA by GP as part of the supplemental remedial investigation of Area 4, EPA may require a removal response action to address actual or threatened releases of pollutants or contaminants from Area 4 that may present an imminent and substantial endangerment to public health or welfare or the environment and will likely need to be addressed through a removal response action prior to the issuance of a ROD for Area 4.

S. If the Director of EPA Region 5 Superfund Division selects a removal response action for Area 4, EPA believes that the removal response action will be properly and promptly conducted by SD if conducted in accordance with this CD and its appendices.

T. Based on the information presently available to EPA, EPA believes that SD will properly and promptly implement the remedy for Area 2 as set forth in the Area 2 ROD if conducted in accordance with this CD and its appendices. If the Director of EPA Region 5 Superfund Division selects a removal response action for Area 4 and a ROD for Area 3, EPA believes those response actions will be properly and promptly conducted by SD if conducted in accordance with this CD and its appendices.

U. Solely for the purposes of Section 113(j) of CERCLA, 42 U.S.C. § 9613(j), the remedies set forth in the Area 2 ROD, the Area 3 ROD, any removal response action in Area 4, and

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[2] The District Court also found International Paper, Weyerhaeuser Company and the Georgia-Pacific Defendants liable for GP's past and future costs.

the Work to be performed by SD under this CD shall constitute response actions taken or ordered by the President for which judicial review shall be limited to the administrative record.

V. The State Trustees, DOI, and DOC have been involved in various Natural Resource Damages assessment activities relating to the Site. The Trustees have incurred and will continue to incur assessment costs associated with Natural Resource Damage assessment activities related to the Site.

W. The Parties recognize, and the Court by entering this CD finds, that this CD has been negotiated 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.

X. The Parties to this Consent Decree agree, and the Court by entering this Consent Decree finds, that restoration actions and other compensatory activities and damages payments to be provided under this Consent Decree constitute appropriate actions necessary to protect and restore the Natural Resources allegedly injured by releases or threatened releases of hazardous substances by the SD.

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 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:

"Affected Property" shall mean all real property at Area 2, Area 3 and Area 4 of Operable Unit 5 of the Site and any other real property to which EPA determines, at any time, that access, land, water, or other resource use restrictions, and/or Institutional Controls are needed to implement the Area 2 ROD, the Area 3 ROD (as applicable) or the Area 4 Removal Response Action.

"Area 2 of Operable Unit 5" or "Area 2" shall mean that portion of OU 5 from Plainwell Dam to Otsego City Dam, including approximately 1.9 miles of the Kalamazoo River and any nearby areas where hazardous substances, pollutants or contaminants from the Site have been, or may come to be, located (see Appendix A).

"Area 3 of Operable Unit 5" or "Area 3" shall mean that portion of OU 5 from Otsego City Dam to Otsego Dam, including approximately 3.4 miles of the Kalamazoo River and any nearby areas where hazardous substances, pollutants or contaminants from the Site have been, or may come to be, located (see Appendix A).

"Area 4 of Operable Unit 5" or "Area 4" shall mean that portion of OU 5 from Otsego Dam to Trowbridge Dam, including approximately 4.7 miles of the Kalamazoo River and any nearby areas where hazardous substances, pollutants or contaminants from the Site have been, or may come to be, located (see Appendix A).

"Area 4 Action Memorandum" or "Area 4 AM" shall mean the primary decision document selecting a removal response action at Area 4 of Operable Unit 5 that documents EPA's determination that a CERCLA removal action is needed, authorizes the removal action, identifies the action and cleanup levels and explains the rationale for the removal response action. A draft of the Area 4 AM is attached as Appendix D.

"Area 4 Removal Response Action" shall mean the response action for Area 4 of Operable Unit 5 to be selected by EPA in the Area 4 Action Memorandum, pursuant to CERCLA section 104(a), 42 U.S.C. § 9604, and EPA's regulations set forth at 40 C.F.R. § 300.415 and prior to EPA's issuance of a ROD for Area 4.

"Area 4 Removal Work Plan" shall mean the document describing the actions required by the CD related to implementation of the Area 4 Action Memorandum and shall include an expeditious schedule for completion of the activities set forth therein.

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

"CD" shall mean this CD and all appendices attached hereto (listed in Section XXIV). In the event of conflict between this CD and any appendix, this CD shall control. The term "CD" includes any CD(s) modified pursuant to Paragraph(s) 13 and/or 14.

"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.

"DOC" shall mean the United States Department of Commerce and any successor departments, agencies, or instrumentalities.

"DOI" shall mean the United States Department of the Interior and any successor departments, agencies, or instrumentalities.

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

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

"EGLE" shall mean the Michigan Department of Environment, Great Lakes, and Energy and any successor departments or agencies of the State.

"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.

"Final Certification of Remedial Action Completion" or "Final Certification of RA Completion" shall mean the certification of remedial action completion that is last in time for the Site, regardless of which operable unit or Area of an Operable Unit it pertains to, and shall constitute the Final Certification of Remedial Action Completion for purposes of Section XVII (Covenants by Plaintiffs).

"Future Specified Response Costs" shall mean all costs incurred under this CD, including, but not limited to, direct and indirect costs, that the United States incurs in reviewing or developing deliverables submitted pursuant to this CD, 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 ¶ 10 (Emergencies and Releases), ¶ 11 (Community Involvement) (including the costs of any technical assistance grant under Section 117(e) of CERCLA, 42 U.S.C. § 9617(e)), ¶ 39 (Access to Financial Assurance), Section IX (Remedy Review), Section X (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 XV (Dispute Resolution), and all litigation costs.

"Installment Payments" shall mean the payment made by SD to the Trustees or EPA made on the anniversary of the Effective Date in accordance with Paragraphs 44 and 49 and does not include the Initial Payment as required by Paragraph 42, the initial payment to the Trustees as required by Paragraph 44, or the annual payment to the State for its oversight costs as required by Paragraph 50.

"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 Area 2, Area 3, and Area 4; (b) limit land, water, or other resource use to implement, ensure non-interference with, or ensure the protectiveness of the Area 2 RA, Area 3 RA, and Area 4 Removal Response Action; and/or (c) provide information intended to modify or guide human behavior at or in connection with Area 2, Area 3, and Area 4.

"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.

"Natural Resource" or "Natural Resources" shall mean land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States (including the resources of the fishery conservation zone established by the Magnuson-Stevens Fishery Conservation and Management Act [16 U.S.C. 1801 et seq.]), any State or local government, any foreign government, any Indian tribe, or, if such resources are subject to a trust restriction on alienation, any member of an Indian tribe.

"Natural Resource Damages" shall mean any damages recoverable by the United States or the State on behalf of the public for injury to, destruction of, or loss of use of, or impairment of Natural Resources at the Site as a result of a release of hazardous substances, including but not limited to: (i) the costs of assessing injury to, destruction of, loss of, or impairment of Natural Resources; (ii) the costs of restoration, rehabilitation, or replacement of injured or lost Natural Resources or of acquisition of equivalent resources and/or their services; (iii) compensation for injury, destruction, loss, loss of use, diminution in value, or impairment of Natural Resources; (iv) the costs of planning, implementing, and monitoring restoration activities; and (v) each of the categories of recoverable damages described in 43 C.F.R. § 11.15 and applicable state law.

"NRDAR Fund" means DOI's Natural Resource Damage Assessment and Restoration Fund.

"MDAG" shall mean the Michigan Department of Attorney General and any successor departments or agencies of the State.

"MDNR" shall mean the Michigan Department of Natural Resources and any successor departments or agencies of the State.

"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 5" or "OU 5" shall mean the area of the Site which includes contaminated instream sediments, banks and floodplains along 80 miles of the Kalamazoo River from Morrow Dam east of Kalamazoo to the river mouth at Lake Michigan, plus a three-mile stretch of Portage Creek in the City of Kalamazoo.

"Operation and Maintenance for Area 2" or "Area 2 O&M" shall mean all activities required to operate, maintain, and monitor the effectiveness of the Area 2 RA as specified in the SOW or any EPA-approved O&M Plan.

"Operation and Maintenance for Area 3" or "Area 3 O&M" shall mean all activities required to operate, maintain, and monitor the effectiveness of the Area 3 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, and SD.

"Performance Standards" shall mean, collectively, the Area 2 PS and Area 3 PS.

"Performance Standards for Area 2" or "Area 2 PS" shall mean the cleanup levels and other measures of achievement of the remedial action objectives set forth in the Area 2 ROD.

"Performance Standards for Area 3" or "Area 3 PS" shall mean the cleanup levels and other measures of achievement of the remedial action objectives set forth in the Area 3 ROD.

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

"Prior Encumbrances" shall mean all record matters that affect title to the Affected Property, including all prior liens, claims, rights (such as easements), mortgages, and other encumbrances.

"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, 42 U.S.C. §§ 6901-6992 (also known as the Resource Conservation and Recovery Act).

"Record of Decision for Area 2" or "Area 2 ROD" shall mean the EPA Record of Decision relating to Area 2 of Operable Unit 5 of the Site signed on September 28, 2017, by the Regional Administrator, EPA Region 5, or his/her delegate, and all attachments thereto. The ROD is attached as Appendix C.

"Record of Decision for Area 3" or "Area 3 ROD" shall mean the Record of Decision relating to Area 3 of Operable Unit 5 of the Site to be issued after entry of the CD by EPA Region 5 and all attachments thereto. The Area 3 ROD shall become Appendix E.

"Remedial Action for Area 2" or "Area 2 RA" shall mean the remedial action selected in the Area 2 ROD.

"Remedial Action for Area 3" or "Area 3 RA" shall mean the remedial action selected in the Area 3 ROD.

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

"Remedial Design for Area 3" or "Area 3 RD" shall mean those activities to be undertaken by SD to develop final plans and specifications for the Area 3 RA as stated in the SOW.

"Response Cost Payments" shall mean payments made pursuant to Paragraph 44 that will be deposited into the Site-wide Special Account for use by EPA to conduct or finance response actions at or in connection with the Site.

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

"Settling Defendant" or "SD" shall mean NCR Corporation.

"Site" shall mean the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site, encompassing approximately 80 miles of the Kalamazoo River (from Morrow Lake Dam to Lake Michigan), including the river banks and formerly impounded adjacent floodplains and wetlands, as well as a 3-mile stretch of Portage Creek and four paper residual disposal areas, located in Kalamazoo and Allegan Counties, Michigan, and depicted generally on the map attached as Appendix A. The "Site" also includes any areas where hazardous substances, pollutants or contaminants from the Site have been, or may come to be, located.

"Site-wide Special Account" shall mean the special account, within the EPA Hazardous Substance Superfund, established for the Site by EPA prior to the Effective Date pursuant to Section 122(b)(3) of CERCLA, 42 U.S.C. § 9622(b)(3), and designated as account 059B00.

"State" shall mean the State of Michigan.

"State Future Response Costs" shall mean all costs, including direct and indirect costs, including but not limited to State employee salary and benefit costs, and travel expenses, that State employees incur in reviewing plans, reports, or other items pursuant to this CD, verifying Work, consulting with and providing comments to EPA and SD in connection with the Work, or otherwise implementing, overseeing, or enforcing this CD; and any costs spent on removal of one or more portions of the Trowbridge Dam structure done prior to SD's Area 4 Removal Work.

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

"Statement of Work" or "SOW" shall mean the document describing the activities SD must perform to implement the Area 2 RD, the Area 2 RA, the Area 2 O&M, the Area 3 RD, the Area 3 RA, the Area 3 O&M, the Area 4 Removal Response Action and each modification to the SOW.

"Supervising Contractor" shall mean the principal contractor retained by SD to supervise and direct the implementation of the Work under this CD.

"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.

"Trustees" shall mean DOI, DOC, EGLE, MDNR, and MDAG.

"United States" shall mean the United States of America and each department, agency, and instrumentality of the United States, including EPA, the National Oceanic and Atmospheric Administration, and the United States Department of Commerce.

"Waste Material" shall mean (1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); and (3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C.§ 6903(27).

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

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, including to resolve claims for Natural Resource Damages, as provided in this CD.

6. **Commitments by SD**. SD shall finance and perform the Work in accordance with this CD and 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. SD shall also pay the Trustees to resolve Plaintiffs' Natural Resource Damages claim, 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 XIV (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.

9. **Coordination and Supervision**

a. **Project Coordinators**

(1) SD's Project Coordinator 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 the 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[s] and Alternate Project Coordinators. 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[s] and Alternate Project Coordinators. 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 Coordinators shall meet (whether face-to-face or telephonically) with EPA's and the State's Project Coordinators at least monthly.

b. **Supervising Contractor**. SD's proposed Supervising Contractor 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 15 days after the Effective Date, of the name[s], title[s], contact information, and qualifications of the SD's proposed Project Coordinator and, within 60 days, notify EPA of the same regarding SD's proposed 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 60 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. **Emergencies and Releases**. SD shall comply with the emergency and release response and reporting requirements under ¶ 7.1 (Emergency Response and Reporting) of the SOW. Subject to Section XVII (Covenants by Plaintiffs), nothing in this CD or 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 ¶ 7.1 of the SOW, EPA or, as appropriate, the State take such action instead, SD shall reimburse EPA and/or the State under Section XII (Paymentss) for all costs of the response action. Payment to the State under this Paragraph is not subject to the process for payments in ¶ 50 (State Future Response Costs). Any costs incurred by the State under this Paragraph will be itemized and documented, and timely provided to SD, and payments shall be made within 60 days of SD's receipt of the itemized documentation and shall be made in accordance with ¶ 51 (State Payment Instructions).

11. **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. Costs incurred by the United States under this Section constitute Future Specified Response Costs to be reimbursed under Section XII (Payments for Response Costs).

12. **Schedule for Implementation of the Work.** Within 30 days of the Effective Date of the Consent Decree, SD shall submit to EPA for review and approval a schedule that is consistent with the attached SOW for the response actions for Areas 2, 3, and 4 that shows when design, pre-design sampling, construction, and construction completion is expected to occur. The first work on the schedule shall be the Removal Response Action in Area 4. The Parties agree to minimize the overlap of significant removal or remedial action work in more than one Area of OU5.

13. **CD and SOW Modification to Incorporate the Area 3 ROD**

a. After issuance of the Area 3 ROD, EPA, after consultation with the State, will provide SD with a Proposed CD and SOW Modification (e.g., "Proposed CD and SOW Modification for Area 3 RD/RA"), which describes the activities SD must perform to implement the Area 3 RD and Area 3 RA, including land or other resource use restrictions.

b. SD shall have 30 days from receipt of Proposed CD and SOW Modification for Area 3 RD/RA to opt-out of performance of the Area 3 ROD. The Parties agree that the SOW modification shall follow the model "RD/RA CD Statement of Work" available at

https://cfpub.epa.gov/compliance/models/view.cfm?model_ID=543 to the extent that its language applies to the applicable ROD.

c. If the SD does not opt-out of performance of the Area 3 ROD, the Parties will execute a CD modification in the form attached as Appendix F. The Proposed CD and SOW Modification for Area 3 RD/RA 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 modified CD disclose facts or considerations that indicate that the modification is inappropriate, improper, or inadequate.

d. In the event that the Court does not approve the CD and SOW Modification for Area 3 RD/RA, this CD remains in full force and effect.

14. **SOW Modification and 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 Area 2 PS, the Area 3 PS, or to carry out and maintain the effectiveness of the Area 2 RA or the Area 3 RA and such modification is consistent with the Scope of the Remedy for each Area as set forth in the SOW, then EPA may notify SD of such modification. If SD objects to the modification they may, within 30 days after EPA's notification, seek dispute resolution under Section XV. However, SD may not seek dispute resolution for SOW Modifications for Area 3 that are part of the CD and SOW modifications to incorporate a ROD as described in ¶ 13.

b. If EPA determines that it is necessary to modify the work specified in the Area 4 Action Memorandum or the Area 4 Removal Work Plan and/or in deliverables developed under the Area 4 Removal Work Plan in order to achieve and/or maintain the Cleanup Standards of the Action Memorandum or Area 4 PS, 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 XV.

c. 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.

d. 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.

15. 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.

VI. PERFORMANCE OF THE AREA 4 REMOVAL WORK

16. **Selection of a Removal Response Action.** Prior to or following entry of the CD, EPA may issue an Area 4 Action Memorandum to select an Area 4 Removal Response Action. Consistent with EPA's "Superfund Removal Guidance for Preparing Action Memoranda"

(September 2009), the Area 4 Action Memorandum will substantially comport with the draft action memorandum attached hereto as Appendix D.

17. At a minimum, SD shall perform all actions necessary to implement the Area 4 Action Memorandum. The actions to be implemented, if an Area 4 Action Memorandum is issued, will generally include, but are not limited to, the following:

a. dredging and/or excavation of PCB-contaminated in-stream sediments and riverbank/floodplain soils in the Trowbridge Dam Area, at locations specified in the Area 4 Action Memorandum;

b. removal of one or more portions of the Trowbridge Dam structure or any water control structure within the Trowbridge Dam Area as needed to reduce the risk of PCB mobilization from floodplains and banks due to failure of the Trowbridge Dam or water control structure;

c. cut-back and stabilization of riverbanks to mitigate exposures to PCB-contaminated riverbank/floodplain soils and future erosion;

d. dewatering, as necessary, and disposal of all excavated or dredged Waste Material;

e. backfilling and re-vegetation of excavated riverbanks and floodplain areas;

f. monitoring and maintenance during and after the implementation of the removal response action; and

g. post-removal control activities, including restoration. For the avoidance of doubt, SD will not be required to perform restoration work that will be undone by later remedial action in the Area.

18. **Performance of Area 4 Removal Response Action pursuant to an Area 4 Workplan**. SD shall submit an Area 4 Removal Work Plan in accordance with the schedule set forth in the SOW. The approved Area 4 Removal Work Plan shall be incorporated into the CD and SOW and enforceable under this CD without further modification by the Court, and SD shall implement all Work set forth in the Area 4 Removal Work Plan, including any modification made pursuant to ¶ 14.

19. All deliverables required to be submitted for approval under the CD or Area 4 Removal Work Plan shall be subject to approval by EPA, after consultation with the State, in accordance with ¶ ¶ 3.2 and 10.6 of the SOW.

VII. PERFORMANCE OF THE AREA 2 WORK

20. **Performance of Work in Area 2 in Accordance with the SOW**. SD shall: (a) develop the Area 2 RD; (b) perform the Area 2 RA; and (c) operate, maintain, and monitor the effectiveness of the Area 2 RA; all in accordance with the SOW and all EPA-approved, conditionally-approved, or modified deliverables as required by the SOW. All deliverables required to be submitted for approval under the CD or SOW shall be subject to approval by EPA in accordance with ¶ **10.6** (Approval of Deliverables) of the SOW.

VIII. PERFORMANCE OF THE AREA 3 WORK

21. **Selection of Area 3 Remedy.** As provided in Section 121 of CERCLA, 42 U.S.C. § 9621, and the NCP, and in a manner consistent with Section 117 of CERCLA, 42 U.S.C. § 9617, EPA intends to select the remedy for Area 3 and intends to issue the Area 3 ROD setting forth the selected remedy for Area 3.

22. **Proposed Plan for Area 3.**

a. Consistent with Section 117 of CERCLA, 42 U.S.C. § 9617, prior to issuing the Area 3 ROD, EPA intends to issue a proposed plan for the Area 3 remedy (Area 3 Proposed Plan).

b. EPA intends to submit the Area 3 Proposed Plan for public comment in accordance with Section 117(a) of CERCLA, 42 U.S.C. § 9617(a). NCR shall submit any objections to the Area 3 Proposed Plan during the public comment period.

c. The dispute resolution provisions of this CD are not applicable to the Area 3 Proposed Plan or the Area 3 ROD.

23. **SD Opt-Out.** If SD opts-out of the performance of the Area 3 ROD, SD shall pay $52.5 million to EPA pursuant to Paragraph 46 within 60 Days of notifying EPA that it intends to opt-out. If SD opts-out of the performance of the Area 3 ROD, SD shall not need to comply with any requirement in the Statement of Work ("SOW") that is applicable to Area 3, and Area 3 will not be included in the definition of Work.

24. **No Modified CD and SOW for Area 3.** If any of the following events occur: (a) EPA fails to issue the Area 3 ROD within 6 years of entry of the Consent Decree; (b) the United States withdraws its consent from the CD and SOW Modification for Area 3 RD/RA; or (c) the Court denies entry of the modified CD; SD shall pay $35 million pursuant to Paragraph 46 within 30 Days after the relevant triggering event.

25. **Performance of Work in Area 3 in Accordance with the SOW**. Unless SD opts-out of performance of the Area 3 ROD pursuant to ¶ 23 or there is no modified CD or SOW for Area 3: SD shall (a) develop the Area 3 RD; (b) perform the Area 3 RA; and (c) operate, maintain, and monitor the effectiveness of the Area 3 RA; all in accordance with the SOW and all EPA-approved, conditionally-approved, or modified deliverables as required by the SOW. All deliverables required to be submitted for approval under the CD or SOW shall be subject to approval by EPA in accordance with ¶ **10.6** (Approval of Deliverables) of the SOW.

IX. REMEDY REVIEW

26. **Periodic Review**. SD shall conduct, in accordance with ¶ **6.5** (Periodic Review Support Plan) of the SOW and corresponding provisions 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 Area 2 RA and Area 3 RA are protective of human health and the environment.

27. **EPA Selection of Further Response Actions**. If EPA determines, at any time, that any of the RAs are 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.

28. **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 reviews conducted pursuant to Section 121(c) of CERCLA and to submit written comments for the record during the comment period(s).

29. **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 ¶¶ 81-83 (United States' Pre- and Post-Certification Reservations) are satisfied. SD may invoke the procedures set forth in Section XV (Dispute Resolution) to dispute (a) EPA's determination that the reopener conditions of ¶¶ 81-83 are satisfied, (b) EPA's determination that the Area 2 RA or Area 3 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 ¶ 64 (Record Review).

30. **Submission of Plans**. If SD is required to perform further response actions pursuant to ¶ 29, SD 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.

X. PROPERTY REQUIREMENTS

31. **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, enforceable by SD and by Plaintiffs, providing that such Non-Settling Owner (i) provide Plaintiffs, 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 Area 2 RA, Area 3 RA or the Removal Action. SD shall provide a copy of such access and use restriction agreement(s) to EPA and the State.

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

(1) Monitoring the Work;

(2) Verifying any data or information submitted to the United States or the State;

(3) Conducting investigations regarding contamination at or near the Site;

(4) Obtaining samples;

(5) Assessing the need for, planning, or implementing additional response actions at or near the Site;

(6) 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;

(7) Implementing the Work pursuant to the conditions set forth in ¶ 86 (Work Takeover);

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

(9) Assessing SD's compliance with the CD;

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

(11) Implementing, monitoring, maintaining, reporting on, and enforcing any land, water, or other resource use restrictions and Institutional Controls.

32. **Best Efforts**. As used in this Section, "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, as applicable. If SD is unable to accomplish what is required through "best efforts" in a timely manner, it shall notify EPA, and include a description of the steps taken to comply with the requirements. If EPA deems it appropriate, it may assist 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 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 Specified Response Costs to be reimbursed under Section X (Payments).

33. 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.

XI. FINANCIAL ASSURANCE

34. In order to ensure completion of the Work, SD shall secure financial assurance, initially in the amount of $226 million ("Estimated Cost of the Work"), for the benefit of EPA and the Trustees. The financial assurance must be one or more of the mechanisms listed below, in a form substantially identical to the relevant sample documents available from EPA or under the "Financial Assurance - Settlements" category on the Cleanup Enforcement Model Language and Sample Documents Database at https://cfpub.epa.gov/compliance/models/, and satisfactory to EPA. SD may use multiple mechanisms if it is limited to surety bonds guaranteeing payment, letters of credit, trust funds, and/or insurance policies.

a. A surety bond guaranteeing payment and/or performance of the Work that is issued by a surety company among those listed as acceptable sureties on federal bonds as set forth in Circular 570 of the U.S. Department of the Treasury;

b. An irrevocable letter of credit, payable to or at the direction of EPA, that is issued by an entity that has the authority to issue letters of credit and whose letter-of-credit operations are regulated and examined by a federal or state agency;

c. A trust fund established for the benefit of EPA and the Trustees 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 and the Trustees 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 ¶36, accompanied by a standby funding commitment, which obligates the 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 and the Trustees by a company: (1) that is a direct or indirect parent company of 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 ¶36.

35. SD shall, within 30 days of the Effective Date, obtain EPA's approval of the form of SD 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 Financial Management Officer, to the United States, EPA, and the State as specified in Section XXII (Notices and Submissions).

36. SD seeking to provide financial assurance by means of a demonstration or guarantee under ¶ 34.e or 34.f, must, within 30 days of the Effective Date:

a. Demonstrate that:

(1) 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 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 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/.

37. SD providing financial assurance by means of a demonstration or guarantee under ¶ 34.e or 34.f must also:

a. Annually resubmit the documents described in ¶ 36.b within 90 days after the close of the SD's or guarantor's fiscal year;

b. Notify EPA within 30 days after the SD 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 SD or guarantor in addition to those specified in ¶ 36.b; EPA may make such a request at any time based on a belief that the SD or guarantor may no longer meet the financial test requirements of this Section.

38. 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, the State, and the Trustees of such information within seven 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 SD, the State, and the Trustees 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 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 ¶ 40 (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.

39. **Access to Financial Assurance**

a. If EPA issues a notice of implementation of a Work Takeover under ¶ 86.b, then, in accordance with any applicable financial assurance mechanism and/or related standby funding commitment, EPA and the Trustees are entitled to: (1) the performance of the Work including the payment of Installment Payments; and/or (2) require that any funds guaranteed be paid in accordance with ¶ 39.d. EPA will not draw on a financial assurance mechanism for payment of Installment Payments unless the SD has failed to make Installment Payments.

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 ¶ 39.d.

c. If, upon issuance of a notice of implementation of a Work Takeover under ¶ 86.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 including the payment of Installment Payments; or (2) the financial assurance is a demonstration or guarantee under ¶ 34.e or 34.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 including the payment of the Installment Payments. SD shall, within 30 days of such demand, pay the amount demanded as directed by EPA. EPA will not draw on a financial assurance mechanism for payment of Installment Payments unless the SD has failed to make Installment Payments.

d. Any amounts required to be paid under this ¶ 39 shall be, as directed by EPA deposited into an interest-bearing account, established at a duly chartered bank or trust company that is insured by the FDIC, in order to facilitate the completion of the Work by EPA or another person and the payment of the Installment Payments. EPA shall direct that the amount of Installment Payments owed to the Trustees but not yet paid in accordance with Paragraph 49 be paid to the Trustees. If payment is made to EPA, EPA may deposit the payment into the EPA Hazardous Substance Superfund or into the Site-wide 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. If payment is made to the Trustees, it shall be paid into a Site-specific sub-account within the NRDAR Fund, to be managed by DOI for the joint benefit and use of the Trustees to pay for Natural Resource Damages restoration projects jointly selected by the Trustees and for costs associated with such projects, including but not limited to planning, designing, overseeing, monitoring, and maintaining such projects.

e. All EPA Work Takeover costs not paid under this ¶ 39 must be reimbursed as Future Specified Response Costs under Section XII (Payments for Response Costs).

40. **Modification of Amount, Form, or Terms of Financial Assurance**.

a. 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 in accordance with ¶ 35, and must include an estimate of the cost of the remaining Work including the amount of any remaining Installment Payments, 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. SD shall also notify the Trustees of such a request. EPA will notify SD and the Trustees 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 XV (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 and the Trustees documentation of the reduced, revised, or alternative financial assurance mechanism in accordance with ¶ 35.

b. During the first seven years following the Effective Date, SD may reduce the amount of its financial assurance mechanism by the amount of Installment Payment once the SD has made the Installment Payment.

c. After SD has paid all the Installment Payments to the Trustees under Paragraph 49, the SD may change the terms of the Financial Assurance to benefit only EPA. SD will also no longer need to provide notice to the Trustees under this Section.

41. **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 ¶ **8** (Certification 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 XV (Dispute Resolution).

XII. PAYMENTS

42. **Initial Payment by SD**.

a. Within 14 Days after the Court enters an order in this action authorizing payment by SD into the Court Registry Account or 30 Days after the Effective Date, whichever is later, SD shall pay a total of $6,500,000 into the interest-bearing Court Registry Account of the United States District Court for the Western District of Michigan. Payment shall be made to the Clerk of the Court by an electronic funds transfer ("EFT") to the account designated by the Clerk of the Court, in accordance with payment instructions to be provided.

43. **Disbursements from Court Registry Account.** After entry of this Consent Decree by the District Court and either affirmation on appellate review of such entry or the expiration of time to appeal such entry, the funds deposited into the Court Registry Account under this Consent Decree (and all accrued interest) shall be disbursed pursuant to a separate Withdrawal Order of the Court, as follows:

a. $3 million plus all accrued interest on that amount from the Court Registry Account shall be paid to the State for the State Past Response Costs, to be deposited into the State's Environmental Response Fund, settlement ID RRD50118;

b. $2 million plus all accrued interest on that amount from the Court Registry Account shall be deposited in the NRDAR Fund to be applied towards Natural Resource Damage assessment costs incurred by the Trustees; and

c. $1.5 million plus all accrued interest on that amount from the Court Registry Account shall be deposited in the Site-wide Special Account for the United States' response costs 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.

44. **Response Cost Payments.** SD shall pay to EPA a total of $75 million to be paid as follows:

$10,700,000, plus Interest from the Date of Lodging, to be paid each year for six years on or before the anniversary of the Effective Date; and

$10,800,000, plus Interest from the Date of Lodging, to be paid no later than seven years after the Effective Date.

EPA shall deposit the Response Cost Payments in the Site-wide 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.

45. **Payments by SD for Future Specified Response Costs**. SD shall pay to EPA all Future Specified 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 60 days after SD's receipt of each bill requiring payment, except as otherwise provided in ¶ 47, in accordance with ¶ 46.a (instructions for Future Specified Response Cost payments).

b. **Deposit of Future Specified Response Costs Payments.** The total amount to be paid by SD pursuant to ¶ 45.a (Periodic Bills) shall be deposited by EPA in the Site-wide 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 Specified Response Costs payment directly into the EPA Hazardous Substance Superfund if, at the time the payment is received, EPA estimates that the Site-wide 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 Specified 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.

46. **EPA Payment Instructions for SD**

a. **Future Specified Response Costs Payments, Payments pursuant to ¶ 23, Response Cost Payments, and Stipulated Penalties**

i. For all payments subject to this ¶ 46.a, SD shall make such payment by Fedwire EFT, referencing the Site/Spill ID and DJ numbers. The Fedwire EFT payment must be sent as follows:

Federal Reserve Bank of New York
ABA = 021030004
Account = 68010727
SWIFT address = FRNYUS33
33 Liberty Street
New York NY 10045
Field Tag 4200 of the Fedwire message should read
"D 68010727 Environmental Protection Agency"

ii. For all payments made under this ¶ 46.a, SD must include references to the Site/Spill ID and DJ numbers. At the time of any payment required to be made in accordance with ¶ 46.a, SD shall send notices that payment has been made to the United States, EPA, and the EPA Cincinnati Finance Center, all in accordance with ¶ 107. All notices must include references to the Site/Spill ID and DJ numbers.

47. **Contesting Future Specified Response Costs**. SD may submit a Notice of Dispute, initiating the procedures of Section XV (Dispute Resolution), regarding any Future Specified Response Costs billed under ¶ 42 (Payments by SD for Future Specified Response Costs) if it determines that EPA has made a mathematical error or included a cost item that is not within the definition of Future Specified Response Costs, or if it believes EPA incurred excess costs as a direct result of an EPA action that was inconsistent with a specific provision or provisions of the NCP. Such Notice of Dispute shall be submitted in writing within 60 days after receipt of the bill and must be sent to the United States pursuant to Section XXII (Notices and Submissions). Such Notice of Dispute shall specifically identify the contested Future Specified Response Costs and the basis for objection. If SD submits a Notice of Dispute, SD shall within the 60-day period, also as a requirement for initiating the dispute, (a) pay all uncontested Future Specified Response Costs to the United States, and (b) establish, in a duly chartered bank or trust company, an interest-bearing escrow account that is insured by the Federal Deposit Insurance Corporation ("FDIC"), and remit to that escrow account funds equivalent to the amount of the contested Future Response Costs. SD shall send to the United States, as provided in Section XXII (Notices and Submissions), a copy of the transmittal letter and check paying the uncontested Future Specified 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 prevails in the dispute, SD shall pay the sums due (with accrued interest) to the United States within seven 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 they did not prevail to the United States within 30 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 ¶¶ 46.a (instructions for Future Specified Response Cost payments). The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XV (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding SD's obligation to reimburse the United States for its Future Specified Response Costs.

48. **Interest**. In the event that any payment for Past Response Costs or for Future Specified 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 Specified 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 XVI (Stipulated Penalties).

49. **Additional Natural Resource Damages Payments**. In addition to the payment for assessment costs specified in Paragraph 43, SD shall pay a total of $25 million for the Trustees' Natural Resource Damages claim as follows:

> $10,000,000, plus Interest from the Date of Lodging, to be paid on January 15, 2020, or 30 days after the Effective Date, whichever is later;
>
> $2,100,000, plus Interest from the Date of Lodging, to be paid each year for six years on or before the anniversary of the Effective Date; and
>
> $2,400,000, plus Interest from the Date of Lodging, to be paid no later than seven years after the Effective Date.

The Natural Resource Damages payments made pursuant to this Paragraph shall be paid into a Site-specific sub-account within the NRDAR Fund, to be managed by DOI for the joint benefit and use of the Trustees to pay for Natural Resource Damages restoration projects jointly selected by the Trustees and for costs associated with such projects, including but not limited to planning, designing, overseeing, monitoring, and maintaining such projects. Payment shall be made by FedWire Electronic Funds Transfer ("EFT") to the U.S. Department of Justice account, in accordance with current EFT procedures, in accordance with instructions provided to SD by the Financial Litigation Unit ("FLU") of the United States Attorney's Office for the Western District of Michigan. The payment instructions provided by the FLU will include a Consolidated Debt Collection System ("CDCS") number, which Defendant shall use to identify all payments required to be made in accordance with this Consent Decree. The FLU will provide the payment instructions to:

> Bryan Heath

Senior Environmental Manager
864 Spring Street NW
Atlanta, GA 30308
Bryan.Heath@ncr.com

Office of the General Counsel
NCR Corporation
864 Spring Street, NW
Atlanta, GA 30308
Law.notices@ncr.com

on behalf of SD. SD may change the individual to receive payment instructions on its behalf by providing written notice of such change to the United States, the State, DOI, and DOC in accordance with Section XXII (Notices and Submissions).

50. **State Future Response Costs.** SD shall pay 10 consecutive payments of $300,000 per year for the State's Future Response Costs, with the first payment to be made on January 15, 2020, or 30 days after the Effective Date, whichever is later, and the subsequent payments to be made on the anniversary of that date.

51. **State Payment Instructions**. Payments to the State under ¶ 50 shall be made by certified check, made payable to the "State of Michigan – Environmental Response Fund" and shall be sent by first class mail to:

Michigan Department of Environment, Great Lakes, and Energy
Cashier's Office
P.O. Box 30657
Lansing, Michigan 48909-8157

To ensure proper credit, the Site ID and the Account Number RRD50118 shall be designated on the check. A transmittal letter shall be provided simultaneously to the State as provided in ¶ 107 and to MDAG at:

Division Chief
Environment, Natural Resources, and Agriculture Division
Department of Attorney General
P. O. Box 30755
Lansing, MI 48909

52. **Payments Prior to Final Non-Appealable Judgment.** If the Consent Decree requires SD to make a payment prior to either affirmation on appellate review of such entry or the expiration of time to appeal such entry, NCR shall deposit such payment into the Court Registry Account. The withdrawal order shall provide that the payment shall be directed to the intended recipient plus the interest accrued in the Court Registry Account.

XIII. INDEMNIFICATION AND INSURANCE

53. **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, 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 representative 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 plan to seek indemnification pursuant to this ¶ 53, and shall consult with SD prior to settling such claim.

54. 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 any one or more of 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.

55. **Insurance**. No later than 15 days before commencing any on-site Work, SD shall secure, and shall maintain until the first anniversary after Certification of Completion pursuant to ¶ 6.4 of the SOW (Certification of RA Completion) of the last RA completed pursuant to this CD, 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 an additional insured 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 and the State under this Paragraph identify the Site name and the civil action number of this case.

XIV. FORCE MAJEURE

56. "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 exercises "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force majeure and best efforts to address the effects of any potential force majeure (a) as it is occurring and (b) following the potential force majeure such that the delay and any adverse effects of the delay are minimized to the greatest extent possible. "Force majeure" does not include financial inability to complete the Work or a failure to achieve the Performance Standards.

57. 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 Alternate Project Coordinator or, in the event both of EPA's designated representatives are unavailable, the Director of the Superfund Division, EPA Region 5, within five days of when SD first knew that the event might cause a delay. Within 20 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 ¶ 56 and whether SD has exercised its best efforts under ¶ 56, EPA may, in its unreviewable discretion, excuse in writing SD's failure to submit timely or complete notices under this Paragraph.

58. 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.

59. If SD elects to invoke the dispute resolution procedures set forth in Section XV (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 ¶¶ 56 and 57. 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.

60. 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.

XV. DISPUTE RESOLUTION

61. Unless otherwise expressly provided for in this CD, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes regarding 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.

62. 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.

63. **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 10 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 ¶ 64 (Record Review) or ¶65.

b. Within 30 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 ¶ 64 (Record Review) or ¶ 65. 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 ¶ 64 (Record Review) or ¶65, 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 ¶¶ 64 and 65.

64. **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. Nothing in this CD shall be construed to allow any dispute by SD regarding the validity of the provisions of the Area 2 ROD or Area 3 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 Division, EPA Region 5, will issue a final administrative decision resolving the dispute based on the administrative record described in ¶ 64.a. This decision shall be binding upon SD, subject only to the right to seek judicial review pursuant to ¶¶ 64.c and 64.d.

c. Any administrative decision made by EPA pursuant to ¶ 64.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 10 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 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 ¶ 64.a.

65. 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 Division, EPA Region 5, will issue a final decision resolving the dispute based on the statements of position and reply, if any, served under ¶ 63. The Superfund Division Director's decision shall be binding on SD unless, within 15 days after receipt of the decision, SD files with the Court and serve 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 ¶ U (CERCLA § 113(j) record review of the Area 2 ROD, Area 3 ROD, and the Work) of Section I (Background), judicial review of any dispute governed by this Paragraph shall be governed by applicable principles of law.

66. 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

¶ 47 (Contesting Future Specified 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 ¶ 74. 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 XVI (Stipulated Penalties).

XVI. STIPULATED PENALTIES

67. SD shall be liable to the United States and the State for stipulated penalties in the amounts set forth in ¶¶ 68.a and 69 for failure to comply with the obligations specified in ¶¶ 68.b and 69, unless excused under Section XIV (Force Majeure). Fifty percent of stipulated penalties shall be paid the United States and fifty percent shall be paid to the State. "Comply" as used in the previous sentence 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 ¶ 10.6 (a)(Initial Submissions) or 10.6(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.

68. **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 identified in ¶ 68.b:

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

b. Obligations

(1) Payment of any amount due under Section XII (Payments).

(2) Establishment and maintenance of financial assurance in accordance with Section XI (Financial Assurance).

(3) Establishment of an escrow account to hold any disputed Future Specified Response Costs under ¶ 47 (Contesting Future Specified Response Costs)

(4) Timely initiation, performance, and completion of construction of the Area 2 RD or the Area 2 RA in accordance with the Area 2 ROD, the SOW, or this CD, and plans and schedules approved thereunder, including any deadline imposed by a SOW modification or by any plan which is prepared pursuant to the SOW and approved by EPA;

(5) Subject to ¶ 13 timely initiation, performance, and completion of the Area 3 RD or Area 3 RA incorporated into this CD in accordance with the Area 3 ROD, the SOW, or this CD, and plans and schedules approved thereunder, including any deadline with respect to RD imposed by a SOW modification or by any plan which is prepared pursuant to a SOW modification and approved by EPA;

(6) Timely implementation of any O&M as set forth in this CD in accordance with all applicable RODs, the SOW, or this CD, and plans and schedules approved thereunder, including any deadline with respect to O&M imposed by a SOW modification or by any plan which is prepared pursuant to a SOW modification and approved by EPA;

(7) Timely implementation of the Area 4 Removal Response Action in accordance with the Area 4 Action Memorandum, the SOW or this CD;

(8) Obligations imposed by the Emergency Response and Reporting Provisions of the SOW;

(9) Obligations imposed by Section X (Property Requirements);

(10) Performance of studies and investigations pursuant to Section IX (Remedy Review).

69. **Stipulated Penalty Amounts – Other Deliverables**. The following stipulated penalties shall accrue per violation per day for failure to submit timely or adequate deliverables pursuant to the CD other than those specified in Paragraph 68.b:

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

70. In the event that EPA assumes performance of a portion or all of the Work pursuant to ¶ 86 (Work Takeover), SD shall be liable for a stipulated penalty in the amount of $600,000. Stipulated penalties under this Paragraph are in addition to the remedies available under ¶¶ 39 (Access to Financial Assurance) and 86 (Work Takeover).

71. 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 ¶ 10.7 (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 Division, EPA Region 5, under ¶ 64.b or 65.a of Section XV (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 XV (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.

72. Following EPA's determination that SD has failed to comply with a requirement of this CD, EPA and the State may give SD written notification of the same and describe the noncompliance. EPA 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.

73. 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 XV (Dispute Resolution) within the 30-day period. All payments to the United States or the State under this Section shall indicate that the payment is for stipulated penalties and shall be made in accordance with ¶ 46.a (instructions for Future Specified Response Cost payments) and ¶ 51 (State Payment Instructions).

74. Penalties shall continue to accrue as provided in ¶ 71 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 ¶ 74.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 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.

75. 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 ¶ 74 until the date of payment; and (b) if SD fails to timely invoke dispute resolution, Interest shall accrue from the date of demand under ¶ 73 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.

76. 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.

77. 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.

78. 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.

XVII. COVENANTS BY PLAINTIFFS

79. **Covenants for SD by United States**. Except as provided in ¶¶ 81 and 82 (Plaintiffs' Pre- and Post-Certification Reservations) and ¶¶ (General Reservations of Rights), the United States covenants not to sue or to take administrative action against SD pursuant to Sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607, and Section 311(f) of the Clean Water Act, 33 U.S.C. § 1321(f), relating to the Site. Except with respect to future liability, these covenants shall take effect upon the Effective Date. With respect to future liability, these covenants shall take effect upon Final Certification of RA Completion by EPA. These covenants are conditioned upon the satisfactory performance by the SD of its obligations under this CD. These covenants extend only to SD and do not extend to any other person.

80. **Covenants for SD by the State**. Except as provided in ¶¶ 81 and 82 (Plaintiffs' Pre- and Post-Certification Reservations) and ¶¶ (General Reservations), the State covenants not to sue or to take administrative action against SD pursuant to Section 107 of CERCLA, 42 U.S.C. § 9607, and Section 311(f) of the Clean Water Act, 33 U.S.C. § 1321(f), and Michigan statutory or common law relating to the Site. Except with respect to future liability, these covenants shall take effect upon the Effective Date. With respect to future liability, these covenants shall take effect upon Final Certification of RA Completion by EPA. These covenants are conditioned upon the satisfactory performance by the SD of its obligations under this CD. These covenants extend only to SD and do not extend to any other person.

81. **Plaintiffs' Pre-Certification Reservations**. Notwithstanding any other provision of this CD, the United States and the State reserve, 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 and the State for additional costs of response if, (a) prior to Final 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, after consultation with the State, determines that these previously unknown conditions or information together with any other relevant information indicates that the RA for a particular Operable Unit or Area of OU5 is not protective of human health or the environment.

82. **Plaintiffs' Post-Certification Reservations.** Notwithstanding any other provision of this CD, the United States and the State, 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 NCR to perform further response actions relating to the Site and/or to pay the United States and the State for additional costs of response if, (a) subsequent to Final 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, after consultation with the State, determines that these previously unknown conditions or this information together with other relevant information indicate that the RA for a particular Operable Unit or Area of OU5 is not protective of human health or the environment.

83. For purposes of ¶ 81 (Plaintiffs' Pre-Certification Reservations), the information and the conditions known to EPA will include only that information and those conditions known to EPA as of the date of lodging of the Consent Decree. For purposes of ¶ 82 (Plaintiffs' Post-Certification Reservations), the information and the conditions known to EPA shall include only that information and those conditions known to EPA as of the date of Final Certification of RA Completion and set forth in the RODs, the administrative record supporting the RODs, the post-ROD administrative record, which will include the administrative records for all subsequent RODs at the Site or in any information received by EPA pursuant to the requirements of this CD prior to Final Certification of RA Completion.

84. **Plaintiffs' Reservations for Unknown NRD Conditions and New NRD Information.** Notwithstanding any other provision of this Consent Decree, the United States and the State reserve the right to institute proceedings against NCR in this action or in a new action seeking recovery of Natural Resource Damages, based on: (1) conditions with respect to the Site, unknown to the Trustees as of the Date of Lodging, that result in releases of hazardous substances that contribute to injury to, destruction of, or loss of Natural Resources ("Unknown NRD Conditions"), or (2) information received by the Trustees after the Date of Lodging which indicates that the releases of hazardous substances at the Site have resulted in injury to, destruction of, or loss of Natural Resources of a type or future persistence that was unknown to the Trustees as of the Date of Lodging of this Consent Decree ("New NRD Information"). The following shall not be considered Unknown NRD Conditions or New NRD Information for the purpose of this Paragraph: (1) an increase solely in any trustee's assessment of the magnitude of a known injury to, destruction of, or loss of Natural Resources at the Site; or (2) injury to, destruction of, or loss of Natural Resources at the Site arising from the re-exposure, resuspension, or migration of hazardous substances known to be present in the sediments of the Site. For the purpose of this Paragraph, the information and conditions known to the Trustees shall include any information or conditions listed or identified in records relating to the Site that were in the possession or under the control of the Trustees as of the Date of Lodging of this Consent Decree.

85. **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 arising from past, present, or future disposal, release, or threat of release of non-PCB Waste Material within the Site;

d. liability based on the ownership of the property that is part of the Site by SD when such ownership commences after signature of this CD by SD;

e. 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;

f. 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 Area 2 ROD, Area 3 ROD, the Area 4 Action Memorandum, the Work, or otherwise ordered by EPA, after signature of this CD by SD;

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 Area 2 ROD or Area 3 ROD, but that cannot be required pursuant to ¶ 14 (SOW or Related Deliverables).

86. **Work Takeover**

a. In the event EPA determines that SD: (1) has ceased implementation of any portion of the Work, including payment of Installment Payments; (2) is seriously or repeatedly deficient or late in its performance of the Work; (3) is implementing the Work in a manner that may cause an endangerment to human health or the environment; or (4) does not perform the response actions as described in Sections VI, VII or VIII, 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, the portion of the work to be taken over, and will provide SD a period of 15 days within which to remedy the circumstances giving rise to EPA's issuance of such notice. If EPA issues a Work Takeover Notice, EPA will send a copy to the State. EPA will not issue a Work Takeover Notice that includes the payment of Installment Payments unless the SD has failed to make Installment Payments.

b. If, after expiration of the 15-day notice period specified in ¶ 86.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 ¶ 86.b. Funding of Work Takeover costs is addressed under ¶ 39 (Access to Financial Assurance).

c. SD may invoke the procedures set forth in ¶ 64 (Record Review), to dispute EPA's implementation of a Work Takeover under ¶ 86.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 ¶ 86.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 ¶ 64 (Record Review) requiring EPA to terminate such Work Takeover.

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

XVIII. COVENANTS BY SD

88. **Covenants by SD**. Subject to the reservations in ¶ 90, 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 Site, 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 Specified Response Costs, State Past Response Costs, State Future Response Costs, SD's Past Response Costs, SD's Future Specified 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 Michigan Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, or at common law.

89. Except as provided in ¶¶ 92 (Waiver of Claims by SD) and 98 (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 XVII (Covenants by Plaintiffs), other than in ¶¶ 85.a (claims for failure to meet a requirement of the CD), 85.g (criminal liability), and 85.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.

90. 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.

91. 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).

92. **Waiver of Claims by SD**

a. Subject to the reservations in this ¶ 92, SD waives and agrees not to assert any claims or causes of action (including but not limited to claims for contribution under CERCLA) that it may have for all matters relating to the release of PCBs to the Site against any other person who is a potentially responsible party under CERCLA at the Site. This waiver includes, but is not limited to, any asserted or unasserted claims or causes of action by SD, whether in this action, or any future action related to the Site, for recovery of its costs based on contract law or any other theory of recovery.

b. The waiver in ¶ 92.a shall not apply to any claims that SD may have against a PRP at this Site if a PRP pursues a claim of any type based on any theory relating to this Site against SD.

c. The waiver in ¶ 92.a shall not apply to any claims that SD may have as a result of the Plaintiffs' exercising any rights against the SD pursuant to ¶¶ 81,82, 83, 84, or 85.

d. The waiver in ¶ 92.a shall not apply to any claims that SD may have against its own insurance carriers or indemnitors.

e. The claim waivers in this ¶ 92 shall take effect upon the Effective Date, but are conditioned on this CD's continued effectiveness. Nothing in this ¶ 92 is intended to diminish the contribution protection provided to the SD by this CD or any other CD or administrative settlement agreement relating to this Site.

XIX. EFFECT OF SETTLEMENT; CONTRIBUTION

93. Except as provided in ¶ 92 (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 XVIII (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).

94. 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 include Natural Resource Damages and all response actions taken or to be taken and all response costs incurred or to be incurred by the United States or any other person with respect to the Site, including any claims against SD for the imposition or allocation of any costs (other than the judgment for past costs and interest imposed on SD on June 19, 2018) that have been or could be asserted in Case No. 1:11-cv-00483, including, without limitation the Petition for Further Relief filed by GP on August 10, 2018. SD agrees, within

30 days following the Effective Date, to voluntarily dismiss its appeal in Case No. 1:11-cv-00483, docketed in the Sixth Circuit as Case No. 18-1805.

95. The Parties further agree, and by entering this CD this Court finds, that the complaint filed by the United States 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).

96. 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.

97. 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.

98. **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 XVII (Covenants by Plaintiffs).

XX. ACCESS TO INFORMATION

99. 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 their 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.

100. **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 ¶ 100.b, and except as provided in ¶ 100.c.

b. If SD asserts a claim of privilege or protection, it 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.

101. **Business Confidential Claims**. SD may assert that all or part of a Record provided to Plaintiffs under this Section or Section XXI (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 or 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.

102. 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.

103. 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.

XXI. RETENTION OF RECORDS

104. Until 10 years after EPA's final Certification of Work Completion under ¶ 8 (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, and 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.

105. 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 ¶ 100 (Privileged and Protected Claims), SD shall deliver any such Records to EPA or the State.

106. SD certifies that, to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed, or otherwise disposed of any Records (other than identical copies) relating to its potential liability regarding the Site since notification of potential liability by 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.

XXII. NOTICES AND SUBMISSIONS

107. 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 # 90-11-2-07912/11
As to EPA:	Director, Superfund Division U.S. Environmental Protection Agency, Region 5 77 W. Jackson Blvd. Chicago, IL 60604-3507
and:	James Saric Remedial Project Manager U.S. Environmental Protection Agency, Region 5 77 W. Jackson Blvd, S-6J Chicago, IL 60604-3507 Saric.James@epa.gov (312) 886-0992
As to the Regional Financial Management Officer:	Justin Abrams Accountant U.S. Environmental Protection Agency, Region 5 77 West Jackson Blvd., MC:MF-10J Chicago, IL 60604-3507

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 DOI:	Lisa L. Williams NRDA Representative for FWS 2651 Coolidge Road, Suite 101 East Lansing, MI 48823 lisa_williams@fws.gov Kelly Brooks Bakayza Attorney Advisor Office of the Solicitor 3 Parkway Center, Suite 385 Pittsburgh, PA 15220 kelly.bakayza@sol.doi.gov
As to DOC:	Laurie Lee Deputy Section Chief Office of General Counsel Natural Resources Section 501 W. Ocean Blvd., Suite 4470 Long Beach, CA 90802 laurie.lee@noaa.gov
As to the State:	Daniel Peabody State Project Coordinator 525 W. Allegan St., Lansing, MI 48933 PeabodyD@michigan.gov Jay Wesley Fisheries Division Michigan Department of Natural Resources 621 N. 10th Street Plainwell, MI 49080 WesleyJ@michigan.gov

As to SD:

James M. Bedore
Executive VP, General Counsel, & Secretary
NCR Corporation
864 Spring Street NW
Atlanta, GA 30308
James.Bedore@ncr.com

Christopher Murphy
Law VP & Chief Litigation Counsel
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864 Spring Street NW
Atlanta, GA 30308
Christopher.Murphy@ncr.com

Bryan Heath
Senior Environmental Manager
864 Spring Street NW
Atlanta, GA 30308
Bryan.Heath@ncr.com

Office of the General Counsel
NCR Corporation
864 Spring Street, NW
Atlanta, GA 30308
Law.notices@ncr.com

XXIII. RETENTION OF JURISDICTION

108. 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 XV (Dispute Resolution).

XXIV. APPENDICES

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

"Appendix A" is the Site map.

"Appendix B" is the SOW.

"Appendix C" is the Area 2 ROD.

"Appendix D" is the draft Area 4 Action Memorandum.

"Appendix E' is reserved for the Area 3 ROD.

"Appendix F" is the form for modification of the Consent Decree after the Areas 3 ROD.

XXV. MODIFICATION

110. Except as provided in ¶ 14 (SOW or Related Deliverables), material modifications to this CD, including the SOW, shall be in writing, signed by the United States, the State, and SD, and shall be effective upon approval by the Court. Except as provided in ¶ 14, 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. 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.

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

XXVI. LODGING AND OPPORTUNITY FOR PUBLIC COMMENT

112. 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.

113. 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.

XXVII. EFFECTIVE DATE

114. The Effective Date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court or a motion to enter the Consent Decree is granted, whichever occurs first, as recorded on the Court's docket; provided, however, that SD hereby agrees that it shall be bound to perform duties scheduled to occur prior to the Effective Date. In the event the United States withdraws or withholds consent to this Consent Decree before entry, or the Court declines to enter the Consent Decree, then the preceding requirement to perform duties scheduled to occur before the Effective Date shall terminate.

XXVIII. SIGNATORIES/SERVICE

115. Each undersigned representative of a SD to this CD, the State, and the Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice certifies that he or she is fully authorized to enter into the terms and conditions of this CD and to execute and legally bind such Party to this document.

116. 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.

117. Each 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 need not file an answer to the complaint in this action unless or until the Court expressly declines to enter this CD.

XXIX. FINAL JUDGMENT

118. 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.

119. 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.

SO ORDERED THIS 2nd DAY OF December, 2020.

/s/ Robert J. Jonker
Chief United States District Judge

Signature Page for CD regarding the Allied Paper Kalamazoo River Superfund Site

FOR THE UNITED STATES OF AMERICA:

12/4/19
Dated

Jeffrey Bossert Clark
Assistant Attorney General
U.S. Department of Justice
Environment and Natural Resources Division
Washington, D.C. 20530

Kristin M. Furrie
Trial Attorney
U.S. Department of Justice
Environment and Natural Resources Division
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P.O. Box 7611
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ANDREW BYERLY BIRGE
United States Attorney
Western District of Michigan

Adam B. Townshend
Assistant United States Attorney
Western District of Michigan
330 Ionia Ave. N.W., Suite 501
Grand Rapids, MI 49503

Signature Page for CD regarding the Allied Paper Kalamazoo River Superfund Site

For the Environmental Protection Agency:

11/13/19
Dated

Douglas Ballotti
Director
Superfund & Emergency Management Division
U.S. Environmental Protection Agency, Region 5
77 West Jackson Blvd.
Chicago, IL 60604-3507

Nicole Wood-Chi
Associate Regional Counsel
U.S. Environmental Protection Agency, Region 5
77 West Jackson Blvd.
Chicago, IL 60604-3507

Signature Page for CD regarding the Allied Paper Kalamazoo River Superfund Site

FOR THE STATE OF MICHIGAN:

DANA NESSEL
Attorney General of Michigan

Dated 12/6/19

Megen Miller (P78901)
Assistant Attorney General
Environment, Natural Resources, and Agriculture Division
Michigan Department of Attorney General
P.O. Box 30755
Lansing, MI 48909
(517) 335-7664

Dated 12/6/2019

Liesl Clark, Director
Michigan Department of Environment, Great Lakes, and Energy
P.O. Box 30473
Lansing, MI 48909-7973
(517) 284-6700

Dated 12/2/19

Daniel Eichinger, Director
Michigan Department of Natural Resources
Constitution Hall, 525 West Allegan Street
P.O. Box 30028
Lansing, MI 48909-7528
(517) 284-6367

Signature Page for CD regarding the Allied Paper Kalamazoo River Superfund Site

FOR NCR Corporation:

11/5/19
Dated

Owen Sullivan
Chief Operating Officer

NCR Corporation
864 Spring Street NW
Atlanta, GA 30308

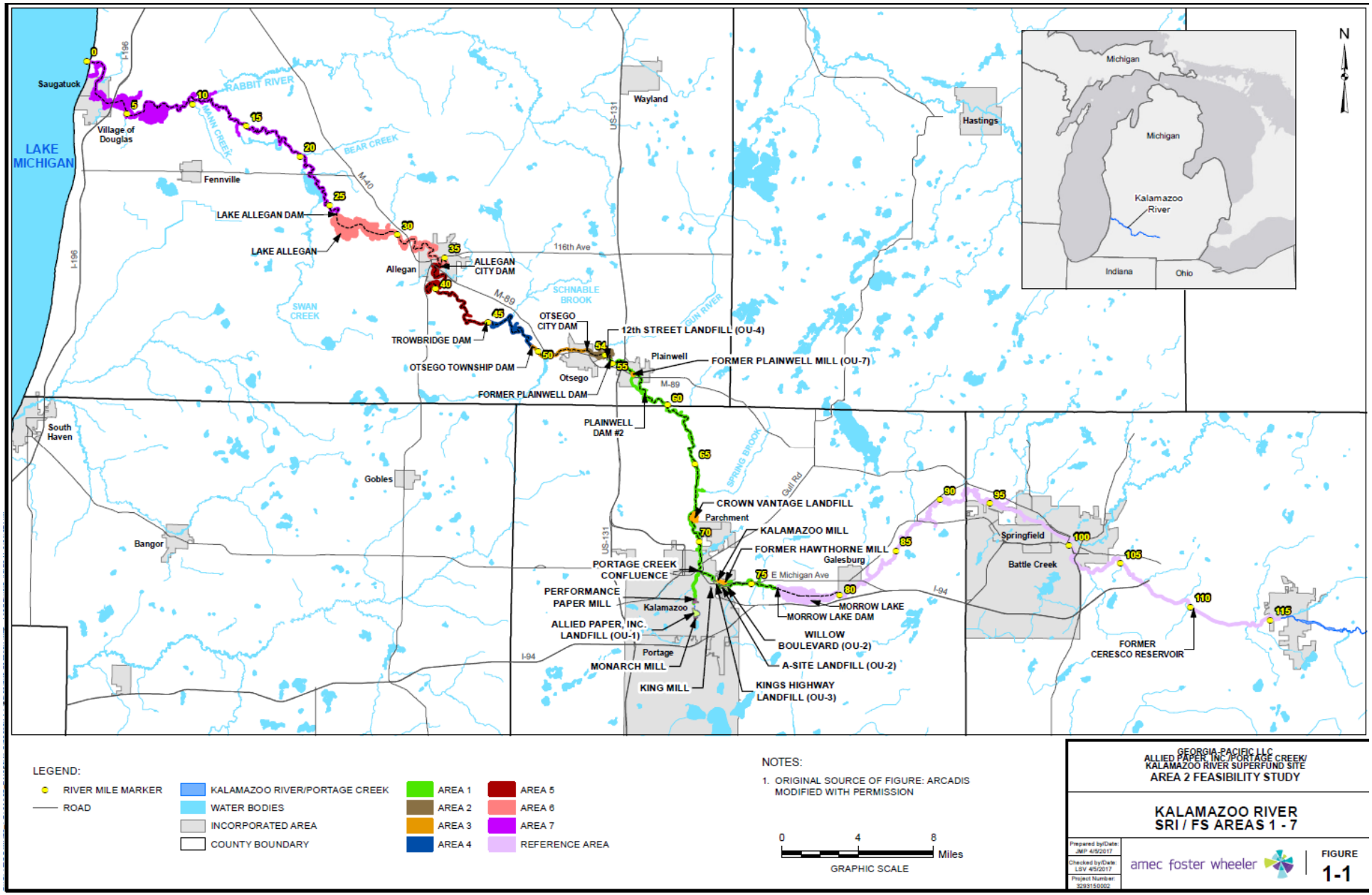
Agent Authorized to Accept Service on Behalf of Above-signed Party:

David R. Marriott
Darin P. McAtee
Cravath, Swaine & Moore LLP
Worldwide Plaza
825 Eighth Avenue
New York, NY 10019
T: (212) 474-1000
DMarriott@cravath.com
DMcAtee@cravath.com

IN THE UNITED STATES DISTRICT COURT
FOR WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

UNITED STATES OF AMERICA and THE STATE OF MICHIGAN Plaintiffs, v. NCR CORPORATION, Defendant.	Civil Action No.

CONSENT DECREE WITH NCR CORPORATION
Appendix A
(Site Map)



LEGEND:

- RIVER MILE MARKER
- ROAD
- KALAMAZOO RIVER/PORTAGE CREEK
- WATER BODIES
- INCORPORATED AREA
- COUNTY BOUNDARY
- AREA 1
- AREA 2
- AREA 3
- AREA 4
- AREA 5
- AREA 6
- AREA 7
- REFERENCE AREA

NOTES:

1. ORIGINAL SOURCE OF FIGURE: ARCADIS MODIFIED WITH PERMISSION

0 4 8 Miles

GRAPHIC SCALE

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/ KALAMAZOO RIVER SUPERFUND SITE
AREA 2 FEASIBILITY STUDY

KALAMAZOO RIVER
SRI / FS AREAS 1 - 7

Prepared by/Date: JMP 4/5/2017
Checked by/Date: LSV 4/5/2017
Project Number: 3293150002

amec foster wheeler

FIGURE
1-1

IN THE UNITED STATES DISTRICT COURT
FOR WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

UNITED STATES OF AMERICA and THE STATE OF MICHIGAN Plaintiffs, v. NCR CORPORATION, Defendant.	)	Civil Action No.

CONSENT DECREE WITH NCR CORPORATION
Appendix B
(SOW)

STATEMENT OF WORK

ALLIED PAPER/PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

AREAS 2, 3, AND 4 OF OPERABLE UNIT 5, ALLEGAN COUNTY, STATE OF MICHIGAN

EPA REGION 5

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1. INTRODUCTION

1.1 Purpose of the SOW. This SOW sets forth the procedures and requirements for implementing the Work required by the Consent Decree (CD).

1.2 Structure of the SOW

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- Section 3 (Area 4 Removal Response Action) sets forth the process for SDs to design and implement a removal response action at Area 4.
- Section 4 (Scope of Remedy) includes the actions described in the applicable RODs for implementation of the respective selected remedies.
- Section 5 (Remedial Design) sets forth the process for developing the RDs
- Section 6 (Remedial Action) sets forth requirements regarding the completion of the Area 2 RA and the Area 3 RA.
- Section 7 (Waste Material) sets forth SD's obligation related to emergency response and reporting and off-site shipment waste material.
- Section 8 (Certification of Work Completion) describes the process for approval and certification of each response action conducted by SD as required by the CD.
- Section 9 (Reporting) sets forth SD's reporting obligations
- Section 10 (Submission of 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 11 (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 Work.
- Section 12 (State Participation) addresses State participation.
- Section 13 (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 this SOW, and the term "Section" means a section of this SOW, unless otherwise stated.

2. COMMUNITY INVOLVEMENT

2.1 Community Involvement Responsibilities

(a) EPA has the lead responsibility for developing and implementing community involvement activities at the Site. Previously, EPA developed a Community Involvement Plan (CIP) for the Site. Pursuant to 40 C.F.R. § 300.435(c), EPA shall review the existing CIP and determine whether it should be revised to

describe further public involvement activities during the Work that are not already addressed or provided for in the existing CIP.

(b) If requested by EPA, SD shall participate in community involvement activities, including participation in (1) the preparation of information regarding the Work for dissemination to the public, with consideration given to including mass media and/or Internet notification, and (2) public meetings that may be held or sponsored by EPA to explain activities at or relating to the Site. SD's support of EPA's community involvement activities may include providing online access to initial submissions and updates of deliverables to (1) any Community Advisory Groups, (2) any Technical Assistance Grant recipients and their advisors, and (3) other entities to provide them with a reasonable opportunity for review and comment. EPA may describe in its CIP SD's responsibilities for community involvement activities. All community involvement activities conducted by SD at EPA's request are subject to EPA's oversight. Upon EPA's request, SD shall establish a community information repository at or near the Site to house one copy of the administrative record.

(c) **SD's CI Coordinator**. If requested by EPA, SD shall, within 30 days, designate and notify EPA of SD's Community Involvement Coordinator (SD's CI Coordinator). SD may hire a contractor for this purpose. SD's notice must include the name, title, and qualifications of the SD's CI Coordinator. SD's CI Coordinator is responsible for providing support regarding EPA's community involvement activities, including coordinating with EPA's CI Coordinator regarding responses to the public's inquiries about the Site.

3. AREA 4 REMOVAL RESPONSE ACTION

3.1 Scope of Area 4 Removal Response Action. The actions to be implemented shall include, but are not limited to, the following:

(a) Dredging and/or excavation of PCB-contaminated in-stream sediments and riverbank/floodplain soils with elevated PCB concentrations in the Trowbridge Dam Area, at locations specified in the Action Memorandum;

(b) Removal of the Trowbridge Dam including the 150-foot left earthen embankment, 80-foot wide concrete spillway, and a 110-foot right earthen embankment as illustrated in the Action Memorandum, or any water control structure within the Trowbridge Dam Area as needed to reduce the risk of PCB mobilization from floodplains and banks due to failure of the Trowbridge Dam or water control structure;

(c) Cut-back and stabilization of riverbanks to mitigate exposures to PCB-contaminated riverbank/floodplain soils and future erosion;

(d) Dewatering, as necessary, and disposal off-site of all PCB-contaminated instream sediments and riverbank/floodplain soils removed pursuant to tasks 3.1a, 3.1b, and 3.1c. PCB-contaminated material with PCB concentrations > 50 mg/kg shall be transported

off-site to a TSCA waste landfill that is in compliance with all state and federal regulatory requirements. PCB-contaminated material with PCB concentrations < 50 mg/kg shall be transported off-site and disposed in an appropriately licensed and permitted commercial landfill in compliance with all state and local laws;

(e) Ensuring that a stable river channel exists post-removal, including backfilling as appropriate and re-vegetation with native plant species; and

(f) Conducting appropriate monitoring and maintenance during the removal response action; and

(g) Post-removal control activities, including restoration. For the avoidance of doubt, SD will not be required to perform restoration work that will be undone by later remedial action in the Area.

3.2 Submittal and Approval of Area 4 Removal Work Plan. Within 30 days after EPA issues the Area 4 Action Memorandum and in accordance with Section 10 (Submission of Deliverables) of this SOW, SD shall submit to EPA for approval a draft work plan for performing the Area 4 Removal Response Action (the "Area 4 Removal Work Plan"). The draft Area 4 Removal Work Plan shall provide a description of, and an expeditious schedule (Area 4 Schedule) for, the actions required by the CD related to implementation of the Area 4 Action Memorandum.

a. EPA may approve, disapprove, require revisions to, or modify the draft Area 4 Removal Work Plan in whole or in part. If EPA requires revisions, SD shall submit a revised draft Area 4 Removal Work Plan within 45 days after receipt of EPA's notification of the required revisions. SD shall implement the Area 4 Removal Work Plan as approved in writing by EPA in accordance with the schedule approved by EPA. Once approved, or approved with modifications, the Area 4 Removal Work Plan, the Area 4 Schedule, and any subsequent modifications shall be incorporated into and become fully enforceable under this CD as it relates to implementation of the Area 4 Action Memorandum.

b. Upon approval or approval with modifications of the Area 4 Removal Work Plan, SD shall commence implementation of the Work in accordance with the schedule included therein. SD shall not commence or perform any response activities at Area 4 except in conformance with the terms of this CD as it relates to implementation of the Area 4 Action Memorandum.

c. Unless otherwise provided in this CD as it relates to implementation of the Area 4 Action Memorandum, any additional deliverables that require EPA approval under the Removal Work Plan shall be reviewed and approved by EPA in accordance with this Paragraph.

3.3 Area 4 Health and Safety Plan. Within 60 days after EPA issues the Area 4 Action Memorandum and in accordance with the requirements of ¶10.7(a), SD shall submit for

EPA review and comment a plan that ensures the protection of public health and safety during performance of the Area 4 Removal Response Action.

3.4 **Final Report for Area 4 Removal Response Action.** Within 60 days after completion of the activities required by the CD as it relates to implementation of the Area 4 Action Memorandum, other than continuing obligations listed in Post-Removal Site Control Plan (¶ 3.5), SD shall request a Work Completion Inspection pursuant to Section 8 . Within 45 days after the Work Completion Inspection, SD shall submit for EPA review and approval a final report summarizing the actions taken to comply with this CD as it relates to implementation of the Area 4 Action Memorandum. The final report shall conform, at a minimum, with the requirements set forth in Section 300.165 of the NCP entitled "OSC Reports." The final report shall include a good faith estimate of total costs or a statement of actual costs incurred in complying with the CD as it relates to implementation of the Area 4 Action Memorandum, a listing of quantities and types of materials removed off-Site or handled on-Site, a discussion of removal and disposal options considered for those materials, a listing of the ultimate destination(s) of those materials, a presentation of the analytical results of all sampling and analyses performed, and accompanying appendices containing all relevant documentation generated during the removal action (e.g., manifests, invoices, bills, contracts, and permits). The final report shall also include the following certification signed by a responsible corporate official of SD or Project Coordinator: "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."

3.5 **Post-Removal Site Control.** Within 45 days of receipt of EPA's Notice of Completion of Work for the Area 4 Removal Response Action, SD shall submit a proposal for post-removal site control, consistent with Section 300.415(l) of the NCP and OSWER Directive No. 9360.2-02. Upon EPA approval of the proposal, the proposal shall become the Post-Removal Site Control Plan and SD shall implement such controls until the ROD for Area 4 is implemented, and shall provide EPA with documentation of all post-removal site control arrangements that they implement.

4. SCOPE OF REMEDY

4.1 The scope of the remedy for Area 2 includes actions described Section 1.4 in the Area 2 ROD, as described below.

a. Otsego City Dam removal: Removal of the dam will result in the northeast anabranches not conveying water under normal flow conditions.

b. Channel realignment: Realigning of the river in Area 2 to create a stable single channel with dam removal will prevent the river from regularly forming unstable anabranches, and will protect the floodplain from future erosion due to channel migration.

c. Remedial action level (RAL) for bank soil excavation: Excavate bank soil along the realigned channel to a RAL of 5 milligrams per kilogram (mg/kg) total PCBs in a 10-foot swath along the bank. The bank soil excavation will provide a buffer between the newly realigned channel and floodplain soils as a measure of added protection above that provided by the natural channel design to prevent migration of PCBs from floodplain bank soil to the river.

d. RD sampling as approved by EPA and targeted removal: Sampling will include the identification of the remedial area footprints, as well as targeting areas near the prior sample locations that exceeded 50 mg/kg PCBs to confirm the presence and extent of such hot spots for targeted removal.

e. Excavation of confirmed PCB hot spots in areas to be capped: The footprints of confirmed hot spots exceeding 50 mg/kg on Knife Blade Island and in proposed cap areas will be excavated and backfilled prior to installing caps.

f. Excavation of floodplain soil exceeding the 20 mg/kg RAL for PCBs outside the realigned channel footprint: Remedial footprints in the Area 2 floodplain will be identified based on reducing potential exposure to soil for ecological and human receptors.

g. Capping of the northeast anabranches and Pond G: The northeast anabranches that are cut off from the main channel following Otsego City Dam removal and channel realignment will be capped to prevent ecological exposure. Caps in the floodplain and anabranches will consist of a two-foot-thick soil cap (including topsoil layer) over a geotextile. For Pond G, the subaqueous cap will consist of an 18-inch layer of soil overlain with six inches of sand or gravel.

h. Excavation of Gun River sediment and bank soil: Gun River will be modified as part of channel realignment. Additional RD sampling will be conducted to determine the extent of sediment and bank soil excavation required.

i. Targeted excavation of soil/sediment with PCB concentrations exceeding 50 mg/kg at Knife Blade Island: Additional RD sampling will be conducted to determine the hot spot locations and identify any additional hot spot areas to be excavated.

j. Excavation and backfilling of the floodplain soil exceeding PCB concentrations of 2.5 mg/kg on the two private residential parcels in the northeast

corner of Area 2. In the event that dioxins are found in floodplain surface soils in current or potential residential use areas located outside the PCB remediation footprint, a FRG of 50 parts per trillion (ppt) will be used to protect residential receptors. If property owners prefer institutional controls may be put in place instead of excavation.

k. Institutional controls (ICs): ICs include continuation of fish consumption advisories and warning signage until fish tissue goals are met, and land use restrictions to prevent future residential use and limit human exposure at all properties where contamination is left in place at levels unsuitable for unrestricted residential use (i.e., at concentrations greater than 2.5 mg/kg PCBs).

l. Long-term monitoring, including visual river bank and channel inspections, maintenance activities for caps, bank treatments, and/or vegetation restoration, and monitoring surface water, fish tissue and sediment until fish tissue levels attain final remediation goals.

4.2 The scope of the remedy for Area 3 for purposes of this SOW is subject to the "CD and SOW Modification to Incorporate the Area 3 ROD" provisions in the CD. The paragraph shall be updated as part of the SOW Modification.

5. REMEDIAL DESIGN

5.1 **Remedial Design (RD) Work Plan**. SD shall submit a Remedial Design Work Plan (RDWP) for the Area 2 RD for EPA approval. Subject to the "CD and SOW Modification to Incorporate the Area 3 ROD" , SD shall submit a separate RDWP for Area 2 and Area 3. Each RDWP must include:

(a) Plans for implementing all RD activities identified in this Scope of Remedy section of this SOW or required by EPA to be conducted to develop the RD for each Area;

(b) A description of the overall management strategy for performing the specific 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 related 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;

(e) Descriptions of any areas requiring clarification and/or anticipated problems (e.g., data gaps);

(f) Description of any proposed pre-design investigation;

(g) Descriptions of any applicable permitting requirements and other regulatory requirements;

(h) Description of plans for obtaining access in connection with the Work, such as property acquisition, property leases, and/or easements; and

(i) The following supporting deliverables described in ¶ 10.7 (Supporting Deliverables): Health and Safety Plan; Emergency Response Plan, Field Sampling Plan; Quality Assurance Project Plan; and Long-Term Monitoring Plan. However, SD should reuse any of these plans that were developed and approved during earlier work at the Site.

5.2 SD shall meet regularly with EPA to discuss design issues as necessary, as directed or determined by EPA.

5.3 **Pre-Design Investigation**. The purpose of the Pre-Design Investigation (PDI) is to address data gaps identified in a ROD by conducting additional field investigations.

(a) **PDI Work Plan**. SD shall submit a PDI Work Plan (PDIWP) for each Area for EPA approval. The PDIWP must include:

(1) An evaluation and summary of existing data and description of data gaps;

(2) A sampling plan including media to be sampled, contaminants or parameters for which sampling will be conducted, location (areal extent and depths), and number of samples; and

(3) Cross references to quality assurance/quality control (QA/QC) requirements set forth in the Quality Assurance Project Plan (QAPP) as described in ¶ 10.7(d).

(b) **PDI Evaluation Report**. Following the PDI, SD shall submit a PDI evaluation report for Area 2 that shall include, but not be limited to:

(1) Summary of the investigations performed;

(2) Summary of investigation results;

(3) Summary of validated data (i.e., tables and graphics);

(4) Data validation reports and laboratory data reports;

(5) Narrative interpretation of data and results;

(6) Results of statistical and modeling analyses;

(7) Photographs documenting the work conducted; and

(8) Conclusions and recommendations for RD, including design parameters and criteria.

(c) EPA may require SDs to supplement the PDI Evaluation Report and/or to perform additional pre-design studies.

5.4 Preliminary (30%) RD. SD shall submit a Preliminary (30%) RD for the respective Area of OU5 for EPA's comment. The Preliminary RD must include:

(a) A design criteria report, as described in the *Remedial Design/Remedial Action Handbook*, EPA 540/R-95/059 (June 1995);

(b) Preliminary drawings and specifications;

(c) Descriptions of permit requirements, if applicable;

(d) Preliminary Operation and Maintenance (O&M) Plan and O&M Manual;

(e) A description of how the RA will be implemented in a manner that minimizes environmental impacts in accordance with EPA's *Principles for Greener Cleanups* (Aug. 2009);

(f) A description of monitoring and control measures to protect human health and the environment, such as air monitoring and dust suppression, during the RA;

(g) Any proposed revisions to the RA Schedule that is set forth in ¶ 11.3 (RA Schedule); and

(h) Updates of all supporting deliverables required to accompany the RDWP and the following additional supporting deliverables described in ¶ 10.7 (Supporting Deliverables): Monitoring Plan; Construction Quality Assurance/Quality Control Plan; Transportation and Off-Site Disposal Plan; O&M Plan; O&M Manual; and Institutional Controls Implementation and Assurance Plan.

5.5 Pre-Final (95%) RD. SD shall submit the Pre-final (95%) RD for the respective Area of OU5 for EPA's comment. The Pre-final RD must be a continuation and expansion of the previous design submittal and must address EPA's comments regarding the Preliminary RD. The Pre-final RD will serve as the approved Final (100%) RD if EPA approves the Pre-final RD without comments. The Pre-final RD must include:

(a) A complete set of construction drawings and specifications that are: (1) certified by a registered professional engineer; (2) suitable for procurement; and (3) follow the Construction Specifications Institute's MasterFormat 2012;

(b) A survey and engineering drawings showing existing features, such as elements, property borders, easements, and Site conditions;

(c) Pre-Final versions of the same elements and deliverables as are required for the Preliminary RD;

(d) A specification for photographic documentation of the RA; and

(e) Updates of all supporting deliverables required to accompany the Preliminary (30%) RD.

5.6 **Final (100%) RD**. SD shall submit the Final (100%) RD for Area 2 for EPA approval. The Final RD must address EPA's comments on the Pre-final RD and must include final versions of all Pre-final RD deliverables.

6. REMEDIAL ACTION

6.1 **RA Work Plan**. SD shall submit for EPA approval a Remedial Action Work Plan (RAWP) for performance of each RA required under the CD that includes:

(a) A proposed RA Construction Schedule in both critical path method and Gantt format;

(b) An updated health and safety plan that covers activities during the RA; and

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

6.2 **Meetings and Inspections**

(a) **Preconstruction Conference**. SD shall hold a preconstruction conference with EPA and others as directed or approved by EPA and as described in the *Remedial Design/Remedial Action Handbook*, EPA 540/R-95/059 (June 1995). SD shall prepare minutes of the conference and shall distribute the minutes to all Parties.

(b) **Periodic Meetings**. During the construction portion of the RA (RA Construction), SD shall meet biweekly with EPA, and others as directed or determined by EPA, to discuss construction issues. SD shall distribute an agenda and list of attendees to all Parties prior to each meeting. SD shall prepare minutes of the meetings and shall distribute the minutes to all Parties.

(c) **Inspections**

(1) EPA or its representative shall conduct periodic inspections of or have an on-site presence during the Work. At EPA's request, the Supervising

Contractor or other designee shall accompany EPA or its representative during inspections.

(2) SD shall provide on-site office space for EPA personnel to perform their oversight duties. The minimum office requirements are a private office with at least 150 square feet of floor space, an office desk with chair, a four-drawer file cabinet, and a telephone with a private line, access to facsimile, reproduction, and personal computer equipment, wireless internet access, and sanitation facilities.

(3) Upon notification by EPA of any deficiencies in the RA Construction, SD shall take all necessary steps to correct the deficiencies and/or bring the RA Construction into compliance with the approved Final RD, any approved design changes, and/or the approved RAWP. If applicable, SD shall comply with any schedule provided by EPA in its notice of deficiency.

6.3 RA Construction Completion

(a) For purposes of this ¶ 6.3, "RA Construction" comprises the excavation and construction activities described in ¶ 6 of this SOW.

(b) **Inspection of Constructed Remedy**. Following the construction of each remedy performed pursuant to this CD and SOW, SD shall schedule inspections to review whether the remedy is functioning properly and as designed. The inspection must be attended by SD and EPA and/or their representatives. A re-inspection must be conducted if requested by EPA.

(c) **RA Report**. Following the inspection of the constructed remedy, SD shall submit an "RA Report" for each RA constructed pursuant to this CD and SOW requesting EPA's determination that RA Construction has been completed. The RA Report must: (1) include statements by a registered professional engineer and by SD's Project Coordinator that construction of the system is complete and that the system is functioning properly and as designed; (2) include a demonstration, and supporting documentation, that construction of the system is complete and that the system is functioning properly and as designed; (3) include as-built drawings signed and stamped by a registered professional engineer; (4) 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 (5) be certified in accordance with ¶ 10.5 (Certification).

(d) If EPA determines that RA Construction is not complete, EPA shall so notify SD. EPA's notice must include a description of, and schedule for, the activities that SD must perform to complete RA Construction. 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.

(e) If EPA determines, based on the initial or any subsequent RA Report, that RA Construction is complete, EPA shall so notify SD.

6.4 Certification of RA Completion

(a) **Monitoring Report**. SD shall submit a Monitoring Report to EPA requesting EPA's Certification of RA Completion for each Area. The report must: (1) include certifications by a registered professional engineer and by SD's Project Coordinator that that Area's RA 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 (4) be certified in accordance with ¶ 10.5 (Certification).

(b) If EPA concludes that an RA is not Complete, EPA shall so notify SD. EPA's notice must include a description of any deficiencies. EPA's notice may include a schedule for addressing such deficiencies or may require SD to submit a schedule for EPA approval. SD shall perform all activities described in the notice in accordance with the schedule.

(c) If EPA concludes, based on the initial or any subsequent Monitoring Report requesting Certification of RA Completion, that an RA is Complete, EPA shall so certify to SD. Certification of RA Completion will not affect SD's remaining obligations under the CD.

(d) Certification of RA Completion described in this section does not constitute the Final Certification of Remedial Action Completion for purposes Section XV (Covenants by Plaintiff) of the CD unless the corresponding completed remedial action is last in time for the Site.

6.5 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 RAs in Area 2 and 3 of OU5 implemented by SD are 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 guidance documents. The SD shall update the PRSP upon completion of each RA.

7. WASTE MATERIAL

7.1 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, SDs 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 ¶ 7.1(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 SDs are 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, SDs shall immediately notify the authorized EPA officer orally.

(c) The "authorized EPA officer" for purposes of immediate oral notifications and consultations under ¶ 7.1(a) and ¶ 7.1(b) is the EPA Project Coordinator, the EPA Alternate Project Coordinator (if the EPA Project Coordinator is unavailable), or the EPA Emergency Response Unit, Region 5 (if neither EPA Project Coordinator is available).

(d) For any event covered by ¶ 7.1(a) and ¶ 7.1(b), SDs 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 ¶ 7.1 are in addition to the reporting required by CERCLA § 103 or EPCRA § 304.

7.2 Off-Site Shipments

(a) SDs 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. SDs will be deemed to be in compliance with CERCLA § 121(d)(3) and 40 C.F.R. § 300.440 regarding a shipment if SDs obtain 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) SDs may ship Waste Material from the Site to an out-of-state waste management facility only if, prior to any shipment, they provide 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. SDs shall provide the notice after the award of the contract for RA construction and before the Waste Material is shipped.

(c) SDs may ship Investigation Derived Waste (IDW) from the Site to an off-Site facility only if they comply with Section 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3), 40 C.F.R. § 300.440, *EPA's Guide to Management of Investigation Derived Waste*, OSWER 9345.3-03FS (Jan. 1992), and any IDW-specific requirements contained in the ROD. Wastes shipped off-Site to a laboratory for characterization, and RCRA hazardous wastes that meet the requirements for an exemption from RCRA under 40 CFR § 261.4(e) shipped off-site for treatability studies, are not subject to 40 C.F.R. § 300.440.

8. CERTIFICATION OF WORK COMPLETION

8.1 **Work Completion Inspection**. SD shall schedule inspections for the purpose of obtaining EPA's Certification of Work Completion for each of the response actions implemented by SD. Each of the inspections must be attended by SD and EPA and/or their representatives.

8.2 **Work Completion Report**. Following the inspection for Area 2, 3, or 4, SD shall submit a report to EPA requesting EPA's Certification of Work Completion for that Area. The report must: (1) include certifications by a registered professional engineer and by SD's Project Coordinator that the Work, including all O&M activities, is complete; and (2) be certified in accordance with ¶ 10.5 (Certification). If the Monitoring Report submitted under ¶ 6.4(a) includes all elements required under this ¶ 8.2, then the Monitoring Report suffices to satisfy all requirements under this ¶ 8.2.

(a) If EPA concludes that the Work is not complete, EPA shall so notify SD. EPA's notice must include a description of the activities that SD must perform to complete the Work. EPA's notice must include specifications and a schedule for such activities or must require SD to submit specifications and a schedule for EPA approval. SD shall perform all activities described in the notice or in the EPA-approved specifications and schedule.

(b) 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 PRSP; (2) obligations under Sections **X** (Property Requirements), **XXI** (Retention of Records), and **XX** (Access to Information) of the CD; (3) Institutional Controls obligations as provided in the ICIAP; (4) Long-Term Monitoring Plan; and (5) reimbursement of EPA's Future Response Costs under Section **XII** (Payments for Response Costs) of the CD.

9. REPORTING

9.1 **Progress Reports**. Commencing with the month following lodging of the CD and until EPA issues a notice of Completion of Work for the last RA completed by SD, SD shall submit progress reports to EPA on a monthly basis, or as otherwise requested by EPA. The reports must cover all activities that took place during the prior reporting period, including:

(a) The actions that have been taken toward achieving compliance with the CD;

(b) A summary of all results of sampling, tests, and all other data received or generated by SD (a central database accessible by the EPA may be used in lieu of providing monthly updates);

(c) A description of all deliverables that SD submitted to EPA;

(d) A description of all activities that are scheduled for the next month;

(e) An updated Construction Schedule, together with information regarding percentage of completion, delays encountered or anticipated that may affect the future schedule for implementation of the Work, and a description of efforts made to mitigate those delays or anticipated delays;

(f) A description of any modifications to the work plans or other schedules that SD has proposed or that have been approved by EPA; and

(g) A description of all activities undertaken in support of the CIP during the reporting period and those to be undertaken in the next month.

9.2 **Notice of Progress Report Schedule Changes**. If the schedule for any activity described in the Progress Reports, including activities required to be described under ¶ 9.1(d), changes, SD shall notify EPA of such change at least seven days before performance of the activity.

10. SUBMISSION OF DELIVERABLES

10.1 **Applicability**. SD shall submit deliverables for EPA approval or for EPA comment as specified in this SOW. If neither is specified, the deliverable does not require EPA's approval or comment. Paragraphs 10.2 (In Writing) through 10.4 (Technical Specifications) apply to all deliverables. Paragraph 10.5 (Certification) applies to any deliverable that is required to be certified. Paragraph 10.6 (Approval of Deliverables) applies to any deliverable that is required to be submitted for EPA approval.

10.2 **In Writing**. As provided in ¶ 107 of the CD, all deliverables under this SOW must be in writing unless otherwise specified.

10.3 **General Requirements for Deliverables.** All deliverables must be submitted by the deadlines in the RD Schedule or RA Schedule, 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 ¶ 10.4 All other deliverables shall be submitted to EPA in the electronic form and paper form as specified by the EPA RPM or OSC. If any deliverable includes maps, drawings, or other exhibits that are larger than 8.5" by 11", SDs shall also provide EPA with paper copies of such exhibits.

(a) **Area 4 Removal Response Action**: SD shall submit all deliverables required by this CD related to the Area 4 Removal Response Action or the approved Area 4 Removal Work Plan to EPA in accordance with the CD or the schedule set forth in the Area 4 Removal Work Plan. Unless otherwise instructed by EPA, SD shall direct all submissions required by the Area 4 Removal Work Plan to the OSC listed below.

Paul Ruesch
On-Scene Coordinator
United States Environmental Protection Agency Region 5
77 W. Jackson Blvd., Mail Code SE-5J
Chicago, IL 60604
ruesch.paul@epa.gov
312-886-7898

(b) **RD/RA:** All RD/RA deliverables must be submitted by the deadlines in the RD Schedule or RA Schedule, as applicable, to the RPM listed below.

James Saric
Remedial Project Manager
United States Environmental Protection Agency Region 5
77 W. Jackson Blvd., Mail Code SE-5J
Chicago, IL 60604

saric.james@epa.gov
312-886-0992

10.4 Technical Specifications

(a) Sampling and monitoring data should be submitted in standard regional Electronic Data Deliverable (EDD) format. Other delivery methods may be allowed if electronic direct submission presents a significant burden or as technology changes.

(b) Spatial data, including spatially-referenced data and geospatial data, should be submitted: (1) in the ESRI File Geodatabase format or the Region 5 EDD format; and (2) as unprojected geographic coordinates in decimal degree format using North American Datum 1983 (NAD83) or World Geodetic System 1984 (WGS84) as the datum. If applicable, submissions should include the collection method(s). Projected coordinates may optionally be included but must be documented. Spatial data should be accompanied by metadata, and such metadata should be compliant with the Federal Geographic Data Committee (FGDC) Content Standard for Digital Geospatial Metadata and its EPA profile, the EPA Geospatial Metadata Technical Specification. An add-on metadata editor for ESRI software, the EPA Metadata Editor (EME), complies with these FGDC and EPA metadata requirements and is available at https://www.epa.gov/geospatial/epa-metadata-editor.

(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 the Site.

10.5 Certification. All deliverables that require compliance with this ¶ 10 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.

10.6 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 this SOW, EPA shall: (i) approve, in whole or in part, the submission; (ii) approve the submission upon specified conditions; (iii) disapprove, in whole or in part, the submission; or (iv) any combination of the foregoing.

(2) EPA also may modify the initial submission to cure deficiencies in the submission if: (i) EPA determines that disapproving the submission and awaiting a resubmission would cause substantial disruption to the Work; or (ii) previous submission(s) have been disapproved due to material defects and the deficiencies in the initial submission under consideration indicate a bad faith lack of effort to submit an acceptable deliverable.

(b) **Resubmissions**. Upon receipt of a notice of disapproval under ¶ 10.6(a) (Initial Submissions), or if required by a notice of approval upon specified conditions under ¶ 10.6(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 under ¶ 10.6(a) (Initial Submissions) or ¶ 10.6(b) (Resubmissions), of any deliverable, or any portion thereof: (1) such deliverable, or portion thereof, will be incorporated into and enforceable under the CD; and (2) SD shall take any action required by such deliverable, or portion thereof. The implementation of any non-deficient portion of a deliverable submitted or resubmitted under ¶ 10.6(a) or ¶ 10.6(b) does not relieve SD of any liability for stipulated penalties under Section **XV**I (Stipulated Penalties) of the CD.

10.7 Supporting Deliverables. SD shall 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 13 (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) describes all activities to be performed to protect on site personnel and area residents from physical, chemical, and all other hazards posed by the Work. This plan shall be prepared in accordance with "OSWER Integrated Health and Safety Program

Operating Practices for OSWER Field Activities," Pub. 9285.0-OlC (Nov. 2002), available on the NSCEP database at http://www.epa.gov/nscep/index.html, and "EPA's Emergency Responder Health and Safety Manual," OSWER Directive 9285.3-12 (July 2005 and updates), available at http://www.epaosc.org/_HealthSafetyManual/manual-index.htm. In addition, the plan shall comply with all currently applicable Occupational Safety and Health Administration (OSHA) regulations found at 29 C.F.R. Part 1910 and 1926.

SD may develop one HASP that covers the Area 4 removal response action and Area 2 and 3 RD/RA activities and should be, as appropriate, updated to cover the various stages of Work described in the CD and this SOW. EPA does not approve the HASP, but will review it to ensure that all necessary elements are included and that the plan provides for the protection of human health and the environment.

(b) **Emergency Response Plan**. The Emergency Response Plan (ERP) must describe procedures to be used in the event of an accident or emergency at Area 2, Area 3 or Area 4 (for example, power outages, water impoundment failure, treatment plant failure, slope failure, etc.). The ERP must include:

(1) Name of the person or entity responsible for responding in the event of an emergency incident;

(2) Plan and date(s) for meeting(s) with the local community, including local, State, and federal agencies involved in the cleanup, as well as local emergency squads and hospitals;

(3) Spill Prevention, Control, and Countermeasures (SPCC) Plan (if applicable), consistent with the regulations under 40 C.F.R. Part 112, describing measures to prevent, and contingency plans for, spills and discharges;

(4) Notification activities in accordance with ¶ 7.1(b) (Release Reporting) in the event of a release of hazardous substances requiring reporting under Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community Right-to-know Act (EPCRA), 42 U.S.C. § 11004; and

(5) A description of all necessary actions to ensure compliance with Paragraph **10** (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 Areas 2, 3, and 4 that constitutes an emergency or may present an immediate threat to public health or welfare or the environment.

(c) **Field Sampling Plan**. The Field Sampling Plan (FSP) addresses all sample collection activities. The FSP must be written so that a field sampling team

unfamiliar with the project would be able to gather the samples and field information required. SD shall develop the FSP in accordance with *Guidance for Conducting Remedial Investigations and Feasibility Studies*, EPA/540/G 89/004 (Oct. 1988).

(d) **Quality Assurance Project Plan**. The Quality Assurance Project Plan (QAPP) augments the FSP and addresses sample analysis and data handling regarding the Work. The QAPP must include a detailed explanation of SD's quality assurance, quality control, and chain of custody procedures for all treatability, design, compliance, and monitoring samples. SD shall develop the QAPP in accordance with *EPA Requirements for Quality Assurance Project Plans*, QA/R-5, EPA/240/B-01/003 (Mar. 2001, reissued May 2006); *Guidance for Quality Assurance Project Plans*, QA/G-5, EPA/240/R 02/009 (Dec. 2002); and *Uniform Federal Policy for Quality Assurance Project Plans*, Parts 1-3, EPA/505/B-04/900A though 900C (Mar. 2005). The QAPP also must include procedures:

(1) To ensure that EPA and the State and their authorized representative have reasonable access to laboratories used by SD in implementing the CD (SD's Labs);

(2) To ensure that SD's Labs analyze all samples submitted by EPA pursuant to the QAPP for quality assurance monitoring;

(3) To ensure that SD's Labs perform all analyses using EPA-accepted methods (i.e., the methods documented in *USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis*, ILM05.4 (Dec. 2006); *USEPA Contract Laboratory Program Statement of Work for Organic Analysis*, SOM01.2 (amended Apr. 2007); and *USEPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods (Multi-Media, Multi-Concentration)*, ISM01.2 (Jan. 2010)) or other methods acceptable to EPA;

(4) To ensure that SD's Labs participate in an EPA-accepted QA/QC program or other program QA/QC acceptable to EPA;

(5) For SD to provide EPA and the State with notice at least 28 days prior to any sample collection activity;

(6) For SD to provide split samples and/or duplicate samples to EPA and the State upon request;

(7) For EPA and the State to take any additional samples that they deem necessary;

(8) For EPA and the State to provide to SD, upon request, split samples and/or duplicate samples in connection with EPA's and the State's oversight sampling; and

(9) For SD to submit to EPA and the State all sampling and tests results and other data in connection with the implementation of the CD.

(e) **Long-Term Monitoring Plan**. The long-term monitoring program (LTM) will obtain baseline information, confirm the ongoing effects of natural processes and will document the continued decline in PCB concentrations in various media, resulting in reductions in risk and ecological exposures. The LTM program will be implemented until FRGs are achieved. The LTM may be used to obtain information to determine whether to perform additional actions. The LTM plan will include at a minimum:

(1) Description of the data collection parameters, including existing and proposed monitoring devices and locations, schedule and frequency of monitoring, analytical parameters to be monitored, and analytical methods employed;

(2) Description of how performance data will be analyzed, interpreted, and reported, and/or other Area-related requirements;

(3) Description of verification sampling procedures;

(4) Description of deliverables that will be generated in connection with monitoring, including sampling schedules, laboratory records, monitoring reports, and monthly and annual reports to EPA and State agencies;

(5) Description of proposed additional monitoring and data collection actions (such as increases in frequency of monitoring, and/or installation of additional monitoring devices in the affected areas) in the event that results from monitoring devices indicate changed conditions (such as higher than expected concentrations of the contaminants of concern).

(6) Fish monitoring annually for the first five years, then once every five years for the remainder of the LTM period. Fish samples should be collected within locations spanning Area 2 and as applicable Area 3 and the reference/background areas. Smallmouth bass and carp should be collected at each sampling location. Adult carp and both adult (fillet) and young-of-year (whole body) smallmouth bass should be collected and analyzed for total PCBs and lipid content;

(7) Surface water quality monitoring should occur annually for the first five years then once every five years for the remainder of the LTM period to support EPA's five-year reviews. Water samples should be analyzed for

total PCBs;

(8) Sediment samples will be collected to support EPA's five-year reviews by monitoring ongoing recovery conditions and natural attenuation in selected portions of Area 2 and as applicable Area 3;

(9) Visual inspections of riverbank erosion should occur annually for the first five years then once every five years for the remainder of the LTM period. Additional inspections should be conducted after major storm/flooding events, as necessary;

(10) Biological samples may be collected from terrestrial areas to evaluate the effectiveness of floodplain remedies;

(f) **Construction Quality Assurance/Quality Control Plan (CQA/QCP)**. The purpose of the Construction Quality Assurance Plan (CQAP) is to describe planned and systemic activities that provide confidence that the construction of the Area 2 RA, Area 3 RA, Area 4 TCRA and any and all other response activities undertaken by SD pursuant to this CD and SOW will satisfy all plans, specifications, and related requirements, including quality objectives. The CQA/QCP must:

(1) Identify, and describe the responsibilities of, the organizations and personnel implementing the CQA/QCP;

(2) Describe the PS required to be met to achieve Completion of each response action to be implemented by SD;

(3) Describe the activities to be performed: (i) to provide confidence that the Area 2 PS will be met as well as the Area 3 PS and Area 4 PS as applicable; and (ii) to determine whether each applicable PS has been met;

(4) Describe verification activities, such as inspections, sampling, testing, monitoring, and production controls, under the CQA/QCP;

(5) Describe industry standards and technical specifications used in implementing the CQA/QCP;

(6) Describe procedures for tracking construction deficiencies from identification through corrective action;

(7) Describe procedures for documenting all CQA/QCP activities; and

(8) Describe procedures for retention of documents and for final storage of documents.

(g) **Transportation and Off-Site Disposal Plan**. The Transportation and Off-Site Disposal Plan (TODP) describes plans to ensure compliance with ¶ 7.2 (Off-Site Shipments). The TODP must include:

(1) Proposed routes for off-site shipment of Waste Material;

(2) Identification of communities affected by shipment of Waste Material; and

(3) Description of plans to minimize impacts on affected communities.

(h) **O&M Plan**. The O&M Plan describes the requirements for inspecting, operating, and maintaining the RAs. SD shall develop the O&M Plan in accordance with *Guidance for Management of Superfund Remedies in Post Construction*, OLEM 9200.3-105 (Feb. 2017). The O&M Plan must include the following additional requirements:

(1) Description of the Areas 2 PS and, as applicable, the Area 3 PS, as well as the Cleanup Standards of the Action Memorandum required to be met to implement the Area 2 ROD, the Area 3 ROD, as applicable, and the Area 4 TCRA;

(2) Description of activities to be performed: (i) to provide confidence that the Area 2 PS and the Area 3 PS, as applicable, as well as the Cleanup Standards of the Action Memorandum or will be met; and (ii) to determine whether the Areas 2 and 3 PS, as well as the Cleanup Standards of the Action Memorandum, have been met;

(3) **O&M Reporting**. Description of records and reports that will be generated during O&M, such as daily operating logs, laboratory records, records of operating costs, reports regarding emergencies, personnel and maintenance records, monitoring reports, and monthly and annual reports to EPA and State agencies;

(4) Description of corrective action in case of systems failure, including: (i) alternative procedures to prevent the release or threatened release of Waste Material which may endanger public health and the environment or may cause a failure to achieve the requisite performance standard; (ii) analysis of vulnerability and additional resource requirements should a failure occur; (iii) notification and reporting requirements should O&M systems fail or be in danger of imminent failure; and (iv) community notification requirements; and

(5) Description of corrective action to be implemented in the event that performance standards are not achieved; and a schedule for implementing these corrective actions.

(i) **O&M Manual**. The O&M Manual serves as a guide to the purpose and function of the equipment and systems that make up the remedy for Area 2. SD shall develop the O&M Manual in accordance with *Guidance for Management of Superfund Remedies in Post Construction*, OLEM 9200.3-105 (Feb. 2017).

(j) **Institutional Controls Implementation and Assurance Plan**. The Institutional Controls Implementation and Assurance Plan (ICIAP) describes plans to implement, maintain, and enforce the Institutional Controls (ICs) at Area 2 and, as applicable, Area 3. 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) 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; and

(2) 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) **Proprietary Controls**. SD shall, with respect to any Non-Respondent Owner's Affected Property, use best efforts to secure Non-Respondent Owner's cooperation in executing and recording, in accordance with the procedures of this ¶ 10.7(j), proprietary controls that: (i) grant a right of access to conduct any activity regarding the CD, including those activities listed in ¶ 31.a (Access Requirements); and (ii) grant the right to enforce the land, water, or other resource use restrictions set forth in ¶ 31.a(11) related to land, water, or other resource use restrictions).

(i) **Grantees**. The Proprietary Controls must be granted to one or more of the following persons and their representatives, as determined by EPA: the United States, the State, SD, and other appropriate grantees.

(4) **Initial Title Evidence**. SD shall, within the schedule set forth in the ICIAP:

(i) **Record Title Evidence**. Submit to EPA a title insurance commitment or other title evidence acceptable to EPA that: (i) names the proposed insured or the party in whose favor the title evidence runs, or the party who will hold the real estate interest, or

if that party is uncertain, names EPA, the State, the SD, or "To Be Determined;" (ii) covers the Affected Property that is to be encumbered; (iii) demonstrates that the person or entity that will execute and record the Proprietary Controls is the owner of such Affected Property; (iv) identifies all record matters that affect title to the Affected Property, including all prior liens, claims, rights (such as easements), mortgages, and other encumbrances (collectively, "Prior Encumbrances"); and (v) includes complete, legible copies of such Prior Encumbrances; and

(ii) **Non-Record Title Evidence**. Submit to EPA a report of the results of an investigation, including a physical inspection of the Affected Property, which identifies non-record matters that could affect the title, such as unrecorded leases or encroachments.

(5) **Release or Subordination of Prior Liens, Claims, and Encumbrances**.

(i) SD shall secure the release, subordination, modification, or relocation of all Prior Encumbrances on the title to the Affected Property revealed by the title evidence or otherwise known to any Respondent, unless EPA waives this requirement as provided under ¶ 10.7(j)(5) (i)-(iv).

(ii) SD may, by the deadline under ¶ 10.7(j)(4) (Initial Title Evidence), submit an initial request for waiver of the requirements of ¶ 10.7(j)(5)(i) regarding one or more Prior Encumbrances, on the grounds that such Prior Encumbrances cannot defeat or adversely affect the rights to be granted by the Proprietary Controls and cannot interfere with the remedy or result in unacceptable exposure to Waste Material.

(iii) SD may, within 90 days after the Effective Date, or if an initial waiver request has been filed, within 45 days after EPA's determination on the initial waiver request, submit a final request for a waiver of the requirements of ¶ 10.7(J)(5)(i) regarding any particular Prior Encumbrance on the grounds that SD could not obtain the release, subordination, modification, or relocation of such Prior Encumbrance despite best efforts.

(iv) The initial and final waiver requests must include supporting evidence including descriptions of and copies of the Prior Encumbrances and maps showing areas affected by the Prior Encumbrances. The final waiver request also must include evidence of efforts made to secure release, subordination, modification, or relocation of the Prior Encumbrances.

(v) SD shall complete their obligations under ¶ 10.7(j)(5)(i) regarding all Prior Encumbrances: within 180 days after the Effective Date; or if an initial waiver request has been filed, within 135 days after EPA's determination on the initial waiver request; or if a final waiver request has been filed, within 90 days after EPA's determination on the final waiver request.

(6) **Update to Title Evidence and Recording of Proprietary Controls**.

(i) SD shall submit to EPA for review and approval, by the deadline specified in ¶ 10.7(j)(5)(v), all draft Proprietary Controls and draft instruments addressing Prior Encumbrances.

(ii) Upon EPA's approval of the proposed Proprietary Controls and instruments addressing Prior Encumbrances, SD shall, within 15 days, update the original title insurance commitment (or other evidence of title acceptable to EPA) under ¶ 10.7(j)(4) (Initial Title Evidence). If the updated title examination indicates that no liens, claims, rights, or encumbrances have been recorded since the effective date of the original commitment (or other title evidence), SD shall secure the immediate recordation of the Proprietary Controls and instruments addressing Prior Encumbrances in the appropriate land records. Otherwise, SD shall secure the release, subordination, modification, or relocation under ¶ 10.7(j)(5)(i), or the waiver under ¶10.7(j)(5)(ii)-(iv), regarding any newly-discovered liens, claims, rights, and encumbrances, prior to recording the Proprietary Controls and instruments addressing Prior Encumbrances.

(iii) If SD submitted a title insurance commitment under ¶ 10.7(j)(4)(i) (Record Title Evidence), then upon the recording of the Proprietary Controls and instruments addressing Prior Encumbrances, SD shall obtain a title insurance policy that: (i) is consistent with the original title insurance commitment; (ii) is for $100,000 or other amount approved by EPA; (iii) is issued to EPA, SD, or other person approved by EPA; and (iv) is issued on a current American Land Title Association (ALTA) form or other form approved by EPA.

(iv) SD shall, within 30 days after recording the Proprietary Controls and instruments addressing Prior Encumbrances, or such other deadline approved by EPA, provide EPA and to all grantees of the Proprietary Controls: (i) certified copies of the recorded Proprietary Controls and instruments addressing Prior Encumbrances showing the clerk's recording stamps; and (ii) the title insurance policy(ies) or other approved form of updated title

evidence dated as of the date of recording of the Proprietary Controls and instruments.

(7) SD shall monitor, maintain, enforce, and annually report on all Proprietary Controls required under this CD.

(8) **Best Efforts**. As used in this Section, "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. If, within 60 days after the Effective Date, SD are unable to accomplish what is required through "best efforts," they shall notify EPA, and include a description of the steps taken to comply with the requirements. If EPA deems it appropriate, it may assist SD, or take independent action, in obtaining such access and/or use restrictions. EPA reserves the right to pursue cost recovery regarding all costs incurred by the United States in providing such assistance or taking such action, including the cost of attorney time and the amount of monetary consideration or just compensation paid.

11. RD/RA SCHEDULES

11.1 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 and RA Schedules set forth below. SD may submit proposed revised RD Schedules or RA Schedules for EPA approval. Upon EPA's approval, the revised RD and/or RA Schedules supersede the RD and RA Schedules set forth below, and any previously-approved RD and/or RA Schedules.

11.2 Area 2 RD Schedule

	Description of Deliverable, Task	**¶ Ref.**	**Deadline**
1	RDWP	5.1	60 days after EPA's Authorization to Proceed regarding Supervising Contractor under CD **¶ 9.c**
2	PDIWP	5.3(a)	90 days after EPA's Authorization to Proceed regarding Supervising Contractor under CD **¶ 9.c**
3	Preliminary (30%) RD	5.4, 5.3(a)	As scheduled in the Approved RDWP
4	Pre-final (95%) RD	5.5	60 days after EPA comments on Preliminary RD
5	Final (100%) RD	5.6	30 days after EPA comments on Pre-final RD

11.3 Area 2 RA Schedule

	Description of Deliverable / Task	**¶ Ref.**	**Deadline**
1	Award RA contract		60 days after EPA Notice of Authorization to Proceed with RA or approval of Final (100%) RD, whichever is later
2	RAWP	6.1	120 days after EPA Notice of Authorization to Proceed with RA or approval of Final (100%) RD, whichever is later
3	Pre-Construction Conference	6.2(a)	15 days after Approval of RAWP
4	Start of Construction		60 days after Approval of RAWP
5	Completion of Construction		
6	Pre-final Inspection	6.3(b)	30 days after completion of construction
7	Pre-final Inspection Report	6.3(c)	30 days after completion of Pre-final Inspection
8	Final Inspection		30 days after Completion of Work identified in Pre-final Inspection Report
9	RA Report	6.3(c)	60 days after Final Inspection
10	Monitoring Report	6.4(a)	
11	Work Completion Report	8.2	
12	Periodic Review Support Plan	6.4(d)	Four years after Start of RA Construction

11.4 Area 3 RD Schedule. To be determined pursuant the "CD and SOW Modification to Incorporate the Area 3 ROD" provisions in the CD.

11.5 Area 3 RA Schedule. To be determined pursuant "CD and SOW Modification to Incorporate the Area 3 ROD" provisions in the CD.

12. STATE PARTICIPATION

12.1 Copies. SD shall, at any time they send a deliverable to EPA, send a copy of such deliverable to the State. EPA shall, at any time it sends a notice, authorization, approval, disapproval, or certification to SD, send a copy of such document to the State.

12.2 Review and Comment. The State will have a reasonable opportunity for review and comment prior to:

(a) Any EPA approval or disapproval under ¶ 10.6 (Approval of Deliverables) of any deliverables related to RD/RA that are required to be submitted for EPA approval; and

(b) Any approval or disapproval of the Construction Phase under ¶ 6.3 (RA Construction Completion), any disapproval of, or Certification of RA Completion under ¶ 6.4 (Certification of RA Completion), and any disapproval of, or Certification of Work Completion under ¶ 8 (Certification of Work Completion).

13. REFERENCES

13.1 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 ¶ 13.2~~12.2~~:

(a) A Compendium of Superfund Field Operations Methods, OSWER 9355.0-14, EPA/540/P-87/001a (Aug. 1987).

(b) Contaminated Sediment Remediation Guidance for Hazardous Waste Sites, OSWER 93355.0-85, EPA/540/R-05/012 (Dec. 2005).

(c) CERCLA Compliance with Other Laws Manual, Part I: Interim Final, OSWER 9234.1-01, EPA/540/G-89/006 (Aug. 1988).

(d) Guidance for Conducting Remedial Investigations and Feasibility Studies, OSWER 9355.3-01, EPA/540/G-89/004 (Oct. 1988).

(e) CERCLA Compliance with Other Laws Manual, Part II, OSWER 9234.1-02, EPA/540/G-89/009 (Aug. 1989).

(f) 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).

(g) Guidance on Expediting Remedial Design and Remedial Actions, OSWER 9355.5-02, EPA/540/G-90/006 (Aug. 1990).

(h) Guide to Management of Investigation-Derived Wastes, OSWER 9345.3-03FS (Jan. 1992).

(i) Permits and Permit Equivalency Processes for CERCLA On-Site Response Actions, OSWER 9355.7-03 (Feb. 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), 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), https://www.epa.gov/geospatial/geospatial-policies-and-standards and https://www.epa.gov/geospatial/epa-national-geospatial-data-policy.

(aa) Principles for Greener Cleanups (Aug. 2009), https://www.epa.gov/greenercleanups/epa-principles-greener-cleanups.

(bb) USEPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods (Multi-Media, Multi-Concentration), ISM01.2 (Jan. 2010).

(cc) Close Out Procedures for National Priorities List Sites, OSWER 9320.2-22 (May 2011).

(dd) Recommended Evaluation of Institutional Controls: Supplement to the "Comprehensive Five-Year Review Guidance," OSWER 9355.7-18 (Sep. 2011).

(ee) Construction Specifications Institute's MasterFormat 2012, available from the Construction Specifications Institute, http://www.csinet.org/masterformat.

(ff) 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).

(gg) 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).

(hh) EPA's Emergency Responder Health and Safety Manual, OSWER 9285.3-12 (July 2005 and updates), https://www.epaosc.org/_HealthSafetyManual/manual-index.htm.

(ii) Broader Application of Remedial Design and Remedial Action Pilot Project Lessons Learned, OSWER 9200.2-129 (Feb. 2013).

(jj) Guidance for Management of Superfund Remedies in Post Construction, OLEM 9200.3-105 (Feb. 2017), https://www.epa.gov/superfund/superfund-post-construction-completion.

13.2 A more complete list 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

13.3 For any regulation or guidance referenced in the CD or SOW, the reference will be read to include any subsequent modification, amendment, or replacement of such regulation or guidance. Such modifications, amendments, or replacements apply to the Work only after SD receive notification from EPA of the modification, amendment, or replacement.

IN THE UNITED STATES DISTRICT COURT
FOR WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

UNITED STATES OF AMERICA and THE STATE OF MICHIGAN Plaintiffs, v. NCR CORPORATION, Defendant.	)	Civil Action No.

CONSENT DECREE WITH NCR CORPORATION
Appendix C
(Area 2 ROD)

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

OPERABLE UNIT 5
AREA 2

Allegan County, Michigan

Record of Decision

U.S. Environmental Protection Agency Region 5

77 W Jackson Blvd
Chicago, IL 60604

September 2017

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FIGURES

TABLES

APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS

AOC	Administrative Order on Consent
AR	Administrative Record
ARARs	applicable or relevant and appropriate requirements
BERA	baseline ecological risk assessment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CDM	Camp, Dresser, McKee
cfs	cubic feet per second
CIP	Community Involvement Plan
COC	contaminant of concern
CRP	Community Relations Plan
CSM	conceptual site model
CWA	Clean Water Act
cy	cubic yard
dioxins/furans	polychlorinated dibenzo-*p*-dioxins/polychlorinated dibenzofurans
EC	engineering control
EPA	U.S. Environmental Protection Agency
FRG	final remediation goal
FS	feasibility study
GP	Georgia Pacific
HI	hazard index
HQ	hazard quotient
HHRA	human health risk assessment
IC	institutional control
LTM	long-term monitoring
MDCH	Michigan Department of Community Health
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
mg/kg	milligrams per kilogram
mg/l	milligrams per liter
Millennium	Millennium Holdings, LLC
MNR	monitored natural recovery
NCP	National Contingency Plan
ND	non-detect
NPL	National Priorities List
NREPA	Natural Resources and Environmental Protection Act
O&M	operation and maintenance
OU	operable unit
PCB	polychlorinated biphenyl
ppt	parts per trillion
PRGs	preliminary remediation goals
PRP	potentially responsible party
RA	remedial action
RAL	remedial action level
RAO	remedial action objective

RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RD	remedial design
RI	remedial investigation
ROD	Record of Decision
SRI	supplemental remedial investigation
SRI/FS	supplemental remedial investigation and feasibility study
State	State of Michigan
SVOCs	semi-volatile organic compounds
SWAC	surface-weighted average concentration
TAG	Technical Assistance Grant
TBERA	terrestrial baseline ecological risk assessment
TCRA	time-critical removal action
TEQ	toxicity equivalence
TOC	total organic carbon
TSCA	Toxic Substances Control Act
µg/L	microgram per liter
UU/UE	unlimited use and unrestricted exposure
VOCs	volatile organic compounds
Weyerhaeuser	Weyerhaeuser Company

Part 1 – Declaration

1.1 Site Name and Location

Allied Paper, Inc./Portage Creek/Kalamazoo River Site
CERCLA SITE ID# MID006007306
Operable Unit 5, Area 2
Allegan County, Michigan

1.2 Statement of Basis and Purpose

This decision document presents the Selected Remedy for Area 2 of Operable Unit 5 (OU5) of the Allied Paper, Inc./Portage Creek/Kalamazoo River Site located in Kalamazoo, Michigan (the Site) (see Figure 1).

OU5 encompasses 77 miles of the Kalamazoo River from Morrow Dam east of Kalamazoo to the river mouth at Lake Michigan, plus a 3-mile stretch of Portage Creek in Kalamazoo (see Figure 2). Area 2 of OU5 is a 1.9-mile stretch of the Kalamazoo River located between the former Plainwell Dam and the Otsego City Dam (see Figure 3).

The Selected Remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. Section 9601 *et seq.* (CERCLA) and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300 (NCP). This decision is based on information contained in the Administrative Record file (AR) for OU5 of the Site.

The State of Michigan (State) has indicated that it intends to concur with the Selected Remedy.

1.3 Assessment of Site

The response action selected in this Record of Decision (ROD) is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

1.4 Description of Selected Remedy

The primary risks associated with OU5 are to human receptors through consumption of polychlorinated biphenyl (PCB)-contaminated fish and to ecological receptors through exposure to PCB-contaminated soil. The U.S. Environmental Protection Agency (EPA) is selecting Alternative A-5 as the remedy (Selected Remedy) for Area 2 of OU5 to address these risks. The Selected Remedy focuses on PCBs as the primary contaminant of concern (COC) but also addresses polychlorinated dibenzo-*p*-dioxins/polychlorinated dibenzofurans (dioxins/furans) found in Area 2 of OU5.

The cleanup of OU5 is not dependent on response actions at any other Site OUs. Within OU5, the remedial action (RA) for Area 2 is expected to follow the RA for Area 1, which is located immediately upstream of Area 2 and currently in the remedial design (RD) phase.

Alternative A-5: Capping, Bank RAL[1] Excavation, Channel Realignment, Floodplain Soil Excavation, Gun River Excavation, Targeted Excavation of Knife Blade Island, Institutional Controls and Long-Term Monitoring

The major components of the Selected Remedy, which is illustrated on Figure 4, are briefly described as follows:

- Otsego City Dam removal: Removal of the dam will result in the northeast anabranches not conveying water under normal flow conditions. As such, fish will no longer have routine access to these areas with higher PCB concentrations. Dam removal is also desired by the City of Otsego and the State of Michigan for several reasons, including reducing long-term dam maintenance and restoring natural free-flowing conditions to the river.

- Channel realignment: Realigning the river in Area 2 to create a stable single channel with dam removal will prevent the river from regularly forming unstable anabranches, and will protect the floodplain from future erosion due to channel migration. Removing the dam and constructing a single stable channel are believed to be necessary to meet the remedial action objectives (RAOs) for Area 2.

- Bank RAL excavation: Bank soil along the realigned channel will be excavated to a RAL of 5 milligrams per kilogram (mg/kg) total PCBs in a 10-foot swath along the bank. The bank soil excavation will provide a buffer between the newly realigned channel and floodplain soils as a measure of added protection above that provided by the natural channel design to prevent migration of PCBs from floodplain bank soil to the river.

- RD sampling as approved by EPA and targeted removal: Sampling will include the identification of the remedial area footprints, as well as targeting areas near the prior sample locations that exceeded 50 mg/kg PCBs to confirm the presence and extent of such hot spots for targeted removal.

- Excavation of confirmed PCB hot spots in areas to be capped: The footprints of confirmed hot spots exceeding 50 mg/kg on Knife Blade Island and in proposed cap areas will be excavated and backfilled prior to installing caps.

- Excavation of floodplain soil exceeding the 20 mg/kg RAL for PCBs outside the realigned channel footprint: Remedial footprints in the Area 2 floodplain will be

[1] A remedial action level or RAL is a value that triggers cleanup.

identified based on reducing potential exposure to soil for ecological and human receptors, to meet RAOs 3 and 5.

- Capping of the northeast anabranches and Pond G: The northeast anabranches that are cut off from the main channel following Otsego City Dam removal and channel realignment will be capped to prevent ecological exposure. Caps in the floodplain and anabranches will consist of a two-foot-thick soil cap (including topsoil layer) over a geotextile. For Pond G, the subaqueous cap will consist of an 18-inch layer of soil overlain with six inches of sand or gravel.

- Excavation of Gun River sediment and bank soil: Gun River will be modified as part of channel realignment. Additional RD sampling will be conducted to determine the extent of sediment and bank soil excavation required.

- Targeted excavation of soil/sediment with PCB concentrations exceeding 50 mg/kg at Knife Blade Island: Additional RD sampling will be conducted to confirm the hot spot locations and identify any additional hot spot areas to be excavated.

- Institutional controls (ICs): ICs include continuation of fish consumption advisories and warning signage until fish tissue goals are met, and land use restrictions to prevent future residential use and limit human exposure at all properties where contamination is left in place at levels unsuitable for unrestricted residential use (i.e., at concentrations greater than 2.5 mg/kg PCBs).

- Long-term monitoring (LTM) would include visual river bank and channel inspections, and maintenance activities for caps, bank treatments, and/or vegetation restoration, as well as monitoring surface water, fish tissue and sediment until fish tissue levels attain final remediation goals (FRGs), which is estimated at 32 years after ROD issuance.

The Selected Remedy is Alternative A-5, as described in Section 2.12. The time to complete construction will be approximately 5 years, at an estimated cost of $46,400,000. Alternative A-5 includes approximately 28 acres of capping and 29,200 cubic yards (cy) of excavation over a total remedial footprint spanning approximately 38 acres.

1.5 Statutory Determinations

The Selected Remedy set forth in this ROD achieves the statutory and regulatory mandates set forth in CERCLA Section 121 and the NCP. Specifically, the Selected Remedy addresses exposure to PCBs in a manner that is protective of human health and the environment, complies with federal and state applicable or relevant and appropriate requirements (ARARs), is cost-effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. The Selected Remedy does not satisfy the CERCLA statutory preference for treatment as a principal element of the remedy for the following reasons: no source materials constituting principal threats have

been identified at Area 2 of OU5 of the Site, and the low-level PCB contamination does not lend itself to any cost-effective treatment.

Because this remedy will result in hazardous substances, pollutants or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure (UU/UE), a statutory review will be conducted within five years after initiation of RA to ensure that the Selected Remedy is, or will be, protective of human health and the environment. Two five-year reviews have already been conducted at the Site, and the Selected Remedy for Area 2 of OU5 will be included in future reviews.

Under the Toxic Substances Control Act (TSCA), EPA finds that the PCBs remaining on Site as part of the Selected Remedy will not pose an unreasonable risk of injury to human health or the environment pursuant to 40 C.F.R. Part 761.61(c).

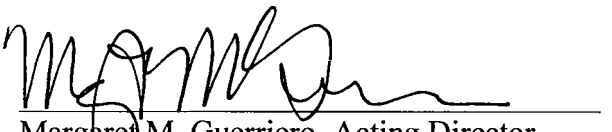
1.6 Data Certification Checklist

The following information is included in the Decision Summary section of this ROD. Additional information can be found in the AR for Area 2 of OU5 of the Site.

Information Item	Section in ROD
Chemicals of concern and their respective concentrations	2.5
Baseline risk represented by the chemicals of concern	2.7
Cleanup levels established for chemicals of concern and the basis for these levels	2.8
How source materials constituting principal threats are addressed	2.11
Current and reasonably-anticipated future land use assumptions and current and potential future beneficial uses of groundwater used in the baseline risk assessment and ROD	2.2, 2.6
Potential land and groundwater use that will be available at the Site as a result of the Selected Remedy	2.12
Estimated capital, annual operation and maintenance (O&M), and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected	2.9, 2.10
Key factor(s) that led to selecting the remedy (i.e., describe how the Selected Remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decision)	2.12

1.7 Authorizing Signature and Support Agency Acceptance of Remedy

EPA, as the lead agency for the Site, formally authorizes this ROD.



September 28, 2017

Margaret M. Guerriero, Acting Director
Superfund Division
U.S. Environmental Protection Agency
Region 5

Date

The State of Michigan Department of Environmental Quality (MDEQ), as the support agency for the Site, has indicated that it intends to concur with the ROD. MDEQ's concurrence letter will be included in the AR upon receipt.

Part 2 – Decision Summary

2.1 Site Name, Location, and Brief Description

Name, Identification Number, Official Site Address, Location

Allied Paper, Inc./Portage Creek/Kalamazoo River Site
CERCLA SITE ID# MID006007306
420 East Alcott Street, Kalamazoo, Michigan 49001

The Site is located in both Allegan and Kalamazoo Counties of southwest Michigan (see Figure 1).

Site Type and Brief Description

The Site was listed on the National Priorities List (NPL) in August 1990 and consists of former disposal areas, former paper mill properties, and contaminated sediments, banks, and floodplains of the Kalamazoo River and Portage Creek.

EPA often divides complex cleanup sites into smaller, more manageable sections called operable units or OUs. The entire site currently comprises six different OUs:

- OU1 – Allied Paper, Inc./Bryant Mill Pond;
- OU2 – Willow Boulevard/A-Site Landfill;
- OU3 – King Highway Landfill;
- OU4 – 12th Street Landfill;
- OU5 – 77 miles of the Kalamazoo River and 3 miles of Portage Creek; and
- OU7 – former Plainwell Paper Mill Property.

OUs 1 through 4 and 7 are source-area OUs located adjacent to the Kalamazoo River or Portage Creek. The RODs for those OUs all have been issued and address contaminated soils and paper-waste residuals in certain mill areas and land-based disposal areas. EPA designated OU6 as a placeholder for certain other source areas at the Site, but that designation is not currently being used for any ongoing activities or geographic areas.

OU5 encompasses 77 miles of the Kalamazoo River from Morrow Dam east of Kalamazoo to the river mouth at Lake Michigan, plus a 3-mile stretch of Portage Creek in Kalamazoo. EPA divided OU5 into seven different areas (see Figure 2). This ROD addresses Area 2.

Area 2 of OU5 is a 1.9-mile stretch of the Kalamazoo River located between the former Plainwell Dam and the Otsego City Dam (see Figure 3). This section of the river flows through forested wetland areas with predominantly recreational land use, and ends at the City of Otsego. The 12th Street Landfill (OU4) is located at the upstream end of Area 2.

Sediments and floodplain soils are the media of concern in Area 2. Groundwater is not a medium of concern (see discussion below in Sections 2.2 and 2.5).

Area 2 has two distinct sections: the upstream, free-flowing anabranched section (approximately 0.7 miles long) and the downstream section influenced by the Otsego City Dam (approximately 1.2 miles long) (see Figure 3).

Lead and Support Agencies and Source of Cleanup Funds

Since the start of the Site investigation effort in 1991, EPA and the State conducted interagency negotiations to determine which government agency should act as the lead agency and which as support agency in the remedial process. The roles of EPA and the State related to the Site and each OU are set forth in a series of Site-wide Memoranda of Understandings, which are part of the AR for the Site. EPA is currently the lead agency for all response actions and enforcement activities at OU5.

EPA has issued general notice letters to multiple potentially responsible parties (PRPs) at the Site. EPA expects the PRPs to fund and/or implement the response actions detailed in this ROD.

2.2 Site History and Enforcement Activities

Site History

As mentioned above, OUs 1 through 4 and 7 consist of several former paper mill properties located along the Kalamazoo River and Portage Creek. These OUs include the disposal areas (landfills and/or lagoons) for wastes generated by those mills, as well as areas in and along the river and creek to which those wastes were discharged or migrated. Since the Site's 1990 NPL listing, several response actions were conducted at many of the Site OUs.

The Site is primarily contaminated with PCBs that were found in the waste streams at paper mills, although other industrial operations also used PCBs along the Kalamazoo River. The former paper mills recycled and/or de-inked and re-pulped carbonless copy paper that contained PCBs as an ink carrier. The mill operators discharged wastewater directly into Portage Creek and the Kalamazoo River and left dewatered wastes, commonly referred to as residuals, in on-site dewatering lagoons or disposed of the PCB-contaminated residuals in upland or wetland areas along the Kalamazoo River and Portage Creek.

Six former hydroelectric dams are located along the Kalamazoo River within the Site boundaries. In the 1970s, the State partially dismantled three dams (Plainwell, Otsego, and Trowbridge). This activity dropped the water level, and the contaminated sediment that was once under water became PCB-contaminated floodplain soil. Lowering of the water levels also increased bank erosion.

Site Investigations and Related Enforcement Activities

The Michigan Department of Natural Resources (MDNR) first became concerned about the presence of PCBs in the Kalamazoo River in 1971, after routine surface water and biota sampling at the mouth of the river indicated that PCBs were discharging from the river into Lake Michigan. During the summer of 1972, MDNR conducted an extensive survey of PCB levels in sediments of the Kalamazoo River. In 1990, EPA listed the Site on the NPL as a Superfund site, and CERCLA site investigations began in 1993.

In February 2007, Georgia-Pacific, LLC (GP) and Millennium Holdings, LLC (Millennium) entered into an Administrative Order on Consent (AOC) with EPA to conduct a series of supplemental remedial investigations and feasibility studies (SRIs/FSs) at OU5.[2]

As described below, various parties – including PRPs, EPA, and the State – collected an extensive body of data from a variety of environmental media over the years. At OU5 (Areas 1 through 7), more than 15,000 samples were collected and analyzed prior to the start of the OU5 SRI work in 2007. The samples were analyzed for various constituents including PCBs, metals, polycyclic aromatic hydrocarbons, and pesticides.

During 2008 and 2009, five quarterly groundwater sampling events were conducted in a network of 15 monitoring wells as part of the Plainwell Impoundment time-critical removal action (TCRA), located in Area 1 of OU5. PCBs were not detected in groundwater.[3]

Sediment data for Area 2 have been collected under various sampling programs, starting with the original remedial investigation (RI) work in 1993/1994. Data from the original RI were used to develop an understanding of spatial and historical PCB trends in sediment in Area 2. These data were supplemented in 2000 by additional sediment sampling. In 2001, as part of a two-phased investigation of Area 2, EPA collected and analyzed additional sediment and soil samples. In 2011, Weyerhaeuser Company (Weyerhaeuser) conducted additional sediment sampling in Area 2. From 2011 through 2012, GP conducted SRI field investigations that added more than 1,000 PCB data points for Area 2 sediment and soil. The primary intent of the SRI work was to address localized data gaps and further define the nature and extent of contamination. Details regarding the Area 2 SRI sampling efforts and results are discussed in the "Nature and Extent of Contamination" portion of Section 2.5, below.

A human health risk assessment (HHRA) for the Site was completed by MDEQ's contractor, Camp, Dresser, McKee (CDM), in May 2003. The HHRA evaluated potential current and future risks to people who may live or engage in recreational activities near

[2] Following its bankruptcy in 2009, Millennium stopped participating in the SRI/FS work.

[3] Based on this information, in conjunction with groundwater information from other site OUs and knowledge of the nature of the PCB contamination at the site, EPA has concluded that groundwater is not a medium of concern at Area 2 of OU5.

the Kalamazoo River and its floodplains along all seven areas of OU5, including risks to subsistence and sport anglers who may consume fish caught from the Kalamazoo River. Additionally, the Michigan Department of Community Health (MDCH) prepared a Health Consultation for the Site in 2002.

GP's contractor, ARCADIS, updated the HHRA in 2012 as part of the Area 1 SRI to reflect the results of additional fish tissue samples collected since the publication of the 2003 HHRA. The updated HHRA provided updated risk and hazard estimates for subsistence and sport anglers associated with exposures to PCBs released into the Kalamazoo River system. GP's current contractor, Amec Foster Wheeler, updated the HHRA in 2015 based upon data collected in 2011 from Area 2 of the river.

As noted above, GP conducted the SRI/FS work for Area 2 under a 2007 AOC. In accordance with the 2007 SRI/FS AOC, GP submitted many reports that it then used to support the development and evaluation of remedial alternatives for sediment and floodplain soil in the FS. The major reports are listed below and included in the AR for Area 2 of OU5.

- Area 2 Supplemental Remedial Investigation/Feasibility Study Work Plan
- Multi-Area FS Documents – To guide the FS process and provide consistency and efficiency across all seven areas of OU5, four Multi-Area FS Planning Documents were prepared as the first step in developing the FS reports.
- Area 2 SRI Report
- Area 2 Alternatives Screening Technical Memorandum
- Area 2 FS Report

EPA approved the Area 2 SRI Report on July 28, 2015, and approved the Area 2 FS Report on March 15, 2017.

Response Actions and Related Enforcement Activities

To date, remediation work along the Kalamazoo River and the adjacent OUs has included PCB source control and elimination activities in upstream Area 1, and most recently in downstream Area 3. These activities, which are described below, have addressed the most significant known sources of PCBs and have helped support reductions in PCB levels in fish tissue.

EPA has conducted or overseen cleanup activities within or along OU5 since 1998, with the goal of controlling PCB sources. These activities have included four TCRAs in upstream Area 1 along Portage Creek and the Kalamazoo River, interim and final remedial actions at former paper mill properties and disposal areas (e.g., at other OUs), and one TCRA in downstream Area 3 of the Kalamazoo River. There have been no interim or final response actions conducted in Area 2 of OU5.

In addition to the enforcement activities discussed above related to the Area 2 SRI/FS, EPA and/or MDEQ have engaged PRPs to conduct work at other Site OUs, as follows:

- Millennium put in place interim remedial measures at the Allied Paper property (OU1) that effectively controlled the OU1 landfill wastes from entering Portage Creek.
- Millennium conducted RI/FS work at the Allied Paper property (OU1) until its bankruptcy, and then EPA took over completion of the FS and issued a ROD in September 2016.
- GP conducted the RD and RA work at the Willow Boulevard/A-Site Landfill (OU2) and the King Highway Landfill (OU3).
- Weyerhaeuser conducted the RD/RA work at the 12th Street Landfill (OU4), and is conducting the RD/RA work at the former Plainwell Mill (OU7).

2.3 Community Participation

After the Site was listed on the NPL in 1990, the State entered into an agreement with EPA, by which MDEQ served as the lead Agency for the Site and EPA acted in a support role. In 1991, MDEQ developed a Community Relations Plan (CRP), held public meetings, and addressed community concerns. In 2002, EPA assumed the role of lead Agency and began its public involvement with a community involvement workshop in March 2002. Subsequently, EPA held various public meetings and issued fact sheets related to various aspects of the Site cleanup. In 2006, EPA finalized its Community Involvement Plan (CIP) for the Site. The CIP replaced the 1991 CRP. It provides background information on the Site, recommends activities for EPA to continue to inform the public and local officials concerning progress at the Site, and encourages community involvement during the Site cleanup.

In 1999, the Kalamazoo River Watershed Council received an EPA Technical Assistance Grant (TAG) of $50,000 to assist in document review relative to all aspects of the Site. The TAG expired in 2008.

Since 2007, EPA has conducted two public meetings per year regarding cleanup activities within OU5. In addition, EPA has distributed fact sheets for all of the public meetings. EPA also conducted site tours for interested stakeholders during various TCRAs conducted in Areas 1 and 3 of OU5. On March 8, 2017, EPA held a public meeting regarding the Area 2 FS report and presented all of the relevant information to the public and answered questions. On July 26, 2017, EPA held a public meeting for the Area 2 Proposed Plan and took comments from the public.

EPA has regularly provided relevant information and written updates to interested Tribes regarding all aspects of cleanup activities at the Site.

2.4 Scope and Role of Operable Unit or Response Action

This Area 2 ROD is the second of seven RODs planned for OU5 of the Site, and is the final ROD for Area 2. The ROD for Area 1 of OU5 was issued in 2015, and SRIs/FSs are ongoing in other areas of OU5. Upstream Area 1 is currently in the RD phase. When the

SRI/FS for each of the remaining areas – Areas 3 through 7 – are completed, EPA plans to select a final remedy for each area. The RA work in Area 2 of OU5 will follow the Area 1 RA, and is not dependent on response actions at any other Site OUs.

EPA has conducted response work in phases, generally working upstream to downstream and utilizing an iterative approach within each area of OU5. This approach is consistent with EPA's policy set forth in OSWER Directive 8258.6-08, "Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites," dated February 12, 2002. Additionally, the NCP states at 300 C.F.R. Section 430(a)(1)(ii):

> "Sites should generally be remediated in Operable Units when...phased analysis and response is necessary or appropriate given the size or complexity of the site..."

The primary objective of this response action is to address the risks to human health and the environment due to contamination in sediments and soil in the Kalamazoo River and watershed. PCB concentrations remain elevated in Kalamazoo River sediments, in the water column, in the fish, and in the floodplain soil. Removal of the PCB-contaminated sediments will result in reduced PCB concentrations in fish tissue, thereby accelerating the reduction in future human health and ecological risks. In addition, by addressing the sediments, the remediation will control a source of PCBs to the water column, which contributes to fish tissue concentrations and transports PCBs into downstream reaches of the river and eventually to Lake Michigan. Finally, by addressing PCB-contaminated floodplain soils, this response action addresses risks to human health and the environment related to direct exposure to PCBs and dioxins/furans.

2.5 Area 2 Characteristics

Physical Characteristics

The physical characteristics of Area 2 are influenced by dams. The remains of the former Plainwell Dam mark the upstream boundary of Area 2, while the Otsego City Dam forms the downstream boundary. The former Otsego City Impoundment was drawn down in 1982 when stop logs were removed from the Otsego City Dam and again in May 1991 when the dam was dismantled to its sill level. These actions are estimated to have lowered water levels by 3 to 5 feet.

Area 2 has two distinct sections, as shown on Figure 3: the upstream, free-flowing anabranched section (approximately 0.7 miles long) and the downstream section influenced by the current Otsego City Dam (approximately 1.2 miles long). Gun River is the only tributary to this section of the Kalamazoo River, entering the north bank approximately one-half mile upstream of the Otsego City Dam. There is a 2.6-acre pond that lies between the Gun River and the Area 2 study boundary. This pond, known here as Pond G, does not typically interact with the Gun River except during flooding events, when the pond drains to the Gun River. A distinctly shaped island, known here as Knife

Blade Island, exists in the center of the former Otsego City Impoundment on the south side of the Kalamazoo River.

Area 2 is densely vegetated. Land use within Area 2 is primarily recreational, with some industrial property near the City of Otsego and a few residential properties bordering the study area.

The river bottom is predominantly sand and gravel with some fine-grained sediment. Fine-grained sediment occurs in areas along the channel margins and in side channels of the anabranched area. The average water depth in Area 2 of the Kalamazoo River ranges from 2 to 6 feet.

Based on groundwater monitoring conducted in Area 1 of OU5 as part of the Plainwell Impoundment TCRA, in conjunction with groundwater monitoring data from other Site OUs and knowledge of the nature of the PCB contamination at the Site, EPA has concluded that groundwater is not a medium of concern at Area 2 of OU5.

Nature and Extent of Contamination

This section summarizes the nature and extent of contamination in the sediment and floodplain soil within Area 2 of OU5. All PCB concentrations are reported as total Aroclors (total PCBs).

As discussed above, significant site-wide sampling efforts took place from 1993 to 2012. The SRI for Area 2 of OU5 focused on data gaps and further defining the nature and extent of contamination. As part of the SRI, 116 sediment cores were collected and yielded 567 sediment samples that were analyzed for PCB Aroclors, with a subset analyzed for total organic carbon (TOC) and grain size. In addition, a subset of samples was analyzed for mercury, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, pesticides, and dioxins/furans. Sediment PCB concentrations ranged from non-detect (ND) to 111 mg/kg. The non-PCB constituents are discussed in the *Contaminants of Concern* discussion below.

Soil cores were collected as part of the Area 2 SRI from 243 locations within the floodplain. Of these, 154 soil cores yielded 762 samples for PCB analysis, with a subset analyzed for TOC and grain size. In addition, a subset was analyzed for mercury, VOCs, SVOCs, metals, pesticides, and dioxins/furans. An additional 89 riverbank soil cores were analyzed for PCBs, with a subset analyzed for TOC, grain size, mercury, SVOCs, VOCs, metals, pesticides, and dioxins/furans. Soil PCB concentrations ranged from ND to 112 mg/kg.

Distribution of PCBs in Sediment

Sediments are defined as materials collected in areas with flowing or standing water. The spatial distribution of PCBs in Area 2 has been significantly influenced by historical

changes in the water level elevation associated with the Otsego City Dam and geomorphology in this segment of the Kalamazoo River.

Area 2 sediment has been divided into 11 subareas based on geomorphic similarities and location (see Figure 5). They are as follows:

- Subarea A: Lower Main Channel
- Subarea B: Lower Anabranches and Unnamed Tributary
- Subarea C: Upper Main Channel
- Subarea C1: Upper Main Channel (Side Channel)
- Subarea D0: Upper Anabranches (Plainwell Dam Spillway)
- Subarea D1: Upper Anabranches (Northern Anabranches)
- Subarea D2: Upper Anabranches (Plainwell Anabranches)
- Subarea E: Cutoff Anabranches
- Subarea F: Lower Gun River
- Subarea F0: Upper Gun River
- Subarea G: Ponded Area

Detailed discussions of the PCB concentrations in each subarea are included in the Area 2 SRI Report. Table 1 presents a summary of the sediment concentrations in each subarea. Overall, 72 percent of sediment samples were ND or less than 0.33 mg/kg, and 82 percent of samples were less than 1 mg/kg. Lower PCB concentrations generally occurred in Subareas A, B, C1, and F0. Subarea B generally had PCB concentrations less than 1 mg/kg. Subarea F0 had concentrations that were ND. Most of Subareas A and C had PCB concentrations less than 1 mg/kg (likely due to flow preventing the settling of PCBs in this segment of the river), with the exception of individual high PCB concentrations mostly located along the river channel edges.

A transect with higher concentrations between 5 and 10 mg/kg is located in Subarea A approximately 100 feet upstream of the Otsego City Dam along the channel edges at the surface. Individual areas of discrete concentrations above 10 mg/kg also occur along the channel edges in Subarea C. Higher concentrations are also observed in Subareas D1, D2, and E throughout the depth profile. The maximum concentrations of PCBs in Area 2 were detected in these anabranch subareas (with the highest concentration being 111 mg/kg). PCB concentrations are also higher in Subareas F and G.

The vertical distribution of PCBs is directly related to the prevalence and thickness of sediment deposits in Area 2. In the upstream subareas where sediment is relatively thin, PCBs are predominantly located in the upper intervals. In the downstream areas, where sediment deposits are thicker, PCBs are detected at higher concentrations at depth.

The horizontal distribution of PCBs appears to be related to the formation of an anabranched region comprised of Subareas D1 and E. These subareas were subjected to significant changes over time resulting from water level management practices. The higher concentrations in Subarea A appear to be influenced by PCB concentrations in adjacent bank soils, as few sediments in the mid-channel exhibit PCB concentrations

greater than 1 mg/kg. River edge sediment samples with elevated PCB concentrations often spatially coincide with bank soils with higher PCB concentrations. Physical processes such as erosion and sloughing, as well as varying water elevations, may explain the spatial distribution of PCBs in Subarea A.

Surface-Weighted Average Concentration of PCBs in Sediment

A surface-weighted average concentration (SWAC) is a method of spatially calculating the mean (average) concentration of a constituent in the sediment surface. Samples are collected throughout the area of concern, representative subareas are generated for each sample location, and a subarea-weighted average concentration is calculated to produce the SWAC. The subareas may be generated using several different methods such as grids or stream tubes. SWACs were generated for the main channel (Subareas A and C) using kriging. Mean concentrations were used rather than SWACs for the remaining subareas due to the often limited number of samples. The methodology for calculating SWACs is described in Appendix H of the Area 2 SRI Report, which is included in the AR. Table 2 presents a summary of the sediment SWACs and mean concentrations in each subarea.

Based on the data collected during the SRI, SWACs in the main channel are less than 0.33 mg/kg. The anabranch subareas (Subareas D1, D2 and E) showed some of the highest average PCB concentrations in the top six inches, ranging from 3.91 to 7.84 mg/kg, indicating that the anabranch areas are a source of PCB contamination to the river.

Distribution of PCBs in Floodplain Soil

Soils are defined as materials collected in areas without standing water, and along the riverbank represent the area above the water line under normal flow conditions.

The floodplain areas within Area 2 were split into 11 geomorphic categories based on their physical characteristics and surface elevations in relation to historical water levels over time (see Figure 6). These floodplain subareas are as follows:

- Lower Terrace
- Lower Terrace-Gun River
- Medium Terrace
- Medium Terrace-Buffered
- Medium Terrace-Gun River
- Previous Channel
- Previous Main Channel
- Previous Main Channel-Anthropogenic
- Upland Area
- Upper Terrace
- Upper Terrace-Buffered

Detailed discussions of the PCB concentrations in floodplain soils are included in the Area 2 SRI Report. Table 3 presents a summary of the floodplain soil concentrations in

each subarea. PCB concentrations are less than 10 mg/kg throughout the soil profile in the Medium Terrace-Gun River, Upland Area, and Upper Terrace-Buffered landforms. These areas have been protected from dispersion of PCB-laden sediments by dense vegetation and/or higher elevations.

Historical higher water elevations and flood events have dispersed higher concentration, PCB-containing sediments over the now-exposed floodplain next to the Otsego City Dam and in anabranched subareas. These areas are designated as Medium Terrace, Upper Terrace, Lower Terrace, Lower Terrace-Gun River, Previous Channel, Previous Main Channel, and Previous Main Channel-Anthropogenic. The maximum PCB concentrations in floodplain soils were found in the anabranched subareas (with the highest, 112 mg/kg, found in the Lower Terrace subarea). Multiple sampling events between 1993 and 2012 demonstrated variability in the results for various floodplain areas. This is a result of both flooding events redistributing sediment and channel movement in the anabranched area. As a result, there is uncertainty regarding the PCB distribution in floodplain soils. This was discussed in detail in Section 4.2.2.4 of the SRI Report. Pre-design sampling may be conducted to further delineate the distribution of PCBs in floodplain soils prior to remedial action.

Contaminants of Concern

PCBs are the primary COC for Area 2 of OU5. The available data indicate that exposure to PCBs will drive risks at the site, and that management of risks due to PCB exposure will also address risks associated with other non-PCB constituents.

During the investigation of Areas 1 and 2 of OU5, samples collected from various media and biota in and along Portage Creek and the Kalamazoo River, including soil, sediment, surface water, and fish tissue, were selectively analyzed for non-PCB constituents. Samples were analyzed for metals, VOCs, SVOCs, pesticides, and dioxins/furans. Many non-PCB constituents were detected in all media, likely from multiple point and non-point sources in the industrialized portions of the watershed (and general anthropogenic deposition throughout the watershed), and may not be directly linked to the PCB releases.

On April 2, 2015, EPA approved the *Area-Wide Non-PCB Constituent Screening Evaluation.* Sediment and soil samples collected in Areas 1, 2, and 3 and analyzed for non-PCB constituents were pooled to produce a statistically relevant data set for this evaluation. The evaluation compared the sample results for non-PCB constituents in soil and sediment to background concentrations and human health and ecological screening values, and resulted in the non-PCB constituents being screened out. The evaluation demonstrated that total PCBs will drive risk-management and remedial decisions for sediment and soil in Area 2.

In addition, dioxin-like PCBs and dioxin/furans were further addressed through a collocation mapping exercise in the *Technical Memorandum - Collocation Mapping of PCB Dioxin-Like Compound TEQs, Dioxins/Furans, and Total PCBs*, which was submitted to EPA and MDEQ on April 16, 2015. The collocation mapping showed that

concentrations of dioxin-like PCBs and dioxins/furans would be included within the PCB remediation footprint. As a result, EPA believes that Area 2 risk-management and remedial decisions based on total PCBs will address dioxin-like PCBs and dioxins/furans.

Conceptual Site Model

A conceptual site model (CSM) was developed for Area 2 of OU5 based on site characteristics and results from the SRI investigations. The CSM helps to tells the story of how and where the PCB contamination moved and what impacts such movement may have had upon human health and the environment.

As described in the Area 2 CSM, PCBs are the primary COC. Site data shows that exposure to PCBs will drive risks at the site, and that the management of risks due to PCB exposure will also address risks associated with other non-PCB constituents. PCB levels in fish are linked to concentrations in sediment and surface water through the food chain. Risks to humans and aquatic ecological receptors are driven by the consumption of PCB-contaminated fish. Human health risk estimates show concentrations of PCBs in fish tissue result in exceedances of EPA target levels for both cancer and non-cancer risks; this will be further discussed below in Section 2.7.

The primary transport mechanism is PCB uptake through the food chain via PCB-contaminated sediment that already exists in the river and that continues to enter the river by erosion of PCB-contaminated bank material. External sources of PCBs to Area 2, including background sources of PCBs from areas upstream of Area 1 (which have mean PCB background sediment concentrations of 0.31 mg/kg), are expected to sustain low levels of PCBs in fish tissue in the long term, even with control of known potential source areas associated with historical papermaking operations.

The media of concern in Area 2 are sediments and floodplain soils. PCB-contaminated sediments and bank soils both can lead to PCB uptake in fish. The targeted remediation areas in Area 2 are localized PCB deposits along the main channel, the anabranch channels, floodplain soils exceeding ecological risk criteria, bank soils, Knife Blade Island, Gun River, Pond G, and two private parcels extending into the study area. As noted earlier, the calculated SWACs in the main channel are less than 0.33 mg/kg total PCBs. The anabranch channels have the highest average PCB sediment concentrations in Area 2 and are targeted for remediation.

2.6 Current and Potential Future Land and Resource Uses

Area 2 is a densely vegetated 1.9-mile stretch of the Kalamazoo River located between the former Plainwell Dam and the Otsego City Dam. This stretch of the river flows through forested wetland areas with predominantly recreational land use, and ends at the City of Otsego. Land use within Area 2 is primarily recreational, with some industrial property near the City of Otsego and a few residential properties bordering the study area. There is no known active tribal land use. Appendix B of the Area 2 SRI report describes the current and future land use assessment. MDEQ has designated the Kalamazoo River

as a "Natural River" as that term is defined in the State's Natural River Act (Part 305 of P.A. 451 of 1994). The potential future uses of Area 2 are expected to remain the same.

As noted earlier, groundwater is not a medium of concern in Area 2 of OU5 so is not addressed by this ROD.

2.7 Summary of Site Risks[4]

This section summarizes the risks to human health and the environment that are posed by the contamination.

Human Health Risk Assessment

Risks to humans are driven by the consumption of PCB-contaminated fish. In addition to fish consumption by anglers, several other potential exposure pathways were described in the 2003 HHRA that are relevant to Area 2, as follows:

- *Consumption of turtles:* Although this pathway was evaluated qualitatively as a potential exposure pathway, the HHRA concluded that the overall exposure and risks to receptors ingesting turtles would be less than that of anglers. The analytical data that exist for turtle tissue indicate that PCB concentrations are less than that for smallmouth bass and carp fish tissue;
- *Consumption of waterfowl*: This exposure pathway was considered in the HHRA. However, because of data limitations with waterfowl samples, CDM did not complete a qualitative evaluation or quantify risk estimates for this exposure pathway;
- *Direct contact with river sediment (by swimmers or waders):* Direct contact exposures to river sediment during recreational activities (e.g., swimming, wading) were determined not to be an important means of exposure to PCBs, based on the Health Consultation prepared by the MDCH. As a result, such exposures were not evaluated further in the HHRA;
- *Exposure to in-stream surface water (by swimmers or waders):* Due to the relatively low ingestion rates of surface water, the low solubility of PCBs in water, and the low dermal absorption of PCBs, the HHRA concluded that this pathway could be assumed to be without risk;
- *Exposure to air:* Inhalation of particulates and volatile emissions from exposed floodplain soil and sediment were quantitatively evaluated in the HHRA, but inhalation of volatile emissions from surface water was not quantitatively evaluated; and
- *Direct contact with floodplain soil and exposed sediment:* Two residential developments exist adjacent to the floodplains in Area 2. The HHRA quantitatively evaluated direct contact pathways (dermal contact and incidental

[4] Risks related to dioxins/furans at the Site were not evaluated in either the HHRA or the BERA, so this section of the ROD does not discuss risks associated with dioxins/furans found in Area 2. The SRI for Area 2, however, did evaluate dioxins/furans and determined that dioxins/ furans are found within the remedial footprint of Area 2 of OU5. The FS for Area 2 concluded that dioxins/furans are a COC at Area 2 and, as such, this ROD establishes a remediation goal for dioxins/furans found in floodplain soils

ingestion) that may be relevant to residents (the most highly-exposed receptor group) or recreational visitors.

Fish Advisory

MDCH has issued a fish advisory for parts of Portage Creek and the Kalamazoo River, extending from Morrow Lake Dam to Lake Michigan. For the river area from Morrow Lake Dam to the Allegan Dam (which is located in Area 6), and on Portage Creek downstream of Monarch Mill Pond (which is located just upstream of OU1), the advisory currently recommends that the general population not consume carp, catfish, suckers, smallmouth bass or largemouth bass from these areas. Between Allegan Dam and Lake Michigan, the advisory recommends that the general public not consume carp, catfish, or northern pike. Healthy adult males are advised to eat no more than one meal per week of all other species. For women of childbearing age and children under 15 years of age, no consumption of any species is recommended for fish caught above Allegan Dam, including Area 2.

MDCH's fish consumption advisory is only a recommendation, is not legally binding, and has limited effectiveness in protecting human anglers from Kalamazoo and Allegan Counties. A survey from 1994 showed that anglers ate on average two meals per month of various species taken from contaminated reaches of the river, including bass, catfish, panfish, bullheads, and carp. More than 10 percent of anglers ate more than one meal per week of these various species. This survey confirmed that the Kalamazoo River is an important recreational resource and may serve as an important source of food for certain human populations.

HHRA Conclusions

The likelihood of any kind of cancer resulting from exposure to carcinogens at a Superfund site is generally expressed as an upper bound incremental probability, such as a "1 in 10,000 chance" (expressed as 1×10^{-4}). In other words, for every 10,000 people exposed to the site contaminants under reasonable maximum exposure conditions, one extra cancer may occur as a result of site-related exposure. This is known 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 risk of cancer from other causes has been estimated to be as high as one in three. 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 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 COCs that affect the same target organ (such as the liver). 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 1 x 10^{-6} to 1 x 10^{-4} and an HI < 1. Generally, remedial action at a site is warranted if cancer risks exceed 1 x 10^{-4} and/or if non-cancer hazards exceed an HI of 1.

The HHRA for the Site (including Area 2) presented estimated cancer risks and non-cancer hazards for several populations of anglers consuming fish from the Kalamazoo River and for residential and recreational receptors exposed to floodplain soil adjacent to the former Plainwell, Otsego, and Trowbridge Impoundments.

Risk characterization for anglers was performed for three potential populations: central tendency sports anglers, high-end sports anglers, and subsistence anglers.[5] Two exposure scenarios for the three angler populations were included in the HHRA: the first assumed a diet of 100 percent pelagic (non-bottom feeding) fish species and the second assumed a mixed species diet (76 percent pelagic species and 24 percent bottom-feeding species).

The HHRA for Area 2 showed that potential excess cancer risks and non-cancer hazards exceeded acceptable levels for the fish ingestion pathway for all three angler populations. Cancer risks and non-cancer hazards were highest for the subsistence angler (4 x 10^{-4} and an HI of 18, respectively). Cancer risks and non-cancer hazards were lowest for the central tendency sport angler (5 x 10^{-5} and an HI of 2, respectively). Adverse health effects associated with PCB exposure include increased risk of liver cancers and reproductive and immunological impairment.

The HHRA for Area 2 did not update floodplain risk information provided in the 2003 HHRA, as risk estimates for the fish ingestion pathway were approximately 60- to 70-fold greater than risk estimates for floodplain soil pathways for residents and recreational receptors. The 2003 HHRA evaluated the floodplain areas around the former Plainwell and Plainwell 2 impoundments, the Otsego Dam, and the Trowbridge Dam. Estimated risks for residents exposed to average floodplain surface soil concentrations were within EPA's acceptable risk range but were greater than MDEQ's cancer risk threshold of 1 x 10^{-5}. Excess cancer risk estimates exceeded the acceptable risk range when the maximum detected concentration for each area was used.

For residential receptors exposed to floodplain soil via multiple routes (i.e., ingestion, dermal contact, and inhalation of fugitive dust), HIs for the reproductive endpoint exceeded 1 for all three areas when maximum concentrations were used, but were less than 1 using average floodplain soil concentrations. HIs for immunological endpoints exceeded 1 for all three areas using both average and maximum floodplain soil concentrations.

Excess cancer risks and non-cancer hazards for recreationists exposed to average floodplain surface soil concentrations were within EPA's acceptable risk range and less than MDEQ's cancer risk threshold of 1 × 10^{-5} in all three areas evaluated. When the maximum floodplain soil concentration was used, potential cancer risks were within

[5] Central tendency sports anglers were estimated to consume an average of 0 015 kg fish tissue/day (24 half-pound meals/year). High-end sports anglers were estimated to consume 0.078 kg fish tissue/day (125 half-pound meals/year). Subsistence anglers were estimated to consume 0.11 kg fish tissue/day (179 half-pound meals/year).

EPA's acceptable risk range but were greater than MDEQ's cancer risk threshold. HIs were greater than 1 when maximum soil concentrations were used.

As noted earlier, fish advisories are currently in place to address risks to humans from consumption of fish. There are currently no restrictions in place to control human exposures to sediment, soil, or surface water.

In summary, the fish ingestion pathway poses unacceptable risks and hazards to anglers. Additionally, potential exposure to maximum floodplain soil concentrations may pose unacceptable risks and hazards to residents and recreationists. The HHRAs made assumptions using best professional judgment and available scientific literature on risk assessments.

Baseline Ecological Risk Assessment

As part of the original RI, CDM prepared a baseline ecological risk assessment (BERA) for OU5 that identified terrestrial and aquatic receptors and exposure pathways. During the Area 1 SRI, an updated terrestrial BERA (TBERA), covering terrestrial birds and mammals, was conducted. The methods and approaches incorporated in the Area 1 TBERA built on the information in the BERA and the CSM. The TBERA also accounted for updated risk assessment guidance and scientific research, additional sampling results, a December 2008 peer review panel report, two completed TCRAs in Area 1, and source control activities completed or underway at the former mill properties and landfill OUs in Area 1 since the BERA was completed. The Area 1 TBERA did not revisit the aquatic portion of the BERA but carried forward those associated conclusions. As part of the Area 2 SRI, the TBERA was updated to incorporate recent Area 2 data.

The BERA was conducted to evaluate potential adverse effects to terrestrial and aquatic ecological receptors associated with PCB exposures in surface water, sediment, surface soil, and biota. Representative ecological receptors included aquatic plants, aquatic macroinvertebrates, game fish, forage fish, rough fish, terrestrial invertebrates, small burrowing omnivorous mammals, semi-aquatic herbivorous mammals, small semi-aquatic carnivorous mammals, and top mammalian and avian predators. The BERA evaluated complete exposure pathways that included the following:

- Surface water – direct contact, uptake, ingestion, or ingestion of prey;
- In-stream sediment/interstitial water – direct contact, ingestion, or ingestion of prey; and
- Surface soil/floodplain sediment and soil – direct contact, ingestion, or ingestion of vegetation/prey.

The BERA concluded the following:

- Most aquatic biota, such as invertebrates and fish, are not expected to be adversely affected by direct contact with and ingestion of surface water because of relatively low PCB toxicity to most aquatic biota.

- PCB contamination of surface water and streambed sediment may adversely affect sensitive piscivorous predators, such as mink, through the consumption of PCB-contaminated fish.
- Terrestrial and semi-aquatic biota are potentially at risk from floodplain sediment and surface soil, depending on life cycle characteristics (e.g., foraging behavior, diet, mobility) and predicted sensitivity to PCBs.

The updated Area 2 TBERA builds upon the prior OU5 BERA and the Area 1 TBERA. The updated Area 2 TBERA for terrestrial birds and mammals is included as Appendix M of the Area 2 SRI Report. The methods, inputs, and approaches incorporated in the updated Area 2 TBERA are the same as those employed in the Area 1 TBERA. The updated Area 2 TBERA incorporates current Agency guidance, current science, and new data collected to support the SRI activities. Representative receptors were selected as the most highly-exposed species likely to inhabit Area 2. The representative receptors included insectivorous birds (house wren), vermivorous mammals (short-tailed shrew), vermivorous birds (American robin and American woodcock), carnivorous mammals (red fox), and carnivorous birds (red-tailed hawk).

The Area 2 TBERA conclusions are summarized as follows:

- Overall, the Area 2 TBERA found no unacceptable risk to moderate or low-sensitivity insectivorous (e.g., house wren) or vermivorous (e.g., American robin, American woodcock) birds in Area 2.
- Possible, but unlikely, risk was identified for high-sensitivity insectivorous (e.g., gray catbird, European starling) and vermivorous birds, if present. (Note: no highly-exposed, high-sensitivity vermivorous birds have been documented at the Site, although these species could potentially occur at the Site.) Many of these species have not been classified based on their sensitivity to PCBs or dioxin-like compounds. As a result, there is a possibility that high-sensitivity vermivorous birds, if they occur at the Site, may have a potential for risk.
- The TBERA did not address aquatic receptor uptake when the floodplains are inundated by flooding because the frequency and duration of flooding is not of sufficient duration.
- While possible risk was identified for vermivorous mammals (e.g., short-tailed shrew), it is unlikely due to the low frequency of possible home ranges with high HQs. These areas correspond to geomorphic categories of Medium and Upper Terraces in the east portion of Area 2 (among the anabranches) and Lower Terrace areas in the northwest portion of Area 2, north of the main river channel approaching the Otsego City Dam.

Because there is potential risk to ecological receptors exposed to PCB-contaminated floodplain soils, remedial alternatives to protect ecological receptors were developed and evaluated.

2.8 Remedial Action Objectives

RAOs are goals for protecting human health and the environment. RAOs are developed to address the contaminant levels and exposure pathways that present unacceptable current or potential future risk to human health and the environment. During the FS, the development of RAOs and cleanup levels, known as preliminary remediation goals (PRGs) until final cleanup levels or FRGs are selected in a ROD, is the first step in identifying and screening remedial alternatives for addressing the COCs and media of concern.

Remedial Action Objectives for Area 2

The following five RAOs were developed for PCB-containing media and biota in Area 2:

- **RAO 1: Protect people who consume Area 2 Kalamazoo River fish from exposure to PCBs that exceed protective levels.** This RAO is expected to be progressively achieved over time by meeting the following targets for fish tissue and sediment:
  - Reduction in fish tissue to the Michigan fish advisory level for smallmouth bass to two meals per month (0.11 mg/kg total PCB concentration) within 30 years[6];
  - Achievement of a non-cancer HI of 1 and a 10^{-5} cancer risk within 30 years for the high-end sport angler (100 percent bass diet; 125 meals/year)[7]; and
  - The above fish tissue goals for bass will be achieved by protecting fish from exposure to sediment PCB SWACs above 0.33 mg/kg in Area 2 following completion of the remedial action.

- **RAO 2: Protect aquatic ecological receptors from exposure to concentrations of PCBs in sediment that exceed protective levels for local populations.** This RAO is designed to protect fish-eating birds and mammals by reducing fish tissue PCB concentrations to levels that do not harm the sustainability of local populations of these receptors[8].

- **RAO 3: Protect terrestrial ecological receptors from exposure to concentrations of PCBs in soil that exceed protective levels.** This RAO is intended to protect local populations of birds and mammals by reducing PCB concentrations in soil to levels that do not harm the sustainability of local populations of these receptors.

- **RAO 4: Reduce transport of PCBs from Area 2 to downstream areas of the Kalamazoo River and Lake Michigan.** This RAO includes reducing the potential for erosion and downstream migration of PCB-impacted sediment and riverbank soil.

[6] This specific target is a goal of the remedial action, but it is not an FRG.
[7] The non-cancer and cancer risk levels described here are what drive the FRGs for RAO 1.
[8] See the FRG table on page 30.

- **RAO 5: Protect people that reside in Area 2 from exposure to COCs that exceed protective levels.** This RAO is intended to protect local residents from exposure to COC concentrations that may cause a carcinogenic risk greater than 10^{-5} or an HI greater than 1.

Final Remediation Goals/Cleanup Levels

This ROD establishes the final remediation goals and/or cleanup levels for Area 2 of OU5. The PRGs that were included in the Proposed Plan have become the FRGs. FRGs are also used to define the extent of contaminated media requiring remedial action, and are the targets for the analysis and selection of long-term remedial goals.

The HHRA developed a series of risk-based concentrations (RBCs) for total PCBs in fish, sediment, and floodplain soil intended to be protective of anglers, recreationists, and residents, while the BERA and TBERA developed RBCs for sediment and floodplain soil intended to be protective of sensitive wildlife receptors. The RBCs are calculated, chemical-specific concentrations below which no significant health effects are anticipated for a receptor. For human receptors, Area 2 RBCs correspond to a target risk for carcinogenic effects of 1×10^{-5} and a target HI of 1 for non-carcinogenic effects. For ecological receptors, RBCs correspond to a target HQ of 1. RBCs for ecological receptors represent a risk range based on "No Observed Adverse Effects Level" and "Lowest Observed Adverse Effects Level" risk estimates for each receptor group.

Selection of Fish Tissue Final Remediation Goals

The selection of a fish tissue FRG was a multi-step process that considered the RBC_{fish} values generated for each receptor, the likely exposure scenario to be frequently encountered, and the background levels of PCBs in fish tissue. Although a subsistence angler scenario was included in the calculation of RBC_{fish}, this pathway represents a worst-case scenario that is not expected to be frequently encountered compared to sport anglers. The RBC_{fish} would likely reflect a diet that is weighted toward the 100 percent smallmouth bass consumption scenario (over a mixed carp and bass species scenario) because the smallmouth bass is a popular sport fish on the Kalamazoo River. The range of RBC_{fish} for sport anglers is from 0.042 mg/kg to 0.187 mg/kg (non-lipid corrected). The upper end of this range is similar to the mean background concentration in smallmouth bass fillets in Morrow Lake immediately upstream of Area 1 (0.23 mg/kg). Another background reference area further upstream of Area 1 (Ceresco) had mean smallmouth bass fillet concentrations of 0.03 mg/kg. The upper end of this range is also protective of women of childbearing age and young children consuming one half-pound meal per month from the Site.

For RAO 1, the fish tissue FRGs for total PCBs are 0.042 mg/kg for carcinogenic effects (based on a risk of 1×10^{-5}) and 0.072 mg/kg for non-carcinogenic effects (based on an HI of 1). These FRGs are based on risk estimates to sport anglers and sensitive populations, and take into account background considerations.

For RAO 2, the fish tissue FRG for total PCBs is 0.6 mg/kg, which is protective of mink (the most sensitive ecological receptor).

Selection of Sediment FRGs

The selection of a sediment FRG for total PCBs considered the human health RBC_{sed} values associated with the human receptors who consume fish. MDEQ conducted an independent evaluation and has recommended a sediment FRG of 0.33 mg/kg. MDEQ concluded that this FRG value is appropriate for sediment because it is sufficiently protective of the high-end sport angler. This FRG value also corresponds to MDEQ's historical PCB detection limit that has previously been used as a sediment screening and target level in Michigan under Michigan's Natural Resources and Environmental Protection Act of 1994 (NREPA), Part 201. Further, this FRG is close to the mean background sediment concentration of 0.31 mg/kg.

An FRG of 0.33 mg/kg for total PCBs is protective of both human and ecological receptors. Sediment concentrations below 0.33 mg/kg are not likely to bioaccumulate in fish tissue to levels that present unacceptable risks and hazards to human populations and will promote the achievement of the fish tissue RAOs over time.

Selection of Floodplain Surface Soil FRGs

The selection of a floodplain surface soil FRG was based on the range of site-specific RBC_{soil} values calculated for human recreationists and ecological receptors, with the ecological RBC_{soil} values driving the selection of the FRG because they were much lower than the values for human receptors. Although ecological risk was predominantly associated with high-sensitivity insectivorous and vermivorous birds and vermivorous mammals in the Area 2 TBERA, a range of RBC_{soil} was calculated based on the protection of multiple wildlife receptors. The uncertainty associated with the TBERA RBCs is summarized in the Area 2 FS Report.

A floodplain soil FRG of 11 mg/kg for total PCBs is based on protectiveness of 1-acre home ranges for maximum exposed mammals. Based on the analysis presented in the Area 2 FS Report, an FRG of 11 mg/kg is expected be protective of 99.5% of the possible 1-acre home ranges for maximally exposed mammalian receptors (i.e., the shrew). An FRG of 11 mg/kg PCBs is also assumed to be protective of avian receptors as it represents a balance between risk and uncertainty associated with the various methodologies and assumptions used in the TBERA to calculate risk to avian receptors.[9] Therefore, the FRG of 11 mg/kg in floodplain soil is protective of the various ecological receptors.

[9] An FRG of 11 mg/kg is below the dietary high-sensitivity RBCs calculated for the house wren and American robin and within the mid-range and high-sensitivity dietary RBCs calculated for the American woodcock. An FRG of 11 mg/kg falls between the egg-based RBCs for mid-range and high-sensitivity avian receptors.

A floodplain soil FRG of 11 mg/kg for total PCBs is also protective of human recreational receptors. However, for floodplain surface soil in current or potential residential use areas, an FRG of 2.5 mg/kg will be used to protect residential receptors.

For the reasons noted above in the *Contaminants of Concern* discussion in Section 2.5, EPA believes that risk management decisions based on total PCBs will also address risks associated with other non-PCB constituents. However, in the event that dioxins/furans are found in floodplain surface soils in current or potential residential use areas located outside the PCB remediation footprint, an FRG of 50 parts per trillion (ppt) will be used to protect residential receptors, based on current EPA Regional Screening Levels.

Summary of FRGs

The table below summarizes the various FRGs for Area 2. The ability to meet the various risk-based fish tissue FRGs will be evaluated during the five-year review process following the Area 2 remedial action. These reviews will consider factors identified during LTM that may limit overall fish tissue and sediment recovery (e.g., fish tissue or sediment concentrations approaching background levels, which include atmospheric deposition and/or other non-site sources of PCBs to the river system).

FRGs/Cleanup Levels for Area 2 of OU5	
Media/Biota	**FRG for Total PCBs**
Fish Tissue	0.042 mg/kg (RAO 1, cancer risk of 1 x 10^{-5}) 0.072 mg/kg (RAO 1, non-cancer HI of 1) 0.6 mg/kg (RAO 2, ecological receptors)
Sediment	0.33 mg/kg (SWAC in each river section)
Floodplain Soil	11 mg/kg (all areas except residential) 2.5 mg/kg (residential areas)
Media	**FRG for Dioxin/Furans (if needed)**
Floodplain Soil	50 ppt (residential areas)

2.9 Description of the Alternatives

For purposes of developing potential remedial alternatives, the FS identified the various sediment and floodplain areas that would require remediation based on the RAOs and PRGs (now FRGs) for Area 2.

Remediation Areas

The PCB SWAC analysis was used as a screening tool to evaluate the distribution of PCBs in sediment and to identify potential sediment remediation locations in Area 2. The SWACs provide predictions of the average exposure concentration in a specified area.

Area 2 is unique within the Kalamazoo River system because it includes anabranches with average sediment PCB concentrations above the sediment FRG of 0.33 mg/kg and a main channel with sediment SWACs below this FRG. The other areas of OU5 that have been investigated to date (Areas 1, 3, and 4) have main channel sediment SWACs above 0.33 mg/kg and require (or may require) remediation in the main channel. These other areas do not have anabranches to the same extent as Area 2, but rather are single-channel reaches. The highest average SWAC in an Area 2 main channel interval is 0.16 mg/kg. Because the sediment FRGs are currently being met in the main channel but fish tissue concentrations are elevated, it is likely that fish migrate to and from the anabranches where they are exposed to soil/sediment containing higher PCB concentrations. Therefore, the remedial alternatives that were evaluated for Area 2 sediment focused on remediation of the anabranches rather than the main channel.

The remedial alternatives evaluated in the FS for floodplain soil focused on locations that exceed ecological or human exposure PRGs, and on bank soil that could contribute, via erosion, to the transportation of PCBs to downstream areas.

Single Channel Design

Potential remediation areas were identified based on the evaluation of the Area 2 sediment and soil PCB data. An important consideration for selecting the remedial areas is the future river location following the removal of the Otsego City Dam. Dam removal is desired by the City of Otsego and the State of Michigan for several reasons, including reducing long-term dam maintenance and restoring natural free-flowing conditions to the river. Removal of the dam would result in the anabranches not conveying water under normal flow conditions (1,000 cubic feet per second (cfs)). As such, fish would no longer have routine access to these areas with higher PCB concentrations. However, with the dam removed, the bed slope in Area 2 would increase, and the main channel would likely erode, becoming more entrenched in the floodplain and unstable. In addition, during high flow events the anabranches would continue to erode PCB-contaminated material and transport it downstream into the river.

Due to the unique circumstances in Area 2 described above, EPA believes that removing the dam and constructing a single stable channel are necessary to meet the RAOs. Therefore, options for realigning the river in Area 2 to create a stable single channel with dam removal were evaluated for inclusion in the remedial alternatives to prevent the river from regularly forming unstable anabranches, and to protect the floodplain from future erosion due to channel migration. The goal would be to create a channel that conveys the bankfull flow of a 1.2-year return period (approximately 2,500 to 2,700 cfs), maintains adequate shear stress to convey the bedload of the river, and remains in a fixed location over time. Such a stable channel would maintain the applicability of the soil FRG in the dam-out floodplain across Area 2.

Channel realignment would be accomplished using modern natural channel design and restoration approaches to promote a stable channel and ecosystem that is self-sustaining over time. Such design features include energy dissipation structures, main channel

bank/bed erosion protection, bank and riparian zone vegetation/restoration, and connectivity with the natural floodplain. Beneficial reuse of materials removed for channel realignment may include sediment, soil, vegetation, and woody debris.

Three channel realignment options were evaluated, and details about the three different options are provided in the Area 2 FS Report. Channel Option 3 (Figure 7) was selected for incorporation into the remedial alternatives that were developed for Area 2. In Option 3, the upstream half of Area 2 is provided with two meander curves, natural bank treatments with point bars, floodplain connection, and benches in the former impoundment at the bankfull flow elevation. The second meander curve in Option 3 serves as additional buffer for Knife Blade Island, allowing further deposition within and isolation of this island, to prevent the PCB contamination at Knife Blade Island from eroding into the river. Following the meandering section, the downstream layout closely follows the northern bank of the existing channel to the current dam location. Channel Option 3 was selected as the basis for remedial alternative development because it balances the effort and cost to achieve a stable single channel for remedial alternative development by providing a larger buffer area for Knife Blade Island than the other two options while also following the existing channel bed in the downstream reach. The actual design for channel realignment will likely be different in some respects from that shown in Figure 7 based on additional data collection and evaluation during the RD. However, general elements of the design should include protection of Knife Blade Island and a designed meander in the upstream portion to maintain a stable single channel through the currently anabranched area.

Construction of Channel Option 3 includes an estimated cut and fill volume of 144,000 and 62,000 cy, respectively, encompassing 59.1 acres. The total cost of channel realignment is $26,000,000 and the total cost to remove the Otsego City Dam is estimated at $3,840,000. Therefore, the total combined cost of Otsego City Dam removal and construction of Channel Option 3 is $29,840,000.

Remedial Areas for Evaluation

The remedial footprints selected for the comparative evaluation of remedial alternatives during the FS were based on the data collected during the SRI. These remedial footprints represent approximate areas for comparative evaluation of remedial alternatives and were based on PCB concentrations greater than 50 mg/kg, maximum PCB concentrations at any depth, and the 0- to 24-inch natural neighbor interpolation for floodplain soils. The actual remedial footprints to be addressed by the Selected Remedy will be refined during the RD as determined by additional sampling.

The remedial areas are depicted on Figure 8 and include the following portions of Area 2 (some of which are labeled on Figure 3):

- main river channel
- northeast anabranches
- Gun River

- Pond G
- Knife Blade Island
- banks soils
- floodplain soil exceeding human health and ecological FRGs

Common Elements

Section 121(d) of CERCLA requires that Superfund remedial actions meet ARARs. A complete listing of ARARs can be found in Appendix 1. The location-specific ARARs common to each response action evaluated here establish restrictions on dredging and grading activities and pertain to the management of waste or hazardous substances in specific protected locations, such as riverbeds, wetlands, floodplains, historic places, and sensitive habitats.

The action-specific ARARs are technology-based or activity-based requirements or limitations on actions taken with respect to remediation. These requirements are triggered by particular remedial activities that are selected to accomplish the remedial objectives. The action-specific ARARs indicate the way in which the selected alternative must be implemented, as well as specify levels for discharge.

Chemical-specific ARARs are health- or risk-based numerical values or methodologies that establish concentration or discharge limits, or a basis for calculating such limits, for particular substances, pollutants, or contaminants.

Sediment cleanup levels are subject to Michigan's NREPA, Part 201. Part 201 also applies to concentrations of COCs in sediment that can adversely affect biota and their habitats. While Part 201 does not include generic sediment cleanup criteria, Part 201 allows development of site-specific cleanup levels if such criteria better reflect best available information concerning the toxicity or exposure risk posed by the hazardous substance or other factors, and to meet the other requirements of Part 201, including, but not limited to, the risk standards set forth at Michigan Compiled Law 324.20120a and 20120b.

PCB-contaminated sediments removed as part of the RA must be handled in accordance with storage and disposal requirements set forth in the TSCA regulations at 40 C.F.R. Part 761. TSCA regulations at 40 C.F.R. Part 761.61 further provide cleanup and disposal levels for PCBs in soil that either remain in place or are removed from Area 2 during remedial action.

The Clean Water Act (CWA) establishes effluent standards for contaminants such as PCBs in navigable waters of the United States and regulates quality standards for surface waters. The ambient water quality criterion for navigable waters is 0.001 microgram per liter (µg/L) total PCBs (40 C.F.R. Part 129.105 - Toxic Pollutant Effluent Standards). The PCB water quality criteria established by the CWA for protection of aquatic life for continuous concentration (chronic) is 0.014 µg/L and for protection of human health is 0.000064 µg/L in freshwater.

Eight remedial alternatives were evaluated during the FS. Components that are common to Alternatives A-3 through A-7 are presented here as a group in order to limit redundancy in the subsequent discussion of the individual alternatives. The common components of Alternatives A-3 through A-7 are:

- Identification and confirmation of the remedial area footprints through additional sampling during the RD;
- RD sampling at SRI sample locations that exceeded 50 mg/kg PCBs to confirm the presence and extent of such hot spots for targeted removal;
- An LTM program and maintenance of ICs and engineering controls (ECs) until long-term goals are achieved. The LTM program would confirm the ongoing effects of natural processes and document the continued declines in PCB concentrations in various media, resulting in reductions in risk and ecological exposures. It is anticipated that the monitoring program would be designed to supplement the current program that includes fish and water column monitoring. The final components of the LTM program would be defined during the RD. For purposes of developing cost estimates, it was assumed that the LTM program would include the following activities:
    - Fish monitoring twice every 5 years during the LTM period. Fish samples would be collected in Area 2 and the reference/background areas. The actual sampling locations would be specified during the RD. Smallmouth bass and carp would be collected at each sampling location. Adult carp and both adult (fillet) and young-of-year (whole-body) smallmouth bass would be collected and analyzed for total PCBs and lipid content.
    - Surface water quality monitoring annually for the first five years, then once every five years for the remainder of the LTM period to support EPA's periodic five-year reviews. Surface water monitoring stations for OU5 are currently located at the upstream and downstream ends of Area 2 (in Areas 1 and 3, respectively). Surface water samples would be analyzed for total PCBs.
    - Sediment samples would also be collected to support EPA's five-year reviews by monitoring ongoing recovery conditions and natural attenuation in Area 2.
    - Visual inspections of riverbank erosion along the newly-constructed channel and cap erosion and/or damage in any capped areas annually for the first five years after dam removal, then once every five years for the remainder of the LTM period. Additional inspections would be conducted after major storm/flooding events, as necessary.
- Site-specific fish consumption advisories established and publicized by the State of Michigan would continue to manage risks posed to anglers and their families from consumption of PCB-containing fish.[10] These advisories, which include warning signage posted along the river, are already in place for Area 2, and the

[10] The fish consumption advisories issued by MDCH are only a recommendation, are not legally binding, and have limited effectiveness in protecting human health. Fish advisories, alone, would not be an appropriate remedial alternative.

advisory for each fish type would remain in effect until fish tissue PCB concentrations achieve RAOs for the fish specified. The advisories would be reviewed and verified annually as a component of the site ICs;

- In addition to fish consumption advisories, other ICs would be implemented and maintained. Land use restrictions to prevent future residential use and limit human exposure to recreational scenarios may be implemented where concentrations greater than 2.5 mg/kg will remain in the floodplain soil. In addition to the two private parcels in the northeast portion of Area 2, there are industrial-zoned and recreational parcels along the downstream portion (some owned by the City of Otsego and Otsego Township) for which ICs may be required.
- Use of a RAL for PCBs of 20 mg/kg for floodplain soil. The RAL value of 20 mg/kg is based on an assessment of the following factors: the incremental risk reduction that would be achieved; the desire to protect 95% to 100% of the receptors (i.e., shrew, wren, and robin); and the incremental area and soil volume associated with each potential RAL value that was evaluated during the FS. A RAL of 20 mg/kg will provide the largest incremental risk reduction in the impounded floodplain area.

Remedial Alternatives

A-1: No Action

Estimated Capital Cost: $0
Estimated O&M Cost: $0
Estimated Present Worth Cost: $0
Estimated Total Cost: $0
Estimated Construction Timeframe: None

Regulations governing the Superfund program require that the "no action" alternative be evaluated generally to establish a baseline for comparison. The No Action remedial alternative, A-1, would rely on natural recovery processes ongoing in the river, as a result of completed and ongoing remedial actions in Area 1 and other upstream OUs. Ongoing natural recovery processes include deposition of cleaner sediment from the watershed and mixing of surface and cleaner sediment. No active remediation or monitoring would be conducted under this alternative. The time to reach protective levels and compliance with FRGs is estimated to be a minimum of 35 years, but no monitoring would be conducted to document progress toward achievement of FRGs. No cost is associated with this alternative.

A-2: Monitored Natural Recovery, Institutional Controls, and Long-Term Monitoring

Estimated Capital Cost: $4,900,000
Estimated O&M Cost: $7,600,000
Estimated Present Worth Cost: $7,580,000

Estimated Total Cost: $12,500,000
Estimated Construction Timeframe: 2 years

This alternative includes the removal of the Otsego City dam followed by MNR, ICs and LTM. It relies on natural processes ongoing in the river, including reduced PCB loading from upstream sources as a result of completed and ongoing remedial actions in Area 1 and the other upstream OUs. Ongoing natural recovery processes include deposition of cleaner sediment from the watershed and mixing of surface and cleaner sediment. The LTM program for MNR would be robust to confirm stability of PCB deposits and to measure and track recovery in Area 2 PCB-impacted media/biota. The time to reach protective levels and compliance with FRGs under Alternative A-2 is estimated to be a minimum of 35 years after ROD issuance. The estimated cost of this alternative is $12,500,000.

A-3: Capping, Channel Realignment, Gun River Excavation, Targeted Excavation of Knife Blade Island, ICs and LTM

Estimated Capital Cost: $41,080,000
Estimated O&M Cost: $2,720,000
Estimated Present Worth Cost: $34,900,000
Estimated Total Cost: $43,800,000
Estimated Construction Timeframe: 5 years

The components of Alternative A-3 are discussed in detail below. In summary, Alternative A-3 includes:

- Otsego City Dam removal
- Channel realignment (Option 3)
- RD sampling as approved by EPA
- Excavation of confirmed PCB hot spots in areas to be capped
- Capping of the northeast anabranches, Pond G, and floodplain soil exceeding the 20 mg/kg RAL for PCBs outside the realigned channel footprint
- Excavation of Gun River sediment and bank soil
- Targeted excavation of soil/sediment with PCB concentrations exceeding 50 mg/kg at Knife Blade Island
- ICs (as discussed above in the *Common Elements* section)
- LTM and maintenance (as discussed above in the *Common Elements* section)

Alternative A-3 includes approximately 33 acres of capping and 12,900 cy of excavation over a total remedial footprint spanning approximately 36 acres.

Cap soil is assumed to mostly consist of clean cut material recovered from the channel realignment. Prior to placement of the cap, a non-woven geotextile layer would be placed over the existing ground surface to serve as a demarcation layer. To support habitat restoration, a topsoil layer would be created by entraining organic material (e.g., chipped vegetation, peat, and other organic detritus) recovered during clearing and channel

realignment activities into the top six inches of fill. Caps in floodplain and anabranches would consist of a two-foot-thick soil cap (including topsoil layer) over a geotextile. For Pond G, the subaqueous cap would consist of an 18-inch layer of soil overlain with six inches of sand or gravel.

Some excavation at the interface between the anabranches and the main channel would occur prior to capping as part of channel realignment activities. RD sampling would be used to confirm locations of potential hot spots with PCB concentrations greater than 50 mg/kg identified during the SRI sampling. Footprints of confirmed hot spots exceeding 50 mg/kg PCBs on Knife Blade Island and in proposed cap areas would be excavated and backfilled prior to installing caps.

Gun River would be modified as part of channel realignment. Due to the uncertainty regarding the extent of current PCB contamination in Gun River, a cost range representing excavation of half of the channel sediment and along the left bank to the full width of the channel and both banks was considered. A mid-point cost has been included in the cost estimate for this alternative.

The LTM program for this alternative includes visual inspections, fish sampling, and maintenance activities for caps, bank treatments, and/or vegetation restoration. This alternative would reach FRGs for smallmouth bass within 32 years after ROD issuance. The time to complete construction would be approximately 5 years. The estimated cost of this alternative is $43,800,000.

A-4: Capping, Bank RAL Excavation, Channel Realignment, Gun River Excavation, Targeted Excavation of Knife Blade Island, ICs and LTM

Estimated Capital Cost: $41,660,000 to $42,410,000
Estimated O&M Cost: $2,740,000 to $2,790,000
Estimated Present Worth Cost: $35,400,000 to 36,000,000
Estimated Total Cost: $44,400,000 to $45,200,000
Estimated Construction Timeframe: 5 years

Alternative A-4 is the same as A-3 with the addition of excavation of bank soil along the realigned channel path that exceeds a RAL of either 5 or 10 mg/kg total PCBs.

The components of Alternative A-4 are discussed in detail below. In summary, Alternative A-4 includes:

- Otsego City Dam removal
- Channel realignment (Option 3)
- Bank RAL Excavation
- RD sampling as approved by EPA
- Excavation of confirmed PCB hot spots in areas to be capped
- Capping of the northeast anabranches, Pond G, and floodplain soil exceeding the 20 mg/kg RAL for PCBs outside the realigned channel footprint
- Excavation of Gun River sediment and bank soil

- Targeted excavation of soil/sediment with PCB concentrations exceeding 50 mg/kg at Knife Blade Island
- ICs (as discussed above in the *Common Elements* section)
- LTM and maintenance (as discussed above in the *Common Elements* section)

Alternative A-4 includes approximately 33 acres of capping and 16,900 to 22,300 cy of excavation over a total remedial footprint spanning approximately 38 acres.

Bank soil along the realigned channel would be excavated to a RAL of either 5 or 10 mg/kg total PCBs in a 10-foot swath along the bank. This additional bank soil excavation would provide an additional buffer between the newly-realigned channel and floodplain soils as a measure of added protection – above that provided by the natural channel design – to prevent migration of PCBs from floodplain/bank soil to the river. While bank treatment alone would protect the bank and floodplain soils, excavation to the bank soil RAL in the 10-foot swath would allow additional time to respond to maintenance concerns before bank failure could potentially occur.

Bank soil RALs for PCBs of both 5 mg/kg and 10 mg/kg were analyzed in the FS for additional protection along the realigned channel. Both RALs have been estimated to be protective. The cost range for performing bank excavation to a RAL of 10 or 5 mg/kg was estimated to be $570,000 to $1,330,000, respectively, based on an estimated 4,000 cy to 9,400 cy of excavation (including contingency and management costs). The cost range for this alternative reflects the difference in cost between a bank RAL for PCBs of 10 mg/kg and 5 mg/kg.

This alternative would reach FRGs for smallmouth bass within 32 years after ROD issuance. The time to complete construction would be approximately 5 years. The estimated cost range of this alternative is $44,400,000 to $45,200,000.

***A-5: Capping, Bank RAL Excavation, Channel Realignment, Floodplain Soil Excavation, Gun River Excavation, Targeted Excavation of Knife Blade Island, ICs and LTM* (EPA'S SELECTED ALTERNATIVE)**

Estimated Capital Cost: $42,920,000 to $43,670,000
Estimated O&M Cost. $2,680,000 to $2,730,000
Estimated Present Worth Cost: $36,400,000 to $37,000,000
Estimated Total Cost: $45,600,000 to $46,400,000
Estimated Construction Timeframe: 5 years

Alternative A-5 is the same as A-4, except that the floodplain soil areas exceeding the RAL of 20 mg/kg for PCBs would be excavated instead of capped.

The components of Alternative A-5 are discussed in detail below and shown on Figure 4. In summary, Alternative A-5 includes:

- Otsego City Dam removal
- Channel realignment (Option 3)

- Bank RAL Excavation
- RD sampling as approved by EPA
- Excavation of confirmed PCB hot spots in areas to be capped
- Excavation of floodplain soil exceeding the 20 mg/kg RAL for PCBs outside the realigned channel footprint
- Capping of the northeast anabranches and Pond G
- Excavation of Gun River sediment and bank soil
- Targeted excavation of soil/sediment with PCB concentrations exceeding 50 mg/kg at Knife Blade Island
- ICs (as discussed above in the *Common Elements* section)
- LTM and maintenance (as discussed above in the *Common Elements* section)

Alternative A-5 includes approximately 28 acres of capping and 23,800 to 29,200 cy of excavation over a total remedial footprint spanning approximately 38 acres.

Remedial footprints in the Area 2 floodplain were identified based on reducing potential exposure to soil for ecological and human receptors to meet RAOs 3 and 5. The RAL evaluation in the FS was performed based on the 0- to 6-inch and 0- to 24-inch natural neighbor PCB concentrations to determine remedial action levels necessary to improve home range protectiveness. Details of the full evaluation can be found in Appendix C of the Area 2 FS.

The floodplain soil RAL evaluation consisted of identifying areas with natural neighbor interpolated concentrations in the 0- to 6-inch and 0- to 24-inch intervals including the anabranch sediment exceeding the selected RAL value. The concentrations in these areas were then replaced with a backfill value to represent conditions after excavation or capping. A backfill PCB concentration of 0.078 mg/kg was used to represent the measured average in off-site backfill as documented during implementation of the Area 1 TCRAs. Following backfill replacement, the moving window analysis was repeated for the four home range scenarios (2 acres for the 0- to 6-inch interval, and 1, 2, and 11 acres for the 0- to 24-inch interval), and the home-ranges-protected percentages for that RAL were calculated. A RAL of 20 mg/kg for PCBs was initially selected as this would also be protective of human recreational receptors (the PRG for recreational exposure is 23 mg/kg PCBs). At the RAL of 20 mg/kg, 99.5 to 100% of home ranges for the four receptor scenarios were protected by achieving the FRG of 11 mg/kg. Based on this result, it was not necessary to evaluate other RALs. The RAL soil footprint was then identified by combining the 0- to 6-inch and 0- to 24-inch natural neighbor areas exceeding 20 mg/kg PCBs.

This alternative would reach FRGs for smallmouth bass within 32 years after ROD issuance. The time to complete construction would be approximately 5 years. The estimated cost range of this alternative is $45,600,000 to $46,400,000.

A-6: Capping, Bank RAL Excavation, Channel Realignment, Anabranch Excavation, Gun River Excavation, Targeted Excavation of Knife Blade Island, ICs and LTM

Estimated Capital Cost: $64,400,000 to $65,150,000
Estimated O&M Cost: $2,500,000 to $2,550,000
Estimated Present Worth Cost: $53,900,000 to $54,500,000
Estimated Total Cost: $66,900,000 to $67,700,000
Estimated Construction Timeframe: 5 years

Alternative A-6 is the same as A-4, except that the anabranch areas would be excavated instead of capped.

The components of Alternative A-6 are discussed in detail below. In summary, Alternative A-6 includes:

- Otsego City Dam removal
- Channel realignment (Option 3)
- Bank RAL Excavation
- RD sampling as approved by EPA
- Excavation of confirmed PCB hot spots in areas to be capped
- Excavation of the northeast anabranches
- Capping of Pond G and floodplain soil exceeding the 20 mg/kg RAL for PCBs outside the realigned channel footprint
- Excavation of Gun River sediment and bank soil
- Targeted excavation of soil/sediment with PCB concentrations exceeding 50 mg/kg at Knife Blade Island
- ICs (as discussed above in the *Common Elements* section)
- LTM and maintenance (as discussed above in the *Common Elements* section)

Alternative A-6 includes approximately 8 acres of capping and 124,900 to 130,300 cy of excavation over a total remedial footprint spanning approximately 38 acres.

The remediation footprint selected in the region of the northeast anabranches comprises the anabranch subareas D0, D1, D2 and E. The area in and around the D1 Subarea has the largest number of samples in Area 2 with maximum PCB concentrations above 50 mg/kg widely distributed at various depths in the soil and sediment along the banks of the various anabranches. Data in Subareas D0, D2, and E is less dense, with both high and low concentrations distributed throughout. RD sampling would be required to refine and further define the final remedial footprint in these areas. Excavation would occur in these anabranch areas, followed by backfilling to restore grade and riparian habitat restoration.

This alternative would reach FRGs for smallmouth bass within 32 years after ROD issuance. The time to complete construction would be approximately 5 years. The estimated cost range of this alternative is $66,900,000 to $67,700,000.

A-7: RAL-Based Excavation in Remedial Areas, Channel Realignment, Gun River Excavation, Targeted Excavation of Knife Blade Island, ICs and LTM

Estimated Capital Cost: $72,100,000 to $72,850,000
Estimated O&M Cost: $2,400,000 to $2,450,000
Estimated Present Worth Cost: $60,100,000 to 60,700,000
Estimated Total Cost: $74,500,000 to $75,300,000
Estimated Construction Timeframe: 5 years

The components of Alternative A-7 are discussed in detail below. In summary, Alternative A-7 includes:

- Otsego City Dam removal
- Channel realignment (Option 3)
- Bank RAL Excavation
- RD sampling as approved by EPA
- Excavation of the northeast anabranches, Pond G, floodplain soil exceeding the 20 mg/kg RAL for PCBs outside the realigned channel footprint, and soil with PCB concentrations exceeding 2.5 mg/kg on one of the two private parcels in the northeast corner of Area 2
- Targeted excavation of soil/sediment with PCB concentrations exceeding 50 mg/kg at Knife Blade Island
- ICs (as discussed above in the *Common Elements* section)
- LTM and maintenance (as discussed above in the *Common Elements* section)

Alternative A-7 includes 162,100 to 167,500 cy of excavation over a total remedial footprint spanning approximately 42 acres.

This alternative would include excavation of the northeast anabranches, Pond G, floodplain soil exceeding the 20 mg/kg RAL outside the realigned channel footprint, and soil exceeding 2.5 mg/kg on one of the two private parcels in the northeast corner of Area 2.[11] After excavation, backfilling would occur to restore grade and riparian habitat restoration would be performed.

This alternative would reach FRGs for smallmouth bass within 32 years after ROD issuance. The time to complete construction would be approximately 5 years. The estimated total cost range of this alternative is $74,500,000 to $75,300,000.

A-8: Area-Wide Aggressive Excavation, ECs, ICs, and LTM

Estimated Capital Cost: $322,200,000
Estimated O&M Cost: $2,800,000
Estimated Present Worth Cost: $227,000,000

[11] The owner of the second private parcel is amenable to implementing a restrictive covenant prohibiting residential use of the impacted portion of the property, which is used for recreational activities

Estimated Total Cost: $325,000,000
Estimated Construction Timeframe: 10 years

The components of Alternative A-8 are discussed in detail below. In summary, Alternative A-8 includes:

- Otsego City Dam removal
- Area-wide excavation throughout Area 2 of sediment and floodplain soil with PCB concentrations exceeding 0.33 mg/kg, backfilling to restore the floodplain with grading for drainage to the post-dam main channel, and restoration of floodplain areas as riparian habitat
- ECs including erosion controls for rebuilt banks along the main channel
- RD sampling as approved by EPA
- ICs (as discussed above in the *Common Elements* section)
- Access agreements including rental and/or purchase of property
- LTM and maintenance (as discussed above in the *Common Elements* section)

Alternative A-8 includes 1,260,000 cy of excavation over a total remedial footprint spanning approximately 250 acres.

Aggressive excavation would include an area-wide removal of sediment and floodplain soil exceeding 0.33 mg/kg. Although the dam would be removed, there would be no channel realignment. The goal of this alternative would be to achieve the sediment PRG throughout the floodplain and allow the river to migrate and meander without LTM or maintenance of bank treatments, soil, or sediment.

Excavated floodplain areas would be backfilled to pre-excavation grade, banks would be rebuilt (using ECs), and the area would be vegetated to restore the destroyed riparian habitat. The LTM program for this alternative would include visual inspections, fish sampling, and verification of ICs.

The extended construction timeframe and aggressive excavation work would mean invasive floodplain-wide impacts to habitat. Habitat and wildlife recovery times would be lengthy. The potential of invasive species to propagate may make a full recovery unlikely.

This alternative would reach FRGs for smallmouth bass within 40 years after ROD issuance. The time to complete construction would be approximately 10 years. The estimated cost of this alternative is $325,000,000.

2.10 Comparative Analysis of Alternatives

Section 121(b)(1) of CERCLA presents several factors that EPA is required to consider in its assessment of alternatives. Building upon these specific statutory mandates, the NCP articulates nine evaluation criteria to be used in assessing the individual remedial alternatives. The purpose of this evaluation is to promote consistent identification of the relative advantages and disadvantages of each alternative, thereby guiding selection of

remedies offering the most effective and efficient means of achieving site cleanup goals. While all nine criteria are important, they are weighed differently in the decision-making process depending on whether they evaluate protection of human health and the environment or compliance with federal and state ARARs (threshold criteria), consider technical or economic merits (primary balancing criteria), or involve the evaluation of non-EPA reviewers that may influence an EPA decision (modifying criteria).

Each of the nine evaluation criteria are described and discussed below with respect to the alternatives under consideration for this RA. In addition, Table 4 provides a qualitative summary of how the cleanup alternatives compare against the nine criteria. The first two criteria are "threshold criteria" that must be met by the selected remedy. The next five criteria deal with the technical and economic merits of the alternatives under consideration and are known as "primary balancing criteria." The last two criteria consider the views of non-EPA reviewers that may influence an EPA decision, and are known as "modifying criteria." More details regarding the evaluation and comparison of the cleanup alternatives against the nine criteria can be found in the Area 2 FS Report.

Overall Protection of Human Health and the Environment

This criterion addresses whether a remedy provides adequate protection of human health and the environment and describes how risks posed by the site are eliminated, reduced or controlled through treatment, engineering, or institutional controls.

Alternatives A-1 and A-2 are not protective of human health and the environment. These alternatives would not improve, reduce, or control risk to human health or ecological receptors beyond that initiated by the remedial work completed in the river to date. Although FRGs might be met in 35 years, no monitoring would occur with Alternative A-1, so any recovery rates and the achievement of protective levels would not be documented. Alternatives A-1 and A-2 would not address RAO 4, as they would not reduce the transport of PCBs from Area 2 to downstream areas of the Kalamazoo River and Lake Michigan. Sediment in the anabranch areas containing high concentrations of PCBs would continue to erode and migrate downstream with floods above the normal surface water elevation. Fish would then continue to be exposed to PCBs in or from the anabranch sediment. Dam removal may also increase the possibility of bed and bank erosion, especially in the short term.

Alternatives A-3 through A-7, which include removal of the Otsego City dam and realignment of the river channel, are protective of human health and the environment. These alternatives would immediately disconnect the anabranched sections from the main channel, eliminating exposure of fish to anabranch sediment and downstream migration of PCBs in anabranch sediment. Alternatives A-3 through A-5 would also include capping the former anabranches, which would raise their elevation further with respect to the main channel, cutting flow off at even higher water elevations. In addition to precluding contact with receptors, the capped elevation would reduce flood frequency, inundation time, and depth, as well as floodplain soil erosion. Alternatives A-6 and A-7 would include excavating the former anabranches to remove any possibility of PCBs

from these areas entering the river system. Alternatives A-3 through A-7 all would achieve the FRGs in 32 years.

Alternative A-4 would provide additional protection compared to Alternative A-3 with the addition of bank excavation to a 5 or 10 mg/kg RAL for PCBs, as an additional buffer to the bank treatments installed along the realigned channel.

Alternative A-5 would provide protection comparable to Alternative A-4, with floodplain soils exceeding the 20 mg/kg RAL for PCBs excavated and disposed off site instead of capped.

Alternative A-6 would provide protection comparable to Alternatives A-4 and A-5, with the anabranches excavated and disposed off site instead of capped.

Alternative A-7 would provide protection comparable to Alternatives A-3 through A-6, with all remedial areas exceeding RALs excavated and disposed off site.

Alternative A-8 would be protective, as aggressive excavation would be performed throughout Area 2 to remove sediment and soil with PCB concentrations exceeding 0.33 mg/kg. This alternative would take the longest to achieve FRGs (40 years), with achieving protection hampered by the long construction period (10 years). The extensive construction activities could negatively impact wildlife habitat and make full recovery unlikely.

Compliance with Applicable or Relevant and Appropriate Requirements

This criterion addresses whether a remedy will meet the applicable or relevant and appropriate federal and state requirements, known as ARARs.

Alternatives A-1 and A-2 might eventually meet most ARARs through natural recovery. Since no monitoring would be conducted under Alternative A-1, compliance with ARARs under that alternative would not be documented.

Alternatives A-3 through A-7 would meet ARARs but would require a risk-based disposal equivalency demonstration for compliance with TSCA ARARs. Appropriate control measures would be implemented during construction such that the substantive requirements of the action- and location-specific ARARs would be achieved.

Alternative A-8 would comply with ARARs, but it would take longer to meet them (compared to Alternatives A-3 through A-7) due to the longer construction period.

Long-term Effectiveness and Permanence

This criterion addresses expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup levels have been met.

Alternative A-1 would not provide for tracking or confirmation of future achievement of RAOs, so long-term effectiveness would not be demonstrated or documented.

Alternative A-2 might eventually meet FRGs but would not be effective, as the downstream migration of PCBs would continue through erosion of PCB materials from the river banks and anabranched area after dam removal.

Alternatives A-3 through A-7 would be effective in the long term and permanent, and all would have a relatively comparable degree of long-term effectiveness and permanence. All of these alternatives include removing the Otsego City dam and realigning the channel. Alternatives A-3 through A-5 include capping the former anabranches, which would prevent contact by receptors, prevent erosion of floodplain soil, sediment, and bank soil, and reduce flooding frequency, inundation depth and time in the former anabranches for the long term. Alternatives A-6 and A-7 include excavating the former anabranches instead of capping them, which would remove this PCB contamination from the river system. Alternative A-7 has less long-term maintenance than Alternatives A-3 through A-6 due to the excavation of all the remedial areas as opposed to capping some of them. For Alternatives A-3 through A-7, channel realignment and bank treatments would prevent erosion or exposure to remaining PCB deposits in the banks and floodplain soil for the long term. Alternatives A-4 through A-7 would provide somewhat greater long-term effectiveness than Alternative A-3 due to the 10-foot bank excavation buffer associated with these alternatives, which would provide additional protection from PCB release into the river should bank erosion occur. Alternatives A-3 through A-7 would achieve fish tissue FRGs for smallmouth bass within 32 years. LTM and ICs would remain in place until fish tissue FRGs are achieved.

Alternative A-8 would have a high degree of long-term effectiveness and permanence, as all sediment and floodplain soil exceeding 0.33 mg/kg total PCBs would be removed. The time to achieve the fish tissue FRGs for smallmouth bass is longer than the other alternatives, estimated at 40 years, due to the long construction timeframe. However, short-term and long-term impacts to habitat would be substantial and may outweigh the benefits of PCB removal.

Reduction of Toxicity, Mobility, or Volume through Treatment

This criterion addresses the statutory preference for selecting remedial actions that employ treatment technologies that permanently and significantly reduce toxicity, mobility, or volume of the hazardous substances as their principal element. This preference is satisfied when treatment is used to reduce the principal threats at the site through destruction of toxic contaminants, reduction of the total mass of toxic contaminants, irreversible reduction in contaminant mobility, or reduction of total volume of contaminated media.

None of the alternatives employ treatment technologies to reduce the toxicity, mobility or volume of the contaminated materials. However, Alternatives A-3 through A-8 would

remove significant volumes of PCB-contaminated sediment and soil from Area 2, thereby reducing the ability of the PCB-contaminated sediment to be mobilized into the river in the future. Due to the nature of the contamination, the PCB-contaminated sediment and soil does not lend itself to cost-effective treatment.

Short-term Effectiveness

This criterion addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers, the community and the environment during construction of the remedy until cleanup levels are achieved. This criterion also considers the effectiveness of mitigative measures and time until protection is achieved through attainment of the RAOs.

Alternatives A-1 and A-2 would have no adverse short-term impacts, as no active construction work is associated with these alternatives. However, the time to achieve RAOs is also considered as part of the short-term effectiveness criterion, and neither of these alternatives would achieve all of the RAOs. For this reason, Alternatives A-1 and A-2 are not considered effective in the short term.

Alternatives A-3 through A-5 would have the same relative degree of short-term effectiveness. Dam removal and channel realignment would immediately disconnect the anabranches from the main river channel, eliminating fish exposure to anabranch sediment. These alternatives would prevent contact to receptors immediately upon completion. Erosion prevention, as well as reductions to flooding frequency, and inundation depth and time in the anabranches would also be immediate. Temporary, reversible, and limited impact would occur to habitat areas where the cap is applied and in support areas such as staging areas and construction roads. These would be addressed by revegetating the disturbed areas to initiate habitat recovery. Risks to workers during construction activities would be controlled through safe work practices and training. The implementation period for Alternatives A-3 through A-5 would be approximately 5 years.

Alternative A-6 includes dam removal and channel realignment which would provide similar short-term benefits as mentioned for Alternatives A-3 through A-5. However, Alternative A-6 is less protective in the short term as it includes excavation and restoration of the anabranches which would result in a lower ground surface elevation than capping. The lower ground surface would immediately increase frequency of flooding, inundation depth, and the potential for soil erosion. The large footprint for excavation in this alternative yields a more extensive short-term impact to habitat and wildlife than Alternatives A-3 through A-5. The implementation period for Alternative A-6 is the same as for Alternatives A-3 through A-5, approximately 5 years.

Alternative A-7 would have a somewhat greater degree of potential short-term adverse impacts than Alternatives A-3 through A-6 due to the larger volume of material to excavate and transport off site. The implementation period for Alternative A-7 would be the same as Alternatives A-3 through A-6, approximately 5 years.

Alternative A-8 would have the greatest degree of short-term impacts because of the long construction period, estimated at 10 years, and the extensive excavation work throughout Area 2. Compared to the other alternatives, Alternative A-8 requires extensive and invasive floodplain-wide excavation and habitat impact. Potential PCB migration during excavation work would be increased under Alternative A-8. Risks to workers during construction activities would be controlled through safe work practices and training.

Implementability

This criterion addresses the technical and administrative feasibility of a remedy from design through construction, including the availability of services and materials needed to implement a particular option and coordination with other governmental entities.

Alternatives A-1 and A-2 could be easily implemented. No active measures are associated with Alternative A-1, and Alternative A-2 would include only LTM and inspections.

Alternatives A-3 through A-7 are all readily implementable.

Alternative A-3, which includes the construction of access roads and staging areas, capping and excavation work, channel realignment, and dam removal, is readily implementable using standard construction techniques. Negotiations with property owners for access agreements for remedial activity and channel realignment would be required spanning Area 2. Although the on-site remedial action work would not be subject to the permit approval process, the remedial action would need to meet the substantive requirements of otherwise applicable permits for dam removal, channel realignment, and capping in the floodplain. Floodplain elevation changes would need to be evaluated against the post-dam removal and realigned channel water elevations and flooding potential. Work would be performed using conventional, readily available equipment and practices. Transport of dewatered material for disposal to approved landfills would be required. Cap placement in hard-to-access and swampy areas would be a concern. However, cap placement would be much easier using application methods such as broadcasting via an air or water slurry. These methods would reduce handling difficulties, time, and costs as well as the impact to habitat.

Alternative A-4 would be somewhat more difficult to implement than Alternative A-3, as the additional river bank buffer excavation would increase the volume of material requiring dewatering, transport and disposal.

Alternative A-5 would be slightly more difficult to implement than Alternatives A-3 and A-4, as in addition to the additional river bank buffer excavation, floodplain soils exceeding the 20 mg/kg PCB RAL would be excavated. This would increase the volume of material requiring dewatering, transport and disposal.

Alternative A-6 would be somewhat more difficult to implement than Alternatives A-3 through A-5 since this alternative requires excavation of the northeast anabranches. This would increase the volume of material requiring dewatering, transport and disposal.

Alternative A-7 would be somewhat more difficult to implement than Alternatives A-3 through A-6 since this alternative requires excavation of all remedial areas. This would increase the volume of material requiring dewatering, transport and disposal.

Alternative A-8 would be the most difficult to implement. This alternative requires an extensive network of access roads and staging areas as well as a significant volume of material to be dewatered, transported, and disposed. A significant volume of borrow or imported material would be required for backfill. Negotiations with private parcel owners would be more intensive due to the extent and invasive nature of the remediation. It is possible that rental or purchase of properties may be required to gain access and implement this alternative. Floodplain changes would need to be evaluated against the post-dam removal water elevations and flooding potential. Work would be performed using conventional, readily available equipment and practices, but the implementation time would be lengthy. Additionally, parcel owners may be unwilling to allow substantial destruction of their property.

Cost

This criterion considers the estimated capital costs, annual O&M costs, and the net present value of the capital and O&M costs, including long-term monitoring.

The estimated total costs for each alternative are FS-level cost estimates that have an expected accuracy of +50% to -30%. Costs for the alternatives range from zero to $325 million, as listed below. A 7% discount factor was used to develop the cost estimates.

Alternative A-1	$0
Alternative A-2	$12,500,000
Alternative A-3	$43,800,000
Alternative A-4	$44,400,000 to $45,200,000
Alternative A-5	$45,600,000 to $46,400,000
Alternative A-6	$66,900,000 to $67,700,000
Alternative A-7	$74,500,000 to $75,300,000
Alternative A-8	$325,000,000

Alternative A-8 is the highest cost alternative because 1,260,000 cy of sediment and soil would be removed throughout Area 2 and transported for off-site disposal. The estimated costs for Alternatives A-3 through A-7 are an order of magnitude lower than the cost for Alternative A-8. Alternatives A-3 through A-5 are similar in cost. The costs of Alternatives A-6 and A-7 are significantly higher than Alternatives A-3 through A-5 due to the increase volume of excavated materials associated with those alternatives. Other than the "no action" alternative, Alternative A-2 is the least costly alternative because the

only remedy components that have associated costs are dam removal, LTM and inspections.

As noted earlier, Alternatives A-3 through A-7 all include removal of the Otsego City Dam and channel realignment. The estimated cost of channel realignment (Option 3) is $26,000,000 and the estimated cost of dam removal is $3,840,000, making the total combined cost of these common components of Alternatives A-3 through A-7 an estimated $29,840,000.

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

State Agency Acceptance

This criterion considers whether the state support agency supports the preferred alternative presented in the Proposed Plan and concurs with the selected remedy.

The State has indicated that it intends to concur with the Selected Remedy for Area 2 of OU5. MDEQ's concurrence letter will be included in the AR upon receipt.

Community Acceptance

This criterion addresses the public's general response to the remedial alternatives and the preferred alternative presented in the Proposed Plan.

During the public meeting and in comments submitted during the public comment period, the community expressed acceptance of Alternative A-5. A full response to public comments is included in this ROD in Part 3 - Responsiveness Summary.

2.11 Principal Threat Wastes

The principal threat concept is applied to the characterization of "source material" at a Superfund site. Source material is material that includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for migration of contaminants to groundwater, surface water or air, or acts as a source for direct exposure. EPA has defined principal threat wastes as those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur.

EPA has not identified any principal threat wastes at OU5 of the Site. The PCB-contaminated soil and sediment throughout OU5 are re-worked and re-deposited materials that were mixed with water, soil, and sediment throughout Area 2. The concentrations of PCBs at OU5 are considered to be low-level threat wastes.

2.12 Selected Remedy

Description of the Selected Remedy

The selected sediment and floodplain soil remedy for Area 2 of OU5 is **Alternative A-5: Capping, Bank RAL Excavation, Channel Realignment, Floodplain Soil Excavation, Gun River Excavation, Targeted Excavation of Knife Blade Island, ICs and LTM.**

The Selected Remedy consists of the following main components and is illustrated on Figure 4:

- Otsego City Dam removal: Removal of the dam will result in the northeast anabranches not conveying water under normal flow conditions (1,000 cfs). As such, fish will no longer have routine access to these areas with higher PCB concentrations. Dam removal is also desired by the City of Otsego and the State of Michigan for several reasons, including reducing long-term dam maintenance and restoring natural free-flowing conditions to the river.

- Channel realignment (Option 3): Realigning the river in Area 2 to create a stable single channel with dam removal will prevent the river from regularly forming unstable anabranches, and will protect the floodplain from future erosion due to channel migration. Removing the dam and constructing a single stable channel are believed to be necessary to meet the RAOs for Area 2. The goal is to create a channel that conveys the bankfull flow of a 1.2-year return period (approximately 2,500 to 2,700 cfs), maintains adequate shear stress to convey the bedload of the river, and remains in a fixed location over time. This stable channel would therefore maintain the applicability of the soil FRG in the dam-out floodplain across Area 2. Channel Option 3 balances the effort and cost to achieve a stable single channel for remedial alternative development by providing a larger buffer area for Knife Blade Island and by following the existing channel bed in the downstream reach. The design for channel realignment will likely be modified from that shown as Option 3 (in Figure 7) based on additional data collection and evaluation during the RD.

- Bank RAL excavation: Bank soil along the realigned channel will be excavated to a RAL of 5 mg/kg total PCBs in a 10-foot swath along the bank. This additional bank soil excavation will provide an additional buffer between the newly realigned channel and floodplain soils as a measure of added protection above that provided by the natural channel design to prevent migration of PCBs from floodplain bank soil to the river. While bank treatment alone would protect the bank and floodplain soils, excavation to the bank soil RAL in the 10-foot swath allows additional time to respond to maintenance concerns before bank failure could potentially occur.

  Bank soil RALs for PCBs of both 5 mg/kg and 10 mg/kg were analyzed for additional protection along the realigned channel. Both RALs have been estimated to be protective. The cost difference between implementing the different RALs is small ($570,000 vs $1,330,000) relative to the total cost of the remedy. Given the

uncertainty of the natural channel design (particularly in upstream reaches of Area 2), as well as the uncertainty in the RAL calculations, EPA believes the RAL of 5 mg/kg is most appropriate for long-term effectiveness and permanence of the remedy and ensuring that a clean buffer exists between the river and the floodplain.

- RD sampling as approved by EPA and targeted excavation: Sampling will include the identification of the remedial area footprints, as well as targeting the SRI sample locations that exceeded 50 mg/kg PCBs to confirm the presence and extent of such hot spots for targeted removal.

- Excavation of confirmed PCB hot spots in areas to be capped: The footprints of confirmed hot spots exceeding 50 mg/kg on Knife Blade Island and in proposed cap areas will be excavated and backfilled prior to installing caps.

- Excavation of floodplain soil exceeding the 20 mg/kg RAL for PCBs outside the realigned channel footprint: Remedial footprints in the Area 2 floodplain will be identified based on reducing potential exposure to soil for ecological and human receptors to meet RAOs 3 and 5. A RAL of 20 mg/kg for PCBs will be protective of human recreational receptors (the FRG for recreational exposure is 23 mg/kg), and will protect an estimated 99.5 to 100% of home ranges for the four receptor scenarios at the FRG of 11 mg/kg. The 20 mg/kg RAL soil footprint will combine the 0- to 6-inch and 0- to 24-inch natural neighbor areas exceeding 20 mg/kg total PCBs.

- Capping of the northeast anabranches and Pond G: The northeast anabranches that are cut off from the main channel following Otsego City Dam removal and channel realignment will be capped to prevent ecological exposure. Cap soil is assumed to mostly consist of clean cut material recovered from the channel realignment. Prior to placement of the cap, a non-woven geotextile layer will be placed over the existing ground surface to serve as a demarcation layer. To support habitat restoration, a topsoil layer will be created by entraining organic material (e.g., chipped vegetation, peat, and other organic detritus) recovered during clearing and channel realignment activities into the top six inches of fill. Caps in the floodplain and anabranches will consist of a two-foot-thick soil cap (including topsoil layer) over a geotextile. For Pond G, the subaqueous cap will consist of an 18-inch layer of soil overlain with six inches of sand or gravel.

- Excavation of Gun River sediment and bank soil: Gun River will be modified as part of channel realignment. Due to the uncertainty regarding the extent of current PCB contamination in Gun River, a cost range representing excavation of half of the channel sediment and along the left bank to the full width of the channel and both banks was considered. A mid-point cost was included in the cost estimate.

- Targeted excavation of soil/sediment with PCB concentrations exceeding 50 mg/kg at Knife Blade Island: Additional RD sampling will be conducted to confirm the hot spot locations and identify any additional hot spot areas to be excavated.

- ICs: The ICs for Area 2 include continuation of fish consumption advisories and warning signage until fish tissue goals are met, and land use restrictions to prevent future residential use and limit human exposure at all properties where contamination is left in place at levels unsuitable for unrestricted residential use (i.e., at concentrations greater than 2.5 mg/kg). Site-specific fish consumption advisories established and publicized by the State of Michigan will continue to manage risks posed to anglers and their families from consumption of PCB-containing fish. These advisories are already in place for Area 2, and the advisory for each fish type will remain in effect until fish tissue PCB concentrations achieve RAOs for the fish specified. The advisories will be reviewed and verified annually as a component of the site ICs.

- Long-term monitoring: LTM in Area 2 will include visual river bank and channel inspections, and maintenance activities for caps, bank treatments, and/or vegetation restoration, as well as monitoring surface water, fish tissue and sediment until fish tissue levels attain FRGs, which is estimated at 32 years after ROD issuance.

The estimated time to complete construction is approximately 5 years, at an estimated cost of $46,400,000. Alternative A-5 includes approximately 28 acres of capping and 29,200 cy of excavation over a total remedial footprint spanning approximately 38 acres.

Summary of the Rationale for the Selected Remedy

EPA believes that Alternative A-5 provides the best balance of the evaluation criteria among all the alternatives. Alternative A-5 is protective of human health and the environment, meets all federal and state ARARs, achieves the RAOs for this remedial action, is straightforward in its implementation, and is effective in the long term and permanent.

Alternative A-5 provides long-term and permanent protection against exposure to contaminated materials by removing the Otsego City Dam and realigning the channel consistent with Option 3 described above. This will reduce fish access to the northeast anabranches and reduce erosion of PCB soil downstream. The construction of the 10-foot buffer along the realigned channel will provide an additional measure of protection above that provided by the natural channel design to prevent migration of PCBs from floodplain bank soil to the river. In addition, Alternative A-5 includes excavating approximately 29,200 cy of PCB-contaminated sediment and soil and capping approximately 28 acres, reducing potential exposure to soil for ecological and human receptors to meet RAOs 3 and 5. Alternative A-5 includes capping of the northeast anabranches and Pond G, and excavating floodplain soil exceeding the 20 mg/kg PCB RAL, Gun River and hot spot areas exceeding 50 mg/kg. These remedial activities along with natural recovery processes, in conjunction with ICs and LTM, will ensure the FRGs and RAOs are achieved over time.

Alternative A-5 is effective in the short term, as it prevents contact to receptors immediately upon completion. Erosion prevention, as well as reductions to flooding

frequency and inundation depth and time in the anabranches, will also be immediate. Alternative A-5 is administratively and technically implementable and can be completed within 5 years, while posing easily manageable risks to workers and the local community during implementation.

Alternative A-5 is cost-effective because it has less extensive impact on habitat and is significantly less costly compared to Alternatives A-6, A-7 and A-8. Alternative A-5 will achieve FRGs for smallmouth bass within 32 years, which is the same timeframe as Alternatives A-3, A-4, A-6 and A-7, but 8 years sooner than Alternative A-8. Alternative A-5 is slightly more expensive but comparable in cost to Alternatives A-3 and A-4, but incorporates an additional 10-foot buffer along the realigned channel for added protection and removes additional PCB contaminated floodplain soil.

Alternative A-5 does not reduce the toxicity, mobility or volume of the contamination through treatment, as the relatively low-level PCB contamination that is present in Area 2 of OU5 does not lend itself to any cost-effective treatment.

Expected Outcomes of the Selected Remedy

The Selected Remedy will reduce the risks to human health and the environment by reducing PCB concentrations in smallmouth bass fish tissue to levels within EPA's acceptable risk range, and reducing PCB exposure to ecological receptors. This will be accomplished by removing the Otsego City Dam and realigning the channel, capping the northeast anabranches and Pond G, and excavating floodplain soil exceeding the 20 mg/kg PCB RAL, Gun River and hot spot areas exceeding 50 mg/kg. These remedial activities, along with natural recovery processes, in conjunction with ICs and LTM, will ensure the FRGs and RAOs are achieved over time. The time to reach fish tissue FRGs is approximately 32 years. The ecological risk FRG will be met in 99.5 to 100% of home ranges immediately upon completion of construction. The land use within Area 2 of OU5 is expected to remain the same. As noted earlier, groundwater is not a media of concern and is not addressed by this ROD.

Cost of the Selected Remedy

The estimated cost of implementing the selected remedy is $46,400,000. The information in the cost estimates 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 and remedy implementation. This is an order-of-magnitude engineering cost estimate that is expected to be within +50 to -30 percent of the actual project cost.

2.13 Statutory Determinations

Under CERCLA Section 121 and the NCP, the lead agency must select remedies that are protective of human health and the environment, comply with ARARs (unless a statutory waiver is justified), are cost-effective, and utilize permanent solutions and alternative

treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as a principal element and a bias against off-site disposal of untreated wastes. The following sections discuss how the Selected Remedy meets these statutory requirements.

Protection of Human Health and the Environment

The Selected Remedy provides overall protection of human health and the environment from impacted soils and sediments. This remedy reduces overall PCB exposure risk to humans and ecological receptors and supports the reduction in PCB concentrations in fish tissue over time.

Alternative A-5, which includes removal of the Otsego City dam and realignment of the river channel, will immediately disconnect the anabranched sections from the main channel, eliminating exposure of fish to anabranch sediment and downstream migration of PCBs in anabranch sediment. The selected remedy also includes capping the former anabranches and Pond G, and excavating floodplain soil exceeding the 20 mg/kg PCB RAL, Gun River and hot spot areas exceeding 50 mg/kg. This will raise the anabranch elevation further with respect to the main channel, cutting flow off at even higher water elevations. In addition to precluding contact with receptors, the capped elevation would reduce flood frequency, inundation time, and depth, as well as floodplain soil erosion. The selected remedy will achieve the fish tissue FRGs in 32 years, and be protective of 99.5 to 100% of ecological receptor home ranges immediately following construction.

Compliance with Applicable or Relevant and Appropriate Requirements

The Selected Remedy is expected to comply with the federal and state ARARs that are specific to this RA. The ARARS for this action are discussed above in Section 2.10 and can be found in Appendix 1.

Cost-Effectiveness

In EPA's judgment, the selected remedy is cost-effective and represent 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 Section 300.430(f)(I)(ii)(D)). The Selected Remedy is cost-effective because it has less extensive impact on habitat and is significantly less costly compared to Alternatives A-6, A-7 and A-8. Alternative A-5 will achieve FRGs for smallmouth bass within 32 years, which is the same timeframe as Alternatives A-3, A-4, A-6 and A-7, but 8 years sooner than Alternative A-8. Alternative A-5 is slightly more expensive but comparable in cost to Alternatives A-3 and A-4, but incorporates an additional 10-foot buffer along the realigned channel for added protection and removes additional PCB contaminated floodplain soil.

Preference for Treatment as a Principal Element

The Selected Remedy does not reduce the toxicity, mobility, or volume of the contamination through treatment because the relatively low-level PCB contamination is not considered by EPA to be a principal threat waste, and the contamination does not lend itself to any cost-effective treatment.

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

Alternative A-5 provides long-term and permanent protection against exposure to contaminated materials by removing the Otsego City Dam and realigning the channel consistent with Option 3 described above. This will reduce fish access to the northeast anabranches and reduce erosion of PCB soil downstream. The construction of the 10-foot buffer along the realigned channel will provide an additional measure of protection above that provided by the natural channel design to prevent migration of PCBs from floodplain bank soil to the river. In addition, Alternative A-5 includes excavating approximately 29,200 cy of PCB-contaminated sediment and soil and capping approximately 28 acres, reducing potential exposure to soil for ecological and human receptors to meet RAOs 3 and 5. Alternative A-5 includes capping of the northeast anabranches and Pond G, and excavating floodplain soil exceeding the 20 mg/kg PCB RAL, Gun River and hot spot areas exceeding 50 mg/kg. These remedial activities along with natural recovery processes, in conjunction with ICs and LTM, will ensure the FRGs and RAOs are achieved over time.

Alternative A-5 is effective in the short term, as it prevents contact to receptors immediately upon completion. Erosion prevention, as well as reductions to flooding frequency and inundation depth and time in the anabranches, will also be immediate. Alternative A-5 is administratively and technically implementable and can be completed within 5 years, while posing easily manageable risks to workers and the local community during implementation.

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 and bias against off-site treatment and disposal and considering State and community acceptance.

Five-Year Review Requirements

Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for UU/UE, statutory review of the remedy protectiveness will be conducted every five years until the PCB concentration in fish

tissue meets the remediation goals set forth in this ROD. Two five-year reviews have already been conducted at the Site, and Area 2 of OU5 will be included in future five-year reviews.

2.14 Documentation of Significant Changes

The Proposed Plan for Area 2 of OU5 was issued for public comment on June 30, 2017. The Proposed Plan identified Alternative A-5 as the Preferred Alternative. The Proposed Plan public comment period ran from July 1, 2017 through August 30, 2017. CERCLA Section 117(b) and NCP Section 300.430(f)(5)(iii) require an explanation of any significant changes from the remedy presented in the Proposed Plan that was published for public comment. Based upon its review of the written and oral comments submitted during the public comment period, EPA has determined that no significant changes to the remedy, as originally identified in the Proposed Plan, are necessary or appropriate.

Part 3 - Responsiveness Summary

In accordance with CERCLA Section 117, 42 U.S.C. Section 9617, EPA released the Proposed Plan and AR on June 30, 2017, and the public comment period ran through August 30, 2017, to allow interested parties to comment on the Proposed Plan. EPA held a public meeting regarding the Proposed Plan on July 25, 2017, at the Otsego Library, Otsego, Michigan. Approximately 70 people attended the meeting. Representatives from EPA, MDEQ, and MDNR were present at the public meeting. A written transcript from the public meeting is available in the AR.

The AR index is attached as Appendix 2 to this ROD. EPA, in consultation with MDEQ, carefully considered all information found in the AR prior to selecting the remedy documented in this ROD. Complete copies of the Proposed Plan, AR, and other pertinent documents are available at:

The Kalamazoo Public Library
315 South Rose
Kalamazoo, MI 49007

EPA Region 5 Superfund Division Records Center
77 West Jackson Boulevard
Chicago, IL 60604

EPA is not required to reprint the comments of each commenter verbatim and may paraphrase where appropriate. In this responsiveness summary, EPA has included large segments of the original comments. However, persons wishing to see the full text of the comments should refer to the commenters' submittals to EPA, which are included in the AR. The comments and EPA's responses are summarized below.

3.1 Comments Received During Public Comment Period and EPA's Responses:

1. Comment from Char Troost:

I want the Kalamazoo River cleaned up, but we have spent thousands/millions of dollars doing this. At what point will it be done? You will always find something else to do there. I say enough is enough. It doesn't have to be drinkable.

Response:

A release of hazardous substances to the environment has occurred and continues to occur at Area 2 of OU 5 of the Site, due to the disposal of contaminated waste water into and along the Kalamazoo River, erosion of contaminated riverbank and floodplain soils, and migration of contaminated instream sediments. This contamination poses a risk to human health and the environment and requires addressing.

EPA is working with the PRPs to clean up the Allied Paper, Inc./Portage Creek/ Kalamazoo River Superfund Site in an expeditious fashion. Work remains to be completed at Allied Landfill and throughout the 77 miles of the Kalamazoo River from Morrow Dam to Lake Michigan. It is difficult to estimate when the work will be completed. Once all of the remedies for the seven areas of the Kalamazoo

River have been completed the work can be considered finished. However, long-term monitoring will continue until fish tissue levels meet cleanup goals.

2. Comment from R.J. Peterson:

The cleanup of the Kalamazoo River Superfund Site is long overdue. Compared to other Areas of Concern and Superfund sites around the Great Lakes Region, the Kalamazoo River Site seems to be one of the last to get started. Based on the proposed cleanup alternatives the following are my concerns:

(1) The realignment of the Kalamazoo River channel, removal of the Otsego City Dam, lowering of the water level of the river, and exposing raw shoreline will have an increased negative effect downstream. The cause and effect of channelizing any parts of the river upstream will result in the transport of sediment arising to a negative outcome on Kalamazoo Lake and the communities of Saugatuck and Douglas. This increased flow will intensify erosion and the transport of sediment traveling downstream to Kalamazoo Lake. It will not matter if the sediment is clean or contaminated, the increase of any sediment fallout deposited in Kalamazoo Lake will greatly have negative effects on the communities' economy. For over 25 years the communities of Saugatuck/Douglas have financed the extra cost associated with removing and disposing contaminated dredged material. The existing dredged material disposal site (financed by the lower river communities) can no longer be used. It is understood this cleanup effort will have short-term effects in Area 2, however the cleanup efforts will have long-term detrimental effects on downstream Kalamazoo Lake.

Response:

The removal of the Otsego City Dam and realignment of the Kalamazoo River will not result in an increased volume of sediment being transported downstream near Kalamazoo Lake. Area 2 is approximately 50 miles upstream of Lake Kalamazoo, and Lake Kalamazoo is well outside the hydraulic influence of the dam removal. The realignment of the river channel will create a wider and more stable channel with constructed riffle features to slow flow velocity. This will result in less erosion in the main channel and prevent the downstream migration of contaminated sediment from the anabranch areas being transported downstream.

Comment, continued

(2) The realignment of the Kalamazoo River channel will cut off valuable access to existing wetlands in Area 2. The wetlands are natural areas to absorb sediments, clean contaminated waters and absorb and slow heavy water flows during flood events. This will increase the volume of water flowing downstream causing greater erosion and [the eroded sediments] will ultimately settle in Kalamazoo Lake.

Response:

The new realigned channel will be constructed using appropriate width/depth dimensions to make it more stable, and will use natural channel design features. An important component of the realigned channel is retaining the connectivity to

the floodplain and protecting wetland areas. During flood events greater than approximately a 2-year flood, water will leave the channel and flood onto the adjacent floodplain areas including the capped anabranches. This will maintain the important floodplain connectivity for the ecosystem and prevent channelized erosional flow in the main river channel.

Comment, continued

(3) The lower Kalamazoo River communities use the river and lake in a very different way than citizens up river. This lower area's economy revolves around a 100-day seasonal market which is vital to the permanent residents and businesses of Saugatuck and Douglas. Their economy is largely based on tourism, recreation, and boating. Without the lake/harbor both communities would not financially survive. The PCBs, dioxin, and arsenic found in the lake are not only a health risk to residents, but a costly burden for the disposal of contaminated dredged materials from a Superfund site and Area of Concern.

Response:

EPA understands with your concerns and will continue to work with the Saugatuck/Douglas area to assist with the sedimentation problem that is occurring in Kalamazoo Lake. Kalamazoo Lake is located in Area 7 of Operable Unit 5 of the Site which will be the final area of the Superfund cleanup to be addressed. Supplemental remedial investigation work is currently planned to begin in Area 7 in 2020. Based on the information currently available to EPA, there is no health risk associated with direct contact with water or sediment while recreating throughout the Kalamazoo River or in Kalamazoo Lake. However, risk does exist from fish consumption, and fish consumptions advisories exist throughout the river. MDCH has developed www.michigan.gov/eatsafefish to better explain the fish consumption restrictions and associated risks throughout the State of Michigan.

Comment, continued

(4) From previous meetings I have attended with the EPA and MDEQ, it was stated that the cleanup efforts in Kalamazoo Lake would not start until all cleanup efforts upstream were completed. Both Agencies have indicated this time frame may be 30-50 years from present date. This concept is not acceptable. In theory, this approach may seem practical, but in reality, it is not feasible. How many residents are going to suffer the health risks associated with living and working in a Superfund site for this period of time? There is a need for an interim solution to make the lake healthy for residents, to correct the water flow through the harbor to eliminate the constant need for dredging, and to ease the burden of any financial stress placed on the communities of Saugatuck and Douglas. It is imperative to address these critical issues. The PRPs are obligated in helping the communities of Saugatuck and Douglas and providing solutions and financial relief measures for the downriver region of the Superfund site.

Response:
As discussed above in response to your third concern, EPA understands your concerns and will continue to work with the Saugatuck/Douglas area to assist with the sedimentation problem that is occurring in Kalamazoo Lake. The remedial investigation work in Area 7, which includes Kalamazoo Lake, is scheduled to begin in 2020. EPA has used both Superfund removal and remedial authorities to conduct cleanup work throughout the Kalamazoo River. The data that have been collected to date indicate that there are low levels of PCBs in Kalamazoo Lake, and those low levels would not warrant an expedited removal action. Should future data suggest otherwise, that situation may change. EPA will continue to work with the PRPs to conduct the work required under the current Administrative Order on Consent to determine the nature and extent of contamination and select cleanup remedies in an expeditious fashion.

Comment, continued
(5) The economic references above are based on the "Economic Impact Analysis Saugatuck Harbor," conducted using the on-line Boating Economic Impact Model developed by Dr. Ed Mahony, Dr. Dan Stynes and Yue Cui of the Recreation Marine Research Center of Michigan State University. November 15, 2010.

Response:
Thank you for the reference.

3. Comment from Samuel Johnson:
As part of EPA's recommendation in the Superfund Task Force Report published in July 2017 to utilize state-of-the-art PCB remediation technology, I would like to call your attention to the NASA-designed SPEARS technology. Our organization, ecoSPEARS, licenses the SPEARS technology which has shown 75% success in removing PCBs from contaminated sediments in the past. It is our hope you and your partners at the EPA will see this technology and our organization as a potential partner for the continued cleanup of Area 2 along the Kalamazoo River. I sent you an email on August 4, 2017, with documents outlining the SPEARS technology, our organization, and an abstract proposal of how you will be able to utilize ecoSPEARS at the Kalamazoo River cleanup.

Response:
EPA reviewed the ecoSPEARS information and it will be evaluated and considered when developing the RD for Area 2.

4. Comment from Stephen Hamilton, Kalamazoo River Watershed Council:
As President of the Kalamazoo River Watershed Council, I wish to convey our comments on the proposed cleanup of Area 2. I and two members of our board were present at the 25 July meeting, and our board member Robert Whitesides participated in earlier discussions about this location. Furthermore, Dr. Kornheiser and I are both quite familiar with the ecology and hydrology of the site. The Kalamazoo Watershed Council finds the preferred alternative denoted as A-5 to be acceptable. We think that EPA has thoroughly evaluated the options and done its due diligence to arrive at this recommendation. We

understand the financial and logistical compromises that come into play in these matters. We are happy to see a full cleanup with dam removal in this reach and we look forward to accompanying the cleanup and seeing the new ecosystem that develops as a result.

Response:
EPA appreciates the input and support of the Kalamazoo River Watershed Council and looks forward to working with the Council in Area 2 and other reaches of the Kalamazoo River as we work towards cleaning up the river.

5. Comment from Claus Globig:
I live in Kalamazoo. I have studied the PCB issue for 20 years. I am introducing into the public records two items. The first one is a lecture about PCBs which I presented at the Western Michigan College of Engineering. The second item is an open letter to the residents of Kalamazoo. The lecture is available on the internet. If you mention my name and PCBs, you will find it. Now, in the interest of public free speech, I have a few copies left for you. Not many, but if you are interested, I think it will be illuminating. So here are some copies, you can pick them up at your convenience.

Response:
Your attachments have been placed in the AR. It is EPA's position that PCBs are probable human carcinogens and that PCB contamination in Area 2 of OU5 does, in fact, present an unacceptable risk to human health and the environment. EPA believes that Alternative A-5 is protective of human health and the environment, meets ARARs, is implementable, and is cost-effective. Removal of the dam and realigning the river channel will produce a clean buffer along the river corridor, allowing for interconnectivity between the river and floodplain, yet preventing the continued migration of PCB-contaminated material downstream. Part 2 of this ROD details EPA's rationale for selecting Alternative A-5.

6. Comment from Lois Heuchert:
I just wanted to make sure that as you're doing the redevelopment, if you could please include some recreation access outlets or sites. This may have to be planned with the communities or whomever. Instead of putting up the banks and not having access to the river, it would be nice if we could have that coordinated in advance.

Response:
As EPA moves forward in the development and implementation of the cleanup we will work with the PRPs, MDNR, MDEQ, the U.S. Fish and Wildlife Service, and the City of Otsego to consider increased recreational access within Area 2.

7. Comment from Dayle Harrison:
I'm the president of the group called the Kalamazoo River Protection Association. For history buffs, this is our 40th anniversary. We're trying to get the river cleaned up and restored and have clean fish to eat, holding the polluters and the companies responsible for the cost of the cleanup, and trying to get EPA to get more invigorated. It has been quite an interesting four decades. As far as the proposed plan, I do have some concerns

about the selected remedy. Those gray shaded areas that you call anabranches – I would like to see you come in when it's time, and I don't think you should be doing it until you do further work downstream. But when it's time to go in and use some of the natural resource damages funds, Fish and Wildlife might be able to help you with that, to restore those areas. Excavate them and then restore them. I think that would be a good step forward.

But I really want to talk about the impact that this site has on downstream areas. By devoting time and energy and money from the companies to clean up this site that we're talking about tonight above the City of Otsego, we're really sacrificing the benefits we would gain from cleaning up the PCBs along the banks of the Trowbridge area and then moving down to the City of Allegan. Then once that's done, move back up here and finish the job here above the City of Otsego. It's unbelievable, the bank of sediments, you can see them. If you canoe the river, many of you have, from Otsego down to the township dam downstream to the Trowbridge, you see the banks literally saturated with PCB waste from the paper companies. We need to get that isolated and removed, like you're doing, at the Trowbridge. That should be the top priority and then at a later date think about coming forward after you do the City of Allegan impoundment and Lake Allegan and then come back up here and do something up here. We'll be submitting more written documents regarding this proposal in more detail.

I like the plan. I'm still concerned about that area from the Knife Blade downstream. It seems like at the Otsego impoundment you had a wall that you sort of shuffled around and excavated one side in the design process, and then we clean up that side, you went back over and rerouted the river to one side and then you cleaned up the other side. That would reduce a lot of the soil sediment, the so-called clean sediment from moving downstream and creating problems in our floodplain and wildlife habitats. I would like to see some of the data that we haven't seen that goes below the four feet depth of the core samples. I know at the Trowbridge impoundment there are areas where we have three or four feet of clean sediment that's covering up the contaminated sediment. That's been documented by the U.S. Fish and Wildlife Service and the U.S. Geological survey folks.

So thanks for the opportunity to say a few words. Hope you can get moving on it. Thanks for the work that you do do.

Response:
EPA evaluated various remedial approaches for the anabranch areas and determined that Alternative A-5, which includes realigning the river channel, creating a clean buffer and capping the anabranches, is the most appropriate, protective and cost-effective remedy. In the future, should the natural resource trustees or other party decide to fund additional restoration and/or excavation efforts, EPA will take it into consideration.

EPA is conducting cleanup along the Kalamazoo River consistent with EPA's contaminated sediment remediation guidance and principles. As such, work is generally being conducted from upstream to downstream. EPA has worked with

GP to complete the RI sampling in the Trowbridge Impoundment and is evaluating the data, as well as potential cleanup options, which includes both remedial and removal options.

EPA will work closely with the PRPs to ensure contaminated materials are not transported downstream when the Otsego City dam is removed. Further, the amount of any clean materials that may be transported downstream as a result of the dam removal will be conducted consistent with any State requirements. You can review all of the sampling data in the Area 2 RI Report.

8. Comment from Judith Alfano, Lead Administrative Trustee:

The purpose of this letter is to provide EPA with the comments of the Kalamazoo River Trustee Council from a Natural Resource Damage Assessment and Restoration (NRDAR) perspective. The Trustee Council consists of MDEQ, MDNR, the Michigan Attorney General, the U.S. Fish and Wildlife Service, and the National Oceanic and Atmospheric Administration.

The goals of NRDA are to restore the natural resources and the services they provide to the condition they would have been in had the release of hazardous substances not occurred and to compensate the public for the interim lost services that would have been provided by natural resources until such time as restoration to baseline is achieved.

Based on the description of alternatives for River Area 2 of the Kalamazoo River in the EPA June 2017 fact sheet and the Proposed Plan, the trustees understand that the EPA preferred remedy is Alternative A-5. A-5 includes capping, bank excavation, floodplain soil excavation, channel realignment, Gun River excavation, and targeted excavation on Knife Blade Island, institutional controls, and long-term monitoring. EPA considers this alternative to have less impact to habitat and surrounding properties than other options, protects against erosion and would help maintain flow in the river channel.

The Trustee's support the selection of Alternative A-5 as the preferred remedial action and agree with EPA that remedial Alternative A-5 is the most practicable alternative, providing the best balance of EPA's remedial evaluation criteria among the alternatives presented in the Proposed Plan. Foremost, the Trustees value practicable elimination of source material from the river, banks, and floodplains to allow more natural channel design and riverine functions. Considering the dynamic nature of rivers and uncertainties in natural channel design, the Trustees agree that it is prudent to incorporate an additional (10-ft) buffer along the bank of the realigned channel to provide an added measure of protection for the aquatic environment while also removing additional PCBs from the floodplain. Similarly, the Trustees agree that it is prudent to apply the 5 mg/kg RAL for removal of PCBs from the buffer area, which would result in an FS-projected average bank residual PCB concentration that would provide a greater degree of long-term effectiveness with a relatively small increase in cost. The Trustees consider that the excavation of floodplain soil exceeding the RAL of 20 mg/kg also increases the overall protectiveness and long-term effectiveness and permanence of Alternative A-5.

The long-term stability and effectiveness of the river channel along with maintenance of floodplain connectivity are inherent in achieving the long-term goals of the remedial action to keep the channel in place and prevent additional PCB loading into the river. The Trustees appreciate the revisions incorporated in the April 28, 2017 Final Feasibility Study that recognize the merits of maintaining floodplain connection and flood capacity along the new channel for the proposed alternative. Having sufficient bankfull floodplain capacity reduces the risk of potential future channel erosion and increases the likelihood that bank treatments will remain stable over the long term. Dissipating flood energy within Area 2 would also minimize the transfer of energy downstream that otherwise could result in erosion downstream in Area 3.

Concomitantly, future climate scenarios predict increasing severity of storm events in this region, so long-term effectiveness will require a Natural Channel Design that can withstand anticipated future precipitation events and reasonably expected hydraulic stresses. These considerations will be imperative in ensuring that the RD meets the intent of the remedy to keep the channel in place and prevent additional PCB loading to the river.

Overall, the Trustees agree that the proposed alternative, with the noted design considerations, presents a balanced remedy that will achieve considerable progress towards the NRDA goal of returning the natural resources and natural resource services to the condition they would have been in had the hazardous substances not been released. To ensure that the baseline restoration goal is fully achieved and to resolve the NRDA goal of compensating the public for the interim lost services that would have been provided by natural resources until the cleanup goals are met and baseline is achieved, the Trustees will work with the PRPs to develop restoration actions adjunct to the remedial actions.

The Trustees appreciate the opportunity to comment on the Area 2 Proposed Plan. We look forward to working with EPA to address these issues as part of an integrated effort to protect the public and protect and restore the Kalamazoo River environment for the long-term benefit of the public.

Response:
EPA appreciates the technical support and input it has received from the Natural Resource Trustees in developing a cleanup remedy that addresses environmental concerns as well as those of the Trustees and other stakeholders. EPA understands the importance of the natural channel design, a clean buffer between the river and the floodplain, and the need for connectivity between the river and the floodplain. EPA will continue to work with the Natural Resource Trustees while working with the PRPs on the remedy design.

9. Comment from Shannon D. Johnson, Senior Manager, Georgia-Pacific LLC: GP has reviewed the above referenced documents and supports EPA's overall selection of the preferred remedial alternative as presented in the July 2017 Proposed Plan. GP

comments regarding selected numeric action levels and remedial goals identified in the Proposed Plan are discussed below.

(1) Bank Soil RAL of 5 mg/kg:
EPA selected a RAL of 5 mg/kg in the Proposed Plan. EPA justified selection of 5 mg/kg based on inherent uncertainty in the historical data and evaluation. EPA also justified selection of the 5 mg/kg RAL by noting that the cost difference was small compared to the overall cost of the remedy and added additional assurance to the remedy by selecting the lower RAL.

- Bank soil RALs of 5 and 10 mg/kg PCBs were evaluated in the Area 2 FS. This evaluation showed that RALs of 5 and 10 mg/kg are both adequately protective. The current overall, average bank soil concentrations throughout Area 2 were estimated at 0.9 mg/kg PCBs. A RAL of 5 or 10 mg/kg lowers the average PCB concentration in the banks of the re-aligned channel to 0.2 and 0.3 mg/kg, respectively. Both estimates are at or below the PRG for sediment of 0.33 mg/kg.
- The RAL analysis represents an extreme condition where all of the banks catastrophically and simultaneously fail and produce new sediment with no dilution. The 10-foot buffer and bank treatments already provide reasonable erosion protection and time to identify and repair erosion problems before the river would encounter higher floodplain concentrations. The assumption of catastrophic and simultaneous bank failure is extremely conservative and more than compensates for uncertainty in the historical data or RAL evaluation. EPA justified selection of a RAL of 5 mg/kg over 10 mg/kg based on the idea that $760,000 was not a significant amount of money. The amount of money estimated to implement a RAL is not sufficient evidence or justification for its selection.

The selection of a RAL of 5 mg/kg over 10 mg/kg PCB is neither justified technically nor monetarily and represents a poor use of funds in protecting the environment. GP strongly urges EPA to select a remedial goal of 10 mg/kg for bank soil.

Response:
EPA evaluated the RAL analysis of both 5 mg/kg and 10 mg/kg PCB in the Area 2 FS. As EPA indicated in previous comments on the FS and in the Proposed Plan there is uncertainty associated with the calculations of both the current and future estimated average bank soil concentrations throughout Area 2. EPA and other stakeholders have also indicated the need for a clean buffer between the realigned channel and the floodplain. The 5 mg/kg PCB RAL provides the best balance of risk and uncertainty associated with the RAL, and ensures that if bank failure was to occur that there would be adequate time to complete the bank repair and there would not be increased risk to the environment. Finally, although the increased cost of implementing the RAL of 5 mg/kg PCB vs 10 mg/kg PCB is significant, EPA believes it is a necessary component to ensure long-term protectiveness of the $46 M remedy.

Comment, continued
(2) PRG of 50 ppt for dioxins/furans and dioxin-like compounds on residential parcels:

The EPA selection of a residential soil remediation goal of 50 ppt (or picograms per gram) for dioxins/furans and dioxin-like PCBs did not follow EPA guidance in that a site-specific goal using site-specific inputs was not developed. Nor was MDEQ's residential value of 90 ppt (Part 201) considered.

The 50 ppt is a risk-based screening level based on default residential assumptions. Screening levels are intended to aid in the selection of constituents of potential concern and not to serve as goals for remediation. Per EPA guidance, the recommended approach for developing remediation goals is to identify screening levels at scoping, modify them as needed based on site-specific information from the baseline risk assessment, and ultimately select remediation goals in the ROD. The value of 50 ppt does not incorporate site-specific exposure assumptions including reduced dermal exposure and reduced outdoor exposures due to snow cover. Additionally, the value of 50 ppt assumes dermal skin absorption at a rate of 3 percent. However, the amount of organic material influences the dermal absorption rate of dioxins from soil, with scientifically determined rates ranging from 1.9 percent to 0.24 percent for low and high organic soils, respectively. The value of 50 ppt also assumes that dioxins/furans and dioxin-like PCBs are 100 percent bioavailable from soil. Recent studies conducted at other sites found that the relative bioavailability of these compounds was much lower than 100 percent. The selection of a 50 ppt remedial goal does not account for these important and well documented risk assessment inputs. For these reasons, the residential remedial goal for dioxins and furans and dioxin-like PCBs should not be selected until site-specific information on bioavailability, the organic content of soil, site-specific exposure parameters, and regional background are carefully considered, along with MDNR residential standards.

There are currently only two residential parcels in the northeast portion of the anabranches that appear in the study boundary. The largest landowner in this area owns most of the land in the anabranched area, which is currently used for recreational purposes only. This landowner has verbally indicated a desire to sign a deed restriction to keep that parcel recreational. The portion of the remedial footprint in the second parcel is also currently recreational. Therefore, a residential remedial goal, even if identified, will not be relevant in Area 2.

Response:
Cleanup decisions must comply with CERCLA and the NCP. As lead agency, in order to comply with the NCP, EPA is required to set remedial action goals that establish acceptable exposure levels that are protective of human health and the environment. Generally, EPA sets those goals by considering applicable or relevant and appropriate requirements under federal environmental or state environmental laws. When ARARs are not available or not sufficiently protective, EPA uses a 10^{-6} risk level as a point of departure for determining remediation goals for known carcinogens such as dioxin.

In the FS Report for Area 2 of OU5, GP identified dioxins and furans as contaminants of interest in relation to Michigan's Part 201 regulations. Michigan's Part 201 regulations set the direct contact cleanup level for dioxin at residential properties at 90 ppt. EPA's guidance for risk assessment of dioxin at Superfund sites sets a soil screening level of 50 ppt for dioxin and states that the screening level can be used as a PRG. After multiple discussions with the State of Michigan, EPA decided to set the PRG for dioxin at the more stringent level of 50 ppt instead of Michigan's 90 ppt level. EPA's June 27, 2017, letter to MDEQ, which is part of the AR, documents the discussions with the State of Michigan on this issue.

As described in the FS and Proposed Plan, although dioxin was detected in some soil areas it falls within the PCB remediation footprint. Therefore, Alternative A-5 will address both the PCB and non-PCB risk and is the appropriate remedy for Area 2. As GP notes in its comment, there are only two residential parcels in the remedial footprint of Area 2 of OU5, and it may turn out that ICs to restrict land use will be used instead of cleaning up the land for residential use. If EPA determines during the remedial design that ICs will be the only remedial action implemented on the two residential parcels, additional cleanup to address dioxins will not be necessary. However, in the event that dioxins are found in floodplain surface soils in current or potential residential use areas located outside the PCB remediation footprint, a PRG of 50 ppt will be used to protect residential receptors, based on current EPA regional screening levels and EPA guidance.

10. Comment from Dayle Harrison, President, Kalamazoo River Protection Agency:

Please include these comments on behalf of the Kalamazoo River Protection Association (KRPA) in the official record of the EPA's Proposed final remedy for Area 2. The KRPA, now in our 40th year of advocating for the restoration of the river, appreciates this opportunity to comment.

I have reviewed the Feasibility Study for Area 2 of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site as well as previous RI/FS technical documents. The KRPA is of the opinion that Preferred Cleanup Alternative 5A, although not as protective of human health and the environment as we would prefer (see Alternative 8), is acceptable given the magnitude of the remediation needed downstream. Alternative 5 appears to be cost-effective and should provide long-term protection of human health and the environment, provided actions are taken downstream to minimize erosion within the Trowbridge impoundment.

Although technically not related to Area 2, the implementation of the proposed remedy there, along with dam removal, poses serious risks for areas immediately downstream within the MDNR Trowbridge impoundment. As you know, increased velocity of the river flow due to dam removal at the Plainwell impoundment, MDNR Otsego impoundment, and now the City of Otsego dam will certainly increase erosion of the banks of the Trowbridge impoundment. This will be exacerbated by any storm events and

is of serious concern. Removal of the Otsego City Dam should be placed on hold until remedial action is completed at the Trowbridge impoundment, similar to progress being made at the MDNR Otsego impoundment. The so called "upstream-downstream" approach has its obvious drawbacks, particularly as it impacts the Trowbridge impoundment. EPA and the PRP should not take remedial actions upstream that would result in increased releases of the toxic PCB contaminated sediment downstream. As I stated at the Public Hearing held in Otsego on July 25, 2017, remedial actions should be undertaken as soon as possible at the Trowbridge Impoundment. This could be done concurrently with proposed cleanup efforts continuing at Area 2, except for dam removal which can be accomplished later.

Finally, the KRPA, along with the thousands of other stakeholders in the river's future are deeply concerned about the slow pace of the cleanup. The cost of adequate restoration of the river is likely to exceed one billion dollars. With the PRP only spending 10 to 25 million annually, the cleanup will take over 100 years at present value dollars. EPA has the legal authority, under CERCLA, to mandate that the PRPs provide the financial assurances and commitment to implement acceptable cleanup plans downstream including Lake Allegan. Should the PRP fail to do so, EPA should initiate remediation at the Trowbridge impoundment with the 50 million dollars available from the Lyondell L. L.C., Bankruptcy. As you know, EPA has the statutory authority to pursue treble damages against PRPs for EPA's cost of remediation where the PRPs fail to take appropriate action.

Response:
The removal of the Otsego Dam and the realigned river channel will not promote increased erosion in the Trowbridge impoundment, or promote the transport of PCB-contaminated materials downstream. The new channel will be constructed with the appropriate width/depth ratio to make it more stable. In addition, riffle features will be constructed to reduce river flow velocities. Finally, the new channel will be constructed to ensure connectivity between the river and floodplain to dissipate energy during flood events. Alternative A-5 will reduce the current erosion and transportation of PCB-contaminated materials downstream.

EPA understands your concerns related to the pace of cleanup and is taking all actions to move in an expeditious fashion. EPA disagrees with your conclusion that it will take 100 years to clean up the Site. EPA currently anticipates that cleanup work on the entire Kalamazoo River will be complete in 2035, although long-term monitoring will be required to confirm fish tissue recovery. Regarding expediting cleanup in the Trowbridge impoundment, EPA has worked with GP to complete the RI sampling in the Trowbridge Impoundment and is evaluating the data, as well as potential response actions, which includes both remedial and removal options.

11. Comment from Robert M. Always, Commissioner, Otsego Planning Commission:
EPA currently recommends Alternative A-5 for the cleanup of the Kalamazoo River. This plan, as well as several other possible plans, includes a substantial amount of geographic modification for excavation, capping and channel realignment.

(1) The City of Otsego and civic organizations have long-term plans to develop the river front in downtown Otsego. These plans include the expectation of pedestrian and bicycling access parallel to the Kalamazoo river channel over the intercity distances. Currently, the City of Otsego maintains a "Riverwalk" along the south side of the Kalamazoo River. The Riverwalk starts on Farmer Street at the Otsego Historical Museum, runs past the Otsego Dam, slated for removal as part of the cleanup, and terminates at Jewel Street. The Riverwalk allows two-way pedestrian and cycling traffic as well as including a pedestrian/bicycling bridge. Another example of an appropriately designed recreational pathway is the Kalhaven Trail Linear Park.

I am requesting that the EPA work with the City of Otsego and civic organizations such as the Otsego Main Street organization and Otsego Downtown Development Authority to include a recreational trail along the new Kalamazoo River channel.

Response:
EPA will work with the City of Otsego, its civic organizations and its citizens, along with the PRPs, the MDNR, and the Natural Resource Trustees, to consider pedestrian and recreational pathways along the Kalamazoo River, if appropriate, during remedial design.

Comment, continued:
(2) My understanding is that laboratory testing has been done with zero valent (metallic uncombined) iron to remove chlorine from organic compounds as a remediation process. The testing was on solvent materials in less dilute form than the halogenated compounds containing Kalamazoo River soils. However, the addition of zero valent iron, sized to allow settling through sediment over a period of decades, under capped areas may be useful for the long-term remediation of contaminated soils. Care should be taken to avoid iron alloys that would create more contamination such as machineable lead containing alloys.

Response:
EPA is not aware of any such laboratory testing being conducted by the PRPs using zero valent iron for treatment of PCB-contaminated sediment or soil. The remedy selected in the ROD does not include use of iron alloys or any treatment alternatives that would create more contamination. Capping in the anabranch areas will include a soil cover. None of the alternatives in the Proposed Plan include treatment of the PCB-contaminated materials, as the nature of the reworked sediment and soil are not conducive to cost-effective treatment. Excavated PCB-contaminated soil and sediment will be disposed at a commercial landfill permitted to handle such materials.

FIGURES

Figure 1: Allied Paper, Inc./Portage Creek/Kalamazoo River Site

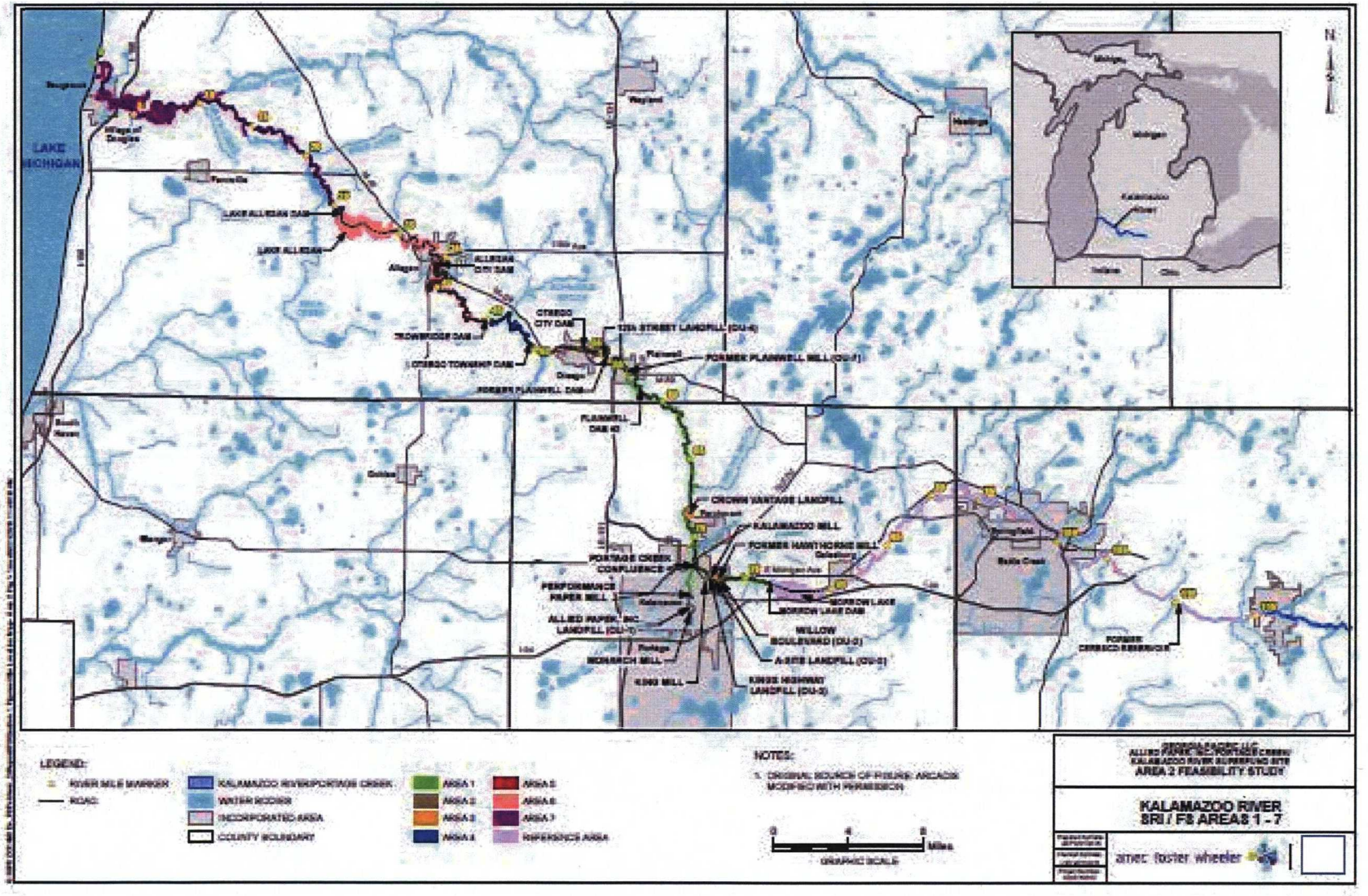


Figure 2: Operable Unit 5

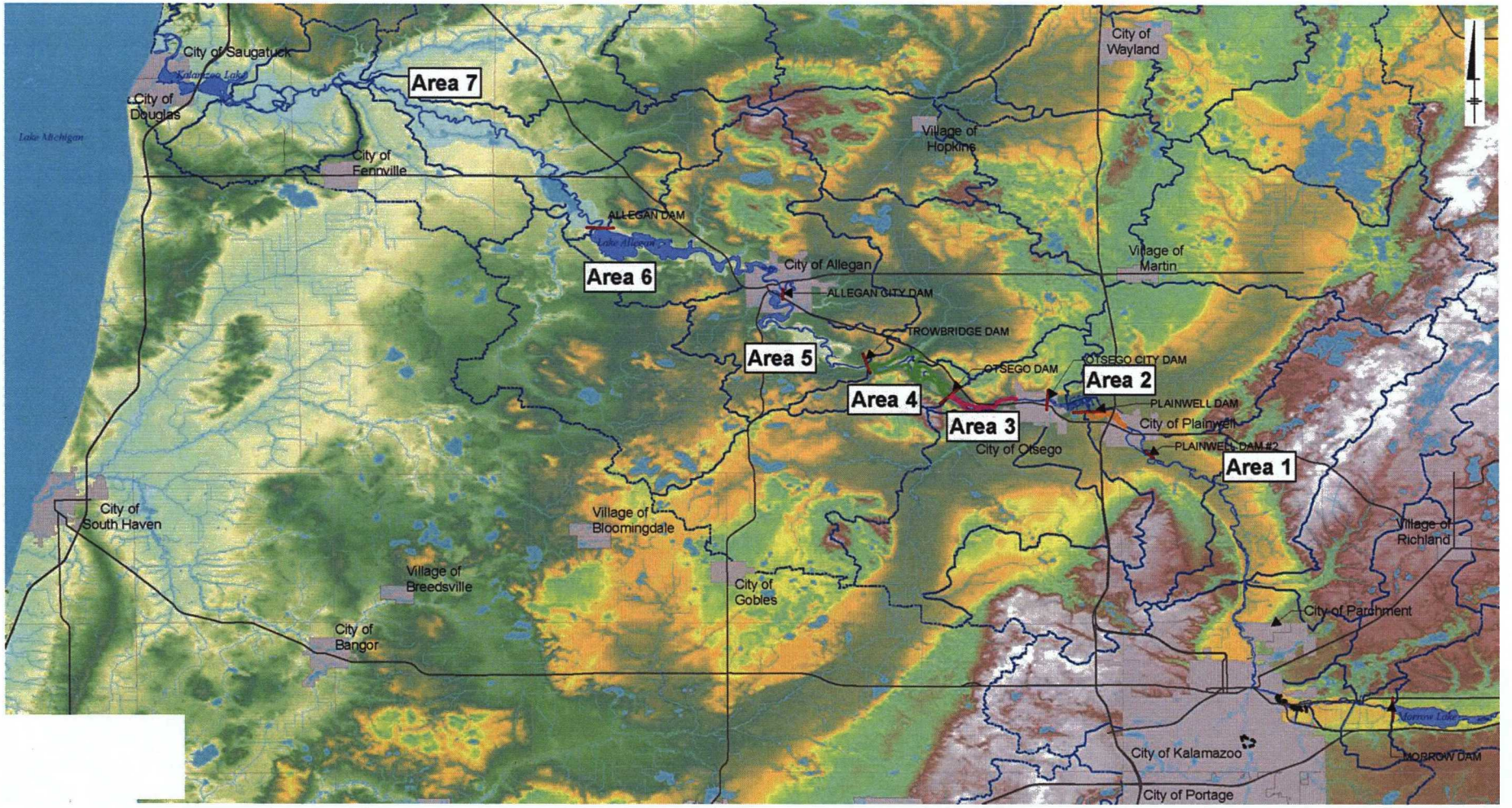


Figure 3: Area 2 of Operable Unit 5

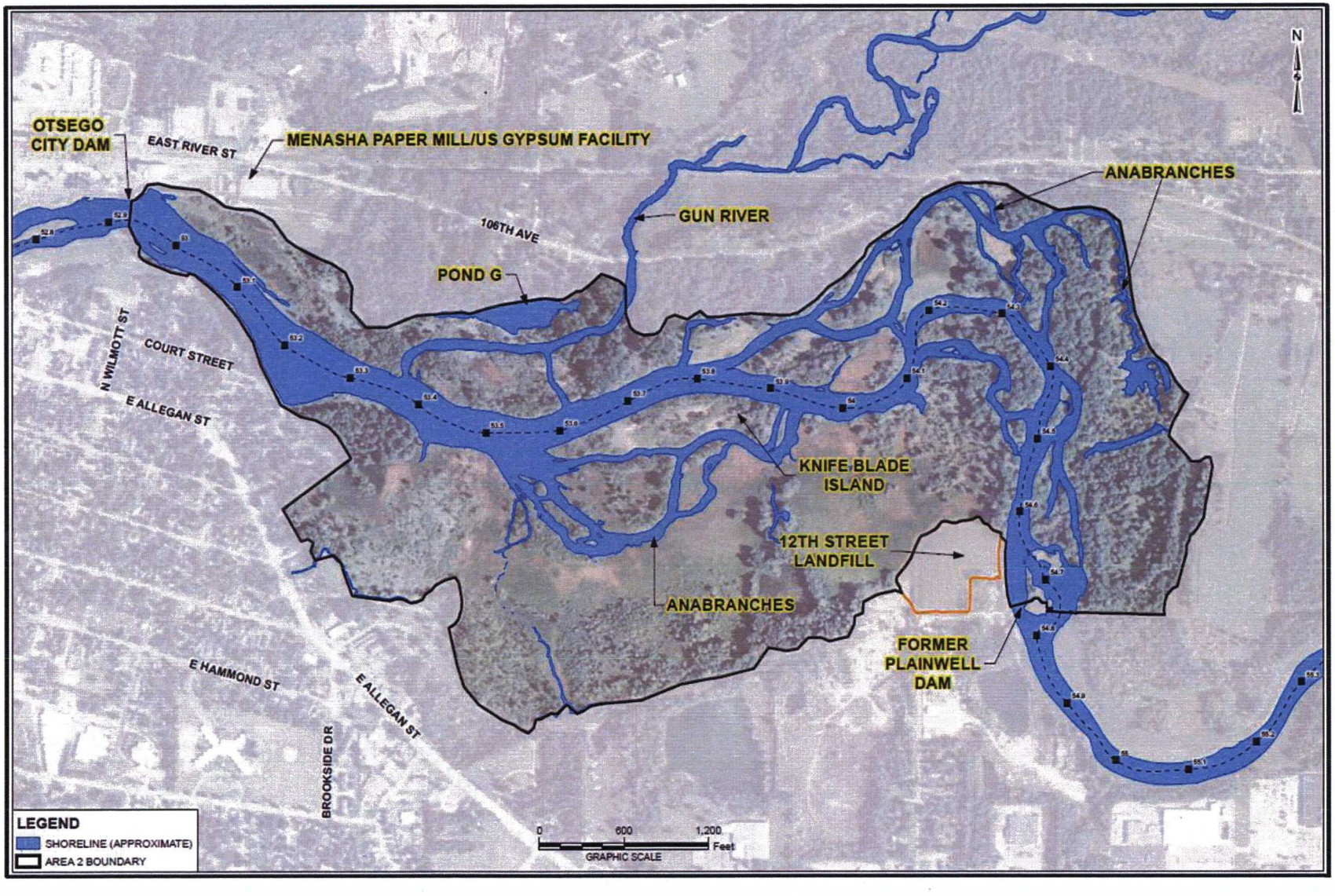


Figure 4: EPA's Selected Remedy Alternative A-5

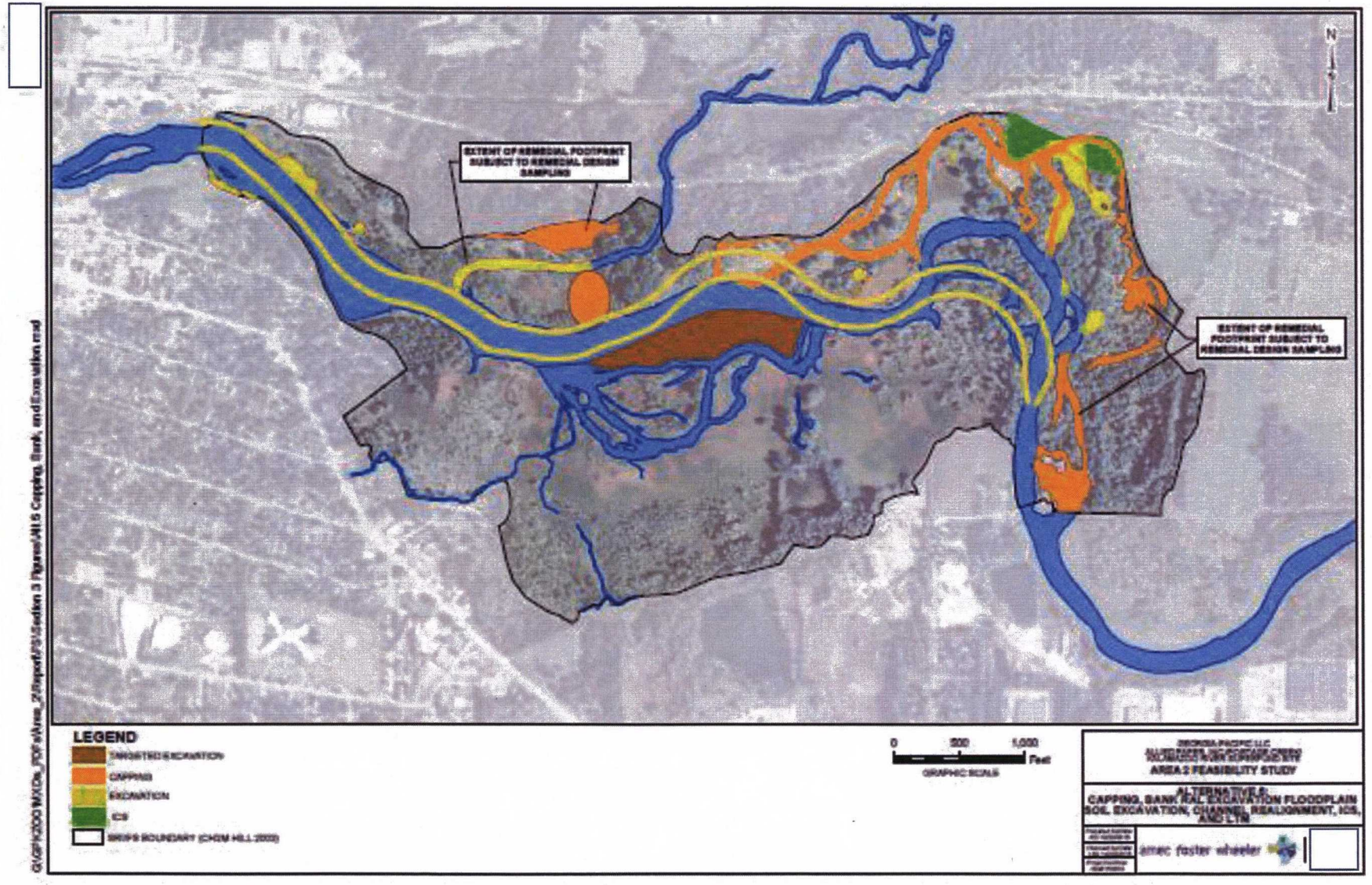


Figure 5: Area 2 Sediment Subareas

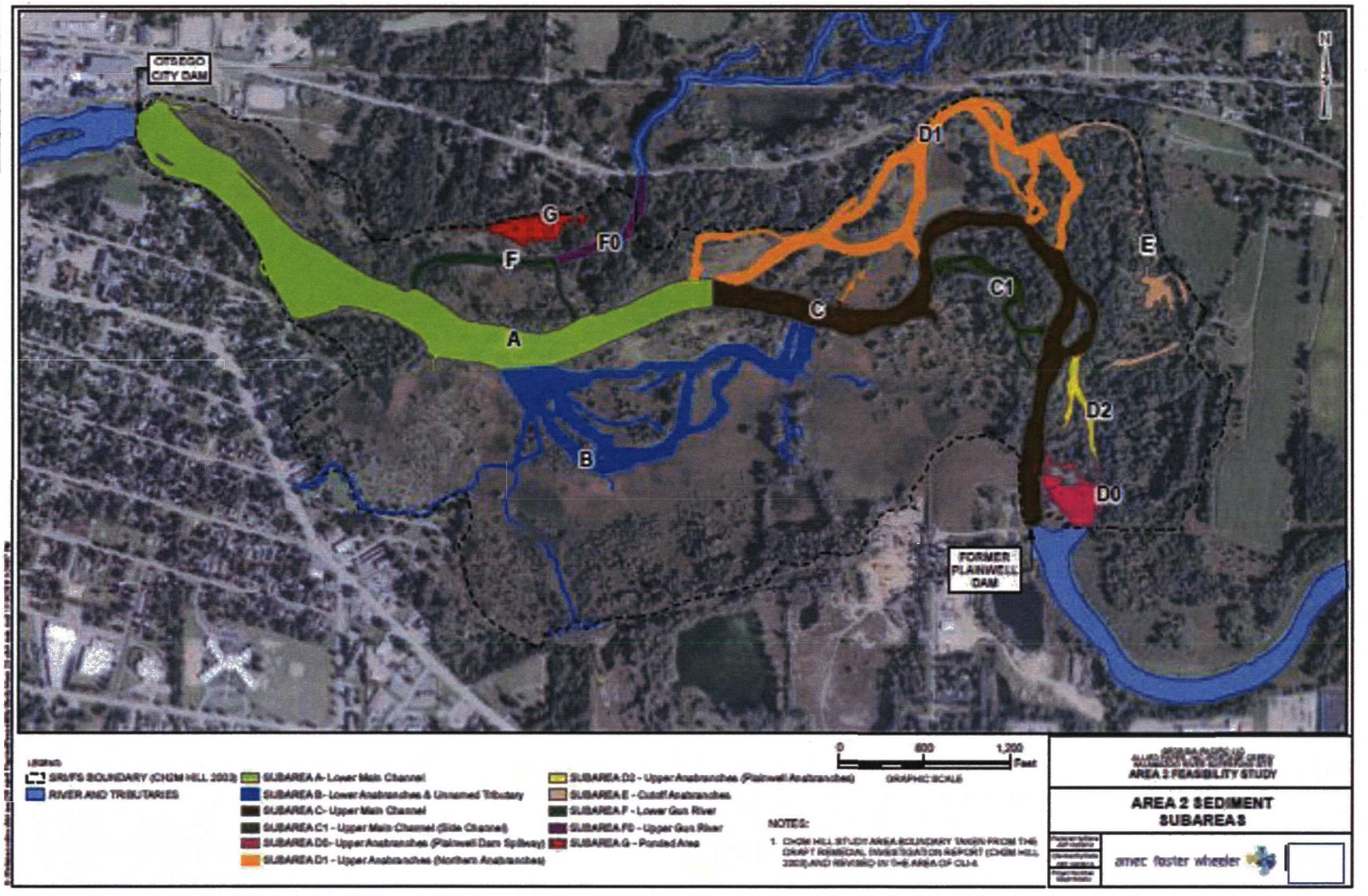


Figure 6: Area 2 Floodplain Soil Subareas

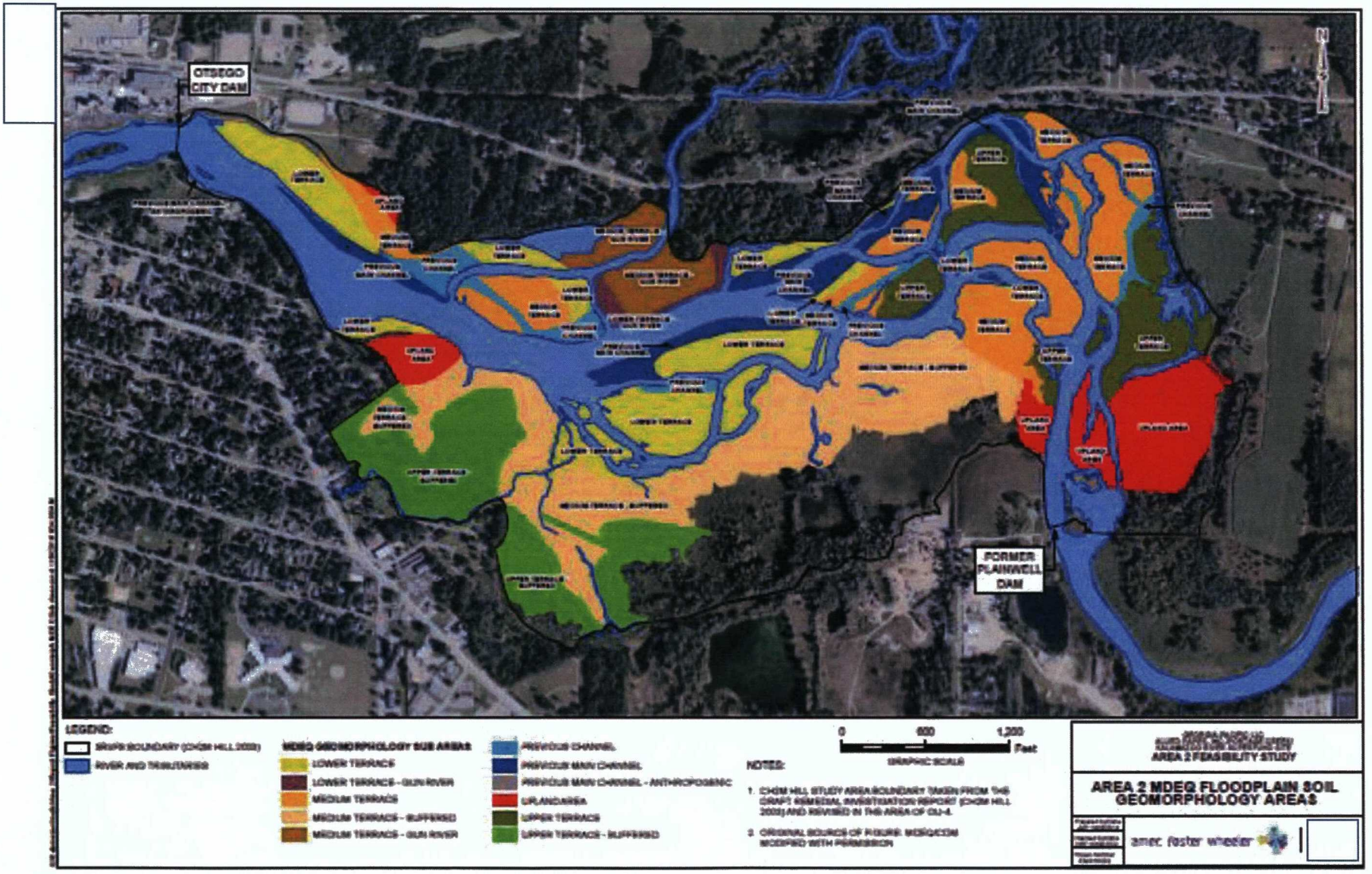


Figure 7: Channel Realignment Option 3

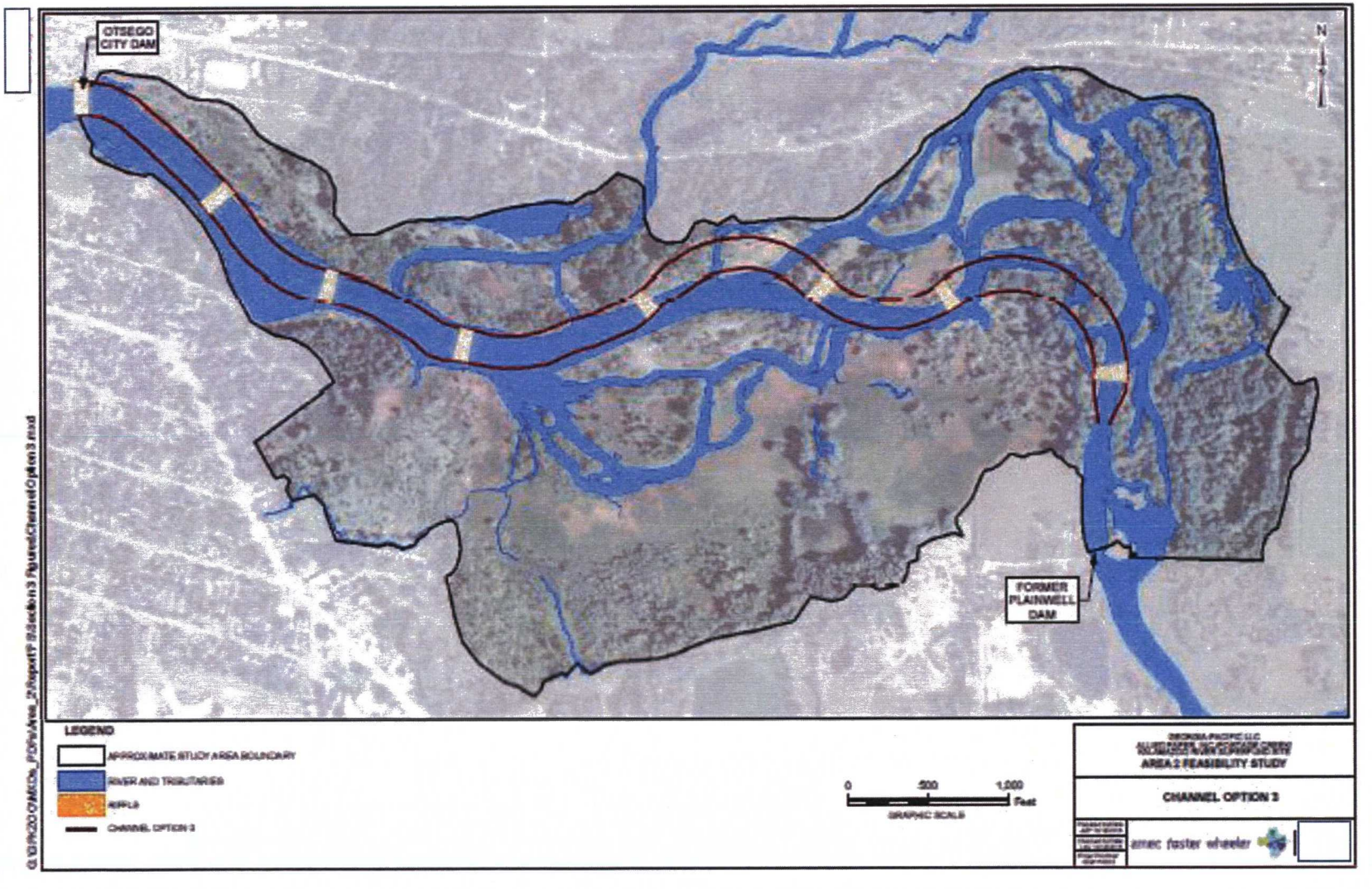
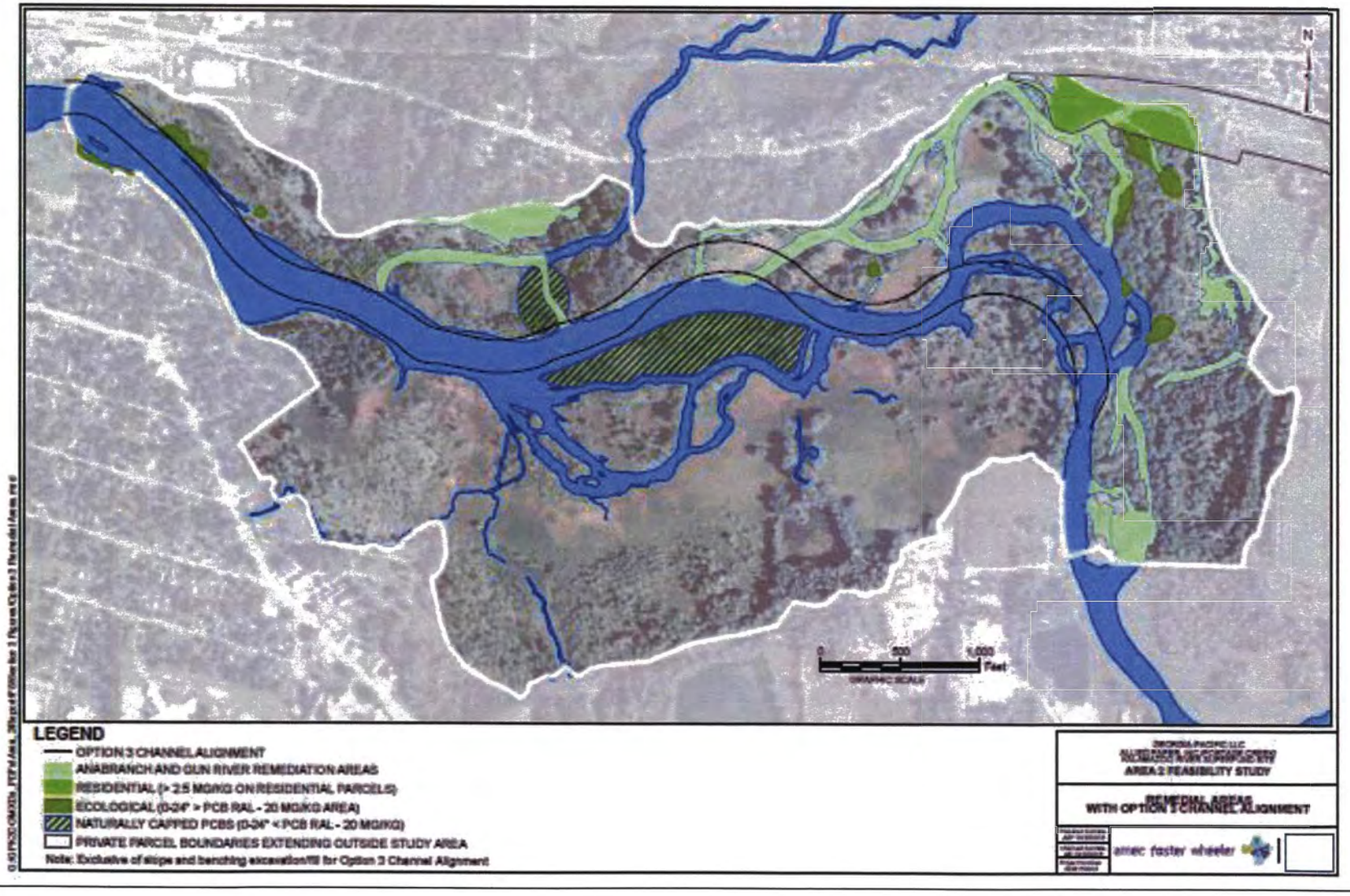


Figure 8: Area 2 Remedial Areas



TABLES

Table 1: PCB Concentrations by Sediment Subarea

Sediment Subareas	PCB Concentration (mg/kg)	
	Minimum	Maximum
Sediment Area A	0.009	94
Sediment Area B	0.011	3.07
Sediment Area C1	0.025	14.03
Sediment Area C	0.018	59
Sediment Area D0	0.05	17.5
Sediment Area D1	0.021	111
Sediment Area D2	0.081	27.8
Sediment Area E	0.018	73.5
Sediment Area F0	0.039	0.047
Sediment Area F	0.018	85
Sediment Area G	0.022	59.9

Table 2: PCB SWAC and Mean Concentrations by Sediment Subarea

Sediment Subareas	SWAC and Mean PCB Concentration (mg/kg)	
	0-6" Interval	6-12" Interval
Sediment Area A	0.08	0.2
Sediment Area C	0.22	0.08
Sediment Area A &C (Main Channel)	0.13	0.16
Sediment Area B	0.46	0.28
Sediment Area C1	0.92	0.05
Sediment Area D0	2.14	0.55
Sediment Area D1	3.91	4.88
Sediment Area D2	5.87	3.34
Sediment Area E	7.84	9.76
Sediment Area F	12.39	21.94
Sediment Area F0	0.02	0.02
Sediment Area G	1.22	9.05

Table 3: PCB Concentrations by Floodplain Soil Subarea

Floodplain Soil Subareas	PCB Concentration (mg/kg)	
	Minimum	Maximum
Lower Terrace	0.019	112
Lower Terrace Gun River	0.018	60.9
Medium Terrace	0.019	69
Medium Terrace Buffered	0.006	26.8
Medium Terrace Gun River	0.018	4.32
Previous Channel	0.017	108
Previous Main Channel	0.018	134
Previous Main Channel Anthropogenic	0.023	59
Upland Area	0.018	2.48
Upper Terrace	0.011	49
Upper Terrace Buffered	0.021	2.88

Table 4: Alternatives Comparative Analysis

Alternative	Capping Area (acres) / Removal Volume (cy)	Years to Reach PRGs for Smallmouth Bass	Overall Protection of Human Health and the Environment	Compliance with ARARs	Short-term Effectiveness	Long-term Effectiveness	Reduction of Toxicity, Mobility, and Volume Through Treatment	Implementability	Total Cost
A-1	None	35	Undocumented	Undocumented	Not Effective	Undocumented	No treatment	Nothing to implement	$0
A-2	None	35	Not Protective, ongoing bank erosion	Complies	Not Effective	Not Effective	No treatment	Readily implementable	$12,500,000
A-3	33 / 12,900	32	Protective, reasonable timeframe	Complies	Effective	Effective	No treatment	Readily implementable	$43,800,000
A-4	33 / 16,900-22,300	32	Protective, reasonable timeframe	Complies	Effective	Effective	No treatment	Readily implementable	$44,400,000 to $45,200,000
A-5	28 / 23,800-29,200	32	Protective, reasonable timeframe	Complies	Effective	Effective	No treatment	Readily implementable	$45,600,000 to $46,400,000
A-6	8 / 124,900-130,300	32	Protective, reasonable timeframe	Complies	Effective	Effective	No treatment	Readily implementable	$66,900,000 to $67,700,000
A-7	0 / 162,100-167,500	32	Protective, reasonable timeframe	Complies	Effective	Effective	No treatment	Readily implementable	$74,500,000 to $75,300,000
A-8	0 / 1,260,000	40	Protective, longer timeframe, extensive habitat destruction	Compliance delayed	Not Effective	Effective	No treatment	Requires extensive effort	$325,000,000

APPENDICIES

APPENDIX 1

Applicable or Relevant and Appropriate Requirements

Table 2-1
Federal and State Chemical-Specific Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considereds (TBCs)
Area 2, OU-5 Kalamazoo River

Action/Medium	Requirements	Prerequisite	Citation	Applicable to Sediment/Soil Alternatives	
				Sediment	Soil
Protection of surface water and sediment	Establishes effluent standard for toxic compounds including PCBs. Applies to discharges to navigable waters. The ambient water quality criterion for navigable waters is 0.001 µg/L total PCB.	Discharges to waters of the State of Michigan - **relevant and appropriate**	40 CFR Part 129.105 Toxic Pollutant Effluent Standards	X	X
Protection of aquatic life and human health	Water quality criterion for protection of aquatic life for continuous concentration (chronic) is 0.014 µg/L PCBs in freshwater. Water quality criterion for protection of human health is 0.000064 µg/L PCBs in freshwater.	PCB concentrations in surface water - **relevant and appropriate**	63 Fed. Reg. 68354 (December 10, 1998) Clean Water Act	X	
Protection of surface water, sediment, and soil	Water quality criteria for 29 pollutants and detailed methodologies to develop criteria for additional pollutants; implementation procedures to develop more consistent, enforceable water quality-based effluent limits in discharge permits, as well as total maximum daily loads of pollutants that can be allowed to reach the Great Lakes and their tributaries from all sources; and antidegradation policies and procedures. The Great Lakes States must adopt water quality standards, antidegradation policies and implementation procedures for waters within the Great Lakes System. The PCB human health criterion is 3.9 × 10-6 µg/L for both drinking and non-drinking water, and the wildlife protection criterion is 7.5 × 10-5 µg/L.	Effluent discharges to the Great Lakes and/or their tributaries - **relevant and appropriate**	40 CFR Parts 9, 122, 123, 131, and 132 Final Water Quality Guidance for the Great Lakes System	X	X
Protection of potential drinking water sources	The Safe Drinking Water Act regulations establish maximum contaminant levels (MCL) and maximum contaminant level goals (MCLG) for public water supplies. The MCL for PCBs is 0.5 µg/L and the MCLG is 0.0 µg/L.	PCB concentrations in a potential drinking water source - **relevant and appropriate**	40 CFR 141 Safe Drinking Water Act		
Protection of soil and sediment	Establishes requirements for handling, storage, and disposal of PCB-containing materials, including PCB remediation waste, in excess of 50 mg/kg. Applicable for PCB-containing materials that are removed from the Site. Establishes performance standards for disposal technologies. Soils containing PCBs at concentrations >50 mg/kg can be incinerated, treated with an equivalent method, or landfilled at a licensed chemical waste landfill. Industrial sludge with PCB concentrations in excess of 500 mg/kg may not be landfilled. Spill cleanup policy establishes cleanup criteria for spills after 5/4/87. Soil cleanup levels: Unrestricted access - 10 mg/kg, restricted access - 25 mg/kg.	PCB concentrations in soil and/or sediment - **relevant and appropriate**	40 CFR Part 761.60 - 761.79 Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions (Toxic Substance Control Act (TSCA) Regulations)	X	X
Protection of soil and sediment	Guidance on remedial actions for Superfund sites containing PCBs. May be used as a guideline for handling PCB-contaminated sediment/soil.	PCB concentrations in soil and/or sediment at CERCLA sites - **TBC**	OSWER Directive 9355.4-01 Guidance on Remedial Actions for Superfund Sites with PCB Contamination	X	X

Table 2-1
Federal and State Chemical-Specific Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considereds (TBCs)
Area 2, OU-5 Kalamazoo River

Action/Medium	Requirements	Prerequisite	Citation	Applicable to Sediment/Soil Alternatives	
				Sediment	Soil
Protection of soil and sediment	Guidance on technology alternatives for the remediation of PCB-contaminated soil and sediment.	Remedial actions for PCB-contaminated soil and sediment - TBC	USEPA Guidance EPA/540/S-93/506 Technology Alternatives for the Remediation of PCB-Contaminated Soil and Sediment	X	X
Protection of surface water	Establishes water quality requirements for surface waters in the State. Part 4 rules specify standards for all waters of the State, and require that all deseignated uses of the receiving water be protected, including aquatic life and wildlife. Applicable to remedial activities. The approved water quality standard for protection of wildlife and human health are 1.2×10^{-4} µg/L and 2.6×10^{-5} µg/L PCBs, respectively. Prior Substantive Requirement Documents (SRDs) at the Site have specified PCB discharge limitations of 2.6×10^{-5} µg/L.	Discharges to waters of the State of Michigan -- standards are applicable to venting groundwater, storm water, and discharges associated with remedial action - **relevant and appropriate, except as noted in citation**	Michigan NREPA, MCL 324.3101-3133; Mich. Admin. Code R 323.1041-1097, R 323.1100-1117 (Part 4 Rules), and R 323.1201-1221 (Part 8 Rules) R 323.1098, Michigan's Antidegradation Rule, is **relevant but NOT APPROPRIATE** for this site. The Antidegradation Rule may be relevant and appropriate when TMDLs are established for PCBs entering the Kalamazoo River	X	
Protection of soil	Establishes screening levels and generic cleanup criteria for soils in the State.	PCB concentrations in sediment/soil -- would apply if federal requirements were less stringent. Here, because site-specific cleanup criteria are set at 2.5 and 11 mg/kg, Michigan's criteria are **relevant but NOT APPROPRIATE** for the floodplains.	Mich Admin Code R 299.1-299.50		
Risk-based Sediment Criteria for PCBs	Part 201 generic sediment cleanup criteria are not available. Site-specific cleanup criteria may be required to address multiple exposure scenarios. These standards may be used in determining site-specific PCB cleanup levels.	Would apply to development of site-specific cleanup criteria for PCBs in sediment; the cancer (1 in 100,000) and noncancer (HI=1) risk standards in Michigan's NREPA can be more protective than the EPA standards, and therefore would be **relevant and appropriate**	Michigan NREPA, MCL 324.20120a, 324.20120b	X	

Table 2-1
Federal and State Chemical-Specific Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considereds (TBCs)
Area 2, OU-5 Kalamazoo River

Action/Medium	Requirements	Prerequisite	Citation	Applicable to Sediment/Soil Alternatives	
				Sediment	Soil
Risk-based Soil Criteria	Protocol for developing site-specific human exposure concentrations over a representative exposure area (e.g., a residential back yard) for PCBs in soil. Concentrations are back-calculated from various cancer risk thresholds and non-cancer hazard indices based on a combination of site-specific characteristics and site-specific exposure assumptions. Site-specific PCB risk-based thresholds in soil (CDM 2003b): Residential: Carcinogenic at $1x10^{-5}$ risk: 2.5 mg/kg Non-carcinogenic at HI = 1: 15 mg/kg Recreationist: Carcinogenic at $1x10^{-5}$ risk: 23 mg/kg Non-carcinogenic at HI = 1: 139 mg/kg Part 201 soil criteria for non-PCB constituents may be revelant and appropraite for residential parcels that do not have institutional controls or restrictive covenants.	PCB concentrations in floodplain soil; site-specific human health risk assessment per CERCLA guidance - TBC Michigan's NREPA could be relevant and appropriate	*Risk Assessment Guidance for Superfund Volume 1, Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals)*, EPA/540/R-92/003, December 1991. Michigan NREPA, MCL 324.20120a, 324.20120b		X
Protection of surface water, soil, and floodplains	Establishes permit requirements for alteration of floodplains and discharges to surface waters. Applicable if remedial alternatives involve construction in floodplains.	Discharges to waters of the State of Michigan classified for wildlife use and human health, Alteration of floodplains as defined by MDEQ R324.3101 - R324.3111 and R323.2190 - relevant and appropriate	Michigan NREPA (Part 4 of Part 31) Water Resources Protection R324.3101 - R324.3111		X
Fish Tissue Residue Criterion for PCBs	Since 1970, MDCH has issued Guidelines to provide the public with the information needed to make decisions to protect themselves and their families from the health risks of consuming fish that contain environmental contaminants. The MDCH Mission statement summarizes the intent of Michigan's GUidelines: Protect, preserve, and promote the health and safety of the people of Michigan with particular attention to providing for the needs of vulnerable and under-served populations. (MDCH 2014)	PCBs in fish tissue residue - TBC	Michigan Fish Consumption Advisory Program Guidance Document Dated August 1, 2013.	X	

References

MDCH 2014. Michigan Fish Consumption Advisory Program Guidance Document. http://www.michigan.gov/documents/mdch/MDCH_MFCAP_Guidance_Document_417043_7.pdf

TMDLs - total maximum daily load standards

Prepared by/Date: KPW 04/21/14
Checked by/Date: MTP 06/11/14

Table 2-2
Federal and State Location-Specific Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considereds (TBCs)
Area 2, OU-5 Kalamazoo River

Location	Requirements	Prerequisite	Citation	Applicable to Sediment/Soil Alternatives	
				Sediment	Soil
Presence of farmland as indicated in Farmland Protection Policy Act of 1981 7 USC 4201, et seq	The purpose of the law is to "...minimize the extent to which Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses..." (P.L. 97-98, Sec. 1539-1549; 7 U.S.C. 4201, et seq.). The FPPA also stipulates that federal programs be compatible with state, local and private efforts to protect farmland. For the purposes of the law, federal programs include construction projects—such as highways, airports, dams and federal buildings—sponsored or financed in whole or part by the federal government, and the management of federal lands.	Federal actions that involve potential conversion of farmland to non-agricultural areas - **relevant and appropriate**	Farmland Protection Policy Act of 1981		X
Presence of Kalamazoo River, a direct link to surface waters of the Great Lakes	Applicable to action or activity by any source, point or nonpoint, of pollutants that is anticipated to result in an increased loading of bioaccumulative contaminants of concern to surface waters of the Great Lakes.	Remedial actions that are anticipated to result in increased loading of bioaccumulative contaminants in the surface water of the Kalamazoo River and, in turn, the Great Lakes - **relevant and appropriate**	40 CFR Part 132, Appendix E Great Lakes Water Quality Initiative Antidegradation Policy	X	
Presence of floodplain, designated as such on a map	Shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains.	Federal actions that involve potential impacts to, or take place within, floodplains – **applicable**	Executive Order 11988 – *Floodplain Management* Section 1. Floodplain Management	X	X
Presence of floodplain, designated as such on a map	Shall consider alternatives to avoid, to the extent possible, adverse effects and incompatible development in the floodplain. Design or modify its action in order to minimize potential harm to or within the floodplain	Federal actions that involve potential impacts to, or take place within, floodplains – **applicable**	Executive Order 11988 Section 2.(a)(2) Floodplain Management	X	X
Presence of floodplain, designated as such on a map	If there is no practicable alternative to locating in or affecting the floodplain, the potential harm to the floodplain shall be minimized. The natural and beneficial values of floodplains shall be restored and preserved.	Federal actions that involve potential impacts to, or take place within, floodplains – **applicable**	40 C.F.R. Part 6, App. A, § 6(a)(5)	X	X
Presence of floodplain, designated as such on a map	Structures and facilities must be constructed in accordance with existing criteria and standards set forth under the National Flood Insurance Program (NFIP) and must include mitigation of adverse impacts wherever feasible. If newly constructed structures or facilities are to be located in a floodplain, accepted floodproofing and other flood protection measures shall be undertaken. To achieve flood protection, EPA shall, wherever practicable, elevate structures above the base flood level rather than filling land.	Construction of structures and facilities within floodplains – **applicable**	40 C.F.R. Part 6, App. A, § 6(c)(1) & (2)	X	X
Presence of floodplain, designated as such on a map; discharge to surface water	Establishes permit requirements for alteration of floodplains and discharges to surface waters.	Substantive requirements would apply if remedial alternatives involve construction in floodplains - **relevant and appropriate**	Michigan NREPA, MCL 324.3108; Part 13 Floodplain Rules at Mich. Admin. Code R. 323.1311-323.1329		X

Table 2-2
Federal and State Location-Specific Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considereds (TBCs)
Area 2, OU-5 Kalamazoo River

Location	Requirements	Prerequisite	Citation	Applicable to Sediment/Soil Alternatives	
				Sediment	Soil
Presence of federally endangered or threatened species, as designated in 50 C.F.R. §§ 17.11 and 17.12 -or- critical habitat of such species listed in 50 C.F.R. § 17.95	Actions that jeopardize the existence of a listed species or results in the destruction or adverse modification of critical habitat must be avoided or reasonable and prudent mitigation measures taken.	Action that is likely to jeopardize fish, wildlife, or plant species or destroy or adversely modify critical habitat— **relevant and appropriate**	16 U.S.C. § 1538(a)	X	X
Presence of federally endangered or threatened species, as designated in 50 C.F.R. §§ 17.11 and 17.12 -or- critical habitat of such species listed in 50 C.F.R. § 17.95	Each Federal agency shall, in consultation with and with the assistance of the Secretary [of DOI], insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by [DOI] to be critical.	Actions authorized, funded, or carried out by any Federal agency, pursuant to 16 U.S.C. § 1536 – **relevant and appropriate**	16 U.S.C. § 1536(a)(2); 50 C.F.R. §§ 402.13(a), 402.14	X	X
Presence of endangered or threatened species, as designated in MCL 324.36501-36507	Establishes requirements for conservation, management, enhancement, and protection of species either endangered or threatened with extinction. For certain remedial alternatives, activities may disrupt or disturb endangered species.	Action that is likely to jeopardize fish, wildlife, or plant species or destroy or adversely modify critical habitat — **relevant and appropriate**	Michigan NREPA (Part 365), MCL 324.36501-36507	X	X
Presence of any migratory bird, as defined by 50 C.F.R. § 10.13	It shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or eggs of any such bird.	Federal actions that have, or are likely to have, a measurable negative effect on migratory bird populations – **relevant and appropriate**	16 U.S.C. § 703(a)	X	X
Presence of archaelogically or historically sensitive area	Establishes procedures to provide for preservation of historical and archaeological data which might be destroyed through alteration of terrain as a result of a federal construction project for a federal licensed activity or program. Historic or archaeological value is currently unknown.	Location of historically or archaelogically significant areas in Area 1 - **relevant and appropriate**	40 CFR Part 6.301(c)	X	X
Presence of archaelogically or historically sensitive area	The NAGPR act requires federal agencies and museums with possession or control over Native American human remains and associated funerary objects to compile an inventory of such items. It requires federal agencies and museums with possession or control over Native American non-associated funerary objects, sacred objects, or objects of cultural patrimony to provide a written summary of such objects. It prescribes when a federal agency or museum must return Native American cultural items. This regulation is only applicable if Native American remains or funerary objects are in Area 1.	Applies if Native American remains or funerary objects are discovered in Area 1 - **relevant and appropriate**	43 CFR Part 10 Excavations and Inadvertent Discoveries		X
Presence of wetlands	Shall take action to minimize the destruction, loss or degradation of wetlands and to preserve and enhance beneficial values of wetlands.	Federal actions that involve potential impacts to, or take place within, wetlands – **TBC**	Executive Order 11990 – *Protection of Wetlands* Section 1.(a)	X	X
Presence of wetlands	Shall avoid undertaking construction located in wetlands unless: (1) there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.	Federal actions that involve potential impacts to, or take place within, wetlands – **TBC**	Executive Order 11990, Section 2.(a) Protection of Wetlands	X	X

Table 2-2
Federal and State Location-Specific Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considereds (TBCs)
Area 2, OU-5 Kalamazoo River

Location	Requirements	Prerequisite	Citation	Applicable to Sediment/Soil Alternatives	
				Sediment	Soil
Location encompassing aquatic ecosystem as defined in 40 C.F.R. § 230.3(c)	No discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.	Action that involves discharge of dredged or fill material into waters of the United States, including wetlands – **relevant and appropriate**	40 C.F.R. § 230.10(a)	X	
Location encompassing aquatic ecosystem as defined in 40 C.F.R. § 230.3(c)	No discharge of dredged or fill material shall be permitted if it: • Causes or contributes, after consideration of disposal site dilution and dispersion, to violations of any applicable State water quality standard; • Violates any applicable toxic effluent standard or prohibition under Section 307 of the Clean Water Act; • Jeopardizes the continued existence of species listed as endangered or threatened under the Endangered Species Act of 1973, or results in the likelihood of the destruction or adverse modification of critical habitat; • Violates any requirement imposed by the Secretary of Commerce to protect any marine sanctuary designated under title III of the Marine Protection, Research, and Sanctuaries Act of 1972.	Action that involves discharge of dredged or fill material into waters of the United States, including wetlands – **relevant and appropriate**	40 C.F.R. § 230.10(b)	X	
Location encompassing aquatic ecosystem as defined in 40 C.F.R. § 230.3(c)	No discharge of dredged or fill material shall be permitted which will cause or contribute to significant degradation of the waters of the United States	Action that involves discharge of dredged or fill material into waters of the United States, including wetlands – **relevant and appropriate**	40 C.F.R. § 230.10(c)	X	
Location encompassing aquatic ecosystem as defined in 40 C.F.R. § 230.3(c)	No discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem.	Action that involves discharge of dredged or fill material into waters of the United States, including wetlands – **relevant and appropriate**	40 C.F.R. § 230.10(d)	X	
Presence of any stream or other body of water proposed to be impounded, diverted, controlled, or modified for drainage	Whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the United States, or by any public or private agency under Federal permit or license, such department or agency first shall consult with the United States Fish and Wildlife Service, Department of the Interior, and with the head of the agency exercising administration over the wildlife resources of the particular State wherein the impoundment, diversion, or other control facility is to be constructed, with a view to the conservation of wildlife resources by preventing loss of and damage to such resources as well as providing for the development and improvement thereof in connection with such water-resource development.	Federal actions that propose to impound, divert, control, or modify waters of any stream or body of water – **relevant and appropriate**	16 U.S.C. § 662(a)	X	
Presence of contamination requiring remedial action, risk assessment, and environmental response activities.	Establishes rules specifying environmental response, risk assessment, remedial action, and site cleanup criteria. Applicable to remedial activities conducted in Area 1.	Occurrence of environmental response, remedial action, and site cleanup - **relevant and appropriate**	Michigan NREPA (Part 201); MDEQ Admin. Code R324.20101 - R324.20142	X	X

Table 2-2
Federal and State Location-Specific Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considereds (TBCs)
Area 2, OU-5 Kalamazoo River

Location	Requirements	Prerequisite	Citation	Applicable to Sediment/Soil Alternatives	
				Sediment	Soil
Presence of floodplain as defined in MDEQ Admin. Code R324.9101 - R324.9123a	Establishes rules prescribing soil erosion and sedimentation control plans, procedures, and measures. If work is conducted in floodplain areas, a soil erosion and sedimentation control plan may be required to perform earth changes.	State actions that involve potential impacts to, or take place within, a floodplain - **relevant and appropriate**	Michigan NREPA (Part 17); Michigan NREPA (Part 91); MDEQ Admin. Code R324.9101 - R324.9123a	X	X
Presence of designated environmental area boundary as defined in MDEQ Admin. Code R324.32301 - R324.32315	In the absence of an approved local ordinance, any person or agency must first apply for and obtain a permit from the MDEQ when proposing to dredge, fill, grade, or otherwise alter the soil, alter the natural drainage, or alter the vegetation on a parcel or property within a designated environmental area boundary.	Activities likely to involve dredging, filling, grading, or other alterations to the soil within an environmental boundary - **relevant and appropriate**	Michigan NREPA (Part 323); MDEQ Admin Code R324.32301 - R324.32315	X	X
Presence of endangered or thereatened species, as deisgnated in MDEQ Admin. Code R324.36501 - R324.36507	Establishes rules to provide for conservation, management, enhancement, and protection of species either endangered or threatened with extinction. For certain remedial alternatives, activities may disrupt or disturb endangered species.	Action that is likely to jeopardize fish, wildlife, or plant species or destory or adversely modify critical habitat - **relevant and appropriate**	Michigan NREPA (Part 365); MDEQ Admin Code R324.36501 - R324.36507	X	X
Enaction of fish consumption advisory as defined by MDCH Division of Community Health 2014	The *MichiganEat Safe Consumption Guide* provides fish consumption advice for Kalamazoo River by fish species and fish length.	Consumption of fish from Area 1 - **TBC**	Michigan Department of Community Health (MDCH) Fish Consumption Advisory MDCH Division of Community Health 2014	X	

Reference
MDCH. 2014. Michigan Fish Advisory. Michigan Department of Community Health, Lansing, MI, 2014.

Prepared by/Date: KPW 04/22/14
Checked by/Date: MTP 06/11/14

Table 2-3
Federal and State Action-Specific Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considereds (TBCs)
Area 2, OU-5 Kalamazoo River

Action	Requirements	Prerequisite	Citation	Applicable to Sediment/Soil Alternatives	
				Sediment	Soil
Engagement in remedial activities damaging to fish or wildlife	Requires the Corps of Engineers to develop mitigation plans to repair fish and wildlife damage associated with remedy implementation.	Remedy incurs damage to fish and wildlife as indicated in 33 USC §§ 2201-2331 - **relevant and appropriate**	33 USC § 2201 et seq.	X	
Water quality-based limits for discharge into navigable waters	Regulates any federal-authorized activity which may result in any discharge into navigable waters and requires reasonable assurance that the action will comply with state applicable water quality standards.	Dredging activities are considered to impact discharge to navigable waters as defined in Section 401, Clean Water Act - **relevant and appropriate**	Clean Water Act 33 USC §§ 1341 Section 401	X	
Risk-based limits protective of human health for air emissions associated with soil and sediment removal	Establishes ambient air quality standards for protection of public health.	Air emissions are generated that create threats to human health as defined in 40 CFR Part 50 - **relevant and appropriate**	40 CFR Part 50 National Primary and Secondary Ambient Air Quality Standards	X	X
Risk-based limits protective of human health for air emissions associated with soil and sediment removal	Establishes filing requirements and standards for constituent emission rates in accordance with National Ambient Air Quality Standards (NAAQS). To be considered for remedial alternatives that include removal of sediment/soil.	Air emissions are generated that create threats to human health as defined in 40 CFR Part 50 - **relevant and appropriate**	40 CFR Part 52 Approval and Promulgation of Implementation Plans	X	X
Protection of soil and sediment	Establishes requirements for handling, storage, and disposal of PCB-containing materials, including PCB remediation waste in excess of 50 mg/kg. Applicable for PCB-containing materials that are removed from the Site. Establishes performance standards for disposal technologies. Soils containing PCBs at concentrations in excess of 50 mg/kg can be incinerated, treated with an equivalent method, or landfilled at a licensed chemical waste landfill. Industrial sludge with PCB concentrations in excess of 500 mg/kg may not be landfilled. Spill cleanup policy establishes cleanup criteria for spills after 5/4/87. Soil cleanup levels: Unrestricted access - 1 to10 mg/kg, restricted access - 10 to 50 mg/kg.	Actions which address soil and/or sediment containing PCBs - **relevant and appropriate**	40 CFR Part 761.60 - 761.79 Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions (Toxic Substance Control Act (TSCA) Regulations)	X	X
Transportation of hazardous waste off site	Defines threshold levels and criteria to determine whether material is hazardous waste.	Waste generated from remedial process and analyzed in accordance with 40 CFR Part 261 - **relevant and appropriate**	40 CFR Part 261 Identification and Listing of Hazardous Waste	X	X
Transportation of hazardous waste off site	Includes manifest, record-keeping and other requirements applicable to generators of hazardous waste.	Waste generated from remedial process and transported off site for storage and/or disposal - **relevant and appropriate**	40 CFR Part 262 Standards Applicable to Generators of Hazardous Waste	X	X
Transportation of hazardous waste off site	Sets forth standards for transporters of hazardous wastes, including the receipt of an EPA identification number and manifesting requirements.	Waste generated from remedial process and transported off site for storage and/or disposal - **relevant and appropriate**	40 CFR Part 263 Standards Applicable to Transporters of Hazardous Waste	X	X
Transportation, storage, and disposal of hazardous waste off site	Includes management standards including record keeping, requirements for particular units such as tanks or containers, and other requirements applicable to owners and operators of hazardous waste treatment, storage and disposal facilities.	Waste generated from remedial process and transported off site for storage and/or disposal in accordance with 40 CFR Part 264 - **relevant and appropriate**	40 CFR Parts 264 and 265 Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities	X	X
Disposal of samples and remedial waste	On-site treatment of samples and remedial waste treatment standards and related testing, tracking and record keeping requirements on hazardous waste.	Waste generated from remedial process and analyzed samples transported off site for disposal in accordance with 40 CFR Part 268 - applicable and relevant	40 CFR Part 268 Subparts D and E Land Disposal Restrictions	X	X

Table 2-3
Federal and State Action-Specific Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considereds (TBCs)
Area 2, OU-5 Kalamazoo River

Action	Requirements	Prerequisite	Citation	Applicable to Sediment/Soil Alternatives	
				Sediment	Soil
Disposal of samples and remedial waste	Identifies disposal requirements for various PCB waste types.		40 CFR Part 761.50 Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions: Storage and Disposal, Applicability	X	X
Disposal of PCB remediation waste	Cleanup and disposal options for PCB remediation waste, which includes PCB-contaminated sediments and dredged materials. Disposal options for PCB remediation waste include disposal in a high-temperature incinerator, an approved chemical waste landfill, or a facility with a coordinated approval under 40 CFR Part 761.77. PCB remediation waste containing PCBs at concentrations less than 50 mg/kg may be disposed of off-site in an approved land disposal facility for the management of municipal solid waste, or in a disposal facility approved under 40 CFR Part 761. 40 CFR Part 761.61(c) allows an EPA Regional Administrator to approve a risk-based disposal method that will not pose an unreasonable risk of injury to human health or the environment.	Sediment waste with PCB concentrations less than 50 mg/kg generated from remedial process and transported off site for storage and/or disposal in accordance with 40 CFR Part 761.61 -relevant and appropriate	40 CFR Part 761.61 PCB Remediation Waste	X	X
Storage of hazardous waste on site	Storage requirements: Establishes technical requirements for temporary storage of PCB wastes prior to treatment or disposal.	PCB wastes generated on site with storage needs defined in 40 CFR Part 761.65 - relevant and appropriate	40 CFR Part 761.65 Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions: Storage for Disposal	X	X
Decontamination of equipment used in remedial activities	Decontamination standards and procedures for removing PCBs that are regulated for disposal from water, organic liquids, and other materials.	Decontamination necessary for equipment, water, organic liquids, or other materials contaminated with PCBs during remedial activities 40 CFR Part 761.79 **- relevant and appropriate**	40 CFR Part 761.79 Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions: Decontamination standards and procedures	X	X
Technology-based water quality discharge limits	Best available technology and monitoring requirements.	Wastewater generated in remedial process to be discharged **- relevant and appropriate**	40 CFR Part 122.44 (a,e,l) Establishing Limitations, Standards, and Other Permit Conditions	X	X
Technology-based water quality discharge limits	Establishes criteria and standards for imposing technology-based treatment requirements.	Wastewater generated in remedial process to be discharged - relevant and appropriate	40 CFR Part 125 Criteria and Standards for the National Pollutant Discharge Elimination System	X	X
Disposal of dredged or fill material on site	These regulations apply to all existing, proposed, or potential disposal sites for discharges of dredged or fill materials into U.S. waters, which include wetlands. Includes special policies, practices, and procedures to be followed by the U.S. Army Corp of Engineers in connection with the review of applications for permits to authorize the discharge of dredged or fill material into waters of the United States pursuant to Sections 301 and 404 of the Clean Water Act. In accordance with CERCLA Section 121(e), a permit is not required for on-site CERCLA response actions, although the selected remedy will comply with substantive requirements of these regulations.	Dredged or fill materials will be disposed of on site, in a wetland area as defined in 40 CFR Part 231, Section 301 Effluent Standards, Section 404(c) Procedures, and 33 CFR Parts 320-330 - relevant and appropriate	40 CFR Part 231 Section 301 Effluent Standards Section 404(c) Procedures 33 CFR Parts 320-330 Navigation and Navigable Waters	X	X
Treatment of wastewater generated from remediation process	Establishes responsibilities of Federal, State, and local government, industry and the public to implement National Pretreatment Standards to control pollutants which pass through or interfere with treatment processes in Publicly Owned Treatment Works (POTWs). Provides guidelines establishing test procedures for the analysis of pollutants.	Remedial actions generate waste that will pass through or interfere with treatment processes in POTWs as defined in 40 CFR Part 403 and 40 CFR Part 136 **- relevant and appropriate**	40 CFR Part 403 General Pre-Treatment Regulations for Existing and New Sources of Pollution 40 CFR Part 136 Guidelines Establishing Test Procedures for the Analysis of Pollutants	X	X

Table 2-3
Federal and State Action-Specific Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considereds (TBCs)
Area 2, OU-5 Kalamazoo River

Action	Requirements	Prerequisite	Citation	Applicable to Sediment/Soil Alternatives	
				Sediment	Soil
Remedial activities on site include dredging, filling, etc.	Prohibits unauthorized obstruction or alteration of any navigable water in the U.S. (dredging, filling, cofferdams, piers, etc.). Remedial activities may have to be conducted in such a way as to avoid obstruction or alteration of the waterway.	The Kalamazoo River altered by dredging, filling, etc. to complete remedial actions - **relevant and appropriate**	33 CFR Parts 320-330 Navigation and Navigable Waters	X	
Remedial activities on site include dredging, filling, etc.	Requirements for permits affecting "navigable waters of the U.S." If excavation or capping activities are performed, the substantive requirements of the Act must be met for work affecting "navigable waters of the United States."	The Kalamazoo River altered by dredging, filling, etc. to complete remedial actions - **relevant and appropriate**	33 CFR Part 322 Permits for Structures or Work in or Affecting Navigable Waters of the United States	X	
Transportation, storage, and disposal of hazardous waste off site	Transportation and handling requirements for hazardous materials, including procedures for the packaging, labeling, manifesting and transporting of hazardous materials. This would apply to alternatives where sediment/soil are removed and transported from Area 1.	Contaminated, hazardous soil and sediment are removed and transported off site for storage and/or disposal as defined by 49 CFR Part 107, 49 CFR Part 171, and 49 CFR Part 172 - relevant and appropriate	49 CFR Part 107 Hazardous Materials Program Procedures 49 CFR Part 171 General Information, Regulations and Definitions 49 CFR Part 172 Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements	X	X
Human health and risk-based limits for air emissions	Establishes 8-hour time-weighted average air concentrations for particulates and PCBs for protection of worker breathing zones, PPE requirements, medical monitoring requirements, respiratory protection requirements, and HAZMAT training requirements. Establishes health and safety requirements for cleanup operations at NPL sites; Site is listed on NPL.	Air emissions are generated during remedial activities that create threats to human health as defined in 29 CFR Part 1910 Subpart I - **to be considered (TBC)**	29 CFR Part 1910 Subpart I, Personal Protective Equipment (General Industry); also Parts 1904 and 1926	X	X
Disposal of dredged or fill material	Guidelines for Specification of Disposal Sites for Dredged or Fill Material. Except as otherwise provided under Clean Water Act § 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. If there is no other practical alternative, impacts must be minimized. Includes criteria for evaluating whether a particular discharge site may be specified.	Disposal of dreged or fill materials will create adverse environmental impacts in proposed disposal site - **relevant and appropriate**	40 CFR Part 230 Guidelines for Specification of Disposal Sites for Dredged or Fill Material.	X	X
Waste characterization of dredged or fill material	Testing manual establishes procedures for determining the potential for contaminant-related impacts associated with discharge of dredged material in inland waters.	Dredged or fill wastes generated in the remedial process for disposal off site as defined in Department of Army, U.S. Army Corps of Engineers Directive - TBC	Department of Army U.S. Army Corps of Engineers Directive	X	X
Transportation and handling of contaminated sediments	Guidance designed to assist EPA staff managing sediment sites by providing a thorough overview of methods that can be used to reduce risk caused by contaminated sediment.	Dredged or fill wastes generated in the remedial process for handling/transportation off site as defined in EPA-540-R-05-012, OSWER 9355.0-85 - TBC	EPA-540-R-05-012, OSWER 9355.0-85	X	
Characterization of solid waste (all primary and secondary wastes)	Must determine if solid waste is excluded from regulation under 40 C.F.R. § 261.4(b); and determine if waste is listed as hazardous waste under subpart D 40 C.F.R. Part 261. Must determine whether the waste is (characteristic waste) identified in subpart C of 40 CFR part 261by either: (1) Testing the waste according to the methods set forth in subpart C of 40 CFR part 261, or according to an equivalent method approved by the Administrator under 40 CFR 260.21; or (2) Applying knowledge of the hazard characteristic of the waste in light of the materials or the processes used.	Generation of solid waste as defined in 40 C.F.R. § 261.2 – **applicable**	40 C.F.R. § 262.11	X	X
Characterization of solid waste (all primary and secondary wastes)	Must refer to Parts 261, 262, 264, 265, 266, 268, and 273 of Chapter 40 for possible exclusions or restrictions pertaining to management of the specific waste.	Generation of solid waste which is determined to be hazardous waste – **applicable**	40 C.F.R. § 262.11(d)	X	X

Table 2-3
Federal and State Action-Specific Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considereds (TBCs)
Area 2, OU-5 Kalamazoo River

Action	Requirements	Prerequisite	Citation	Applicable to Sediment/Soil Alternatives	
				Sediment	Soil
Characterization of hazardous waste (all primary and secondary wastes)	Must obtain a detailed chemical and physical analysis on a representative sample of the waste(s), which at a minimum contains all the information that must be known to treat, store, or dispose of the waste in accordance with pertinent sections of 40 C.F.R. Parts 264 and 268.	Generation of RCRA-hazardous waste for storage, treatment or disposal – **applicable**	40 C.F.R. § 264.13(a)(1)	X	X
Determinations for management of hazardous waste	Must determine each EPA Hazardous Waste Number (waste code) applicable to the waste in order to determine the applicable treatment standards under 40 C.F.R. Part 268 et seq. Note: This determination may be made concurrently with the hazardous waste determination required in Sec. 262.11 of this chapter.	Generation of hazardous waste for storage, treatment or disposal – **applicable**	40 C.F.R. § 268.9(a)	X	X
Determinations for management of hazardous waste	Must determine the underlying hazardous constituents [as defined in 40 C.F.R. § 268.2(i)] in the waste.	Generation of RCRA characteristic hazardous waste for storage, treatment or disposal – **applicable**	40 C.F.R. § 268.9(a)	X	X
Determinations for management of hazardous waste	Must determine if the hazardous waste meets the treatment standards in 40 C.F.R. §§ 268.40, 268.45, or 268.49 by testing in accordance with prescribed methods or use of generator knowledge of waste. Note: This determination can be made concurrently with the hazardous waste determination required in 40 CFR 262.11.	Generation of RCRA characteristic hazardous waste for storage, treatment or disposal – **applicable**	40 C.F.R. § 268.7(a)	X	X
Temporary on-site storage of hazardous waste in containers (e.g., excavated sediments and soils)	A generator may accumulate hazardous waste at the facility provided that: • Waste is placed in containers that comply with 40 C.F.R. §§ 265.171-173; and • The date upon which accumulation begins is clearly marked and visible for inspection on each container; and • Container may be marked with other words that identify the contents. • Container is marked with the words "hazardous waste"; or	Accumulation of RCRA hazardous waste on site as defined in 40 C.F.R. § 260.10 – **applicable** Accumulation of 55 gal. or less of RCRA hazardous waste or one quart of acutely hazardous waste listed in 261.33(e) at or near any point of generation – **applicable**	40 C.F.R. § 262.34(a)(1)(i); 40 C.F.R. § 262.34(a)(2) &(3); 40 C.F.R. § 262.34(c)(1)	X	X
Use and management of hazardous waste in containers	If container is not in good condition (*e.g.*, severe rusting, structural defects) or if it begins to leak, must transfer waste into container in good condition. Use container made or lined with materials compatible with waste to be stored so that the ability of the container is not impaired. Keep containers closed during storage, except to add/remove waste. Open, handle and store containers in a manner that will not cause containers to rupture or leak. Containers having capacity greater than 30 gallons must not be stacked over two containers high.	Storage of RCRA hazardous waste in containers – **applicable**	40 C.F.R. § 265.171 40 C.F.R. § 265.172 40 C.F.R. § 265.173	X	X
Storage of hazardous waste in container area	Area must have a containment system designed and operated in accordance with 40 C.F.R. § 264.175(b).	Storage of RCRA hazardous waste in containers *with free liquids* – **applicable**	40 C.F.R. § 264.175(a)	X	X
Storage of hazardous waste in container area	Area must be sloped or otherwise designed and operated to drain liquid from precipitation, or Containers must be elevated or otherwise protected from contact with accumulated liquid.	Storage of RCRA-hazardous waste in containers that *do not contain free liquids* (other than F020, F021, F022, F023, F026 and F027) –**applicable**	40 C.F.R. § 264.175(c)	X	X
Closure of RCRA container storage unit	At closure, all hazardous waste and hazardous waste residues must be removed from the containment system. Remaining containers, liners, bases, and soils containing or contaminated with hazardous waste and hazardous waste residues must be decontaminated or removed. [Comment: At closure, as throughout the operating period, unless the owner or operator can demonstrate in accordance with40 CFR 261.3(d) of this chapter that the solid waste removed from the containment system is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of parts 262 through 266 of this chapter].	Storage of RCRA hazardous waste in containers in a unit with a containment system – applicable	40 C.F.R. § 264.178	X	X

Table 2-3
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Area 2, OU-5 Kalamazoo River

Action	Requirements	Prerequisite	Citation	Applicable to Sediment/Soil Alternatives	
				Sediment	Soil
Temporary on-site storage of remediation waste in staging piles (e.g., excavated sediments and soils)	Must be located within the contiguous property under the control of the owner/operator where the wastes are to be managed in the staging pile originated. For purposes of this section, storage includes mixing, sizing, blending or other similar physical operations so long as intended to prepare the wastes for subsequent management or treatment.	Accumulation of non-flowing hazardous remediation waste (or remediation waste otherwise subject to land disposal restrictions) as defined in 40 C.F.R. § 260.10 –applicable	40 C.F.R. § 264.554(a)(1)	X	X
Performance criteria for staging pile	Staging pile must: • Facilitate a reliable, effective and protective remedy; • Must be designed to prevent or minimize releases of hazardous wastes and constituents into the environment, and minimize or adequately control cross–media transfer as necessary to protect human health and the environment (e.g. use of liners, covers, run–off/run–on controls).	Storage of remediation waste in a staging pile –applicable	40 C.F.R. § 264.554(d)(1)(i) and (ii)	X	X
Operation of a staging pile	Must not operate for more than 2 years, except when an operating term extension under 40 CFR 264.554(i) is granted. Note: Must measure the 2-year limit (or other operating term specified) from first time remediation waste placed in staging pile. Must not use staging pile longer than the length of time designated by EPA in appropriate decision document	Storage of remediation waste in a staging pile – **applicable**	40 C.F.R. § 264.554(d)(1)(iii) 40 C.F.R. § 264.554(h)	X	X
Design criteria for a staging pile	In setting standards and design criteria, must consider the following factors: • Length of time pile will be in operation; • Volumes of waste you intend to store in the pile; • Physical and chemical characteristics of the wastes to be stored in the unit; • Potential for releases from the unit; • Hydrogeological and other relevant environmental conditions at the facility that may influence the migration of any potential releases; and • Potential for human and environmental exposure to potential releases from the unit.	Storage of remediation waste in a staging pile – **applicable**	40 C.F.R. § 264.554(d)(2)(i) –(vi)	X	X
Closure of staging pile of remediation waste	Must be closed within 180 days after the operating term by removing or decontaminating all remediation waste, contaminated containment system components, and structures and equipment contaminated with waste and leachate. Must decontaminate contaminated sub –soils in a manner that EPA determines will protect human and the environment.	Storage of remediation waste in staging pile in ***previously contaminated area*** – **applicable**	40 C.F.R. § 264.554(j)(1) and (2)	X	X
Discharge of residual water from dewatering activities to surface water	Comply with any applicable substantive water quality requirements under the Clean Water Act (CWA) including application of technology- or ambient water quality- based effluent limitations to ensure discharge does not cause or contribute to violation of water quality standards.	Discharge of pollutants into surface waters – **applicable**	40 C.F.R. § 122	X	

Table 2-3
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Area 2, OU-5 Kalamazoo River

Action	Requirements	Prerequisite	Citation	Applicable to Sediment/Soil Alternatives	
				Sediment	Soil
Discharge of residual water from dewatering activities to surface water	• Technology based effluent limitations and standards based on effluent limitations and standards promulgated under Sections 301 of the [CWA], or case-by-case effluent limitations determined under Section 402(a)(1) of the [CWA] when technology based standards or new source performance standards have not been promulgated, or on a combination of the two. • Other applicable effluent limitations and standards under Sections 301, 302, 303, 304, 307, 318, and 405 of the [CWA] and applicable effluent guidelines and standards under 40 C.F.R. Subchapter N.; and • Other requirements in addition to or more stringent than promulgated effluent limitations, guidelines, or standards under Sections 301, 306, 307, 318, and 405 of the Clean Water Act where necessary to achieve water quality standards established under Section 303 of the Clean Water Act and AWPCA §2-22-9(g) • Take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of effluent standards which has the reasonable likelihood of adversely affecting human health and the environment. • Properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used to achieve compliance with effluent standards. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures.	Discharge of pollutants into surface waters – **applicable**	40 C.F.R. § 122.44(a), (b), (d) 40 C.F.R. § 122.41(d) 40 C.F.R. § 122.41(e)	X	
Disposal of RCRA hazardous waste in an off-site land-based unit	May be land disposed if it meets the requirements in the table "Treatment Standards for Hazardous Waste" at 40 CFR 268.40 before land disposal.	Land disposal, as defined in 40 CFR 268.2, of restricted RCRA waste – **applicable**	40 C.F.R. § 268.40(a)	X	X
Disposal of RCRA hazardous waste in an off-site land-based unit	All underlying hazardous constituents [as defined in 40 CFR 268.2(i)] must meet the Universal Treatment Standards (UTSs), found in 40 CFR 268.48 Table UTS prior to land disposal	Land disposal of restricted RCRA characteristic wastes (D001 –D043) that are not managed in a wastewater treatment system that is regulated under the CWA, that is CWA equivalent, or that is injected into a Class I nonhazardous injection well – **applicable**	40 C.F.R. § 268.40(e)	X	X
Disposal of RCRA – hazardous waste soil in an off-site land–based unit	Must be treated according to the alternative treatment standards of 40 CFR 268.49(c) or according to the UTSs specified in 40 CFR 268.48 applicable to the listed and/or characteristic waste contaminating the soil prior to land disposal.	Land disposal, as defined in 40 CFR 268.2, of restricted hazardous soils – **applicable**	40 C.F.R. § 268.49(b)	X	X
Transportation of hazardous materials	Shall be subject to and must comply with all applicable provisions of the HMTA and HMR at 49 C.F.R. §§ 171-180 related to marking, labeling, placarding, packaging, emergency response, etc.	Any person who, under contract with a department or agency of the federal government, transports "in commerce," or causes to be transported or shipped, a hazardous material – **applicable**	49 C.F.R. § 171.1(c)	X	X
Transportation of hazardous waste *off–site*	Must comply with the generator standards of Part 262 including 40 C.F.R. §§ 262.20-23 for manifesting, Sect. 262.30 for packaging, Sect. 262.31 for labeling, Sect. 262.32 for marking, Sect. 262.33 for placarding.	Preparation and initiation of shipment of hazardous waste off–site – **applicable**	40 C.F.R. § 262.10(h);	X	X
Transportation of samples (i.e. contaminated soils and wastewaters)	Except as provided in 40 C.F.R. § 261.4(d)(2), a sample of waste is not subject to any requirements of 40 C.F.R. Parts 261 through 268 or 270 provided the requirements specified in subparagraphs d)(1) (i) through (iii) are complied with. Exemption does not apply if laboratory determines waste is hazardous but it no longer meets conditions in paragraph (d)(1).	Samples of solid waste or a sample of water, soil for purpose of conducting testing to determine its characteristics or composition – **applicable**	40 C.F.R. § 261.4 (d)	X	X
Presence of floodplain, designated as such on a map	Shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains.	Federal actions that involve potential impacts to, or take place within, floodplains – **relevant and appropriate**	Executive Order 11988 – *Floodplain Management* Section 1. Floodplain Management	X	X

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Action	Requirements	Prerequisite	Citation	Applicable to Sediment/Soil Alternatives	
				Sediment	Soil
Presence of floodplain, designated as such on a map	Shall consider alternatives to avoid, to the extent possible, adverse effects and incompatible development in the floodplain. Design or modify its action in order to minimize potential harm to or within the floodplain	Federal actions that involve potential impacts to, or take place within, floodplains – **relevant and appropriate**	Executive Order 11988 Section 2.(a)(2) Floodplain Management	X	X
Presence of floodplain, designated as such on a map	If there is no practicable alternative to locating in or affecting the floodplain, the potential harm to the floodplain shall be minimized. The natural and beneficial values of floodplains shall be restored and preserved.	Federal actions that involve potential impacts to, or take place within, floodplains – **relevant and appropriate**	40 C.F.R. Part 6, App. A, § 6(a)(5)	X	X
Presence of floodplain, designated as such on a map	Structures and facilities must be constructed in accordance with existing criteria and standards set forth under the National Flood Insurance Program (NFIP) and must include mitigation of adverse impacts wherever feasible. If newly constructed structures or facilities are to be located in a floodplain, accepted floodproofing and other flood protection measures shall be undertaken. To achieve flood protection, EPA shall, wherever practicable, elevate structures above the base flood level rather than filling land.	Construction of structures and facilities within floodplains – **relevant and appropriate**	40 C.F.R. Part 6, App. A, § 6(c)(1) & (2)	X	X
Presence of federally endangered or threatened species, as designated in 50 C.F.R. §§ 17.11 and 17.12 **-or-** critical habitat of such species listed in 50 C.F.R. § 17.95	Actions that jeopardize the existence of a listed species or results in the destruction or adverse modification of critical habitat must be avoided or reasonable and prudent mitigation measures taken.	Action that is likely to jeopardize fish, wildlife, or plant species or destroy or adversely modify critical habitat— **applicable**	16 U.S.C. § 1538(a)	X	X
Presence of federally endangered or threatened species, as designated in 50 C.F.R. §§ 17.11 and 17.12 **-or-** critical habitat of such species listed in 50 C.F.R. § 17.95	Each Federal agency shall, in consultation with and with the assistance of the Secretary [of DOI], insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by [DOI] to be critical.	Actions authorized, funded, or carried out by any Federal agency, pursuant to 16 U.S.C. § 1536 – **relevant and appropriate**	16 U.S.C. § 1536(a)(2); 50 C.F.R. §§ 402.13(a), 402.14	X	X
Presence of any migratory bird, as defined by 50 C.F.R. § 10.13	It shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or eggs of any such bird.	Federal actions that have, or are likely to have, a measurable negative effect on migratory bird populations – **applicable**	16 U.S.C. § 703(a)	X	X
Presence of wetlands	Shall take action to minimize the destruction, loss or degradation of wetlands and to preserve and enhance beneficial values of wetlands. Shall avoid undertaking construction located in wetlands unless: (1) there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.	Federal actions that involve potential impacts to, or take place within, wetlands – **TBC**	Executive Order 11990 – Protection of Wetlands Section 1.(a) Section 2.(a)	X	X
Location encompassing aquatic ecosystem as defined in 40 C.F.R. § 230.3(c)	No discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.	Action that involves discharge of dredged or fill material into waters of the United States, including wetlands – **relevant and appropriate**	40 C.F.R. § 230.10(a)	X	

Table 2-3
Federal and State Action-Specific Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considereds (TBCs)
Area 2, OU-5 Kalamazoo River

Action	Requirements	Prerequisite	Citation	Applicable to Sediment/Soil Alternatives	
				Sediment	Soil
Location encompassing aquatic ecosystem as defined in 40 C.F.R. § 230.3(c)	No discharge of dredged or fill material shall be permitted if it: • Causes or contributes, after consideration of disposal site dilution and dispersion, to violations of any applicable State water quality standard; • Violates any applicable toxic effluent standard or prohibition under Section 307 of the Clean Water Act; • Jeopardizes the continued existence of species listed as endangered or threatened under the Endangered Species Act of 1973, or results in the likelihood of the destruction or adverse modification of critical habitat; • Violates any requirement imposed by the Secretary of Commerce to protect any marine sanctuary designated under title III of the Marine Protection, Research, and Sanctuaries Act of 1972. • No discharge of dredged or fill material shall be permitted which will cause or contribute to significant degradation of the waters of the United States • No discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem.	Action that involves discharge of dredged or fill material into waters of the United States, including wetlands – **relevant and appropriate**	40 C.F.R. § 230.10(b) 40 C.F.R. § 230.10(c) 40 C.F.R. § 230.10(d)	X	
Presence of any stream or other body of water proposed to be impounded, diverted, controlled, or modified for drainage	Whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the United States, or by any public or private agency under Federal permit or license, such department or agency first shall consult with the United States Fish and Wildlife Service, Department of the Interior, and with the head of the agency exercising administration over the wildlife resources of the particular State wherein the impoundment, diversion, or other control facility is to be constructed, with a view to the conservation of wildlife resources by preventing loss of and damage to such resources as well as providing for the development and improvement thereof in connection with such water-resource development.	Federal actions that propose to impound, divert, control, or modify waters of any stream or body of water – **relevant and appropriate**	16 U.S.C. § 662(a)	X	
Water quality-based limits for discharge into navigable waters	Establishes effluent standards in accordance with federal WPCA and CWA. Applicable for alternatives involving discharge of water to the river.	Wastes generated from remedial process to be discharged to river would be subject to the substantive requirements of Part 31 of the NREPA, MCL 324.3101 *et seq*, and Mich Admin Code R. 323.1201-1221; and R. 323.2101-2195 - **relevant and appropriate**	Michigan NREPA, MCL 324.1301 *et seq*, Mich Admin Code R 323.1201-1221; R 323.2101-2195	X	X
Water quality-based limits for discharge to groundwater or the ground	Establishes requirements for discharges of waters or waste to groundwater or to the ground.	Substantive requirements would apply if remedial alternatives involve discharges of wastewater or wastes to groundwater or to the ground - **relevant and appropriate**	Mich Admin Code R 323.2201-2240 (Part 22 Rules for groundwater protection)	X	X
Transportation, storage, and disposal of hazardous waste off site	Establishes requirements for hazardous waste generators, transporters, and treatment/storage/disposal (TSD) facilities. Area 1 is likely not a TSD facility nor a generator of hazardous wastes, although certain portions of the regulations may be useful as a means of determining handling/transportation requirements.	Hazaradous wates generated from remedial process to be transported, stored, and/or disposed of off site as defined in MCL324.11101-11153 - **relevant and appropriate**	Miichigan NREPA, MCL 324.11101-11153	X	X
Disposal of non-hazardous waste off site	Establishes rules for solid waste disposal facilities. Applies to a remedial alternative involving landfilling.	Non-hazardous wasts generated from remedial process to be transported and disposed of off site as defined in MCL 324.11101-11153 and Mich Admin Code R. 299.4401 - 4922 - **relevant and appropriate**	Michigan NREPA, MCL 324.11101-11153 and Mich Admin Code R 299.4401 - 4922	X	X
Regulation of activities in inland lakes or streams to complete remedial actions	Regulates dredging or filling of lake or stream bottoms and establishes mitigation requirments. For certain remedial alternatives, activities may be affected by these regulations.	Dredging or filling will be included in remedial activities as defined in MCL 324.30101 - 30113 - **applicable**	Michigan NREPA, MCL 324.30101 - 30113; Mich Admin Code R 281.811-845	X	X

Table 2-3
Federal and State Action-Specific Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considereds (TBCs)
Area 2, OU-5 Kalamazoo River

Action	Requirements	Prerequisite	Citation	Applicable to Sediment/Soil Alternatives	
				Sediment	Soil
Use of dredging or filling in wetlands to complete remedial activities	Establishes the rules regarding wetland uses and the permit application process for protection of state wetland areas. For certain remedial alternatives, activities may be affected by these rules.	Dredging or filling in regulated wetlands may be included in remedial activities as defined in MCL 324.30101 - 30113 - **relevant and appropriate**	Michigan NREPA, MCL 324.30101-30329; Mich Admin Code R 281.921-925; R 281.951-961; Part 303 (Wetlands Protection), MCL 324.30319	X	X
Maintaining safe conditions during remedial activities	Establishes the rules for safety standards in the workplace. For certain remedial alternatives, activities may be restricted by these regulations.	Safety standards used during remedial activities as detailed in MCL 408.1001 - 1094 - **applicable**	Michigan NREPA, MCL 408.1001-1094; portions of the MIOSHA rules including Part 4 through 13 of the All Industry Administrative Rules, Parts 1-91 of Construction Safety Standards Comission Rules, Part 1-93 of the General Industry Safety Standards Comission Rules, and Parts 301-681 of the Occupational Health Standards Commission Rules.	X	X
Human health and wildlife risk-based limits for air emissions	Establishes rules prohibiting the emission of air contaminants in quantities that cause injurious effects to human health, animal life, plant life of significant economic value, and/or property. For certain remedial alternatives, dust emissions may need to be monitored and controlled, if appropriate.	Air emissions may be generated that create threats to human health as defined in MCL 324.5501 - 5542 and Mich Admin Code R. 336.1101-2823 - **relevant and appropriate**	Michigan NREPA, MCL 324.5501-5542, Mich Admin Code R 336.1101-2823	X	X
Soil erosion and sediment control requirements for owners of land undergoing an earth change	Establishes rules prescribing soil erosion and sedimentation control plans, procedures, and measures	For any remedial action involving an earth change, substantive requirements of permit must be satisfied - **relevant and appropriate**	Michigan NREPA, Part 91 (Soil Erosion and Sediment Control), MCL 324.9101-9112; Mich Admin Code R 323.1701-1744	X	X
Dam Safety	Provides requirements for dam construction and maintenance to ensure that dams are properly constructed, inspected, and maintained, and that the owners have adequately prepared for potential emergencies. Permits are required for the construction, enlargement, repair, alteration, removal, abandonment, and reconstruction of state regulated dams. Dam removal will also have an impact on water resources, so there will also be applicable rules in Part 31.	Applies to dams over 6' in height and over 5 acres of impoundment during the design flood. Would apply to remedial actions that impact regulated dams and surrounding areas - **relevant and appropriate**	Michigan NREPA, Part 315 (Dam Safety), MCL 324.31501-31529; Part 31 (Water Resources), MCL 324.3101	X	X
Invasive Species	Lists nonnative species that are prohibited or restricted in Michigan; provides authority and procedures for State Natural Resources Commission to add or delete from the list. Provides for a permit for introduction of genetically engineered organisms. Provides penalties for violations.	Substantive requirements apply to remedial alternatives that involve restoration or planting activities - **relevant and appropriate**	Michigan NREPA, Part 413 (Transgenic and Nonnative Organisms), MCL 324.41301-41325	X	X
Storage and handling of liquid industrial wastes	Imposes requirements on generators for storage, documentation, and handling for onsite liquid waste in preparation for transport, for the use of registered haulers, and for the inspection of vehicles and control of the disposal of wastes.	Remedial actions may require transportation and disposal of liquid waste, and the Part 121 requirements apply to the storage and transport of those wastes - **relevant and appropriate**	Michigan NREPA, Part 121 (Liquid Industrial Waste), MCL 324.12101-12118	X	X
Reporting wastewater discharge	Requires discharge reporting on the part of any wastewater discharger other than of sanitary sewage to a sewer system. Applicable to any alternatives involving discharge of wastewater.	Remedial activities include discharge of wastewater as defined Mich Admin Code R. 299.9007 - **relevant and applicable**	Michigan NREPA; Mich Admin Code R 299.9007	X	X
Human health and wildlife risk-based limits for air emissions	Establishes rules prohibiting the emission of air contaminants in quantities that cause injurious effects to human health, animal life, plant life of significant economic value, and/or property. For certain remedial alternatives, dust emissions may need to be monitored.	Air emissions are generated that create threats to human health as defined in MCL 336.1101 - 2823 and MCL 324.5501 -5542 - **relevant and applicable**	Michigan NREPA; MCL 336.1101 - 2823; MCL 324.5501 - 5542	X	X

Prepared by/Date: KPW 04/22/14
Checked by/Date: MTP 06/11/14

APPENDIX 2

Administrative Record Index

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

ADMINISTRATIVE RECORD
FOR THE
ALLIED PAPER/PORTAGE CREEK/KALAMAZOO RIVER SITE
OPERABLE UNIT 5, AREA 2
KALAMAZOO, KALAMAZOO COUNTY, MICHIGAN

UPDATE 1
SEPTEMBER 27, 2017
SEMS ID: 935138

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	936300	Undated	U.S. EPA	Public	Learn About Dioxin Webpage	4
2	936314	Undated	U S. EPA	Public	Cleanup Levels for Dioxin at Superfund Sites Web Page	3
3	936319	Undated	Always, R., Otsego Planning Commission	File	Comments on Proposed EPA Cleanup Plan for Area 2 of the Kalamazoo River	2
4	381731	3/1/76	U.S. EPA	U.S. EPA	Journal Article: "The View of the Paper Industry on the Occurrence of PCBS in the Environment and the Need for Regulation" (National Conference on Polychlorinated Biphenyls Proceedings)	6
5	381732	3/1/76	U.S. EPA	U.S. EPA	Journal Article: "Statement Relating to Polychlorinated Biphenyls on Behalf of the Wisconsin Paper Council" (National Conference on Polychlorinated Biphenyls Proceedings)	5
6	381735	3/1/76	Institute of Paper Chemistry	File	Journal Article: Determination of Polychlorinated Biphenyls in Paper Mills Effluents and Process Streams	31
7	381733	7/22/77	Institute of Paper Chemistry	File	Report: Polychlorinated Biphenyls in Pulp and Paper Mills - Part 2, Distribution and Removal	64

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
8	381734	8/1/79	Institute of Paper Chemistry	File	Journal Article: "InterLaboratory Study of the Determination of Polychlorinated Biphenyls in a Paper Mill Effluent	20
9	930007	10/1/80	U.S. EPA	File	Ambient Water Quality Criteria for Polychlorinated Biphenyls	200
10	171135	12/13/82	Creel, W., MI Dept. of Natural Resources	Gettle, G., MI Dept. of Natural Resources	MDNR Memo re: Otsego Dam	3
11	165912	2/1/86	Allied Paper Co. & Varnum Riddering Schmidt & Howlett	U.S. EPA	Allied Paper Inc. - Proposal for Implementation of Immediate Remedial Action Plan & Assessment of Future Remedial Action Plan	45
12	171120	3/1/86	Nus Corp	Michigan, State of	Feasibility Study of Alternatives (Vol 1)	8
13	930004	4/1/86	Eisler, R., U.S. Deot. Of Interior/Fish & Wildlife Services	File	Polychlorinated Biphenyls Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review	53
14	165918	11/19/86	Wallace, C., MI Dept. of Natural Reources	Eaton, R., Allied Paper Co.	Site Inspection Report & Hazardous Ranking System Packet (Cover Letter Attached)	93
15	936297	3/1/88	U.S. EPA	File	USEPA/Paper Industry Cooperative Dioxin Screening Study	333
16	165953	3/7/90	Luzkow, S., MI Dept. of Natural Resources	Leep, T., MI Dept. of Natural Resources	Draft Preliminary Health Assessment (3/8/1990 Cover Memo Attached)	25
17	936297	7/1/90	U.S. EPA	File	USEPA/Paper Industry Cooperative Dioxin Study "The 104 Mill Study" - Summary Report	29
18	381968	8/30/90	Federal Register	Public	NPL Site Narrative	2
19	494780	4/19/91	File	File	Land Application of Bleached Pulp & Paper Mill Wastewater Treatment Sludges	102
20	167821	12/23/91	MI Dept. of Public Health & ATSDR	U.S. EPA	Preliminary Health Assessment	42

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21	165888	5/1/92	Blasland Bouck & Lee Inc.	U.S. EPA	Description of Current Situation - Vol II of VII	211
22	165892	5/1/92	Blasland Bouck & Lee Inc.	U.S. EPA	Description of Current Situation (Drawings) - Vol III of VII	43
23	165251	5/1/92	Brasland & Bouck Engineers P C	U.S. EPA	Description of Current Situation - Aerial Photographs - Vol IV of VII	36
24	165894	5/1/92	Blasland Bouck & Lee Inc.	U.S. EPA	Description pf Current Situation - Appendix B - Land Use Figures - Vol V of VII	13
25	165895	5/1/92	Blasland Bouck & Lee Inc.	U.S EPA	Draft Description of Current Situation - Appendix A-D - Vol VI of VII	253
26	165897	5/1/92	Blasland Bouck & Lee Inc.	U.S. EPA	Description of Current Situation - Appendix E - Stiff Diagrams - Vol VII of VII	14
27	235188	7/1/92	Blasland Bouck & Lee Inc.	Kalamazoo River Study Group	Description of Current Situation (Vols 1-7)	884
28	930006	9/1/96	U.S. EPA	File	PCBS: Cancer Dose-Response Assessment and Application to Environmental Mixtures	83
29	167797	1/1/02	Blasland Bouck & Lee Inc.	U.S. EPA	Final Technical Memorandum 14 - Biota Investigation	211
30	167798	1/1/02	Blasland Bouck & Lee Inc.	U.S. EPA	Final Technical Memorandum 14 - Biota Investigation - Appendix B - Field Documentation	243
31	167799	1/1/02	Blasland Bouck & Lee Inc.	U.S. EPA	Final Technical Memorandum 14 - Biota Investigation - Appendix C - Photographic Log	388
32	167800	1/1/02	Blasland Bouck & Lee Inc.	U.S. EPA	Final Technical Memorandum 14 - Biota Investigation - Appendix D - QA/QC Review of Data Summary Of Precision & Accuracy Assessment	242
33	167801	1/1/02	Blasland Bouck & Lee Inc.	U.S. EPA	Final Technical Memorandum 14 - Biota Investigation - Appendix E - Data Quality Review Reports - Vol 1 of 3	667

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34	167802	1/1/02	Blasland Bouck & Lee Inc.	U.S. EPA	Final Technical Memorandum 14 - Biota Investigation - Appendix E - Data Quality Review Reports - Vol 2 of 3	631
35	168049	1/1/02	Blasland Bouck & Lee Inc.	U S. EPA	Final Technical Memorandum 14 - Biota Investigation - Appendix E - Data Quality Review Reports - Vol 3 of 3	1003
36	168048	1/1/02	Blasland Bouck & Lee Inc.	U.S. EPA	Final Technical Memorandum 14 - Biota Investigation - Appendix F - Chain of Custody Records	531
37	168050	1/1/02	Blasland Bouck & Lee Inc.	U.S. EPA	Final Technical Memorandum 14 - Biota Investigation - Appendix G - PCDD/PCDF Fish Tissue Laboratory Documentation	80
38	168051	1/1/02	Blasland Bouck & Lee Inc.	U.S. EPA	Final Technical Memorandum 14 - Biota Investigation - Appendix H - 1997 Fish Trend Monitoring Investigation	56
39	168052	1/1/02	Blasland Bouck & Lee Inc.	U.S. EPA	Final Technical Memorandum 14 - Biota Investigation - Appendix I - Data Quality Review Reports - Turtle Tissue Analytical Results	420
40	249486	5/1/03	Camp Dresser & Mckee Inc	U.S. EPA	Final Human Health Risk Assessment (Revised)	109
41	910573	8/27/10	Saric, J., U.S. EPA	Erickson, M., Arcadis	Letter re: Area 2 Supplemental Remedial Investigation/ Feasibility Study Work Plan Disapproval	8
42	910572	12/1/10	Saric, J., U.S. EPA	Erickson, M , Arcadis	Letter re: Area 2 Supplemental Remedial Investigation/ Feasibility Study Work Plan Approval	3
43	910571	2/10/11	Saric, J., U.S. EPA	Erickson, M., Arcadis	Letter re: Area 2 Supplemental Remedial Investigation/ Feasibility Study Reconnaissance Plan Extension	2
44	935137	10/21/11	URS	U.S. EPA	Engineering Design Report - Dam Removal and Channel Restoration ***(Redacted)***	140

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45	910566	10/26/11	Saric, J., U.S. EPA	Erickson, M., Arcadis	Letter re: Area 2 Proposed Soil and Sediment Field Sampling Plan Approval	4
46	910564	11/22/11	Erickson, M., Arcadis	Saric, J., U.S. EPA	Area 2 Revised Soil and Sediment Field Sampling Plan	269
47	910567	4/2/12	Saric, J., U.S. EPA	Erickson, M., Arcadis	Letter re: Area 2 Proposed Supplemental Non-PCB Analysis Approval	2
48	910568	5/29/12	Saric, J., U.S. EPA	Erickson, M., Arcadis	Letter re: Area 2 Supplemental Soil and Sediment Field Sampling Plan Approval	2
49	918185	8/1/12	File	File	Supplemental Remedial Investigation Report - OU-5, Area 1	4740
50	910565	10/11/12	Saric, J., U.S. EPA	Erickson, M., Arcadis	Letter re: Area 2 Alternatives Screening Technical Memorandum Extension	1
51	934400	3/27/13	U.S. EPA	File	Memo re: Procedure for Re-evaluation of Dioxin Risk at Region 5 Remedial Superfund Sites	2
52	910569	4/8/13	Saric, J., U.S. EPA	Fortenberry, C., Georgia-Pacific LLC	Letter re: Area 2 Draft Supplemental Remedial Investigation Report Disapproval	22
53	910570	5/23/13	Saric, J., U.S. EPA	Fortenberry, C., Georgia-Pacific LLC	Letter re: Area 2 Revised Supplemental Remedial Investigation Report Extension	1
54	916473	2/27/14	Saric, J., U.S. EPA	Fortenberry, C., Georgia-Pacific LLC	Letter re: Area 2 and 3 Revised Draft Supplemental Remedial Investigation Report and Alternatives Screening Technical Memorandum (with EPA Comments)	25
55	916472	5/27/14	Saric, J., U.S. EPA	Fortenberry, C , Georgia-Pacific LLC	Letter re: Area 2 and 3 Alternatives Screening Technical Memorandum Extension	1
56	916474	7/31/14	Saric, J., U.S. EPA	Fortenberry, C , Georgia-Pacific LLC	Letter re: Area 2 Revised Draft Supplemental Remedial Investigation Report Disapproval (with EPA Comments)	11

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57	934402	8/1/14	AMEC	U.S. EPA	Draft Area 2 Alternatives Screening Technical Memorandum	127
58	934401	8/7/14	Bucholtz, P., MDEQ	Fortenberry, C., Georgia-Pacific LLC	Letter re: Comments for Operable Unit 5, Area 2 Revised Draft Supplemental Remedial Investigation Report	30
59	916475	10/6/14	Saric, J., U.S. EPA	Fortenberry, C., Georgia-Pacific LLC	Letter re: Area 2 Revised Draft Supplemental Remedial Investigation Report Extension	1
60	934391	3/5/15	Saric, J., U.S. EPA	Fortenberry, C., Georgia-Pacific LLC	Letter re: Area 2 and Area 3 Revised Supplemental Remedial Investigation Report Submittal Dates	1
61	936322	4/30/15	Resident of Kalamazoo	Public	Letter re: Open Letter to the Residents of the City of Kalamazoo Concerning the Allied Paper Co. Landfill	34
62	934397	7/28/15	Saric, J., U.S. EPA	Fortenberry, C., Georgia-Pacific LLC	Letter re: Area 2 Revised Supplemental Remedial Investigation Report Approval	2
63	936353	8/3/15	Bucholtz, P., MDEQ	Fortenberry, C., Georgia-Pacific LLC	Letter re: Comments for OU5 Allied Paper, Inc./Portage Creek/Kalamazoo River, Area 2	12
64	934392	9/8/15	Saric, J., U.S. EPA	Fortenberry, C., Georgia-Pacific LLC	Letter re: Final Comments on Area 2 Alternatives Screening Technical Memorandum	8
65	934404	9/25/15	Fortenberry, C., Georgia-Pacific LLC	Saric, J., U.S. EPA	Supplemental Remedial Investigation Report (Text and Tables) - Operable Unit 5, Area 2	393
66	934405	9/25/15	Fortenberry, C., Georgia-Pacific LLC	Saric, J., U.S. EPA	Supplemental Remedial Investigation Report (Appendices) - Operable Unit 5, Area 2	1
67	934406	9/25/15	Georgia-Pacific	U.S. EPA	Responses to Final U.S. EPA Comments on Area 2 Supplemental Remedial Investigation Report	1
68	934407	9/29/15	Georgia-Pacific	U.S. EPA	Responses to Final MDEQ Comments on Area 2 Supplemental Remedial Investigation Report	15

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69	934395	11/18/15	Saric, J., U.S. EPA	Fortenberry, C., Georgia-Pacific LLC	Letter re: Area 2 Feasibility Study Report Extension	1
70	516258	1/27/16	Saric, J., U.S. EPA	Fortenberry, C., Georgia Pacific Corp	Letter re. Final Multi-Area Quality Assurance Project Plan Revision 1, Addendum 1 and Quality Management Plan Approval	4
71	934394	8/8/16	Saric, J., U.S. EPA	Fortenberry, C., Georgia-Pacific LLC	Letter re: Disapproval of Area 2 Draft Feasibility Study Report	9
72	934396	10/3/16	Saric, J., U.S. EPA	Fortenberry, C., Georgia-Pacific LLC	Letter re: Area 2 Revised Feasibility Study Report Extension	1
73	934398	12/7/16	Saric, J., U.S. EPA	Ells, S., Contaminated Sediments Technical Advisory Group	Memo re. Tier 2 Sediment Site Consideration Memo	19
74	934393	3/15/17	Saric, J., U.S. EPA	Fortenberry, C., Georgia-Pacific LLC	Letter re: Approval of Area 2 Revised Draft Feasibility Study Report with Modifications	5
75	516268	3/15/17	Saric, J , U.S. EPA	Fortenberry, C., Georgia Pacific Corp.	Letter re: Area 2: Revised Draft Feasibility Study Report	6
76	516254	4/7/17	Saric, J , U.S. EPA	Bucholtz, P , MI Dept of Environmental Quality	Letter re: Allied Paper, Inc /Portage Creek/Kalamazoo River Third Five-Year Review	2
77	934399	4/21/17	Guerriero, M., U.S. EPA	Woolford, J., U.S. EPA	Memo re: National Remedy Review Board Review Not Warranted for Proposed Response Action at Operable Unit 5, Area 2	94
78	936352	4/21/17	Bradley, J., MI Dept. of Environmental Quality	Fortenberry, C., Georgia Pacific Corp.	Letter re: Comments for OU5 Allied Paper, Inc./Portage Creek/Kalamazoo River, Area 2	14
79	934403	4/28/17	AMEC	U S EPA	Feasibility Study for Operable Unit 5, Area 2	669

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80	934408	4/28/17	Georgia-Pacific	U.S. EPA	Responses to U.S. EPA Comments on Area 2 Revised Draft Feasibility Study	3
81	934409	4/28/17	Fortenberry, C., Georgia-Pacific LLC	Goeks, T., NOAA and Alfano, J., MDEQ	Letter re: Categorical Response to Comments on the October 21, 2016 Area 2 Draft Feasibility Study	4
82	934410	4/28/17	Fortenberry, C., Georgia-Pacific LLC	Saric, J., U.S. EPA	Letter re. Submission of Final Area 2 Revised Draft Feasibility Study	1
83	934438	6/1/17	U.S. EPA	Public	Regional Screening Level (RSL) Resident Soil	11
84	936313	6/6/17	Peabody, D., MI Dept. of Environmental Quality	Saric, J., U.S. EPA	Letter re: Comments for the Draft Proposed Plan - May 2017	7
85	936312	6/27/17	Saric, J., U S. EPA	Peabody, D., MI Dept. of Environmental Quality	Letter re: MDEQ Comments on Draft Proposed Plan	2
86	936324	7/12/17	File	U.S. EPA	Comments on the Proposed Cleanup Plan for the Kalamazoo River Area 2	2
87	936320	7/25/17	Jenson Litigation Solutions	Saric, J., & Russell, D., U.S. EPA	Public Meeting - Proposed Cleanup Plan for Area 2 of the Kalamazoo River Site	37
88	936325	7/31/17	Peterson, R., Saugatuck-Douglas Chamber of Commerce	U.S. EPA	Comments on the Proposed Cleanup Plan for the Kalamazoo River Area 2	4
89	516256	7/31/17	Morgan, T., U.S. Government National Labor Relations Board	Bachelder, A., Sachs Waldman, P.C.	Letter re: Decision to Dismiss	4
90	936315	8/3/17	Hamilton, S., Kalamazoo River Watershed Council	Russell, D., U.S. EPA	Email re: Kalamazoo River Watershed Council Comment on Proposed Area 2 Cleanup	1
91	936326	8/4/17	Johnson, S., EcoSPEARS	Russell, D., U.S. EPA	Email re: NASA Tech for PCB Remediation	19

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
92	936316	8/25/17	Georgia-Pacific LLC	Saric, J., U.S. EPA	Letter re: Comments on the July 2017 Proposed Plan Area and Fact Sheet	3
93	936317	8/30/17	Harrison, D , Kalamazoo River Protection Associtaion	Saric, J., & Russell, D , U.S. EPA	Letter re: Comments on EPA Proposed Plan for Remediation Plan	4
94	936318	8/30/17	Alfano, J , MI Dept. of Environmental Qualtiy	Saric, J., & Russell, D., U.S. EPA	Letter re· Kalamazoo River Proposed Plan Comments from the NRD Trustees	4
95	936327	9/21/17	Peabody, D., MI Dept. of Environmental Quality	Saric, J., U S. EPA	Letter re: Comments for the Draft Record of Decision	5
96	-	-	-	File	Record of Decision - Operable Unit 5 Area 2 ***(Pending)***	-

IN THE UNITED STATES DISTRICT COURT
FOR WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

UNITED STATES OF AMERICA and THE STATE OF MICHIGAN Plaintiffs, v. NCR CORPORATION, Defendant.	Civil Action No.

CONSENT DECREE WITH NCR CORPORATION
Appendix D
(Draft Area 4 Action Memorandum)

MEMORANDUM

SUBJECT: Approval for a Time-Critical Removal Action at the Trowbridge Dam Area of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site, Allegan County, Michigan (EPA ID MID006007306)

FROM: Paul Ruesch, On-Scene Coordinator
Emergency Response Branch 2 - Section 3

THRU: Cathy Stepp,
Regional Administrator

TO: Henry Darwin,
Acting Deputy Administrator

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of the time-critical removal action (TCRA) described herein for the "Trowbridge Dam Area," an area of contamination within Area 4 of Operable Unit #5 (OU5) of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site (the Site). OU5, which is located in Kalamazoo and Allegan Counties, Michigan, is primarily and pervasively contaminated with polychlorinated biphenyls (PCBs).

The response action described in this Action Memorandum will mitigate threats to public health, welfare, and the environment upstream of the Trowbridge Dam[1] posed by the ongoing uncontrolled releases of PCBs and potential for further uncontrolled release of high levels of PCBs into the food chain from instream sediments and riverbank/floodplain soils of the Kalamazoo River at the Trowbridge Dam Area. For the purposes of this Action Memorandum, the "Trowbridge Dam Area" is PCB-contaminated material in and along an approximate 2.4 mile stretch of the Kalamazoo River between River Mile 47.25 and the Trowbridge Dam (see Figure 2) and includes targeted instream sediments and riverbank/floodplain soils (see Figures 3 & 4).

The Trowbridge Dam Area contains contaminated sediment and soil with very high levels of PCBs. Riverbank erosion and instability cause continued release of PCBs into the Kalamazoo

[1] The Trowbridge Dam is located in Allegan County at River Mile (RM) 44.9 of the Kalamazoo River (see Figure 1).

River. The Trowbridge Dam is in very poor condition and on the brink of failing. The dam creates an impoundment area of approximately 59 acres. Failure of the dam prior to the implementation of the removal action described in this Action Memorandum would lead to highly concentrated PCB-contaminated sediments being released to the riverbanks, floodplains, and instream sediments where contamination does not currently exist or exists at lower levels.

The response action set forth in this Action Memorandum is time-critical and includes dredging and/or excavation of sediment and soil; containment of PCB-contaminated material; water treatment; shoreline and riverbank stabilization; off-site disposal of removed PCB-contaminated materials managed in accordance with EPA's Toxic Substances Control Act (TSCA) (40 C.F.R. Part 761) and the off-site rule (40 C.F.R. § 300.440); and monitoring. EPA estimates that this time-critical removal action (TCRA) will address approximately 189,000 yd^3 of PCB-contaminated material.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID # MID006007306

A. Site Description

1. Removal Site Evaluation

The Administrative Record (found in Attachment 2) contains numerous reports which summarize investigations at the Site. The three investigations and two risk assessments described below provide the basis for this TCRA:

a) State-lead Remedial Investigation/Feasibility Study (RI/FS)

Between 1990 and 2003, the State of Michigan (the State) and various potentially responsible parties (PRPs) conducted Site-wide remedial investigation (RI) and feasibility study (FS) work. The RI field work included an assessment of the physical characteristics of the riverbanks across OU5, including what is now referred to as Area 4. Based on the State's early field work, EPA has concluded that the riverbanks are an ongoing source of loading of PCB-contaminated soils and sediments to the Kalamazoo River.

EPA bases its determination of an imminent and substantial endangerment in this Action Memorandum in part on the risk analysis set forth in the State's RI. The risk analysis associated with the RI identified some ways PCBs are released into the Kalamazoo River from the riverbanks. In particular, the RI report concludes that the cohesive nature of the exposed sediments allows significant portions of the riverbanks to remain in vertical-to-near-vertical repose. The fine-grained exposed sediments, however, generally overlie non-cohesive sandy sediments and soils. As a result, the faces of the banks are susceptible to erosion by river flow during higher water stages and to undercutting by erosion of the underlying non-cohesive sediments and soils. Undercutting progresses until the overlying sediments fall into the river, typically in blocks. These blocks, or portions thereof, remain along the toe of the river at the Trowbridge Dam Area (see photographs in Attachment 3).

b) United States Geological Survey (USGS) Study

In 2005, USGS, in cooperation with EPA and the State, conducted an additional study of the channel characteristics of the Kalamazoo River. This study concluded that the erosion of the "toe" of the riverbank widens the river, resulting in steeper bank angles. Once the bank undercut exceeds its critical bank angle, the inability of the sediments to support themselves results in bank failure. EPA and State field personnel observed both significant erosion and failure of riverbanks into the river channel in April 2018 (see photographs in Attachment 3).

c) Supplemental Remedial Investigation/Feasibility Study

Beginning in 2013, and continuing today, additional investigations in Area 4, which includes the Trowbridge Dam Area, were conducted as part of the Supplemental Remedial Investigation (SRI). The data gathered as part of the SRI found levels of PCBs in the Trowbridge Dam Area as high as 83 milligrams per kilogram (mg/kg) PCBs in riverbank/floodplain soils and 120 mg/kg PCBs in instream sediments. Further, the report indicated that PCB levels were > 50 mg/kg in 18 riverbank soil samples. The SRI investigations also indicate riverbank erosion and sloughing are contributing PCB-contaminated sediments to the Kalamazoo River. Erosion pin survey results indicate that bank erosion and/or bank sloughing occurred at 70% (7 of 10) of the locations in the former Trowbridge impoundment (BBL, 2003).

d) Baseline Human Health Risk Assessments

In 1977, the State issued a public health advisory related to the PCB contamination in the Kalamazoo River. This advisory remains in place today and warns against eating a variety of fish species from the river because of PCB contamination. In December 1991, the federal Agency for Toxic Substances and Disease Registry (ATSDR) and the State prepared a Public Health Assessment (PHA) for the Site (ATSDR, 1991). The PHA indicated that the Site was a public health hazard because of the probable exposure to hazardous substances at concentrations that might result in adverse health effects. Potential human exposure pathways of concern include incidental ingestion and inhalation of contaminated soils and ingestion of contaminated biota, primarily fish.

In April 2003, the State completed a Baseline Human Health Risk Assessment (HHRA) for the Site that is relevant to EPA's determination of imminent and substantial endangerment in this Action Memorandum. The HHRA identified the following primary human health risk:

> Cancer risks and non-carcinogenic Hazard Quotients (HQ) exceed EPA and/or State acceptable risk limits for both sport and subsistence fishermen. Carcinogenic risk from the consumption of fish ranges from 1.8×10^{-4} to 1.8×10^{-3} for the river segment (designated in the assessment as 'ABSA8') encompassing the Trowbridge Dam Area. Non-carcinogenic HQs for the consumption of fish range from 3.0 to 29 for reproductive effects and 10 to 100 for immunological effects.

Subsequent updates to the HHRA in 2012 and 2015, as well as the 2017 SRI concluded that unacceptable risks and hazards to human health continue to be associated with the fish ingestion pathway (ARCADIS, 2012, AMEC Foster Wheeler, 2015, AMEC Foster Wheeler, 2017).

e) Ecological Risk Assessment

The State finalized its Ecological Risk Assessment (ERA) for the Kalamazoo River in April 2003. The State's ERA findings are also relevant to EPA's determination of imminent and substantial endangerment at the Trowbridge Dam Area. The ERA focused primarily on assessing population-level risks associated with PCB contamination in abiotic media and biota. Because of the potential for PCBs to accumulate in biological tissues and exert adverse effects in upper trophic level biota, the ERA specifically considered bioaccumulation, food chain effects, and adverse effects in upper trophic level organisms. The ERA also focused on assessing the risks from PCB exposures via direct contact with contaminated surface water, streambed sediment, floodplain (exposed) sediment, and surface soil, as well as ingestion of PCB-contaminated food items.

The ERA concluded that PCB contamination at the Site presents a high to moderate ecological risk for eight animal species. Table 5.3 of the ERA identifies the estimated risks for all representative species of concern, based on estimated PCB dose (birds and mammals) or on the Site-wide average PCB concentration (aquatic receptors). The ERA also found that PCB contamination of surface water and streambed sediment (and floodplain soils that are frequently inundated or have the potential to erode into the river) is likely to adversely affect sensitive piscivorous predators, such as mink, through consumption of PCB-contaminated prey, especially fish. Other piscivorous predators, such as bald eagles, also appear to be at high risk based on the exposure assumptions presented in the assessment.

More recently, the Terrestrial Baseline Ecological Risk Assessment, updated as part of the SRI, concluded that there continues to be a potential risk to moderate to low-sensitivity insectivorous and vermivorous birds (AMEC Foster Wheeler, 2017). Terrestrial and semi-aquatic biota may also be at risk from PCB-contaminated riverbank/floodplain soils, depending on life history (e.g. foraging behavior, diet and mobility) and sensitivity to PCBs. Omnivorous birds (represented by the robin) that consume substantial numbers of soil invertebrates, such as earthworms, appear to be at moderate but still significant risk.

The Trowbridge Dam Area may also be home to endangered species. The United States Fish and Wildlife Service has identified two federally endangered species, three federally threatened species, and one federal candidate species that can be present in Allegan County. The Karner Blue Butterfly and the Indiana Bat both are endangered. The Bald Eagle, Northern Long-Eared Bat, and Pitcher's Thistle (a plant) are threatened in this region. The Eastern Massasauga Rattlesnake is the lone candidate species. The State lists seven species as endangered or threatened (not including the federally-listed species) in or near the Site, including the Zigzag Bladderwort, wild American Ginseng, and the Log Fern (plants), the Creek Chubsucker (fish), Prairie Warbler (bird), Ottoe Skipper (insect), and the Spotted Turtle (reptile).

2. Physical Location

The "Trowbridge Dam Area" is the aerial extent of PCB-contaminated instream sediments and riverbank/floodplain soils along the 2.4 mile stretch of the Kalamazoo River between River Mile 47.25 and the Trowbridge Dam (see Figure 2). The geographical coordinates of the Trowbridge Dam are 42° 28' 58.21" north latitude and 85° 47' 47.50" west longitude.

An Environmental Justice (EJ) analysis for the Trowbridge Dam Area is contained in Attachment 1. The analysis was done for the surrounding area using EPA's EJ Screen Tool. EPA has reviewed environmental and demographic data for a one-mile radius surrounding the Trowbridge Dam Area and determined there is a potential for EJ concerns at this location.

3. Site and Trowbridge Dam Area Characteristics

As stated above, the Trowbridge Dam Area is an area of contamination within Area 4 of OU5 of the Site. The Site lies within the Great Lakes Basin in the Kalamazoo River watershed of Michigan's Lower Peninsula. The watershed drains 2,020 square miles of southwest Michigan. It reaches 162 miles into south-central Michigan, and ranges in width from 11 to 29 miles. The main channel of the Kalamazoo River flows northwest for 123 miles before ultimately emptying into Lake Michigan near Saugatuck, Michigan. EPA studies have estimated that the Kalamazoo River contributes approximately 42 pounds of PCBs to Lake Michigan per year (EPA, 2004).

The Trowbridge Dam was built in 1898 to generate hydroelectric power. Consumers Energy operated it from 1902 to 1967, when it gifted the dam to the State. Over the past 50 years, the State has demolished the dam's powerhouses, removed its superstructure, spillway and concrete piers, raised its gates to lower the impoundment level, and lowered its abutment walls. The dam, as it exists today, consists of a 150-foot left earthen embankment, 80-foot wide concrete spillway, and a 110-food right earthen embankment (see Figure 5).

In 2010, the State began semi-annual safety inspections of Trowbridge Dam. The State has determined that the Trowbridge Dam is in 'very poor' condition and exhibits several active or incipient failure mechanisms (SME, 2018). The latest inspection report defines 'very poor' to mean that it is expected that the dam will fail unless action is taken to remove or reconstruct the dam (SME, 2018). Most pertinent to this Action Memorandum is the active erosion of the left upstream embankment into the reservoir with progressive sloughing of the slope into the embankment (see photograph #5 in Attachment 3), and the potential for an uncontrolled release of the reservoir as well as the impounded sediment should there be a catastrophic failure of the dam. Because of the critical dam safety issues set forth in the State's report, EPA plans to complete the work described herein within the next two years so that PCB-contaminated soils and sediments impounded by the dam and within the reservoir do not further contaminate the river due to dam failure.

4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

A release to the environment of a hazardous substance, pollutant, and/or contaminant has occurred and continues to occur at the Trowbridge Dam Area due to ongoing riverbank erosion (see photographs in Attachment 3). EPA documented the presence of elevated levels of PCBs, a hazardous substance, as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), within instream sediments and riverbank/floodplain soils at the Trowbridge Dam Area. The human health impacts from elevated PCB levels are described in Section III. Possible exposure routes for wildlife contact with hazardous substances includes direct contact with contaminated riverbank/floodplain soils, and consumption of fish and earthworms that accumulate PCBs. Historical samples taken at the Trowbridge Dam Area show PCB concentrations in riverbank/floodplain soils up to 83 mg/kg and instream sediments up to 120 mg/kg. These levels are orders of magnitude higher than the clean-up goals established for other response actions at OU5.

EPA has not yet selected remediation goals for Area 4, but at this time believes that the remediation goals will be consistent with the final remediation goals selected for other areas of the Site, which are 0.33 mg/kg surface-weighted average concentration[2] for instream sediments, 2.5 mg/kg for residential floodplain soils, and 11 mg/kg for non-residential floodplain soils.

5. NPL Status

The Site was listed on the NPL on August 30, 1990. In 2002, EPA assumed the enforcement lead from the State for most operable units of the Site, including OU5.

6. Maps and Pictures

The following figures can be found attached to this Action Memorandum:

Figure 1. Site Location Map
Figure 2. Area 4 - Designated Subareas
Figure 3. Approximate Site Excavation Areas – Riverbank Soils
Figure 4. Approximate Site Excavation Areas – In-Stream Sediments
Figure 5. Trowbridge Dam – Projected Extent of Removal

[2] A surface-weighted average concentration (SWAC), is a method of spatially calculating the mean (average) concentration of a constituent (i.e., total PCBs) in the sediment surface. Samples are collected throughout the area of concern, representative sub-areas are generated for each sample location, and a subarea-weighted concentration is calculated to produce the SWAC. The subareas may be generated using several different methods, such as grids or stream tubes.

The following photographs depicting site conditions can be found in Attachment 3 of this Action Memorandum:

Photograph 1. Riverbank erosion of contaminated soils on north bank (April 2018)
Photograph 2. Riverbank erosion of contaminated soils on south bank (April 2018)
Photograph 3. Riverbank erosion of contaminated soils on north bank (April 2018)
Photograph 4. Riverbank erosion of contaminated soils on south bank (April 2018)
Photograph 5. Deterioration of left descending bank at Trowbridge Dam (March 2018)

B. Other Actions to Date

1. Previous actions

Previous actions have been documented in Section II.A.1.

2. Current Actions

The Site continues to be addressed through the Superfund remedial process. Subsequent to completion of the TCRA and through the Superfund remedial process, EPA will complete its evaluation of the risks to human health and the environment presented by the presence of PCBs within Area 4 of OU5. This evaluation will consider data collected and analyses performed as part of the TCRA described in this Action Memorandum. EPA will then issue a Record of Decision (ROD) for Area 4 of OU5.

C. State and Local Authorities' Roles

1. State and local actions to date

Previous actions by the State have been documented in Section II.A.1.

2. Potential for continued state/local response

EPA is the lead agency for CERCLA response actions and will continue working in consultation with the State during the proposed removal and remedial activities associated with the Site.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Conditions present at the Trowbridge Dam Area constitute a threat to public health, welfare or the environment based upon the factors set forth in 40 C.F.R. Part 300.415(b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). These include, but are not limited to, the following:

- **Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;**

PCBs are a hazardous substance, as defined by Section 101(14) of CERCLA. PCBs are listed as a hazardous substance under Section 311(b)(2) of the Clean Water Act, as set forth in 40 C.F.R. Part 116.4, Table A. EPA has determined that PCBs are a probable human carcinogen. In addition, exposure to PCBs is widely associated with measurable adverse immunological and developmental effects in humans, particularly developing fetuses (MDPH, 2012). These chemicals have the potential to bio-magnify, which means that they have the potential to increase in concentration as they are transferred from one link in the food chain to another.

The Trowbridge Dam Area has PCB levels up to 120 mg/kg for instream sediments and 83 mg/kg for riverbank/floodplain soils. The ongoing, uncontrolled erosion of soils from the riverbanks is a significant source of PCB loading to the Kalamazoo River. The 2017 SRI report documented PCB-containing wastepaper residuals and soils sloughing off the riverbanks into the Kalamazoo River and transported downstream. Erosion pins installed in 2000 along transects at 10 different locations were utilized to establish riverbank/floodplain soils and PCB erosion rates, which are reported in the Area 3 SRI document. The Area 3 SRI document described the erosion along the riverbanks to be greater than previously understood (see photographs in Attachment 3). Instream sediments and riverbank/floodplain soils are primary sources of an ongoing release of PCBs into the Kalamazoo River.

Although the 1977 State fish consumption advisory is still in effect, it is not legally binding. State personnel and local officials have reported that anglers fishing at the Site are taking home fish in amounts that may be inconsistent with consumption advisories issued by the State (MDPH, 2015). It has also been reported that turtles have been taken from the river for human consumption, which would provide for another potential human exposure pathway.

The most significant outcome of the ecological and human health risk assessments is the conclusion that fish consumption is the primary exposure pathway for receptors that may be at risk from PCB within media of the Kalamazoo River. Therefore, the key to reducing exposure and potential risks to important receptors (e.g. fish-eating birds, fish-eating wildlife, and humans) is to reduce PCB concentrations in the fish tissue consumed by these receptors. The SRI concluded the greatest factor controlling PCB levels in fish is bioavailability of PCB in surface sediments and the water column where fish and their prey come in contact with or ingest PCBs.

- **High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;**

The Trowbridge Dam Area has PCB levels up to 120 mg/kg for instream sediments and 83 mg/kg in riverbank/floodplain soils. As explained above, sediments and riverbank/floodplain soils located instream or near the river's edge are susceptible to erosion and scouring (see photographs in Attachment 3). During high water events, increases in river velocity create conditions cause additional releases of PCB to the Kalamazoo River, and ultimately, Lake Michigan (EPA, 2004).

Further, if the dam were to fail, contaminated instream sediments would be transported downriver. These contaminated sediments would spread PCB-contaminated sediments onto riverbanks and floodplains previously characterized as not having PCB contamination above risk-based levels. This may also require EPA to conduct response actions to address either human health threats related to direct exposure of residents or recreational users to riverbank/floodplain soils or exacerbated ecological threats at areas where responses may not otherwise be necessary.

- **Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;**

The Kalamazoo River is often subjected to extreme weather conditions in the winter and spring which increase the threat of a release of PCBs. The highest flood-stage water level ever recorded was measured by the National Weather Service in February 2018. The breakup of ice in the late winter, and the movement of ice floes downstream, causes scouring of the banks and river bottom and may adversely impact the temporary water control structure. Likewise, heavy spring rains and/or summer storms increase stream volume and flow velocity, which lead to increased scouring of the river bottom and riverbanks. All of these forces cause an increase in the volume and extent of PCB contamination in the Kalamazoo River and Lake Michigan.

IV. ENDANGERMENT DETERMINATION

EPA concludes that unless addressed by implementing the response action detailed in this Action Memorandum, the conditions at the Trowbridge Dam Area, the nature of the hazardous substances found there, the potential exposure pathways described in Sections II and III above, and the actual or threatened release of PCBs from the Trowbridge Dam Area, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTIONS

A. Description of the Proposed Action

The preferred response action to mitigate threats associated with PCB-contaminated sediments and soils in the Trowbridge Dam Area consists of removing contaminated instream sediments and riverbank/floodplain soils. The TCRA will include, but may not be limited to, the following tasks:

1) Dredging and/or excavation of PCB-contaminated instream sediments and riverbank/floodplain soils with elevated PCB concentrations (see estimated excavation area maps in Figures 2 & 3);

2) Removal of the Trowbridge Dam including the 150-foot left earthen embankment, 80-foot wide concrete spillway, and a 110-food right earthen embankment (see Figure 5), or any water control structure within the Trowbridge Dam Area as needed to reduce the

risk of PCB mobilization from floodplains and banks due to failure of the Trowbridge Dam or water control structure;

3) Cut-back and stabilization of riverbanks to mitigate exposures to PCB-contaminated riverbank/floodplain soils and future erosion;

4) Dewatering, as necessary, and disposal off-site of all PCB-contaminated instream sediments and riverbank/floodplain soils removed pursuant to tasks 1, 2 & 3 above. PCB-contaminated material with PCB concentrations ≥ 50 mg/kg shall be transported off-site to a TSCA waste landfill that is in compliance with all state and federal regulatory requirements. PCB-contaminated material with PCB concentrations < 50 mg/kg shall be transported off-site and disposed in an appropriately licensed and permitted commercial landfill in compliance with all state and local laws;

5) Ensuring that a stable river channel exists post-removal, including backfilling as appropriate and re-vegetation with native plant species; and

6) Conducting appropriate monitoring and maintenance both during and for a defined time period after completion of the work described above.

The TCRA will be conducted in a manner not inconsistent with the NCP. The OSC has initiated planning for provision of post-removal site controls consistent with the provisions of Section 300.415(l) of the NCP.

The actions described in this Action Memorandum directly address actual or threatened releases of hazardous substances, pollutants, or contaminants at the Trowbridge Dam Area which pose an imminent and substantial endangerment to public health, welfare and the environment. The activities related to the TCRA will require an estimated 2-3 construction seasons on-site to complete, with continued post-removal monitoring and maintenance for a defined time period.

B. Cleanup Standards

EPA has established the following cleanup standards for the Trowbridge Dam Area:

- Instream sediments: ≤ 1.0 mg/kg.
- Riverbank/floodplain soils: ≤ 5.0 mg/kg.

The standards are based on preliminary remediation goals (PRGs) expected to be sufficiently protective of human (anglers, recreationists and residents) as well as ecological (wildlife) receptors set forth in the updated Human Health Risk Assessment (HHRA) (CDM, 2003) and are consistent with prior TCRAs conducted in Area 1 of OU5 of the Site. The PRGs were established based on risk-based concentration (RBC) values for fish tissue, soil and sediment defined in the human health and ecological risk assessments conducted at this Site and referenced in Section II.A of this Action Memorandum. RBCs are calculated, chemical-specific concentrations below which no significant health risks are anticipated for a receptor. The PRGs are also based on the State's screening and target level for PCBs.

EPA anticipates that the cleanup standards for PCBs in Area 4 will be consistent with the cleanup standards set forth in the RODs Area 1 and Area 2 of OU5. EPA expects to achieve a surface weighted average concentration of 0.33 mg/kg total PCBs (set forth in the HHRA) for instream sediments by removing contaminated riverbank/floodplain soil with PCBs greater than 5 mg/kg (see Figure 2), and instream sediments with PCBs at levels greater than or equal to 1 mg/kg (see Figure 3). Additionally, past work with PCB-contaminated soils has found a "neat line" exists in subsurface riverbank/floodplain soils above which contamination is present and below which it is not. Sampling data along this "neat line" has been found to be at the 5.0 mg/kg cleanup goal, making 5.0 mg/kg a practicable cleanup goal.

C. Orderly Transition to Remedial Response

The NCP requires that, if EPA determines that a removal action will not fully address a release, and that subsequent remedial action may be necessary, then the Agency must ensure an orderly transition from removal to remedial response activities (40 C.F.R. Part 300.415(g)). As noted above, subsequent to the TCRA described in this Action Memorandum, EPA will complete its evaluation, through the Superfund remedial process, of risks to human health and the environment within Area 4. Residual risks to human health and the environment remaining within Trowbridge Dam Area after completion of the removal action will be evaluated as part of the feasibility study that will be used by EPA to select a final remedy for Area 4 of OU5.

D. Applicable or Relevant and Appropriate Requirements

Pursuant to 40 C.F.R. Part 300.415, removal actions shall, to the extent practicable considering the exigencies of the situation, attain applicable or relevant and appropriate requirements (ARARs) of federal and state law. Federal ARARs for this TCRA may include:

- Clean Air Act requirements related to emission of air contaminants in quantities that can cause harmful effects to human health, animal life, plant life, and/or property found at 40 C.F.R. Part 50.

- Clean Water Act (CWA) requirements at 40 C.F.R. Part 231 and 33 C.F.R. Parts 320 - 330 apply to all existing, proposed, or potential areas for discharges of dredged or fill materials into the Kalamazoo River.

  If water is treated during removal action and discharged to a publicly-owned treatment works (POTW), the influent requirements of these facilities must be met prior to discharging to the POTW, as prescribed 40 C.F.R. Parts 136 and 403. These regulations also provide guidelines establishing test procedures for the analysis of pollutants.

  If water is treated during the removal action and discharged back into the river, on-site discharges from the Site must meet the substantive National Pollutant Discharge

Requirements (NPDES) requirements related to ambient water quality standards and effluent standards, both of which are set by the State in relation to the Kalamazoo River.

- TSCA requirements for the dewatering of PCB-contaminated sediment and for the storage and transport of PCBs found at 40 C.F.R. Part 761.61(b) (specifies cleanup and disposal options for PCB remediation waste including sediment and dredged materials) 40 C.F.R. Part 761.65 (establishes technical requirements for temporary storage of PCB wastes prior to treatment or disposal) and 40 C.F.R. Part 761.79 (provides decontamination standards and procedures for removing PCBs that are regulated for disposal from water, organic liquids, and other materials).

By letter dated June 20, 2019, EPA requested that the State identify potential state ARARs for this TCRA. Any state ARARs identified in a timely manner for this TCRA will be complied with to the extent practicable. To date, the State has not provided EPA with a list of ARARs.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Continued risk to public health and the environment will result if the TCRA is delayed or not taken. Delayed action increases the risk of failure of the Trowbridge Dam before the completion of the TCRA, which would spread the contamination and increase the likelihood for wildlife populations to come into direct contact with PCB-contaminated sediments and riverbank/floodplain soils. In addition to the risks associated with failure of the Trowbridge Dam, delay or non-action would likely result in erosion of high levels of PCB-contaminated riverbank/floodplain soils and instream sediment to both the water column and surface, allowing for easy uptake of PCBs by fish, worms, plants and other organisms of the food chain in this area and downstream.

VII. OUTSTANDING POLICY ISSUES

No outstanding policy issues have been identified in relation to the Trowbridge Dam Area.

VIII. RECOMMENDATION

This decision document represents the selected response action for the Trowbridge Dam Area of the Site. It was developed in accordance with CERCLA and is not inconsistent with the NCP. This decision is based upon the Administrative Record for the TCRA, an index of which is attached to this Action Memorandum (Attachment 2).

Conditions at the Trowbridge Dam Area meet the criteria of Section 300.415(b)(2) of the NCP for a TCRA, and I recommend your approval of the TCRA described herein. EPA expects that a PRP will perform all removal actions under the oversight of the OSC. You may indicate your decision by signing below.

APPROVE: _____ DATE: _____
Henry Darwin
Acting Deputy Administrator

DISAPPROVE:_____ DATE: _____
Henry Darwin
Acting Deputy Administrator

Enforcement Addendum

Figures:

1. Site Location Map
2. Area 4 - Designated Subareas
3. Approximate Site Excavation Areas – Riverbank Soils
4. Approximate Site Excavation Areas – In-Stream Sediments
5. Trowbridge Dam – Projected Extent of Removal

Attachments:

1. Environmental Justice Analysis
2. Administrative Record Index
3. Site Photographs

cc: S. Ridenour, U.S. EPA, 5104A/B517F **(**Ridenour.Steve@epa.gov**)**
Lindy Nelson, U.S. DOI, **w/o Enf. Addendum (Lindy_Nelson@ios.doi.gov)**
C. Heidi Grether, Director, Michigan EGLE, w/o Enf. Addendum
Polly Synk, Michigan AG, w/o Enf. Addendum

FIGURE 1

SITE LOCATION MAP

Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site –
Trowbridge Dam Area

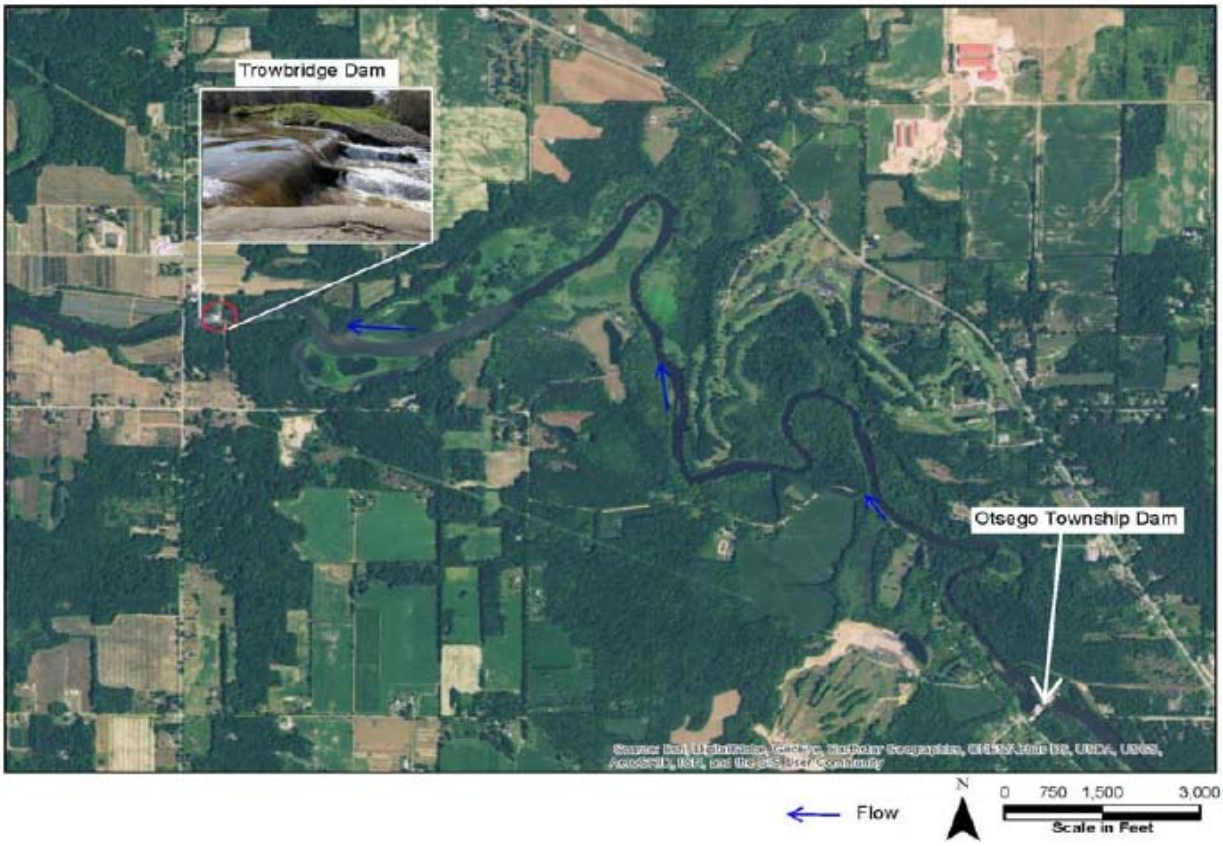


FIGURE 2

AREA 4 - DESIGNATED SUBAREAS
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site –
Trowbridge Dam Impoundment

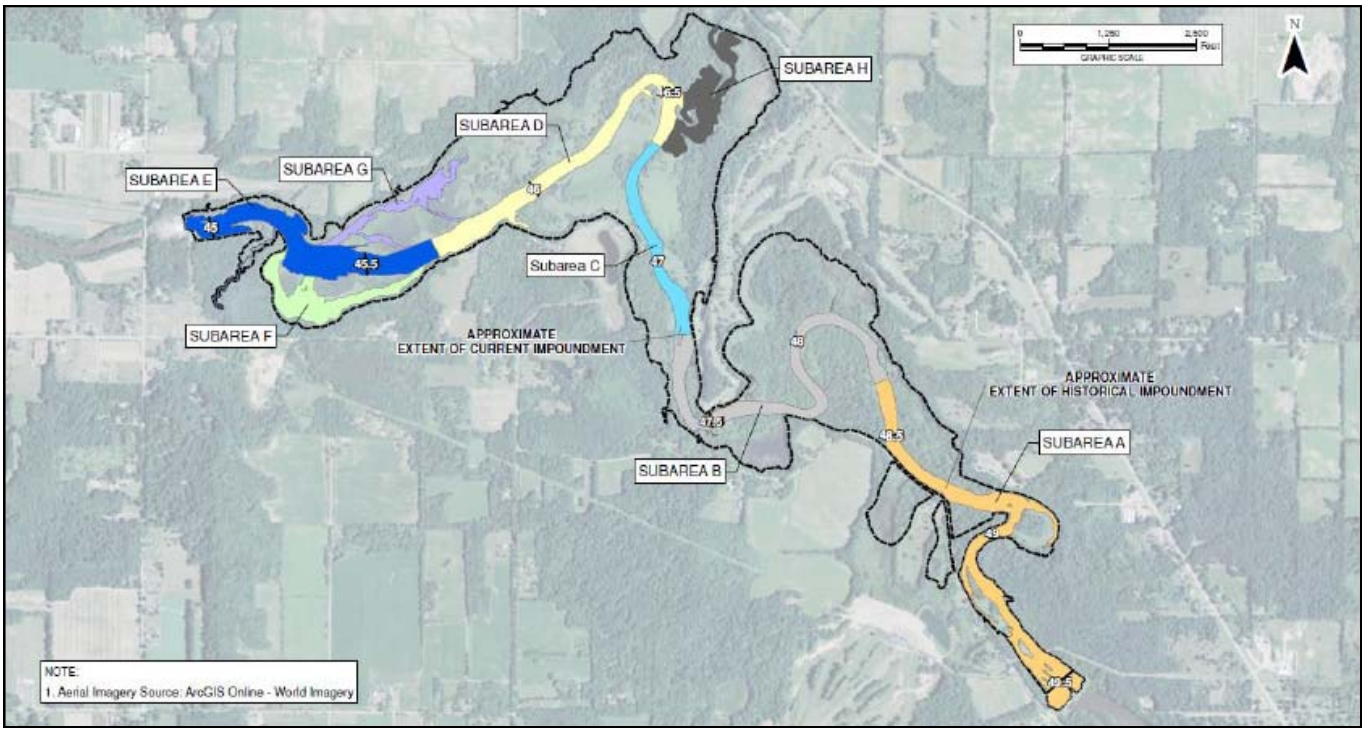
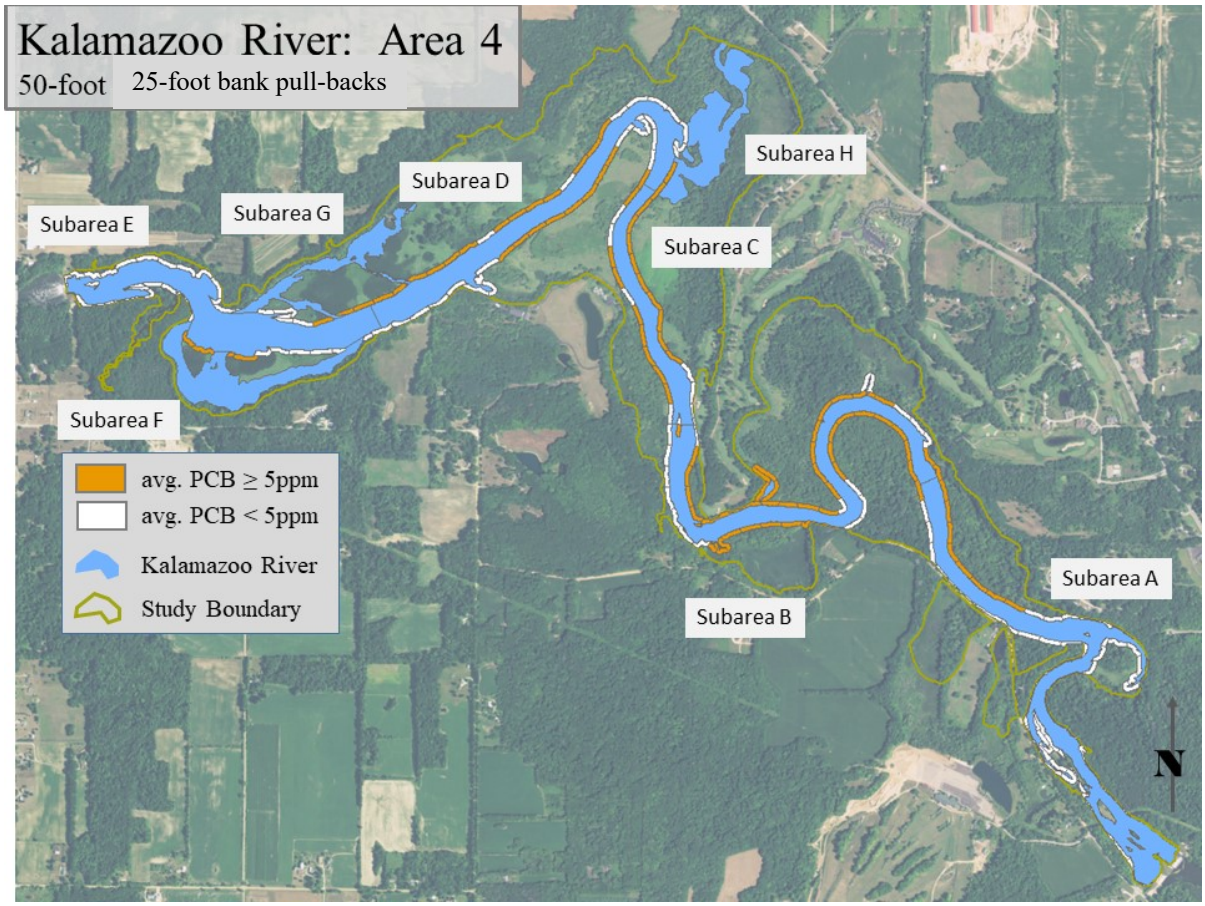


FIGURE 3

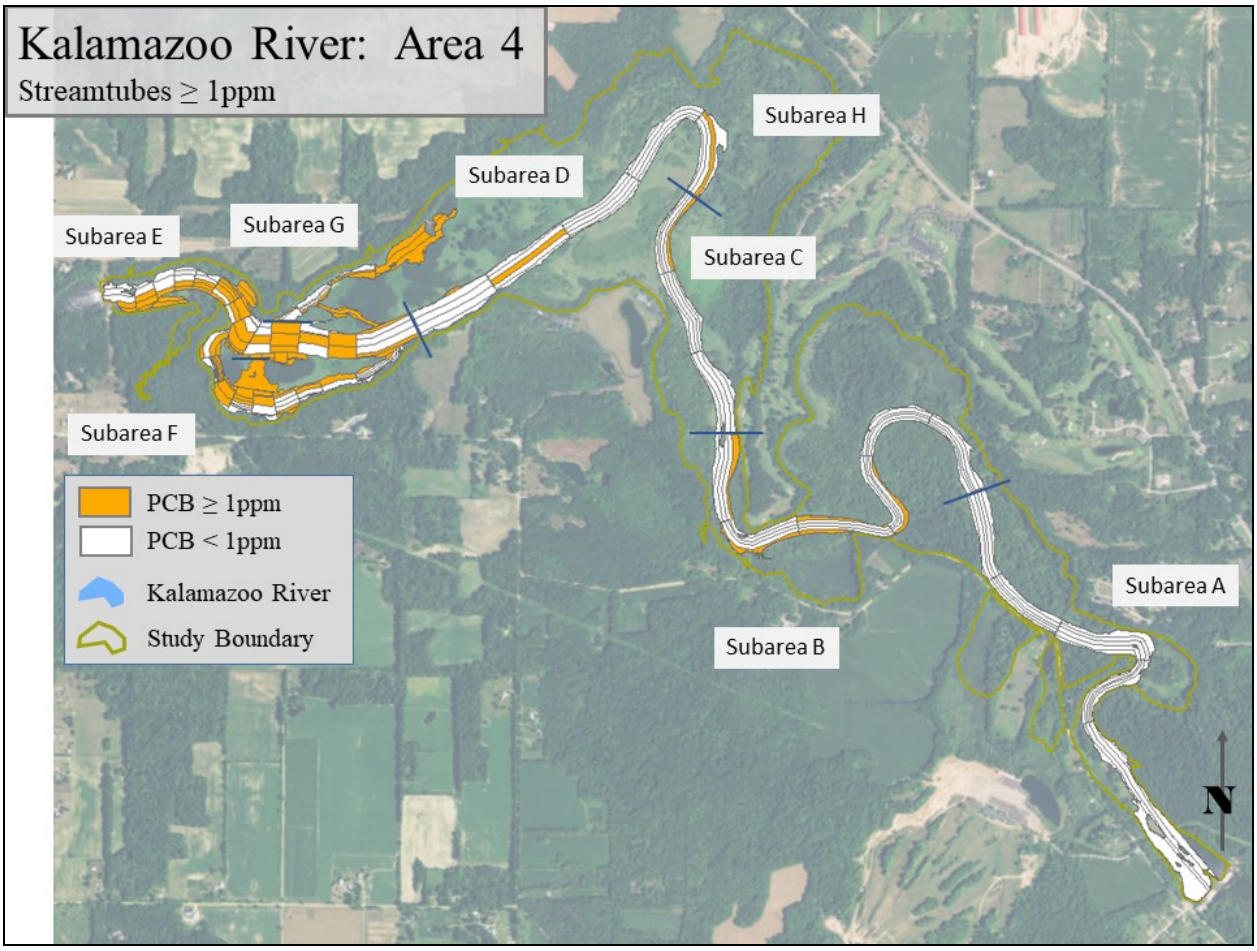
APPROXIMATE SITE EXCAVATION AREAS – RIVERBANK SOILS
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
Trowbridge Dam Area



River bank soil removal is anticipated in Subareas C, D & E.

FIGURE 4

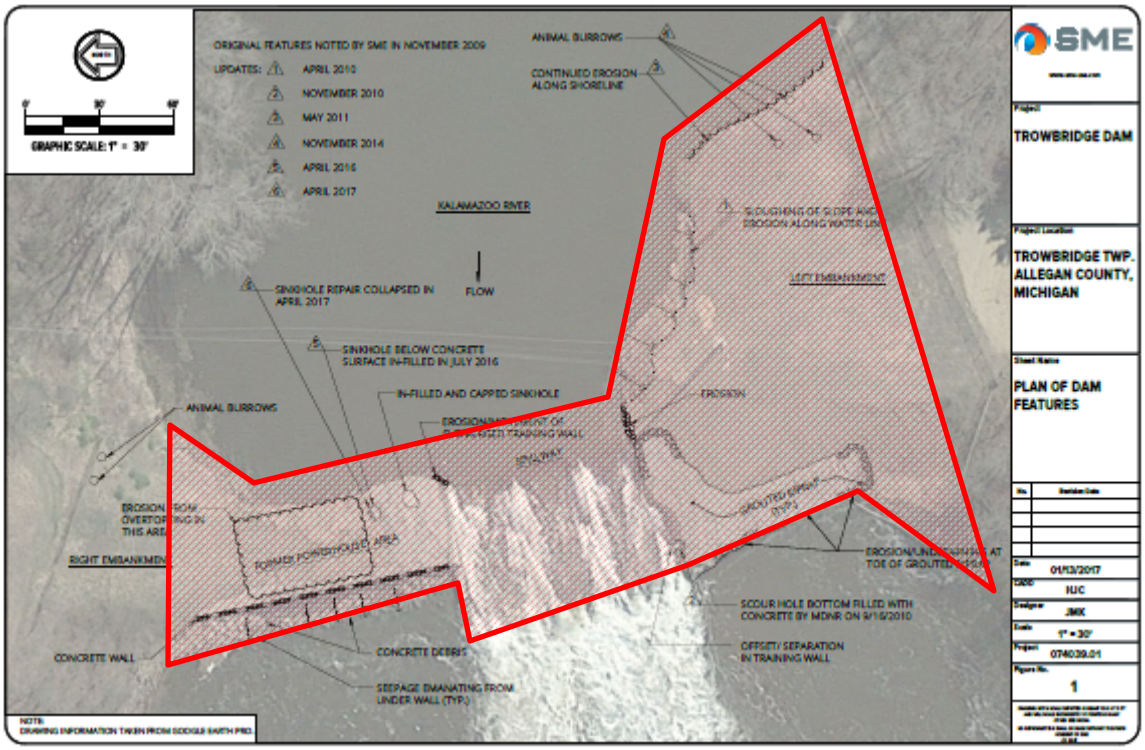
APPROXIMATE SITE EXCAVATION AREAS – IN-STREAM SEDIMENTS
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
Trowbridge Dam Area



In-Stream sediment removal is anticipated in Subareas E, F & G.

FIGURE 5

Trowbridge Dam – Projected Extent of Removal
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
Trowbridge Dam Area



Anticipated extent of existing dam removal.

Attachment 1

EJ Analysis

(3 pages)

Attachment 2

Administrative Record

(4 pages)

Attachment 3

Site Photographs

(3 pages)

Site: Trowbridge Dam Area
Photograph No.: 1 **Date:** 04/03/2018
Direction: North **Photographer:** Paul Ruesch
Subject: Riverbank erosion of contaminated soils into Kalamazoo River on north bank.

Site: Trowbridge Dam Area
Photograph No.: 2 **Date:** 04/03/2018
Direction: South **Photographer:** Paul Ruesch
Subject: Riverbank erosion of contaminated soils into Kalamazoo River on south bank.

Site: Trowbridge Dam Area
Photograph No.: 3 **Date:** 04/03/2018
Direction: North **Photographer:** Paul Ruesch
Subject: Riverbank erosion of contaminated soils into Kalamazoo River on north bank.

Site: Trowbridge Dam Area
Photograph No.: 4 **Date:** 04/03/2018
Direction: south **Photographer:** Paul Ruesch
Subject: Riverbank erosion of contaminated soils into Kalamazoo River on south bank.

Site: Trowbridge Dam Area
Photograph No.: 5 **Date:** 03/08/2018
Direction: East **Photographer:** Paul Ruesch
Subject: Erosion on south bank at Trowbridge Dam.

When EPA approves a record of decision for Area 3, it will become Apendix E.

IN THE UNITED STATES DISTRICT COURT
FOR WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

UNITED STATES OF AMERICA and THE STATE OF MICHIGAN Plaintiffs, v. NCR CORPORATION, Defendant.	)	Civil Action No.

CONSENT DECREE WITH NCR CORPORATION
Appendix F
(Modification)

IN THE UNITED STATES DISTRICT COURT
FOR WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

UNITED STATES OF AMERICA and THE STATE OF MICHIGAN Plaintiffs, v. NCR CORPORATION, Defendant.	)	Civil Action No.

MODIFICATION OF CONSENT DECREE WITH NCR CORPORATION

WHEREAS, prior to ____ 2019, the United States of America ("United States") and the State of Michigan ("the State") engaged in negotiations with NCR Corporation ("NCR") engaged in negotiations to resolve NCR's alleged liability under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA") and Michigan statutory or common law relating to the Allied Paper/Portage Creek/Kalamazoo River Superfund Site, EPA ID# MID006007306 (the "Site") regarding NCR, in a cooperative manner, without the transaction costs associated with protracted litigation;

WHEREAS, as a result of these negotiations, an agreement was reached and embodied in a consent decree (CD) which resolved alleged claims by the United States and the State against NCR under CERCLA and State statutory or common laws relating to the Site;

WHEREAS, the CD required that NCR conduct certain response actions at the Site and pay specific dollar amounts to the United States and the State;

WHEREAS, this Court entered the CD on _____, (docket #_____) and, under Section XXIII of the CD, has retained jurisdiction over implementation and enforcement of the CD;

WHEREAS, Paragraph 13 of the CD provides that, after issuance by the U.S. Environmental Protection Agency ("EPA") of a Record of Decision ("ROD") for Area 3 of Operable Unit 5 of the Site ("Area 3 ROD), NCR may agree to perform the RD/RA for Area 3 or opt-out of performance of the work and pay EPA $52.5 million;

WHEREAS, after the issuance of the Area 3 ROD, EPA, after consultation with the State, provided NCR with a Proposed CD and SOW Modification, describing the activities SD must perform to implement the Area 3 RD and Area 3 RA, including land or other resource use restrictions.

WHEREAS, the United States, the State, and NCR (collectively the "Parties") agreed on a SOW modification for the Area 3 ROD and have attached the updated SOW to this modification to the CD ("CD Modification");

WHEREAS, the Parties have agreed to this CD Modification to add the Area 3 ROD and the Area 3 SOW modifications to the CD;

WHEREAS, Paragraphs 13 and 110 of the CD allows for amendments to add a CD and SOW modification to implement the Area 3 ROD, by agreement of the Parties, effective upon approval by the Court after notice and opportunity for public comment;

WHEREAS, the Parties agree, and the Court by entering this CD Modification finds that the amendment set forth herein is fair, reasonable, and in the public interest;

NOW THEREFORE, it is hereby ORDERED, ADJUDGED, and DECREED that the CD in this matter is modified as follows:

1. This CD Modification shall apply to, and be binding upon, the Parties as an amendment to the CD.

2. This CD Modification shall not be construed to alter, affect or amend the CD in any way other than provided herein.

4. It is the purpose of the Parties in entering into this CD Modification to further the objectives of the Parties as provided in the CD.

5. Unless otherwise defined herein, terms used in this CD Modification shall have the meaning given to those terms in the CD, CERCLA, and the regulations promulgated thereunder.

6. The attached SOW modification is hereby incorporated into the CD.

7. This CD Modification 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 and the State reserve the right to withdraw or withhold its consent to this CD Modification if the comments regarding the CD Modification disclose facts or considerations that indicate that the CD Modification is inappropriate, improper, or inadequate. NCR consents to the entry of this CD Modification without further notice. If for any reason the Court declines to approve this CD Modification in the form presented, this CD modification 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.

Dated and entered this _____day of _____, _____.

.

_____
UNITED STATES DISTRICT JUDGE

The Undersigned Parties Enter into this ___ Modification to Consent Decree in the case of *United States of America and the State of Michigan v. NCR Corporation*, Civil Action No. _____ .

FOR THE UNITED STATES OF AMERICA
DEPARTMENT OF JUSTICE

_____

Assistant Attorney General
Environment and Natural Resources Division

_____

Trial Attorney
Environment and Natural Resources Division
Environmental Enforcement Section
P.O. Box 7611
Washington, DC 20044-7611
Phone: (202)
Fax: (202)
Email:

FOR THE ENVIRONMENTAL PROTECTION AGENCY

_____

EPA Region 5

FOR THE STATE OF MICHIGAN:

_____

FOR NCR CORPORATION:

_____

UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

THE UNITED STATES OF AMERICA
and THE STATE OF MICHIGAN,

Plaintiffs,

v.

NCR CORPORATION,

Defendant, and

GEORGIA-PACIFIC LLC,
GEORGIA-PACIFIC CONSUMER
PRODUCTS LP, INTERNATIONAL
PAPER COMPANY, and
WEYERHAEUSER COMPANY,

Intervenors.

_____/

CASE No. 1:19-CV-1041

HON. ROBERT J. JONKER

ORDER ADOPTING CONSENT DECREE

Before the Court is a proposed Consent Decree between Plaintiffs and Defendant NCR Corporation. (ECF No. 2-1). The United States moves (ECF No. 10) for approval of the Consent Decree, which would resolve NCR's liability to Plaintiffs for costs of response actions taken or to be taken in connection with the release of polychlorinated biphenyls ("PCBs") at the Allied Paper / Portage Creek / Kalamazoo River Superfund Site ("Kalamazoo River Superfund Site" or "Site"). The Consent Decree would also provide protection to NCR against contribution claims from other PRPs at the Site. Intervenors are other PRPs at the Site, and they object to approval of the Consent Decree. After reviewing the proposed Consent Decree and all relevant matters of record, the Court finds that the proposed Consent Decree is fair, reasonable, consistent with the purposes of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42

U.S.C. §§ 9606, 9607, and in the public interest. Accordingly, the Court **GRANTS** the United States' Motion (ECF No. 10) and **APPROVES AND ADOPTS** the proposed Consent Decree (ECF No. 2-1).

FACTUAL BACKGROUND

The United States' Motion and the proposed Consent Decree itself thoroughly detail the facts and issues relating to the Site. The parties here and this Court are thoroughly familiar with these issues and facts based on twenty-eight days of bench trial conducted in two phases. The trial resulted in a series of opinions from this Court, and an eventual judgment. The case is now pending in the Court of Appeals.[1]

The Court will not repeat all the details here, but will summarize highlights. The Kalamazoo River Superfund Site is located in Allegan and Kalamazoo Counties, Michigan and includes approximately eighty miles of the Kalamazoo River (from Morrow Dam to Lake Michigan) and roughly three miles of Portage Creek running up from its confluence with the Kalamazoo River past the Bryant and Monarch mills. The Site is contaminated with PCBs, a hazardous substance under CERCLA. It is contaminated because the paper mills in the Kalamazoo River Valley discharged PCBs as part of their waste streams in the mid to late 20th century. The PCBs were in the mills' waste streams because they recycled wastepaper as a source of pulp, and some of that wastepaper was NCR's Carbonless Copy Paper, which contained PCBs.

The Site has been studied by the State of Michigan and the federal government for decades. John Hesse, a researcher for the State of Michigan, testified at trial that during his surveys of

[1] *See Georgia-Pacific Consumer Prods, et al. v. NCR Corp, et al.*, Case No. 1:11-CV-483, ECF No. 432 (W.D. Mich. Sept. 26, 2013) (Phase I decision); *Georgia-Pacific Consumer Prods, et al. v. NCR Corp, et al.*, Case No. 1:11-CV-483, ECF No. 921 (W.D. Mich. Mar. 29, 2018) (Phase II decision); *Georgia-Pacific Consumer Prods, et al. v. NCR Corp, et al.*, Case No. 1:11-CV-483, ECF No. 925 (W.D. Mich. June 19, 2018) (Judgment); *Georgia-Pacific Consumer Prods, et al. v. NCR Corp, et al.*, Case Nos. 18-1805/18-1806/18-1818/18-1858 (6th Cir.) (appeals).

Portage Creek in the 1960s and '70s the creek appeared turbid, with discoloration extending from the creek well down the river. The consistency and color of the water reminded him of a blueberry milkshake. Studies of the area continued, and on May 5, 1989, the United States Environmental Protection Agency ("EPA") proposed that the Kalamazoo River Superfund Site be placed on the National Priorities List ("NPL"). The EPA then listed the Site on August 30, 1990. The Site has been divided into several current or former operable units ("OUs") for purposes of managing, studying, and cleaning up the Site. The river and creek itself is OU5 and is divided into seven separate work areas tied mostly to current or former dams.

In the years since the Site's listing, various entities, including some of the successors of the paper mills that discharged NCR's PCBs into the Kalamazoo River, performed cleanup work at the Site. In 2010 one of those successors, Georgia-Pacific, sued NCR and two other potentially responsible parties ("PRPs")—International Paper and Weyerhaeuser—to establish liability under CERCLA for the PCB contamination of the Kalamazoo River, to determine the equitable shares of the costs of cleaning up the Kalamazoo River Superfund Site, and to require the defendants in that case to pay their portion of past and future cleanup costs. At the close of a lengthy two-phase trial, the Court found (in relevant part) that NCR was liable as an arranger under CERCLA and assigned it a 40% share of responsibility for past costs. The judgment required NCR to pay Georgia-Pacific $19,826,725.67 along with prejudgment and postjudgment interest. Liability extended to future costs, but the Court declined to make an allocation as to future costs in its Phase II decision. Appeals followed, and remain pending.

On December 11, 2019, Plaintiffs United States of America and the State of Michigan filed this action under Sections 106 and 107 of CERCLA seeking "to recover unreimbursed costs incurred for response activities undertaken in response to the release and threatened release of hazardous substances from facilities at and near the" Kalamazoo River Superfund Site. (Compl.

¶ 1, ECF No. 1, PageID.1). The same day the United States filed the proposed Consent Decree with the Court and subsequently published it for public comment as required by law. 42 U.S.C. § 9622(d)(2)(B); 28 C.F.R. § 50.7, 84 Fed. Reg. 68,946 (Dec. 17, 2019). Eleven sets of public comments were received, including those from the intervenors in this case, Georgia-Pacific, International Paper, and Weyerhaeuser. The United States addresses the comments in its motion and states that, notwithstanding these comments, the Court should approve the Consent Decree.

As set out by the United States, the Consent Decree proposes resolving NCR's liability at the Superfund Site. In exchange, NCR has agreed to (1) perform response cleanup work at certain areas of OU5 in the Site at an estimated cost of $135.7 million; (2) pay $76.5 million to the United States for past and future response costs at the Site; (3) pay $27 million for natural resource damages; and (4) pay $6 million to the State for the State's past and future response costs. NCR also has agreed to withdraw its appeal from the judgment in the Georgia-Pacific litigation and pay the nearly $20 million to Georgia-Pacific as set out in that judgment. Co-Plaintiff, the State of Michigan, has filed a statement in support of entry of the consent decree. (ECF No. 12). NCR has also filed a memorandum in support of the Consent Decree. (ECF No. 26). Georgia-Pacific, International Paper, and Weyerhaeuser have all intervened in this case, and have each filed objections to at least some aspect of the proposed Consent Decree. (ECF Nos. 30, 31, and 32). The United States and NCR have filed reply briefs (ECF Nos. 34 and 35). The matter is ready for decision.

LEGAL STANDARDS

Under CERCLA, a proposed consent decree must be lodged in the district court and approved to become enforceable. 42 U.S.C. § 9622(d)(1)(A). "'The requirement of court approval is intended to help insure that the proposed settlement will serve the public interest by facilitating restoration of the environment and by adequately compensating the taxpayers for the cleanup costs

that will be incurred."' *United States v. City of Grand Rapids*, 166 F. Supp. 2d 1213, 1218 (W.D. Mich. 2000) (Bell, J.) (quoting *United States v. Davis*, 11 F. Supp. 2d 183, 188 (D.R.I. 1998)). When deciding whether to approve and enter the proposed Consent Decree, the Court is required to consider "whether the decree is fair, adequate, and reasonable, as well as consistent with the public interest." *United States v. Lexington-Fayette Urban Cnty. Gov't*, 591 F.3d 484, 489 (6th Cir. 2010). The Sixth Circuit has interpreted this as a "three-part test of (1) fairness, (2) reasonableness, and (3) consistency with CERCLA's goals." *United States v. Akzo Coatings of Am., Inc.*, 949 F.2d 1409, 1426 (6th Cir. 1991). "[F]airness in the CERCLA settlement context has both procedural and substantive components." *United States v. Cannons Eng'g Corp.*, 899 F.2d 79, 86 (1st Cir. 1990); *see also United States v. BP Amoco Oil PLC*, 288 F.3d 1012, 1018 (8th Cir. 2002) (discussing both procedural and substantive fairness).

In conducting this review, the court is tasked with determining whether a consent decree "is rational and not arbitrary or capricious." *Akzo*, 949 F.2d at 1435. The court "is not permitted to engage in a de novo review of the evidence." *City of Grand* Rapids, 166 F. Supp. 2d at 1218. Rather the Court generally affords deference to the government agency's judgment in entering into a consent decree. In evaluating consent decrees under CERCLA, the Sixth Circuit Court of Appeals has observed that reviewing courts "must give a proper degree of deference to the agency's expertise, yet also ensure that the agency has considered all of the relevant evidence in the record and has acted in the public interest." *Akzo*, 949 F.2d at 1426.

DISCUSSION

After reviewing the record in this case, the Court concludes that the proposed Consent Decree appropriately resolves this matter and that it complies with all applicable standards, including the three part test of fairness, reasonableness and consistency with the purpose of CERCLA. The full contours of what the Consent Decree means going forward, including whether

the Consent Decree would extinguish International Paper's pending lawsuit against NCR[2]—as the United States says—or whether it bars subsequent lawsuits that Georgia-Pacific might file seeking to recover future costs from NCR—as NCR says—are not yet ripe for this Court to determine.

1. Procedural Fairness

The Consent Decree is, first of all, procedurally fair. This element of the analysis requires courts to consider "the strength of plaintiff's case, the good faith efforts of the negotiators, the opinions of counsel, and the possible risks involved in the litigation if the settlement is not approved." *Akzo Coatings*, 949 F.2d at 1435 (internal citations omitted). "The effect on non-settlers should be considered, but is not determinative in the court's evaluation." *Id.* In evaluating whether a Consent Decree is procedurally fair, "a court should ordinarily look to the negotiation process and attempt to gauge its candor, openness, and bargaining balance." *United States v. Cannons Engineering Corp.*, 899 F.2d 78, 86 (1st Cir. 1990). The Consent Decree in this case resulted from arms-length negotiations between the United States, the State of Michigan, and NCR. These negotiations took place over many months with capable and experienced counsel on all sides. The Consent Decree was lodged for public comment as required by law. Comments were received and considered, including those from the intervenors in this case. There is nothing

[2] *See International Paper Co. v. Georgia-Pacific Consumer Prods, et al*, Case No. 1:18-cv-1229 (W.D. Mich. filed Nov. 1, 2018). That lawsuit principally seeks response costs against NCR and the other defendants under CERCLA Section 107 (first cause of action) as well as contribution under CERCLA Section 113 (second cause of action). The Sixth Circuit Court of Appeals has remarked that "PRPs must proceed under § 113(f) if they meet one of that section's statutory triggers." *Hobart Corp. v. Waste Mgmt. of Ohio, Inc.*, 758 F.3d 757, 767 (6th Cir. 2014); *see also Phase II Opinion & Order*, Case No. 1:11-cv-483, ECF No. 921, PageID.34655-34656 (W.D. Mich. Mar. 29, 2018) (citing *Hobart*); *see also* Order, Case No. 1:11-cv-483, ECF No. 924, PageID.34744 (W.D. Mich. June 19, 2018) (noting, "all parties are liable in the Court's view, and even though the liability is established and defined by CERCLA § 107, the ultimate responsibility is handled in contribution under CERCLA § 113(g)(3), not cost recovery under Section 107 and 113(g)(2)."). The place to decide whether there is any daylight for IP's claim is in that case, not here. Among other things, it is possible that the Court of Appeals' decision in IP's appeal from this Court's determination of its liability could have impact.

in the record to suggest bad faith or collusion. *See United States v. BP Expl. & Oil Co.*, 167 F. Supp. 2d 1045, 1051-52 (N.D. Ind. 2001) (noting, as part of a fairness evaluation, the absence of anything in the administrative record that would suggest the settlement negotiations were conducted in bad faith or that the consent decree was the product of collusion.). All this satisfies the Court that the Consent Decree is procedurally fair.

2. Substantive Fairness

a. Comparative Fault

The Consent Decree also meets the substantive fairness prong. Here, reviewing courts begin with "comparative fault." *In re Tutu Water Wells CERCLA Litigation*, 326 F.3d 201, 207 (3d Cir. 2003). In other words, "a party should bear the cost of the harm for which it is legally responsible." *Cannons Engineering Corp.*, 899 F.2d at 87. However, "[t]here is no universally correct approach for measuring comparative fault." *City of Grand Rapids*, 166 F. Supp. 2d at 1222 (citing *Cannons*, 899 F.2d at 87). Rather, "whatever formula or scheme the EPA advances for measuring comparative fault and allocating liability should be upheld as long as the agency supplies a plausible explanation for it, welding some reasonable linkage between the factors it includes in its formula or scheme and the proportionate shares of the settlings PRPs." *Cannons*, 899 F.2d at 87. In this, "[t]he EPA must also be given considerable flexibility in negotiating and structuring settlements so that it may diverge from an apportionment formula in order to address special factors such as the uncertainly of future events and the timing of particular settlement decisions." *City of Grand Rapids*, 166 F. Supp. 2d at 1222 (citing *Cannons*, 899 F.2d at 87-88).

The Consent Decree reflects this Court's decision that NCR is liable as an arranger of PCBS at the Site. This Court obviously believes that was the correct decision, but the Court also recognizes that the Court of Appeals may not agree or may not agree with this Court's allocation of fault. The terms of the Consent Decree strike a reasonable balance. NCR will pay a significant

portion of costs at the Site under the Consent Decree. The United States values NCR's obligation under the Consent Decree at approximately $245 million and estimates the total Site costs at approximately $851 million. (ECF No. 11, PageID.275). The work that NCR will perform at the Site also includes a time-critical removal action ("TCRA") at the Trowbridge dam, which is currently at risk of failure. (ECF No. 2-6, PageID.215). Other work that NCR will undertake at the Site under the Consent Decree includes removal of the Otsego City Dam; realignment of the river channel; excavation of contaminated soils along the river banks floodplain; and Gun River; excavation of other areas with high concentrations of PCBs; caping anabranches; placing institutional controls; and the performance of long-term monitoring. The Court is satisfied NCR's contribution under the Consent Decree reasonably corresponds to the Court's Phase II contribution determination. Exact correspondence to the Court's allocation is not necessary or practical. The funds that NCR will spend to perform work at the Site, the cost reimbursement and natural resource damages it will pay and the particular environmental value of some of the work, fairly reflect NCR's comparative fault for the presence of PCBs at the Kalamazoo River Site, particularly considering ongoing litigation risk.

b. Intervenors' Objections

There are two overarching sets of objections made by the intervenors. The first relates to whether NCR is paying its fair share for costs at the Site. The second relates to the effect of the Consent Decree's contribution protection provision on claims Georgia-Pacific might have in the future. Neither of these objections persuade the Court that the proposed Consent Decree is substantively unfair.

i. Fair Share

Intervenor Georgia-Pacific contends that the Consent Decree is unfair to the non-settling PRPs because under the decree NCR will pay less than the share of liability the Court adjudicated

as part of the earlier litigation. Its argument, in brief, is that future costs are still very much uncertain and that the United States' estimates with respect to those numbers are too low and were arbitrarily reached. Even under the EPA's rosy numbers, Georgia-Pacific says, NCR will pay only 28.83% of the total OU5 costs, significantly less than its 40% share as allocated in this Court's Phase II decision. (ECF No. 32, PageID.490-491). Moreover, there is no guarantee in the Consent Decree that the funds paid by NCR will even be used towards the Site (International Paper raises a similar argument). Furthermore, by broadly defining "matters addressed," the Consent Decree at least facially provides a wide swath of contribution protection to NCR. In order to ensure fairness, Georgia-Pacific asks that the Consent Decree be modified to limit the "matters addressed" in the decree to the next $609 million of work at OU5.

The Court remains satisfied the Consent Decree is substantively fair as presented.

The Court's earlier allocation decision required NCR to pay approximately $20 million toward past costs, corresponding to the Court's decision finding NCR's share of response costs at the Site was 40%. *Georgia-Pacific Consumer Prods, et al v. NCR Corp., et al*, Case No. 1:11-cv-483, ECF No. 921 PageID.34691 (W.D. Mich. Mar. 29, 2018). NCR has that ruling on appeal now and, as always, there is litigation risk that the Court of Appeals will disagree with this Court's decision and side with NCR. But as part of the Consent Decree, NCR is agreeing to drop its appeal and pay the Judgment without any discount.

The Court's Phase II decision expressly stated that the Court was not deciding future costs. This was based on the inherent uncertainty of what was to come and on the possibility that comparative fault for certain future response costs might not be the same as the past cost allocation. We are already seeing the uncertainty unfolding in a way that reduces expects costs. The United States currently estimates that the cost to cleanup OU5 is $609 million (ECF No. 11, PageID.275), which is less than earlier estimates. Some earlier estimates were much higher—approximately

$2.4 billion at one point—but even Georgia-Pacific does not believe the highest figure to be realistic now, given subsequent developments at the Site. (ECF No. 32, PageID.492). Yes, the number could increase, giving NCR a comparatively better deal. But it could also decrease further, particularly if the work NCR agrees to perform contributes to more rapid cleanup, giving NCR a comparatively greater share of the overall cost.[3]

The Court, furthermore, does not view the EPA's current estimate as arbitrary. The EPA's estimates are at least in the same ballpark as the $670 million Georgia-Pacific estimated during the Phase II trial with respect to future costs in OU5. (Fortenberry Test. 897:14-19, Oct. 6, 2015, *Georgia-Pacific Consumer Prods, et al v. NCR Corp., et al*, Case No. 1:11-cv-483, Trial Tr. Vol. V, ECF No. 838, PageID.28145) (W.D. Mich. filed Oct. 10, 2015). In a declaration James Saric, the EPA's Remedial Project Manager for the Site, stated that the EPA's current estimates of costs at OU5 were reached "using knowledge gained from removal actions that have been conducted at the Site, cost information from the removal actions, and remedial costs for selected remedies in River Areas 1 and 2 developed by Georgia-Pacific." (Saric Decl. ¶ I.3, ECF No. 33, PageID.582). This is not, then, a change without explanation; rather, as clearly laid out, the EPA's new estimates were formed by the years of experience working at the Site.

The Consent Decree further requires NCR to perform certain work, regardless of costs, at areas 2, 3, and 4 of OU5. The Consent Decree incorporates an opt out provision for this work, but only at a 150% premium. Either way, NCR is shouldering some risk of uncertainty too.

[3] To the extent the Intervenors object the Consent Decree does not ensure settlement funds will be applied to the Site, the Court is satisfied that existing EPA guidance adequately covers the matter. (*See* ECF No. 11-2). This is also what Mr. Saric declares the EPA plans to do here. (Saric Decl. ¶ 7, ECF No. 8, PageID.258). Additional language is not only unnecessary but would create a risk (however remote) that excess funds deposited in the special account will be encumbered contrary to EPA guidance.

All this satisfies the Court that the that the EPA has given a plausible explanation for its allocation, linking the fault of NCR for the presence of PCBs at the Site to the costs NCR is obligated to expend, and that NCR's share of the total cost is not so out of bounds to render the Consent Decree unfair.

ii. Contribution Protection

The second set of objections relates to what claims Georgia-Pacific may, or may not, have going forward given the contribution protection language as part of the consent decree. NCR claims that in approving the proposed Consent Decree, this Court also ought to "expressly confirm that [Georgia-Pacific] has no further right to seek future costs from NCR, under § 107 or otherwise, for any part of the Site." (ECF No. 26, PageID.439). The United States agrees that "Georgia-Pacific does not have a § 107 claim against NCR." (ECF No. 11, PageID.297). The intervenors other than GP ask this Court to refrain from addressing what they assert is an unripe issue. To render a decision now, they say, would be tantamount to an advisory opinion. The Court agrees.

NCR argues that the matter is ripe because Georgia-Pacific put the matter on the table in its public comments where it asked that the Consent Decree be modified to "expressly acknowledge that its contribution-protection provisions do not foreclose other PRPs from pursuing section-107 claims against NCR in the future." (ECF No. 11-1, PageID.328). The Court is not persuaded. The EPA did not modify the Consent Decree as Georgia-Pacific requested. It was satisfied that the decree as written was fair, reasonable, and consistent with CERCLA's goals and that is what is presently before the Court. Georgia-Pacific may believe that it has some available pathway notwithstanding the contribution protection provision and its failure to persuade the EPA to insert favorable language into the Consent Decree. But whether it can, or will be successful in this endeavor, does not bear on whether the Consent Decree is fair, reasonable, or consistent with CERCLA. The Court is satisfied the question of whether Georgia-Pacific can seek future costs

from NCR given the language of the Consent Decree must wait for another day: namely, the day—if it ever comes—that Georgia-Pacific actually tries to assert a claim.

3. Reasonableness and Consistency With CERCLA's Goals.

The Court finds the remaining two elements of the analysis are met as well: the Consent Decree is reasonable and it complies with the principal goals of CERCLA. Factors a reviewing court will consider with respect to reasonableness include the nature and extent of the hazard, the degree to which the remedy will address the hazard, possible alternatives, and the extent to which the decree furthers the goals of statute. *Akzo Coatings*, 949 F.2d at 1436. "The most important of these 'reasonableness' factors [is] the decree's likely effectiveness as a vehicle for cleansing" the Site. *Id.* at 1437. With respect to consistency with CERCLA's goals, courts consider the statutory purposes of ensuring prompt cleanup of hazardous sites, placing the costs of cleanup on PRPs, and encouraging settlement. *Best Foods v. Aerojet-General Corp.*, No. 1:89-cv-503, 2000 WL 1238910, at *12 (W.D. Mich. Aug. 24, 2000 (Hillman, J.) (citing § 9622(a) and *Akzo Coatings*, 949 F.2d at 1416-17). The same reasons for finding fairness also augur in favor of these other elements. Under the Consent Decree, NCR will not only reimburse significant costs, it will also perform new cleanup at the Site, including removal of sediment behind the failing Trowbridge Dam. In addition to paying the EPA $1.5 million for its past response costs, NCR will also pay $75 million to be deposited in a Special Account to fund further response actions at the Site. The settlement in this action also provides a significant contribution to compensation for natural resource damages. CERCLA's enforcement and settlement provisions are intended to hold liable parties accountable while remediating environmental contamination in an expeditious and efficient manner. *Akzo*, 949 F.2d at 1439; *City of Grand Rapids*, 166 F. Supp. 2d at 1226. The proposed Consent Decree achieves these goals.

CONCLUSION

For the reasons stated above and outlined in the proposed Consent Decree itself, the Court concludes that the proposed Consent Decree is fair, reasonable, and consistent with the public interest. Therefore, the Court **GRANTS** the United States' Motion (ECF No. 10) and **APPROVES AND ADOPTS** the parties' Consent Decree (ECF No. 2-1). The Court will sign and enter the Consent Decree.

IT IS SO ORDERED.

Dated: December 2, 2020

/s/ Robert J. Jonker
ROBERT J. JONKER
CHIEF UNITED STATES DISTRICT JUDGE