UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF LOUISIANA

UNITED STATES OF AMERICA, *Plaintiff*, v. CLEAN HARBORS, INC., CLEAN HARBORS BATON ROUGE, LLC and BATON ROUGE DISPOSAL, LLC, *Defendants*.	Civ. No. 24-688

REMEDIAL DESIGN/REMEDIAL ACTION

CONSENT DECREE

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I. BACKGROUND

A. The United States of America ("United States"), on behalf of the Administrator of the United States Environmental Protection Agency ("EPA"), filed a complaint in this matter pursuant to Sections 106 and 107 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended ("CERCLA"), 42 U.S.C. §§ 9606 and 9607.

B. The United States in its complaint seeks, *inter alia*: (1) reimbursement of costs incurred by EPA and the Department of Justice ("DOJ") for response actions at the Devil's Swamp Lake Superfund Site in East Baton Rouge Parish, Louisiana ("Site"), 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. 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 Louisiana (the "State") on August 25, 2020, of negotiations with potentially responsible parties ("PRPs") regarding the implementation of the remedial design and remedial action ("RD/RA") for the Site, and EPA has provided the State with an opportunity to participate in such negotiations and be a party to this Consent Decree ("CD").

D. In accordance with Section 122(j)(1) of CERCLA, 42 U.S.C. § 9622(j)(1), EPA notified the Department of Interior on August 25, 2020, of negotiations with PRPs regarding the release of hazardous substances that may have resulted in injury to the natural resources under federal trusteeship and encouraged the trustee(s) to participate in the negotiation of this CD.

E. The defendants that have entered into this CD ("Settling Defendants" or "SDs") do not admit any liability to Plaintiff arising out of the transactions or occurrences alleged in the

complaint, nor do they acknowledge that the release or 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.

F. In response to a release or a substantial threat of a release of a hazardous substance(s) at or from the Site, SDs commenced on January 4, 2010 a Remedial Investigation and Feasibility Study ("RI/FS") for the Site pursuant to 40 C.F.R. § 300.430.

G. SDs completed a Remedial Investigation ("RI") Report on October 30, 2015, and SDs completed a Feasibility Study ("FS") Report on June 28, 2018.

H. Pursuant to Section 117 of CERCLA, 42 U.S.C. § 9617, EPA published notice of the completion of the FS and of the proposed plan for remedial action on September 1, 2019, in a major local newspaper of general circulation. EPA provided an opportunity for written and oral comments from the public on the proposed plan for remedial action. A copy of the transcript of the public meeting is available to the public as part of the administrative record upon which the Director of the Superfund and Emergency Management Division, EPA Region 6, based the selection of the response action.

I. The decision by EPA on the remedial action to be implemented at the Site is embodied in a final Record of Decision ("ROD"), executed on August 6, 2020, on which the State had a reasonable opportunity to review and comment and on which the State has given its concurrence. The ROD includes a responsiveness summary to the public comments. Notice of the final plan was published in accordance with Section 117(b) of CERCLA, 42 U.S.C. § 9617(b).

J. Based on the information presently available to EPA, EPA believes that the Work will be properly and promptly conducted by SDs if conducted in accordance with this CD.

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

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

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

II. JURISDICTION

1. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1345, and 42 U.S.C. §§ 9606, 9607, and 9613(b). This Court also has personal jurisdiction over SDs. Solely for the purposes of this CD and the underlying complaint, SDs waive all objections and defenses that they may have to jurisdiction of the Court or to venue in this District. SDs 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 upon SDs and their successors, and assigns. Any change in ownership or corporate or other legal status of a SD including, but

not limited to, any transfer of assets or real or personal property, shall in no way alter such SD's responsibilities under this CD.

3. SDs shall provide a copy of this CD to each contractor hired to perform the Work and to each person representing any 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. SDs or their contractors shall provide written notice of the CD to all subcontractors hired to perform any portion of the Work. SDs shall nonetheless be responsible for ensuring that their 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 SDs 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 the Site and any other real property where EPA determines, at any time, that access, land, water, or other resource use restrictions, and/or Institutional Controls are needed to implement the Remedial Action, including, but not limited to, the following properties in East Baton Rouge Parish, Louisiana: Section 47, Township 5 South, Range 1 West; and Sections 55 and 59, Township 6 South, Range 1 West.

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

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

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

"Devil's Swamp Lake Superfund Site Special Account" shall mean the special account, within the EPA Hazardous Substance Superfund, established for the Site by EPA pursuant to Section 122(b)(3) of CERCLA, 42 U.S.C. § 9622(b)(3).

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

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

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

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

"LDEQ" shall mean the Louisiana Department of Environmental Quality and any successor departments or agencies of the State.

"Future Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the United States incurs in reviewing or developing deliverables submitted pursuant to this 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 ¶ 11 (Emergencies and Releases), ¶ 12 (Community Involvement) (including the costs of any technical assistance grant under Section 117(e) of CERCLA, 42 U.S.C. § 9617(e)), ¶ 28 (Access to Financial Assurance), Section VII (Remedy Review), Section VIII (Property Requirements) (including the cost of attorney time and any monies paid to secure or enforce access or land, water, or other resource use restrictions and/or to secure, implement, monitor, maintain, or enforce Institutional Controls including the amount of just compensation), and Section XII (Dispute Resolution), and all litigation costs. Future Response Costs shall also include all Interim Response Costs, and all Interest on those Past Response Costs SDs have agreed to pay under this CD that has accrued pursuant to 42 U.S.C. § 9607(a) during the period after August 12, 2022 to the Effective Date.

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

"Interim Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, (a) paid by the United States in connection with the Site between August 12, 2022 and the Effective Date, or (b) incurred prior to the Effective Date but paid after that date.

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

"Municipal Solid Waste" or "MSW" shall mean waste material: (a) generated by a household (including a single or multifamily residence); or (b) generated by a commercial, industrial, or institutional entity, to the extent that the waste material (1) is essentially the same as waste normally generated by a household; (2) is collected and disposed of with other municipal solid waste as part of normal municipal solid waste collection services; and (3) contains a relative quantity of hazardous substances no greater than the relative quantity of hazardous substances contained in waste material generated by a typical single-family household.

"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 a SD, that owns or controls any Affected Property, including Eugene Cazedessus, Edmond Q. Ewell, and the Greater Baton

Rouge Port Commission. The clause "Non-Settling Owner's Affected Property" means Affected Property owned or controlled by Non-Settling Owner.

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

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

"Parties" shall mean the United States and SDs.

"Past Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the United States paid at or in connection with the Site through August 12, 2022, plus Interest on all such costs that has accrued pursuant to 42 U.S.C. § 9607(a) through such date.

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

"Plaintiff" shall mean the United States.

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

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

"Record of Decision" or "ROD" shall mean the EPA Record of Decision relating to the Site signed on August 6, 2020, by the Director of the Superfund and Emergency Management Division, EPA Region 6, and all attachments thereto. The ROD is attached as Appendix A.

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

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

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

"Site" shall mean the Devil's Swamp Lake Superfund Site, encompassing approximately 39 acres, consisting of the following parcels located in East Baton Rouge Parish, Louisiana: Section 47, Township 5 South, Range 1 West; and Sections 55 and 59, Township 6 South, Range 1 West. The Site is depicted generally on the maps attached as Appendix C.

"State" shall mean the State of Louisiana.

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

"Supervising Contractor" shall mean the principal contractor retained by SDs 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.

"United States" shall mean the United States of America and each department, agency, and instrumentality of the United States, including EPA.

"Waste Material" shall mean (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 SDs are required to perform under this CD, except the activities required under Section XVIII (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 SDs, to pay response costs of Plaintiff, and to resolve the claims of Plaintiff against SDs as provided in this CD.

6. **Commitments by SDs**

a. SDs shall finance and perform the Work in accordance with this CD and all deliverables developed by SDs and approved or modified by EPA pursuant to this CD. SDs shall pay the United States for its response costs as provided in this CD.

b. SDs' obligations to finance and perform the Work, including obligations to pay amounts due under this CD, are joint and several. In the event of the insolvency of any SD or the failure by any SD to implement any requirement of this CD, the remaining SDs shall complete all such requirements.

7. **Compliance with Applicable Law**. Nothing in this CD limits SDs' obligations to comply with the requirements of all applicable federal and state laws and regulations. SDs 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, SDs shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals.

b. SDs may seek relief under the provisions of Section XI (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 they have submitted timely and complete applications and taken all other actions necessary to obtain all such permits or approvals.

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

VI. PERFORMANCE OF THE WORK

9. **Coordination and Supervision**

a. **Project Coordinators**

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

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

(3) SDs' Project Coordinators shall meet with EPA's Project Coordinator at least monthly, either via teleconference, virtually, or in person.

b. **Supervising Contractor**. SDs' 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) SDs shall designate, and notify EPA, within twenty (20) days after the Effective Date, of the name, title, contact information, and qualifications of the SDs' proposed Project Coordinator and Supervising Contractor, whose qualifications shall be subject to EPA's review for verification based on objective assessment criteria (e.g., experience, capacity, technical expertise) and do not have a conflict of interest with respect to the project.

(2) EPA shall issue notices of disapproval and/or authorizations to proceed regarding the proposed Project Coordinator and Supervising Contractor, as applicable. If EPA issues a notice of disapproval, SDs shall, within 30 days, submit to EPA a list of supplemental proposed Project Coordinators and/or Supervising Contractors, as applicable, including a description of the qualifications of each. EPA shall issue a notice of disapproval or authorization to proceed regarding each supplemental proposed coordinator and/or contractor. SDs may select any coordinator/contractor covered by an authorization to proceed and shall, within 21 days, notify EPA of SDs' selection.

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

10. **Performance of Work in Accordance with SOW**. SDs shall: (a) develop the RD; (b) perform the RA; and (c) operate, maintain, and monitor the effectiveness of the 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 ¶ 6.6 (Approval of Deliverables) of the SOW.

11. **Emergencies and Releases**. SDs shall comply with the emergency and release response and reporting requirements under ¶ 4.4 (Emergency Response and Reporting) of the SOW. Subject to Section XIV (Covenants by Plaintiff), nothing in this CD, including ¶ 4.4 of the SOW, limits any authority of Plaintiff: (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 SDs' failure to take appropriate response action under ¶ 4.4 of the SOW, EPA takes such action instead, SDs shall reimburse EPA under Section X (Payments for Response Costs) for all costs of the response action.

12. **Community Involvement**. If requested by EPA, SDs 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 Response Costs to be reimbursed under Section X (Payments for Response Costs).

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

a. If EPA determines that it is necessary to modify the work specified in the SOW and/or in deliverables developed under the SOW in order to achieve and/or maintain the Performance Standards or to carry out and maintain the effectiveness of the RA, and such modification is consistent with the Scope of the Remedy set forth in ¶ 1.3 of the SOW, then EPA may notify SDs of such modification. If SDs object to the modification they may, within 30 days after EPA's notification, seek dispute resolution under Section XII.

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

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

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

VII. REMEDY REVIEW

15. **Periodic Review**. SDs shall conduct, in accordance with ¶ 4.7 (Periodic Review Support Plan) of the SOW, studies and investigations to support EPA's reviews under Section 121(c) of CERCLA, 42 U.S.C. § 9621(c), and applicable regulations, of whether the RA is protective of human health and the environment.

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

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

18. **SDs' Obligation to Perform Further Response Actions**. If EPA selects further response actions relating to the Site, EPA may require SDs to perform such further response actions, but only to the extent that the reopener conditions in ¶ 62 or 63 (United States' Pre- and Post-Certification Reservations) are satisfied. SDs may invoke the procedures set forth in Section XII (Dispute Resolution) to dispute (a) EPA's determination that the reopener conditions of ¶ 62 or 63 are satisfied, (b) EPA's determination that the RA is not protective of human health and the environment, or (c) EPA's selection of the further response actions. Disputes regarding EPA's determination that the RA is not protective or EPA's selection of further response actions shall be resolved pursuant to ¶ 46 (Record Review).

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

VIII. PROPERTY REQUIREMENTS

20. **Agreements Regarding Access and Non-Interference.** SDs 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 SDs and by Plaintiff, providing that such Non-Settling Owner: (i) provide Plaintiff and the other SDs, and their representatives, contractors, and subcontractors with access at all reasonable times to such Affected Property to conduct any activity regarding the CD, including those listed in ¶ 20.a (Access Requirements); and (ii) refrain from using such Affected Property in any manner that EPA determines will pose an unacceptable risk to human health or to the environment due to exposure to Waste Material, or interfere with or adversely affect the implementation, integrity, or protectiveness of the Remedial Action, including the restrictions listed in ¶ 20.b (Land, Water, or Other Resource Use Restrictions). SDs shall provide a copy of such access and use restriction agreement(s) to EPA.

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;

(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 ¶ 66 (Work Takeover);

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

(9) Assessing SDs' 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.

b. **Land, Water, or Other Resource Use Restrictions**. The following is a list of land, water, or other resource use restrictions that may be applicable to the Affected Property:

(1) Prohibiting activities that could interfere with the RA;

(2) Prohibiting activities that could result in exposure to contaminants in Site sediments;

(3) Ensuring that any new structures on the Site will not be constructed in a manner that could interfere with the RA; and

(4) Ensuring that any new structures on the Site will be constructed in a manner that will minimize potential risk exposure to contaminants.

21. **Best Efforts**. As used in this Section, "best efforts" means the efforts that a reasonable person in the position of SDs 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 SDs are unable to accomplish what is required through "best efforts" in a timely manner, they shall notify EPA, and include a description of the steps taken to comply with the requirements. If the United States deems it appropriate, it may assist SDs, or take independent action, in obtaining such access and/or use restrictions. All costs incurred by the United States in providing such assistance or taking such action, including the cost of attorney time and the amount of monetary consideration or just compensation paid, constitute Future Response Costs to be reimbursed under Section X (Payments for Response Costs).

22. 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, SDs shall cooperate with EPA's efforts to secure and ensure compliance with such Institutional Controls.

23. In the event of any Transfer of the Affected Property, unless the United States otherwise consents in writing, SDs shall continue to comply with their obligations under the CD, including their obligation to secure access and ensure compliance with any land, water, or other

resource use restrictions regarding the Affected Property and to implement, maintain, monitor, and report on Institutional Controls.

24. Notwithstanding any provision of the CD, Plaintiff retains all of its access authorities and rights, as well as all of its rights to require land, water, or other resource use restrictions and Institutional Controls, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statute or regulations.

IX. FINANCIAL ASSURANCE

25. In order to ensure completion of the Work, SDs shall secure financial assurance, initially in the amount of $3,191,000 ("Estimated Cost of the Work"), for the benefit of EPA. The financial assurance must be one or more of the mechanisms listed below, in a form substantially identical to the relevant sample documents available from EPA or under the "Financial Assurance - Settlements" category on the Cleanup Enforcement Model Language and Sample Documents Database at https://cfpub.epa.gov/compliance/models/, and satisfactory to EPA. SDs may use multiple mechanisms if they are limited to surety bonds guaranteeing payment, letters of credit, trust funds, and/or insurance policies.

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

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

c. A trust fund established for the benefit of EPA that is administered by a trustee that has the authority to act as a trustee and whose trust operations are regulated and examined by a federal or state agency; or

d. A policy of insurance that provides EPA with acceptable rights as a beneficiary thereof and that is issued by an insurance carrier that has the authority to issue insurance policies in the applicable jurisdiction(s) and whose insurance operations are regulated and examined by a federal or state agency.

26. SDs shall, within 30 days of the Effective Date, obtain EPA's approval of the form of SDs' financial assurance. Within 60 days of such approval, SDs 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 EPA as specified in Section XIX (Notices and Submissions).

27. SDs shall diligently monitor the adequacy of the financial assurance. If any 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, such SD shall notify EPA of such information within 7 days. If EPA determines that the financial assurance provided under this Section is inadequate or otherwise no longer satisfies the requirements of this Section, EPA will notify the affected SD of such determination. SDs shall, within 30 days after notifying EPA or receiving notice from EPA under this Paragraph, secure and submit to EPA for approval a proposal for a revised or alternative financial assurance mechanism that satisfies the requirements of this Section. EPA may extend this deadline for such time as is reasonably necessary for the affected SD, in the exercise of due diligence, to secure

and submit to EPA a proposal for a revised or alternative financial assurance mechanism, not to exceed 60 days. SDs shall follow the procedures of ¶ 29 (Modification of Amount, Form, or Terms of Financial Assurance) in seeking approval of, and submitting documentation for, the revised or alternative financial assurance mechanism. SDs' inability to secure financial assurance in accordance with this Section does not excuse performance of any other obligation under this Settlement.

28. **Access to Financial Assurance**

a. If EPA issues a notice of implementation of a Work Takeover under ¶ 66.b, then, in accordance with any applicable financial assurance mechanism, EPA is entitled to require that any funds guaranteed be paid in accordance with ¶ 28.d.

b. If EPA is notified by the issuer of a financial assurance mechanism that it intends to cancel the mechanism, and the affected SD fails to provide an alternative financial assurance mechanism in accordance with this Section at least 30 days prior to the cancellation date, the funds guaranteed under such mechanism must be paid prior to cancellation in accordance with ¶ 28.d.

c. If, upon issuance of a notice of implementation of a Work Takeover under ¶ 66.b, EPA is unable for any reason to promptly secure the resources guaranteed under any applicable financial assurance mechanism, then EPA is entitled to demand an amount, as determined by EPA, sufficient to cover the cost of the remaining Work to be performed. SDs shall, within 30 days of such demand, pay the amount demanded as directed by EPA.

d. Any amounts required to be paid under this ¶ 28 shall be, as directed by EPA: (i) paid to EPA in order to facilitate the completion of the Work by EPA, the State, or by

another person; or (ii) deposited into an interest-bearing account, established at a duly chartered bank or trust company that is insured by the FDIC, in order to facilitate the completion of the Work by another person. If payment is made to EPA, EPA may deposit the payment into the EPA Hazardous Substance Superfund or into the Devil's Swamp Lake Superfund Site Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

e. All EPA Work Takeover costs not paid under this ¶ 28 must be reimbursed as Future Response Costs under Section X (Payments for Response Costs).

29. **Modification of Amount, Form, or Terms of Financial Assurance**. SDs 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 ¶ 26, and must include an estimate of the cost of the remaining Work, an explanation of the bases for the cost calculation, and a description of the proposed changes, if any, to the form or terms of the financial assurance. EPA will notify SDs of its decision to approve or disapprove a requested reduction or change pursuant to this Paragraph. SDs 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 XII (Dispute Resolution). SDs 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 SDs 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, SDs shall submit to EPA documentation of the reduced, revised, or alternative financial assurance mechanism in accordance with ¶ 26.

30. **Release, Cancellation, or Discontinuation of Financial Assurance**. SDs may release, cancel, or discontinue any financial assurance provided under this Section only: (a) if EPA issues a Certification of Work Completion under ¶ 4.8 (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 XII (Dispute Resolution).

X. PAYMENTS FOR RESPONSE COSTS

31. **Payment by SDs for United States Past Response Costs**.

a. Within 30 days after the Effective Date, SDs shall pay to EPA $2,047,313.63 in payment for Past Response Costs. The Financial Litigation Program ("FLP") of the United States Attorney's Office for the Middle District of Louisiana shall provide to SDs, in accordance with ¶ 88, instructions for making this payment, including a Consolidated Debt Collection System ("CDCS") reference number. SDs shall make such payment by Fedwire Electronic Funds Transfer ("EFT") in accordance with the FLP's instructions, including references to the CDCS Number, Site/Spill ID Number 06N1, and DJ Number 90-11-3-12390.

SDs shall send to DOJ and EPA, in accordance with ¶ 88, a notice of this payment including these references.

b. **Deposit of Past Response Costs Payment**. The total amount to be paid by Setting Defendants pursuant to ¶ 31.a shall be deposited by EPA in the Devil's Swamp Lake Superfund Site 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.

32. **Payments by SDs for Future Response Costs**. SDs shall pay to EPA all Future Response Costs not inconsistent with the NCP.

a. **Periodic Bills**. On a periodic basis, EPA will send SDs a bill requiring payment that includes an eRecovery Report cost summary and a DOJ case cost summary, which includes direct and indirect costs incurred by EPA, its contractors, subcontractors, and DOJ. SDs shall make all payments within 30 days after SDs' receipt of each bill requiring payment, except as otherwise provided in ¶ 33, at https://www.pay.gov using the "EPA Miscellaneous Payments Cincinnati Finance Center" link, and including references to the Site/Spill ID Number 06N1, the DJ Number 90-11-3-12390, and the purpose of the payment. SDs shall send to DOJ and EPA, in accordance with ¶ 88, a notice of this payment including these references.

b. **Deposit of Future Response Costs Payments**. The total amount to be paid by SDs pursuant to ¶ 32.a (Periodic Bills) shall be deposited by EPA in the Devil's Swamp Lake Superfund Site Special Account to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund, provided, however, that EPA may deposit a Future Response Costs

payment directly into the EPA Hazardous Substance Superfund if, at the time the payment is received, EPA estimates that the Devil's Swamp Lake Superfund Site Special Account balance is sufficient to address currently anticipated future response actions to be conducted or financed by EPA at or in connection with the Site. Any decision by EPA to deposit a Future Response Costs payment directly into the EPA Hazardous Substance Superfund for this reason shall not be subject to challenge by SDs pursuant to the dispute resolution provisions of this CD or in any other forum.

33. **Contesting Future Response Costs**. SDs may submit a Notice of Dispute, initiating the procedures of Section XII (Dispute Resolution), regarding any Future Response Costs billed under ¶ 32 (Payments by SDs for Future Response Costs) if they determine that EPA has made a mathematical error or included a cost item that is not within the definition of Future Response Costs, or if they believe 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 30 days after receipt of the bill and must be sent to the United States pursuant to Section XIX (Notices and Submissions). Such Notice of Dispute shall specifically identify the contested Future Response Costs and the basis for objection. If SDs submit a Notice of Dispute, SDs shall within the 30-day period, also as a requirement for initiating the dispute, (a) pay all uncontested Future Response Costs to the United States and (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. SDs shall send to the United States, as provided in Section XIX (Notices and Submissions), a copy of the

transmittal letter and check paying the uncontested Future Response Costs, and a copy of the correspondence that establishes and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. If the United States prevails in the dispute, SDs shall pay the sums due (with accrued interest) to the United States within 7 days after the resolution of the dispute. If SDs prevail concerning any aspect of the contested costs, SDs shall pay that portion of the costs (plus associated accrued interest) for which they did not prevail to the United States within 7 days after the resolution of the dispute. SDs shall be disbursed any balance of the escrow account. All payments to the United States under this Paragraph shall be made in accordance with ¶ 31.a (instructions for past response cost payments). The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XII (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding SDs' obligation to reimburse the United States for its Future Response Costs.

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

35. **SDs' Indemnification of the United States**

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

b. The United States shall give SDs notice of any claim for which the United States plans to seek indemnification pursuant to this ¶ 35, and shall consult with SDs prior to settling such claim.

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

37. **Insurance**. No later than 15 days before commencing any on-site Work, SDs shall secure, and shall maintain until the first anniversary after issuance of EPA's Certification of RA Completion pursuant to ¶ 4.6 (Certification of RA Completion) of the SOW commercial general liability insurance with limits of liability of $1 million per occurrence, automobile liability insurance with limits of liability of $1 million per accident, and umbrella liability insurance with limits of liability of $5 million in excess of the required commercial general liability and automobile liability limits, naming the United States as an additional insured with respect to all liability arising out of the activities performed by or on behalf of SDs pursuant to this CD. In addition, for the duration of this CD, SDs shall satisfy, or shall ensure that their contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of SDs in furtherance of this CD. Prior to commencement of the Work, SDs shall provide to EPA certificates of such insurance and a copy of each insurance policy. SDs shall resubmit such

certificates and copies of policies each year on the anniversary of the Effective Date. If SDs demonstrate by evidence satisfactory to EPA 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, SDs need provide only that portion of the insurance described above that is not maintained by the contractor or subcontractor. SDs shall ensure that all submittals to EPA under this Paragraph identify the Devil's Swamp Lake Superfund Site**,** East Baton Rouge Parish, Louisiana and the civil action number of this case.

XI. FORCE MAJEURE

38. "Force majeure," for purposes of this CD, is defined as any event arising from causes beyond the control of SDs, of any entity controlled by SDs, or of SDs' contractors that delays or prevents the performance of any obligation under this CD despite SDs' best efforts to fulfill the obligation. The requirement that SDs exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force majeure and best efforts to address the effects of any potential force majeure (a) as it is occurring and (b) following the potential force majeure such that the delay and any adverse effects of the delay are minimized to the greatest extent possible. "Force majeure" does not include financial inability to complete the Work or a failure to achieve the Performance Standards.

39. If any event occurs or has occurred that may delay the performance of any obligation under this CD for which SDs intend or may intend to assert a claim of force majeure, SDs 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 and Emergency Management Division, EPA Region 6, within 7 days

of when SDs first knew that the event might cause a delay. Within 30 days thereafter, SDs shall provide in writing to EPA an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; SDs' rationale for attributing such delay to a force majeure; and a statement as to whether, in the opinion of SDs, such event may cause or contribute to an endangerment to public health or welfare, or the environment. SDs shall include with any notice all available documentation supporting their claim that the delay was attributable to a force majeure. SDs shall be deemed to know of any circumstance of which SDs, any entity controlled by SDs, or SDs' contractors or subcontractors knew or should have known. Failure to comply with the above requirements regarding an event shall preclude SDs 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 ¶ 38 and whether SDs have exercised their best efforts under ¶ 38, EPA may, in its unreviewable discretion, excuse in writing SDs' failure to submit timely or complete notices under this Paragraph.

40. If EPA 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 for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the force majeure shall not, of itself, extend the time for performance of any other obligation. If EPA does not agree that the delay or anticipated delay has been or will be caused by a force majeure, EPA will notify SDs in

writing of its decision. If EPA agrees that the delay is attributable to a force majeure, EPA will notify SDs in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure.

41. If SDs elect to invoke the dispute resolution procedures set forth in Section XII (Dispute Resolution) regarding EPA's decision, they shall do so no later than 15 days after receipt of EPA's notice. In any such proceeding, SDs 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 SDs complied with the requirements of ¶¶ 38 and 39. If SDs carry this burden, the delay at issue shall be deemed not to be a violation by SDs of the affected obligation of this CD identified to EPA and the Court.

42. 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 SDs from meeting one or more deadlines in the SOW, SDs may seek relief under this Section.

XII. DISPUTE RESOLUTION

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

44. 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.

45. **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 20 days after the conclusion of the informal negotiation period, SDs invoke the formal dispute resolution procedures of this Section by serving on the United States 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 SDs. The Statement of Position shall specify SDs' position as to whether formal dispute resolution should proceed under ¶ 46 (Record Review) or 47.

b. Within 20 days after receipt of SDs' Statement of Position, EPA will serve on SDs 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 ¶ 46 (Record Review) or 47. Within 20 days after receipt of EPA's Statement of Position, SDs may submit a Reply.

c. If there is disagreement between EPA and SDs as to whether dispute resolution should proceed under ¶ 46 (Record Review) or 47, the parties to the dispute shall follow the procedures set forth in the Paragraph determined by EPA to be applicable. However, if SDs 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 ¶¶ 46 and 47.

46. **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. SDs shall not challenge, using the dispute resolution procedures under Section XII, or judicially, EPA's remedial action selection embodied in the ROD.

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

b. The Director of the Superfund and Emergency Management Division, EPA Region 6, will issue a final administrative decision resolving the dispute based on the administrative record described in ¶ 46.a. This decision shall be binding upon SDs, subject only to the right to seek judicial review pursuant to ¶¶ 46.c and 46.d.

c. Any administrative decision made by EPA pursuant to ¶ 46.b shall be reviewable by this Court, provided that a motion for judicial review of the decision is filed by SDs 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 SDs' motion.

d. In proceedings on any dispute governed by this Paragraph, SDs shall have the burden of demonstrating that the decision of the Superfund and Emergency Management Division Director is arbitrary and capricious or otherwise not in accordance with law. Judicial review of EPA's decision shall be on the administrative record compiled pursuant to ¶ 46.a.

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

a. The Director of the Superfund and Emergency Management Division, EPA Region 6, will issue a final decision resolving the dispute based on the statements of position and reply, if any, served under ¶ 45. The Superfund and Emergency Management Division Director's decision shall be binding on SDs unless, within 10 days after receipt of the decision, SDs file 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 SDs' motion.

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

48. The invocation of formal dispute resolution procedures under this Section does not extend, postpone, or affect in any way any obligation of SDs under this CD, except as provided in ¶ 33 (Contesting Future Response Costs), as agreed by EPA, or as determined by the Court. Stipulated penalties with respect to the disputed matter shall continue to accrue, but payment shall be stayed pending resolution of the dispute, as provided in ¶ 56. 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 SDs do not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XIII (Stipulated Penalties).

XIII. STIPULATED PENALTIES

49. SDs shall be liable to the United States for stipulated penalties in the amounts set forth in ¶¶ 50.a and 51 for failure to comply with the obligations specified in ¶¶ 50.b and 51, unless excused under Section XI (Force Majeure). "Comply" as used in the previous sentence includes compliance by SDs 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 ¶ 6.6(a) (Initial Submissions) or 6.6(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.

50. **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 ¶ 50.b:

Period of Noncompliance	Penalty Per Violation Per Day
1st through 14th day	$500
15th through 30th day	$1000
31st day and beyond	$3000

b. **Obligations**

(1) Payment of Past Response Costs.

(2) Payment of Future Response Costs – 30 days after receipt of bill and eRecovery Report from EPA.

(3) Establishment and maintenance of financial assurance in compliance with the timelines and other substantive and procedural requirements of Section IX (Financial Assurance).

(4) Establishment of an escrow account to hold any disputed Future Response Costs under ¶ 33 (Contesting Future Response Costs).

(5) Compliance with all deliverable and reporting requirements set forth in Section VI of this Consent Decree (Performance of Work) and in the provisions respecting "Remedial Action" and "Reporting" in the SOW, ROD, and this Consent Decree.

(6) Implementation of the Remedial Action and Operation and Maintenance in accordance with the SOW, ROD, and this CD, and plans and

schedules approved thereunder in accordance with deadlines and requirements specified in the SOW, ROD, and this CD.

51. **Stipulated Penalty Amounts – Other Deliverables**

a. The following stipulated penalties shall accrue per violation per day for non-compliance with any requirement of this CD not identified in Paragraph 50.b:

Period of Noncompliance	Penalty Per Violation Per Day
1st through 14th day	$400
15th through 30th day	$500
31st day and beyond	$1500

52. In the event that EPA assumes performance of a portion or all of the Work pursuant to ¶ 66 (Work Takeover), SDs shall be liable for a stipulated penalty in the amount of $100,000. Stipulated penalties under this Paragraph are in addition to the remedies available under ¶¶ 28 (Access to Financial Assurance) and 66 (Work Takeover).

53. 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 ¶ 6.6 (Approval of Deliverables) of the SOW, during the period, if any, beginning on the 31st day after EPA's receipt of such submission until the date that EPA notifies SDs of any deficiency; (b) with respect to a decision by the Director of the Superfund and Emergency Management Division, EPA Region 6, under ¶ 46.b or 47.a of Section XII (Dispute Resolution), during the period, if any, beginning on the 21st day after the date that SDs' 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 XII (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.

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

55. All penalties accruing under this Section shall be due and payable to the United States within 30 days after SDs' receipt from EPA of a demand for payment of the penalties, unless SDs invoke the Dispute Resolution procedures under Section XII (Dispute Resolution) within the 30-day period. All payments to the United States under this Section shall be made at https://www.pay.gov using the link for "EPA Miscellaneous Payments Cincinnati Finance Center," including references to the Site/Spill ID Number, the DJ Number, and the purpose of the payment. SDs shall send to DOJ and EPA, in accordance with ¶ 88, a notice of this payment including these references.

56. Penalties shall continue to accrue as provided in ¶ 53 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 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, SDs shall pay all accrued penalties determined by the Court to be owed to EPA within 60 days after receipt of the Court's decision or order, except as provided in ¶ 56.c;

c. If the District Court's decision is appealed by any Party, SDs 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 or to SDs to the extent that they prevail.

57. If SDs fail to pay stipulated penalties when due, SDs shall pay Interest on the unpaid stipulated penalties as follows: (a) if SDs have 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 ¶ 56 until the date of payment; and (b) if SDs fail to timely invoke dispute resolution, Interest shall accrue from the date of demand under ¶ 55 until the date of payment. If SDs fail to pay stipulated penalties and Interest when due, the United States may institute proceedings to collect the penalties and Interest.

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

59. Nothing in this CD shall be construed as prohibiting, altering, or in any way limiting the ability of the United States to seek any other remedies or sanctions available by virtue of SDs' 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.

60. 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.

XIV. COVENANTS BY PLAINTIFF

61. **Covenants for SDs by United States**

Except as provided in ¶¶ 62, 63 (United States' Pre- and Post-Certification Reservations), and 65 (General Reservations of Rights), the United States covenants not to sue or to take administrative action against SDs pursuant to Sections 106 and 107(a) of CERCLA 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 Certification of RA Completion by EPA pursuant to ¶ 4.6 (Certification of RA Completion) of the SOW. These covenants are conditioned upon the satisfactory performance by SDs of their obligations under this CD. These covenants extend only to SDs and do not extend to any other person.

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

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

64. For purposes of ¶ 62 (United States' 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 the ROD was signed and set forth in the ROD for the Site and the administrative record supporting the ROD. For purposes of ¶ 63 (United States'

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 Certification of RA Completion and set forth in the ROD, the administrative record supporting the ROD, the post-ROD administrative record, or in any information received by EPA pursuant to the requirements of this CD prior to Certification of RA Completion.

65. **General Reservations of Rights**. The United States reserves, and this CD is without prejudice to, all rights against SDs with respect to all matters not expressly included within Plaintiff's covenants. Notwithstanding any other provision of this CD, the United States reserves all rights against SDs with respect to:

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

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

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

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

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

f. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;

g. criminal liability;

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

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

66. **Work Takeover**

a. In the event EPA determines that SDs: (1) have ceased implementation of any portion of the Work; (2) are seriously or repeatedly deficient or late in their performance of the Work; or (3) are implementing the Work in a manner that may cause an endangerment to human health or the environment, EPA may issue a written notice ("Work Takeover Notice") to SDs. Any Work Takeover Notice issued by EPA will specify the grounds upon which such notice was issued and will provide SDs a period of 10 days within which to remedy the circumstances giving rise to EPA's issuance of such notice.

b. If, after expiration of the 10-day notice period specified in ¶ 66.a, SDs have 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 SDs in writing (which writing may be electronic) if EPA determines that implementation of a Work

Takeover is warranted under this ¶ 66.b. Funding of Work Takeover costs is addressed under ¶ 28 (Access to Financial Assurance).

c. SDs may invoke the procedures set forth in ¶ 46 (Record Review), to dispute EPA's implementation of a Work Takeover under ¶ 66.b. However, notwithstanding SDs' 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 ¶ 66.b until the earlier of (1) the date that SDs remedy, 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 ¶ 46 (Record Review) requiring EPA to terminate such Work Takeover.

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

XV. COVENANTS BY SDs

68. **Covenants by SDs**. Subject to the reservations in ¶ 70, SDs covenant not to sue and agree not to assert any claims or causes of action against the United States with respect to the Site, 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 Site, past response actions regarding the Site, Past

Response Costs, Future Response Costs, SDs' Past Response Costs, SDs' Future Response Costs and this CD; or

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

69. Except as provided in ¶¶ 72 (Waiver of Claims by SDs) and 79 (Res Judicata and Other Defenses), the covenants in this Section shall not apply if the United States brings a cause of action or issues an order pursuant to any of the reservations in Section XIV (Covenants by Plaintiff), other than in ¶¶ 65.a (claims for failure to meet a requirement of the CD), 65.g (criminal liability), and 65.h (violations of federal/state law during or after implementation of the Work), but only to the extent that SDs' claims arise from the same response action, response costs, or damages that the United States is seeking pursuant to the applicable reservation.

70. SDs reserve, 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 SDs' deliverables or activities.

71. 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).

72. **Waiver of Claims by SDs**

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

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

(2) **MSW Waiver**. For all matters relating to the Site against any person where the person's liability to SDs with respect to the Site is based solely on having arranged for disposal or treatment, or for transport for disposal or treatment, of MSW at the Site, if the volume of MSW disposed, treated, or

transported by such person to the Site did not exceed 0.2% of the total volume of waste at the Site;

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

b. **Exceptions to Waivers**

(1) The waivers under this ¶ 72 shall not apply with respect to any defense, claim, or cause of action that a SD may have against any person otherwise covered by such waivers if such person asserts a claim or cause of action relating to the Site against such SD. The waiver under ¶ 72.a(1) (De Micromis Waiver) shall not apply to any claim or cause of action against any person otherwise covered by such waiver if EPA determines that: (i) the materials containing hazardous substances contributed to the Site by such person contributed significantly or could contribute significantly, either individually or in the aggregate, to the cost of the response action or natural resource restoration at the Site; or (ii) such person has failed to comply with any information request or administrative subpoena issued pursuant to Section 104(e) or 122(e)(3)(B) of CERCLA, 42 U.S.C. § 9604(e) or 9622(e)(3)(B), or Section 3007 of RCRA, 42 U.S.C. § 6927, or has impeded or is impeding, through action or inaction, the performance of a response action or natural resource restoration with respect to the Site; or if (iii) such person has been convicted of a criminal violation for the

conduct to which the waiver would apply and that conviction has not been vitiated on appeal or otherwise.

(2) The waiver under ¶ 72.a(2) (MSW Waiver) shall not apply to any claim or cause of action against any person otherwise covered by such waiver if EPA determines that: (i) the materials containing MSW contributed to the Site by such person contributed significantly or could contribute significantly, either individually or in the aggregate, to the cost of the response action or natural resource restoration at the Site; or (ii) such person has failed to comply with any information request or administrative subpoena issued pursuant to Section 104(e) or 122(e)(3)(B) of CERCLA, 42 U.S.C. § 9604(e) or 9622(e)(3)(B), or Section 3007 of RCRA, 42 U.S.C. § 6927, or has impeded or is impeding, through action or inaction, the performance of a response action or natural resource restoration with respect to the Site.

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

XVI. EFFECT OF SETTLEMENT; CONTRIBUTION

74. Except as provided in ¶ 72 (Waiver of Claims by SDs), 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 XV (Covenants by SDs), 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).

75. The Parties agree, and by entering this CD this Court finds, that this CD constitutes a judicially-approved settlement pursuant to which each SD has, as of the Effective Date, resolved liability to the United States within the meaning of Section 113(f)(2) of CERCLA, 42 U.S.C. § 9613(f)(2), and is entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Section 113(f)(2) of CERCLA, or as may be otherwise provided by law, for the "matters addressed" in this CD. The "matters addressed" in this CD are all response actions taken or to be taken and all response costs incurred or to be incurred, at or in connection with the Site, by the United States or any other person, except for the State; provided, however, that if the United States exercises rights under the reservations in Section XIV (Covenants by Plaintiff), other than in ¶¶ 65.a (claims for failure to meet a requirement of the CD), 65.g (criminal liability), or 65.h (violations of federal/state law during or after implementation of the Work), the "matters addressed" in this CD will no longer include those response costs or response actions or natural resource damages that are within the scope of the exercised reservation.

76. 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 each Settling Defendant 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).

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

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

79. **Res Judicata and Other Defenses**. In any subsequent administrative or judicial proceeding initiated by the United States for injunctive relief, recovery of response costs, or other appropriate relief relating to the Site, SDs 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 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 XIV (Covenants by Plaintiff).

XVII. ACCESS TO INFORMATION

80. SDs shall provide to EPA, 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 SDs' 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. SDs shall also make available to EPA, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

81. **Privileged and Protected Claims**

a. SDs may assert that all or part of a record requested by Plaintiff is privileged or protected as provided under federal law, in lieu of providing the record, provided SDs comply with ¶ 81.b, and except as provided in ¶ 81.c.

b. If SDs assert a claim of privilege or protection, they shall provide Plaintiff 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, SDs shall provide the record to Plaintiff in redacted form to mask the privileged or protected portion only. SDs shall retain all records that they claim to be privileged or protected until Plaintiff has had a reasonable opportunity to dispute the privilege or protection claim and any such dispute has been resolved in the SDs' favor.

c. SDs 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 SDs are required to create or generate pursuant to this CD.

82. **Business Confidential Claims**. SDs may assert that all or part of a record provided to Plaintiff under this Section or Section XVIII (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). SDs shall segregate and clearly identify all records or parts thereof submitted under this CD for which SDs assert business confidentiality claims. Records that SDs claim 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 if EPA has notified SDs 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 SDs.

83. 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.

84. Notwithstanding any provision of this CD, Plaintiff retains all of its information gathering and inspection authorities and rights, including enforcement actions related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

XVIII. RETENTION OF RECORDS

85. Until 10 years after EPA's Certification of Work Completion under ¶ 4.8 (Certification of Work Completion) of the SOW, each SD shall preserve and retain all non-

identical copies of Records (including Records in electronic form) now in its possession or control or that come into its possession or control that relate in any manner to its liability under CERCLA with respect to the Site, provided, however, that SDs who are potentially liable as owners or operators of the Site must retain, in addition, all Records that relate to the liability of any other person under CERCLA with respect to the Site. Each 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 each 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.

86. At the conclusion of this record retention period, SDs shall notify the United States at least 90 days prior to the destruction of any such Records, and, upon request by the United States, and except as provided in ¶ 81 (Privileged and Protected Claims), SDs shall deliver any such Records to EPA.

87. Each SD certifies individually 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 and that it has fully complied with any and all EPA 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.

XIX. NOTICES AND SUBMISSIONS

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

As to the United States:	EES Case Management Unit U.S. Department of Justice Environment and Natural Resources Division P.O. Box 7611 Washington, D.C. 20044-7611 eescdcopy.enrd@usdoj.gov Re: DJ # 90-11-3-12390 and to EPA as provided below
As to EPA:	Ronald D. Crossland Director, Superfund and Emergency Management Division U.S. Environmental Protection Agency, Region 6 1201 Elm Street Dallas, Texas 75270 crossland.ronnie@epa.gov (214) 665-2721
and:	Kimberly Tapia Remedial Project Manager Superfund and Emergency Management Division U.S. Environmental Protection Agency, Region 6 1201 Elm Street Dallas, Texas 75270 tapia.kimberly@epa.gov (214) 665-6728
As to EPA Cincinnati Finance Center:	EPA Cincinnati Finance Center 26 W. Martin Luther King Drive Cincinnati, Ohio 45268 CINWD_AcctsReceivable@epa.gov
As to SDs:	C. Scott Wilson, P.E. Senior Remediation Manager Clean Harbors wilson.scott14@cleanharbors.com Office: (225) 778-3596 Cell: (225) 316-9563

XX. RETENTION OF JURISDICTION

89. This Court retains jurisdiction over both the subject matter of this CD and SDs 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 XII (Dispute Resolution).

XXI. APPENDICES

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

"Appendix A" is the ROD.

"Appendix B" is the SOW.

"Appendix C" is a selection of maps of the Site.

XXII. MODIFICATION

91. Except as provided in ¶ 13 (Modification of SOW or Related Deliverables), material modifications to this CD, including the SOW, shall be in writing, signed by the United States and SDs, and shall be effective upon approval by the Court. Except as provided in ¶ 13, non-material modifications to this CD, including the SOW, shall be in writing and shall be effective when signed by duly authorized representatives of the United States and SDs. 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).

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

XXIII. LODGING AND OPPORTUNITY FOR PUBLIC COMMENT

93. 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. SDs consent to the entry of this CD without further notice.

94. 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.

XXIV. SIGNATORIES/SERVICE

95. Each undersigned representative of a SD to this CD 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.

96. Each 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 SDs in writing that it no longer supports entry of the CD.

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

XXV. FINAL JUDGMENT

98. 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.

99. Upon entry of this CD by the Court, this CD shall constitute a final judgment between and among the United States and SDs.

SO ORDERED THIS __ DAY OF _____, 20__.

_____
United States District Judge

Signature Page for CD regarding the Devil's Swamp Lake Superfund Site

FOR THE UNITED STATES OF AMERICA:

TODD KIM
Assistant Attorney General
U.S. Department of Justice
Environment and Natural Resources Division

August 20, 2024
Dated

LAURA F. SMYTHE, NY Reg. No. 5326657
Trial Attorney
U.S. Department of Justice
Environment and Natural Resources Division
Environmental Enforcement Section
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Middle District of Louisiana

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Signature Page for CD regarding the Devil's Swamp Lake Superfund Site

FOR THE U.S. ENVIRONMENTAL PROTECTION AGENCY:

RONALD CROSSLAND

Digitally signed by RONALD CROSSLAND
Date: 2024.06.27 15:13:23 -05'00'

June 27, 2024
Dated

Ronald D. Crossland
Director, Superfund and Emergency Management Division
U.S. Environmental Protection Agency, Region 6
1201 Elm Street, Suite 500
Dallas, Texas 75270

Signature Page for CD regarding the Devil's Swamp Lake Superfund Site

FOR CLEAN HARBORS, INC.:

April 24, 2024
Dated

Name (print): Michael McDonald
Title: Assistant Secretary
Address: 42 Longwater Drive, Norwell, MA 02061

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

Name (print): _____
Title: _____
Company: CT Corporation
Address: 100 Federal Street, Suite 700
Boston, MA 02110
Phone: _____
email: _____

Signature Page for CD regarding the Devil's Swamp Lake Superfund Site

FOR CLEAN HARBORS BATON ROUGE, LLC:

4/24/2024
Dated

Name (print): Rebecca Underwood
Title: President
Address: 42 Longwater Dr.
Norwell, MA 02061

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

Name (print): ~~CT Corporation~~
Title:
Company:
Address: ~~3867 Plaza Tower Drive~~
~~Baton Rouge, LA 70816-4378~~
Phone:
email:

Signature Page for CD regarding the Devil's Swamp Lake Superfund Site

FOR BATON ROUGE DISPOSAL, LLC:

7/11/24
Dated

Name (print): Rebecca Underwood
Title: President
Address: 42 Longwater Dr.
Norwell, MA 02061

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

Name (print): _____
Title: _____
Company: CT Corporation
Address: 3867 Plaza Tower Drive
Baton Rouge, LA 70816-4378
Phone: _____
email: _____

APPENDIX A

RECORD OF DECISION

RECORD OF DECISION

DEVIL'S SWAMP LAKE SUPERFUND SITE
EAST BATON ROUGE PARISH, LOUISIANA
EPA ID: LAD981155872

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 6
DALLAS, TEXAS

AUGUST 2020

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS

ADI	Average Daily Intake
AOC	Administrative Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirement
ATSDR	Agency for Toxic Substances and Disease Registry
BERA	Baseline Ecological Risk Assessment
BHHRA	Baseline Human Health Risk Assessment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
C.F.R.	Code of Federal Regulations
COC	Chemical of Concern
CRA	Conestoga-Rovers & Associates
CSF	Cancer Slope Factor
CSM	Conceptual Site Model
CUL	Cleanup Level
CWA	Clean Water Act
DLPCB	Dioxin-like Polychlorinated Biphenyl
EMNR	Enhanced Monitored Natural Recovery
EPA	U.S. Environmental Protection Agency Region 6
EPC	Exposure Point Concentration
FS	Feasibility Study
HI	Hazard Index
HQ	Hazard Quotient
IC	Institutional Control
ID	Informational Device
IRIS	Integrated Risk Information System
LAC	Louisiana Administrative Code
LADI	Lifetime cancer average daily intake
LDEQ	Louisiana Department of Environmental Quality
LDH	Louisiana Department of Health
mg/kg	Milligram(s) per kilogram
mg/kg-d	Milligram(s) per kilogram per day
MNR	Monitored Natural Recovery
NAD	North American Datum
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFA	No Further Action
ng/g	Nanogram per gram
ng/kg	Nanogram per kilogram
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
OSWER	Office of Solid Waste and Emergency Response
PCB	Polychlorinated biphenyl
PRG	Preliminary Remediation Goals
PRP	Potentially Responsible Party
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act

Respondent	Clean Harbors Environmental Services, Inc., on behalf of Baton Rouge Disposal, LLC
RfD	Reference Dose
RG	Remediation Goal
RI	Remedial Investigation
RME	Reasonable Maximum Exposure
ROD	Record of Decision
Rollins	Rollins Environmental Services (LA), Inc.
SARA	Superfund Amendments and Reauthorization Act of 1986
SF	Slope Factor
Site	Devil's Swamp Lake Superfund Site
SMA	Sediment Management Area
SSID	Superfund Site Identification Number
SWAC	Surface Weighted Average Concentration
TAG	Technical Assistance Grant
TBC	To Be Considered
TCDD	2,3,7,8-Tetrachlorodibenzo-p-Dioxin
TEF	Toxic Equivalency Factor
TEQ	Toxic Equivalency
UAO	Unilateral Administrative Order
UCL	Upper Confidence Limit
µg/L	Microgram(s) per liter
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code

PART 1 - THE DECLARATION

1.1 Site Name and Location

Site Name: Devil's Swamp Lake Superfund Site
Site Location: East Baton Rouge Parish, Louisiana

EPA Site Identification Number: LAD981155872
LDEQ Agency Interest Number: 86800

1.2 Statement of Basis and Purpose

This Record of Decision (ROD) describes the "Selected Remedy" for the Devil's Swamp Lake Superfund Site (hereinafter Site). The Selected Remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. §§ 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA); and to the extent practicable the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 Code of Federal Regulations (C.F.R.) Part 300, as amended (1990).

The U.S. Environmental Protection Agency Region 6 office (EPA) is the lead agency for this Site and has conducted remedial activities at the Site since the 1990s. The Louisiana Department of Environmental Quality (LDEQ) is the support agency and provided technical review of the remedy through a cooperative agreement with EPA.

The State of Louisiana, by and through the LDEQ, was provided the opportunity to review and comment on the EPA's Selected Remedy (i.e., Alternative 4 – Cap in drainage ditch and Enhanced Monitored Natural Recovery (EMNR) in Remainder of Sediment Management Areas (SMAs) A + B). The LDEQ's concurrence is provided in Appendix A.

This decision is based on the Administrative Record for the Site, which has been developed in accordance with Section 113(k) of CERCLA, 42 U.S.C. § 9613(k). The Administrative Record is available for public review at the following locations:

Scotlandville Branch Library
7373 Scenic Highway
Baton Rouge, Louisiana 70807
(225) 354-7540

U.S. EPA Region 6
5th Floor Reception Area
1201 Elm Street, Suite 500
Dallas, Texas 75270-2102
Toll Free (800) 533-3508 or (214) 665-6597

LDEQ Headquarters
Public Records Center
Galvez Building, 1st Floor – Room 127
602 North Fifth Street
Baton Rouge, Louisiana 70802
(225) 219-3181

The Administrative Record along with the Site's profile page, is also available on the internet at the following website:

www.epa.gov/superfund/devils-swamp-lake

An Administrative Record Index is provided in Appendix B.

1.3 Assessment of the Site

The response action selected in this ROD is necessary to protect the public health, welfare, and/or the environment from actual or threatened releases of hazardous substances into the environment.

1.4 Description of the Selected Remedy

The Selected Remedy is a final action for the Site. This Site is being addressed as a single Operable Unit, and all the areas and media of concern within the Site are addressed in this ROD. The Selected Remedy addresses the Site-related human health risks associated with consumption of fish from the lake. It also addresses Site-related risks from contaminated soils and sediment in the drainage ditch, and is anticipated to achieve the Remedial Action Objectives (RAOs). The site RAOs are as follows:

- Reduce contaminant concentrations in fish and shellfish to levels protective of human health;
- Prevent unacceptable non-cancer health effects from ingestion of fish containing elevated concentrations of total PCBs;
- Prevent unacceptable cancer risks from ingestion of fish containing elevated concentrations of dioxin-like PCBs (DLPCBs);
- In considering the state Fish Consumption Advisory To Be Considered (TBC) criteria, reduce risk to levels that will allow the state to remove or modify the existing fish consumption advisory; and
- Maintain or reduce ecological risks, while limiting physical, chemical, and/or biological harms to the ecosystem associated with the implementation of remediation alternatives.

The Selected Remedy includes the following components:

- Sediment capping to isolate underlying PCBs in drainage ditch sediment and to provide a clean sediment surface for habitat restoration;
- Application of EMNR in parts of SMAs A+B that are outside of the drainage ditch;
- Long-term monitoring of sediment and biota;
- Maintenance of informational devices (IDs), as necessary, namely the state issued fish consumption advisory;
- Implementation of institutional controls (ICs); and
- Performance of statutory Five-Year Reviews to evaluate the performance of the remedy.

The total estimated net present value cost to implement the Selected Remedy is $3.191 million.

1.5 Statutory Determinations

The Selected Remedy meets the requirements of CERCLA Section 121, 42 U.S.C. § 9621, and the NCP, because it is protective of human health and the environment; complies with federal and state requirements that are applicable or relevant and appropriate to the remedial action; is cost effective; and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

While CERCLA Section 121(b)(1) gives preference to remedial actions involving treatment of wastes, treatment is not appropriate for this Site for the reasons set forth in this ROD. The NCP establishes the expectation that treatment will be used to address the principal threats posed by a site whenever practicable (40 C.F.R. § 300.430(a)(1)(iii)(A)). Principal threat wastes are those source materials considered highly toxic and/or highly mobile that generally cannot be reliably contained, or would pose a significant risk to human health or the environment should exposure occur. For wastes that pose a relatively low long-term threat, or in situations where treatment is impractical, the NCP establishes the expectation to use engineering controls, such as containment (40 C.F.R. § 300.430(a)(1)(iii)(B)). Here, the likely source material at the Site is the existing contaminated sediment located downstream of the outfall used by the former Rollins Environmental Services, Inc. (Rollins) facility. The contaminated sediments are not highly toxic or highly mobile and are not considered principal threat wastes. The Selected Remedy includes sediment capping to create an isolation or physical barrier between PCB contamination and the overlying media (i.e., surface water) and receptors; and EMNR to provide a clean sediment surface for habitat recovery while minimizing construction impacts to the wetland environment. The

Selected Remedy meets the expectations of the NCP and is the most appropriate choice for the Site. Given the relatively low risks posed by PCBs to ecological receptors, as well as the sensitivity of the habitat to physical disturbance, and the significant physical disturbance associated with sediment remediation in aquatic ecosystems such as Devil's Swamp Lake, the adverse effects of remediation outweigh the relatively low risks posed by PCBs.

Because this remedy will result in hazardous substances remaining on the Site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted pursuant to CERCLA Section 121(c) and 40 C.F.R. § 300.430(f)(4)(ii) within five years after initiation of the remedial action to ensure that the remedy is, or will be, protective of human health and the environment. If the results of the Five-Year Reviews reveal that the remedy integrity is compromised and protection of human health is insufficient, then additional remedial actions will be evaluated by the EPA and State.

1.6 Data Certification Checklist

The following information is included in Part 2 (Decision Summary) of this ROD:

1	Chemicals of concern and their respective concentrations	Section 2.7.1.1
2	Baseline risk represented by the chemicals of concern	Sections 2.7.1.6 and 2.7.1.7
3	Remediation Goals or Cleanup Levels, established for the chemicals of concern and the basis for these levels	Section 2.8.2
4	How source materials constituting principal threats are addressed or do not exist at the Site	Section 2.10
5	Current and reasonably anticipated land use assumptions and current and potential future beneficial uses of surface water used in the baseline risk assessment and Record of Decision	Sections 2.5.1.2, 2.5.1.3, and 2.6
6	Potential land use that will be available at the Site as a result of the Selected Remedy	Section 2.6
7	Estimated capital; annual operation and maintenance; and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected	Section 2.9
8	Key factors that led to selecting the remedy (i.e., describe how the Selected Remedy provides the best balance of trade-offs with respect to the balancing and modifying criteria, highlighting criteria key to the decision)	Sections 2.10 and 2.12.1

Additional information can be found in the Administrative Record file for the Site. The locations of the information repositories and the Administrative Record file are included in Section 1.2 of this ROD.

1.7 Authorizing Signature

This ROD documents the Selected Remedy for the Site. This remedy was selected by the EPA after consultation with the LDEQ. The Director of the Superfund Division (EPA Region 6) has been delegated the authority to approve and sign this ROD.

WREN STENGER

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Date: 2020.08.06 11:36:44 -05'00'

By: _____ Date: _____

Wren Stenger
Director, Superfund and Emergency Management Division
U.S. Environmental Protection Agency, Region 6

CONCURRENCE PAGE FOR RECORD OF DECISION
Devil's Swamp Lake Superfund Site
East Baton Rouge, Louisiana

canellas.bart@epa.gov

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Bart Cañellas
Remedial Project Manager

Date

BLAKE ATKINS

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Blake Atkins
Chief, Louisiana/Oklahoma/New Mexico Section

Date

JOHN MEYER

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Date: 2020.07.31 15:01:11 -05'00'

John C. Meyer
Chief, Superfund Remedial Branch

Date

I-JUNG CHIANG

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for

Leonard Schilling
Office of Regional Counsel

Date

I-JUNG CHIANG

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I-Jung Chiang
Chief, Superfund Branch
Office of Regional Counsel, ORCDS

Date

PART 2 - THE DECISION SUMMARY

This Decision Summary provides a description of the Site-specific factors and analyses that led to the Selected Remedy. It includes background information, a summary of the remedial investigation, the nature and extent of contamination, assessments of human health risks posed by the contaminants at the Site, the basis for action, and the identification and evaluation of remedial alternatives for the Site.

2.1 Site Name, Location, and Brief Description

The Devil's Swamp Lake Superfund site (Site) is located in East Baton Rouge Parish, Louisiana. Devil's Swamp Lake is a constructed, crescent-shaped lake located on the east bank floodplain of the Mississippi River, approximately 10 miles north of Baton Rouge, Louisiana. The Site location is shown on Figure 1 of Appendix C. A Site plan is included in Figure 2 of Appendix C.

The Site is located in Section 47, Township 5 South, Range 1 West; and Sections 55 and 59, Township 6 South, Range 1 West. The geographic coordinates for the Site are 30° 33′ 43′′ north latitude and –91° 13′ 14′′ west longitude (Appendix C, Figure 3). Northern portions of Devil's Swamp flow into Devil's Swamp Lake and continue from the lake into the southern portion of the swamp before emptying into the Mississippi River via the re-emerging channels of Bayou Baton Rouge.

The EPA is the lead agency for this Site, and LDEQ is the support agency. The National Superfund electronic database identification number is LAD981155872. The SSID number is 06N1. The LDEQ Agency Interest (AI) is No. 86800. The EPA expects to negotiate a settlement with potentially responsible parties (PRPs) to perform the cleanup of the Site, as outlined in this ROD.

2.2 Site History and Enforcement Activities

Prior to the 1950s, the areas surrounding Devil's Swamp consisted of agricultural farms, pasture, and some timberland. Rapid development of the area throughout the 1960s and 1970s resulted in construction of numerous industrial facilities, including the Rollins facility, in areas surrounding Devil's Swamp. Rollins operated a waste disposal facility that beginning in 1971 discharged treated process wastewater to Devil's Swamp Lake through National Pollutant Discharge Elimination System (NPDES) permitted Outfall 001 and stormwater runoff through Outfall 002. In 1993, the treated water discharge line (Outfall 001) was installed directly to the Mississippi River. Stormwater from Outfall 002 continues to discharge to Devil's Swamp Lake through the drainage ditch from the former Rollins facility. The lake was excavated in 1973 and 1974 to provide a source of borrow material for construction to reinforce the levee along the north and west sides of the Port of Greater Baton Rouge Terminal (Baton Rouge Barge Harbor). The Site boundaries are described in the Unilateral Administrative Order (UAO) as follows:

"The Site is generally bordered by the north portions of Bayou Baton Rouge to the north, U.S. Highway 61 (Scenic Highway), the Ewell Swamp farm, Baton Rouge Disposal, LLC (previously owned and operated by Safety-Kleen (Baton Rouge), Inc., formerly known as Laidlaw Environmental Services (Baton Rouge), formerly known as Rollins), the Baton Rouge Barge Harbor to the east, and the Mississippi River to the south and west." The Site consists of contaminated sediment within the Devil's Swamp Lake, a portion of Devil's Swamp adjoining the lake, and associated wetlands.

The historical discharge from the former Rollins facility appears to be the primary source of contamination at the Site. Chemicals were discharged to surface water and sediment, and subsequently to other areas and environmental media at the Site by various transport mechanisms, including sediment resuspension and surface water transport (Appendix C, Figure 4). Discharge of contaminants resulted in contamination of surface water, soil, sediment, and biota in Devil's Swamp Lake.

The soil/sediment within the drainage ditch located east of Devil's Swamp Lake, specifically northeast of the Baton Rouge Barge Terminal railroad tracks, within the former Rollins property, was addressed separately under a December 3, 2003, Administrative Order on Consent (AOC) and a Hazardous Waste Permit (LAD010395127) for the former facility.

Rollins completed a Resource Conservation and Recovery Act (RCRA) Facility Investigation and Corrective Action Plan at the former Rollins facility, including that portion of the drainage ditch, in July 1991. Characterization was completed as part of the RCRA Facility Investigation under the jurisdiction of the LDEQ. The remediation of the portion of the drainage ditch, within the former Rollins property, was completed as part of the AOC under the jurisdiction of the LDEQ and the February 7, 2014 Outfall 002 Ditch TSCA Clean-Up Work Plan (approved March 19, 2014) under the jurisdiction of the EPA. Therefore, that portion of the drainage ditch is not included as part of the Site.

2.2.1 History of CERCLA Enforcement Activities

The Site was proposed to the NPL on March 8, 2004 (Federal Register / Vol. 69. No. 45 / Monday, March 8, 2004 / Proposed Rules). On September 24, 2007, EPA Region 6 sent a Special Notice Letter for Remedial Investigation/Feasibility Study (RI/FS) to several PRPs. On December 3, 2009, EPA Region 6 issued a UAO for RI/FS to Clean Harbors Environmental Services, Inc., and Baton Rouge Disposal, LLC. Clean Harbors Environmental Services, Inc., on behalf of Baton Rouge Disposal, LLC (Respondent), provided written notice stating the intent to comply with the terms of the UAO. The RI/FS was completed in accordance with the requirements of the UAO and is the basis for the Proposed Plan and the ROD.

2.3 Community Participation

This section of the ROD describes the EPA's community involvement and participation activities. The EPA has actively engaged with stakeholders and encouraged community

participation during the EPA's remedial activities. The community participation activities during the remedy selection process meet the public participation requirements in Section 117 of CERCLA, 42 U.S.C. § 9617, and 40 C.F.R. § 300.430(f)(3).

In August 2010, the EPA issued a Technical Assistance Grant (TAG) to the Alsen – St. Irma Lee Community Enterprise, Inc. group to facilitate more effective and informed community involvement in the Superfund public engagement process. The EPA, in coordination with the state and local agencies, has provided public information and outreach for the Site area since 2009 by:

- Hosting community meetings and open houses that provided updates to the community members on the status of remedial investigations and upcoming actions;
- Conducting an Environmental Health Fair featuring free health screenings and health information at the Alsen Recreation Center in the community;
- Conducting residential tap water sampling in the Alsen community area;
- Issuing fact sheets explaining the Superfund process and activities conducted as part of the RI/FS for the Site;
- Issuing fact sheets explaining the Baton Rouge Barge Canal Investigation;
- Issuing fact sheets and updating the Alsen community about the "no consumption" fishing advisory issued by the State of Louisiana; and
- Developing a Community Involvement Plan to facilitate two-way communication between the community surrounding the Site and EPA, and to encourage community involvement in Site activities.

2.3.1 Community/Public Meetings and Fact Sheets

The EPA has conducted community meetings over the course of the Superfund process. In addition, the EPA has published fact sheets detailing the Site's activities.

The EPA held a public meeting announcing the Proposed Plan on October 17, 2019, in the Alsen Recreation Center in East Baton Rouge Parish, Louisiana. The Proposed Plan (Appendix D) described the EPA's rationale for the selection of the Preferred Alternative. A 30-day public comment period for the Proposed Plan was established from September 30, 2019, through October 29, 2019, and later extended for 30 additional days until November 28, 2019.

The EPA published public notices of the availability of the Proposed Plan, public meeting, the public comment period, and the extension of the public comment period in local newspapers of general circulation. Additionally, the public notices announcing the

Proposed Plan, public meeting, and the comment period were mailed to the contacts included in the Site's mailing list. Representatives from the EPA provided a power point presentation on the Proposed Plan. This presentation was uploaded to the EPA website for this Site.

Representatives from the LDEQ and the Louisiana Department of Health (LDH) were also present at the meeting. Oral and written comments were accepted at the meeting, and a court reporter transcribed the discussions held during the meeting. This transcript (Appendix E) is included in the Administrative Record file for the Site. The EPA's responses to each of the comments received during the public comment period are included in Part 3 (Responsiveness Summary) of this ROD.

The EPA's Technical Assistance Services for Communities program conducted a review of the Proposed Plan and prepared a fact sheet to provide tips to the community on how to make effective comments about the Proposed Plan. This fact sheet was mailed in November 2019 to the contacts in the Site's mailing list.

2.4 Scope and Role of Operable Unit or Response Action

The NCP, 40 C.F.R. § 300.5, defines "Operable Unit" as "a discrete action that comprises an incremental step toward comprehensively addressing site problems." The cleanup/remediation of a site can be divided into several Operable Units depending on the complexity of the problems associated with the site.

There is only one planned Operable Unit for the Site, and the EPA's Selected Remedy (i.e., Alternative 4) is intended to fully address the threats to human health and the environment posed by the conditions at the Site by addressing the existing contaminated sediment and by the continued implementation of the state fish consumption advisory and performance monitoring. It is possible that multiple phases of this Operable Unit may be considered during the remedial design of the Selected Remedy to facilitate the implementation of the Selected Remedy.

2.5 Site Characteristics

The following sections of the ROD describe the Site's demographics and cultural features, physical characteristics, Conceptual Site Model (CSM), and the nature and extent of contamination identified during the RI.

2.5.1 Physical Characteristics

2.5.1.1 Devil's Swamp

Devil's Swamp consists of an approximate 12-square-mile backwater wetland along the east side of the Mississippi River in an industrialized area near north Baton Rouge, Louisiana. From its southern end, Devil's Swamp extends approximately five miles to the north to where Bayou Baton Rouge has built up the land surface to nearly 35 feet

North American Datum (NAD). The northern portion of Devil's Swamp is bounded on the west by the natural levee of the Mississippi River and on the east by the Pleistocene terrace. The southern portion of Devil's Swamp is bordered to the west by the Mississippi River and to the east by the levee of the Baton Rouge Barge Canal.

Backwater wetlands are included in the classification of Riverine wetlands. This includes temporary wet, swampy areas behind river levees. Devil's Swamp is subject to seasonal flooding events as the Mississippi River levels vary through the year, up to a Flood Stage of 35 feet at Baton Rouge. During seasonal dry periods, stagnation within the swamp can occur.

2.5.1.2 Devil's Swamp Lake (the Site)

The Site lies within the low-lying bottomland (wetlands) of the Mississippi River floodplain, between the natural levee of the Mississippi River and the erosional bluff along the Pleistocene upland, at an elevation of less than 30 feet NAD of 1983. The lake was dredged approximately 3,800 feet east of the present Mississippi River channel. The centerline depth has been measured between approximately 10 and 25 feet at low water stage. The lake is situated in the middle of Devil's Swamp, covers approximately 39 acres, is approximately 0.8 miles long, and is 340 feet wide at its widest point. The lake bottom is relatively flat with the exception of point-bar deposits that form alternating emergent and open water areas. The dredged material from the lake, which was placed along the eastern bank of the lake, reaches an elevation of approximately 20 feet above the surrounding lowland. The topography of the area slopes upward abruptly to the east along the erosional escarpment to the Pleistocene terrace that is at an elevation of approximately 75 feet NAD (Appendix C, Figure 5).

The lake was constructed by dredging in 1973, with the material removed used to reinforce the levee along the north and west side of the Baton Rouge Barge Canal. During flood conditions, with a maximum Flood Stage of 35 feet at the river, the lake and surrounding swamp are inundated by water from the Mississippi River. Appendix F provides average annual Mississippi River water elevations.

In 2004, the U.S. Geological Survey collected and analyzed for PCBs sediment cores from the lake (Van Metre et al. 2006). Deposition dates for intervals in the cores were estimated, and the results were used to evaluate historical input records of PCBs to the lake and deposition rates. This is a depositional environment or sedimentary environment.

2.5.1.3 The Drainage Ditch (part of the Site)

The drainage ditch, which is approximately 3,600 feet long, begins near the southwest corner of the former Rollins facility on the Pleistocene terrace and discharges into the northeastern portion of Devil's Swamp Lake. The elevation of the ditch is about 75 feet

NAD within the former Rollins facility, and decreases to an elevation of approximately 35 feet NAD at the outfall into Devil's Swamp Lake (Appendix C, Figure 5).

The drainage ditch is divided into two segments. One segment is within the Rollins facility and has already been remediated. The second segment is the portion of the drainage ditch between the Rollins facility and the Devil's Swamp Lake. This segment will be further referred in this document as the "Drainage Ditch."

Historical discharge from the former Rollins facility appears to be the primary source of contamination at the Site. Impacted soil/sediment is present in the reach of the drainage ditch that has not yet been remediated. Chemicals were discharged to the lake surface water and sediment, and subsequently to other areas and environmental media at the Site by various transport mechanisms, including sediment resuspension and surface water transport.

2.5.1.4 Site Geology/Hydrology

Devil's Swamp is bounded on the west by the natural levee of the Mississippi River and on the east by the erosional escarpment of the Pleistocene terrace (terraces consisting of ancient Mississippi River deposits of unconsolidated fine sand, which grades to coarser sand and gravel at depth).

Devil's Swamp Lake is surrounded by low-lying bottomlands that grade into the swamp toward the Mississippi River, located approximately 3,600 feet west of the lake. The lake covers approximately 39 acres in the central portion of the swamp and roughly divides Devil's Swamp into northern and southern halves in that area of Devil's Swamp. The Site is located on the alluvial sediment of the Mississippi River floodplain (composed predominantly of layers and lenses of clays and silts overlying sands and gravels).

2.5.1.5 Groundwater

Groundwater is not impacted by Site-related releases, and drinking water is not a complete pathway of exposure associated with this Site. Nonetheless, consideration of groundwater contributes to an overall understanding of the Site setting.

Groundwater is the source of drinking water for Baton Rouge and the northern portion of East Baton Rouge Parish. Drinking water in the vicinity of the Site is primarily provided by public supply wells. The Parish Water Company serves water customers in unincorporated East Baton Rouge Parish north of the City of Baton Rouge. The sources of groundwater in the area are dependent on the location within the Pleistocene-age terrace deposits or the shallow Holocene-age deposits within the Mississippi River alluvial valley. The aquifers deeper than approximately 800 to 1,000 feet are sources for municipal drinking water and industrial uses in the Baton Rouge area.

The shallow water-bearing zone occurs at depths of 20 to 200 feet and exhibits low potential for groundwater production due to low permeabilities, limited extent, and variable water quality. The uppermost aquifer is called the "400-ft Sand" which is encountered at a depth of approximately 200 feet in the Site vicinity.

2.5.2 Demographics and Cultural Features

The 2006 U.S. Department of Health and Human Services *Health Consultation* included information on demographics in the area of the Site. The Devil's Swamp Lake Site lies near the city of Scotlandville (U.S. Census Bureau 2000 population 22,106, 94% non-Caucasian), in East Baton Rouge Parish (U.S. Census Bureau 2000 population 412,952), Louisiana. According to 2000 census data, 56% of the parish population is Caucasian, and 44% is non-Caucasian.

The average annual income in East Baton Rouge Parish is above the average for the state. The number of people in the parish that are considered below poverty level is 17.9%, compared to the yearly average for Louisiana of 19.6%. The nearest community to the Devil's Swamp Lake Site is Alsen, Louisiana, approximately 0.75 miles away. According to census data, the average household income in Alsen is $19,868, with 18,245 persons below poverty level. The largest community in the area of the Site is the city of Scotlandville, about ten miles north of the city of Baton Rouge. The community is predominately rural with a few houses located about 800 to 1000 feet from Bayou Baton Rouge, near the northern portion of the swamp and the crossing of Bayou Baton Rouge under U.S. Highway 61 – (Scenic Highway).

Residential patterns have not changed significantly since 2000 in the vicinity of the Site. Historically, Devil's Swamp has been used for recreation including hunting and fishing; however, the lake and surrounding swamps have been posted, advising against recreational use and the consumption of fish since 1987.

Conservative risk exposure assumptions were used in the human health risk assessment (further discussed in Section 2.7) including exposure to sediment and surface water while in the swamp, and based on local observations, it was assumed that two fish or crawfish meals per month were obtained from the swamp. The ditch supplies insufficient habitat to support fish or crayfish, and habitat in Devils Swamp is of low-value. In addition, in 2015 the State issued a fish consumption advisory based on elevated PCB concentration found in fish in Devils Swamp Lake. Consequently, while exposure to Devils Swamp Lake by humans may occur, the lake does not offer a high quality of habitat for either fish or crayfish, but also has an existing fish consumption advisory and exposure has likely been overestimated.

2.5.3 Conceptual Site Model

A CSM identifies the sources of contamination, release mechanisms, pathways for contaminant transport, the impacted media, and potential human and ecological receptors. The human health CSM is presented in Figure 6 of Appendix C. The

ecological CSM is presented in Figure 7 of Appendix C. The CSMs are used to organize and communicate information about a site and are the bases for the remedial action presented in this ROD.

Graphical illustrations of CSMs are depicted in Figures 8 and 9 of Appendix C. Based on the human health and ecological risk assessments, complete pathways for contaminant transport were identified for the human receptors to fish tissue and sediment, as depicted in the graphical CSMs for human receptors.

The Site includes a lake and portions of a drainage ditch containing fish and sediment with elevated concentrations of PCBs. Fish with detectable levels of total PCBs and DLPCB congeners have been collected from several areas of the lake sampled as described in Section 2.5.4 (Nature and Extent of Contamination). Sediment concentrations for total PCBs and DLPCBs decrease with distance from the lake and in the lower portions of Bayou Baton Rouge. From the information gathered during the RI, it may be concluded that PCBs are bioaccumulating in fish, and the largest known accessible source of PCBs at the Site for fish is the sediment in the northern end of the lake, near the drainage ditch that received the discharge of the former Rollins facility outfall.

The former Rollins waste disposal facility discharge included many potential contaminants, including PCBs which represent the greatest amount of risk to human health and the environment.

The duration and extent of inundation of the Site by the Mississippi River affects the Site. The area is frequently flooded as the seasonal elevation of the Mississippi River rises in the early spring and summer months. Local precipitation and short time high water stages in Bayou Baton Rouge can also affect the water levels in Devil's Swamp and the surrounding area. The mobility of constituents appears to vary depending on water levels.

Overall, however, Devil's Swamp Lake is a net depositional environment based on studies completed by the U.S. Geological Survey (Van Metre and Wilson 2004, Van Metre et al. 2006.). Because PCBs bind tightly to particles, the mobility of these contaminants depends on the rate of flow of floodwaters and the ability of floodwaters to maintain sediment in suspension. Typically, channels (such as the drainage ditch) have higher flow rates than waterbodies with broader geometries, like backwaters and floodplains. Consequently, suspended sediment tends to be deposited upon release as flow moves out of channels and into backwaters and floodplains. This principle of geomorphology results in natural capping of sediment in backwaters and floodplains, such as those in Devil's Swamp Lake.

2.5.4 Nature and Extent of Contamination

The nature and extent of contamination at the Site was determined during the RI. Samples of sediment, soil, and surface water were collected as part of the Tier 1

Investigation (Conestoga-Rovers & Associates [CRA] 2012). The likely source of PCB contamination at the Site has been determined to be the historical discharge from the former Rollins facility which discharged treated process wastewater to Devil's Swamp Lake through Outfall 001 and stormwater runoff through Outfall 002. The former Rollins facility was operated as a hazardous and non-hazardous waste treatment, storage, and disposal facility from the early 1970s to 1997.

Total PCBs as Aroclors and PCB congeners (depending on the sample type, either all 209 congeners or only the 12 dioxin-like PCB congeners) were investigated at the Site. Fish and crawfish with detectable levels of PCBs have been collected at the lake.

The following tables show a summary of PCBs as Aroclors and PCB congeners concentrations in Site media. Additional data is included in Appendix G.

Devil's Swamp Lake – Fish Tissue Concentrations

	Mean Total PCB Congeners	Mean DLPCB TEQ
Catfish fillet	0.748 ng/g	1.53 E-05 ng/g
Bass fillet	0.603 ng/g	1.69 E-05 ng/g
Crawfish	0.003 ng/g	NA

Data Source: Tier 2 Remedial Investigation Report (GHD 2015) Appendix L (ProUCL general statistics)

Notes:
DL = Dioxin-like
ng/g = Nanogram(s) per gram
PCB = Polychlorinated biphenyl
TEQ = Toxic equivalency

The current (pre-remediation) surface weighted average concentration is 0.6 milligram per kilogram (mg/kg). The two sampling locations with the highest concentrations of PCBs are listed in the following table.

Devil's Swamp Lake – Sediment Concentrations

Location / Sample Identifier	PCB Aroclor-1254	Depth Interval
North Devil's Swamp Lake / NDSL-13	19.9 mg/kg	Average of three depth intervals, 0"-6", 6"-12", and 12"-18"
North Devil's Swamp Lake / NDSL-9	5.2 mg//kg	0"-6"

Data Source: Tier 1 Remedial Investigation Report (CRA 2012), Table 3-3A (Human Health Evaluation of Sediment Analytical Data – PCB Aroclors)

Notes:
" = inch(es)
CRA = Conestoga-Rovers & Associates
mg/kg = Milligram(s) per kilogram
PCB = Polychlorinated biphenyl

Devil's Swamp Lake – Surface Water Concentrations

Location – Sample Identifier	Total PCB Aroclors	
Drainage Ditch / Sample DD-1	0.22 µg/L	Tier 1 RI Report, Figure 11

Devil's Swamp Lake – Surface Water Concentrations		
North Devil's Swamp Lake / Sample NDSL-7	0.022 µg/L	Tier 1 RI Report, Section 5.2.3
Data Source: Tier 1 Remedial Investigation Report (CRA 2012)		
Notes: µg/L = Microgram(s) per liter CRA = Conestoga-Rovers & Associates PCB = Polychlorinated biphenyl RI = Remedial Investigation		

2.6 Current and Potential Future Land and Resource Uses

This section of the ROD summarizes the current and potential (i.e., reasonably anticipated) future land and resource uses at the Site and areas surrounding the Site. This information forms the basis for the exposure assessment assumptions and risk characterization conclusions discussed in Section 2.7 (Summary of Site Risks).

Local land use in the immediate vicinity of the Site consists of a mixture of industrial, commercial, residential, recreational, and undeveloped wetlands. Residential areas and commercial businesses are located along US Highway 61 (Scenic Highway), east-southeast of the Site. This includes Scotlandville, located approximately 3 miles southeast of Devil's Swamp Lake, and the small residential community of Alsen, located approximately 1-mile northeast of Devil's Swamp Lake. Industrial properties are located north and east of the Site.

Recreational and open space land uses occur within the Site and the wetlands surrounding the Site. The current and potential future land and resource uses for the Site will remain the same.

2.7 Summary of Risks

A Baseline Human Health Risk Assessment (BHHRA) and a Baseline Ecological Risk Assessment (BERA) were conducted to evaluate potential exposure pathways and estimate potential risks posed to human and ecological receptors because of exposure to contaminants in Site media. The primary hazardous substances present at the Site are PCBs.

PCBs are mixtures of up to 209 individual chlorinated compounds (known as congeners). There are no known natural sources of PCBs. PCBs are either oily liquids or solids that are colorless to light yellow. Many commercial PCB mixtures are known in the U.S. by the trade name Aroclor. PCBs were used in a variety of industrial equipment (e.g., electrical, heat transfer, and hydraulic equipment) because they don't burn easily and are good insulators and consumer products (e.g., plasticizers in paints, plastics, and rubber products). The manufacture of PCBs was stopped in the U.S. in 1977 because of evidence they build up in the environment and can cause harmful health effects.

Twelve PCB congeners show structural similarity to chlorinated dibenzo-p-dioxins and dibenzofurans, and are often referred to as 'dioxin-like' PCBs (DLPCBs). Dioxin-like congeners include the non-*ortho* PCBs 77, 81, 126, and 169 and mono-*ortho* PCBs 105, 114, 118, 123, 156, 157, 167, and 189. These dioxin-like PCBs elicit a spectrum of biochemical and toxicological responses similar to dibenzo-p-dioxins and dibenzofurans including environmental persistence and bioaccumulation in the food chain. Like dibenzo-p-dioxins and dibenzofurans, dioxin-like PCB congeners have also been assigned toxic equivalency factors (TEFs) ranging from 0.1 (PCB-126) to 0.00003 relative to 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), which is assigned a TEF of 1 (Van den Berg 2006).

Concentrations of these congeners in various media are multiplied by their respective TEFs to yield toxic equivalent concentrations which are summed to provide a measure of total dioxin-like activity. Dioxin-like PCBs toxicity can therefore be expressed as a fraction of the toxicity of TCDD, and thereafter presented as DLPCBs Toxic Equivalency (TEQ).

Section 2.7.1 provides a summary of the relevant portions of the BHHRA. Section 2.7.2 provides a summary of the relevant portions of the BERA. Section 2.7.3 discusses the basis for action at the site.

2.7.1 Summary of Baseline Human Health Risk Assessment

The BHHRA estimates what risks the Site poses if no action were taken. It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. This section of the ROD summarizes the results of the BHHRA.

2.7.1.1 Identification of Chemicals of Concern

The following table provides the chemicals of concern (COCs) and Exposure Point Concentrations (EPCs) for each of the COCs detected in Site media (i.e., the concentration used to estimate the exposure dose and risk from each COC). Additional information is provided in Appendix H.

Exposure Media, Chemicals of Concern and Exposure Point Concentration								
Scenario Timeframe: Current/Future								
Exposure Medium	**Chemical of Concern**	**Exposure Route**	**Exposure Point Concentration**	**Units**	**No. of Samples**	**Minimum**	**Maximum**	**95% UCL**
Water – Current/Future Wading Fisher-Hunter (Drainage Ditch)								
	Total PCB	Ingestion	1.6E-04	mg/L	12	Non Detect	2.2E-04	1.5E-04
	Total PCB	Dermal						

Exposure Media, Chemicals of Concern and Exposure Point Concentration								
Scenario Timeframe: Current/Future								
Sediment – Current/Future Wading Fisher-Hunter (Drainage Ditch)								
	Total PCB	Ingestion	1.1	mg/kg	36	Non Detect	3.1E+00	1.1E+00
	Total PCB	Dermal						
Tissue- Bass – Current/Future Recreational User (Child and Adult)								
	Total PCB	Ingestion	6.7E-01	mg/kg	12	3.9E-04	8.5E-01	6.7E-01
	DLPCBs TEQ	Ingestion	2.2E-05	mg/kg	12	5.2E-06	3.2E-05	2.2E-05
Tissue Catfish – Current/Future Recreational User (Child and Adult)								
	Total PCB	Ingestion	1.1E+00	mg/kg	12	3.2E-01	2.1E+00	1.1E+00
	DLPCBs TEQ	Ingestion	2.2E-05	mg/kg	12	4.1E-06	4.7E-05	2.2E-05
Tissue Crawfish – Current/Future Recreational User (Child and Adult)								
	Total PCB	Ingestion	1.6E-02	mg/kg	15	7.8E-04	1.6E-02	7.3E-03
	DLPCBs TEQ	Ingestion	1.6E-07	mg/kg	3	4.7E-08	2.2E-07	1.6E-07

Data Source: Tier 2 Remedial Investigation Report (GHD 2015), Appendix N (Risk Characterization)

Notes:
DL = Dioxin-like
mg/L = Milligrams per Liter
mg/kg = Milligrams per kilogram
PCB = Polychlorinated biphenyl
TEQ = Toxic equivalency
UCL = Upper confidence limit

2.7.1.2 Exposure Pathway Assessment

Based upon the CSM presented in Section 2.5.3 (Conceptual Site Model), the following exposure pathways quantitatively evaluated for the BHHRA for the lake and the drainage ditch that carried the former NPDES discharge into the lake included the following:

- Recreational User (Fisher) – direct contact (incidental ingestion and dermal contact) with sediment and soils, ingestion of fish (represented by a fish/crawfish meal of fish and crawfish obtained from the Site).

- Wading Fisher-Hunter (Recreational Visitor) – direct contact (incidental ingestion and dermal contact) with sediment and surface water.

The subsequent discussions have been limited to exposure media (i.e., fish tissue), exposure routes (i.e., consumption), and the COCs (i.e., Total PCBs and DLPCBs)

identified as risk drivers at the Site for the Recreation User (Fisher). Unacceptable risk was only found for consumption of fish. The Wading Fisher-Hunter (Recreational Visitor) was not at risk from exposure to sediment or water.

2.7.1.3 Human Health Risk Assessment Assumptions

The exposure assumptions used in the Human Health Risk Assessment are based upon Reasonable Maximum Exposure (RME) from the Risk Assessment Guidance in Superfund. Other assumptions include:

- considered a recreational user,
- child (older than 2 years) and an adult,
- ingesting a fish and crawfish meal catch from the Site,
- with a frequency of the meal is 4 meals/month, and
- the composition of the meal includes a combination of:
    - largemouth bass,
    - channel catfish, and
    - crawfish.

2.7.1.4 Toxicity Assessment

The following tables provide the carcinogenic and noncarcinogenic risk information relevant to the COCs identified in the BHHRA.

Cancer Toxicity Data

Chemical of Concern	Oral Cancer Slope Factor (CSF)	Units	Source	Weight of Evidence Cancer
Total PCBs [1,2,3]	2.0	mg/kg-d	IRIS (PCBs assessed using the high risk EPA toxicity category)	Classification -B2; Probable human carcinogen.
DLPCBs TEQ [4,5]	1.3E+05	mg/kg-d		

Notes:
mg/kg-d = Milligram(s) per kilogram per day
CSF = Cancer Slope Factor
DLPCBs = Dioxin-like PCBs
IRIS = Integrated Risk Information System
PCB = Polychlorinated biphenyl
TEQ = Toxicity Equivalency
RfD = Reference Dose
[1] Total PCBs based on the summed results for Aroclor-1016, -1221, -1232, -1242, -1248, -1254, and -1260 for sediment and surface water and individual congeners for fish and crawfish.
[2] Total PCBs upper bound slope factor for carcinogenic endpoint (EPA 2014).
[3] Total PCBs RfD based on that for Aroclor-1254 per EPA 823-B-00-007 (EPA 2014).
[4] TCDD slope factor from EPA (2009).
[5] TCDD reference dose from EPA (2014).
References:
EPA 2009. Draft Recommended Interim Preliminary Remediation Goals for Dioxin in Soil in CERCLA and RCRA Sites. OSWER 9200.3-56.
EPA 2014. Integrated Risk Information System (IRIS). http://www.epa.gov/iris/.

Noncancer Toxicity Data

Chemical of Concern	Oral RFD Value	Units	Source
Total PCBs [1,2,3]	2.0E-05	mg/kg-d	EPA derived to Aroclor 1254
DLPCBs TEQ [4,5]	7.0E-10	mg/kg-d	EPA derived to Aroclor 1016

Notes:
mg/kg-d = Milligrams per kilogram per day
DLPCBs = Dioxin-like PCBs
PCB = Polychlorinated biphenyl
RfD = Reference Dose
TEQ = Toxicity Equivalency
RfD = Reference Dose
[1] Total PCBs based on the summed results for Aroclor-1016, -1221, -1232, -1242, -1248, -1254, and -1260 for sediment and surface water and individual congeners for fish and crawfish.
[2] Total PCBs upper bound slope factor for carcinogenic endpoint (EPA 2014).
[3] Total PCBs RfD based on that for Aroclor-1254 per EPA 823-B-00-007 (EPA 2014).
[4] TCDD slope factor from EPA (2009).
[5] TCDD reference dose from EPA (2014c).
References:
EPA 2009. Draft Recommended Interim Preliminary Remediation Goals for Dioxin in Soil in CERCLA and RCRA Sites. Office of Solid Waste and Emergency Response (OSWER) 9200.3-56.
EPA 2014. Integrated Risk Information System. http://www.epa.gov/iris/.

2.7.1.5 Risk Characterization

For carcinogens, risks are generally expressed as the incremental probability of an individual developing cancer over a lifetime because of exposure to a potential carcinogen. Excess lifetime cancer risk is calculated from the following equation:

$$Risk = LADI \times CSF$$

Where:

Risk = Unitless probability (e.g., 2×10^{-5}) of an exposed individual developing cancer
LADI = Lifetime cancer average daily intake (mg/kg-d)
CSF = Cancer slope factor $(mg/kg/day)^{-1}$

These risks are probabilities that are usually expressed in scientific notation (e.g., 1×10^{-6} or 10^{-6}). An excess lifetime cancer risk of 10^{-6} indicates that an individual experiencing the reasonable maximum exposure estimate has a 1 in 1,000,000 chance of developing cancer as a result of Site-related exposure. This is referred to as an "excess lifetime cancer risk" because it would be in addition to the risks of cancer individuals face from other causes such as smoking or excessive exposure to sunlight. The chance of an individual developing cancer from other causes has been estimated to be as high as one in three. The EPA's generally acceptable risk range for Site-related exposures is 10^{-4} to 10^{-6}.

The potential for non-carcinogenic effects is evaluated by comparing the Average Daily Intake (ADI) to the chemical-specific Reference Dose (RfD). An RfD represents a level that an individual may be exposed to that is not expected to cause deleterious effects. The ratio of exposure to toxicity is called a Hazard Quotient (HQ), which is derived as shown in the equation below:

$$HQ = ADI / RfD$$

Where:

HQ = Hazard quotient; ratio of average daily intake level to acceptable daily intake level (unitless)
ADI = Calculated non-carcinogenic average daily intake (mg/kg-d or mg/m^3)
RfD = Reference dose (mg/kg-d)

If the ADI exceeds the RfD, the HQ will exceed a ratio of one (1.0) and there may be concern that potential adverse systemic health effects will be observed in the exposed populations. If the ADI does not exceed the RfD, the HQ will not exceed 1.0 and there will be no concern that potential adverse systemic health effects will be observed in the exposed populations. However, if the sum of several HQs exceeds 1.0, and the contaminants affect the same target organ, there may be concern that potential adverse systemic health effects will be observed in the exposed populations. In general, the greater the value of the HQ above 1.0 the greater the level of concern; however, the HQ does not represent a statistical probability that an adverse health effect will occur.

For consideration of exposures to more than one chemical causing systemic toxicity via several different pathways, the individual HQs are summed to provide an overall Hazard Index (HI). If the HI is less than 1.0, then no adverse health effects are likely to be associated with exposures at the Site. However, if the total HI is greater than 1.0, separate endpoint-specific HIs may be calculated based on the toxic endpoint of concern or target organ (e.g., HQs for neurotoxins are summed separately from HQs for renal toxins). Only if an endpoint-specific HI is greater than 1.0 is there reason for concern about potential health effects for that endpoint.

2.7.1.6 Summary of Results

The BHHRA evaluated potential risks due to the consumption of fish (i.e., fish fillets) based on the fish tissue results.

Per the EPA's guidance, cumulative risks and hazards were calculated in the RI/FS where applicable and appropriate, using non-cancer hazard and cancer risk tools, as per the EPA Risk Assessment Guidance for Superfund. The calculation was performed for the RME recreational user potentially exposed to total PCBs and DLPCBs via the consumption of fish and crawfish.

The BHHRA for fish consumption used assumptions that result in non-cancer hazards to a recreational user that are above the threshold for implementing risk management and/or remedial action. This result aligns with the fish advisory issued by the LDEQ, the LDH, and the Louisiana Department of Wildlife and Fisheries. The risk conclusions for fish and crawfish consumption reached were used as part of risk management options considered in completing a FS for the Site.

For the recreational users, calculations resulted in:

Summary of Results

Chemical of Concern	Cancer Risk	Hazard Quotient
Total PCBs	$9E^{-05}$	6
DLPCBs	$1E^{-04}$	4

Data Source: Tier 2 Remedial Investigation Report (CRA 2012), Appendix N (Risk Characterization.

Notes:
DLPCBs = Dioxin-like PCBs
Hazard Quotient = Ratio of average daily intake level to acceptable daily intake level
PCB = Polychlorinated biphenyl

EPA's target range for risk management is $1E^{-06}$ to $1E^{-04}$, with the upper limit of this range typically used to make risk management decisions (OSWER Directive 9355.0-30). A HQ or HI greater than 1 is a reasonable non-cancer hazard level for requiring implementing remedial actions.

2.7.1.7 Conclusions

Individual fish species evaluated during the BHHRA included catfish, largemouth bass, and crawfish. The results of the BHHRA determined that there were unacceptable risks, and cleanup goals at the Site would be applicable. Therefore, the summary of cancer and non-cancer risks presented in this section of the ROD have been limited to those results calculated based on the entire fish tissue dataset collected from the Site.

For a recreational user, child and adult, the EPA's risk characterization results yield:

Risk Characterization Results

Exposure Medium	Exposure Route	Chemicals of Concern	Cancer Risk	Hazard Quotient
Fish Meal	Ingestion	Total PCBs	$9\ E^{-05}$	6
Fish Meal	Ingestion	DLPCBs TEQ	$1\ E^{-04}$	4

EPA Reasonable Maximum Exposure Cancer and Non-Cancer Hazards for a Recreational User fishing in Devil's Swamp Lake. (Tier 2 Remedial Investigation Report [CRA 2012], Appendix N, October 30, 2015)

Notes:
CRA = Conestoga-Rovers & Associates
DLPCBs = Dioxin-like PCBs
PCB = Polychlorinated biphenyl
TEQ = Toxicity Equivalency

For the exposure medium of sediment and water, the BHHRA identified no unacceptable cancer risk or non-cancer hazard for a recreational user due to total PCBs or DLPCBs. For fish consumption, the BHHRA used EPA assumptions that were coordinated with LDEQ and resulted in non-cancer hazards to a recreational user that are above the threshold for implementing risk management and/or remedial action. Therefore, if no remedial action or other means of control is taken there is a potential for systemic non-cancer effects from fish consumption.

2.7.2 Summary of Baseline Ecological Risk Assessment

The BERA evaluated the potential risks to fish and wildlife species foraging on aquatic prey in Devil's Swamp Lake that may be exposed to PCBs. Ingestion of PCBs, evaluated as total PCBs and DLPCBs, by avian and mammalian wildlife was estimated using food chain models.

2.7.2.1 Assessment Assumptions (Indicator Species)

It is not practical to evaluate the potential for risk to all species that may forage in an assessment area. In practice, indicator species are used to represent key trophic guilds that are expected to be most highly exposed and sensitive to Constituents of Potential Ecological Concern. For the Devil's Swamp Lake assessment area, avian and

mammalian wildlife that forage on fish and crawfish are expected to be the most highly exposed and most sensitive to PCBs. Five indicator species were selected to represent the key trophic guilds for the Devil's Swamp Lake assessment area:

- bald eagle (Haliaeetus leucocephalus),
- great blue heron (*Ardea herodias*),
- belted kingfisher (*Megaceryle alcyon*),
- raccoon (*Procyon lotor*), and
- mink (Neovison vison).

2.7.2.2 Summary of Results

The bald eagle was evaluated as the indicator species for sensitive avian wildlife. Based on the results of the food chain models, there is high certainty that concentrations of Aroclors and PCB congeners in sediment, fish, crawfish, and other dietary items are not sufficient to adversely affect growth or reproduction of the bald eagle or other sensitive avian wildlife.

The great blue heron was evaluated as the indicator species for avian wildlife that forage on fish and crawfish. Based on the results of the food chain models, there is high certainty that concentrations of Aroclors and PCB congeners in sediment, fish, crawfish, and other dietary items are not sufficient to adversely affect growth or reproduction of the great blue heron or other avian wildlife that forage primarily on fish, crawfish, and other aquatic prey.

The belted kingfisher was evaluated as the indicator species for avian wildlife that forage on fish and crawfish, with crawfish accounting for a high percentage of the diet. There is high certainty that concentrations of Aroclors and PCB congeners in sediment, fish, crawfish, and other prey are not sufficient to adversely affect growth or reproduction of the belted kingfisher or other avian wildlife that forage primarily on fish, a high percentage of crawfish, and other aquatic prey.

The raccoon was evaluated as the indicator species for mammalian wildlife that forage on fish and crawfish, with crawfish accounting for a high percentage of the diet. There is high certainty that concentrations of Aroclors and PCB congeners in sediment, fish, crawfish, and other prey are not sufficient to adversely affect growth or reproduction of the raccoon or other mammalian wildlife that forage primarily on fish, a high percentage of crawfish, and other aquatic prey.

The mink was evaluated as the indicator species for mammalian wildlife that is sensitive to PCBs and that forages on fish, crawfish, and semi-aquatic prey. The results indicate that the potential for risk and adverse effect on reproduction of individual mink is minimal. Population-level impacts also are likely negligible.

Fish concentrations of DLPCBs in whole-body tissue were evaluated to assess if body burden concentrations have sub-lethal toxic effects in fish. Based on the comparison of

fish tissue concentrations to literature-derived Toxicity Reference Values, there is high certainty that concentrations of DLPCBs in whole-body fish are not sufficient to cause sub-lethal toxic effects.

2.7.2.3 Conclusions

The data and analyses presented in the BERA are sufficient to conclude that concentrations of PCBs in sediment and biota of the Devil's Swamp Lake assessment area do not pose a potential for risk to ecological receptors. Given the relatively low risks posed by PCBs to ecological receptors, as well as the sensitivity of the habitat to physical disturbance, and the significant physical disturbance associated with sediment remediation in aquatic ecosystems such as Devil's Swamp Lake, the adverse effects of remediation would undoubtedly outweigh the relatively low risks posed by PCBs.

2.7.3 Basis for Action

As indicated in Section 2.7.1.7, unacceptable risks were found for human consumption of fish caught from the lake. Under EPA assumptions that were coordinated with LDEQ, the BHHRA resulted in non-cancer hazards to a recreational user that are above the threshold for implementing risk management and/or remedial action. The HQ for recreational fish consumption from total PCBs is 6. The HQ for recreational fish consumption from DLPCB TEQ is 4.

The response action selected in this ROD is necessary to protect human health and the environment from actual or threatened releases of hazardous substances into the environment. The Selected Remedy is warranted because the BHHRA determined that exposure to PCBs through consumption of fish poses unacceptable human non-cancer hazards (i.e., HQ above 1).

Reducing PCB levels in fish and preventing consumption of contaminated fish are two ways to reduce risk. To reduce PCB levels in fish, it is necessary to reduce PCB levels in sediment (i.e., the lake).

2.8 Remedial Action Objectives

The RAOs for the Site describe what the proposed Site cleanup is expected to accomplish. According to the NCP, 40 C.F.R. § 300.430(a)(1)(i), the "... national goal of the remedy selection process is to select remedies that are protective of human health and the environment, that maintain protection over time, and that minimize untreated waste." Cleanup Levels (CULs) and Remediation Goals (RGs) are contaminant-specific concentrations used to measure the success of the Selected Remedy in meeting the RAOs during and after the implementation of the remedy. Based on the information relating to the types of contaminants, environmental media of concern, and potential exposure pathways, the following Site-specific RAOs, CULs, and RGs were developed.

2.8.1 Remedial Action Objectives for this Site

These statements are the following RAOs for the Site:

1. Reduce contaminant concentrations in fish and shellfish to levels protective of human health.

2. Prevent unacceptable non-cancer health effects from ingestion of fish containing elevated concentrations of total PCBs.

3. Prevent unacceptable cancer risks from ingestion of fish containing elevated concentrations of DLPCBs.

4. In considering the state Fish Consumption Advisory TBC criteria, reduce risk to levels that will allow the state to remove or modify the existing fish consumption advisory.

5. Maintain or reduce ecological risks, while limiting physical, chemical, or biological harm to the ecosystem associated with the implementation of remediation alternatives.

These RAOs are closely linked to the concentrations of PCBs in Devil's Swamp Lake fish. Because sediment is the dominant exposure pathway through which fish are exposed to PCBs, these RAOs will be measured in part through sediment PCB concentrations.

2.8.2 Cleanup Levels and Remediation Goals (Basis and Rationale)

Reducing the exposure of receptors of concern to PCBs will mitigate Site baseline risks identified in the BHHRA, as discussed in Section 2.7 (Summary of Site Risks) of this ROD. The quantitative RG and CUL that need to be met to achieve the RAOs are presented in the following table and are further discussed in the following sections of this ROD.

CULs apply to sediment and are evaluated based on surface weighted average concentrations (SWACs), while RGs apply to fish tissue and are evaluated based on average concentrations in fillets. The effectiveness of the remedy in achieving CULs can be determined/evaluated immediately after remediation based on sediment samples collected following remedy implementation. Given the life spans of fish, their mobility and their negligible depuration of PCBs, reduction of PCB concentrations in fish tissue will take more time. Therefore, reductions in fish tissue concentrations will be monitored over the long-term as an indicator that RAOs have been achieved.

Cleanup Levels (CULs) and Remediation Goals (RGs)			
Chemical of Concern	**Media**	**Remediation Goals and Cleanup Level**	**Basis for RG and CUL**
Total PCBs	Surface Sediment CUL	0.2 mg/kg *	EPA-calculated human health risk-based value
Total PCBs (in catfish)	Fish Tissue RG	0.17 mg/kg wet **	EPA-calculated human health risk-based value
DLPCBs TEQ (in catfish)	Fish Tissue RG	2.3 – 2.5 nanogram per kilogram (ng/kg) wet **	EPA-calculated human health risk-based value
DLPCBs TEQ (in fish and crawfish)	Fish Tissue RG	1.6 ng/kg Wet ***	Target Tissue Level for DLPCB in the State fish Consumption Advisory Protocol. EPA-calculated human health risk-based value based on the state "Protocol for Issuing Public Health Advisories for Chemical Contaminants in Recreational Fish and Shellfish".
Total PCBs (in fish and crawfish)	Fish Tissue RG	0.27 mg/kg	Target Tissue Level for Total PCBs in the State Fish Consumption Advisory Protocol.
* The EPA coined the term "Exposure Point Concentration" (EPC) to describe the interaction between the spatial distribution of contaminants and organism use. The EPC is an upper confidence limit for the arithmetic mean intended to represent exposure for risk assessment. At sediment sites, EPCs have been estimated using what is termed Surface Weighted Average Concentration (SWAC). The SWAC is described as a useful surrogate risk metric, representing the average contaminant concentration in the biologically active portion of sediment. In this sense, SWAC is used in place of an EPC for qualifying exposure in a given area. For this project, the term SWAC represents a surface weighted average concentration of PCBs in sediment within a specific area. SWAC calculations have been used at several large Superfund sediment sites to evaluate risks and cleanup levels (e.g., Fox River, Hudson River, Housatonic River, Willamette River and the Lower Duwamish Waterway). The baseline SWAC for total PCBs in Devil's Swamp Lake is 0.6 mg/kg. The CUL of 0.2 mg/kg is selected in this ROD.			
** Total PCB and DLPCBs TEQ concentrations in catfish are used as RGs, because the consumption of catfish fillets drives non-cancer and cancer risks to human health. The baseline Exposure Point Concentration for Total PCB concentration for catfish range from 0.62 to 0.84 mg/kg. Bass, crawfish and other fish concentrations are assumed to vary directly with catfish concentrations and will be reduced. The table presents the selected RG for achieve acceptable human health risks.			
*** To meet the objective of considering the state's TBC criteria, the requirements set forth in "Protocol for Issuing Public Health Advisories for Chemical Contaminants in Recreationally Caught Fish and Shellfish", relevant to rescinding or modifying an advisory, the following should be met.			

Cleanup levels are based on the Preliminary Remediation Goals (PRGs) and were refined by considering the cost and implementability of remedial alternatives, including the technical feasibility of achieving the risk-based PRG, and other criteria outlined in the NCP (EPA Guidance on Surface Soil Cleanup at Hazardous Waste Sites: Implementing Cleanup Levels – EPA 9355.0-91, May 2004, Draft.)

SUMMARY – Cleanup Level (CUL) and Remediation Goals (RG)

Chemical of Concern	Baseline SWAC	CUL SWAC	Baseline Range	RG
Total PCBs (in Sediment)	0.6 mg/kg	0.2 mg/kg	NA	NA
Total PCBs (in catfish)	NA	NA	0.62 to 0.84 mg/kg	0.17 mg/kg
DLPCBs TEQ (in fish and crawfish)	NA	NA	NA	1.6 ng/kg

Notes:
mg/kg = Milligram per kilogram
NA = Not applicable
ng/kg = Nanogram per kilogram
PCB = Polychlorinated biphenyl
SWAC = Surface Weighted Average Concentration
TEQ = Toxic equivalency

2.8.3 How Remedial Action Objectives Address Identified Risks

Quantitative PRGs are tools for predicting which remediation alternatives can attain the RAOs. Site-specific PRGs were calculated for sediment PCB concentrations because sediment is the dominant exposure pathway for fish to PCBs. The percent reduction in current fish tissue concentrations required to achieve acceptable fish concentrations was extrapolated to a commensurate percent decrease in the sediment SWAC. This is the CUL.

Sediment results in fish PCB body burdens which are taken up through the food web into fish. This results in unacceptable risks for the consumption of fish caught in the lake. A decrease in concentrations of PCBs in sediment should lead to decreased exposure of fish to PCBs and, ultimately, to decreased concentrations of PCBs in fish tissue. Therefore, the remediation actions taken to meet the RAOs target PCBs in sediment, and they will be evaluated based on the SWAC CUL of total PCB sediment concentrations.

2.9 Description of Alternatives

Five remediation alternatives were developed for the Site, including the No Action alternative. The other four alternatives were developed based on a single remedial technology or a combination of applicable remedial technologies and process options, as appropriate to achieve Site-specific RGs and CULs.

These alternatives focus on specific areas within Devil's Swamp Lake defined as Sediment Management Areas (SMAs). These SMAs are delineated by comparing surface sediment data to the CUL on parts of the lake that, once remediated, will result in a SWAC that is less than the Site-specific SWAC CULs.

2.9.1 Delineation of Sediment Management Areas

As mentioned above, SMAs were delineated comparing surface sediment data on areas of the lake that were defined using Thiessen polygons. Thiessen polygons are generated using a geoprocessing tool available in ArcMap. The tool creates polygons surrounding each sample location based on the assumption that sediment concentrations at any given point are equal to the concentration at the closest sediment sample location.

The sediment data used total PCB results from the top 6 inches of sediment in the Devil's Swamp Lake Site. The data consist of results from sampling in 2011.

2.9.2 Calculation of Surface Weighted Average Concentrations

The overall baseline SWAC was calculated by multiplying the area of each Thiessen polygon by the associated total PCB concentration for the top 6 inches of sediment. The result was summed and then divided by the total area of all the Thiessen polygons to determine the SWAC for the lake (Appendix C, Figure 10). The extent of remediation then was calculated by iteratively replacing the concentrations of PCBs in individual polygons with concentrations equal to one-half the detection limit and then recalculating the SWAC, in order to mathematically simulate remediation. After doing so for SMAs A+B, the simulated post-remediation SWAC achieved the CUL.

2.9.3 Remedial Alternatives

The five remediation alternatives are listed below:

- Alternative 1 – No Further Action (NFA),
- Alternative 2 – Monitored Natural Recovery in SMAs A+B,
- Alternative 3 – Enhanced Monitored Natural Recovery in SMAs A+B,
- Alternative 4 - Cap in Drainage Ditch and Enhanced Monitored Natural Recovery in Remainder of SMAs A+B, and
- Alternative 5 - Cap in SMAs A+B.

2.9.3.1 Description of Remedy Components

Detailed cost estimates for the alternatives described below can be found in Appendix I.

2.9.3.1.1 Remediation Alternative 1: No Further Action

As required by the NCP, 40 C.F.R. § 300.430 (e)(6), the evaluation of alternatives must include an NFA Alternative. This alternative is used as the baseline alternative against which the effectiveness of all other remedial alternatives is evaluated.

Estimated Time for Design/Construction:	Not applicable
Estimated Time to Reach Remediation Goals:	Not applicable
Estimated Capital Costs:	$0
Estimated Maintenance Cost:	$0
Estimated Total Present Worth Cost:	$0
Estimated Construction Time:	Construction is complete

Under Remediation Alternative 1, no action is taken to confirm natural recovery processes (Appendix C, Figure 11). Consequently, there is no method of ascertaining if and when compliance with remediation goals is achieved.

2.9.3.1.2 Remediation Alternative 2: Monitored Natural Recovery (MNR) in Sediment Management Areas A+B

Surface sediment within SMA A+B (7.1 acres) will be monitored over an extended period of time in order to verify the continuing reduction of concentrations of PCBs through the natural processes that support input and deposition of relatively cleaner sediment within Devil's Swamp Lake (Appendix C, Figure 12). Monitoring of sediment and biota will be used to verify the reduction of PCB concentrations in sediment and fish and/or invertebrates. In addition, ICs will continue to be implemented and enforced throughout the monitoring period. ICs will include limitations on access to Devil's Swamp Lake and other activities that could disturb the sediment.

Estimated Time for Design/Construction:	Construction is complete
Estimated Time to Reach Remediation Goals:	30 years +
Estimated Capital and Fixed Cost:	$ 115,000
Estimated Operation and Maintenance Cost:	$1,089,000
Estimated Capital and Maintenance Cost:	$1,204,000
Estimated Total Present Worth Cost:	$ 623,000
Estimated Construction Time:	Not applicable
Estimated Duration of Long-term Monitoring:	30 years +

Under Remediation Alternative 2, no active remediation is undertaken, but conditions are monitored over the long-term in order to ascertain that the natural processes that are predicted to reduce concentrations of PCBs in surface sediment (as well as in the prey of fish and in the fish themselves) are in fact taking place. In contrast with the No Action alternative, monitored natural recovery (MNR) enables documentation of progress towards achieving RAOs.

Given that historical sources of PCBs to the lake have been controlled to the extent feasible and that there is some evidence that natural recovery is already underway (Ramboll 2018), MNR has the potential to be effective at this Site, though considerable time may be required to achieve remediation goals (i.e., RGs).

2.9.3.1.3 Remediation Alternative 3: Enhanced Monitored Natural Recovery (EMNR) in Sediment Management Areas A+B

An approximate 6-inch sand cover will be placed in SMA A+B (7.1 acres) to reduce surface sediment concentrations of PCBs—and consequently exposures to invertebrates, fish, and the human and ecological receptors that consume them. EMNR will provide a clean sediment surface for habitat recovery while minimizing construction impacts to the wetland environment (Appendix C, Figure 13). For purposes of the FS, it was assumed that the thin cover will be composed of 6 inches of sand. Long-term monitoring of sediment and biota, as well as the implementation of ICs, will be undertaken as part of Remediation Alternative 3.

Estimated Time for Design/Construction:	1 to 2 years
Estimated Time to Reach Remediation Goals:	30 years
Estimated Capital and Fixed Cost:	$2,208,000
Estimated Operation and Maintenance Cost:	$1,089,000
Estimated Capital and Maintenance Cost:	$3,297,000
Estimated Total Present Worth Cost:	$2,716,000
Estimated Duration of Long-term Monitoring:	30 years

Under Remediation Alternative 3, a 6-inch layer of clean sand cover is placed in SMA A+B over PCB-impacted sediment, thereby immediately providing a clean bioactive zone for colonization by invertebrates. The placement of the thin cover simulates the natural deposition of clean materials that occurs under MNR, but at an accelerated rate. Exposure of fish to PCBs via the diet is immediately reduced through the addition of the thin cover, which in turn results in reduced fish tissue concentrations and reduced risks to human health and ecological receptors that consume fish.

The time to achieve remediation goals (i.e., CULs) for EMNR and capping alternatives coincides with the time to implement each remedy. That is, because these technologies rely on placing clean material on the sediment bed surface to achieve sediment CULs, the CULs are achieved when the implementation is complete. RGs and RAOs, on the other hand, will take longer to achieve. Fish concentration reductions will require years after remedy implementation to reach full equilibrium with reduced surface sediment concentrations. Habitat recovery will begin shortly after remedy implementation, but full habitat recovery is expected to take about two growing seasons.

2.9.3.1.4 Remediation Alternative 4: Cap in Drainage Ditch and Enhanced Monitored Natural Recovery in Remainder of Sediment Management Areas A+B

Sediment capping will be used to isolate underlying PCBs in Drainage Ditch sediment (0.6 acres) and to provide a clean sediment surface for habitat restoration. The cap installed in the Drainage Ditch will include a 6-inch base chemical isolation layer with up to 6 inches of coarse sand-to-gravel armoring to protect against chemical migration through the cap and erosive forces from storm events. EMNR will be applied in parts of SMA A+B (6.6 acres) that are outside of the Drainage Ditch (Appendix C, Figure 14). An approximate 6-inch thin cover will be placed in parts of SMA A+B other than the Drainage Ditch to provide a clean sediment surface for habitat recovery while minimizing construction impacts to the wetland environment. Again, alternative materials and amendments may be integrated into the thin cover design for EMNR, but a 6-inch sand layer was assumed for purposes of the FS. The final cap material and armoring thicknesses, and the potential effectiveness and cost of such amendments, will be evaluated during the remedial design phase if Alternative 4 is selected as the preferred remediation alternative. Long-term monitoring of sediment and biota, as well as implementation of ICs, will be undertaken as part of Remediation Alternative 4.

Estimated Time for Design/Construction:	1 to 2 years
Estimated Time to Reach Remediation Goals:	30 years
Estimated Capital and Fixed Cost:	$2,510,000
Estimated Operation and Maintenance Cost:	$1,337,000
Estimated Capital and Maintenance Cost:	$3,847,000
Estimated Total Present Worth Cost:	$3,191,000
Estimated Duration of Long-term Monitoring:	30 years

The placement of the thin cover (EMNR) and the sediment cap immediately provides a clean sediment surface. Exposure of fish to PCBs via the diet is immediately reduced through the creation of a clean sediment surface, which in turn results in reduced fish tissue concentrations and reduced risks to human health and ecological receptors that consume fish. Capping provides a similar degree of protectiveness as EMNR, while the armor layer increases the stability of underlying sediment during high-energy events. As such, capping provides an added measure of protection against remobilization.

The time to achieve remediation goals (i.e., RGs) is the same as Alternative 3.

2.9.3.1.5 Remediation Alternative 5: Cap in Sediment Management Areas A+B

Remediation Alternative 5 will employ a sediment cap to isolate underlying PCBs in SMA A+B (7.1 acres) and provide a clean sediment surface for habitat restoration (Appendix C, Figure 15). The cap will include a 6-inch base layer with up to 6 inches of armoring to protect against chemical migration through the cap, as well as erosive forces resulting from storm events. The final cap and armoring thicknesses will be evaluated during the remedial design phase, if Alternative 5 is selected as the Preferred Alternative. Long-term monitoring of sediment and biota, as well as implementation of ICs, will be undertaken as part of Remediation Alternative 5.

Estimated Time for Design/Construction:	1 to 2 years

Estimated Capital and Fixed Cost:	$3,412,000
Estimated time to Reach Remediation Goals:	30 years
Estimated Operation and Maintenance Cost:	$ 803,000
Estimated Capital and Maintenance Cost:	$4,215,000
Estimated Total Present Worth Cost:	$3,885,000
Estimated Duration of Long-term Monitoring:	20 years

The cap's armor layer enhances the stability of underlying sediment during high-energy events. As such, capping protects against remobilization of PCBs by erosive forces resulting from high-energy events. Although at this time, no modeling has been completed, the duration of long-term monitoring is anticipated to be less than that for MNR and EMNR remedies because the armored nature of the cap is likely to more rapidly and completely reduce exposures of fish to PCBs.

The time to achieve remediation goals (i.e., RGs) is the same as Alternative 3.

2.9.4 Common Elements and Distinguishing Features

2.9.4.1 Informational Devices and Institutional Controls

Informational Devices (IDs) will be maintained as necessary—namely the state issued a fish consumption advisory (Appendix J) that is already in place. With time, when concentrations of total PCBs in fish fall below the criteria to maintain the fish advisory, the state of Louisiana may elect to remove the advisory.

ICs are administrative or legal controls or restrictions included as part of a remediation action to minimize, limit, or prevent potentially unacceptable human health exposures to contaminated media and/or protect the long-term integrity of the remedial action.

An IC, in the form of a land-use restriction or notice as to the environmental conditions of the property, would be required. The IC could consist of either a restrictive covenant or a deed notice. The state of Louisiana does not have restricted land use or deeds as such. Their land use documents are informative only and are known as Conveyance Notifications. Therefore, such notice will be filed in the real property records of the parish where the affected property is located. This restriction will alert property owners of the presence of materials exceeding cleanup levels and will protect the integrity of the remedy (e.g., armored cap, MNR, EMNR) and limit potential disturbance and resuspension of buried sediment in the lake.

2.9.4.2 Monitoring

Except in the case of No Action, long-term monitoring is a necessary component of all remediation alternatives to evaluate remedy effectiveness. Where required and as detailed for the selected remediation alternative, maintenance and monitoring will be conducted. Future remedial design evaluations may be required for any remediation alternative selected. Monitoring may include:

- Active remediation (Construction Monitoring)

  During the construction phase (applicable to alternatives 3, 4 and 5), data will be collected to determine if construction-specific performance metrics and controls (e.g. water quality, resuspension) developed during the remedial design are met. Details of construction monitoring will be developed during remedial design.

- Short-term monitoring (Performance Monitoring)

  Short-term monitoring (applicable to alternatives 3, 4 and 5) determines whether remedy implementation meets all other design specifications (e.g. cap, or clean sediment thickness, water quality, etc.).

- Long-term monitoring (Effectiveness Monitoring)

  Long-term monitoring (applicable to alternatives 2, 3, 4 and 5) monitors progress toward achieving RAOs. The measurable objective is to achieve the target RGs, total PCB concentrations in fish tissue of 0.17 mg/kg wet weight, and DLPCBs TEQ of 1.6 ng/kg wet weight for catfish (*Ictalurus punctatus*). Details of long-term monitoring will be developed during the remedial design but may include the following:
    - Physical measurements to monitor the integrity of the cover,
    - Chemical measurements in fish and or sediment,
    - Surface water quality measurements, and
    - Visual observations and surveys of wetland recovery.

2.10 Comparative Analysis of Alternatives

The NCP, 40 C.F.R. § 300.430(e)(9)(iii), requires the consideration of nine criteria to evaluate the different remedial alternatives individually, and in comparison to each other. The two threshold criteria, which are requirements that each alternative must meet to be eligible for the selection as a final remedy, are: 1) overall protection of human health and the environment; and 2) compliance with "applicable or relevant and appropriate requirements" (ARARs). The five primary balancing criteria which are used to weigh major trade-offs among alternatives are: 3) long-term effectiveness and permanence; 4) reduction of toxicity, mobility or volume through treatment; 5) short-term effectiveness; 6) implementability; and 7) cost. The two modifying criteria are: 8) state acceptance, and 9) community acceptance. The EPA assesses public comments on the Proposed Plan to gauge community acceptance and has responded to each public comment received, during the public comment period, in Part 3 (Responsiveness Summary) of this ROD.

CERCLA Section 121(b), 42 U.S.C. § 9621(b), and 40 C.F.R. § 300.430(f)(ii) state that remedial actions must accomplish the following:

- Be protective of human health and the environment;
- Attain ARARs or provide grounds for invoking a waiver;
- Be cost effective;
- Use permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and
- Satisfy the preference for treatment that reduces toxicity, mobility, and volume as a principal element or explain why it does not meet this criterion.

The following sections of this ROD discuss the relative performance of each alternative against the NCP's nine criteria and the EPA's rationale for the selection of Alternative 4 (Cap in Drainage Ditch, 0.6 acres, and EMNR in Remainder of SMA A+B, total 6.6 acres) as the Selected Remedy for the Site. The FS, included in the Administrative Record file for the Site, contains a detailed analysis of each alternative against the NCP's first seven criteria and a comparative analysis of how the alternatives compare to each other. Table 1 of Appendix K presents a comparison of alternatives.

2.10.1 Threshold Criteria

2.10.1.1 Overall Protection of Human Health and the Environment

This criterion addresses whether each alternative provides adequate protection of human health and the environment and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled, through treatment, engineering controls, and/or ICs. This criterion is considered a threshold and must be met by the selected alternative.

Remediation Alternative 1: No Action. This remediation alternative does not meet the criterion. This remediation alternative reflects baseline sediment conditions as they currently exist, and human fish consumption that currently poses a potential unacceptable risk to human receptors would continue.

Remediation Alternative 2: MNR in SMA A + B. This remediation alternative is anticipated to meet the criterion in time. Surface sediment would be monitored to verify reduction of concentrations of PCBs through the natural processes that support input and deposition of relatively cleaner sediment within Devil's Swamp Lake. Monitoring of sediment and biota would be used to verify continuing reduction of PCB concentrations in sediment and fish and/or invertebrates. However, it would take time for both the sediment concentrations to meet the CUL and for fish tissue concentrations to meet the RG.

ICs and IDs would continue to be implemented throughout the monitoring period. Controls in the form of signs and community involvement would only warn the public of the risks of fish consumption and may not be effective until the fish RGs are met.
In the short term, Remediation Alternative 2 would do little to minimize the unacceptable risk to human health and takes no action in protecting the environment, while waiting for natural recovery processes (i.e., sedimentation) to isolate the contaminated sediment and for fish tissue concentrations to drop as a response to exposure to clean sediment.

Remediation Alternative 3: EMNR in SMA A+B. This remediation alternative is anticipated to meet the criterion in time. The alternative immediately provides a clean bioactive zone for colonization by invertebrates and isolates contaminated material. The sediment CUL would be met immediately following completion of the remedial action. Exposure of fish to PCBs via the diet is immediately reduced through the addition of thin cover, which in turn should result in reduced fish tissue concentrations and with time meet the fish tissue RG.

ICs and IDs would continue to be implemented throughout the monitoring period until the fish RGs are met. Controls in the form of signs and community involvement would only warn the public of the risks of fish consumption and may not be effective

Remediation Alternative 4: Cap in Drainage Ditch and EMNR in the Remainder of SMA A+B. This remediation alternative is anticipated to meet the criterion in time. Under Remediation Alternative 4, capping is used in the Drainage Ditch to isolate PCBs in the sediment and provide a clean sediment surface. EMNR in the remainder of SMA A+B would provide a clean bioactive zone for colonization by invertebrates and isolates contaminated material. The sediment CUL will be met immediately following completion of the remedial action. Exposure of fish to PCBs via the diet is immediately reduced through the addition of the cap or thin cover (i.e., EMNR), which in turn should result in reduced fish tissue concentrations and with time meet the fish tissue RG.

ICs and IDs will continue to be implemented throughout the monitoring period until the fish RGs are met. Controls in the form of signs and community involvement would only warn the public of the risks of fish consumption and may not be effective

Remediation Alternative 5: Cap in SMA A+B. This remediation alternative is anticipated to meet the criterion in time. The cap will isolate PCBs in the sediment and provide a clean sediment surface. The sediment CUL will be met immediately following completion of the remedial action. Exposure of fish to PCBs via the diet is immediately reduced through the addition of the cap, which in turn should result in reduced fish tissue concentrations and with time meet the fish tissue RG.

ICs and IDs will continue to be implemented throughout the monitoring period until the fish RGs are met. Controls in the form of signs and community involvement would only warn the public of the risks of fish consumption and may not be effective

2.10.1.2 Compliance with Applicable or Relevant and Appropriate Requirements

Section 121(d) of CERCLA, 42 U.S.C. § 9621(d), and 40 C.F.R. § 300.430(f)(1)(ii)(B) require that remedial actions at CERCLA sites at least attain legally applicable or relevant and appropriate federal and state requirements, standards, criteria, and limitations that are collectively referred to as ARARs, unless such ARARs are waived pursuant to CERCLA Section 121(d)(4), 42 U.S.C. § 9621(d)(4). This criterion is considered a threshold and must be met by the selected alternative.

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

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

ARARs include chemical-specific, location-specific and action-specific requirements, as well as 'to be considered' items. Table 2 of Appendix K presents ARARs and TBC items.

Except for the No Action Alternative, the alternatives are assumed to comply with the location- and action-specific ARARs, as ensured by the required engineering design and agency review process. Furthermore, the remedial design phase of the remedy can address the various land use and resource protection ARAR requirements (e.g., habitat preservation and mitigation).

Remediation Alternative 1: No Action. The alternative does not meet the criterion. RI sampling results indicate surface water concentrations are above the state water quality standard. No Action may achieve this ARAR at some point in the future, surface water concentrations could decrease as clean sediment is naturally deposited in the lake, but the remediation alternative lacks the mechanisms for determining an outcome.

Remediation Alternative 2: MNR in SMA A+B. The alternative may achieve ARARs with time. MNR may achieve the state water quality standard for PCBs at some point in the future, surface water concentrations should decrease as clean sediment is naturally deposited in the lake. Under Remediation Alternative 2, no active remediation is

undertaken, but conditions are monitored over the long-term in order to ascertain that the natural processes that are predicted to reduce concentrations of PCBs in surface sediment (as well as in the prey of fish and in the fish themselves) are in fact taking place.

Remediation Alternative 3: EMNR in SMA A+B. The alternative should achieve ARARs with time. EMNR is anticipated to achieve the state water quality standard for PCBs following placement of clean material. The clean sediment surface is expected to result in lower concentrations of PCBs in surface water. Remediation Alternative 3 may result in temporary noncompliance with chemical-specific ARARs, such as impacts to water quality, during remedy implementation. Placement of a thin cover can result in turbidity plumes, but most turbidity is associated with the placement of the material itself and not the contaminated sediment. Best management practices would be employed to mitigate, to the greatest extent feasible, adverse impacts of remedy implementation on concentrations of PCBs in surface water.

Remediation Alternative 4: Cap in Drainage Ditch and EMNR in Remainder of SMA A+B. The alternative should achieve ARARs. Capping and EMNR are anticipated to achieve the state water quality standard for PCBs following placement of clean material. The clean sediment surface is expected to result in lower concentrations of PCBs in surface water. Remediation Alternative 4 may result in temporary noncompliance with chemical-specific ARARs, such as impacts to water quality, during remedy implementation. Placement of a cap or thin cover can result in turbidity plumes, but most turbidity is associated with the placement of the material itself and not the contaminated sediment. Best management practices are employed to mitigate, to the greatest extent feasible, adverse impacts of remedy implementation on concentrations of PCBs in surface water.

Remediation Alternative 5: Cap in SMA A+B. The alternative should achieve ARARs. Capping is anticipated to achieve the state water quality standard for PCBs following placement of clean material. The clean sediment surface is expected to result in lower concentrations of PCBs in surface water. Remediation Alternative 5 may result in temporary noncompliance with chemical-specific ARARs, such as impacts to water quality, during remedy implementation. Placement of a cap can result in turbidity plumes, but most turbidity is associated with the placement of the material itself and not the contaminated sediment. Best management practices are employed to mitigate, to the greatest extent feasible, adverse impacts of remedy implementation on concentrations of PCBs in surface water.

2.10.2 Balancing Criteria

These criteria refer to the 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. These criteria are used to weigh major trade-offs among alternatives.

2.10.2.1 Long-Term Effectiveness and Permanence

Long-term effectiveness and permanence refer to the 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. This criterion includes the consideration of the residual risk that will remain onsite following remediation and the adequacy and reliability of controls.

Remediation Alternative 1. No Action, relies on the indefinite continuation of the fish consumption advisory. Although natural recovery processes may reduce surface sediment PCB concentrations over time and increase the physical stability of the PCBs that remain in place, no monitoring occurs to confirm the natural processes are effective. This alternative ranks lowest in long-term effectiveness since there is no enforcement mechanism against not following the advisory.

Remediation Alternative 2. MNR relies on natural processes to achieve RAOs. Concentrations of PCBs in surface sediment and fish tissue are monitored under this remediation alternative, which supports the documentation of the physical stability of PCBs that remain in place (i.e., verification of permanence). This alternative is only slightly better than NFA in that confirmation of effectiveness is monitored; ultimately long-term effectiveness and permanence of the No Action Alternative and MNR are the same.

Remediation Alternative 3. EMNR includes placement of a thin cover of clean sand over PCB-impacted sediment, thereby immediately providing a clean sediment surface in this depositional environment to promptly achieve progress towards reduced fish tissue concentrations and reduced risks to human health from fish consumption (i.e., verification of long-term effectiveness). However, long-term effectiveness and permanence is anticipated to be the same as NFA and MNR.

Remediation Alternative 4. EMNR includes placement a thin cover of clean sand over PCB-impacted sediment. The armoring material used in the Drainage Ditch cap increases permanence by providing increased protection against high velocity flows (e.g., storm events) and will likely decrease the potential for PCBs to leach through overlying clean materials. Long-term effectiveness and permanence are better than alternatives 1, 2, and 3.

Remediation Alternative 5. Following cap implementation, human health risks should be reduced to acceptable levels, as fish tissue PCB concentrations reduce in response to reduced surface sediment PCB concentrations. Cap armoring provides increased permanence and protection against remobilization of PCB-contaminated sediment during high-energy events. Remediation Alternative 5 ranks highest in long-term effectiveness.

2.10.2.2 Reduction of Toxicity, Mobility, or Volume through Treatment

This criterion refers to the anticipated performance of the treatment technologies that may be included as part of a remedy. This criterion is used to weigh major trade-offs among alternatives.

Remediation Alternative 1. NFA does not include a treatment component. The mobility of contaminants is anticipated to be decreased over time through natural processes, however there will be no monitoring to confirm this.

Remediation Alternative 2. MNR does not include a treatment component. The mobility of contaminants is anticipated to be decreased over time through natural processes and will be monitored to confirm this.

Remediation Alternative 3. EMNR does not include a treatment component as described in the FS. The mobility of contaminants is anticipated to be decreased with either placement of clean sand or a reactive material by simple physical separation between the contaminated material and surface water.

Remediation Alternative 4. EMNR and capping do not include a treatment component as described in the FS. The mobility of contaminants is anticipated to be decreased with either placement of clean sand, reactive material, or cap by simple physical separation between the contaminated material and surface water. The Drainage Ditch cap would limit mobility of contaminated material more than NFA, MNR, and EMNR because of the addition of armoring material that would provide more protection from storm surges remobilization of material.

Remediation Alternative 5. Capping does not include a treatment component as described in the FS. The mobility of contaminants is anticipated to be decreased with either placement of the cap by simple physical separation between the contaminated material and surface water. This alternative would limit mobility of contaminated material more than any other alternative described due to its ability to provide the protection against storm surges.

2.10.2.3 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 and operation of the remedy until cleanup levels are achieved. This criterion is used to weigh major trade-offs among alternatives.

Remediation Alternative 1. Because No Action does not require active remediation, its implementation does not pose any new short-term risks to human health or the environment.

Remediation Alternative 2. Implementation of MNR poses only low or minimal short-term risks. Monitoring is the only activity associated with this remediation alternative.

Short-term risks posed to field technicians include the potential for exposure to chemicals in sediment and the hazards of sampling in an aquatic environment.

Remediation Alternative 3. Site work associated with EMNR involves Site access and equipment staging, thin cover placement, and long-term monitoring. Potential effects include: construction of temporary access roads and staging areas can harm sensitive wetland vegetation; placement of thin cover can have short-term effects on the benthic community; placement of thin cover can result in generation of turbidity plumes, though most turbidity is associated with the thin cover or cap material itself; and short-term risks posed to field technicians potentially exposed to PCBs in sediment and hazards of remedy implementation in an aquatic environment. The short-term effectiveness of Remediation Alternative 3 is medium.

Remediation Alternative 4. Site work associated with EMNR and/or capping involves Site access and equipment staging, thin cover and/or cap placement, and long-term monitoring. Potential effects include: construction of temporary access roads and staging areas can harm sensitive wetland vegetation; placement of thin cover and/or cap can have short-term effects on the benthic community; placement of thin cover and/or cap can result in generation of turbidity plumes, though most turbidity is associated with the thin cover or cap material itself; and short-term risks posed to field technicians potentially exposed to PCBs in sediment and hazards of remedy implementation in an aquatic environment. Alternative 4 will have more short-term impacts to the Site and surrounding community than Alternatives 1 through 3 because of the additional effort associated with capping the Drainage Ditch.

Remediation Alternative 5. Site work associated with capping involves Site access and equipment staging, cap placement, and long-term monitoring. Potential effects include: construction of temporary access roads and staging areas can harm sensitive wetland vegetation; placement of a cap can have short-term effects on the benthic community; placement of a cap can result in generation of turbidity plumes, though most turbidity is associated with the cap material itself; and short-term risks posed to field technicians potentially exposed to PCBs in sediment and hazards of remedy implementation in an aquatic environment.

Because short-term effectiveness considers both the positive and negative effects of remedy implementation, the greater amount of construction material, activity, time, impacts on wetland habitat, and transportation associated with Remediation Alternative 5 contribute to greater short-term risks in remedy implementation, as compared to Remediation Alternatives 3 and 4.

2.10.2.4 Implementability

This criterion considers the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as the relative availability of services and materials, administrative feasibility, and coordination with other

governmental entities are also considered. This criterion is used to weigh major trade-offs among alternatives.

Remediation Alternative 1: No Action. No implementation is associated with the No Action alternative.

Remediation Alternative 2: MNR in SMA A+B. MNR is readily implementable, requiring only the preparation and approval of a long-term monitoring plan and implementation of that monitoring plan.

Remediation Alternative 3: EMNR in SMA A+B. EMNR is implementable, requiring the design and installation of a thin cover. To ensure the stability of the EMNR layer as part of the remedial design process, geotechnical properties of the existing mud layer need to be characterized. Furthermore, EMNR implementation requires the construction of temporary access roads and staging areas. Soft marsh sediment requires substantial fill material to construct temporary access roads and staging areas capable of supporting anticipated loads. A long-term monitoring plan will need to be prepared and implemented.

Remediation Alternative 4: Cap in Drainage Ditch and EMNR in Remainder of SMA A+B. EMNR and capping in the Drainage Ditch are implementable. Requirements for the thin cover design and implementation of the EMNR are similar to those discussed for Remediation Alternative 3.

Remediation Alternative 5: Cap in SMA A+B. Capping is implementable and requires the construction of temporary access roads and staging areas. Preparation, approval, and implementation of a cap monitoring plan is required to ensure that the cap is stable and continues to achieve the remediation goals over time.

The implementation of these alternatives are the same and none of the alternatives are better than the others.

2.10.2.5 Costs

This criterion includes estimated capital and operation and maintenance costs as well as present worth costs. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of plus 50 to minus 30 percent. The selection of a remedial alternative is not solely based on cost; however, cost may be used to select between alternatives that perform favorably when comparing the other criteria. This criterion is used to weigh major trade-offs among alternatives.

The calculated costs considered direct, indirect, and operation and maintenance costs. They were calculated as present-value-worth costs for comparison of alternatives. Operation and maintenance costs were estimated using a discount rate of 7%, over a

30-year period, discounted to a net present value in 2017 dollars. The overall cost for each alternative is the sum of capital and discounted annual costs.

Summary of Remedial Alternatives Costs				
Alternative 1 No Further Action	**Alternative 2 MNR**	**Alternative 3 EMNR**	**Alternative 4 EMNR and Cap**	**Alternative 5 Cap**
$0	$623,000	$2,716,000	$3,191,000	$3,885,000
Notes: Net Present Worth Costs				

2.10.3 Modifying Criteria

2.10.3.1 State/Support Agency Acceptance

This criterion considers whether the state agrees with the EPA's analyses and recommendations of the RI/FS and the Proposed Plan. In the final balancing of trade-offs between alternatives upon which the final remedy selection is based, modifying criteria are of equal importance to the balancing criteria.

The state of Louisiana, through the LDEQ, the support agency, was provided the opportunity to review and comment on the Selected Remedy and agrees with the EPA's Selected Remedy. On February 14, 2020, LDEQ sent an email indicating that they and the LDH concur with the Selected Remedy (Appendix A). The email indicates concurrence was discussed with the Assistant Secretary of the LDEQ Office of Environmental Assessment, the Administrator of LDEQ Remediation Division, and the Environmental Health Scientist Manager of the LDH, Section of Environmental Epidemiology and Toxicology.

2.10.3.2 Community Acceptance

This criterion considers whether the local community agrees with the EPA's analyses and the Preferred Alternative of the Proposed Plan. Any comments received on the Proposed Plan are important indicators of community acceptance. In the final balancing of trade-offs between alternatives upon which the final remedy selection is based, modifying criteria are of equal importance to the balancing criteria.

The EPA conducted a public meeting on October 17, 2019, at the Alsen Recreation Center in East Baton Rouge Parish, Louisiana, to present the Proposed Plan and the EPA's Preferred Alternative 4 (Cap in Drainage Ditch and EMNR in Remainder of SMA A+B) to the public and to solicit the public's comments.

EPA established a 30-day public comment period from September 30, 2019 to October 29, 2019. Due to the public's request, an extension was granted for an additional 30 days until November 28, 2019.

The EPA assesses the public's comments on the Proposed Plan to gauge community acceptance of the EPA's Preferred Alternative 4 and has responded to public comments received in Part 3 (Responsiveness Summary) of this ROD.

During the public meeting EPA discussed commenting is an important way for the community to make their voices heard. Based upon the oral and written comments received during the public meeting and during the public comment period for the Proposed Plan, the community did not directly oppose the EPA's Selected Remedy (i.e., Alternative 4) described in this ROD.

As noted in the court reporter transcript of the public meeting, the community took the opportunity to express other concerns not related to the Site.

2.11 Principal Threat Wastes

The NCP, at 40 C.F.R. § 300.430(a)(1)(iii)(A), establishes a preference for the use of treatment to address the principal threats posed by a site wherever practicable. The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for migration of contamination to ground water, surface water, or air; or acts as a source for direct exposure. Principal threat wastes are those 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. Low-level threat wastes are those materials that generally can be reliably contained and that would present only a low risk in the event of exposure. The PCB-contaminated sediment at the Site is not considered principal threat waste.

2.12 Selected Remedy

Based on the consideration of the requirements of CERCLA, the detailed analysis of remedial alternatives, consultations with the LDEQ, and the consideration of the public's comments, the EPA has selected Alternative 4 (Cap in Drainage Ditch and EMNR in Remainder of SMA A+B) as the Selected Remedy for the Site, (Appendix C, Figures 14 and 16).

The Selected Remedy will provide a clean habitat for benthic invertebrates at and near the sediment surface, which in turn will reduce PCB exposures to fish, wildlife, and people who consume fish. The armoring of the cap in the Drainage Ditch will benefit the permanence of the remedy, protecting against erosion during high energy events. The remedy is straightforward to implement, and long-term monitoring will enable the evaluation of remedy effectiveness. By using EMNR to enhance ongoing natural recovery processes and armoring the Drainage Ditch where the potential for erosion is highest, this approach accelerates remediation while minimizing negative environmental impacts of the remedy, such as fuel use, carbon footprint, and damage to vegetation. Appendix C, Figure 17 provides a post-remediation pictorial CSM.

This section of the ROD provides the EPA's rationale for the selection of the Selected Remedy, including a description of its anticipated scope, how the remedy will be implemented, and its expected outcomes.

2.12.1 Summary of the Rationale for the Selected Remedy

The Selected Remedy is protective of human health and the environment, complies with ARARs, and provides the best balance of trade-offs among the balancing criteria. It reduces risks within a reasonable timeframe, provides for long-term reliability of the remedy, and minimizes reliance on ICs.

Reducing the contaminated sediment to concentrations below the CUL will, over time, reduce the fish tissue concentrations to below the RG which is protective of human receptors that consume fish caught from the lake.

2.12.2 Description of the Selected Remedy

The Selected Remedy is considered a final remedial action for the Site and addresses the following environmental media and receptors:

- Impacted environmental media with PCB contamination at the Site (i.e., sediment in the lake and drainage ditch), and
- Site-related human health risks associated with consumption of fish.

The Selected Remedy includes the following major components:

- An approximate 6-inch sand cover will be placed in SMA A+B to reduce surface sediment concentrations of PCBs—and consequently exposures to invertebrates, fish, and the human and ecological receptors that consume them. It is assumed that the thin cover will be composed of 6 inches of sand. Approximately 5,856 cubic yards of sand are anticipated for the sand layer.
- Sediment capping will be used to isolate underlying PCBs in Drainage Ditch sediment and to provide a clean sediment surface for habitat restoration. The cap installed in the Drainage Ditch will comprise a 6-inch base layer with up to 6 inches of armoring to protect against chemical migration through the cap and erosive forces from storm events. The final cap and armoring thicknesses, and the potential effectiveness and cost of such amendments, will be evaluated during the remedial design phase. Approximately 1,065 cubic yards of sand and armor layer materials are anticipated.
- Maintenance of the ID (i.e., fish consumption advisory), as necessary.
- ICs would remain in place throughout the monitoring period.

- Monitoring will document the effectiveness of natural physical, chemical, or biological processes in reducing contaminant concentrations.

- Statutory Five-Year Reviews will be conducted no less often than every five years after the selected remedial action is initiated.

2.12.3 Summary of the Estimated Costs for the Selected Remedy

The estimated net present worth cost for the Selected Remedy is $3.191 million. The information in the cost estimate summary table is based on the best available information regarding the anticipated cost of the Selected Remedy. This cost estimate for the Selected Remedy is an order-of-magnitude engineering cost estimate that is expected to be within plus 50 to minus 30 percent of the actual project cost.

Selected Remedy – Cost Estimate			
Component	**Cost**	**Details**	**Timeframe**
Capital and Fixed Costs			
Preconstruction Sampling	$148,000	Work Plan Sediment Sampling Hydraulic Monitoring	
General Construction	$878,000	Construction Management Mobilization Set Up Temporary Facilities Access Road Site Restoration	2 months
Construction Cap	$126,000	Cap Sand and Armor Materials (Delivered and Placed)	1 month
Construction EMNR	$812,000	Sand Material (Delivered and Placed	1 month
Engineering, management	$273,000	(15% of Total Direct Construction Costs)	
Contingency	$273,000	(15% of Total Direct Construction Costs)	
TOTAL	$2,510,000	Capital and Fixed Costs	
Component	**Cost**	**Details**	**Timeframe**
Operation and Maintenance Costs			
Long-Term Monitoring and Maintenance	$1,215,000	Bathymetric Survey Cap Maintenance Fish Tissue Monitoring Sediment Monitoring Support during Five-Year Reviews	Next 30 years
Contingency (10% of Monitoring Costs)	$122,000		
TOTAL	$1,337,000	Total Direct Monitoring Costs	
	$681,000	Monitoring Present Worth (7% rate)	
	$2,510,000	Capital and Fixed Costs	
	$681,000	Operation and Maintenance	
	$3,191,000	**TOTAL PRESENT WORTH COST FOR THE SELECTED REMEDY**	
Data Source: Devil's Swamp Lake Feasibility Study (Ramboll 2018), Appendix H – Table H-4			

2.12.4 Expected Outcome of the Selected Remedy

The intent of the Selected Remedy is to be protective of human health and the environment and to attain ARARs. It is consistent with current and anticipated future uses of the swamp and lake. It is also intended to minimize reliance on ICs to the extent practicable. The Selected Remedy will reduce sediment contamination, manage short-term risks, and, with time, reduce fish tissue concentrations at the Site to achieve long-term protectiveness to human receptors.

2.13 Statutory Determinations

Under CERCLA Section 121, 42 U.S.C. § 9621, the EPA must select remedies that are protective of human health and the environment, comply with ARARs (unless a statutory waiver is justified), are cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous wastes as their principal element. The following sections discuss how the selected remedy meets these statutory requirements.

2.13.1 Protection of Human Health and the Environment

The Selected Remedy will protect human health and the environment by eliminating the contaminant transport pathway from sediment into biota by placement of a thin "clean" layer of sand or other material as part of EMNR and by placement of a cap. The Selected Remedy will reduce exposure to sediment with the highest concentrations of PCBs in the biological active zone and will manage short-term human health risks while fish tissue concentrations decrease with IDs, ICs, and engineering controls. Specifically, the exposure of recreational fishers to PCBs in fish tissue will be reduced because the contaminated sediment will either be capped or have a "clean" layer of material placed over it. These measures will result in, over time, a decrease in tissue concentrations.

2.13.2 Compliance with Applicable or Relevant and Appropriate Requirements and To-Be-Considered Criteria

The NCP 40 C.F.R. §§ 300.430(f)(5)(ii)(B) and (C) require that a ROD describe the federal and state ARARs that the Selected Remedy will attain or provide justification for any waivers. The implementation of the remedy generally will not require federal, state, or local permits because of the permit equivalency of the CERCLA remedy-selection process (40 C.F.R. § 300.400(e)(i)), but remedial actions will be completed in conformance with substantive technical requirements of applicable regulations.

The ARARs can be broken out into three different categories, although some ARARs may belong to more than one of these categories. In addition, to-be-considered criteria are discussed. These specific categories are listed below:

- Chemical-specific requirements,
- Location-specific requirements,
- Action specific requirements, and
- To be considered.

ARARs are presented in Table 2 of Appendix K. The Selected Remedy would comply with all ARARs through the use of standard engineering and waste management techniques. And as discussed in Section 2.10.1.2, the requirement to meet the State Water Quality Standard for PCBs is anticipated to occur after the remedy is in place.

2.13.3 Cost Effectiveness

The Selected Remedy is cost-effective and represents a reasonable value for the costs incurred. Section 300.430(f)(1)(ii)(D) of the NCP states that, "A remedy shall be cost effective if its costs are proportional to its overall effectiveness." The EPA evaluated the "overall effectiveness" of those alternatives that satisfied the threshold criteria (i.e., protection of human health and the environment and compliance with ARARs) by assessing three of the five balancing criteria in combination (long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short-term effectiveness). Overall effectiveness was then compared to costs to determine cost-effectiveness. The overall effectiveness of this remedial alternative was determined to be proportional to its costs and therefore the Selected Remedy (i.e., Alternative 4) represents a reasonable value for the money to be spent. The total estimated net present value cost to implement the Selected Remedy is $3,191,000.

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

The 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, the 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.

2.13.5 Preference for Treatment as a Principal Element

CERCLA Section 121(b)(1), 42 U.S.C. § 9621(b)(1), establishes a preference for the use of treatment to address the principal threats posed by a site where practicable. The NCP, 40 C.F.R. § 300.430(a)(1)(iii), refines that preference by setting forth expectations that must be considered in developing appropriate remedial alternatives. The NCP expects that treatment will be used to address the principal threats posed by a site whenever practicable (40 C.F.R. § 300.430(a)(1)(iii)(A)). The "principal threat" concept

is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to ground water, surface water, or air; or acts as a source for direct exposure. The NCP defines principal threat wastes to include those 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. Conversely, low-level threat wastes are those materials that generally can be reliably contained and that would present only a low risk in the event of exposure. For low-level threat wastes, the NCP establishes the expectation to use engineering controls, such as containment (40 C.F.R. § 300.430(a)(1)(iii)(B)). The PCB-contaminated sediment at the Site is not highly toxic or highly mobile, and thus is low-level waste and not a principal threat waste.

The Selected Remedy includes sediment capping to create an isolation or physical barrier between PCB contamination and the overlying media (i.e., surface water) and receptors; and EMNR to provide a clean sediment surface for habitat recovery while minimizing construction impacts to the wetland environment.

While the Selected Remedy may not include treatment, it meets the expectation of the NCP and is considered the most appropriate choice for the site. Given the relatively low risks posed by PCBs to ecological receptors, as well as the sensitivity of the habitat to physical disturbance, and the significant physical disturbance associated with sediment remediation in aquatic ecosystems such as Devil's Swamp Lake, the possible adverse effects of remediation outweigh the relatively low risks posed by PCBs

2.13.6 Five-Year Review Requirements

Because the implementation of the Selected Remedy will result in hazardous substances remaining on-Site above levels that allow for unlimited use and unrestricted exposure, a statutory Five-Year Review will be conducted pursuant to Section 121(c) of CERCLA and 40 C.F.R. § 300.430(f)(4)(ii) within five years after initiation of the remedial action to ensure that the remedy is, or will be, protective of human health and the environment. During the statutory reviews, the EPA will evaluate monitoring data collected prior to the review period and assess the effectiveness of the Selected Remedy. If the EPA determines that the RAOs are not being met or that the Selected Remedy is no longer protective, the remedy will be reevaluated, and an Explanation of Significant Differences document or ROD Amendment may be required.

2.14 Documentation of Significant Changes

To fulfill CERCLA §117(b) and the NCP 40 C.F.R. §§ 300.430(f)(5)(iii)(B) and 300.430(f)(3)(ii)(A), the ROD must document and discuss the reasons for any significant changes made to the Selected Remedy. Changes described in this section of the ROD are limited to those that could have been reasonably anticipated by the public from the time the Proposed Plan, RI, and FS were released for public comment to the final

selection of Alternative 4 as the Selected Remedy. Changes that could not have been anticipated require an additional public comment period.

The Proposed Plan was released for public comment on September 30, 2019. The EPA held a public meeting on October 17, 2019, in the Alsen Recreation Center, East Baton Rouge Parish, Louisiana, to present the Proposed Plan to the public and solicit the public's comments. The 30-day public comment period was extended 30 additional days and ended on November 28, 2019. The Proposed Plan Identified Alternative 4 (Cap in Drainage Ditch and EMNR in Remainder of SMA A+B) as the Preferred Alternative.

The EPA reviewed all written and oral comments submitted during the public comment period and determined that no significant changes to the Preferred Alternative, as originally identified in the Proposed Plan, were necessary or appropriate.

PART 3 - RESPONSIVENESS SUMMARY

3.1 Overview and Background on Community Relations

The Responsiveness Summary summarizes information about the views of the support agency and the public regarding both the remedial alternatives and general concerns about the Site submitted during the public comment period. This summary also documents, in the administrative record, how the public's comments were integrated into the EPA's decision-making process.

3.1.1 Activities during the Proposed Plan

The public meeting announcing the Proposed Plan was held on October 17, 2019, in East Baton Rouge Parish, Louisiana. The Proposed Plan described the EPA's rationale for the selection of the Preferred Alternative. The EPA held a public comment period for the Proposed Plan from September 30 through November 28, 2019. Public notices of the public meeting and public comment period were published in local newspapers of general circulation. Additionally, the EPA mailed public notices announcing the Proposed Plan, public meeting, and comment period to the contacts included in the Site's mailing list.

The EPA's Technical Assistance Services for Communities program conducted a review of the Proposed Plan and prepared a fact sheet to provide tips to the community on how to make effective comments about the Proposed Plan. The EPA mailed this fact sheet in November 2019 to the contacts in the Site's mailing list.

Representatives from the EPA provided presentations on the Proposed Plan and answered questions about the EPA's Preferred Alternative. Representatives from the LDEQ and LDH were also present at the meeting. Oral and written comments were accepted at the meeting, and a court reporter transcribed the discussions held during the meeting.

The Administrative Record file for the Site, located at the Scotlandville Branch Library, LDEQ's offices, and the EPA's regional office, contains all the information and documents supporting this ROD (see Section 1.2 [Information Repositories] of this ROD). This Administrative Record file includes transcripts of the oral comments received during the public meetings held on October 17, 2019 by the EPA. This Administrative Record also contains each of the comments received from the public through postal or electronic mail.

No comments were received during the public meeting and public comment period directly concerning the alternatives presented in the Proposed Plan or in support of the EPA's Preferred Alternative 4 (i.e., Cap in Drainage Ditch and EMNR in the Remainder of SMAs A+B).

Comments and concerns related to other topics not related to the Site were presented during the public meeting. The following section of this ROD summarizes stakeholders' comments received during the public comment period and the EPA's responses to those comments.

The concerns of the community have been considered by the Regulatory Agencies in the selection of Alternative 4 as the Selected Remedy for the Site.

3.2 Stakeholders' Comments and EPA Responses

3.2.1 Comment: Overall Community Concerns

Many community members emphasized their concerns about paying for the cleanup, the source of monies to be spent in the remediation of the project, and why these monies were not spent in the community. They stated that the health and wellbeing of the people who live and work around the community of Alsen should be a high priority when considering the effect of the operation of nearby industrial facilities.

Commenters asked if monies could be spent to compensate, relocate, or buy out properties in the community. Some commenters questioned the safety of living in this community.

EPA's Response (regarding costs):

Under CERCLA, EPA's implements an "enforcement first" policy that requires that the EPA seek potentially responsible parties (PRPs) to fund the remedial action(s). In this case, EPA has identified PRPs and will seek to negotiate a settlement to perform the cleanup of the Site, as outlined in this ROD.

EPA's Response (regarding nearby industrial setting):

EPA recognizes the location of this Site is within a larger industrial area with multiple facilities subject to regulation and permits under other programs and authorities outside the EPA Superfund Program. The LDEQ and the LDH have been involved with this project since its inception. They have attended community meetings and answered community health questions and provided general health information throughout the project. They have also provided suggestions to EPA for additional studies and sampling procedures and established other activities in the community to address the community's health concerns more directly (e.g., Agency for Toxic Substances and Disease Registry [ATSDR] Health Consultation, Alsen Environmental Health Fair, Residential Water Sampling).

EPA's Response (regarding buyout and relocation):

Throughout the Superfund Process, EPA has made great strides to keep the entire community informed regarding Site activities and the results of sampling efforts

performed during the RI. As expressed to the community, if at any time during this process an imminent health threat to the residents was discovered, immediate measures such as relocation would have been pursued. For the types of contaminants that exist in the surface and subsurface soils and sediment at the Site, relocation activities in the community are not necessary, and EPA is confident that sediment remedial activities will provide a safer environment.

EPA's policy on the use of permanent relocations as part of Superfund is to address risks posed by the contamination which allow people to remain safely in their homes and businesses. As previously discussed, risks identified with this site are linked to ingestion of fish from Devil's Swamp Lake. Therefore, permanent relocation as part of a Superfund response action is not necessary to protect human health and the environment.

3.2.2 Comment: General Concerns about Personal and Community Health

Some commenters expressed their personal and community health concerns.

EPA's Response

Personal medical issues are outside the scope and mission of EPA. Personal health problems affecting an individual are best addressed by discussing them with an individual's health care provider or professional staff at the individual's local parish health unit.

Additionally, there are other local, state, and federal agencies that are available to assist people with health problems. In December 2019 EPA provided members of the community with a list of specific agencies and telephone numbers that they can contact these concerns.

While EPA has focused on investigating and responding to environmental contamination at this site, it has also requested information and assistance from federal, state, and local health officials with expertise in public and environmental health problems during this project for the benefit of the residents. The response action implemented at the Site was reviewed and endorsed by ATSDR and the LDH, and is viewed as being necessary to protect the health of residents. During the response action, ATSDR and the Louisiana Office of Public Health/Section of Environmental Epidemiology and Toxicology assisted the LDEQ in the review of the Proposed Plan.

3.2.3 Comment: Extent of contamination

One commenter inquired as to whether the extent of contamination is known, or if it was affected by the Great Flood of 2016.

EPA's Response

During the RI, EPA collected soil and sediment samples around the lake and found that the extent of contamination presenting an unacceptable risk is around the upper half of Devil's Swamp Lake and that this area was not affected by the flood of 2016. This is the area considered requiring remediation in the Proposed Plan. Within this area, during the design phase, additional samples will be collected to further define the areas to be remediated and the extent of contamination.

3.2.4 Comment: Recommendation for alternatives approaches

Some commenters stated their opposition to all alternatives and recommended as a new alternative the buyout or relocation.

EPA's Response

As stated in EPA's response to comments in Section 3.2.1, the commenters' recommended new alternative will not meet EPA's criteria in the NCP. EPA's Policy on the Use of Permanent Relocations as Part of Superfund is to address risks posed by the contamination which allow people to remain safely in their homes and businesses. Contamination and risks have been noted at the Site, located within the Devil's Swamp, not in the community. Therefore, an alternative of permanent relocation as part of a Superfund response action is not necessary to protect human health and the environment in the community.

On the other hand, not implementing a response action to address the risks identified will not meet the cleanup objectives set for the protection of public health and the environment for those recreational visitors to the Site. The swamp and the lake are extensively used by recreational visitors, as evidenced by the multiple fishing shacks, boats, canoes, kayaks, four tracks, and hunting blinds observed by EPA and state representatives during the RI.

3.2.5 Comment: Public Meeting questions and clarifications

The following questions were presented during the public meeting, and the EPA's Responses follow.

To the question, what was the time frame to get responses back. The response time depends on the number of comments and their complexity. Responses to all comments received are in this Responsiveness Summary.

To the question if there is a list of PRPs identified? A list of PRPs is available as an enclosure to the Special Notice Letter sent by EPA on September 24, 2007. A copy of the letter is available through a Freedom of Information Act request to the EPA or available online via the state, LDEQ, Electronic Document Management System EDMS. (Agency Interest (AI) 8680, Document Id 5952220).

Is there a relationship of the Site proposed action to the Comite River Diversion Canal Project? There is no relationship. The Comite River Diversion Project consists of a diversion channel from the Comite River to the Mississippi River.

What is the correct date of the Community Involvement Chart? The chart is dated January 2001. The chart illustrates the process that EPA uses to clean up a site. It has not changed, is current, and is applicable to this Site.

When was the Site placed on the NPL? The Site is not on the NPL. The Site was proposed to the NPL on March 8, 2004, but the proposal was never finalized

How long have activities been taking place at the Site? The RI/FS started with the UAO issued on January 4, 2010. Completion of this activity is the date this ROD is signed by the appropriate EPA official.

3.3 Technical and Legal Issues

None

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APPENDICES

Appendix A – Consultation and Concurrence by State of Louisiana

Canellas, Bart

From: Keith Horn <Keith.Horn@LA.GOV>
Sent: Friday, February 14, 2020 9:11 AM
To: Canellas, Bart
Cc: Atkins, Blake; Schilling, Leonard; Roger Gingles; percy.harris@la.gov; Shannon Soileau; Chelsea Bourgeois; June.Sutherlin@la.gov
Subject: FW: Revised draft ROD for EPA Region 6 Devil's Swamp Lake - Request for state concurrence
Attachments: Comment Form_Devil's Swamp Lake Draft ROD 12_04_19 EPA HQs Rev 1 RESPONSES.docx; Comment Form_Devil's Swamp Lake Draft ROD 12_04_19 by LDEQ and LDH RESPONSES.docx; DSL ROD Draft 2 February 2020 text refere acron abbrev Rev 11 020720.docx; Fig 01 - 19 Combined for ROD Draft 2 February 2020 REVISED FIGURES.pdf

Bart:

The Louisiana Department of Environmental Quality (LDEQ) and Louisiana Department of Health (LDH) hereby concur with the Draft ROD (Draft 2 February 2020) for the Devil's Swamp Lake Superfund Site (copy attached). This version of the Draft ROD incorporated all of LDEQ's and LDH's comments, and addressed our previous concerns. We have no objection with this Draft ROD moving forward in the process toward finalization.

This concurrence has been discussed with Roger Gingles, Assistant Secretary, LDEQ Office of Environmental Assessment, Percy Harris, Administrator of the LDEQ Remediation Division, and Shannon Soileau, Environmental Health Scientist Manager, LDH Section of Environmental Epidemiology & Toxicology, and all have agreed that I could e-mail you on their behalf, and on the behalf of our respective Departments.

Thank you for the opportunity to review and comment on this document. If you have further questions, or need additional information, please feel free to contact me.

Keith Horn
Senior Environmental Scientist
LDEQ Remediation Division
Desk (225) 219-3717

From: Canellas, Bart <canellas.bart@epa.gov>
Sent: Wednesday, February 12, 2020 3:38 PM
To: Keith Horn <Keith.Horn@LA.GOV>
Cc: Canellas, Bart <canellas.bart@epa.gov>; Atkins, Blake <Atkins.Blake@epa.gov>; Schilling, Leonard <Schilling.Leonard@epa.gov>
Subject: Revised draft ROD for EPA Region 6 Devil's Swamp Lake - Request for state concurrence

Keith we want to request a concurrence letter for the Devil's Swamp Lake ROD. We want to be sure we don't have any show stoppers.

We received your comments and have addressed then to the greatest extent possible. This considering comments from EPA Headquarters, your comments (the state environmental agency (LDEQ) and the state health department (LDH)), other reviewers, attorneys, our oversight consultants and other environmental and engineering consultants (e.g. EA Engineering, Ramboll, etc.) Also trying to be consistent with other sediment site RODs issued by the Region.

FYI, I am attaching a list of our response to your comments and comments received from EPA HQs.

We also considered comments from other reviewers. FYI, attached is a draft of how the draft ROD looks at this moment.

Please let us know if you have any further comments, questions or concerns. (The line numbers will be removed from the draft once it gets moving in concurrence for approval.

Bartolome Canellas, RPM (SED-RL)
EPA Region 6, Superfund Program
(214) 665-6662
Canellas.Bart@epa.gov

APPENDICES

Appendix B – Administrative Record Index

Prepared for

United States Environmental Protection Agency

Region 6

PROPOSED PLAN
ADMINISTRATIVE RECORD INDEX FILE

for

DEVIL'S SWAMP LAKE
SUPERFUND SITE

EPA ID No. LAD981155872
SSID: 06N1

Contract No. EP-S5-17-01
Task Order No. 5

Bartolome Canellas
Remedial Project Manager
U.S. EPA Region 6

Prepared by:
ARS Aleut Remediation LLC
and Toeroek Associates

September 23, 2019

PREAMBLE

The purpose of this document is to provide the public with an index to the Administrative Record File (AR File) for the U.S. Environmental Protection Agency's (EPA) selected remedial action to respond to conditions at the Devil's Swamp Lake Superfund site (the "Site"). EPA's action is authorized by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. Section 9601 et seq.

Section 113 (j)(1) of CERCLA, 42 U.S.C. Section 9613 (j)(1), provides that judicial review of the adequacy of a CERCLA response action shall be limited to the Administrative Record (AR). Section 113 (k)(1) of CERCLA, 42 U.S.C. Section 9613 (k)(1), requires the EPA to establish an AR upon which it shall base the selection of its remedial actions. As the EPA decides what to do at the site of a release of hazardous substances, it compiles documents concerning the site and it's decision into an "AR File." This means that documents may be added to the AR File from time to time. After the EPA Regional Administrator or the Administrator's delegate signs the Action Memorandum or the Record of Decision memorializing the selection of the action, the documents which form the basis for the selection of the response action are then known as the Administrative Record "AR." Documents included in previous Administrative Records for the earlier Record of Decision (ROD) and ROD Amendments are incorporated by reference into this Administrative Record.

Section 113(k)(1) of CERCLA requires the EPA to make the AR File available to the public at or near the site of the response action. Accordingly, the EPA has established a repository where the AR File may be reviewed near the Site at:

Scotlandville Branch Library
7373 Scenic Highway
Baton Rouge, LA 70807
Telephone: (225) 354-7540
Contact: Ms. Allison Cooper

and

Louisiana Department of Environmental Quality (LDEQ)
Public Records Center
Galvez Building, 1st Floor – Room 121
602 N. Fifth Street
Baton Rouge, LA 70802
Telephone: (225) 219-3168
Contact: Mr. Mike Miller

The public also may review the AR File at the EPA Region 6 office in Dallas, Texas, by contacting the Remedial Project Manager at the address listed below. The AR File is available for public review during normal business hours. The AR File is treated as a non-circulating reference document. Any document in the AR File may be photocopied according to the procedures used at the repository or at the EPA Region 6 office. This index and the AR File were compiled in accordance with the EPA's Final Guidance on Administrative Records for Selecting CERCLA Response Actions, Office of Solid Waste and Emergency Response (OSWER)

Directive Number 9833.3A1 (December 3, 1990).

Documents listed as bibliographic sources for other documents in the AR File might not be listed separately in the index. Where a document is listed in the index but not located among the documents which the EPA has made available in the repository, the EPA may, upon request, include the document in the repository or make the document available for review at an alternate location. This applies to documents such as verified sampling data, chain of custody forms, guidance and policy documents, as well as voluminous site-specific reports. It does not apply to documents in EPA's confidential file. (Copies of guidance documents also can be obtained by calling the RCRA/Superfund/Title 3 Hotline at (800) 424-9346.)

These requests should be addressed to:

Bartolome Canellas
Remedial Project Manager
U.S. EPA Region 6
1201 Elm Street, Suite 500
Dallas, Texas 75202-2733
(214) 665-6662

The EPA response selection guidance compendium index has not been updated since March 22, 1991 (see CERCLA Administrative Records: First Update of the Compendium of Documents Used for Selecting CERCLA Response Actions [March 22, 1991]); accordingly, it is not included here. Moreover, based on resource considerations, the Region 6 Superfund Division Director has decided not to maintain a Region 6 compendium of response selection guidance. Instead, consistent with 40 CFR Section 300.805(a)(2) and 300.810(a)(2) and OSWER Directive No. 9833.3A-1 (page 37), the AR File Index includes listings of all guidance documents which may form a basis for the selection of the response action in question.

The documents included in the AR File index are arranged predominantly in chronological order. The AR File index helps locate and retrieve documents in the file. It also provides an overview of the response action history. The index includes the following information for each document:

- **Doc ID**- The document identifier number.
- **Date** - The date the document was published and/or released. "01/01/2525" means no date was recorded.
- **Pages** - Total number of printed pages in the document, including attachments.
- **Title -** Descriptive heading of the document.
- **Document Type** - General identification, (e.g. correspondence, Remedial Investigation Report, Record of Decision.)
- **Author** - Name of originator, and the name of the organization that the author is affiliated with. If either the originator name or the organization name is not identified, then the field is captured with the letters "N/A".
- **Addressee**- Name and affiliation of the addressee. If either the originator name or the organization name is not identified, then the field is captured with the letters "N/A".

PROPOSED PLAN ADMINISTRATIVE RECORD FILE INDEX
09/23/2019
REGION ID: 06
SITE NAME: DEVIL'S SWAMP LAKE
CERCLIS ID:LAD981155872
SSID: 06N1

DOCID	DOC_DATE	PAGE_COUNT	TITLE	ACCESS_CODE	ADDRESSEE	AUTHOR	DOC_TYPE	Document Bates Begin	Document Bates End
9040569	12/9/1986	1	BATON ROUGE MORNING ADVOCATE: PORTION OF DEVIL'S SWAMP BEING POSTED	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (NONE SPECIFIED)	PUB / Publication	000001	000001
110581	10/29/1987	2	ATTACHMENT B: DEQ POSTS DEVIL'S SWAMP LAKE, PETRO PROCESSORS SITE ADVISING THE PUBLIC OF CONTAMINATION	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (LDEQ)	PUB / Publication	000002	000003
100015457	10/1/1988	187	U.S. EPA GUIDANCE FOR CONDUCTING REMEDIAL INVESTIGATIONS AND FEASIBILITY SITES UNDER CERCLA - EPA/540/G-89/004 - OSWER DIRECTIVE 9355.3-01	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	PUB / Publication	000004	000190
9115134	9/28/1990	31	AUTHORIZATION TO DISCHARGE UNDER NPDES FOR ROLLINS ENVIRONMENTAL SERVICES	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (NONE SPECIFIED)	AGMT / Agreement	000191	000221
918610	7/16/1991	5	CONGRESSIONAL INQUIRY AND TRANSMITTAL OF RESOLUTION REQUESTING A PRELIMINARY ASSESSMENT OF BAYOU BATON ROUGE	UCTL(Uncontrolled)	R06: Reilly, William (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Jefferson, William, J (CONGRESS)	LTR / Letter	000222	000226
919694	4/15/1992	265	PRELIMINARY ASSESSMENT OF DEVIL'S SWAMP LAKE	UCTL(Uncontrolled)	R06: Green, Marta (MORRISON KNUDSEN ENVIRONMENTAL SERVICES), R06: Pandak, Debra (ICF TECHNOLOGY INCORPORATED), R06: Sierra, Ed (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Patterson, Jeffrey, E (ICF TECHNOLOGY INC)	RPT / Report	000227	000491
918615	5/27/1992	19	PRELIMINARY ASSESSMENT REPORT FOR BAYOU BATON ROUGE	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (NONE SPECIFIED)	RPT / Report	000492	000510

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919018	7/9/1993	2	HEALTH ADVISORY FOR THE DEVILS SWAMP AND BAYOU BATON ROUGE AREA	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: Hebert, Larry (LOUISIANA OFFICE OF PUBLIC HEALTH), R06: Givens, Dale (LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY)	CORR / Correspondence	000511	000512
918600	9/27/1993	524	SITE INSPECTION FINAL REPORT FOR BAYOU BATON ROUGE	UCTL(Uncontrolled)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: None (PRC ENVIRONMENTAL MANAGEMENT INCORPORATED)	RPT / Report	000513	001036
917222	10/20/1993	925	EXPANDED SITE INSPECTION FOR DEVIL'S SWAMP	UCTL(Uncontrolled)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: None (PRC ENVIRONMENTAL MANAGEMENT INCORPORATED)	RPT / Report	001037	001961
919693	10/21/1993	780	EXPANDED SITE INSPECTION - FINAL REPORT FOR DEVIL'S SWAMP LAKE	UCTL(Uncontrolled)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: None (PRC ENVIRONMENTAL MANAGEMENT INCORPORATED)	RPT / Report	001962	002741
919014	10/4/1994	5	COORDINATES FOR DEVIL'S SWAMP SAMPLE LOCATIONS	UCTL(Uncontrolled)	R06: Smith, Stephanie (LOUISIANA OFFICE OF PUBLIC HEALTH)	R06: Ayers, Jeffrey, T (PRC ENVIRONMENTAL MANAGEMENT INC.)	CORR / Correspondence	002742	002746
100015458	7/1/1999	182	U.S. EPA - A GUIDE TO PREPARING SUPERFUND PROPOSED PLANS, RECORDS OF DECISION, AND OTHER REMEDY SELECTION DECISION DOCUMENTS - EPA 540-R-98-031 - OSWER 9200.1-23P	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	PUB / Publication	002747	002928
133129	12/6/1999	904	VOLUMES I AND II OF THE ECOLOGICAL RISK ASSESSMENT FOR DEVIL'S SWAMP, BATON ROUGE, LOUISIANA	UCTL(Uncontrolled)	R06: None (ENVIRONMENTAL PROTECTION AGENCY)	R06: None (SCIENCE APPLICATION INTERNATIONAL CORPORATION), R06: None (TECHLAW INCORPORATED)	RPT / Report	002929	003832

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133156	12/8/1999	520	VOLUMES 1 AND 2 OF THE HUMAN HEALTH RISK ASSESSMENT FOR DEVIL'S SWAMP	UCTL(Uncontrolled)	R06: None (ENVIRONMEMTAL PROTECTION AGENCY)	R06: None (SCIENCE APPLICATIONS INTERNATIONAL CORPORATION), R06: None (TECHLAW INCORPORATED)	RPT / Report	003833	004352
133034	1/26/2000	1	[EPA TO FINALIZE THE HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS FOR DEVIL'S SWAMP; RISK ASSESSMENTS ARE NOT ATTACHED]	UCTL(Uncontrolled)	R06: Brent, James, H (LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY)	R06: Knudson, Myron, O (U.S. ENVIRONMENTAL PROTECTION AGENCY)	CORR / Correspondence	004353	004353
9008187	4/27/2000	18	[HEALTH CONSULTATION FOR THE DEVILS SWAMP LAKE SITE]	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (NONE SPECIFIED)	RPT / Report	004354	004371
9600825	11/1/2000	9	ATSDR PUBLIC HEALTH STATEMENT - POLYCHLORINATED BIPHENYLS (PCBS)	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY)	RPT / Report	004372	004380
100015459	2/12/2002	12	U.S. EPA PRINCIPLES FOR MANAGING CONTAMINATED SEDIMENT RISKS AT HAZARDOUS WASTE SITES - EPA-540-R-05-012 - OSWER 9285.6-08	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: Horinko, Marianne, L (U.S. ENVIRONMENTAL PROTECTION AGENCY)	PUB / Publication	004381	004391
300035	2/1/2004	64	PROPOSED HRS DOCUMENTATION RECORD	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (NONE SPECIFIED)	RPT / Report	004392	004455
165392	3/1/2004	5	FACTSHEET: US EPA PROPOSES DEVIL'S SWAMP LAKE SITE TO THE NATIONAL PRIORITIES LIST - MARCH 2004	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (U. S. ENVIRONMENTAL PROTECTION AGENCY ENVIRONMENTAL RESEARCH LABORATORY)	PUB / Publication	004456	004460

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100003830	3/8/2004	10	FEDERAL REGISTER - PROPOSAL OF DEVIL'S SWAMP LAKE TO THE NPL - 40 CFR PART 300 [FRL–7632–9] NATIONAL PRIORITIES LIST FOR UNCONTROLLED HAZARDOUS WASTE SITES, PROPOSED RULE NO. 40	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	OTH / Other	004461	004470
182276	11/1/2004	71	FINAL AERIAL PHOTOGRAPHIC ANALYSIS OF DEVILS SWAMP LAKE SITE	UCTL(Uncontrolled)	R06: None, None (NONE SPECIFIED)	R06: None, None (U.S. ENVIRONMENTAL PROTECTION AGENCY), R06: Mack, W, M (LOCKHEED MARTIN SERVICES INCORPORATED)	PHT / Photograph	004471	004541
188773	11/16/2004	19	THE EPA SUPERFUND PROCESS AND DEVIL'S SWAMP LAKE	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (TECHNICAL OUTREACH SERVICES FOR COMMUNITIES)	PHT / Photograph	004542	004560
182278	12/6/2004	15	IMMUNOASSAY SCREENING OF SEDIMENT CORES FOR POLYCHLORINATED BIPHENYLS, DEVILS SWAMP LAKE NEAR BATON ROUGE, LOUISIANA, 2004 USGS OPEN-FILE REPORT 2004-1397	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (U.S. DEPARTMENT OF THE INTERIOR), R06: None (U.S. GEOLOGICAL SURVEY)	RPT / Report	004561	004575
100003843	12/1/2005	236	CONTAMINATED SEDIMENT REMEDIATION GUIDANCE FOR HAZARDOUS WASTE SITES - EPA-540-R-05-012 - OSWER DIRECTIVE 9355.0-085 - DECEMBER 2005	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	LAWS / Laws/Regulations/Guidance	004576	004811
9406986	3/1/2007	3	FACT SHEET - MARCH 2007 FOR DEVIL'S SWAMP LAKE	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None, None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	PUB / Publication	004812	004814
9294503	2/1/2008	1	FACT SHEET - DEVILS SWAMP LAKE - FEBRUARY 2009 - RICHARD BAKER (R) DISTRICT NO. 6	UCTL(Uncontrolled)	R06: Baker, Richard, H (HOUSE OF REPRESENTATIVES)	R06: Coleman, Sam (U.S. ENVIRONMENTAL PROTECTION AGENCY)	LTR / Letter	004815	004815

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9600848	4/1/2009	2	FACT SHEET - APRIL 2009 - DEVILS SWAMP LAKE SITE	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	PUB / Publication	004816	004817
869983	4/23/2009	2	FACT SHEET - DEVIL'S SWAMP LAKE - APRIL 2009	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	PUB / Publication	004818	004819
870137	7/1/2009	2	FACT SHEET - DEVIL'S SWAMP LAKE - JULY 2009	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	PUB / Publication	004820	004821
884293	11/25/2009	11	LETTER HEALTH CONSULTATION - DEVIL'S SWAMP LAKE SITE	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (LOUISIANA DEPARTMENT OF HEALTH AND HOSPITALS), R06: None (U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES)	RPT / Report	004822	004832
878386	12/3/2009	63	UNILATERAL ADMINISTRATIVE ORDER FOR REMEDIAL INVESTIGATION/ FEASIBILITY STUDY [IN THE MATTER OF CLEAN HARBORS, INC. AND BATON ROUGE DISPOSAL - CERCLA DOCKET NO. 06-04-10]	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: Coleman, Samuel (U.S. ENVIRONMENTAL PROTECTION AGENCY)	LGL / Legal Instrument	004833	004895
877352	12/9/2009	1	ALSEN COMMUNITY ENVIRONMENTAL HEALTH FAIR - 12/09/09 - (DEVIL'S SWAMP)	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	PUB / Publication	004896	004896
881591	1/1/2010	1	[U.S. EPA REGION 6 PUBLIC NOTICE - TECHNICAL ASSISTANCE GRANT AVAILABLE FOR DEVIL'S SWAMP SITE - JANUARY 2010]	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	PUB / Publication	004897	004897

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880220	1/4/2010	1	[RESPONDENTS NOTICE OF INTEND TO COMPLY - CERCLA DOCKET NO. 06-04-10 - UNILATERAL ADMINISTRATIVE ORDER (UAO)]	UCTL(Uncontrolled)	R06: Canellas, Bartolome, J (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Lackey, Raeford, C (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED)	CORR / Correspondence	004898	004898
9601008	2/1/2010	2	FACT SHEET - FEBRUARY 2010 - EPA SIGNS UNILATERAL ADMINISTRATIVE ORDER FOR DEVILS SWAMP LAKE SITE	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	PUB / Publication	004899	004900
100006804	4/8/2010	60	SITE PHOTOGRAPHS DURING A REMEDIAL INVESTIGATION/FEASIBILITY STUDY SCOPING MEETING ON 04/08/2010 - DEVILS SWAMP LAKE	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (NONE SPECIFIED)	PHT / Photograph	004901	004960
891554	5/21/2010	3782	FINAL PRELIMINARY SITE CHARACTERIZATION REPORT - DEVIL'S SWAMP LAKE	UCTL(Uncontrolled)	R06: None (BATON ROUGE DISPOSAL LLC)	R06: None (CONESTOGA-ROVERS & ASSOCIATES)	RPT / Report	004961	008742
634221	6/1/2010	26	COMMUNITY INVOLVEMENT PLAN FOR DEVIL'S SWAMP LAKE	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	WP / Work Plan	008743	008768
500021045	6/3/2010	4	FINAL PRELIMINARY SITE CHARACTERIZATION REPORT - REPLACEMENT PAGES	UCTL(Uncontrolled)	R06: Canellas, Bartolome (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Arbuthnot, John (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED)	LTR / Letter	008769	008772
9600845	6/4/2010	57	FINAL ANALYTICAL REPORT FOR SAMPLES COLLECTED 05/05/2010 PROJECT NO. 10SF154 FOR DEVILS SWAMP LAKE	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: Neleigh, David (U.S. ENVIRONMENTAL PROTECTION AGENCY), R06: Mcmillin, Richard (U.S. ENVIRONMENTAL PROTECTION AGENCY)	ADD / Analytical Data Document	008773	008829

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896784	8/1/2010	2	[TECHNICAL ASSISTANCE GRANT AWARDED TO ALSEN/ST. IRMA LEE COMMUNITY ENTERPRISE INCORPORATED FOR THE DEVIL'S SWAMP LAKE SITE]	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	PUB / Publication	008830	008831
620882	11/24/2010	349	FINAL TIER 1 REMEDIAL INVESTIGATION WORK PLAN - DEVIL'S SWAMP LAKE	UCTL(Uncontrolled)	R06: None (BATON ROUGE DISPOSAL LLC)	R06: None (CONESTOGA ROVERS & ASSOCIATES)	WP / Work Plan	008832	009180
9600866	12/1/2010	2	FACT SHEET - DECEMBER 2010 - SITE ACTIVITIES UPDATE - DEVILS SWAMP LAKE SITE	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	PUB / Publication	009181	009182
626622	1/31/2011	11	[PHOTOS TAKEN DURING LDEQ INSPECTION TO TIER 1 RI FIELD ACTIVITIES]	UCTL(Uncontrolled)	R06: Arbuthnot, John (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED), R06: Canellas, Bart (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Horn, Keith (LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY)	EML / Email	009183	009193
637825	6/1/2011	15544	[ANALYTICAL DATA ASSESSMENT AND VALIDATION REPORT - TIER 1 REMEDIAL INVESTIGATION DEVIL'S SWAMP LAKE SITE JUNE 2011 - PART 1 OF 2]	UCTL(Uncontrolled)	R06: None (BATON ROUGE DISPOSAL LLC)	R06: None (CONESTOGA-ROVERS & ASSOCIATES)	RPT / Report	009194	024737
9152671	6/1/2011	14927	[ANALYTICAL DATA ASSESSMENT AND VALIDATION REPORT - TIER 1 REMEDIAL INVESTIGATION DEVIL'S SWAMP LAKE SITE JUNE 2011 - PART 2 OF 2]	UCTL(Uncontrolled)	R06: None (BATON ROUGE DISPOSAL LLC)	R06: None (CONESTOGA-ROVERS & ASSOCIATES)	RPT / Report	024738	039964
643203	9/1/2011	4	FACT SHEET - SEPTEMBER 2011 FOR DEVIL'S SWAMP LAKE SITE	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	PUB / Publication	039965	039968

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650916	11/9/2011	3	[LDEQ MEETING RECORD OF 11/09/2011 - DEVIL'S SWAMP LAKE]	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (NONE SPECIFIED)	MTG / Meeting Document	039969	039971
651750	2/1/2012	130	STEP 3 – PROBLEM FORMULATION FOR THE BASELINE ECOLOGICAL RISK ASSESSMENT BERA - FINAL	UCTL(Uncontrolled)	R06: None (BATON ROUGE DISPOSAL LLC)	R06: None (CONESTOGA-ROVERS & ASSOCIATES)	RPT / Report	039972	040101
500012982	2/1/2012	30	PROTOCOL FOR ISSUING PUBLIC HEALTH ADVISORIES FOR CHEMICAL CONTAMINANTS IN RECREATIONALLY CAUGHT FISH AND SHELLFISH	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (LOUISIANA DEPARTMENT OF HEALTH AND HOSPITALS), R06: None (LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY), R06: None (LOUISIANA DEPARTMENT OF AGRICULTURE AND FORESTRY)	RPT / Report	040102	040131
651751	2/10/2012	2107	FINAL - TIER 1 REMEDIAL INVESTIGATION REPORT	UCTL(Uncontrolled)	R06: None (BATON ROUGE DISPOSAL LLC)	R06: None (CONESTOGA-ROVERS & ASSOCIATES)	RPT / Report	040132	042238
100015456	3/1/2012	8	TISSUE SCREENING LEVEL GUIDELINES FOR ISSUANCE OF PUBLIC HEALTH ADVISORIES FOR SELECTED CONTAMINANTS AND SUPPORTING DOCUMENTATION - GUIDELINES USED BY THE STATE OF LOUISIANA	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (LOUISIANA DEPARTMENT OF HEALTH AND HOSPITALS), R06: None (LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY)	PUB / Publication	042239	042246
9456368	6/1/2012	339	[REDACTED] FINAL TIER 2 REMEDIAL INVESTIGATION WORK PLAN - DEVILS SWAMP LAKE	UCTL(Uncontrolled)	R06: None (BATON ROUGE DISPOSAL LLC)	R06: None (CONESTOGA-ROVERS & ASSOCIATES)	WP / Work Plan	042247	042585
9600877	6/1/2012	2	FACT SHEET - JUNE 2012 - SITE ACTIVITIES UPDATE - DEVILS SWAMP LAKE SITE	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	PUB / Publication	042586	042587

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663331	7/1/2012	51	TIER 2 RI - FIELD ACTIVITIES OVERSIGHT REPORT (9–19 JULY 2012)	UCTL(Uncontrolled)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: None (EA ENGINEERING SCIENCE AND TECHNOLOGY INCORPORATED)	RPT / Report	042588	042638
662896	7/13/2012	2	LDEQ FIELD INTERVIEW FORM - INSPECTION 07/09/2012	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: Horn, Keith (LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY)	FRM / Form	042639	042640
662897	7/17/2012	1	LDEQ FIELD INTERVIEW FORM - INSPECTION 07/16/2012	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: Horn, Keith (LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY)	FRM / Form	042641	042641
100015455	7/25/2012	51	FIELD ACTIVITIES OVERSIGHT REPORT 07/09/2012-07/19/2012	UCTL(Uncontrolled)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: None (EA ENGINEERING SCIENCE AND TECHNOLOGY INCORPORATED)	RPT / Report	042642	042692
668603	8/21/2012	57	FINAL ANALYTICAL REPORT - PROJECT NO. 12SF141 - WORK ORDERS 1207006 AND 1207007 - LEVEE SOIL SAMPLES AND TIER 2 SPLIT SAMPLES	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: Warren, Cristy (U.S. ENVIRONMENTAL PROTECTION AGENCY), R06: Neleigh, David (U.S. ENVIRONMENTAL PROTECTION AGENCY'), R06: Mcmillin, Richard (U.S. ENVIRONMENTAL PROTECTION AGENCY)	RPT / Report	042693	042749
710569	12/1/2012	700	CONESTOGA-ROVERS AND ASSOCIATES TIER 2 RI - ANALYTICAL DATA ASSESSMENT AND VALIDATION REPORT - CERCLA DOCKET NO. 06-04-10 - DECEMBER 2012 - DEVILS SWAMP LAKE	UCTL(Uncontrolled)	R06: None (BATON ROUGE DISPOSAL LLC)	R06: None (CONESTOGA-ROVERS & ASSOCIATES)	RPT / Report	042750	043449
9600844	1/29/2013	1	[DISCUSSION REGARDING THE DEVIL'S SWAMP LAKE SAMPLING RESULTS IN THE LEVEE SOIL]	UCTL(Uncontrolled)	R06: Arbuthnot, John (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED), R06: Horn, Keith (LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY), R06: Little, Bill (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Canellas, Bart (U.S. ENVIRONMENTAL PROTECTION AGENCY)	EML / Email	043450	043450

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687798	7/1/2013	50	[FIELD ACTIVITIES OVERSIGHT REPORT - 05/09/2013, 05/13/2013, AND 05/22/2013 - DEVIL'S SWAMP LAKE]	UCTL(Uncontrolled)	R06: None, None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: None (EA ENGINEERING SCIENCE AND TECHNOLOGY INCORPORATED)	RPT / Report	043451	043500
692946	10/1/2013	426	ANALYTICAL DATA ASSESSMENT AND VALIDATION REPORT - TIER 2 REMEDIAL INVESTIGATION - CRAWFISH SAMPLING - DEVILS SWAMP LAKE	UCTL(Uncontrolled)	R06: None (BATON ROUGE DISPOSAL LLC)	R06: None (CONESTOGA-ROVERS & ASSOCIATES)	RPT / Report	043501	043926
703251	11/7/2013	3	[CRAWFISH SAMPLE LOCATIONS - WITH AERIAL MAP - DEVILS SWAMP LAKE SITE]	UCTL(Uncontrolled)	R06: Canellas, Bartolome, J (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Arbuthnot, John, C (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED)	PHT / Photograph	043927	043929
710565	1/15/2014	2	[EPA CORRESPONDENCE - CONCERNS REGARDING CRAWFISH SAMPLE LOCATIONS - DEVILS SWAMP LAKE]	UCTL(Uncontrolled)	R06: Arbuthnot, John, C (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED)	R06: Canellas, Bartolome, J (U.S. ENVIRONMENTAL PROTECTION AGENCY)	CORR / Correspondence	043930	043931
500015032	3/28/2014	17	TIER 2 REMEDIAL INVESTIGATION - CRAWFISH SAMPLE LOCATIONS AND BIOACCUMULATION MODELING - (DEVIL SWAMP 2013 CRAWFISH SAMPLES)	UCTL(Uncontrolled)	R06: Canellas, Bartolome, J (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Arbuthnot, John (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED)	CORR / Correspondence	043932	043948
9128598	4/1/2014	5	TECHNICAL MEMORANDUM - REVIEW OF CRAWFISH SAMPLE LOCATIONS AND BIOACCUMULATION MODELING LETTER - DEVILS SWAMP LAKE SITE	UCTL(Uncontrolled)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: None (EA ENGINEERING SCIENCE AND TECHNOLOGY INCORPORATED)	MEMO / Memorandum	043949	043953
710566	4/28/2014	2	[EPA CORRESPONDENCE REGARDING CRAWFISH SAMPLING LOCATIONS AND BIOACCUMULATION MODELING - DEVILS SWAMP LAKE]	UCTL(Uncontrolled)	R06: Arbuthnot, John, C (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED)	R06: Canellas, Bartolome, J (U.S. ENVIRONMENTAL PROTECTION AGENCY)	CORR / Correspondence	043954	043955

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707958	5/9/2014	6	[TIER TWO REMEDIAL INVESTIGATION WORK PLAN ADDENDUM FOR ADDITIONAL CRAWFISH SAMPLE COLLECTION - DEVILS SWAMP LAKE - CERCLA DOCKET NO. 06-04-10]	UCTL(Uncontrolled)	R06: Canellas, Bartolome, J (U.S. ENVIRONMENTAL PROTECTION AGENCY), R06: Turner, Philip, K (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Arbuthnot, John, C (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED), R06: Munce, Katie, M (CONESTOGA ROVERS & ASSOCIATES)	WP / Work Plan	043956	043961
710567	5/9/2014	6	[TIER 2 RI WORK PLAN ADDENDUM FOR 2014 ADDITIONAL CRAWFISH SAMPLE COLLECTION - DEVILS SWAMP LAKE]	UCTL(Uncontrolled)	R06: Canellas, Bartolome, J (U.S. ENVIRONMENTAL PROTECTION AGENCY), R06: Turner, Philip, K (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Arbuthnot, John, C (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED), R06: Munce, Katie, M (CONESTOGA ROVERS & ASSOCIATES)	WP / Work Plan	043962	043967
707976	6/1/2014	32	[LDEQ SITE INSPECTION PHOTOGRAPHS TAKEN DURING THE 2014 CRAWFISH AND SEDIMENT SAMPLING EVENT - MAY AND JUNE 2014 - DEVILS SWAMP LAKE]	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: Horn, Keith (LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY)	PHT / Photograph	043968	043999
707966	6/4/2014	2	[TIER TWO REMEDIAL INVESTIGATION CRAWFISH SAMPLING SPREADSHEET AND MAP OF CRAWFISH SAMPLING AREAS - MAY/JUNE 2014 - PARTIAL RESULTS FOR THE FIRST EIGHT WEEKS AND SAMPLING AREAS - DEVILS SWAMP LAKE]	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (CONESTOGA-ROVERS & ASSOCIATES)	ADD / Analytical Data Document	044000	044001
710568	8/1/2014	155	[CONESTOGA-ROVERS AND ASSOCIATES TIER 2 RI - ANALYTICAL DATA ASSESSMENT AND VALIDATION REPORT FOR 2014 CRAWFISH AND SEDIMENT SAMPLING - DEVILS SWAMP LAKE]	UCTL(Uncontrolled)	R06: None (BATON ROUGE DISPOSAL LLC)	R06: None (CONESTOGA-ROVERS & ASSOCIATES)	RPT / Report	044002	044156
709835	8/15/2014	182	TIER 2 REMEDIAL INVESTIGATION - CRAWFISH SAMPLE LOCATIONS AND BIOACCUMULATION MODELING - (DEVIL'S SWAMP LAKE 2014 CRAWFISH SAMPLES)	UCTL(Uncontrolled)	R06: Canellas, Bartolome, J (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Arbuthnot, John, C (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED), R06: Campbell, Pressley, L (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED)	ADD / Analytical Data Document	044157	044338
710371	9/4/2014	2	EPA APPROVAL - 2014 CRAWFISH AND SEDIMENT SAMPLE SUMMARY REPORT DATED 08/14/2014 AND ANALYTICAL DATA ASSESSMENT AND VALIDATION REPORT DATED 08/27/2014 FOR THE TIER 2 REMEDIAL INVESTIGATION 2014 CRAWFISH AND SEDIMENT SAMPLING EVENT	UCTL(Uncontrolled)	R06: Arbuthnot, John, C (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED)	R06: Canellas, Bartolome, J (U.S. ENVIRONMENTAL PROTECTION AGENCY)	CORR / Correspondence	044339	044340

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9600861	5/1/2015	4	[FINAL FACT SHEET - MAY 2015 - SITE ACTIVITIES UPDATE - DEVILS SWAMP LAKE SITE]	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	PUB / Publication	044341	044344
500012429	8/12/2015	2	ADVISORY FOR DEVIL'S SWAMP/BAYOU BATON ROUGE - AUGUST 2015	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: Kliebert, Kathy, H (LOUISIANA DEPARTMENT OF HEALTH & HOSPITALS), R06: Lane, J, T (LOUISIANA DEPARTMENT OF HEALTH & HOSPITALS), R06: Guidry, Jimmy (LOUISIANA DEPARTMENT OF HEALTH & HOSPITALS)	PUB / Publication	044345	044346
500018077	10/30/2015	2506	FINAL TIER 2 REMEDIAL INVESTIGATION (RI) REPORT - DEVIL'S SWAMP LAKE	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (GHD)	RPT / Report	044357	046862
500021246	2/3/2016	6	LETTER FROM USACE REQUESTING DEVIL'S SWAMP LAKE DATA AND REPORTS USED TO CHARACTERIZE SITE	UCTL(Uncontrolled)	R06: Creef, Edward (U.S. ARMY CORPS OF ENGINEERS)	R06: Atkins, Blake (U.S. ENVIRONMENTAL PROTECTION AGENCY)	LTR / Letter	046962	046967
500022413	6/6/2016	64	FINAL FEASIBILITY STUDY WORK PLAN - DEVIL'S SWAMP LAKE WITH COVER LETTER	UCTL(Uncontrolled)	R06: Canellas, Bartolome, J (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Arbuthnot, John, C (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED)	WP / Work Plan	046968	047031
500024651	12/2/2016	135	FEASIBILITY STUDY TECHNICAL MEMORANDUM - DEVIL'S SWAMP LAKE	UCTL(Uncontrolled)	R06: None (LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY), R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: None (RAMBOLL ENVIRON INCORPORATED)	MEMO / Memorandum	047032	047166
100003831	1/9/2017	23	U.S. EPA REMEDIATING CONTAMINATED SEDIMENT SITES - CLARIFICATION OF SEVERAL KEY RI/FS AND RISK MANAGEMENT RECOMMENDATIONS, AND UPDATED CONTAMINATED SEDIMENT TECHNICAL ADVISORY GROUP OPERATING PROCEDURES - OLEM DIRECTIVE 9200.1-130	UCTL(Uncontrolled)	R06: None (HERCULES INCORPORATED AND U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Stanislaus, Mathy (U.S. ENVIRONMENTAL PROTECTION AGENCY)	LAWS / Laws/Regulations/Guidance	047167	047189

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500024697	1/18/2017	2	EPA/LDEQ APPROVAL OF FINAL FEASIBILITY STUDY TECHNICAL MEMORANDUM DATED 12/02/2016 - DEVIL'S SWAMP LAKE	UCTL(Uncontrolled)	R06: Arbuthnot, John (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED)	R06: Canellas, Bartolome (U.S. ENVIRONMENTAL PROTECTION AGENCY)	LTR / Letter	047190	047191
500025918	5/25/2017	4	BARGE CANAL WORK PLAN ADDENDUM - DEVILS SWAMP LAKE - TRACKING NO. 810966906747	UCTL(Uncontrolled)	R06: Canellas, Bartolome (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Arbuthnot, John (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED)	WP / Work Plan	047192	047195
500025919	5/30/2017	2	LDEQ CONCURRENCE TO THE BARGE CANAL WORK PLAN ADDENDUM - DEVILS SWAMP LAKE	UCTL(Uncontrolled)	R06: Canellas, Bartolome (U.S. ENVIRONMENTAL PROTECTION AGENCY), R06: Sutherlin, June (LOUISIANA STATE OF)	R06: Horn, Keith (LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY)	EML / Email	047196	047197
500025920	5/31/2017	2	EPA AND LDEQ APPROVAL OF BARGE CANAL SAMPLING WORK PLAN AND WORK PLAN ADDENDUM - DEVIL'S SWAMP LAKE	UCTL(Uncontrolled)	R06: Arbuthnot, John (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED)	R06: Canellas, Bartolome (U.S. ENVIRONMENTAL PROTECTION AGENCY)	LTR / Letter	047198	047199
100002919	8/1/2017	4	LDEQ FIELD INTERVIEW FORM - BARGE CANAL	UCTL(Uncontrolled)	R06: Canellas, Bart (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Horn, Keith (LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY)	FRM / Form	047200	047203
100003262	8/7/2017	2	LDEQ FIELD OVERSIGHT FORM - BATON ROUGE BART CANAL - LDEQ INSPECTION OVERSIGHT SAMPLING ACTIVITIES	UCTL(Uncontrolled)	R06: Canellas, Bartolome (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Horn, Keith (LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY)	FRM / Form	047204	047205
100015480	11/2/2017	41	BARGE CANAL - ANALYTICAL RESULTS AND FULL VALIDATION REPORT - BARGE CANAL SEDIMENT AND FISH TISSUE INVESTIGATION - 2017	UCTL(Uncontrolled)	R06: Canellas, Bartolome (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Arbuthnot, John (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED)	RPT / Report	047206	047246

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100004645	11/16/2017	123	BARGE CANAL PRELIMINARY CATFISH TISSUE SAMPLE RESULTS	UCTL(Uncontrolled)	R06: Canellas, Bartolome (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Arbuthnot, John, C (CLEAN HARBOR ENVIRONMENTAL SERVICES INCORPORATED)	RPT / Report	047247	047369
100004636	11/20/2017	6	TECHNICAL MEMORANDUM - REVIEW OF BARGE CANAL PRELIMINARY CATFISH TISSUE SAMPLE RESULTS - DEVILS SWAMP LAKE	UCTL(Uncontrolled)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: None (EA ENGINEERING SCIENCE AND TECHNOLOGY INCORPORATED PBC)	MEMO / Memorandum	047370	047375
100006528	12/15/2017	2	LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY - FIELD INTERVIEW FORM - ROUTINE MONITORING INSPECTION - DEVILS SWAMP LAKE	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: Horn, Keith (LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY)	FRM / Form	047376	047377
100012960	12/15/2017	19	ANALYTICAL RESULTS AND FULL VALIDATION - ADDENDUM FOR RESAMPLING MEMORANDUM - BARGE CANAL SEDIMENT AND FISH TISSUE INVESTIGATION -2017	UCTL(Uncontrolled)	R06: Canellas, Bartolome (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Arbuthnot, John (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED)	ADD / Analytical Data Document	047378	047396
100006549	1/26/2018	351	BARGE CANAL SEDIMENT AND FISH TISSUE INVESTIGATION - 2017	UCTL(Uncontrolled)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: None (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED), R06: None (BATON ROUGE DISPOSAL LLC), R06: None (GHD SERVICES INCORPORATED)	RPT / Report	047397	047747
9491276	2/1/2018	3	EA TECHNICAL MEMORANDUM - REVIEW OF BARGE CANAL SEDIMENT AND FISH TISSUE INVESTIGATION - 2017 - RI/FS OVERSIGHT	UCTL(Uncontrolled)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: None (EA ENGINEERING SCIENCE AND TECHNOLOGY INCORPORATED PBC)	MEMO / Memorandum	047748	047750
100006823	2/27/2018	2	EPA / LDEQ REVIEW OF BARGE CANAL SEDIMENT AND FISH TISSUE INVESTIGATION 2017	UCTL(Uncontrolled)	R06: Arbuthnot, John, C (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED)	R06: Canellas, Bartolome, J (U.S. ENVIRONMENTAL PROTECTION AGENCY)	LTR / Letter	047751	047752

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100015479	3/21/2018	86	BARGE CANAL SEDIMENT AND FISH TISSUE INVESTIGATION - ADDENDUM - (ADDITIONAL EVALUATION OF ESTIMATED DETECTION LIMITS (EDL) RATHER THAN REPORTING LIMITS (RL) FOR NON-DETECT CONCENTRATIONS)	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED)	RPT / Report	047753	047838
100009532	4/3/2018	4	Technical Memorandum - Review of Barge Canal Sediment and Fish Tissue Investigation Addendum - Tech Memo by EPA oversight contractor EA.	UCTL(Uncontrolled)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: None (EA ENGINEERING SCIENCE AND TECHNOLOGY INCORPORATED PBC)	MEMO / Memorandum	047839	047842
100010893	6/1/2018	158	FINAL FEASIBILITY STUDY REPORT FOR DEVIL'S SWAMP LAKE SITE IN EAST BATON ROUGE PARISH, LOUISIANA	UCTL(Uncontrolled)	R06: None (LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY), R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: None (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED), R06: None (RAMBOLL US CORPORATION)	RPT / Report	047843	048000
100010116	6/11/2018	2	BARGE CANAL SEDIMENT AND FISH TISSUE INVESTIGATION ADDENDUM, 03/21/2018 - EVALUATION OF ESTIMATED DETECTION LIMITS (EDL) ADDITIONAL LINES OF EVIDENCE, AND REQUEST FOR RECONSIDERATION FOR ADDITIONAL CATFISH SAMPLE COLLECTION - AGENCIES RESPONSE	UCTL(Uncontrolled)	R06: Arbuthnot, John (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED)	R06: Canellas, Bartolome, J (U.S. ENVIRONMENTAL PROTECTION AGENCY)	LTR / Letter	048001	048002
100012743	8/28/2018	7	PHOTOGRAPHS 08/28/2018 BARGE CANAL FISH TISSUE RESAMPLING EVENT	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: Horn, Keith (LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY)	PHT / Photograph	048003	048009
100012961	11/16/2018	36	ANALYTICAL RESULTS AND FULL VALIDATION MEMORANDUM - BARGE CANAL ADDITIONAL SAMPLE COLLECTION REPORT - 2018 - (CATFISH RESAMPLING EVENT AUGUST 2018)	UCTL(Uncontrolled)	R06: Canellas, Bartolome (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Arbuthnot, John (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED)	ADD / Analytical Data Document	048010	048045
100013274	12/19/2018	292	BARGE CANAL ADDITIONAL FISH TISSUE SAMPLE COLLECTION REPORT - AUGUST 2018 CATFISH TISSUE SAMPLING FIELDWORK	UCTL(Uncontrolled)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: None (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED), R06: None (BATON ROUGE DISPOSAL LLC), R06: None (GHD SERVICES INCORPORATED)	RPT / Report	048046	048337

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100013519	2/1/2019	3	TECHNICAL MEMORANDUM - REVIEW OF BARGE CANAL ADDITIONAL FISH TISSUE SAMPLE COLLECTION REPORT - DEVILS SWAMP LAKE SUPERFUND SITE	UCTL(Uncontrolled)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: None (EA ENGINEERING SCIENCE AND TECHNOLOGY INCORPORATED PBC)	RPT / Report	048338	048340
100013655	2/19/2019	2	BARGE CANAL ADDITIONAL FISH TISSUE SAMPLE COLLECTION REPORT - CLARIFICATION AND CORRECTION - AUGUST 2018 CATFISH TISSUE SAMPLING FIELDWORK	UCTL(Uncontrolled)	R06: Canellas, Bartolome (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Arbuthnot, John (CLEAN HARBORS ENVIRONMENTAL SERVICES INCORPORATED)	LTR / Letter	048341	048342
100013656	2/19/2019	2	EMAIL LDEQ - REVIEW OF BARGE CANAL ADDITIONAL FISH TISSUE SAMPLE COLLECTION REPORT - DECEMBER 2018 - COMMENTS BY LDEQ	UCTL(Uncontrolled)	R06: Turner, Philip, K (U.S. ENVIRONMENTAL PROTECTION AGENCY), R06: Canellas, Bart (U.S. ENVIRONMENTAL PROTECTION AGENCY), R06: Rauscher, Jon (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Horn, Keith (LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY)	EML / Email	048343	048344
100013657	2/19/2019	1	EMAIL LDHH - REVIEW OF BARGE CANAL ADDITIONAL FISH TISSUE SAMPLE COLLECTION REPORT - DECEMBER 2018 - COMMENTS BY LDHH	UCTL(Uncontrolled)	R06: Horn, Keith (LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY), R06: Turner, Philip, K (U.S. ENVIRONMENTAL PROTECTION AGENCY), R06: Canellas, Bart (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Soileau, Shannon (LOUISIANA DEPARTMENT OF HEALTH)	EML / Email	048345	048345
100013658	2/20/2019	1	EMAIL EPA RISK ASSESSORS - REVIEW OF BARGE CANAL ADDITIONAL FISH TISSUE SAMPLE COLLECTION REPORT - DECEMBER 2018 - RESPONSE TO COMMENTS BY LDEQ	UCTL(Uncontrolled)	R06: Canellas, Bart (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Rauscher, Jon (U.S. ENVIRONMENTAL PROTECTION AGENCY)	EML / Email	048346	048346
100013661	2/20/2019	8	ANALYSIS OF THE BARGE CANAL OUTLIER RESULTS, PROUCL 5.1, STATISTICS, UCLS, RESULTING HQS VALUES FOR THE BARGE CANAL CATFISH RESAMPLING REPORT OF DECEMBER 2018	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (NONE SPECIFIED)	ADD / Analytical Data Document	048347	048354
100013659	2/25/2019	2	EMAIL EPA - REVIEW OF BARGE CANAL ADDITIONAL FISH TISSUE SAMPLE COLLECTION REPORT - DECEMBER 2018 - COMMENTS TO LDEQ	UCTL(Uncontrolled)	R06: Horn, Keith (LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY), R06: Turner, Philip, K (U.S. ENVIRONMENTAL PROTECTION AGENCY), R06: Soileau, Shannon (LOUISIANA DEPARTMENT OF HEALTH)	R06: Canellas, Bart (U.S. ENVIRONMENTAL PROTECTION AGENCY)	EML / Email	048355	048356

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100017138	7/29/2019	108	PROPOSED PLAN FOR THE DEVIL'S SWAMP LAKE SUPERFUND SITE	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: Canellas, Bart (U.S. ENVIRONMENTAL PROTECTION AGENCY)	RPT / Report	048357	048464
100017137	8/28/2019	1	COORDINATION WITH LDEQ FOR DRAFT PUBLIC NOTICE AND FACT SHEET - DEVIL'S SWAMP LAKE PROPOSED PLAN	UCTL(Uncontrolled)	R06: Canellas, Bart (U.S. ENVIRONMENTAL PROTECTION AGENCY)	R06: Horn, Keith (LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY)	EML / Email	048465	048465
100017433	9/1/2019	6	FACT SHEET - U.S. EPA REGION 6 ANNOUNCES PROPOSED PLAN - INVITATION TO COMMENT ON THE PROPOSED PLAN	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: Canellas, Bartolome, J (U.S. ENVIRONMENTAL PROTECTION AGENCY)	MTG / Meeting Document	048466	048471
100017432	9/1/2019	2	PUBLIC NOTICE - U.S. EPA REGION 6 ANNOUNCES THE PORPOSED PLAN AND PUBLIC COMMENT PERIOD FOR THE DEVIL'S SWAMP LAKE SUPERFUND SITE	UCTL(Uncontrolled)	R06: None (NONE SPECIFIED)	R06: None (U.S. ENVIRONMENTAL PROTECTION AGENCY)	PUB / Publication	048472	048473

APPENDICES

Appendix C – Figures

APPENDIX C
LIST OF FIGURES

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Miles

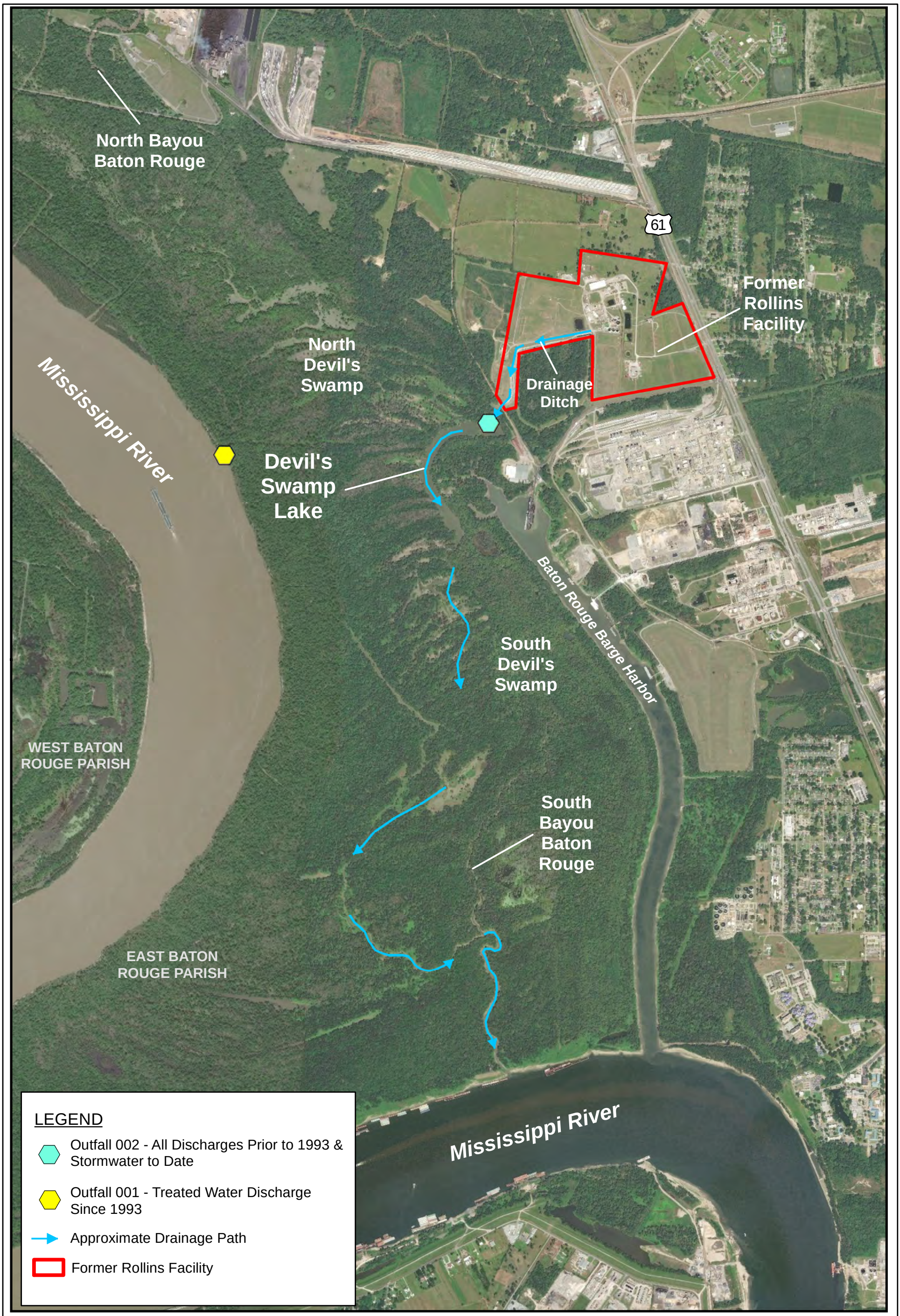
EPA Region 6
Superfund
GIS Support
10/7/2019

20191007ML03

ROD Figure 1 - Vicinity Map

Devil's Swamp Lake Superfund Site

Sources: Esri/World Topo Map;
Ramboll Environ 3/24/2017;
EPA Region 6 Superfund 10/4/2019.



Sources: Bing Maps, EPA Region 6 Superfund.

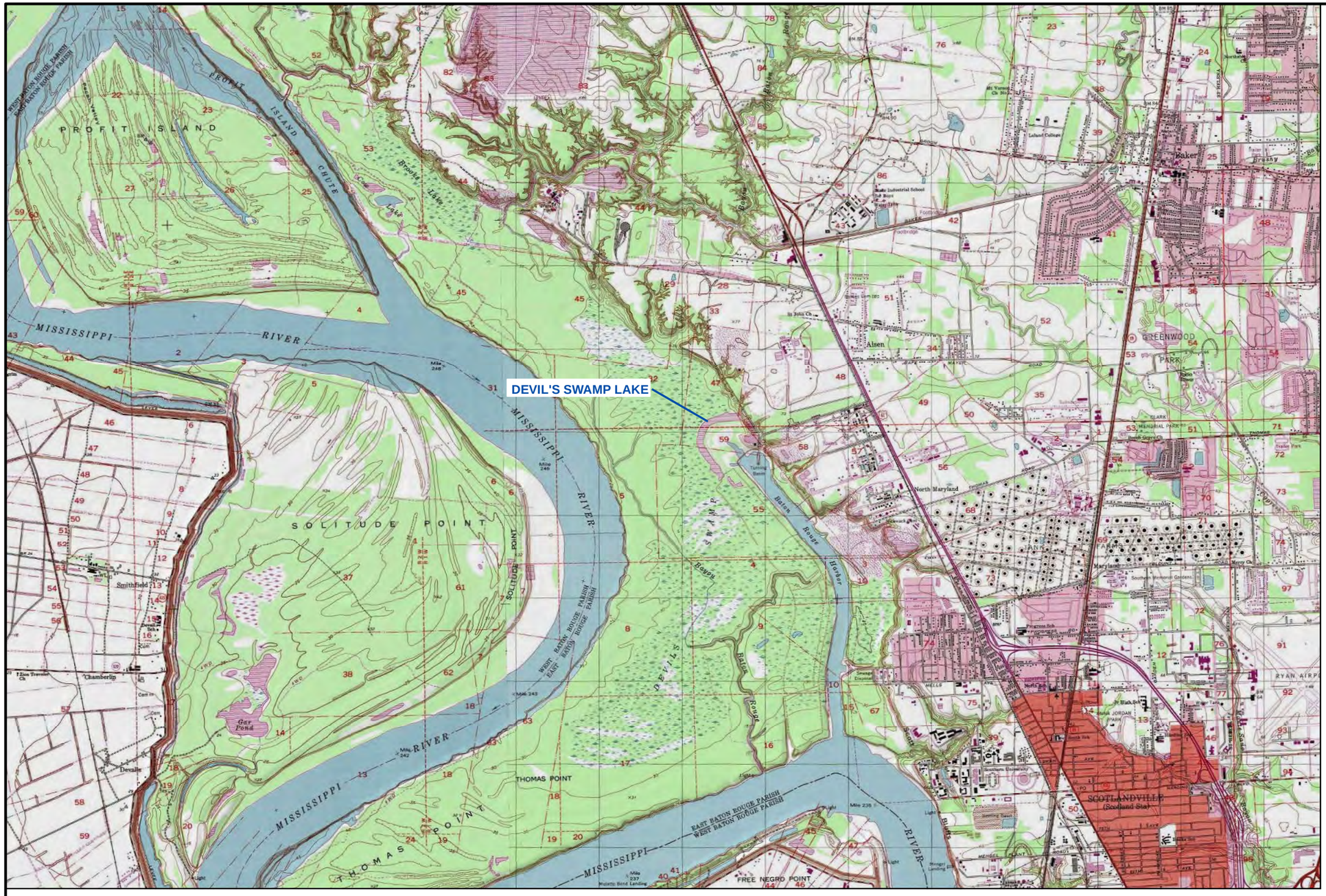
EPA Region 6 Superfund (and CRA) 07/23/2019

0 0.1 0.2 0.3 0.4 0.5 Miles

20190723ML01

ROD Figure 2 - Site Plan (Showing location of Rollins)

DEVIL'S SWAMP LAKE SUPERFUND SITE
EAST BATON ROUGE PARISH, LOUISIANA



RE: USGS 7.5 Minute Topographic Map.

Modified from Figure 1: Conestoga-Rovers & Associates. 2012. Final Tier 1 Remedial Investigation; Devil's Swamp Lake Site; East Baton Rouge Parish, Louisiana; Agency Interest (AI) No. 86800; EPA ID LAD981155872, SSID #06N1; CERCLA Docket No. 06 04 10. Prepared For: Baton Rouge Disposal, LLC; Baton Rouge, Louisiana. Reference No. 055364-00 (13). February.

ROD Figure 3
Conestoga-Rovers & Associates Vicinity Map
DEVIL'S SWAMP LAKE SITE
EAST BATON ROUGE PARISH, LOUISIANA
Baton Rouge Disposal, LLC, Baton Rouge, Louisiana

55364-00(013)PR-BR0001 2/9/2012

048597

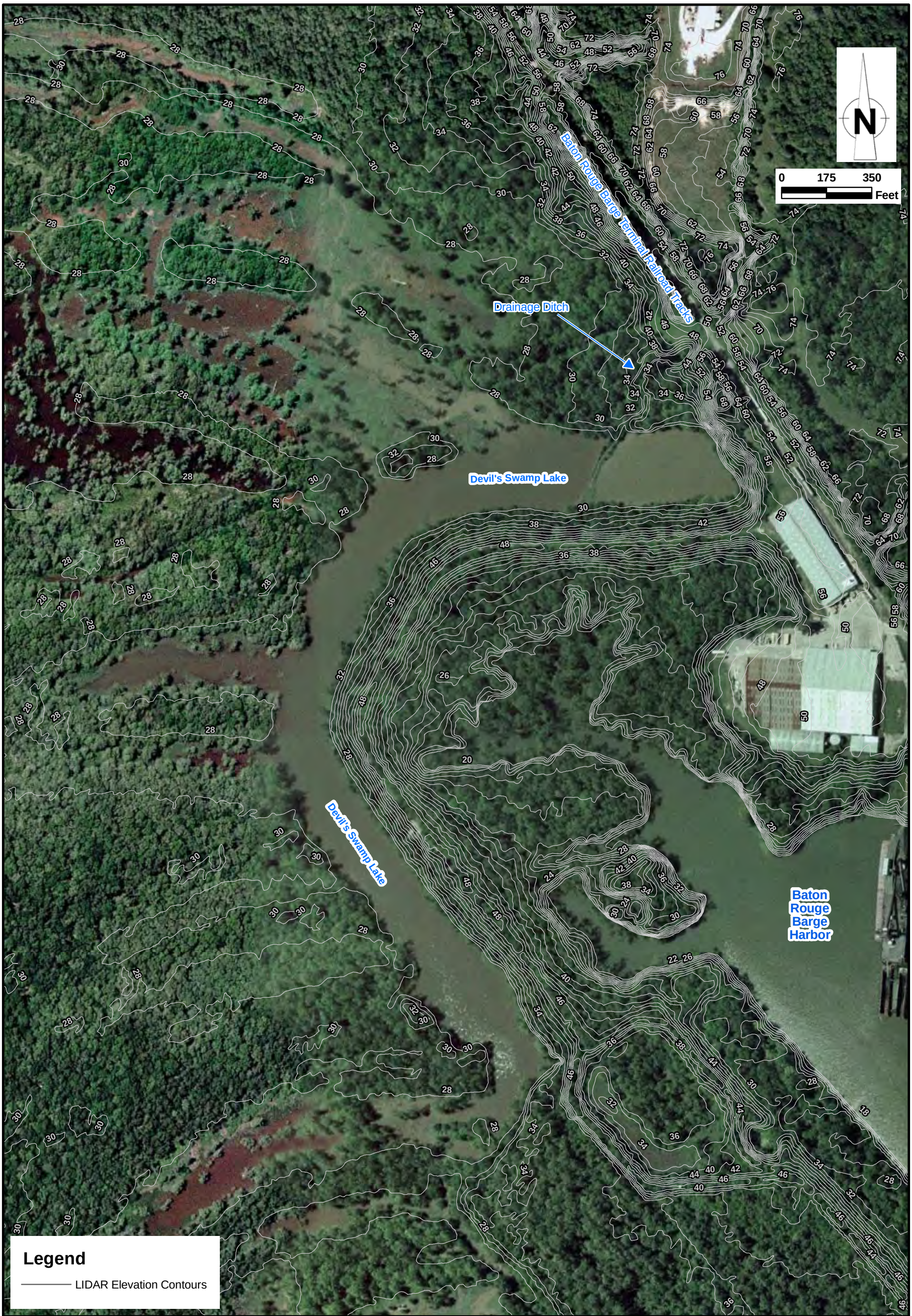
RE: 2010 Aerial by Microsoft Corp and its data suppliers.

Modified from Figure 2: Conestoga-Rovers & Associates. 2012. Final Tier 1 Remedial Investigation; Devil's Swamp Lake Site; East Baton Rouge Parish, Louisiana; Agency Interest (AI) No. 86800; EPA ID LAD981155872, SSID #06N1; CERCLA Docket No. 06 04 10. Prepared For: Baton Rouge Disposal, LLC; Baton Rouge, Louisiana. Reference No. 055364-00 (13). February.

ROD Figure 4
Conestoga-Rovers & Associates Site Plan
DEVIL'S SWAMP LAKE SITE
EAST BATON ROUGE PARISH, LOUISIANA
Baton Rouge Disposal, LLC, Baton Rouge, Louisiana

055364-00(013)PR-BR002 2/9/2012

048598

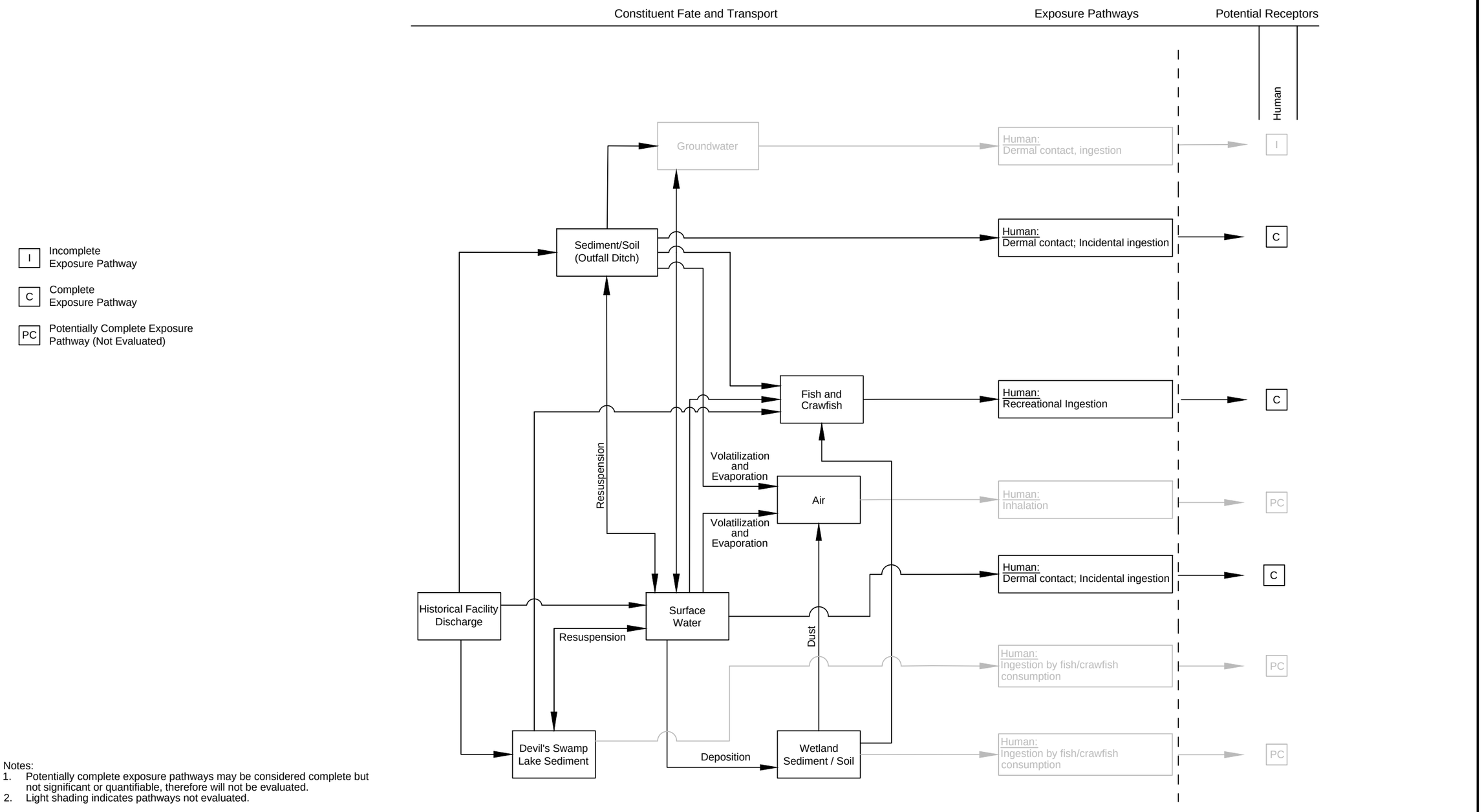


RE: Aerial Photograph by AEX dated May 15, 2006
LIDAR (Louisiana) Light Detection And Ranging data U. S. Army Corps of Engineers, Saint Louis District, 2001, Elevation Contours, Horizontal Datum Name: North American Datum of 1983.

Modified from Figure 5: Conestoga-Rovers & Associates. 2010. Final Preliminary Site Characterization Report; Devil's Swamp Lake Site; East Baton Rouge Parish, Louisiana; Agency Interest (AI) No. 86800; EPA ID LAD981155872, SSID #06N1; CERCLA Docket No. 06 04 10. Prepared For: Baton Rouge Disposal, LLC; Baton Rouge, Louisiana. Reference No. 055364-00 (5). May.

ROD Figure 5
Topographic Map
DEVIL'S SWAMP LAKE SITE
EAST BATON ROUGE PARISH, LOUISIANA
Baton Rouge Disposal, LLC, Baton Rouge, Louisiana

55364-00(004)PR-BR004 MAR 18/2010



Notes:
1. Potentially complete exposure pathways may be considered complete but not significant or quantifiable, therefore will not be evaluated.
2. Light shading indicates pathways not evaluated.

ROD Figure 6 - Human Health Conceptual Site Model

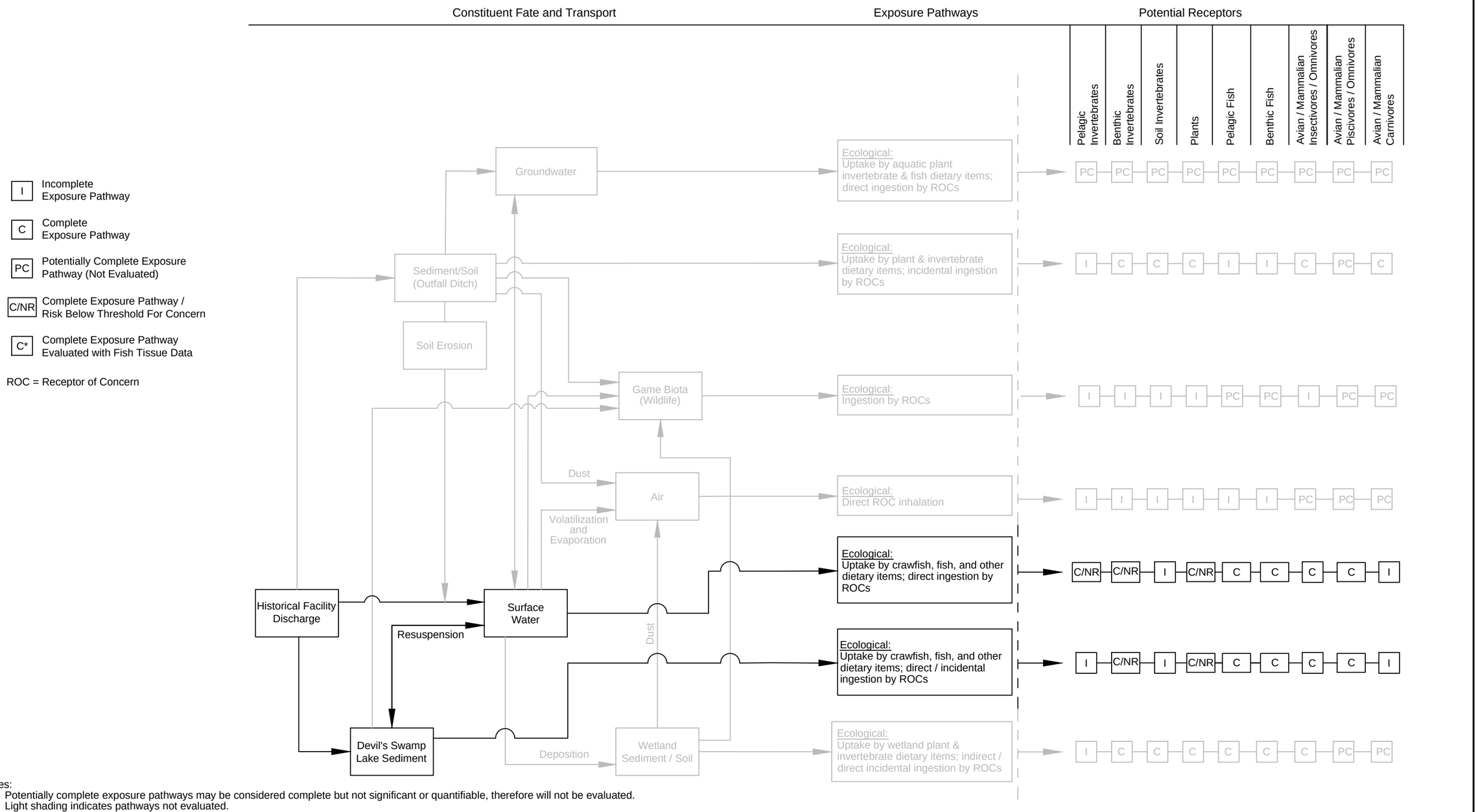
Modified from Figure 7-2: GHD. 2015. Tier 2 Remedial Investigation Report; Devil's Swamp Lake Site; East Baton Rouge Parish, Louisiana; Agency Interest (AI) No. 86800; USEPA ID LAD981155872, SSID #06N1; CERCLA Docket No. 06 04 10. Prepared For: Baton Rouge Disposal, LLC; 055364 | Report No 21. 30 October.

BATON ROUGE DISPOSAL, LLC, BATON ROUGE, LOUISIANA
EAST BATON ROUGE PARISH, LOUISIANA
DEVIL'S SWAMP LAKE SITE

055364-00

Sep 9, 2015

CAD File: P:\6-chars\05----\0553--\055364\055364-Reports\055364-00(021)\055364-00(021)GN\055364-00(021)GN-BR002.dwg



Notes:
1. Potentially complete exposure pathways may be considered complete but not significant or quantifiable, therefore will not be evaluated.
2. Light shading indicates pathways not evaluated.

ROD Figure 7 - Ecological Conceptual Site Model

Modified from Figure 7-1: GHD. 2015. Tier 2 Remedial Investigation Report; Devil's Swamp Lake Site; East Baton Rouge Parish, Louisiana; Agency Interest (AI) No. 86800; USEPA ID LAD981155872, SSID #06N1; CERCLA Docket No. 06 04 10. Prepared For: Baton Rouge Disposal, LLC; 055364 | Report No 21. 30 October.

BATON ROUGE DISPOSAL, LLC, BATON ROUGE, LOUISIANA
EAST BATON ROUGE PARISH, LOUISIANA
DEVIL'S SWAMP LAKE SITE

055364-00
Sep 9, 2015

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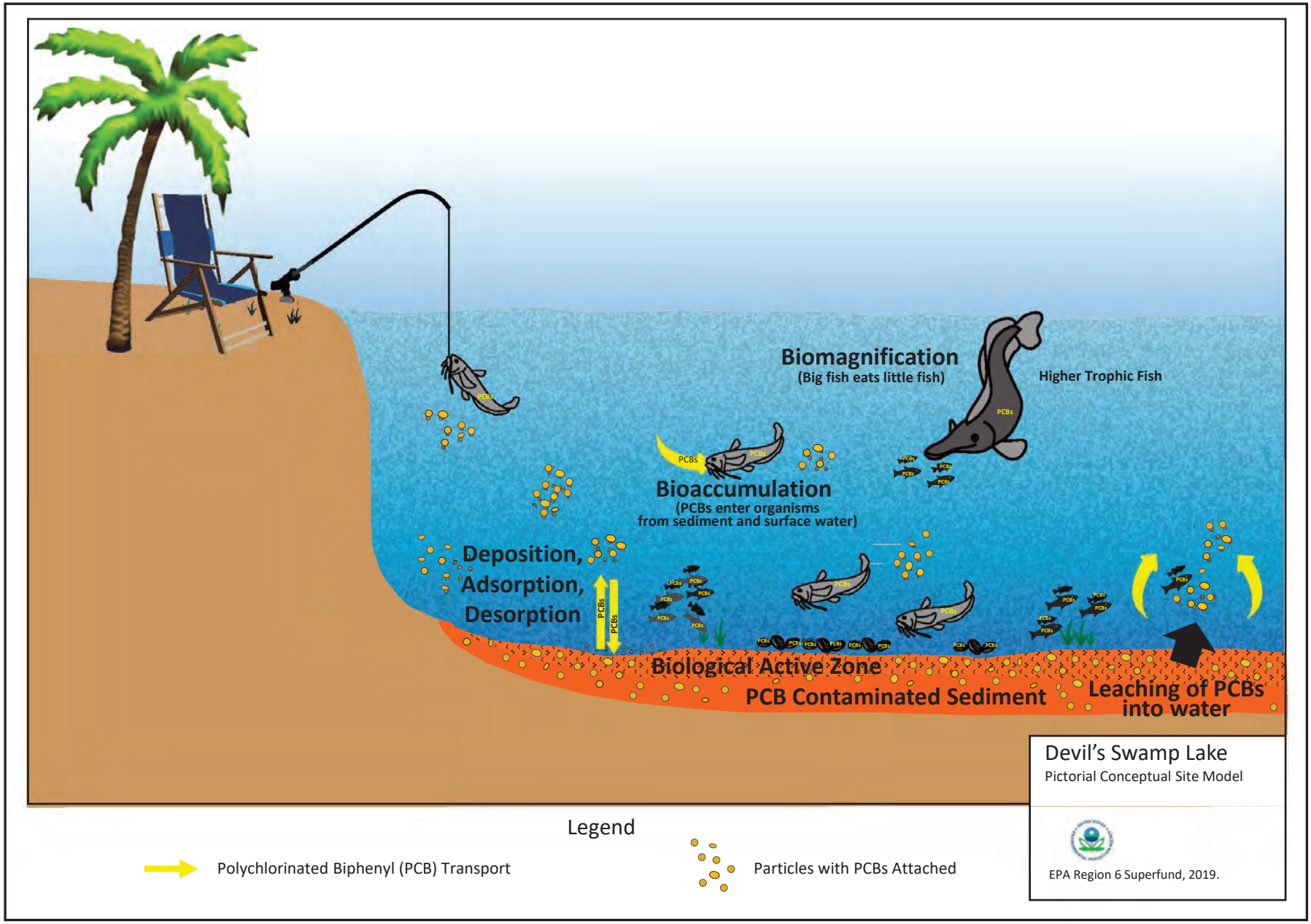
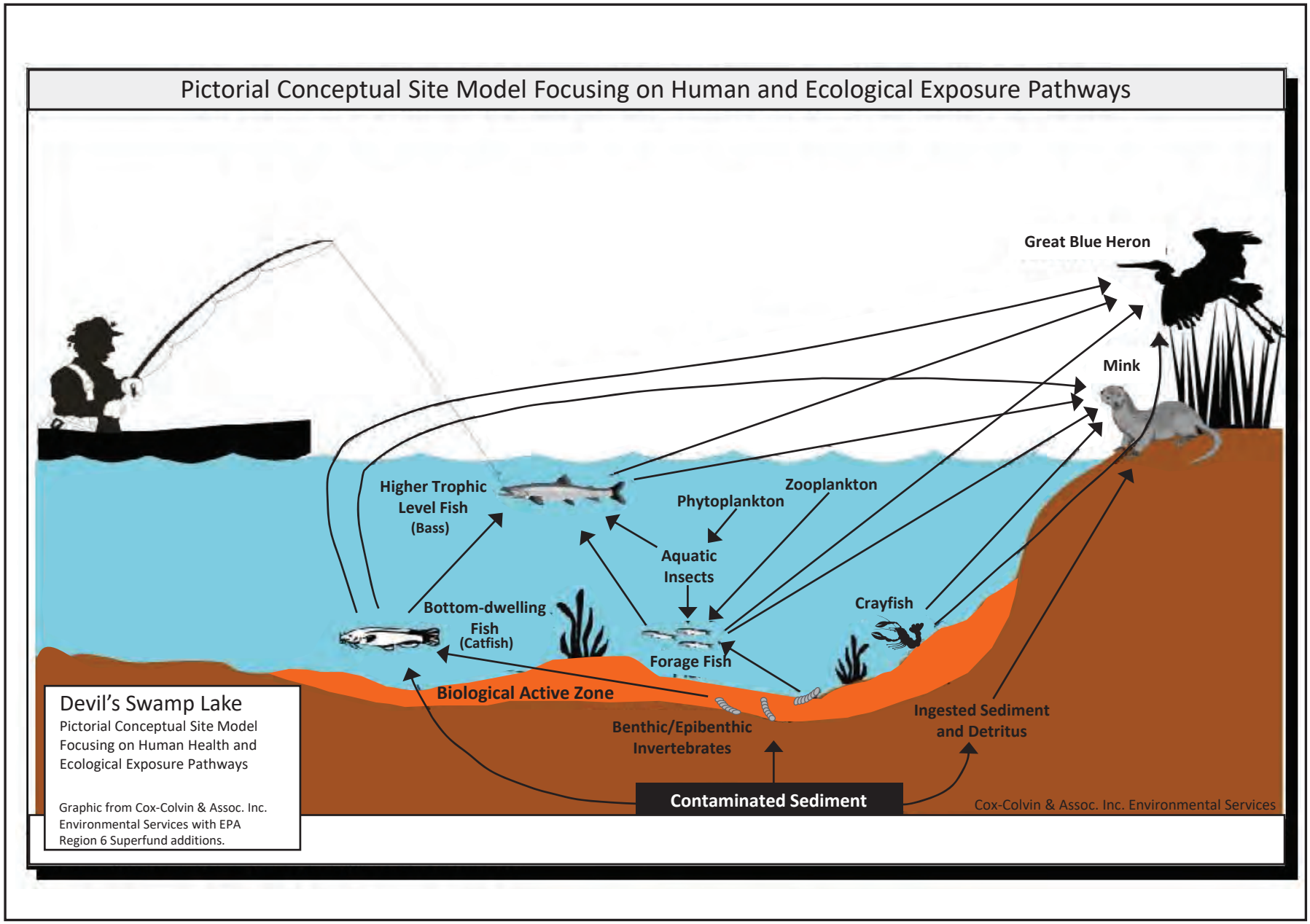
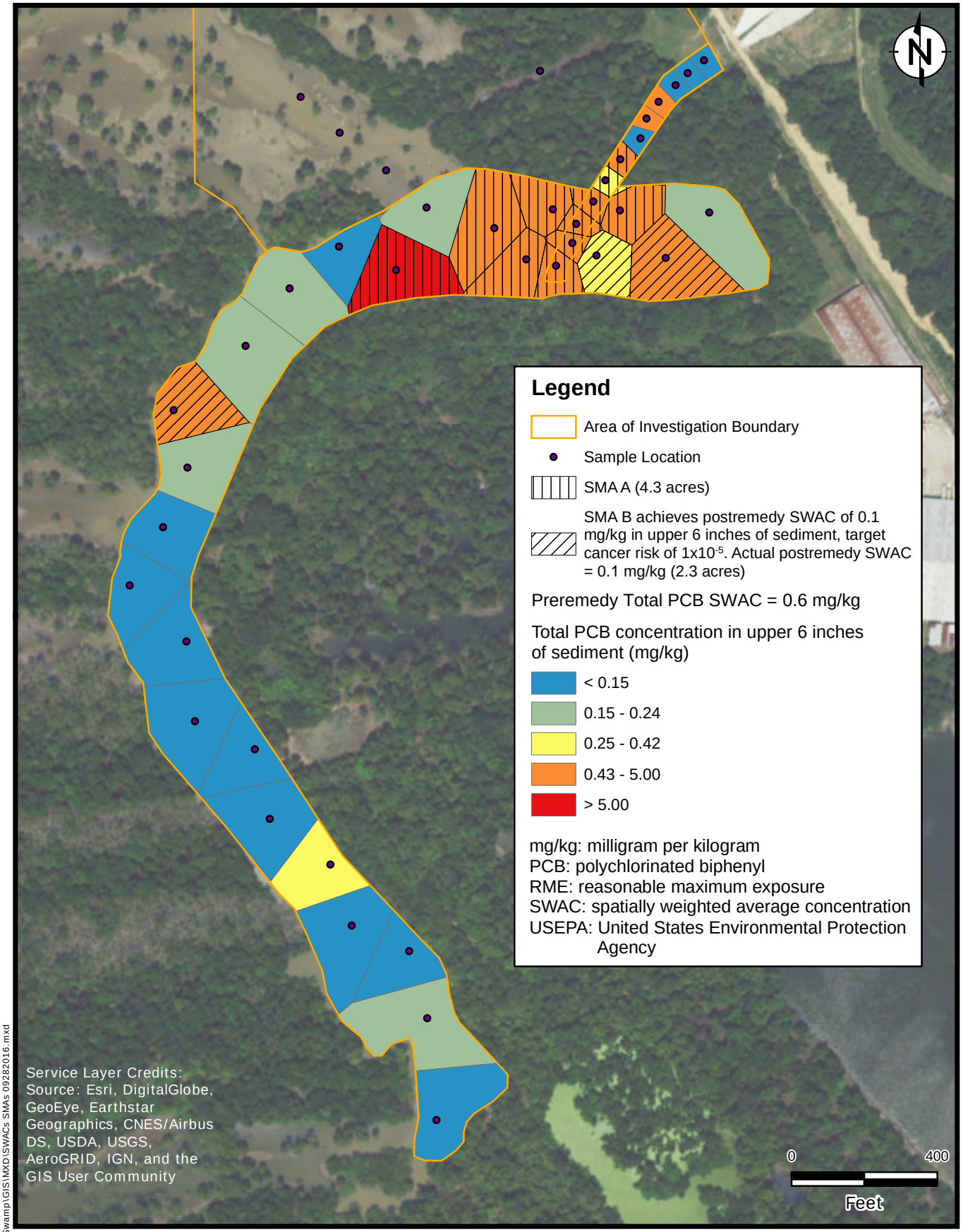


ROD Figure 8 - Pictorial Conceptual Site Model



ROD Figure 9 - Pictorial Conceptual Site Model, Human and Ecological Exposure Pathways



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DRAFTED BY: CWD/JB

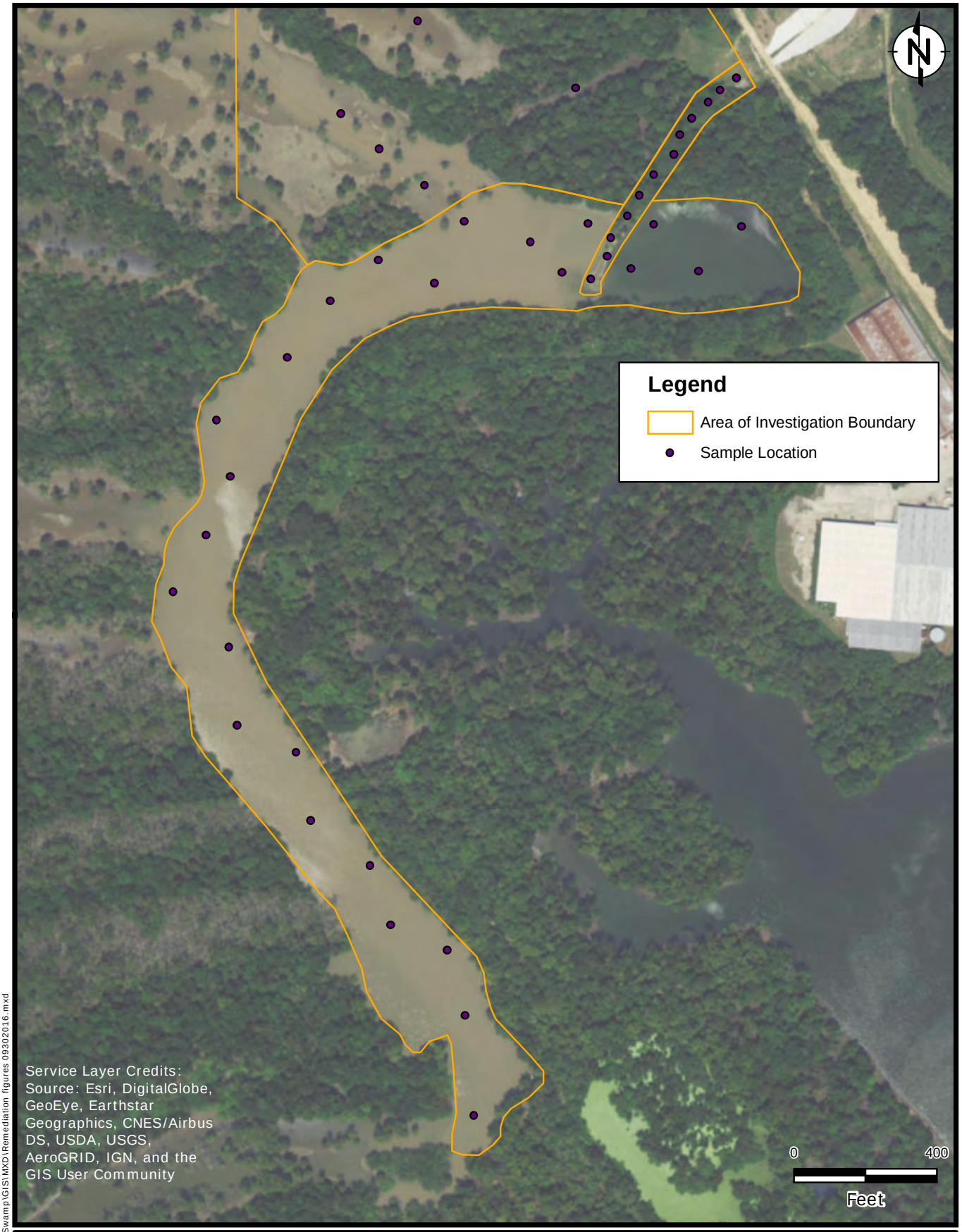
DATE: 5/18/2018

ROD Figure 10 - Sediment Management Area A + B

Achieves Target Cancer Risk of 1x10-5 for Total PCBs

Devil's Swamp Lake Site

Modified from Figure 6-3: Ramboll US Corporation. 2018. Devil's Swamp Lake Site; East Baton Rouge Parish, Louisiana; Feasibility Study; Agency Interest (AI) No. 86800; USEPA ID LAD981155872, SSID #06N1; CERCLA Docket No. 06 04 10. Approved by: Clean Harbors Environmental Services, Inc. June.



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RAMBOLL

DRAFTED BY: CWD

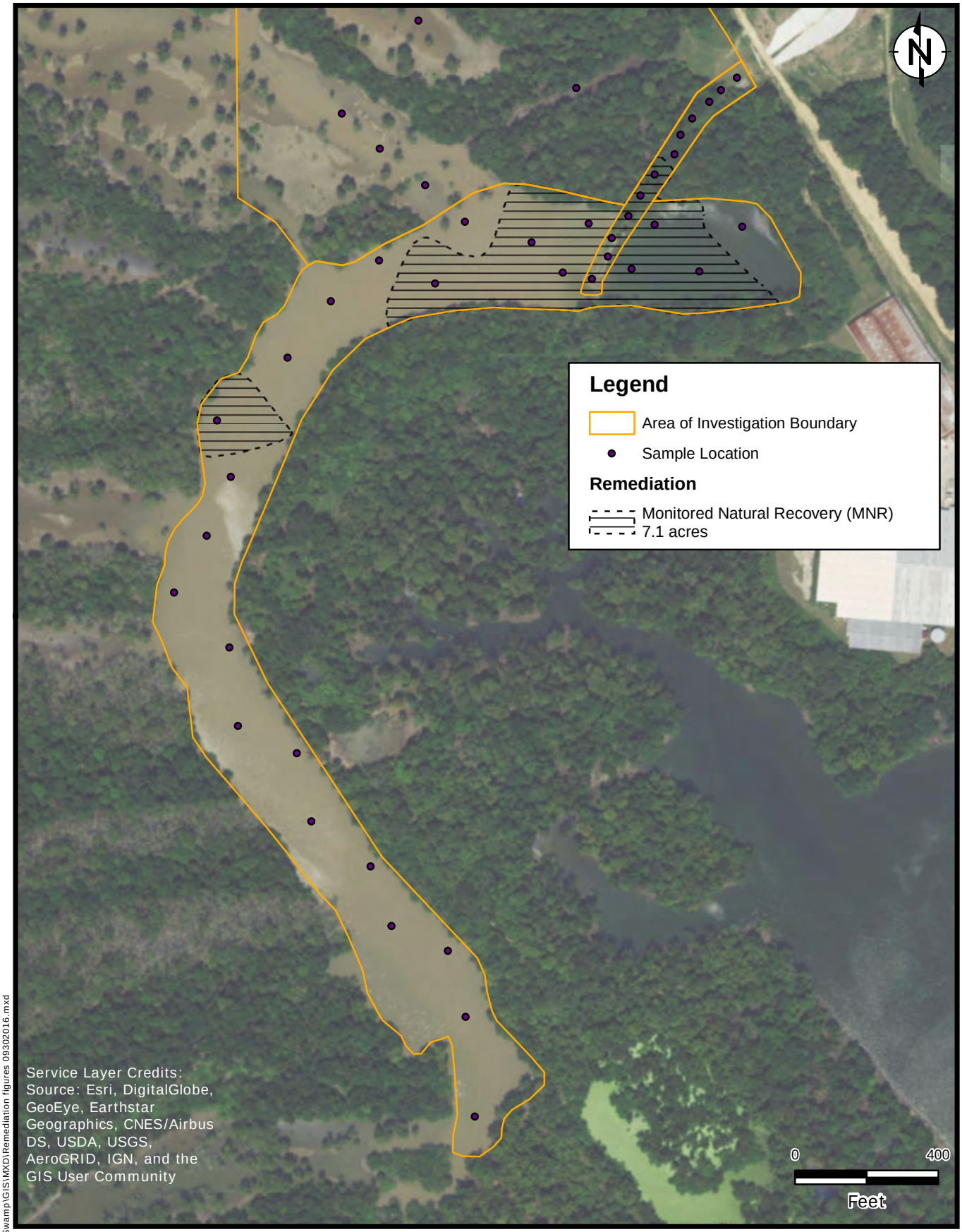
DATE: 5/18/2018

ROD Figure 11 - Remediation Alternative 1 - No Action

Achieves Target Cancer Risk of 1x10-5 for Total PCBs

Devil's Swamp Lake Site

Modified from Figure 6-4: Ramboll US Corporation. 2018. Devil's Swamp Lake Site; East Baton Rouge Parish, Louisiana; Feasibility Study; Agency Interest (AI) No. 86800; USEPA ID LAD981155872, SSID #06N1; CERCLA Docket No. 06 04 10. Approved by: Clean Harbors Environmental Services, Inc. June.



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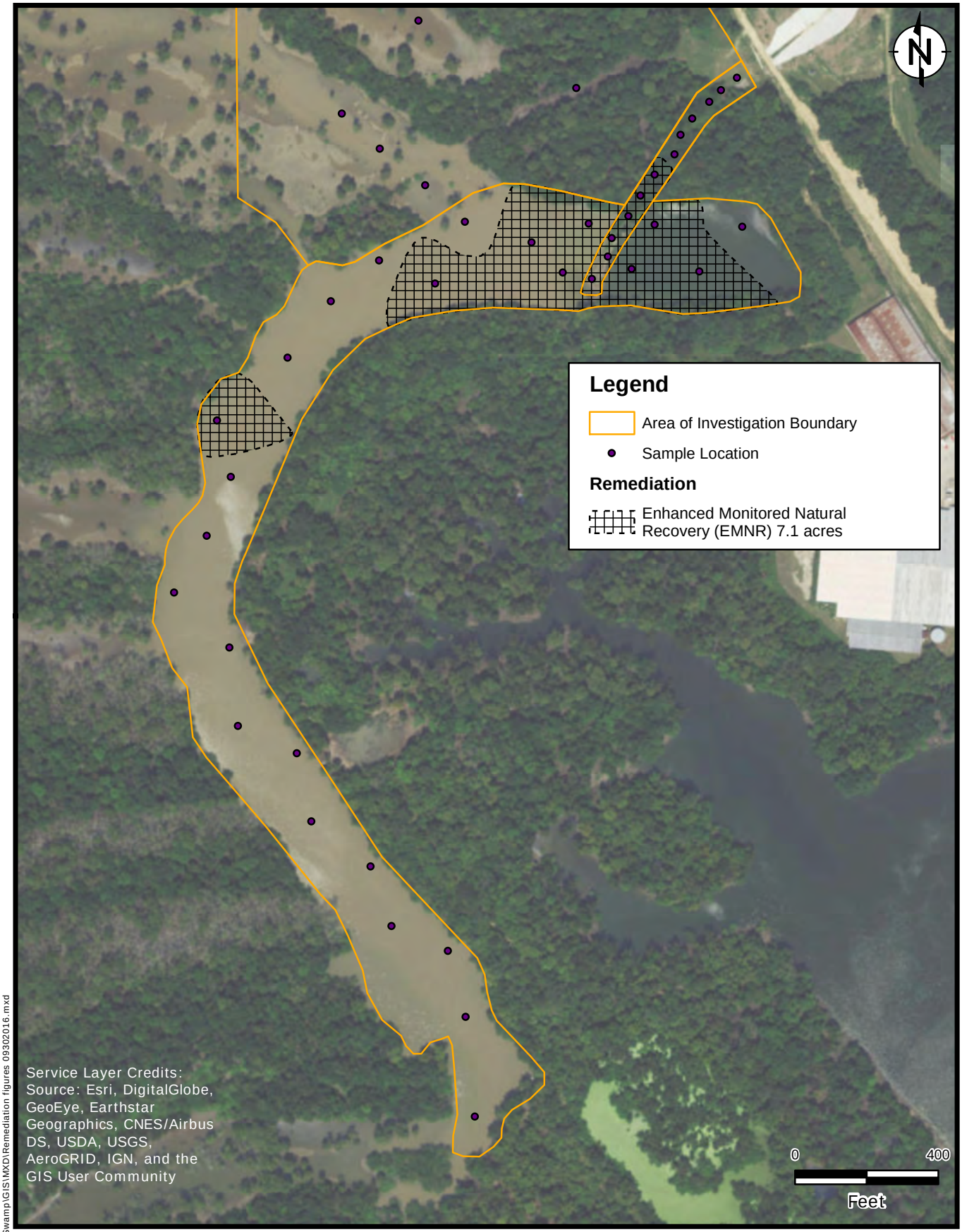
DRAFTED BY: CWD | DATE: 5/18/2018

ROD Figure 12 - Remediation Alternative 2
Monitored Natural Recovery (MNR in SMA A+B)
Devil's Swamp Lake Site

Modified from Figure 6-5: Ramboll US Corporation. 2018. Devil's Swamp Lake Site; East Baton Rouge Parish, Louisiana; Feasibility Study; Agency Interest (AI) No. 86800; USEPA ID LAD981155872, SSID #06N1; CERCLA Docket No. 06 04 10. Approved by: Clean Harbors Environmental Services, Inc. June.



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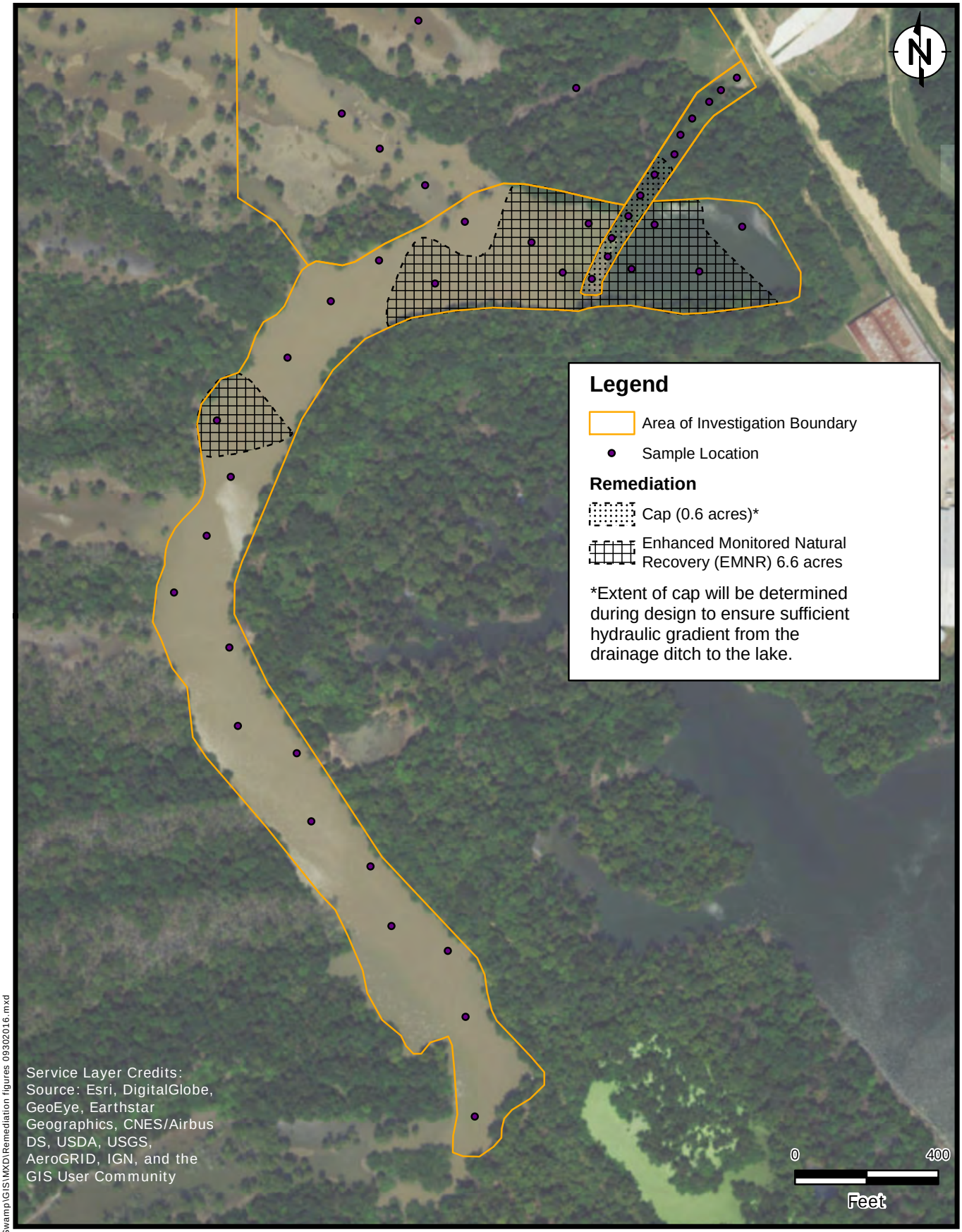
DRAFTED BY: CWD | DATE: 5/18/2018

ROD Figure 13 - Remediation Alternative 3
Enhanced Monitored Natural Recovery (EMNR in SMA A+B)
Devil's Swamp Lake Site

Modified from Figure 6-6: Ramboll US Corporation. 2018. Devil's Swamp Lake Site; East Baton Rouge Parish, Louisiana; Feasibility Study; Agency Interest (AI) No. 86800; USEPA ID LAD981155872, SSID #06N1; CERCLA Docket No. 06 04 10. Approved by: Clean Harbors Environmental Services, Inc. June.



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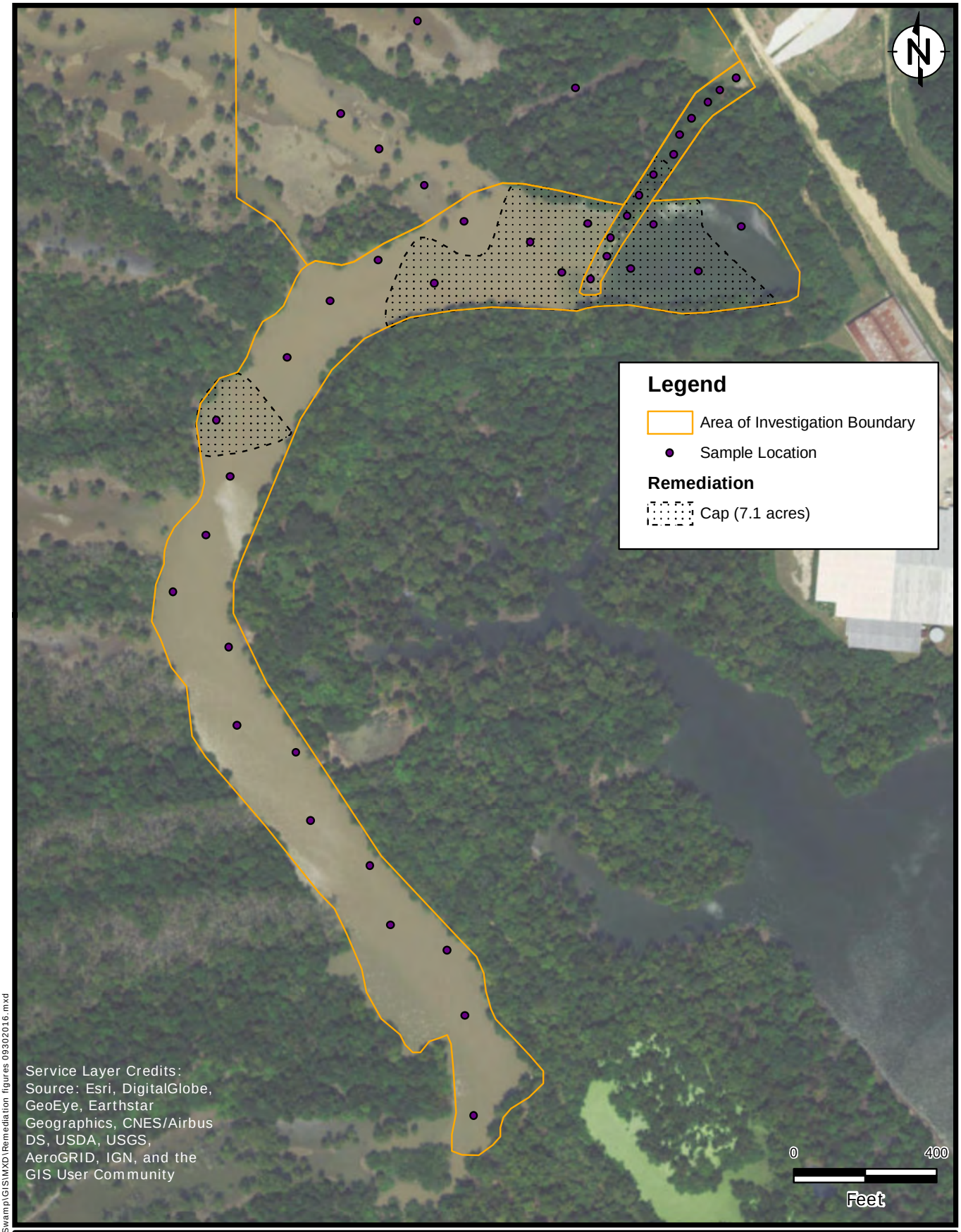
DRAFTED BY: CWD | DATE: 5/18/2018

ROD Figure 14 - Remediation Alternative 4
Enhanced Monitored Natural Recovery and Cap (cap in drainage ditch)
Devil's Swamp Lake Site

Modified from Figure 6-7: Ramboll US Corporation. 2018. Devil's Swamp Lake Site; East Baton Rouge Parish, Louisiana; Feasibility Study; Agency Interest (AI) No. 86800; USEPA ID LAD981155872, SSID #06N1; CERCLA Docket No. 06 04 10. Approved by: Clean Harbors Environmental Services, Inc. June.



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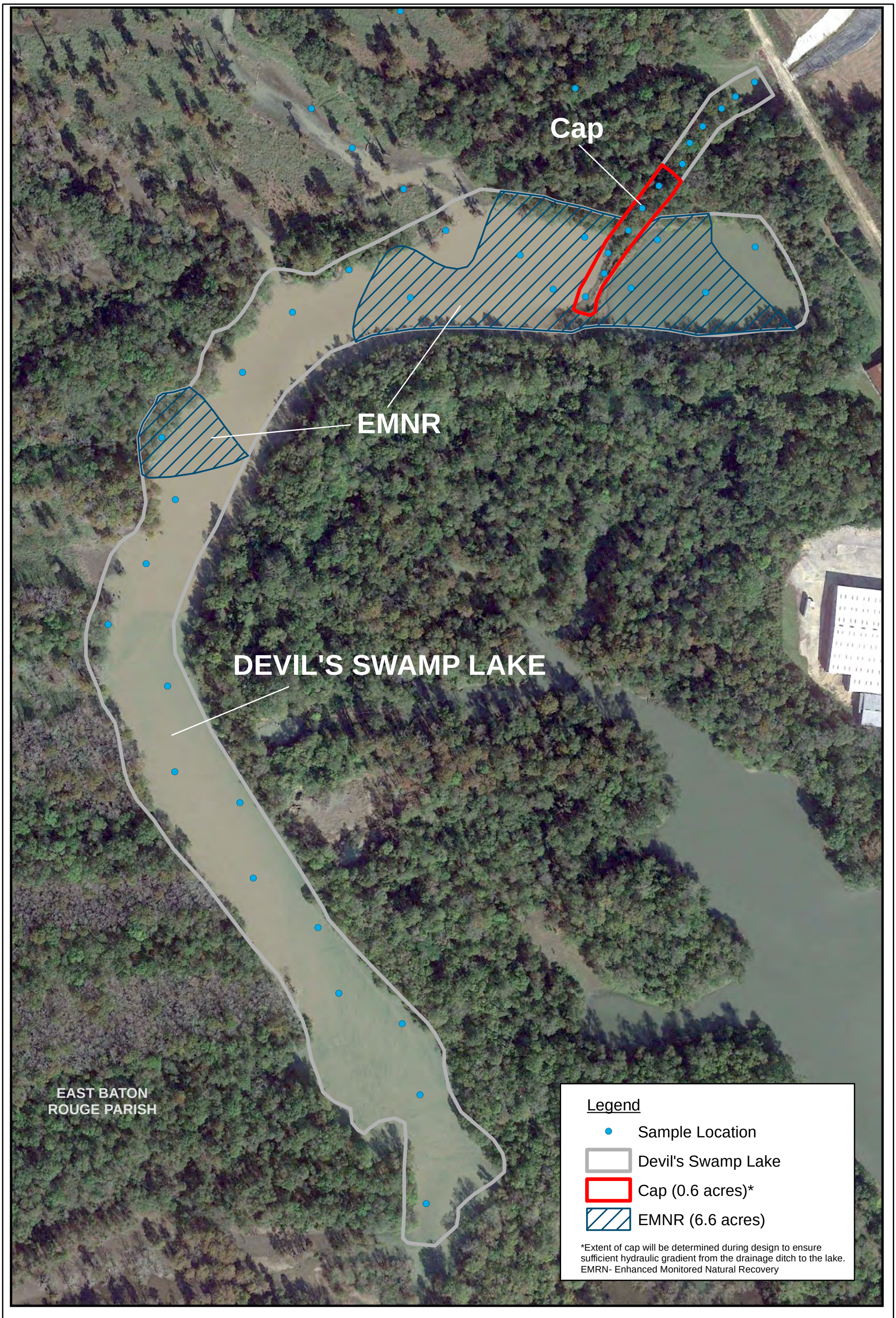
DRAFTED BY: CWD

DATE: 5/18/2018

ROD Figure 15 - Remediation Alternative 5
Cap in Sediment Management Area A+B
Devil's Swamp Lake Site

Modified from Figure 6-8: Ramboll US Corporation. 2018. Devil's Swamp Lake Site; East Baton Rouge Parish, Louisiana; Feasibility Study; Agency Interest (AI) No. 86800; USEPA ID LAD981155872, SSID #06N1; CERCLA Docket No. 06 04 10. Approved by: Clean Harbors Environmental Services, Inc. June.



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Feet

EPA Region 6
Superfund
06/28/2019

20190628ML01

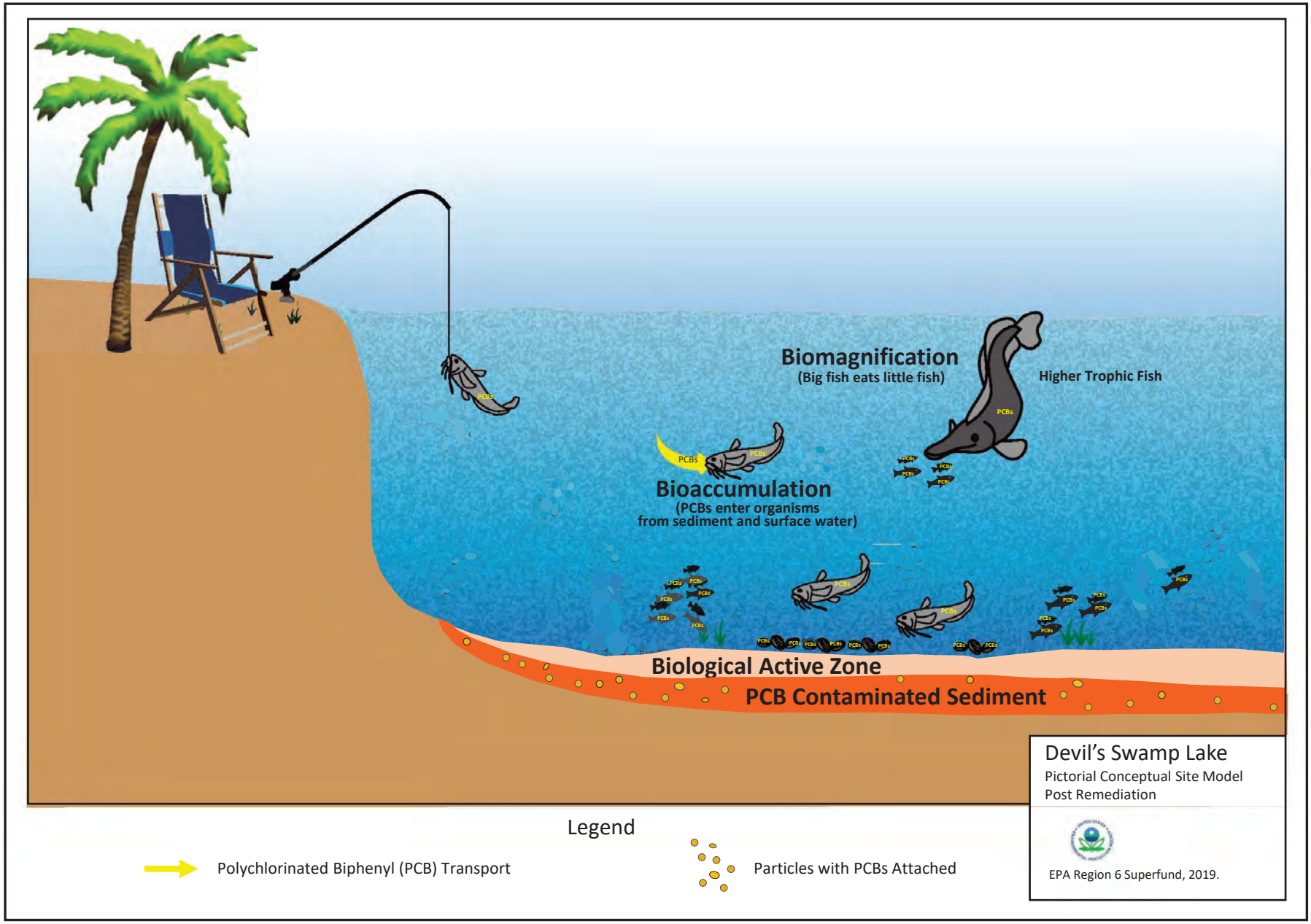
Figure 16 - Selected Remedy, Alternative 4

Cap in Drainage Ditch and Enhanced Monitored Natural Recovery (EMNR in SMA A+B)

Devil's Swamp Lake Site

Baton Rouge Disposal, LLC, Baton Rouge, Louisiana

Sources: Google Earth 11/2017;
Ramboll Environ 3/24/2017;
EPA Region 6 Superfund 6/28/2019.



ROD Figure 17 - Pictorial Conceptual Site Model (Post Remediation)

APPENDICES

Appendix D – Proposed Plan

PROPOSED PLAN

Devil's Swamp Lake Superfund Site
East Baton Rouge Parish, Louisiana
July, 2019

The purpose of this Proposed Plan is to:

- **Identify the Preferred Alternative for cleaning up the contaminated soils and sediments at the Devil's Swamp Lake Site, and provide the rationale for this preference;**
- **Summarize the information from the Remedial Investigation, Risk Assessments and Feasibility Studies conducted;**
- **Summarize other alternatives evaluated for use at this Site;**
- **Solicit public review and comment on the cleanup strategy as well as information contained in the Administrative Record file; and,**
- **Provide information on how the public can be involved in the remedy selection process for the Devil's Swamp Lake Superfund Site.**

Dates to Remember:

- **Public Comment Period:**
  September 30 to October 29, 2019
  The EPA and LDEQ will accept written comments on the Proposed Plan during the public comment period.

- **Public Meeting:** October 17, 2019
  The EPA will hold a public meeting to explain the Proposed Plan and all of the alternatives presented in the Feasibility Study. Oral and written comments will also be accepted at the meeting. The meeting will be held at the Alsen Recreation Center, 601 Old Rafe Meyer Road, Baton Rouge, LA 70807, at 6:00 pm.

- **Administrative Record is available for viewing at:**

EPA Region 6
Office of External Affairs (ORAXO)
121 Elm Street, Suite 500
Dallas, TX 75270-2102
Toll-Free (800) 533-3508 or (214) 665-6597
Monday – Friday 7:30 – 11:00 am/1:00 – 4:00 pm

LDEQ Headquarters
Public Records Center
Galvez Building, 1st Floor – Room 121
602 N. Fifth Street
Baton Rouge, LA 70802
(225) 219-3168

Scotlandville Branch Library
7373 Scenic Hwy
Baton Rouge, LA 70807
(225) 354-7540
Hours – 9:00 am – 8:00 pm Monday - Thursday,
9:00 am – 6:00 pm, Friday - Saturday
2:00 pm - 6:00 pm - Sunday

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CONCURRENCE PAGE – PROPOSED PLAN

Devil's Swamp Lake Superfund
Baton Rouge, Louisiana

Bart Cañellas
Remedial Project Manager

7/12/19
Date

Blake Atkins
Chief, Louisiana/Oklahoma/New Mexico Section

7/18/19
Date

John C. Meyer
Chief, Superfund Remedial Branch

7/18/19
Date

Leonard Schilling
Office of Regional Counsel

7/23/19
Date

Mark A. Peycke
Chief, Superfund Branch, Office of Regional Counsel

07/26/19
Date

Carl E. Edlund, P.E.
Director, Superfund Division

07/29/19
Date

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Table of Contents

1. INTRODUCTION AND STATEMENT OF PURPOSE

1.1 Site Name, Location

The Devil's Swamp Lake (DSL) Superfund site (Site) was proposed to be placed on the National Priorities List (NPL)[1] on March 8, 2004. Devil's Swamp Lake is a constructed, crescent-shaped lake located on the east bank floodplain of the Mississippi River, approximately 10 miles north of Baton Rouge, Louisiana. The Site location is shown on the Site vicinity map included as Figure 1[2]. A Site plan is included in Figure 2[3].

The Site is located in Section 47, Township 5 South, Range 1 West; and Sections 55 and 59, Township 6 South, Range 1 West. The geographic coordinates for the Site are 30° 33′ 43″ north latitude and –91° 13′ 14″ west longitude, see Figure 3[4]. Northern portions of Devil's Swamp (the swamp), flow into DSL and continues from the lake into the southern portion of the swamp before emptying into the Mississippi River via the re-emerging channels of Bayou Baton Rouge.

1.2 Lead and support agencies

The U.S. Environmental Protection Agency (EPA) Region 6 office is the lead agency for this Site and has conducted remedial activities at the site since the 1990's. The Louisiana Department of Environmental Quality (LDEQ) is the support agency and provided technical review of the remedy performance through a cooperative agreement with EPA.

EPA, in consultation with the LDEQ, will select a final remedy for the Site after reviewing and considering all information submitted during the 30-day public comment period, which follows the issuance of this Proposed Plan (PP). EPA, in consultation with the LDEQ, may modify the Preferred Alternative or select another response action presented in this Plan, based on new information or public comments. Therefore, the public is encouraged to review and comment on all alternatives presented in this Proposed Plan. Once EPA has evaluated all the comments and consulted with the LDEQ, it will issue a Record of Decision (ROD) to document the selection of the remedy for the Site. The ROD will include EPA's response to comments submitted during the public comment period.

1.3 Regulatory framework (CERCLA § 117, NCP § 300.430)

The EPA has conducted its activities in connection with the Site in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund), 42 U.S.C.[5] §§ 9601 et seq., and the National Oil and Hazardous Substance Contingency Plan (NCP), 40 C.F.R. Part 300. The EPA is issuing this Proposed Plan in accordance with and as part of its public participation

[1] The NPL is the list, compiled by the EPA pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, of uncontrolled hazardous substance releases in the United States that are priorities for long-term remedial evaluation and responses.
[2] Figure 1 = Figure 1-1 Vicinity Map.
[3] Figure 2 = Figure 1.2 Site Plan.
[4] Figure 3 = Figure 3 - Vicinity map – RE: USGS 7.5 Minute Topographic Maps.
[5] "U.S.C." means United States Code and "§" means section. The 42 refers to the United States Code title referred to. So "42 U.S.C. § 9617(a)" means "title 42 of the United States Code, section 9617(a).

responsibilities under CERCLA § 117(a), 42 U.S.C. § 9617(a) and 40 C.F.R. § 300.430(f)(2) of the NCP. The summary information and recommendations set forth in this Proposed Plan are based on information and documents contained in the Remedial Investigation/Feasibility Study (RI/FS) report and other documents contained in the Administrative Record file for the Site. EPA and the LDEQ encourage the public to review these documents to gain a more comprehensive understanding of the Site and Superfund activities that have been conducted at the Site.

The NCP, at 40 CFR § 300.5, defines an operable unit (OU) as a discrete action that comprises an incremental step toward comprehensively addressing site problems. The investigation of the lake has been conducted as a single operable unit to address surface water and sediment contamination.

1.4 Purpose of this document

Devil's Swamp Lake received the discharge of surface waters containing Polychorinated Biphenyls (PCBs). These contaminants have accumulated in sediments, at concentrations that present unacceptable risks to humans that consume fish caught at this lake. The alternatives presented in this plan will reduce these risks.

The purpose of this Proposed Plan is to:

- Identify the Preferred Alternative (proposed remedy) for the Site;
- Summarize the information that prompted and supports the Preferred Alternative (remedy);
- Solicit public review and comment on the cleanup strategy, as well as information contained in the Administrative Record (AR) file; and,
- Provide information on how the public can be involved in the remedy selection process for the Devil's Swamp Lake Site.

1.5 Summary of alternatives evaluated

This Proposed Plan evaluates sediment remediation alternatives that address elevated concentrations of PCBs in surface sediments, based on the understanding that reducing PCB concentrations in surface sediment will lead to reduced exposure of fish to PCBs and reduced PCB concentrations in edible fish tissue.

Five remediation alternatives are developed for the Site, including the No Action alternative. The other four alternatives were developed based on a single remedial technology or a combination of applicable remedial technologies and process options (i.e., MNR, EMNR, capping), as appropriate to achieve Site specific goals. The five remediation alternatives are listed below:

Remediation Alternative 1: No Action. The No Action remediation alternative is included in the analysis for comparison to other alternatives. This remediation alternative reflects baseline sediment conditions as described in the RI and entails no further action for remediation of the sediments.

Remediation Alternative 2: Monitored Natural Recovery (MNR) in specific areas. Surface sediment within these areas will be monitored over an extended period of time in order to verify the continuing reduction of concentrations of PCBs through the natural processes that support input and deposition of relatively cleaner sediments.

Remediation Alternative 3: Enhanced Monitored Natural Recovery (EMNR) in specific areas. An approximate 6-inch sand cover will be placed in specific areas to reduce surface sediment concentrations of PCBs and consequently exposures to invertebrates, fish, and the human and ecological receptors that consume them. EMNR will provide a clean sediment surface for habitat recovery while minimizing construction impacts to the wetland environment.

Remediation Alternative 4: Cap in Drainage Ditch and EMNR in remainder of specific areas. Sediment capping will be used to isolate underlying PCBs in Drainage Ditch sediment and to provide a clean sediment surface for habitat restoration. The cap installed in the Drainage Ditch will protect against chemical migration through the cap and erosive forces from storm events. EMNR will be applied in specific areas that are outside of the Drainage Ditch. If Alternative 4 is selected as the preferred remediation alternative, long-term monitoring of sediment and biota, as well as the implementation of Informational Devices (IDs), will be undertaken as part of Remediation Alternative 4.

Remediation Alternative 5: Cap in specific areas of the lake. Remediation Alternative 5 will employ a sediment cap to isolate underlying PCBs in specific areas and provide a clean sediment surface for habitat restoration. The cap will protect against chemical migration through the cap, as well as erosive forces resulting from storm events.

2. PUBLIC PARTICIPATION

2.1 Administrative Record (AR) file

This Proposed Plan highlights information contained in the Administrative Record for the Site. The Administrative Record includes the Remedial Investigation Report, risk assessment reports, the Feasibility Report, the Evaluation of the Remediation Alternatives Report, and other documents and reports used in the preparation of this Proposed Plan.

The Environmental Protection Agency encourages the public to review these documents to obtain more information about the Superfund activities that have been conducted. The Environmental Protection Agency also encourages the public to participate in the decision-making process for the Site.

The Administrative Record file is available on the internet at the following website:

https://www.epa.gov/superfund/devils-swamp-lake Collection ID 65949

2.2 Location of AR file

EPA Region 6
5th Floor Reception Area
1201 Elm Street, Suite 500
Dallas, TX 75270-2102
Toll-Free (800) 533-3508 or (214) 665-6597
Monday – Friday 7:30 – 11:00 am/1:00 – 4:00 pm

LDEQ Headquarters
Public Records Center
Galvez Building, 1st Floor – Room 127
602 N. Fifth Street
Baton Rouge, LA 70802
(225) 219-3181

Scotlandville Branch Library
7373 Scenic Hwy.
Baton Rouge, LA 70807
(225) 354-7540

Hours –	9:00 am-8:00 pm	Monday -Thursday
	9:00 am- 6:00 pm	Friday – Saturday
	2:00 pm – 6:00 pm	Sunday

2.3 Public Meeting (Date and Time)

The Environmental Protection Agency will hold a public meeting to inform residents of the proposed remedy and obtain comments on the Proposed Plan.

The public meeting will be held on August 22, 2019, at 6:00 pm at the Alsen Recreation Center, 601 Old Rafe Meyer Road, Baton Rouge, LA 70807. The public meeting is being held in a fully accessible facility. Should you have specific needs or questions about this facility, please contact Bart Cañellas, Remedial Project Manager, at (214) 665-6662 or toll-free (800) 533-3508 or Janetta Coats, Senior Community Involvement Coordinator, (214) 665-7308 or toll-free (800) 533-3508.

Public comments can be presented at the public meeting or can be submitted during the public comment period from August 12, 2019, through September 12, 2019. All written comments should be addressed to:

Bartolome J. Cañellas, Remedial Project Manager
U.S. EPA Region 6 (SEDR)
1201 Elm Street, Suite 500
Dallas, Texas 75270-2102
214-665-6662
canellas.bart@epa.gov

For specific information about the Louisiana Department of Environmental Quality participation in the Superfund process, please contact the Keith Horn, Senior Environmental Scientist, at (225) 219-3717 or Toll-Free (866) 896-5337.

Keith Horn, Senior Environmental Scientist
Louisiana Department of Environmental Quality
Remediation Division
P.O. Box 4314
Baton Rouge, LA 70821-4314
225-219-3717
keith.horn@la.gov

EPA, in consultation with the State of Louisiana, will select a final remedy for the Site after the public comment period has ended and information submitted during this time has been reviewed and considered. EPA will respond to comments received during the public comment period in the Responsiveness Summary, which will be attached to the Record of Decision. Once EPA finalizes the ROD, both the Responsiveness Summary and the ROD will be available to the public at the repository locations noted above. Note that the final Site remedy may be different from the proposed remedy identified in this Proposed Plan, due to changes made by EPA based on comments received, new issues identified, or new information gathered during the public comment period. Such changes or alterations of this Proposed Plan will be explained and described in the ROD. The ROD will be signed by the Superfund Division Director for EPA Region 6 and will become part of the Administrative Record file (40 C.F.R. § 300.825(a)(2)).

3. SITE BACKGROUND

3.1 History

Prior to the 1950s, the areas surrounding Devil's Swamp consisted of agricultural farms, pasture, and some timberland. Rapid development of the area throughout the 1960s and 1970s resulted in construction of numerous industrial facilities in areas surrounding Devil's Swamp. The lake was excavated in 1973 and 1974 to provide a source of borrow material for levee construction to reinforce the levee along the north and west sides of the Port of Greater Baton Rouge Terminal (Baton Rouge Barge Harbor). The Devil's Swamp Lake Site boundaries are described in the Unilateral Administrative Order (UAO) as follows:

> The site is generally bordered by the north portions of Bayou Baton Rouge to the north, US Highway 61 – (Scenic Highway), the Ewell Swamp farm, Baton Rouge Disposal, LLC, [previously owned and operated by Safety-Kleen (Baton Rouge), Inc., formerly known as Laidlaw Environmental Services (Baton Rouge), formerly known as Rollins Environmental Services (LA), Inc. (Rollins), the Baton Rouge Barge Harbor to the east and the Mississippi River to the south and west. The Site consists of contaminated sediments within the Lake, a portion of Devil's Swamp adjoining the Lake and associated wetlands.

3.2 Contaminated media

Discharge of contaminants from industrial facilities resulted in contamination of surface water, soil, sediments and biota in Devil's Swamp Lake. These are potential sources of impact to biota. The potential exposure pathway for both human and ecological receptors to impacted biota is by ingestion.

3.3 Source of contamination

The historical discharge from the former Rollins facility appears to be the primary source of potential contamination at the Site. Chemicals were discharged to surface water and sediment, and subsequently to other areas and environmental media at the Site by various transport mechanisms including sediment resuspension and surface water transport.

3.4 History of Federal, State, and local site investigations

3.4.1 State investigations

In June 1980, the LDEQ collected sediment and surface water samples as part of a preliminary evaluation of potential impact in Devil's Swamp Lake. In addition, a single composite fish tissue (largemouth bass) sample was collected.

In August 1985, the LDEQ Water Pollution Control Division (WPCD) conducted additional sampling in Devil's Swamp Lake to evaluate constituent concentrations in sediment. Analysis of sediment samples for priority pollutant organics and metals indicated that the type and concentrations of chemicals detected were similar to those detected in the 1980 sampling event, with one exception. PCBs were detected at a concentration of 4 parts per million (ppm) in the sediment near the northeastern end of Devil's Swamp Lake near the drainage ditch point of discharge into the lake. PCB concentrations decreased with distance from the drainage ditch entry point to 0.117 ppm at the opposite end of the lake. PCBs were detected in the drainage ditch sediment at a concentration of 4.5 ppm. The LDEQ WPCD considered a PCB concentration of 0.020 ppm in sediment as an upper limit for a background concentration.

In March 1986, as a follow up to the 1985 LDEQ investigation, the LDEQ collected additional samples from the locations that yielded detected PCB concentrations in 1985. Results of additional samples collected in the drainage ditch and the lake indicated PCB concentrations ranging from 0.11 ppm in the southern portion of the lake to 2.31 ppm at the location of the drainage ditch discharge into the lake. The LDEQ indicated that the former Rollins facility was the source contributing to the accumulation of PCBs in sediment in Devil's Swamp Lake.

3.4.2 EPA investigations

An Expanded Site Inspection (ESI) was conducted by the EPA in October 1992 to further characterize Devil's Swamp and Devil's Swamp Lake as part of the EPA's Hazard Ranking System (HRS) screening process of evaluating sites for potential further action in the Superfund program.

Following completion of the ESI in 1992, the EPA completed a Screening Level Ecological Risk Assessment (SLERA) in October 1995, followed by an Ecological Risk Assessment (ERA) and a Human Health Risk Assessment (HHRA) in 1999.

In November 2004, an aerial photograph analysis of the former Rollins facility and the Devil's Swamp Lake Site was completed by the EPA to identify potential sources and pathways for transport of constituents from the former Rollins facility to Devil's Swamp Lake.

3.4.3 Other Federal Agency investigations

In October 2004, the United States Geological Survey (USGS), in cooperation with the EPA, completed an investigation to determine the possible historic contribution of PCBs to Devil's Swamp Lake. The objective of the study was to determine if a temporal record of PCB inputs was preserved in the bottom sediment of the lake[6]. The investigation shows that the most contaminated PCB bed sediment has been buried by subsequent sediment deposition since the lake was created by dredging in 1973. Highest PCB concentrations noted at depths ranging from approximately 3 feet (1.0 meters) to 4.5 feet (1.5 meters).

3.5 Remedial actions under CERCLA or other authorities

In 1986, based on the fish tissue sample results, the Louisiana Department of Health and Hospitals (LDHH) recommended that LDEQ post signs at the lake warning the public against fishing and issued an advisory warning the public against fishing in or consuming fish from Devil's Swamp Lake. LDEQ also recommended that the discharge to Devil's Swamp Lake be reconsidered.

On October 29, 1987, the LDEQ and WPCD posted signs and issued an advisory to the public against swimming in the lake and consuming fish and other aquatic organisms from the lake.

In 1993 the NPDES permit allowing the discharge of treated wastewater to the north end of Devil's Lake was changed to discharge directly to the Mississippi River, see Figure 4[7].

In July 1993, the LDEQ and Louisiana Department of Health and Hospitals (LDHH) issued a "Health Advisory for the Devil's Swamp and Bayou Baton Rouge Area". Among recommendations not to swim nor participate in other primary water contact sports, the agencies advised that consumption of all fish species be limited to two (2) meals per month. LDHH is now named Louisiana Department of Health (LDH).

The sediment/soil within the drainage ditch located east of Devil's Swamp Lake, specifically northeast of the Baton Rouge Barge Terminal railroad tracks, was addressed separately under a December 3, 2003, Administrative Order on Consent (AOC) and a Hazardous Waste Permit (LAD010395127-OP-RN-1) for the former Rollins facility.

The remediation work required on this portion of the drainage ditch was completed during 2014 and 2015 with the submittal to EPA and LDEQ of the report titled "Outfall 002 Ditch TSCA Remediation Report" dated February 20, 2015. Therefore, that portion or segment of the drainage ditch was not included as part of the Devil's Swamp Lake Site during completion of the RI/FS.

[6] Sources of Polychlorinated Biphenyls to Devil's Swamp Lake Near Baton Rouge, Louisiana, By Peter C. Van Metre, Jennifer T. Wilson, and Briant A. Kimball, USGS Scientific Investigation Report 2006-5301

[7] Figure 4 – Figure 2 – Site Plan.

On August 12, 2015, the LDEQ, LDHH and the Louisiana Department of Wildlife & Fisheries (LDWF), issued an update, "Advisory for Devil's Swamp/Bayou Baton Rouge", to advise the following: "DO NOT EAT FISH OR CRAWFISH FROM THIS AREA".

On September 9, 2015, staff from LDEQ installed fishing advisory warning signs at DSL.

On October 28, 2015, the U.S. Army Corps of Engineers, New Orleans District, collected samples from shoal material in the Baton Rouge Harbor canal. These samples were tested for PCB Congeners.

3.6 History of CERCLA enforcement activities

The Site was proposed to the NPL on March 8, 2004 (Federal Register / Vol. 69. No. 45 / Monday, March 8, 2004 / Proposed Rules).

A Special Notice Letter (SNL) for Remedial Investigation and Feasibility Study was sent to several Potentially Responsible Parties (PRPs) on September 24, 2007 (Reference SDMS Record No. 218017).

A Unilateral Administrative Order (UAO) for Remedial Investigation/Feasibility Study was issued to Clean Harbors, Inc. and Baton Rouge Disposal, LLC, on December 3, 2009, by the EPA Region 6 Superfund Division Director (Reference SDMS Record No. 878386).

Clean Harbors Environmental Services, Inc. (Clean Harbors), on behalf of Baton Rouge Disposal, LLC (Respondent), provided written notice stating the intent to comply with the terms of the Order. (Reference SDMS Record No. 880220).

3.7 What has been done to remediate contamination

The former Rollins facility outfalls flowed through a drainage ditch that discharges into the northeastern portion of Devil's Swamp Lake. The ditch crosses under the Baton Rouge Barge Terminal railroad tracks southwest of the former Rollins facility, and continues along a natural drainage to Devil's Swamp Lake, it ultimately travels south through south Devil's Swamp to south Bayou Baton Rouge, which drains to the Mississippi River. On June 3, 1993, Rollins terminated Outfall 001 effluent discharge into the drainage ditch and began discharging Outfall 001, via a pipeline, directly to the Mississippi River, bypassing the drainage ditch. Since 1993, the stormwater runoff from Outfall 002 at the former Rollins facility continues to discharge in Devil's Swamp Lake through the drainage ditch.

3.7.1 PRPs involved in the cleanup

The former Rollins facility was owned and operated by Rollins as a hazardous and non-hazardous waste treatment, storage, and disposal facility from the early 1970s to 1997. In 1997, Rollins acquired Laidlaw Environmental Services, Inc. (Laidlaw), and the resulting corporation was re-named Laidlaw. In 1998, Laidlaw acquired Safety-Kleen Corporation and the resulting corporation was re-named Safety-Kleen Corp. In 2002, Safety-Kleen Corp. sold the property to Baton Rouge Disposal, LLC. Baton Rouge Disposal, LLC currently owns and Clean Harbors Baton Rouge, LLC operates the remaining operational units at the former Rollins facility.

The UAO was issued to Clean Harbors, Inc. and Baton Rouge Disposal, LLC, by EPA Region 6 on December 3, 2009. Clean Harbors Environmental Services, Inc. (Clean Harbors), on behalf of Baton Rouge Disposal, LLC, conducted the RI/FS in accordance with the requirements of this order.

3.8 Community involvement

In August 2010, the EPA issued a Technical Assistance Grant (TAG) to the Alsen – St. Irma Lee Community Enterprise, Inc., group to facilitate a more effective/informed community involvement in the Superfund public engagement process. EPA in coordination with the State and local agencies has provided public information and outreach for the Site area since 2009 by:

- Hosting community meetings or Open Houses that provided updates to the community members on the status of remedial investigations and upcoming actions.
- Conducting an Environmental Health Fair featuring free health screenings and health information at the Alsen Recreation Center in the community.
- Conducting residential tap water sampling in the area of Alsen Community.
- Issuing fact sheets explaining the Superfund Process and activities conducted as part of the Remedial Investigation/Feasibility Study for Devil's Swamp Lake.
- Issuing fact sheets explaining the Baton Rouge Barge Canal Investigation.
- Issuing fact sheets, updating the community of the "no consumption" fishing advisory issued by the State of Louisiana.
- Developing a Community Involvement Plan to facilitate two-way communication between the community surrounding the Devil's Swamp Lake Site and EPA, and to encourage community involvement in site activities.

4. SITE CHARACTERISTICS

4.1 Geographical or topographical factors (flooding)

4.1.1 Devil's Swamp

Devil's Swamp consists of an approximate 12 square-mile backwater wetland along the east side of the Mississippi River in an industrialized area near north Baton Rouge, Louisiana. From its southern end, Devil's Swamp extends approximately five miles to the north to where Bayou Baton Rouge has built up the land surface to nearly 35 feet North American Datum (NAD). The northern portion of Devil's Swamp is bounded on the west by the natural levee of the Mississippi River and on the east by the Pleistocene terrace. The southern portion of Devil's Swamp is bordered to the west by the Mississippi River and to the east by the levee of the Baton Rouge Barge Canal.

Backwater wetlands are included in the classification of Riverine wetlands. This includes temporary wet swampy areas behind river levees. Devil's Swamp is subject to seasonal flooding events as the Mississippi River levels vary through the year, up to a Flood Stage of 35 feet at Baton Rouge. During seasonal dry periods, stagnation within the swamp can occur and water-dependent communities may become isolated.

4.1.2 Devil's Swamp Lake

The Site lies within the low-lying bottomland (wetlands) of the Mississippi River floodplain, between the natural levee of the Mississippi River and the erosional bluff along the Pleistocene upland, at an elevation of less than 30 feet NAD of 1983. The lake was dredged approximately 3,800 feet east of the present Mississippi River channel. The centerline depth has been measured between approximately 10 and 25 feet at low water stage. The lake is situated in the middle of Devil's Swamp, covers approximately 39 acres, is approximately 0.8 miles long, and is 340 feet wide (at its widest point). The lake bottom is relatively flat with the exception of point bar deposits that form alternating emergent and open water areas. The dredged material from the lake, that was placed along the eastern bank of the lake, reaches an elevation of approximately 20 feet above the surrounding lowland. The topography of the area slopes upward abruptly to the east along the erosional escarpment to the Pleistocene terrace that is at an elevation of approximately 75 feet NAD, see Figure 5[8].

The lake was constructed by dredging in 1973, with the material removed used to reinforce the levee along the north and west side of the Baton Rouge Barge Canal. During flood conditions, with a maximum Flood Stage of 35 feet at the river, the lake and surrounding swamp are inundated by water from the Mississippi River.

In 2004, the U.S. Geological Survey collected and analyzed for PCBs sediment cores from the lake. Deposition dates for intervals in the cores were estimated and the results were used to evaluate historical input records of PCBs to the lake and deposition rates.

4.1.3 The drainage ditch

The drainage ditch, which is approximately 3,600 feet long, begins near the southwest corner of the former Rollins facility on the Pleistocene terrace and discharges into the northeastern portion of Devil's Swamp Lake. The elevation of the ditch is about 75 feet NAD within the former Rollins facility, and decreases to an elevation of approximately 35 feet NAD at the outfall into Devil's Swamp Lake, see Figure 5.

The drainage ditch is divided into two segments. One segment is within the Rollins facility and has been already been remediated, see Section3.5. The second segment is the portion of the drainage ditch between the Rollins facility and the Devil's Swamp Lake. This segment will be further referred in this Proposed Plan as the "Drainage Ditch".

4.1.4 Baton Rouge Barge Harbor / Baton Rouge Barge Canal

The Baton Rouge Barge Harbor, a.k.a. the Baton Rouge Barge Canal, was constructed in 1959. It provides a slack water channel for barge traffic and extended river access north of Scotlandville to additional industries by means of the Port of Baton Rouge. The canal extends approximately 2.5 miles north of the Mississippi River's east bank and is 12-feet deep and 200-feet wide. The Site, Devil's Swamp Lake, was excavated in 1973 and 1974 to provide a source of borrow material for construction, to reinforce the levee along the north and west sides of the Barge Canal, see Figures 4 and 5.

[8] Figure 5 = Figure 5 – Topographic Map.

The Baton Rouge Barge Canal is maintained by the U. S. Army Corp of Engineers (USACE), New Orleans District.

4.1.4.1 Background

The Baton Rouge Barge Canal is a harbor project for barge traffic in Devil's Swamp along the bluffs north of Baton Rouge. The project originated with the Rivers and Harbors Omnibus Bill of the House of Representatives (H.R.) 3961, 78 Congress, 2nd Session in 1944. It was authorized by the River and Harbor Act of July 24, 1946, as later amended by the Flood Control Act of 1948.

Construction was completed in 1959. Construction and shaping of earthen dikes along the channel's perimeter were authorized by the River and Harbor Act of October 23, 1962, and substantially completed by 1974. Excavation in Devil's Swamp originated what is known as Devil's Swamp Lake.

4.1.4.2 Discharges to Barge Canal

A March 13, 1970, application for permission to discharge treated wastewaters by a ditch into the Baton Rouge Barge Canal was submitted by Rollins-Purle, Inc. to the State of Louisiana Stream Control Commission.

A March 22, 1973, reapplication for the Rollins Environmental Services, Inc., using an existing discharge permit, approved April 21, 1970, was submitted to the State of Louisiana Stream Control Commission. The application indicates waste reaches State waters by a ditch. Waste flows into the Baton Rouge Barge Canal, thence into the Mississippi River.

A February 8, 1974, investigation by the Louisiana Wild Life and Fisheries Commission, Division of Water Pollution Control, reported that while visiting the Rollins facility the observed spills and general conditions that revealed a lack of maintenance of the retaining levees, overflows, wash out, erosions, lack of any margin of freeboards, pits full to capacity.

4.1.4.3 Rerouting to Devil's Swamp Lake

The Louisiana Stream Control Commission, at its meeting held on April 22, 1976, granted a request by Rollins Environmental Services, Inc., for a revised permit to discharge treated waste into the Mississippi River via the swamp and Baton Rouge Bayou.

The April 8, 1976 application indicates waste reaches State waters by a ditch. Waste flows into the Baton Rouge Bayou, thence into the Mississippi River.

Discharge of Polychlorinated Biphenyls (PCBs) has been documented by the EPA through a grab sample of the Rollins Environmental Services, Inc. plant effluent, collected on October 5, 1977. This sample, reported in an NPDES Compliance Monitoring Report dated November 1, 1977, showed PCB's identified as Aroclor 1254, at a concentration of 2.85 micrograms per liter.

4.2 What media are contaminated

Historical discharge from the former Rollins facility appears to be the primary source of potential impact at the Site. Impacted soil/sediment is present in the drainage ditch. Chemicals were discharged to the lake surface water and sediment, and subsequently to other areas and environmental media at the Site by various transport mechanisms, including sediment resuspension and surface water transport.

The USACE analyzed some Barge Canal sediment samples in October 2015 and found the presence of low levels of contaminants. The contaminants are similar to those in Devils Swamp Lake and this indicated that they may have migrated into the channel during extreme flood events.

4.3 Ownership

Ownership of the property occupied by Devil's Swamp Lake is subdivided between three separate entities, including the Ewell property, the Cazedessus property, and Baton Rouge Disposal property. The swampland surrounding Devil's Swamp Lake is owned by numerous other individuals/entities, see Figures 6[9] and 7[10]. The PRPs must obtain access to the property by purchasing the property or by entering into an access agreement with the current owners to implement any required action.

4.4 Site Geology/Hydrology

Devil's Swamp Lake is surrounded by low-lying bottomlands that grade into the swamp toward the Mississippi River, located approximately 3,600 feet west of the lake. The lake covers approximately 39 acres in the central portion of the swamp and roughly divides Devil's Swamp into northern and southern halves in that area of Devil's Swamp.

Devil's Swamp consists of an approximate 12 square-mile backwater wetland, along the east side of the Mississippi River, in an industrialized area near north Baton Rouge, Louisiana. From its southern end, Devil's Swamp extends approximately five miles to the north. Devil's Swamp is bordered on the west by the natural levee of the Mississippi River and on the east by the erosional escarpment of the Pleistocene terrace.

4.5 Land use

The Site is located in the northern portion of East Baton Rouge Parish, north of the town of Scotlandville, Louisiana. The Site is bordered to the north by the northern portion of Bayou Baton Rouge and several industrial facilities; to the south and west by the Mississippi River; and to the east by US Highway 61 (Scenic Highway), the Ewell Farm, the former Rollins facility, and the Baton Rouge Barge Harbor.

Local land use in the immediate vicinity of the Site consists of a mixture of industrial, commercial, residential, recreational, and undeveloped wetlands. Residential areas and commercial businesses are located along US Highway 61 (Scenic Highway), east-southeast of the Site. This includes Scotlandville,

[9] Figure 6 = Figure 1-3 – Property Ownership.
[10] Figure 7 = Figure 3 – Property Ownership.

located approximately 3 miles southeast of Devil's Swamp Lake and the small residential community of Alsen, located approximately 1-mile northeast of Devil's Swamp Lake. Industrial properties are located north and east of Site. Recreational and open space land uses occur within the Site and the wetlands surrounding the Site, see Figure 8[11].

4.6 Nature and extent of contamination

Evaluation of sediment data collected from the lake and the drainage ditch during the 2004 and 2006 USGS investigations indicated the presence of PCBs concentrations. Data collected during the RI/FS confirmed the extent of contamination along soils and sediments on the drainage ditch, and surface water on the lake.

4.6.1 Source of PCB contamination

Contamination at the Site resulted from past releases from a former hazardous waste disposal facility, the Rollins Environmental Services, Inc. This facility is currently regulated under the Resource Conservation and Recovery Act (RCRA), and on-site remediation and oversight is under State authority, the LDEQ.

4.6.2 Release mechanism

Baton Rouge Disposal, LLC currently owns and Clean Harbors Baton Rouge, LLC currently operates the former Rollins facility adjacent to the Site. Beginning in 1971, the Rollins facility discharged treated process wastewater to DSL through a National Pollutant Discharge Elimination System (NPDES) permitted Outfall 001 and stormwater runoff through Outfall 002, see Figure 2.

4.6.3 Areas of Interest

The Site is defined by the lake, Devil's Swamp Lake, and areas of the swamp, Devil's Swamp, immediately adjacent to the lake and potentially impacted media. Five main Areas of Investigation (AOIs) were defined through the remedial investigations. These include:

- *North-Central Devil's Swamp (NCDS) AOI*, a wetlands area directly upstream of the northern portion of the lake.
- *Drainage Ditch AOI*, includes portions of the Outfall 002 to its discharge location into the northern portion of the lake.
- *North Devil's Swamp Lake (NDSL) AOI*, includes approximately the northern half of the lake.
- *South Devil's Swamp Lake (SDSL) AOI*, includes approximately the southern half of the lake.
- *South Bayou Baton Rouge (SBBR) AOI*, includes portions of the bayou downstream from the lake.

[11] Figure 8 = Figure 4 - Surrounding Land Use Map.

Adjacent to the lake, a sixth AOI that existed prior the construction of the lake was defined. This includes, See Figure 9[12]:

- *Barge Canal AOI,* includes the upper portion of the barge canal (see Section 4.8.7 below).

Contamination at the Site originates from discharges through a drainage ditch, the Drainage Ditch AOI. This ditch ends at the upper portion of the man-made lake, the NDSL AOI, continue to the southern portion of the lake, SDSL AOI, and enter Bayou Baton Rouge, a stream through the swamp identified as SBBR AOI. To investigate potential discharges by overland flow to upgradient portions of the lake, an area north of the lake was investigated and designated as the NCDS AOI.

Sediment, soil, surface water and tissue samples from fish and crawfish were collected to determine the horizontal and vertical distribution of chemicals to support fate and transport evaluations, assess risk, and evaluate potential alternatives if unacceptable risks are identified, see Figures 9[12] and 10[13].

The extent of contamination is limited to sediments in the Drainage Ditch AOI, and the NDSL and SDSL AOIs.

4.6.4 Water, Sediment, Soil Samples

Sediment samples were taken from the 0- to 6- inches, the 6- to 12- inches and 12- to 18- inches depth intervals and tested for PCB Aroclors and the World Health Organization (WHO) PCB congeners. The risk was evaluated using samples from the 0- to 6- inches depth interval, as representative of the biological active zone, see Figures 10[13], 11[14] and 12[15]. Maximum detected PCB concentration in sediment at the Site's upper six inches, the biological active zone, was 5.2 milligram(s) per kilogram (mg/kg) (Sample NDSL-9 (PCB-1254, 0- to 6- inches depth interval), see Figure 12[15]. This is at the North Devil's Swamp Lake AOI.

The RI (*Tier 1 and Tier 2 Remedial Investigation Reports*) involved an extensive investigation of the nature and extent of contamination in the surface water, sediment, soil, and biological tissue of Devil's Swamp Lake. A total of 48 surface water samples were collected for analysis of PCB Aroclors from the Site. A total of 156 sediment samples were collected for analysis of PCB Aroclors, PCB congeners, percent moisture, total organic carbon (TOC), and grain size from the Site at 52 locations (three samples at each location from depths 0-6 inches, 6-12 inches, and 12-18 inches) during the Tier 1 RI. During the Tier 2 RI sampling activities, 33 additional sediment samples were collected for analysis of PCB Aroclors, PCB congeners, percent moisture, TOC, and grain size from the Site at 11 locations in South Bayou Baton Rouge. A total of four soil samples were collected from the Site at four locations along the levee on the east side of Devil's Swamp Lake. The soil samples were collected at the ground surface (approximately 0-6 inch) for analysis of PCB Aroclors.

[12] Figure 9 = Figure 3-1 – Tier 2 Remedial Investigation Areas of Investigation.
[13] Figure 10 = Figure 4-3 – Tier 2 Remedial Investigation 2012 Fish Tissue Sample Areas.
[14] Figure 11 = Figure 3-1 – Sediment Sample Locations.
[15] Figure 12 = Figure 6-1 – Sediment Sample Locations and Results.

4.6.5 Biological Tissue Samples (Fish and Crawfish)

Because the primary indicator species for the Baseline Ecological Risk Assessment (BERA) are the belted kingfisher, bald eagle, raccoon, mink, and a great blue heron, fish readily consumed by these species were targeted for collection. For the BERA and Human Health Risk Assessment (HHRA), composite fish tissue samples were collected from three target feeding guilds, including benthic fish (represented by channel catfish), predatory pelagic fish (represented by largemouth bass), and benthic invertebrates (represented by crawfish).

The biological tissue investigation included collection of 48 (12 largemouth bass, 12 channel catfish, and 24 crawfish) composite tissue samples for use in the BERA and the HHRA. A total of 12 bottom-feeding fish (channel catfish) and 12 pelagic fish (largemouth bass) samples were collected from Devil's Swamp Lake for analysis of 209 PCB congeners, percent moisture, and lipid content. Each composite sample consisted of approximately three individual fish. The fish samples were dissected and analyzed as filet (edible tissue) and offal (remaining whole body tissue).

In May 2013, a total of 19 crawfish samples were collected from areas west of Devil's Swamp Lake and South Bayou Baton Rouge. Fifteen composite crawfish tissue samples were submitted to TestAmerica for analysis of 209 PCB congeners, percent moisture, and lipid content. Four additional composite crawfish tissue samples were dissected in the field and submitted for analysis of the hepatopancreas, tail, and remaining whole body tissue for 209 PCB congeners, percent moisture, and lipid content. Following discussion of the May 2013 crawfish sample locations, the EPA requested additional crawfish sample collection from the areas in and around the North Devil's Swamp Lake shoreline. After a protracted effort to collect additional crawfish in requested areas, in June 2014, five composite whole body crawfish samples were submitted for analysis of WHO list PCB congeners and lipid content.

Devil's Swamp Lake		
	Mean Total PCB Congeners	Mean DLPCB TEQ
Catfish filet	0.748 ng/g	1.53 E-05 ng/g
Bass fillet	0.603 ng/g	1.69 E-05 ng/g
Crawfish	0.003 ng/g	NA

Dioxin-like Polychlorinated Biphenyls (DLPCB) toxic equivalency (TEQ)
Source: Tier 2 Remedial Investigation Report, Appendix L (ProUCL general statistics)

4.6.6 Principal threat waste

The PCB contaminated sediment at the Site is not considered principal threat waste. The maximum average detected PCB concentration in sediment at the Site was 19.9 mg/kg (Sample NDSL-13 (average of PCB-1254 from three samples collected at intervals 0" - 6", 6" – 12" and 12" - 18"), Site sediments are not considered PCB remediation waste subject to specific disposal requirements.

4.7 Constituents of Concern

PCBs have been found at concentrations of concern in sediment and biological tissue in DSL. As a result of evaluation of historical investigations conducted, they were selected as the primary Constituents of Concern (COCs) to be carried forward during the completion of the RI/FS.

PCBs have been classified by the EPA as probable human carcinogens. Historical discharge from the former Rollins facility appears to be the primary source of impact to the Site. They were discharged to surface water and sediment, and subsequently spread by various transport mechanisms, including sediment resuspension and surface water transport. The RI/FS investigation defined the extent of contamination through the Site and surrounding areas.

4.8 Summary of investigations conducted

4.8.1 Site Characterization Report – May 21, 2010

The Preliminary Site Characterization Report was prepared in accordance with the requirements outlined in the UAO for RI/FS, issued on December 3, 2009. The report summarized and evaluated historic investigations conducted at the Site and identified Constituents of Potential Concern (COPCs).

The report developed a preliminary Conceptual Site Model (CSM) and identified potential human and ecological exposure pathways to potential receptors.

4.8.2 Tier 1 Remedial Investigation – February 2012

The Tier 1 investigation collected water and sediment samples that were analyzed for constituents of concern and compared with appropriate screening-level Human Health Risk Assessment (HHRA), and Screening Level Ecological Risk Assessment (SLERA) criteria.

Further evaluation of the potential ecological and human risks was recommended by performing additional sampling of various receptor prey and food items

4.8.3 Tier 2 Remedial Investigation – October 2015

The objective of the Tier 2 RI Report was to present the sampling results, including characterization of Constituents Of Potential Ecological Concern (COPECs) for ecological receptors and Constituents Of Potential Concern (COPCs) for human receptors in sediment, soil, surface water, and biological tissues, and estimate potential ecological and human health risks due to COPEC/COPC exposures. The identified COPECs and COPCs consist of PCBs.

The objectives were completed through further characterization of the Site, conducting a Baseline Ecological Risk Assessment (BERA) and an HHRA to evaluate potential risks. The biological tissue investigation included the collection of bass, channel catfish, and crawfish) composite tissue samples for use in these risk assessments. Samples were from areas throughout the Site that represented likely

habitats for the ecological indicator species, and their prey, and where human receptors may be found. The collection area for fish and crawfish focused solely on open water habitat and fringe swamp marsh habitat. These are locations where both fish and crawfish were expected to physically reside.

The actual fish consumption rates for recreational users that may utilize the Site, disregarding the fish consumption advisory, is unknown. EPA, in coordination with LDEQ, estimated a rate of 45.36 grams per meal of bass, 177 grams per meal of catfish, and 5 grams per meal of crawfish; for a total consumption rate of 227.36 grams per adult meal, and a frequency of 4 meals per month.

4.8.4 State fishing advisory – August 12, 2015

On August 12, 2015, the LDEQ, LDHH, and the LDWF re-issued a precautionary Fish Consumption Advisory for the Devil's Swamp and Bayou Baton Rouge Area. The advisory included a recommendation against consuming fish or crawfish from the area. The advisory diminishes the likelihood that fish and crawfish taken from the Site would be consumed by an actual recreational user; however, the Tier 2 RI HHRA conservatively evaluates consumption of fish and crawfish from the Site as though the advisory was not in place.

4.8.5 FS Technical Memorandum – December 2, 2016

The overall purpose of the Feasibility Study Technical Memorandum was to identify and screen sediment remediation alternatives that address elevated concentrations of PCBs in the Site surface sediments, given that reducing the concentrations of PCBs in sediment will lead to reduced exposure of fish to PCBs and, ultimately, to reduced concentrations of PCBs in edible fish tissue.
The following technologies and process options were retained from the screening and were evaluated as part of remediation alternatives for addressing sediment contamination in the Site:

- No action
- Institutional controls
- Monitored natural recovery (MNR)
- Enhanced monitored natural recovery (EMNR)
- Sediment cap

4.8.6 FS Report – June 28, 2018

The FS for the Devil's Swamp Lake Site was prepared by Clean Harbors, on behalf of Baton Rouge Disposal, LLC, for submittal to EPA. Risk assessments prepared as part of the RI demonstrated the Site's predicted risks are driven by non-cancer health effects in people potentially exposed to total PCBs from consumption of fish harvested from the Site. The overall purpose of the FS was to identify, and evaluate sediment remediation alternatives that address elevated concentrations of PCBs in the Site surface sediments, given that reducing the concentrations of PCBs in surface sediment will lead to reduced exposure of fish to PCBs and, ultimately, to reduced concentrations of PCBs in edible fish tissue.

4.8.7 Barge Canal

PCBs in the Barge Canal may originate from releases through discharges from the Rollins Environmental Services, Inc. ditch in the Barge Canal in the early 1970s, and/or overtopping the Devil's Swamp Lake dike work during severe flood events that allow for overflow of water from Devil's Swamp Lake Site into the navigation channel.

Maintenance projects by the U.S. Army Corps of Engineers, New Orleans District, are limited to the periodic removal of shoals every 1 to 4 years at the navigation channel's entrance and the intersection with the river, to restore serviceable dimensions. This typical maintenance extends no further than the first mile of the channel and was last completed in December 2015. Major maintenance of the entire 2.5 miles of the channel occurs infrequently (every 20-years, or so), and was last completed in November 2009.

4.8.7.1 Sampling Activities by U. S. Army Corps of Engineers

Shoal material samples from the Barge Canal was collected on October 28, 2015, in advance of scheduled maintenance dredging and thus comprised of the material that had accumulated since the 2009 major maintenance event. The samples were analyzed for the presence of the 209 PCB congeners and revealed an increase in total PCB concentrations from about 6 parts per billion (ppb) near the river to about 22 ppb near the north dike (end of the canal). These results suggest that PCBs are originating from a source near the north dike that separates the lake and channel. The USACE reported that these concentrations are 20-fold less than those believed to pose an ecological risk.

4.8.7.2 Sampling Activities by Clean Harbors

Clean Harbors Environmental Services, Inc., on behalf of the Baton Rouge Disposal, LLC, implemented a voluntary sediment and fish tissue investigation in the Barge Canal, as per the request of the EPA and the LDEQ. The LDEQ has previously indicated that the Barge Canal may require further investigation, based on the Corps of Engineers investigations. This Barge Canal is also covered by the Fish Consumption Advisory, issued by the State agencies and has been posted with signs accordingly.

In August 2017, Clean Harbors collected sediment and fish (catfish) tissue samples in the Barge Canal. Sediment samples were collected from the 0- to 6- inches and the 6- to 12- inches depth interval at the upper end of the canal for analysis of PCBs. Fish tissue samples were collected and analyzed for the 209 PCB Congeners.

Samples were collected using the same sampling procedure and methodology used in the investigations at the Site AOIs. The tissue data were evaluated using the 95% Upper Confidence Limit, to calculate an Exposure Point Concentration (EPC), used to calculate risk to potential receptors. For comparison with fish from the lake, similar assumptions were applied as used for a recreational user (the receptor / child and adult).

PCB concentrations in Channel catfish *(Ictalurus punctatus)* was selected as the target fish tissue species, because the consumption of catfish fillets was the primary driver of potential non-cancer and cancer risks to human health. Bass, crawfish and other fish concentrations are assumed to vary directly with catfish concentrations and have a smaller contribution to total risk. The assumption is based on the fact that all species have the same access to prey and reflects the relatively small influence on overall predicted risks.

The sediment and fish tissue sample data were evaluated in accordance with the procedures used for the Human Health Risk Assessment conducted for Devil's Swamp Lake, presented in the EPA-approved Tier 2 Remedial Investigation Report. This evaluation was compared to the risk results from fish caught in the lake.

4.8.7.3 Re-sampling Activities by Clean Harbors

In August 2018, Clean Harbors Environmental Services, Inc., on behalf of the Baton Rouge Disposal, LLC, implemented an additional voluntary fish tissue investigation in the Barge Canal, as per the request of the EPA and the LDEQ. This investigation collected a larger number of fish tissue samples in order to develop a stronger statistical analysis of PCB concentrations in catfish.

Fifteen composite catfish tissue samples were submitted for analysis of PCB congeners. Nine samples were analyzed for the 12 WHO list DLPCBs and six samples were analyzed for the 209 PCB congeners.

Samples were collected using the same sampling procedure and methodology used in the previous investigations at the Site AOIs. The tissue data were evaluated using the 95% Upper Confidence Limit, to calculate an Exposure Point Concentration (EPC), used to calculate risk to potential receptors, for comparison with fish from the lake and fish collected in the 2017 sampling event. Similar assumptions were applied as used for a recreational user (child and adult).

Again, the fish tissue sample data were evaluated in accordance with the procedures used for the Human Health Risk Assessment conducted for Devil's Swamp Lake, presented in the EPA-approved Tier 2 RI Report. This evaluation was compared to the risk results from fish caught in the lake.

4.8.7.4 Risk Characterization for the Barge Canal

For carcinogens, risks are generally expressed as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to the carcinogen. Excess lifetime cancer risk is calculated from the following equation:

$$\text{Risk} = \text{CDI} \times \text{SF}$$

where:
risk = a unitless probability (e.g., 2×10^{-5}) of an individual's developing cancer
CDI = chronic daily intake averaged over 70 years (mg/kg-day)
SF = slope factor, expressed as (mg/kg-day)-1.

These risks are probabilities that usually are expressed in scientific notation (e.g., $1x10^{-6}$ or 1 E-06). An excess lifetime cancer risk of $1x10^{-6}$ indicates that an individual experiencing the reasonable maximum exposure estimate has a 1 in 1,000,000 chance of developing cancer as a result of site-related exposure. This is referred to as an "excess lifetime cancer risk" because it would be in addition to the risks of cancer individuals face from other causes such as smoking or exposure to too much sun. The chance of an individual developing cancer from all other causes has been estimated to be as high as one in three. For Site-related exposure is in the range of 1 in 100,000 (this term also expressed as 1 E-05).

The potential for non-carcinogenic effects is evaluated by comparing an exposure level over a specified time period (e.g., lifetime) with a reference dose (RfD), derived for a similar exposure period. An RfD represents a level that an individual may be exposed to that is not expected to cause any deleterious effect. The ratio of exposure to toxicity is called a hazard quotient (HQ). An HQ<1 indicates that a receptor's dose of a single contaminant is less than the RfD and that toxic non-carcinogenic effects from that chemical are unlikely.

4.8.7.5 Resulting Risk Numbers for the Barge Canal

For a recreational user, child and adult, the EPA's risk characterization results yield:

Exposure Medium	Exposure Route	Constituent of Potential Concern	EPC (mg/kg)	Cancer Risk	Hazard Quotient
Barge Canal – 2017 sampling event					
Catfish Filet	Ingestion	Total PCB	0.15	1 E-05	0.8
Catfish Filet	Ingestion	DLPCBs TEQ	2.8 E-06	1 E-05	0.4
EPA Reasonable Maximum Exposure Cancer Risks and Non-Cancer Hazards for a Recreational User fishing in the north end of the Barge Canal. (Barge Canal Sediment and Fish Tissue Investigation Addendum, March 21, 2018)					
Barge Canal – using data from the 2017 and 2018 sampling events					
Exposure Medium	Exposure Route	Constituent of Potential Concern	Exposure Point Concentration (mg/kg)	Cancer Risk	Hazard Quotient
Catfish Filet	Ingestion	Total PCB	0.15	1 E-05	0.8
Catfish Filet	Ingestion	DLPCBs TEQ	3.0 E-06	1 E-05	0.4
EPA Reasonable Maximum Exposure Cancer Risks and Non-Cancer Hazards for a Recreational User fishing in the north end of the Barge Canal. (Barge Canal Additional Fish Tissue Sample Collection Report, December 19, 2018)					

A Federal response action is generally warranted if one or more of the following conditions is met: (1) the cumulative excess carcinogenic risk to an individual exceeds 1×10^{-4} (or 1E-04) (using reasonable maximum exposure (RME) assumptions for either the current or reasonably anticipated future land use or current or potential beneficial use of ground/surface water); (2) the non-carcinogenic Hazard Quotient is greater than one (using RME assumptions for either the current or reasonably anticipated future land use).

These conditions were not exceeded at the Barge Canal, therefore no further Federal response is warranted under CERCLA and the NCP for this AOI.

Mean concentrations of these contaminants are below the State issued "Tissue Screening Levels" of March 2012 for Total PCBs, except for DLPCBs. This Barge Canal remains under a Fish Advisory issued, by the state agencies, and under their regulations and protocols, other actions may be warranted.

5. SCOPE AND ROLE OF OPERABLE UNIT OR RESPONSE ACTION

5.1 Lead agency's overall strategy for remediating the Site

Risk assessments prepared as part of the Remedial Investigation (RI) concluded the Site's predicted risks are driven by non-cancer health effects in people potentially exposed to total PCBs from consumption of fish harvested from the Site. The overall purpose of this Proposed Plan is to present and evaluate sediment remediation alternatives, identified in the FS, that address elevated concentrations of PCBs in surface sediments, based on the understanding that reducing PCB concentrations in surface sediment will lead to reduced exposure of fish to PCBs, and reduced PCB concentrations in edible fish tissue, thus reducing unacceptable risks to people consuming fish caught in the lake.

6. SUMMARY OF SITE RISKS

6.1 Risk Assessment Assumptions

EPA, LDHH, LDEQ, and Clean Harbors differ in their opinions as to the most appropriate assumptions to apply to represent behaviors of people who consume fish or crawfish derived from the Site. EPA and LDEQ agreed in using Reasonable Maximum Exposure (RME) assumptions, based on the Risk Assessment Guidance for Superfund, these assumptions include:

- EPA and LDEQ considered a recreational user,
- child (older than 2 years) and an adult,
- ingesting a fish and crawfish meal catch from the Site,
- with a frequency of the meal is 4 meals/month, and
- the composition of the meal includes a combination of:
    - largemouth bass,
    - channel catfish, and
    - crawfish.

6.2 Ecological Risks

The BERA evaluated the potential risks to fish and wildlife species foraging on aquatic prey in Devil's Swamp Lake that may be exposed to PCBs. Ingestion of PCBs, evaluated as total PCBs and dioxin-like PCBs (DLPCBs), by avian and mammalian wildlife was estimated using food chain models.

6.2.1 Indicator Species

It is not practical to evaluate the potential for risk to all species that may forage in an assessment area. In practice, indicator species are used to represent key trophic guilds that are expected to be most highly exposed and sensitive to COPECs. For the Devil's Swamp Lake assessment area, avian and mammalian wildlife that forage on fish and crawfish are expected to be the most highly exposed and most sensitive to PCBs. Five indicator species were selected to represent the key trophic guilds for the Devil's Swamp Lake assessment area: bald eagle (*Haliaeetus leucocephalus*), great blue heron (*Ardea herodias*), belted kingfisher (*Megaceryle alcyon*), raccoon (*Procyon lotor*), and mink (*Neovison vison*).

6.2.2 Exposure Models

Risk to bald eagle, great blue heron, belted kingfisher, and raccoon exposed to DLPCBs and total PCBs was evaluated using dose-based food chain models. Risk to mink exposed to total PCBs was also evaluated using a dose-based model. Ingestion of PCBs (i.e., dose), expressed as milligrams of PCBs ingested per kilogram body weight (BW) per day (mg/kg-day), was calculated using equations that consider direct ingestion via food consumption and drinking water and incidental ingestion of sediment and/or soil.

Risk to mink exposed to DLPCBs was evaluated using the whole-body concentration model by Fuchsman, et al., (2008). In recent years, numerous studies have reported effects of PCBs on the reproductive success of mink. Fuchsman, et al., (2008) evaluated over 50 studies and concluded that whole-body concentrations best explain variation in reproductive success among studies.

6.2.3 Summary

The Bald eagle was evaluated as the indicator species for sensitive avian wildlife. Based on the results of the food chain models, there is high certainty that concentrations of Aroclors and PCB congeners in sediment, fish, crawfish, and other dietary items are not sufficient to adversely affect growth or reproduction of bald eagle or other sensitive avian wildlife.

The Great blue heron was evaluated as the indicator species for avian wildlife that forage on fish and crawfish. Based on the results of the food chain models, there is high certainty that concentrations of Aroclors and PCB congeners in sediment, fish, crawfish, and other dietary items are not sufficient to adversely affect growth or reproduction of great blue heron or other avian wildlife that forage primarily on fish, crawfish, and other aquatic prey.

The Belted kingfisher was evaluated as the indicator species for avian wildlife that forage on fish and crawfish, with crawfish accounting for a high percentage of the diet. There is high certainty that concentrations of Aroclors and PCB congeners in sediment, fish, crawfish, and other prey are not sufficient to adversely affect growth or reproduction of belted kingfisher or other avian wildlife that forage primarily on fish, a high percentage of crawfish, and other aquatic prey.

The Raccoon was evaluated as the indicator species for mammalian wildlife that forage on fish and crawfish, with crawfish accounting for a high percentage of the diet. There is high certainty that concentrations of Aroclors and PCB congeners in sediment, fish, crawfish, and other prey are not sufficient to adversely affect growth or reproduction of raccoon or other mammalian wildlife that forage primarily on fish, a high percentage of crawfish, and other aquatic prey.

The Mink was evaluated as the indicator species for mammalian wildlife that is sensitive to PCBs and that forages on fish, crawfish, and semi-aquatic prey. The results indicate that the potential for risk and adverse effect on reproduction of individual mink is minimal. Population-level impacts also are likely negligible.

Fish concentrations of DLPCBs in whole-body tissue were evaluated to assess if body burden concentrations have sub-lethal toxic effects in fish. Based on the comparison of fish tissue concentrations to literature-derived TRVs, there is high certainty that concentrations of DLPCBs in whole-body fish are not sufficient to cause sub-lethal toxic effects.

6.2.4 Conclusions

The data and analyses presented in the BERA are sufficient to conclude that concentrations of PCBs in sediment and biota of the Devil's Swamp Lake assessment area do not pose a potential for risk to ecological receptors. Given the relatively low risks posed by PCBs to ecological receptors, as well as the sensitivity of the habitat to physical disturbance, and the significant physical disturbance associated with sediment remediation in aquatic ecosystems such as Devil's Swamp Lake, the adverse effects of remediation would undoubtedly outweigh the relatively low risks posed by PCBs.

6.3 Human Health Risks

6.3.1 Potentially Exposed Populations

The following two potentially exposed populations and their respective exposure pathways were subjected to a quantitative assessment in the RI/FS:

1) Wading fisher-hunter: an adult receptor wading through Drainage Ditch AOI at the Site where dermal contact with, and incidental ingestion of, surface water and sediment may occur. Exposure of the wading fisher-hunter is evaluated only for the Drainage Ditch AOI since this AOI is where gaining access is most plausible.

2) Recreational user: an adult and child receptor ingesting fish and crawfish caught from all AOIs at the Site. The potentially exposed populations consist of a fisher-hunter and recreational user.

6.3.2 Risk calculation

Per the EPA's guidance, cumulative risks and hazards were calculated in the RI/FS where applicable and appropriate, using non-cancer hazard and cancer risk tools, as per the EPA Risk Assessment Guidance

for Superfund (RAGS). The calculation was performed for the RME recreational user potentially exposed to total PCBs and DLPCBs via the consumption of fish and crawfish.

The HHRA for fish consumption used assumptions that result in non-cancer hazards to a recreational user that are above the threshold for implementing risk management and/or remedial action. This result aligns with the fish advisory issued by the LDEQ, LDHH, and LDWF. The risk conclusions for fish and crawfish consumption reached were used as part of risk management options considered in completing a Feasibility Study (FS) for the Site.

For the recreational users the resulting calculations resulted in:

COPCs	Cancer Risk	Hazard Quotient
Total PCB	9E-05	6
DLPCBs	1E-04	4

EPA's target range for risk management is 1E-06 to 1E-04, with the upper limit of this range typically used to make risk management decisions (OSWER Directive 9355.0-30). A Hazard Quotient (HQ) (or Hazard Index (HI)) greater than 1 is a reasonable non-cancer hazard level for requiring implementing remedial actions.

6.3.3 Summary

For a recreational user, child and adult, the EPA's risk characterization results yield:

Exposure Medium	Exposure Route	Constituents Of Potential Concern	Cancer Risk	Hazard Index / Hazard Quotient
Fish Meal	Ingestion	Total PCB	9 E-05	HI = 6
Fish Meal	Ingestion	DLPCBs TEQ	1 E-04	HI = 4
EPA Reasonable Maximum Exposure Cancer and Non-Cancer Hazards for a Recreational User fishing in Devil's Swamp Lake. (Tier 2 Remedial Investigation Report, Appendix N, October 30, 2015)				

The HHRA identified no unacceptable cancer risk or non-cancer hazard for a recreational user due to total PCBs or DLPCBS in any of the AOIs. The exposure medium was sediment and water.

For fish consumption, the HHRA used EPA and LDEQ approved-assumptions that result in non-cancer hazards to a recreational user are above the threshold for implementing risk management and/or remedial action.

6.3.4 Conclusions

Because of PCBs' environmental toxicity and classification as a persistent organic pollutant[16], PCB production was banned by the United States Congress in 1979 and by the Stockholm Convention on Persistent Organic Pollutants in 2001. It is the lead agency's current judgment that the Preferred Alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to protect public health or welfare or the environment from actual or threatened releases of pollutants or contaminants from this site which may present an imminent and substantial endangerment to public health or welfare.

6.4 Remedial Elements (To control risks - Components)

6.4.1 Treatment approaches and technologies

6.4.1.1 MNR requires monitoring this natural attenuation and is one of the three primary sediment remediation approaches recognized by EPA. Under MNR, concentrations of PCBs in sediment would be reduced over time through a combination of existing physical, chemical, and/or biological processes that contain and reduce their bioavailability.

6.4.1.2 EMNR refer to the range of technologies that involve a thin cover with or without amendments added, to reduce bioavailability or mobility of PCBs in sediment. Options for amendments to thin cover materials are discussed in the FS.

6.4.1.3 Sediment cap (or capping) isolates contaminants from the water column and biological receptors by placing clean material on the sediment bed surface and armoring the cap as needed to withstand erosive forces.

6.4.1.4 Sediment Dredging and Excavation Dredging is used to describe the removal of sediment without water diversion or draining (i.e., "in the wet" under submerged-sediment conditions).

Remediation alternatives that involve sediment dredging and excavation were evaluated as part of the technology screening process. Constraints on access for heavy equipment also would impede sediment removal, and a combination of removal methods (e.g., water or land-based dredging, excavation from shorelines, or using amphibious equipment) may be required. The Site can accommodate the dredged material handling areas and operations (e.g., dewatering or solidification/stabilization), although improvements to create haul roads for transfer of sediments and a dock/berthing area may be necessary. The physical impacts of such improvements and of sediment removal can damage sensitive wetland

[16] Pollutant or contaminant as defined by section 101(33) of CERCLA, shall include, but not be limited to, any element, substance, compound, or mixture, including disease-causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformation, in such organisms or their offspring. <<< This is the definition from 40 CFR 300.5 – Definitions) (CFR Title 40, Chapter I, Subchapter J, Part 300, Subpart A, Section 300.5.

vegetation and hydrology. If recovery is possible, it may take decades for the hydrology and vegetation to be fully restored. For the reasons described here, sediment removal is neither applicable nor recommended for this Site, and was not retained for further consideration.

At Devil's Swamp Lake, concentrations of PCBs are considerably higher in some buried—and currently inaccessible—sediments as compared to surface sediments (Van Metre et al. 2006). Consequently, human and ecological exposures to PCBs could increase as a result of sediment removal. The use of this technology was rejected, since sediment removal would have little positive impact on short-term risk reduction and would result in removing the existing benthic community.

6.4.2 Institutional Controls

Institutional controls would remain in place throughout the monitoring period. Since buried waste is being left in place, some ICs will be needed in perpetuity, as will Five-Year Reviews. Institutional controls include the existing fish consumption advisory, Conveyance Notices to inform an interested party the environmental condition of a property, and prohibitions on construction or any other activity within Devil's Swamp Lake that would disturb the sediments.

6.4.3 Monitoring

Monitoring will document the effectiveness of natural physical, chemical, or biological processes in reducing contaminant concentrations to achieve the RAOs and reduce risks. MNR and EMNR can effectively mitigate human and ecological risks. However, given that contaminants are left in place, the timeframe to achieve remedial action objectives are typically slower than for other General Response Actions (GRAs), such as capping or removal.

Monitoring of sediment and biota will be undertaken concurrently to verify the continuing reduction of PCB concentrations in sediment and fish.

Monitoring may include visual observation (e.g., camera or video profiling) to evaluate the integrity of the thin cover and the potential for displacement, shifting, or erosion. Biological monitoring may be conducted to evaluate biological recovery.

7. REMEDIAL ACTION OBJECTIVES

7.1. Objectives

The FS defined the following Remedial Action Objectives (RAOs) for the Site:

- Reduce contaminant concentrations in fish and shellfish to levels protective of human health.
- Prevent unacceptable non-cancer health effects from ingestion of fish containing elevated concentrations of total PCBs.

- Prevent unacceptable cancer risks from ingestion of fish containing elevated concentrations of dioxin-like PCBs (DLPCBs).
- In considering the State Fish Consumption Advisory, TBC, reduce risk to levels that will allow the State to remove or modify the existing fish consumption advisory.
- Maintain or reduce ecological risks, while limiting physical, chemical, or biological harm to the ecosystem associated with the implementation of remediation alternatives.

These RAOs are closely linked to the concentrations of PCBs in DSL fish. **Because sediment is the dominant exposure pathway through which fish are exposed to PCBs, these RAOs will be measured through sediment PCB concentrations.**

7.2 Contaminants of Concern by medium

7.2.1 PCBs, Congeners, Homologs, Aroclors, DLPCBs

PCBs are a group of man-made organic chemicals consisting of carbon, hydrogen and chlorine atoms. The number of chlorine atoms and their location in a PCB molecule determines many of its physical and chemical properties. PCBs belong to a broad family of man-made organic chemicals known as chlorinated hydrocarbons. PCBs were domestically manufactured from 1929 until manufacturing was banned in 1979.

A PCB congener is any single, unique well-defined chemical compound in the PCB category. The name of a congener specifies the total number of chlorine substituents and the position of each chlorine. For example: 4,4'-Dichlorobiphenyl is a congener comprising the biphenyl structure with two chlorine substituents - one on each of the #4 carbons of the two rings.

PCB Homologs are subcategories of PCB congeners that have equal numbers of chlorine substituents. For example, the tetrachlorobiphenyls are all PCB congeners with exactly 4 chlorine substituents that can be in any arrangement.

Aroclor is a PCB mixture produced from approximately 1930 to 1979. It is one of the most commonly known trade names for PCB mixtures.

Dioxins and some PCBs referred as dioxin-like PCBs, (DLPCBs) are often considered together due to their similar toxicological properties. These substances are considered persistent organic pollutants covered by the Stockholm Conventions. They can travel long distances from the source of release, and bioaccumulate in food chains.

7.2.2 Total PCBs and DLPCBs

The RI/FS and risk assessments evaluated the potential risks to fish and wildlife species foraging on aquatic prey in Devil's Swamp Lake that may be exposed to PCBs. Ingestion of PCBs was evaluated as total PCBs and DLPCBs.

Under conservative assumptions of fish ingestion, the estimated non-cancer hazards exceed thresholds for making risk management/remedial action decisions for the Site. Therefore, risk management options for addressing a wide range of risk assessment results were developed as part of the FS.

Concentrations of PCBs congeners in sediments, surface waters, and whole-body fish were used to generate Exposure Point Concentrations (EPCs) to evaluate potential risk to exposed populations. These concentrations are:

Medium	Location	COC	EPCs	Exposed individual to this COC
Sediment	Ditch	Total PCB	1.1 mg/kg	Current/Future Fisher-Hunter exposure
Surface Water	Ditch	Total PCB	1.6E-04 mg/L	Current/Future Fisher-Hunter exposure
Biological Tissue				
Bass	Entire Site	Total PCB	6.7E-01 mg/kg	Recreational User exposed to fish and crawfish
		DLPCBs	2.2E-05 mg/kg	Recreational User exposed to fish and crawfish
Catfish	Entire Site	Total PCB	1.1 mg/kg	Recreational User exposed to fish and crawfish
		DLPCBs	2.2E-05 mg/kg	Recreational User exposed to fish and crawfish
Crawfish	Entire Site	Total PCB	1.6E-02 mg/kg	Recreational User exposed to fish and crawfish
		DLPCBs	1.6E-07 mg/kg	Recreational User exposed to fish and crawfish

Source: Tier 2 Remedial Investigation Report, Appendix N (Risk Characterization)

7.3 Preliminary Remediation Goals

The Site's risk driver is non-cancer hazard resulting from human exposure to total PCBs via consumption of fish derived from the Site.

Although the risk driver at the Site is human consumption of fish from Devil's Swamp Lake, PRGs are developed for sediment PCB concentrations because sediments are the dominant ongoing exposure pathway for fish to PCBs. Decreases in concentrations of PCBs in sediment should lead to decreased exposure of fish to PCBs and, ultimately, to decreased concentrations of PCBs in fish tissue. Therefore, the remediation actions taken to meet the RAOs above will target PCBs in sediment and they will be evaluated based on surface weighted average concentrations (SWACs) of total PCB concentrations in sediment.

The EPA coined the term "exposure point concentration" (EPC) to describe the interaction between the spatial distribution of contaminants and organism use. The EPC is an upper confidence limit for the arithmetic mean intended to represent exposure for risk assessment. At sediment sites, EPCs have been estimated using what is termed SWAC. The SWAC is described as a useful surrogate risk metric, representing the average contaminant concentration in the biologically active portion of sediment. In this

sense, SWAC is used in place of an EPC for qualifying exposure in a given area. For this project, the term SWAC represents a surface weighted average concentration of PCBs in sediment within a specific area. SWAC calculations have been used at several large Superfund sediment sites to evaluate risks and cleanup levels (e.g., Fox River, Hudson River, Housatonic River, Willamette River and the Lower Duwamish Waterway).

SWAC possible PRGs were calculated for target cancer risks ranging from 1 x 10^{-6} to 1 x 10^{-4} and for non-cancer risks.

- At a target cancer risk of 1 x 10^{-4}, a possible PRG based on non-cancer risks is more protective; that PRG is equal to a SWAC of approximately 0.2 milligrams per kilogram (mg/kg).
- At a target cancer risk of 1 x 10^{-5}, a PRG based on cancer risks is more protective; that PRG is equal to a SWAC between 0.1 and 0.2 mg/kg.
- At a target cancer risk of 1 x 10^{-6}, the required fish tissue concentrations required are below background conditions for remote and pristine parts of the world, 0.014 mg/kg in bottom-dwelling fish sampled throughout US lakes, and the associated sediment PRG will be below precedents from other PCB sediment sites throughout the US. At the Mississippi River, concentrations of PCBs in catfish fall within the range of 0.017 mg/kg to 0.17 mg/kg. Consequently, sediment PRGs associated with a 1 x 10^{-6} target cancer risk were not retained in the FS and are not considered in this Proposed Plan.
- A PRG not to exceed 0.2 mg/kg in sediments is protective of non-cancer hazards at an HI = 1.

Target Cancer Risk	Surface Weighted Average Sediment Concentration (SWAC)
1 E $^{-6}$	Required value below background conditions
1 E $^{-5}$	0.1 to 0.2 milligrams per kilogram (mg/kg)*
1 E $^{-4}$	0.2 milligrams per kilogram (mg/kg)

* The SWAC PRGs are expressed as a range (0.1 to 0.2 mg/kg) based on a range of assumed uptake of PCBs from sediment by fish. Sediment concentrations within this range are predicted to result in fish tissue concentrations that are protective of both non-cancer risk and a target cancer risk of 1 x 10^{-5} from fish consumption.

The baseline SWAC for total PCBs in Devil's Swamp Lake is 0.6 mg/kg. To achieve a target HI of 1 and a target cancer risk of 1 x 10^{-5}, sediment remediation would need to reduce the SWAC to 0.1 mg/kg to 0.2 mg/kg. To achieve a target HI of 1 and a target cancer risk of 1 x 10-4, sediment remediation would need to reduce the SWAC to 0.2 mg/kg. This is the proposed cleanup level.

EPA's Preliminary Remediation Goal (PRG)	
SWAC in surface sediment at or below	0.2 milligrams per kilogram total PCBs (mg/kg) **

** Upper six inches of sediment

Target total PCB concentrations in catfish are used as a target, because the consumption of catfish fillets drives non-cancer and cancer risks to human health. The baseline Total PCB concentration for catfish

range from 0.62 to 0.84 mg/kg. Bass, crawfish and other fish concentrations are assumed to vary directly with catfish concentrations and will be reduced. The assumption is based on the fact that they have full access to prey throughout the lake and reflects the relatively small influence on overall predicted risks.

EPA's Target Concentrations in Fish Tissue	
Total PCB Concentration in Catfish	0.17 mg/kg wet ***
DLPCB TEQ Concentration in Catfish	2.3 – 2.5 ng/kg wet ***

***Average Post remedy Concentration

Although the SWAC PRG range is developed for total PCBs, it is also protective of risks posed by DLPCBs. Appendix B of the FS calculates post-remediation ("residual") risks to human health based on current concentrations of DLPCBs outside of the remedy footprint and post-remediation concentrations of DLPCBs in the SMAs. Residual cumulative cancer risks from DLPCBs are predicted to be within the EPA acceptable cancer risk range, while noncancer risks from DLPCBs are predicted not to exceed an HI of 1. Consequently, a separate PRG for DLPCBs is not necessary to ensure that the remedy is protective of risks posed by both total PCBs and DLPCBs.

To meet the objective of considering the state's TBC criteria, "Protocol for Issuing Public Health Advisories for Chemical Contaminants in Recreationally Caught Fish and Shellfish", relevant to rescinding an advisory, the following Tissue Screening Level (TSLs), derived from the Protocol using default assumptions, should be met.

Fish Consumption Advisory Target TSL Concentrations in Fish and Crawfish Tissue	
Total PCB Concentration	0.27 mg/kg wet ***
DLPCB TEQ Concentration	1.6 ng/kg wet ***

***Average Post remedy Concentration

Once met, this could result in lifting PCB of the Fish Consumption Advisory for Devil's Swamp Lake.

7.4 Sediment Management Areas

Specific areas identified as Sediment Management Areas (SMAs), are delineated such that, when remediated, the Site will achieve the Site-specific SWAC PRGs. The SMAs are delineated by comparing the available surface sediment data to the PRGs and determining which parts of the lake, if remediated to the equivalent of non-detect PCB concentrations, will result in a SWAC that is less than the Site-specific SWAC PRGs.

After EPA's selection of the remedial alternative to be implemented, additional data will be collected to further delineate the SMAs and provide information for the remedial design related to appropriate material and placement methods that maximize long-term remedy effectiveness while optimizing conditions for benthic recolonization.

Following remediation of the SMAs, the post remediation SWAC is predicted to be less than the PRG of not to exceed 0.2 mg/kg PCBs for a cancer risk of 1×10^{-4}.

7.5 General Response Actions

General response actions (GRAs) are broad categories of conceptual sediment remediation. Five GRAs were identified, and are evaluated as part of remediation alternatives, which can be considered separately or in combination for addressing sediment contamination in Devil's Swamp Lake:

- No Action
- Institutional controls
- MNR
- EMNR
- Sediment cap

During screening, two additional GRAs (sediment treatment and sediment removal and disposal) were considered and ruled out.

8. SUMMARY OF REMEDIAL ALTERNATIVES

8.1 Delineation of areas to be remediated

Two SMAs are delineated based on the PCB SWAC PRG's range that achieve a non-cancer risk of 1 and a target cancer risk of 1 x 10^{-5} (i.e., 0.1 to 0.2 mg/kg). Remediating only SMA A, 4.3 acres, see Figure 13[17], is predicted to yield a SWAC of 0.2 mg/kg, and remediating both SMA A + B is predicted to yield a SWAC of 0.1 mg/kg, see Figure 14[18] .

- SWAC Protective of non-cancer target risk — 0.2 mg/kg in surface sediment
- SWAC Protective of a target cancer risk of 1 x 10^{-5} — 0.1 to 0.2 mg/kg in surface sediment

The delineated SMAs (SMA A+B) target a total of 7.1 acres in two parts of the lake within the NDSL AOI, see Figure 14[18]. Following remediation of the SMAs, the post remediation SWAC is predicted to achieve the lower end of the PRG range of 0.1 mg/kg, which will in turn achieve a cancer risk of 1 x 10^{-5} and a noncancer HI of 1.

Through a SWAC evaluation, the FS determined that no further action will be required in the NCDS, SDSL or SBBR AOIs.

8.2 Remediation Alternatives

Five remediation alternatives are developed for the Site, including the No Action alternative. The other four alternatives were developed based on a single remedial technology or a combination of applicable remedial technologies and process options (i.e., MNR, EMNR, capping), as appropriate to achieve Site specific PRGs. The five remediation alternatives are listed below:

[17] Figure 13 = Sediment Management Area A
[18] Figure 14 = Sediment Management Area A + B

8.2.1 Remediation Alternative 1: No Action.

The No Action remediation alternative is included in the analysis for comparison to other alternatives. This remediation alternative reflects baseline sediment conditions as described in the RI and entails no further action for remediation of the Devil's Swamp Lake Site sediments, see Figure 15[19].

Estimated Maintenance Cost:	$0
Estimated Total Present Worth Cost:	$0
Estimated Construction Time:	Construction is complete

Under Remediation Alternative 1 no action is taken to confirm natural recovery processes. Consequently, there is no method of ascertaining if and when compliance with remediation goals is achieved.

8.2.2 Remediation Alternative 2: MNR in SMA A+B, total 7.1 acres.

Surface sediment within SMA A+B will be monitored over an extended period of time in order to verify continuing reduction of concentrations of PCBs through the natural processes that support input and deposition of relatively cleaner sediments within Devil's Swamp Lake. Monitoring of sediment and biota will be used to verify continuing reduction of PCB concentrations in sediment and fish and/or invertebrates. In addition, institutional controls will continue to be implemented and enforced throughout the monitoring period. Institutional controls will include the existing fish consumption advisory (and informational device) and limitations on access to Devil's Swamp Lake and other activities that could disturb the sediments, see Figure 16[20].

Estimated Capital and Fixed Cost:	$ 115,000
Estimated time for full recovery:	30 years
Estimated Operation and Maintenance Cost:	$1,089,000
Estimated Capital and Maintenance Cost:	$1,204,000
Estimated Total Present Worth Cost:	$ 623,000
Estimated Construction Time:	Construction is complete

Under Remediation Alternative 2, no active remediation is undertaken, but conditions are monitored over the long term in order to ascertain that the natural processes that are predicted to reduce concentrations of PCBs in surface sediment (as well as in the prey of fish and in the fish themselves) are in fact taking place. In contrast with the No Action alternative, MNR enables documentation of progress towards achieving RAOs.

Given that historical sources of PCBs to the lake have been controlled to the extent feasible and that there is some evidence that natural recovery is already underway, MNR has the potential to be effective at this Site, though considerable time may be required to achieve remediation goals (i.e., PRGs).

[19] Figure 15 = Figure 6-4 – Remediation Alternative 1.
[20] Figure 16 = Figure 6-5 – Remediation Alternative 2.

8.2.3 Remediation Alternative 3: EMNR in SMA A+B, total 7.1 acres.

An approximate 6-inch sand cover will be placed in SMA A+B to reduce surface sediment concentrations of PCBs—and consequently exposures to invertebrates, fish, and the human and ecological receptors that consume them. EMNR will provide a clean sediment surface for habitat recovery while minimizing construction impacts to the wetland environment. For purposes of this FS, it is assumed that the thin cover will be composed of 6 inches of sand. If EMNR is selected as the preferred remediation alternative, the remedial design phase will evaluate the potential integration into the thin cover of an amendment (e.g., activated carbon) and/or dredged materials from navigational maintenance or improvement projects. Long-term monitoring of sediment and biota, as well as the implementation of institutional controls, will be undertaken as part of Remediation Alternative 3, see Figure 17[21].

Estimated Capital and Fixed Cost:	$2,208,000
Estimated time for full recovery:	30 years
Estimated Operation and Maintenance Cost:	$1,089,000
Estimated Capital and Maintenance Cost:	$3,297,000
Estimated Total Present Worth Cost:	$2,716,000
Estimated Construction Time:	1 to 2 years

Under Remediation Alternative 3, a 6-inch layer of clean sand cover is placed in SMA A+B over PCB-impacted sediment, thereby immediately providing a clean bioactive zone for colonization by invertebrates. The placement of the thin cover simulates the natural deposition of clean materials that occurs under MNR, but at an accelerated rate. Exposure of fish to PCBs via the diet is immediately reduced through the addition of the thin cover, which in turn results in reduced fish tissue concentrations and reduced risks to human health and ecological receptors that consume fish.

The time to achieve remediation goals (i.e., PRGs) for EMNR and capping alternatives coincides with the time to implement each remedy. That is, because these technologies rely on placing clean material on the sediment bed surface to achieve PRGs, the PRGs are achieved when the implementation is complete. RAOs, on the other hand, will take longer to achieve. Fish concentration reductions will require years after remedy implementation to reach full equilibrium with reduced surface sediment concentrations. Habitat recovery will begin shortly after remedy implementation, but full habitat recovery is expected to take about two growing seasons.

8.2.4 Remediation Alternative 4. Cap in Drainage Ditch, 0.6 acres, and EMNR in Remainder of SMA A+B, total 6.6 acres.

Sediment capping will be used to isolate underlying PCBs in Drainage Ditch sediment and to provide a clean sediment surface for habitat restoration. For the purposes of this FS, the cap installed in the Drainage Ditch will comprise a 6-inch base layer with up to 6 inches of armoring to protect against chemical migration through the cap and erosive forces from storm events. EMNR will be applied in parts of SMA A+B that are outside of the Drainage Ditch. An approximate 6-inch thin cover will be

[21] Figure 17 = Figure 6-6 – Remediation Alternative 3.

placed in parts of SMA A+B other than the Drainage Ditch to provide a clean sediment surface for habitat recovery while minimizing construction impacts to the wetland environment. Again, alternative materials and amendments may be integrated into the thin cover design for EMNR, but a 6-inch sand layer is assumed for purposes of this FS. The final cap and armoring thicknesses, and the potential effectiveness and cost of such amendments, will be evaluated during the remedial design phase, if Alternative 4 is selected as the preferred remediation alternative. Long-term monitoring of sediment and biota, as well as implementation of institutional controls, will be undertaken as part of Remediation Alternative 4, see Figure 18[22].

Estimated Capital and Fixed Cost:	$2,510,000
Estimated time for full recovery:	30 years
Estimated Operation and Maintenance Cost:	$1,337,000
Estimated Capital and Maintenance Cost:	$3,847,000
Estimated Total Present Worth Cost:	$3,191,000
Estimated Construction Time:	1 to 2 years

The placement of the thin cover and the sediment cap immediately provides a clean sediment surface. Exposure of fish to PCBs via the diet is immediately reduced through the creation of a clean sediment surface, which in turn results in reduced fish tissue concentrations and reduced risks to human health and ecological receptors that consume fish. Capping provides a similar degree of protectiveness as EMNR, while the armor layer increases the stability of underlying sediments during high-energy events. As such, capping provides an added measure of protection against remobilization.

The time to achieve remediation goals (i.e., PRGs) same as Alternative 3.

8.2.5 Remediation Alternative 5: Cap in SMA A+B, total 7.1 acres.

Remediation Alternative 5 will employ a sediment cap to isolate underlying PCBs in SMA A+B and provide a clean sediment surface for habitat restoration. For the purposes of this FS, the cap will comprise a 6-inch base layer with up to 6 inches of armoring to protect against chemical migration through the cap, as well as erosive forces resulting from storm events. The final cap and armoring thicknesses will be evaluated during the remedial design phase, if Alternative 5 is selected as the Preferred Alternative. Long-term monitoring of sediment and biota, as well as implementation of institutional controls, will be undertaken as part of Remediation Alternative 5, see Figure 19[23].

Estimated Capital and Fixed Cost:	$3,412,000
Estimated time for full recovery:	20 years
Estimated Operation and Maintenance Cost:	$ 803,000
Estimated Capital and Maintenance Cost:	$4,215,000
Estimated Total Present Worth Cost:	$3,885,000
Estimated Construction Time:	1 to 2 years

[22] Figure 18 = Figure 6-7 – Remediation Alternative 4.
[23] Figure 19 = Figure 6-8 – Remediation Alternative 5.

The cap's armor layer enhances the stability of underlying sediments during high-energy events. As such, capping protects against remobilization of PCBs by erosive forces resulting from high-energy events.

The time to achieve remediation goals (i.e., PRGs) same as Alternative 3.

8.3 Common elements

8.3.1 Informational Devices and Institutional Controls

Informational Devices (IDs) will be maintained as necessary—namely the state issued a fish consumption advisory that is already in place. With time, when concentrations of total PCBs in fish fall below the criteria to maintain the fish advisory, the state of Louisiana may elect to remove the advisory.

Institutional Controls (ICs) are administrative or legal controls or restrictions included as part of a remediation action to minimize, limit, or prevent potentially unacceptable human health or ecological exposures to contaminated media and/or protect the long-term integrity of the remedial action.

USACE permit equivalency for capping or other construction activities under Section 401 and 404 of the Clean Water Act also will serve as institutional controls for future construction in and adjacent to the Site.

8.3.2 Monitoring

Where required and as detailed for the selected remediation alternative, maintenance and monitoring will be conducted. Future remedial design evaluations may be required for any remediation alternative selected. Details of the construction monitoring will be developed during remedial design.

8.3.3 Five-Year Reviews

The NCP, at 40 CFR 300.430(f)(4)(ii), requires that periodic reviews be conducted if a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure. Statutory five-year reviews are conducted no less often than every five years after the selected remedial action is initiated.

8.3.4 Management Approach

The EPA intends to utilize an approach of phasing the remedial action (e.g. active remediation, short-term monitoring and long-term monitoring) to address contamination at the Site. Through long-term monitoring, changes in conditions over time are tracked. If improvements are not observed within a reasonable timeframe, remediation decisions may be revisited (e.g. ROD Amendment, Explanation of Significant Differences (ESD).

This type of management approach is well-suited for application within the Five-Year Review process where the protectiveness of the remedial action and the progress towards achieving the Site's RAOs will be routinely evaluated by the EPA.

8.3.4.1 Active remediation (Construction Monitoring)

During the construction phase, data will be collected to determine if construction-specific performance metrics and controls (e.g. water quality, resuspension) developed during the remedial design are met.

The goal of active remediation is to achieve the PRG of a SWAC of not to exceed 0.2 mg/kg in the upper six inches of sediments in the Devil's Swamp Lake and the Drainage Ditch.

As part of the remedial design phase, both short- and long-term maintenance and monitoring programs will be developed to ensure long-term remedy protectiveness.

8.3.4.2 Short-term monitoring (Performance Monitoring)

Short-term monitoring determines whether remedy implementation meets all other design specifications (e.g. cap, or clean sediment thickness, water quality, etc.).

8.3.4.3 Long term monitoring (Effectiveness Monitoring)

Long-term monitoring recognizes that uncertainty is inherent to any cleanup activity and must be managed through data collection and monitoring, and monitors progress toward achieving RAOs. The measurable objective is to achieve the target total PCB concentrations in fish tissue of 0.17 mg/kg wet for catfish (*Ictalurus punctatus*).

Long-term remedy monitoring measures the remedy's long-term effectiveness in enhancing ecosystem recovery and reducing risks to human health and the environment. Details of the long-term monitoring program will be developed during remedial design and may include the following:

- Physical measurements to monitor the integrity of the thin cover (e.g., push cores, bathymetric surveys, or visual observation via camera or video profiling).
- Chemical measurements in fish.
- Chemical measurements in sediment.
- Surface water quality measurements, as necessary to comply with ARARs.
- Visual observations and surveys of wetland recovery, including plant growth and plant density.

Through long-term monitoring, changes in conditions over time are tracked. If improvements are not observed within a reasonable timeframe, remediation decisions may be revisited.

8.4 Description of Differences

The placement of the thin cover, EMNR, immediately provides a clean sediment surface. Exposure of fish to PCBs via the diet is immediately reduced through the creation of a clean sediment surface, which in turn results in reduced fish tissue concentrations and reduced risks to human health and ecological receptors that consume fish.

Capping provides a similar degree of protectiveness as EMNR, while the armor layer increases the stability of underlying sediments during high-energy events. As such, capping provides an added measure of protection against remobilization.

8.5 Applicable or Relevant and Appropriate Requirements (ARARs)

ARARs are any promulgated standard, requirement, criterion, or limitation under Federal or State environmental law that has been found to be applicable and relevant. ARARs consist of two sets of requirements, those that are applicable and those that are relevant and appropriate. Applicable requirements are those substantive standards that specifically address the situation at a CERCLA site. Relevant and appropriate requirements are those that address problems or situations sufficiently similar and appropriate to the circumstances at the site. Constituent-specific ARARs are usually risk-based numerical values or methodologies that, when applied to site-specific conditions, result in the establishment of numerical values.

The ARARs that have been identified as being applicable for the Devil's Swamp Lake Site RI/FS include, but are not limited to, the Resource Conservation Recovery Act (RCRA), the Toxic Substances Control Act (TSCA), the Clean Water Act (CWA), Section 304 (National Recommended Water Quality Standards), State Water Quality Standards. The LDEQ Risk Evaluation/Corrective Action Program (RECAP) and the State Fish Consumption Advisory are to be considered (TBC). A complete list of ARARs was included in Appendix G of the FS.

8.5.1 Key ARARs

The alternatives do not include treatment of the PCB contaminated sediment because the PCB concentrations will not require treatment of the sediment according to federal ARARs. Only media with concentrations greater than 50.0 mg/kg are considered PCB remediation wastes. Therefore, because the maximum detected PCB concentration in sediment at the Site do not exceed this level, Site sediments are not considered PCB remediation waste subject to specific disposal requirements.

The Rivers and Harbors Act, Section 10 requires USACE approval to excavate or fill, or in any manner alter or modify, the course, location, condition, or capacity of the channel of navigable waters of the US. Devil's Swamp Lake is not a navigable waterway and therefore the Rivers and Harbors Act is not applicable to this project.

State regulations pertaining to wetlands are not listed as ARARs because compliance with 43 LAC I Subpart C is specific to coastal wetlands, and the Site is located approximately 35 miles north of the

Louisiana Coastal Management Zone boundary. Consequently, the state wetland regulations are not applicable.

8.6 Reasonably anticipated future land use

There are no changes between current and anticipated future land used. Devil's Swamp Lake is surrounded by undeveloped, forested wetlands within the floodplain of the Mississippi River (Devil's Swamp). Backwater and overbank flooding from the Mississippi River occurs during late winter through spring. Low river stages typically occur during the fall. Water levels in the lake are influenced by the Mississippi River. Water will continue to appear to be present in the Drainage Ditch, on an intermittent basis, based on the facility stormwater drainage.

8.7 Expected Outcome

The Preferred Alternative, Cap in Drainage Ditch and EMNR in Remainder of SMA A+B, will provide a clean habitat for benthic invertebrates at and near the sediment surface, which in turn will reduce PCB exposures to fish, wildlife, and people who consume fish. The armoring of the cap in the Drainage Ditch will benefit the permanence of the remedy, protecting against erosion during high-energy events. The remedy is straightforward to implement and long-term monitoring will enable the evaluation of remedy effectiveness. By using EMNR to enhance ongoing natural recovery processes and armoring the Drainage Ditch where the potential for erosion is highest, this approach accelerates remediation while minimizing negative environmental impacts of the remedy, such as fuel use, carbon footprint, and damage to vegetation.

8.8 Use of Presumptive Remedies

EPA's policy has been and continues to be that there is no presumptive remedy for any contaminated sediment site, regardless of the contaminant or level of risk[24].

8.9 Estimated time

The time to achieve remediation goals (i.e., PRGs) for capping and EMNR coincides with the time to implement each remedy. That is, because these technologies rely on placing clean material on the sediment bed surface to achieve PRGs, the PRGs are achieved as soon as the implementation is complete. Crawfish and fish concentration reductions will require a longer period (many years) following remedy implementation to reach full equilibrium with reduced surface sediment concentrations. Habitat recovery will begin shortly after remedy implementation, but full habitat recovery also is expected to take several years. The time to achieve PRGs for MNR is expected to be many years in the future because the remediation alternative relies on natural deposition of cleaner sediments on the sediment surface.

[24] EPA, Contaminated Sediment Remediation Guidance for Hazardous Waste Sites, December 2005.

Except in the case of No Action, long-term monitoring is a necessary component of all remediation alternatives in order to evaluate remedy effectiveness. The duration of long-term monitoring (i.e., 20 years) following capping is likely to be less than that for MNR and EMNR remedies (i.e., 30 years) because the armored nature of the cap is likely to more rapidly and completely reduce exposures of fish to PCBs, as compared to the outcomes of MNR and EMNR. The precise time to full recovery under any remediation alternative is difficult to predict and, therefore, the duration of all long-term monitoring programs are best viewed as approximate.

8.10 Estimated costs

Alternative	Capital and Fixed Costs	Operation and Maintenance Costs	Total Costs	Net Present Worth based on a 7% discount Rate
Remediation Alternative 1 – No Action	**$ 0**	**$ 0**	**$ 0**	**$ 0**
Remediation Alternative 2 – MNR in SMA A+B	**$115,000**	**$1,089,000**	**$1,204,000**	**$ 623,000**
Remediation Alternative 3 – EMNR in SMA A+B	**$2,208,000**	**$1,089,000**	**$3,297,000**	**$2,716,000**
Remediation Alternative 4 – Cap in Drainage Ditch and EMNR in the Remainder of SMA A+B	$**2,510,000**	**$1,337,000**	**$3,847,000**	**$3,191,000**
Remediation Alternative 5 – Cap in SMA A+B	**$3,412,000**	**$803,000**	**$4,215,000**	**$3,885,000**

9. EVALUATION OF ALTERNATIVES

9.1 Nine criteria listed

CERCLA Remedial Action Alternative Evaluation Criteria	
Threshold Criteria	
Criterion No. 1 Overall Protection of Human Health and the Environment	Alternatives are assessed to determine whether they can adequately protect human health and the environment, in both the short- and long-term, from unacceptable risks posed by hazardous substances, pollutants, or contaminants present at the site by eliminating, reducing, or controlling exposures to levels established during development of remediation goals, consistent with §300.430(e)(2)(i). Overall protection of human health and the environment draws on the assessments of other evaluation criteria, especially long-term effectiveness and permanence, short-term effectiveness, and compliance with ARARs. The assessment against this criterion describes how the alternative, as a whole, achieves and maintains protection of human health and the environment.
Criterion No. 2 Compliance with ARARs	Alternatives are assessed to determine whether they attain ARARs under federal environmental laws and state environmental or facility siting laws or provide grounds for invoking one of the waivers identified in CFR, Title 40, Section 300.430 (f)(1)(ii)(C). This assessment also addresses other information from advisories, criteria, and guidance that the lead and support agencies have agreed is "to be considered."
Balancing Criteria	
Criterion No. 3 Long-term Effectiveness and Permanence	Alternatives are assessed for the long-term effectiveness and permanence they afford, along with the degree of certainty that the alternative will prove successful. Factors that shall be considered, as appropriate, include the following: 1) Magnitude of residual risk from untreated waste or treatment residuals remaining at the conclusion of the remedial activities. The characteristics of the residuals should be considered to the degree that they remain hazardous, taking into account their volume, toxicity, mobility, and propensity to bioaccumulate. 2) Adequacy and reliability of controls, such as containment systems and institutional controls that are necessary to manage treatment residuals and untreated waste. This factor addresses in particular the uncertainties associated with land disposal for providing long-term protection from residuals; the assessment of the potential need to replace technical elements of the alternative, such as a cap, a slurry wall, or a treatment system; and the potential exposure pathways and risks posed, should the remedial action need replacement.

CERCLA Remedial Action Alternative Evaluation Criteria	
Criterion No. 4 Reduction of Toxicity Mobility or Volume (TMV) through Treatment	Alternatives are evaluated to assess the degree to which they employ recycling or treatment that reduces toxicity, mobility, or volume, including how treatment is used to address the principal threats posed by the site. Factors that shall be considered, as appropriate, include the following: 1) The treatment or recycling processes the alternatives employ and materials they will treat. 2) The amount of hazardous substances, pollutants, or contaminants that will be destroyed, treated, or recycled. 3) The degree of expected reduction in TMV of the waste because of treatment or recycling and the specification of which reduction(s) are occurring. 4) The degree to which the treatment is irreversible. 5) The type and quantity of residuals that will remain following treatment, considering the persistence, toxicity, mobility, and propensity to bioaccumulate of such hazardous substances and their constituents. 6) The degree to which treatment reduces the inherent hazards posed by principal threats at the site.
Criterion No. 5 Short-term Effectiveness	Alternatives are evaluated to assess the short-term impacts, considering the following: 1) Short-term risks that might be posed to the community during the implementation of an alternative. 2) Potential impacts on workers during remedial action and the effectiveness and reliability of protective measures. 3) Potential environmental impacts of the remedial action and the effectiveness and reliability of mitigative measures during implementation. 4) Time until protection is achieved.
Criterion No. 6 Implementability	Alternatives are evaluated to assess the ease or difficulty of implementation, considering the following as appropriate: 1) Technical feasibility, including technical difficulties and unknowns associated with the construction and operation of a technology, the reliability of the technology, ease of undertaking additional remedial actions, and the ability to monitor the effectiveness of the remedy. 2) Administrative feasibility, including activities needed to coordinate with other offices and agencies, and the ability and time required to obtain any necessary approvals and permits from other agencies (for off-site actions). 3) Availability of services and materials, including: the availability of adequate off-site treatment, storage capacity, and disposal capacity and services; the availability of necessary equipment and specialists, and provisions to ensure any necessary additional resources; the availability of services and materials; and availability of prospective technologies.

CERCLA Remedial Action Alternative Evaluation Criteria	
Criterion No. 7 Cost	Alternatives are evaluated with respect to the capital cost, annual operation and maintenance (O&M) cost, periodic cost, and total life-cycle cost (present worth cost). Present worth costs were estimated using a 7 percent discount. The cost estimates were prepared in accordance with A Guide to Developing and Documenting Cost Estimates During the Feasibility Study (EPA 540 R 00 002), along with Cost Estimating Guide (Department of Energy G 430.1 1). The cost estimates are for comparison purposes and are prepared to meet the 30 to +50 percent range of accuracy recommended in CERCLA RI/Feasibility Study Guidance (EPA/540/G 89/004). The cost estimates are based on specific response action scenarios and assumptions. Detailed sensitivity analyses were not performed to quantify the potential effect of changing key parametric assumptions.
Criterion No. 8 State Acceptance	This assessment reflects the state's (or support agency's) apparent preferences among or concerns about alternatives.
Criterion No. 9 Community Acceptance	This assessment reflects the community's apparent preferences among or concerns about alternatives.

9.2 Alternatives Comparative Analysis

This section evaluates Remediation Alternatives 1 through 5 against the NCP criteria discussed in Section 9.1. This discussion is organized by criterion. Alternatives are grouped together in the detailed discussions when common features render them highly similar in terms of the criterion being assessed. This overall analysis is also summarized in Table 1.

9.2.1 Overall protection of human health and the environment

Remediation Alternative 1, No Action, does not meet the criterion. The No Action Alternative, ranks lowest, in the evaluation criterion, followed by Alternative 2, MNR in SMA A + B since MNR enables documentation of progress towards achieving RAOs.

Remediation Alternative 3, EMNR in SMA A+B immediately providing a clean bioactive zone for colonization by invertebrates. The placement of the thin covers simulates the natural deposition of clean materials that occurs under MNR, but at an accelerated rate. Exposure of fish to PCBs via the diet is immediately reduced through the addition of thin cover, which in turn results in reduced fish tissue concentrations and reduced risks to human health and ecological receptors that consume fish.

Remediation Alternative 4, Cap in Drainage Ditch and EMNR in the Remainder of SMA A+B. Under Remediation Alternative 4, sediment capping is used in the Drainage Ditch to isolate PCBs in the sediment and to provide a clean sediment surface. Capping provides a similar degree of protectiveness as EMNR, while the armor layer in the drainage ditch increases the stability of underlying sediments to protect against erosive forces resulting from storm events. As such, capping provides an added measure of protection against remobilization.

Remediation Alternative 5, Cap in SMA A+B, uses armoring to protect against erosive forces resulting from high-energy events. The cap's armor layer enhances the stability of underlying sediment. As such, capping protects against remobilization of PCBs and ranks the highest level of protection.

9.2.2 Compliance with ARARs

Remediation Alternative 1: No Action, does not meet the criterion.
This is the ARAR with the greatest uncertainty related to timing to achieve compliance with the Site ARARs for PCBs. Under the No Action alternative, monitoring is not conducted. Consequently, there is no method of ascertaining if and when compliance with the state water quality standard is achieved. No Action may or may not achieve this ARAR, but the remediation alternative lacks the mechanisms for determining an outcome.

Remediation Alternative 2: MNR in SMA A+B.
Under Remediation Alternative 2, no active remediation is undertaken, but conditions are monitored over the long term in order to ascertain that the natural processes that are predicted to reduce concentrations of PCBs in surface sediment (as well as in the prey of fish and in the fish themselves) are in fact taking place. In contrast with the No Action alternative, MNR enables documentation of progress towards compliance with the Site ARARs for PCBs.

Remediation Alternative 3: EMNR in SMA A+B,
Remediation Alternative 4: Cap in Drainage Ditch and EMNR in Remainder of SMA A+B, and
Remediation Alternative 5: Cap in SMA A+B.
Remediation Alternatives 3, 4, and 5 are designed to comply with all ARARs and comply with all appropriate federal, state, and local permits. Under these remediation alternatives, a clean sediment surface result from the placement of a cap or thin cover, which is expected to result in lower concentrations of PCBs in surface water.

Permits are currently required for capping or other in-water construction activities. USACE administers Section 404 of the Clean Water Act, which requires that a permit be obtained for the discharge of fill material in waters of the US. Section 401 of the Clean Water Act requires certification that Section 404 discharges comply with applicable water quality standards. There is an exemption from permitting requirements for CERCLA actions per section 121(e)(1) of CERCLA. During the RD/RA process permit equivalency with any applicable regulation will be demonstrated.

Remediation Alternatives 3, 4 and 5 may result in temporary noncompliance with chemical-specific ARARs, such as impacts to water quality, during remedy implementation. Sediment capping and thin

cover placement can result in turbidity plumes, but most turbidity is associated with the placement of cap material itself, and not the contaminated sediments. BMPs are employed to mitigate, to the greatest extent feasible, adverse impacts of remedy implementation on concentrations of PCBs in surface water.

9.2.3 Long-term effectiveness and permanence

Remediation Alternative 1: No Action.
Potential risks to human health currently are being mitigated through a fish consumption advisory. Long-term effectiveness of the No Action alternative relies on the indefinite continuation of the fish consumption advisory. Although natural recovery processes may reduce surface sediment PCB concentrations over time and increase the physical stability of the PCBs that remain in place, no monitoring occurs through No Action to confirm the effectiveness of these processes in achieving this criterion. Remediation Alternative 1, ranks lowest in long-term effectiveness since there is no enforcement mechanism against not following the advisory and is followed by Remediation Alternative 2.

Remediation Alternative 2: MNR in SMA A+B.
Under MNR, fish are monitored over the long term. Therefore, this remediation alternative includes documentation of progress towards reduced fish tissue concentrations and reduced risks to human health from fish consumption (i.e., verification of long-term effectiveness). Similarly, concentrations of PCBs in surface sediment also are monitored under this remediation alternative, which supports the documentation of the physical stability of PCBs that remain in place (i.e., verification of permanence).

Remediation Alternative 3: EMNR in SMA A+B, and
Remediation Alternative 4: Cap in Drainage Ditch and EMNR in Remainder of SMA A+B.
Under Remediation Alternatives 3 and 4, a thin cover of clean sand will be placed in over PCB impacted sediment, thereby immediately providing a clean sediment surface to promptly achieve progress towards reduced fish tissue concentrations and reduced risks to human health from fish consumption (i.e., verification of long-term effectiveness). Cap armoring in the drainage ditch increases permanence. Following implementation of EMNR, human health risks are reduced to acceptable levels, as fish tissue PCB concentrations reduce in response to reduced surface sediment PCB concentrations.

Remediation Alternative 5: Cap in SMA A+B.
Similar to Alternative 4, Capping of SMA A+B immediately provides a clean sediment surface. Following cap implementation, human health risks should be reduced to acceptable levels, as fish tissue PCB concentrations reduce in response to reduced surface sediment PCB concentrations. Cap armoring provides increased permanence and protection against remobilization of PCB-contaminated sediments during high-energy events. Remediation Alternative 5, ranks highest in long-term effectiveness.

9.2.4 Reduction of toxicity, mobility, or volume

Remediation Alternatives 1, 2, 3, 4 and 5.
This criterion addresses the degree to which an alternative reduces the toxicity, mobility, or volume of PCBs through treatment of the sediment. No Action, MNR, EMNR, and capping do not include a

treatment component. As discussed below, all remediation alternatives are expected to reduce the mobility of PCBs through covering the sediment surface, either naturally, with a thin cover, or with a cap.

9.2.5 Short-term effectiveness

Short-term effectiveness considers the positive and negative environmental effects of remedy implementation, potential impacts to the community and Site workers during remedy implementation, and the time until the RAOs are achieved. Current surface sediment PCB concentrations do not pose short-term risks to human or ecological receptors. Therefore, the following discussion concentrates on the short-term risks of the implementation of the remediation alternatives to human health and the environment, and whether those risks can be eliminated or controlled by remedial design and BMPs. It also considers habitat impacts, such as damage to vegetation and benthic organisms, alteration of marsh hydrology, and reduced water quality.

Remediation Alternative 1: No Action.
Because No Action does not require active remediation, its implementation does not pose any new short-term risks to human health or the environment.

Remediation Alternative 2: MNR in SMA A+B.
Implementation of MNR poses only low or minimal short-term risks. Monitoring is the only activity associated with this remediation alternative. Short-term risks posed to field technicians include the potential for exposure to chemicals in sediment and the hazards of sampling in an aquatic environment.

Remediation Alternative 3: EMNR in SMA A+B),
Remediation Alternative 4: Cap in Drainage Ditch and EMNR in Remainder of SMA A+B, and
Remediation Alternative 5: Cap in SMA A+B.
Site work associated with EMNR and/or capping involves Site access and equipment staging, thin cover and/or cap placement, and long-term monitoring. The short-term effectiveness of Remediation Alternatives 3, 4 and 5 are medium. Because short-term effectiveness considers both the positive and negative effects of remedy implementation, the greater amount of construction material, activity, time, impacts on wetland habitat, and transportation associated with Remediation Alternative 5 contribute to greater short-term risks in remedy implementation, as compared to Remediation Alternatives 3 and 4.

Potential effects include: construction of temporary access roads and staging areas can harm sensitive wetland vegetation; placement of thin cover and/or cap can have short-term effects on the benthic community; placement of the thin cover and/or cap can result in generation of turbidity plumes, though most turbidity is associated with the thin cover or cap material itself; and Short-term risks posed to field technicians potentially exposed to PCBs in sediment and the hazards of remedy implementation in an aquatic environment.

9.2.6 Implementability

Remediation Alternative 1: No Action.
No implementation is associated with the No Action alternative.

Remediation Alternative 2: MNR in SMA A+B.
MNR is readily implementable, requiring only the preparation and approval of a long-term monitoring plan and implementation of that monitoring plan.

Remediation Alternative 3: EMNR in SMA A+B.
EMNR is implementable, requiring the design and installation of a thin cover. To ensure the stability of the EMNR layer as part of the remedial design process, geotechnical properties of the existing mud layer need to be characterized. Furthermore, EMNR implementation requires the construction of temporary access roads and staging areas. Soft marsh sediments require substantial fill material to construct temporary access roads and staging areas capable of supporting anticipated loads. A long-term monitoring plan will need to be prepared and implemented

Remediation Alternative 4: Cap in Drainage Ditch and EMNR in Remainder of SMA A+B.
EMNR and capping in the Drainage Ditch are implementable. Requirement for the thin cover design and implementation of the EMNR are similar to those discussed for Remediation Alternative 3.

Remediation Alternative 5: Cap in SMA A+B.
Capping is implementable and requires the construction of temporary access roads and staging areas. Preparation, approval, and implementation of a cap monitoring plan is required to ensure that the cap is stable and it continues to achieve the remedial goals over time.

9.2.7 Cost

The cost criterion considers direct, indirect, and O&M costs. Costs are calculated as present-value-worth costs for comparison of alternatives. O&M costs are estimated for a 30-year period, discounted to a net present value in 2017 dollars. The overall cost for each alternative is the sum of capital and discounted annual costs.

9.2.7.1 Remediation Alternative 1: No Action

No costs are associated with the No Action alternative.

9.2.7.2 Remediation Alternative 2: MNR in SMA A+B

The estimated cost of Remediation Alternative 2 is $1,204,000, which is the lowest cost of all five remediation alternatives.

The net present value of the cost to implement Remediation Alternative 2 is $623,000.

9.2.7.3 Remediation Alternative 3: EMNR in SMA A+B

The estimated cost of Remediation Alternative 3 is $3,297,000.

The net present value of the cost to implement Remediation Alternative 3 is $2,716,000.

9.2.7.4 Remediation Alternative 4: Cap in Drainage Ditch and EMNR in Remainder of SMA A+B

The estimated cost of Remediation Alternative 4 is $3,847,000.

The net present value of the cost to implement Remediation Alternative 4 is $3,191,000.

9.2.7.5 Remediation Alternative 5: Cap in SMA A+B

The estimated cost for Remediation Alternative 5 is $4,215,000, which is the highest costs of the five remediation alternatives.

The net present value of the cost to implement Remediation Alternative 5 is $3,885,000.

9.2.8 State and Community acceptance

Evaluation against the remaining two NCP criteria—state acceptance and community acceptance—will be addressed by EPA following agency and public reviews, during preparation of the Record of Decision (ROD). In addition to considering the NCP criteria, the remediation alternatives were evaluated with respect to environmental sustainability[25]. Environmental sustainability is not among the NCP criteria, but warrants consideration in light of its relevance to decision making under EPA (2008, 2010b) guidance and Federal Executive Order 13423 (Federal Register 2007). It is further discussed under Section 10.7.3.

10. EPA's PREFERRED ALTERNATIVE

10.1 The Preferred Alternative

The comparative analysis of the five remediation alternatives favors Remediation Alternative 4, *Cap in Drainage Ditch and EMNR in Remainder of SMA A+B*. This remediation alternative, the Preferred Alternative, will provide a clean habitat for benthic invertebrates at and near the sediment surface, which in turn will reduce PCB exposures to fish, wildlife, and people who consume fish. The armoring of the cap in the Drainage Ditch will benefit the permanence of the remedy, protecting against erosion during high energy events. The remedy is straightforward to implement and long-term monitoring will enable

[25] Federal Executive Order 13423 of January 24, 2007, defines sustainability as "…means to create and maintain conditions, under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of present and future generations of Americans.

the evaluation of remedy effectiveness. By using EMNR to enhance ongoing natural recovery processes and armoring the Drainage Ditch where the potential for erosion is highest, this approach accelerates remediation while minimizing negative environmental impacts of the remedy, such as fuel use, carbon footprint, and damage to vegetation.

10.2 Compliance with the Statutory Preference for Treatment

The PCB-contaminated sediment at the Site is not considered principal threat waste. The Alternatives do not include the statutory preference for treatment of the PCB contaminated sediment because the PCB concentrations will not require treatment of the sediment according to federal ARARs. Only media with concentrations greater than 50.0 mg/kg are considered PCB remediation wastes. Therefore, because the maximum detected PCB concentration in sediment at the Site were below this threshold, Site sediments are not considered PCB remediation waste subject to specific disposal requirements.

10.3 Preferred Alternative may change

EPA, in consultation with the LDEQ, may modify the Preferred Alternative or select another response action presented in this Plan, based on new information or public comments. Therefore, the public is encouraged to review and comment on all the alternatives presented in this Proposed Plan. Once EPA has evaluated all the comments and consulted with the LDEQ, it will issue a Record of Decision (ROD) to document the selection of the remedy for the Site. The ROD will also include a Responsiveness Summary where the EPA will respond to the comments received during the comment period.

10.4 Uncertainties or Contingency Measures

Through long-term monitoring, changes in conditions over time are tracked. If improvements are not observed within a reasonable timeframe, remediation decisions may be revisited.

10.5 Expected outcomes

During the remedial process, a concentration equivalent to a lifetime cancer risk of 10^{-6} is first established as a point of departure and then other factors are taken into account to determine where within the acceptable risk range of 10^{-4} to 10^{-6} the Preliminary Remediation Goals for a given contaminant at a specific site should be established. The EPA is proposing a departure from a cleanup goal of 10^{-6} for this Site, requiring a sediment SWAC PRG concentration of 0.02 mg/kg Total PCB, based on: 1) is so low as to possibly be below background condition at the Site, 2) existing Site soil PCB concentrations will result in fish tissue concentrations, below concentrations of PCBs measured in remote and pristine water bodies.

EMNR will reduce sediment PCB concentrations to below the PRG. Reducing the sediment PCB concentrations to the PRG will achieve a Site-wide HI of 1 and an acceptable risk level of 1×10^{-4} cancer risk from consumption of fish by people. Current concentrations of PCBs in sediment are protective of ecological receptors; reductions in PCB concentrations in sediment will further reduce the already acceptable ecological risks.

10.6 Statutory Five-Year Reviews

The Preferred Alternative will require statutory Five-Year Reviews since contaminants (i.e., PCBs) will be left on-Site above levels that permit unrestricted use and unlimited exposure. Although the EPA routinely evaluates the remedy, a formal review will occur every five years in the form of a "Five-Year Review Report", where the EPA will evaluate the performance of the remedy (i.e., protectiveness of human health and the environment, and effectiveness of the ICs).

10.7 Concluding Summary

10.7.1 Compliance with PRGs and RAOs

The EPA's Preferred Alternative will reduce PCB concentrations in surface sediment, with the understanding that this should lead to reduced PCB concentrations in edible fish tissue, thus reducing exposures to fish, wildlife, and people who consume fish.

Reducing the sediment PCB concentrations to the PCB SWAC PRG range of not to exceed 0.2 mg/kg will achieve an acceptable cancer risk level of 1×10^{-4} (i.e., for an adult recreational user) and an acceptable non-cancer HI = 1. Current concentrations of PCBs in sediment are protective of ecological receptors; reductions in PCB concentrations will further reduce the already acceptable ecological risks.

10.7.2 Compliance with the NCP's Criteria and Statutory Requirements

Based on information currently available, the lead agency believes the Preferred Alternative meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. The EPA expects the Preferred Alternative to satisfy the following statutory requirements of CERCLA §121(b): (1) be protective of human health and the environment; (2) comply with ARARs; (3) be cost-effective; and (4) utilize permanent solutions to the maximum extent practicable.

10.7.3 Environmental Sustainability

Remediation Alternative 1: No Action.
The No Action remediation alternative is environmentally sustainable, in that it releases no carbon or other air emissions, uses no energy or water, destroys no vegetation or other aspects of the ecosystem, consumes no materials, and generates no waste.

Remediation Alternative 2: MNR in SMA A+B.
In many respects, MNR is comparable to No Action in terms of environmental sustainability. Specifically, like No Action, MNR uses no water and destroys no vegetation or other elements of the ecosystem. The sampling activities that are required for MNR generate minimal carbon and air emissions, use minimal energy and materials, and generate minimal waste.

Remediation Alternative 3: EMNR in SMA A+B,
Remediation Alternative 4: Cap in Drainage Ditch and EMNR in Remainder of SMA A+B, and
Remediation Alternative 5: Cap in SMA A+B.

EMNR and capping are moderately environmentally sustainable. Carbon and air emissions, as well as fossil fuel use, are associated with cap or cover material acquisition, remedy implementation, and motor vehicle transport to support monitoring events. Construction of access roads and staging areas may damage vegetation or other elements of the ecosystem. All three remediation alternatives require minimal water use, consumption of materials, and waste generation.

11. SUPPORT AGENCY COMMENTS

The EPA consulted with the LDEQ during the preparation of this Proposed Plan, which describes the EPA's Preferred Alternative, Remediation Alternative 4 – Cap in Drainage Ditch and EMNR in Remainder of SMA A+B. The State has been provided the opportunity to review the RI/FS Report, Human Health and Ecological Risk Assessment Reports, and this Proposed Plan. The EPA will request concurrence from the LDEQ upon completion of the public comment period and prior to the issuance of the Record of Decision which describes the EPA's final remedial alternative decision.

12. REQUEST FOR PUBLIC COMMENTS

The EPA is requesting the public's comments on the EPA's Preferred Alternative and the other alternatives described in this Proposed Plan. Oral or written public comments can be presented at the public meeting or can be submitted during the public comment period, which **starts on September 30, 2019, and ends on October 29, 2019**. All written comments not provided to the EPA during the public meeting should be postmarked no later than the end of the public comment period and, in order to be considered, should be mailed to the EPA's Remedial Project Manager:

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Remedial Project Manager
United States Environmental Protection Agency (Region 6)
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TABLES

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Table 1
Summary of Detailed Evaluation

Remedial Alternative	Evaluation Criterion						
	Overall Protection	**Compliance with ARARs**	**Long-Term Effectiveness**	**Reduction of TMV Through Treatment**	**Short-Term Effectiveness**	**Implementability**	**Cost Effectiveness**
1 No Action	Lowest. Risks from fish consumption exceed thresholds.	No. Does not meet the criterion.	Lowest.	No treatment.	No short term impacts.	No implementation would be associated.	No cost.
2 MNR in SMA A+B	Low. Reduced risks over time.	Time required uncertain.	Medium.	No treatment.	Low.	Readily implementable.	Lowest.
3 EMNR in SMA A+B	Medium. Immediately reduced exposure of fish to PCBs via the diet, would result in reduced risk to human health.	Yes.	Medium to High	No treatment. Amendments may be integrated with EMNR. Which would provide in situ treatment through the reduction of PCB bioavailability and toxicity.	Medium. EMNR and/or capping would involve Site access and equipment staging could harm wetland vegetation.	Implementable. Requires design and installation of a cover layer.	Medium.
4 Cap in Drainage Ditch and EMNR in SMA A+B	Medium. Similar to 3, with added measure of protection against remobilization	Yes.	High.	No treatment. Amendments may be integrated with EMNR. Which would provide in situ treatment through the reduction of PCB bioavailability and toxicity.	Medium to High. EMNR and/or capping would involve Site access and equipment staging could harm wetland vegetation.	Implementable. Requires design, installation of a cover layer, and selection of cap material	Medium to High.
5 Cap in SMA A+B	Similar to 4. Provides increase stability.	Yes.	High.	No treatment.	High. Similar to 4.	Implementable. Requires more complex design.	Highest.

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ACRONYMS AND ABBREVIATIONS

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Acronyms and Abbreviations

AOC	Administrative Order on Consent
AOIs	Areas of Investigation
AR	Administrative Record
ARARs	Applicable or Relevant and Appropriate Requirements
BERA	Baseline Ecological Risk Assessment
BW	Body weight
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COCs	Chemicals of Concern
COPCs	Constituents of Potential Concern
COPECs	Constituents of Potential Ecological Concern
CSM	Conceptual Site Model
CWA	Clean Water Act
DHHR	Department of Health and Human Resources (Louisiana)
DLPCBs	Dioxin-Like Polychlorinated Biphenyls
DSL	Devil's Swamp Lake
EMNR	Enhanced Monitored Natural Recovery
EPCs	Exposure Point Concentrations
EPA	U.S. Environmental Protection Agency
ERA	Ecological Risk Assessment
ESI	Expanded Site Inspection
FS	Feasibility Study
GRA	General Response Action
HHRA	Human Health Risk Assessment
HI	Hazard Index
HQ	Hazard Quotient
HRS	Hazard Ranking System
ICs	Institutional Controls

LAC	Louisiana Administrative Code
LDEQ	Louisiana Department of Environmental Quality
LDHH	Louisiana Department of Health and Hospitals
LDNR	Louisiana Department of Natural Resources
LDWF	Louisiana Department of Wildlife and Fisheries
LLC	Limited Liability Company
mg/kg	Milligram(s) per kilogram
MNR	Monitored Natural Recovery
ng/g	Nanogram(s) per gram (= 0.001 mg/kg)
NAD	North American Datum (used for geographic reference)
NCP	National Contingency Plan
NDLPCBs	Non Dioxin-Like Polychlorinated Biphenyls
NPDES	National Pollutant Discharge Elimination System
NEPA	National Environmental Policy Act
NPL	National Priorities List
OSHA	Occupational Safety and Health Administration (OSHA)
OU	Operable Unit
O&M	Operation and Maintenance
PP	Proposed Plan
PCBs	Polychlorinated biphenyls
PRGs	Preliminary Remediation Goals
RAOs	Remedial Action Objectives
RCRA	Resource Conservation Recovery Act
RECAP	Risk Evaluation/Corrective Action Program
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RME	Reasonable Maximum Exposure
ROD	Record of Decision
Site	Devil's Swamp Lake Superfund Site

SLERA	Screening Level Ecological Risk Assessment
SMAs	Sediment Management Areas
SWAC	Spatially-Weighted Average Concentration
TAG	Technical Assistance Grant
TBC	To Be Considered
TEQ	Toxicity Equivalency
TSCA	Toxic Substances Control Act
UAO	Unilateral Administrative Order
USACE	United States Army Corps of Engineers
USC	United States Code
USGS	United States Geological Survey
WHO	World Health Organization
WPCD	Water Pollution Control Division

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GLOSSARY

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Administrative Record File– The administrative record is the body of documents and information that forms the basis for the selection of a particular response action at a Superfund site. Typically, EPA refers to the administrative record as the administrative record file until EPA has selected a particular response action, to avoid creating the impression that the record is complete at any time prior to the final selection decision. See 55 FR. 8666, 8804-5 (March 6, 1990) (National Oil and Hazardous Substances Pollution Contingency Plan Preamble). For this Site, the administrative record file is available on the internet at the following website URL: https://www.epa.gov/superfund/devils-swamp-lake Collection ID 65949

The Administrative Record File is available for public review and copy. It is located at the Scotlandville Branch Library near the Site, LDEQ and at the EPA Regional Office. It is also Available online (see URL address above at page 1).

Applicable or relevant and appropriate requirements (ARARs) – ARARs are the Federal and State environmental laws that a selected remedy will meet. These requirements may vary among Sites and alternatives.

Baseline Risk Assessment – An evaluation of the potential threat to human health and the environment in the absence of any remedial action.

Carcinogen – A cancer-causing substance or agent.

Capping – General response method that isolates contaminants from the water column and biological receptors by controlled placement of clean material on the sediment bed surface and armoring the cap as needed to withstand erosive forces.

Constituent of Concern (COC) – A contaminant at a Superfund site that is considered among the most abundant and/or the most toxic chemicals. When a COC is targeted for cleanup, other chemicals that may be present will also be removed. These are the chemicals associated with

The Site or Site activities that may represent a risk to human health or the environment.

Code of Federal Regulations (CFR) - Codification of the general and permanent rules published in the Federal Register by the departments and agencies of the Federal Government.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) – Also known as Superfund. CERCLA is a Federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act.

Contaminated sediments - Soil, sand, organic matter, or other minerals that accumulate on the bottom of a water body and contain toxic or hazardous materials at levels that may adversely affect human health or the environment.

Dioxins - A mixture of up to 7 dioxin and 10 furan chemical compounds combined using the toxicity equivalence approach. Toxicity Equivalents, or TEQs, are used to report the toxicity-weighted mass of mixtures of dioxins and furans. Within the TEQ method, each dioxin or furan compound is assigned a Toxicity Equivalence Factor (TEF). This factor denotes a given dioxin, or furan compound's toxicity relative to 2,3,7,8-tetra chlorodibenzo-p-dioxin (2,3,7,8- TCDD, or TCDD), which is assigned the maximum toxicity designation of one.

Dioxin-Like Polychlorinated Bi*-Phenyls *(DLPCBs) - A mixture of up to 12 Polychlorinated biphenyl (PCB) chemical compounds that have a mechanism of toxicity very similar to 2,3,7,8-tetra chlorodibenzo-p-dioxin (2,3,7,8-TCDD, or TCDD).

Ecological Risk Assessment – Study that assesses risks to aquatic and terrestrial receptors posed by contaminant releases from a Site.

Engineering Controls – Controls that are engineered to manage environmental or human health risk by limiting access and/or preventing exposure to constituents of concern on the

property. These may include such things as fences, signs, or soil covers over contaminated materials.

Enhanced monitored natural recovery (EMNR) – General response method that uses sand, soil, or previously dredged sediment to enhance the process of natural recovery by placing the material on the sediment bed surface.

Excess Lifetime Cancer Risk – Cancer posed by a contaminated Site in excess of the lifetime probability of developing cancer from other causes.

Feasibility Study (FS) – Identifies and evaluates the appropriate technical approaches and treatment technologies to address contamination at a Site.

Five-Year Reviews – A review generally required by statute or program policy when hazardous substances remain at a site above levels which permit unrestricted use and unlimited exposure. Five-year reviews provide an opportunity to evaluate the implementation and performance of a remedy to determine whether it remains protective of human health and the environment. Reviews are repeated every succeeding five years so long as future uses at a site remain restricted.

General Response Actions (GRAs) - Broad categories of conceptual sediment remediation methods. Consistent with USEPA (Contaminated Sediment Remediation Guidance for Hazardous Waste Sites), seven GRAs are identified, which can be considered separately or in combination as remediation alternatives.

Hazard Index (HI) **–** It is the sum of more than one hazard quotient for multiple substances and/or multiple exposure pathways. The acceptable risk value is 1. Anything below this value is protective of human health and the environment. A Hazard Index of greater than 1.0 may warrant concern for non-cancer effects due to exposure.

Hazard Quotient (HQ) – The ratio of estimated site-specific exposure to a single chemical from a site over a specified period to the estimated daily exposure level, at which no adverse health effects are likely to occur. If the hazard quotient is greater than 1, then adverse health effects are possible

Human Health Risk Assessment – A study that determines and evaluates risk that Site contamination poses to human health.

Implementability – One of the Environmental Protection Agency's primary balancing criteria addresses the technical and administrative feasibility of a remedy from design through construction and operation.

Institutional Controls (ICs) – Non-engineered instruments, such as administrative and/or legal controls, that help to minimize the potential for human exposure to contamination and/or protect the integrity of the remedy. ICs work by limiting land or ground water use and/or providing information that helps modify or guide a person's action at a site. Some common examples include restrictive covenants, deed notices, or local ordinances.

Informational Devices - Fish consumption advisories are informational devices that are frequently already in place and incorporated into sediment site remedies. Consumption advisories are not enforceable controls and their effectiveness can be extremely variable.

Long-term Effectiveness and Permanence – One of the Environmental Protection Agency's primary balancing criteria that refers to the 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. This criterion includes the consideration of residual risk that will remain onsite following remediation and the adequacy and reliability of controls.

Maximum Contaminant Level (MCL) – The maximum permissible level of a contaminant in

water to any user of a public water system. MCLs are established under the Federal Safe Drinking Water Act, 42 U.S.C. 300(f) et seq.

Milligrams per Kilogram (mg/kg) - A unit of measurement equivalent to one milligram of contaminant per kilogram of solid (typically soil).

Microgram per Kilogram (µg/kg) - A unit of measurement equivalent to one microgram of contaminant per kilogram of solid (typically soil). (1 ug/kg = 0.001 mg/kg)

Milligram per Liter (mg/L) - A unit of measurement equivalent to one milligram of contaminant per liter of water or approximately one part per million.

Monitoring – Monitoring is the ongoing collection of information about the environment that helps gauge the effectiveness of a cleanup action. Monitoring wells and probes installed at different locations/depths/levels at a site would be used to detect the presence of COCs in ground water and soil.

Monitored natural recovery (MNR) – General response method that documents the effectiveness of natural physical, chemical, or biological processes in reducing contaminant concentrations to achieve the Remedial Action Objectives.

Nanograms per Gram (ng/g) - A unit of measurement equivalent to one nanogram of contaminant per gram of solid (typically soil). (1 ng/g = 0.001 mg/kg)

National Oil and Hazardous Substances Pollution Contingency Plan (NCP) – 40 Code of Federal Regulations (CFR) Part 300. Regulations promulgated by EPA to respond to releases or threatened release of hazardous substances, pollutants, or contaminants.

National Priorities List (NPL) – EPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible remedial action under Superfund. A site must be

on the NPL to receive money from the Trust Fund for Remedial Action.

Natural Attenuation – Natural attenuation refers to the natural degradation processes that achieve site-specific remedial objectives. The natural attenuation processes that are at work in such a remedial approach includes a variety of physical, chemical, and/or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil and ground water. These in situ processes include biodegradation, dispersion, dilution, sorption, volatilization, and chemical or biological stabilization, transformation, or destruction of contaminants. Under the proper conditions, natural attenuation can contribute significantly to remediation of COCs.

Non-Dioxin-Like PCBs (NDLPCBs) **-** Refer to PCB congeners that do not share the dioxin's toxic mechanism. (See DLPCBs).

Off-site – Away from the Site.

Polychlorinated Biphenyls (PCBs) - PCBs are a group of man-made organic chemicals consisting of carbon, hydrogen and chlorine atoms. PCBs belong to a broad family of man-made organic chemicals known as chlorinated hydrocarbons. PCBs were domestically manufactured from 1929 until manufacturing was banned in 1979.

Preliminary Remediation Goal (PRG) **–** PRGs are upper concentration limits for individual chemicals in environmental media and land use combinations that are anticipated to protect human health or the environment.

Present Worth Cost – A method of evaluation of expenditures that occur over different time periods. By discounting all costs to a common base year, the costs for different remedial action alternatives can be compared on the basis of a single figure for each alternative. When calculating present worth cost for Superfund sites, total operations & maintenance costs are to be included.

Proposed Alternative – Selected remedial alternative that meets NCP evaluation criteria and is supported by regulatory agencies.

Receptor – An organism that receives, may receive, or has received environmental exposure to a Chemical.

Record of Decision (ROD) – A ROD is a public document prepared by EPA that provides the justification for the remedial action (cleanup) chosen at a National Priority Listed (Superfund) site. It also contains site history, site description, site characteristics, community participation, enforcement activities, past and present activities, contaminated media, the contaminants present, and the scope and role of the response action.

Remedial Action (RA) – The actual construction or implementation phase of a Superfund site cleanup that follows remedial design. Are action(s) taken to correct or remediate contamination.

Remedial Action Objectives (RAOs) – Remedial action objectives specify contaminants and media of concern, potential exposure pathways, and remediation goals. Remediation goals establish acceptable exposure levels that are protective of human health and the environment. Remedial action objectives are established for each remedial action under CERCLA.

Remedial Design (RD) – A phase of remedial action that follows the Remedial investigation/Feasibility Study and includes development of engineering drawings and specifications for a site cleanup.

Remedial Investigation (RI) – A study conducted to identify the types, amounts, and locations of contamination at a Site.

Reasonable Maximum Exposure (RME) – The highest level of human exposure that could

reasonably be expected to occur.

Sediment - material that sinks to the bottom of the lake.

Surface Weighted Average Concentration (SWAC) – Average concentration for an area calculated by applying a surface area weighting factor to each concentration value.

PROPOSED PLAN FIGURES

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Figure Number	Figure Title	Figure Source Document	Document Identification No.
Figure 1	Figure 1-1 Vicinity Map.	*Final Feasibility Study Technical Memorandum.* December 2, 2016	Doc Id 50 002 4651
Figure 2	Figure 1.2 Site Plan.	*Final Feasibility Study – Devil's Swamp Lake Site.* June 28, 2018.	Doc Id 10 001 0893
Figure 3	Figure 3 - Vicinity map– RE: USGS 7.5 Minute Topographic Maps	*Final Preliminary Site Characterization Report.* May 2010 and *Aerial Photographic Analysis of Devil's Swamp Lake Site*. November 2004	Doc Id 891554 Doc Id 50 002 1045 and Doc Id 182276
Figure 4	Figure 2 – Site Plan.	*Final Preliminary Site Characterization Report.* May 2010	Doc Id 891554 and Doc Id 50 002 1045
Figure 5	Figure 5 – Topographic Map.	*Final Preliminary Site Characterization Report.* May 2010	Doc Id 891554 and Doc Id 50 002 1045
Figure 6	Figure 1-3 – Property Ownership.	*Final Tier 2 Remedial Investigation.* October 30, 2015	Doc Id 50 001 8077
Figure 7	Figure 3 – Property Ownership.	*Final Preliminary Site Characterization Report.* May 2010	Doc Id 891554 and Doc Id 50 002 1045
Figure 8	Figure 4 - Surrounding Land Use Map.	*Final Preliminary Site Characterization Report.* May 2010	Doc Id 891554 and Doc Id 50 002 1045
Figure 9	Figure 3-1 – Tier 2 Remedial Investigation Areas of Investigation.	*Final Tier 2 Remedial Investigation Report.* October 30, 2015	Doc Id 50 001 8077
Figure 10	Figure 4-3 – Tier 2 Remedial Investigation 2012 Fish Tissue Sample Areas.	*Final Tier 2 Remedial Investigation Report.* October 30, 2015	Doc Id 50 001 8077
Figure 11	Figure 3-1 – Sediment Sample Locations.	*Final Feasibility Study Technical Memorandum.* December 2, 2016	Doc Id 50 002 4651
Figure 12	Figure 6-1 – Sediment Sample Locations and Results.	*Final Feasibility Study Technical Memorandum.* December 2, 2016	Doc Id50 002 4651
Figure 13	Figure 6-2 - Sediment Management Area A.	*Final Feasibility Study Technical Memorandum.* December 2, 2016	Doc Id50 002 4651
Figure 14	Figure 6-3 - Sediment Management Area A+B.	*Final Feasibility Study Technical Memorandum.* December 2, 2016	Doc Id 50 002 4651

Figure Number	Figure Title	Figure Source Document	Document Identification No.
Figure 15	Figure 6-4 - Remediation Alternative 1.	*Final Feasibility Study Technical Memorandum.* December 2, 2016	Doc Id 50 002 4651
Figure 16	Figure 6-5 - Remediation Alternative 2.	*Final Feasibility Study Technical Memorandum.* December 2, 2016	Doc Id 50 002 4651
Figure 17	Figure 6-6 - Remediation Alternative 3.	*Final Feasibility Study Technical Memorandum.* December 2, 2016	Doc Id50 002 4651
Figure 18	Figure 6-7 - Remediation Alternative 4.	*Final Feasibility Study Technical Memorandum.* December 2, 2016	Doc Id50 002 4651
Figure 19	Figure 6-8 - Remediation Alternative 5.	*Final Feasibility Study Technical Memorandum.* December 2, 2016	Doc Id50 002 4651

Figure 1 – Vicinity Map

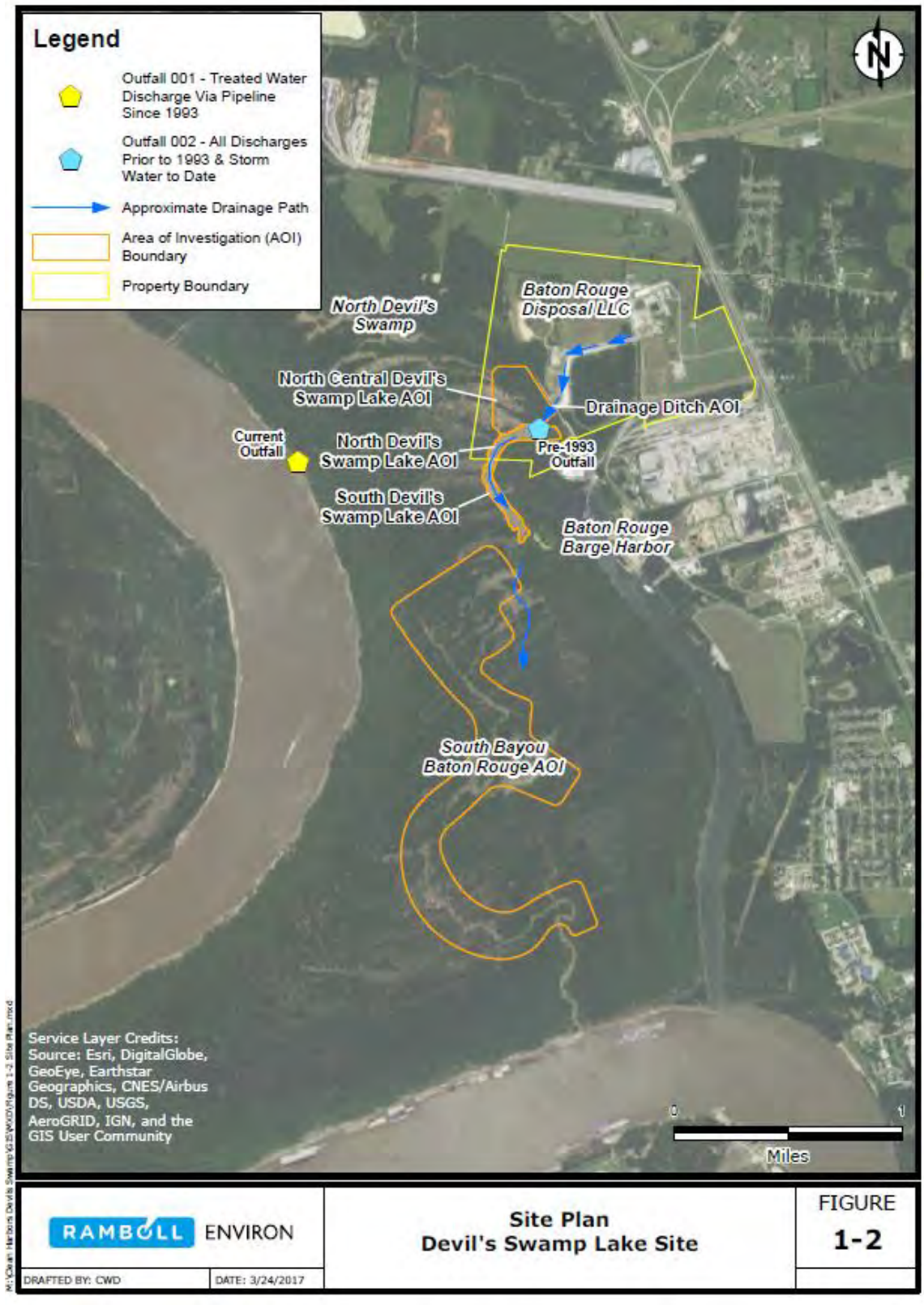
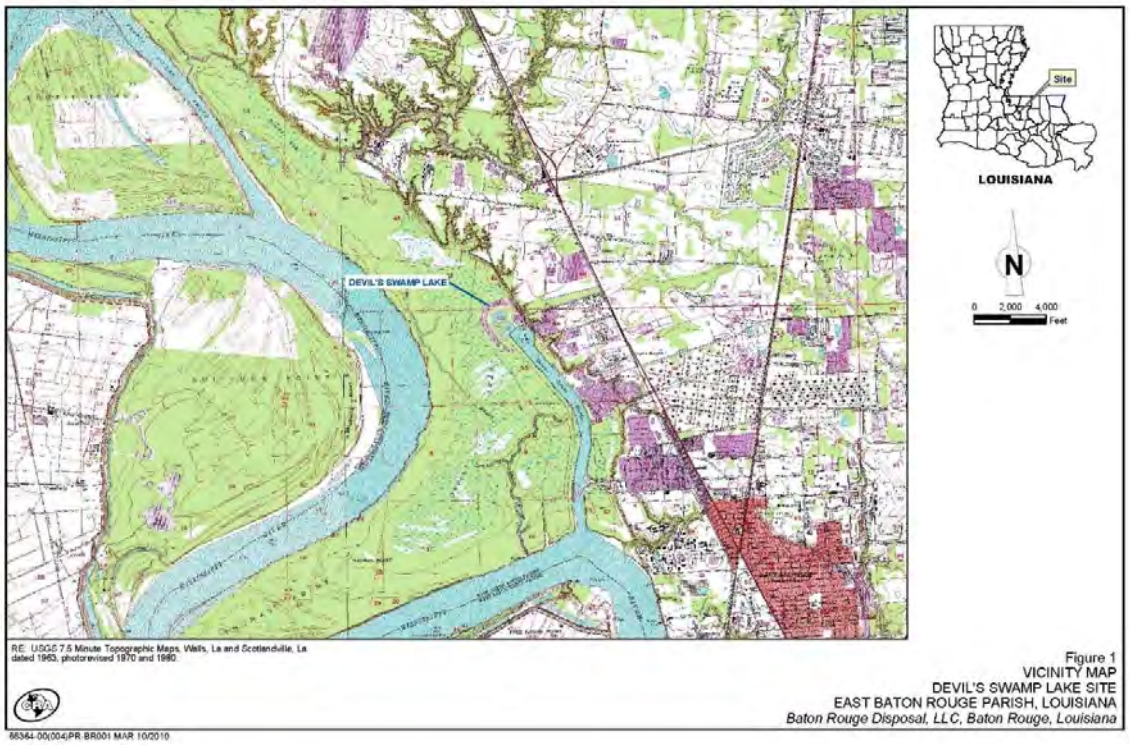


Figure 2 – Site Plan



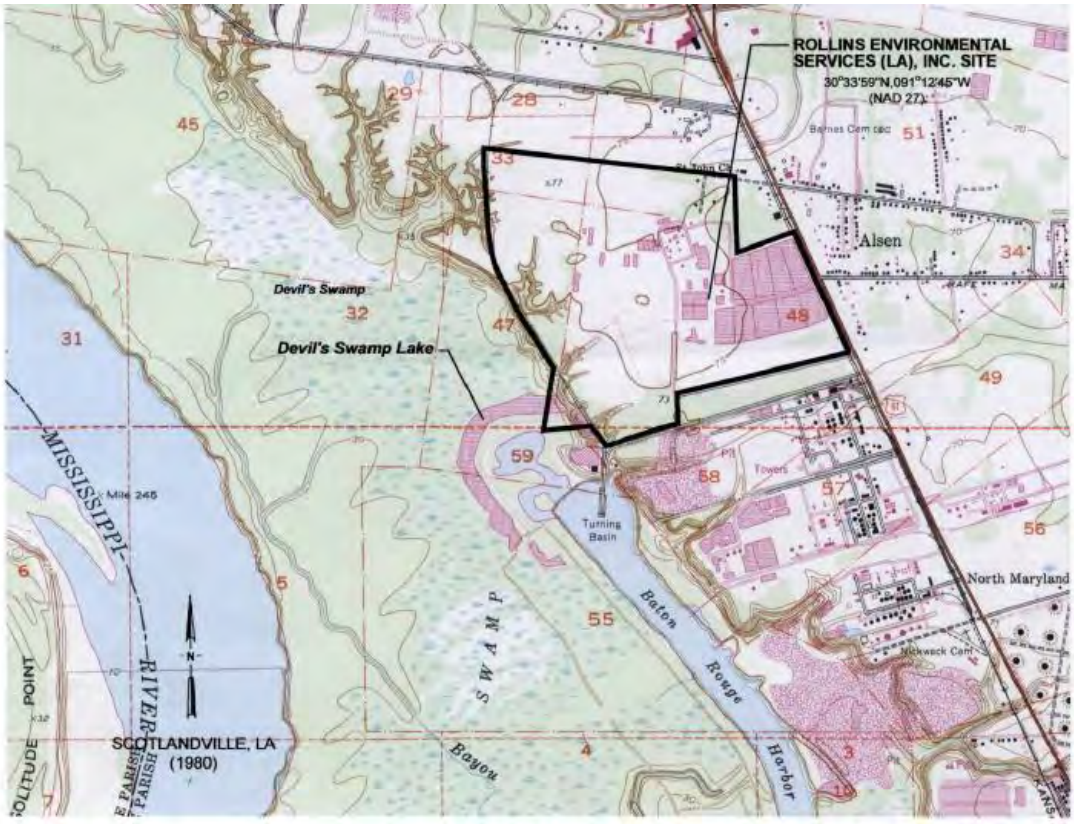


Figure 3 – Vicinity Map / Topographic Map

Figure 4 – Site Plan

Figure 5 – Topographic Map

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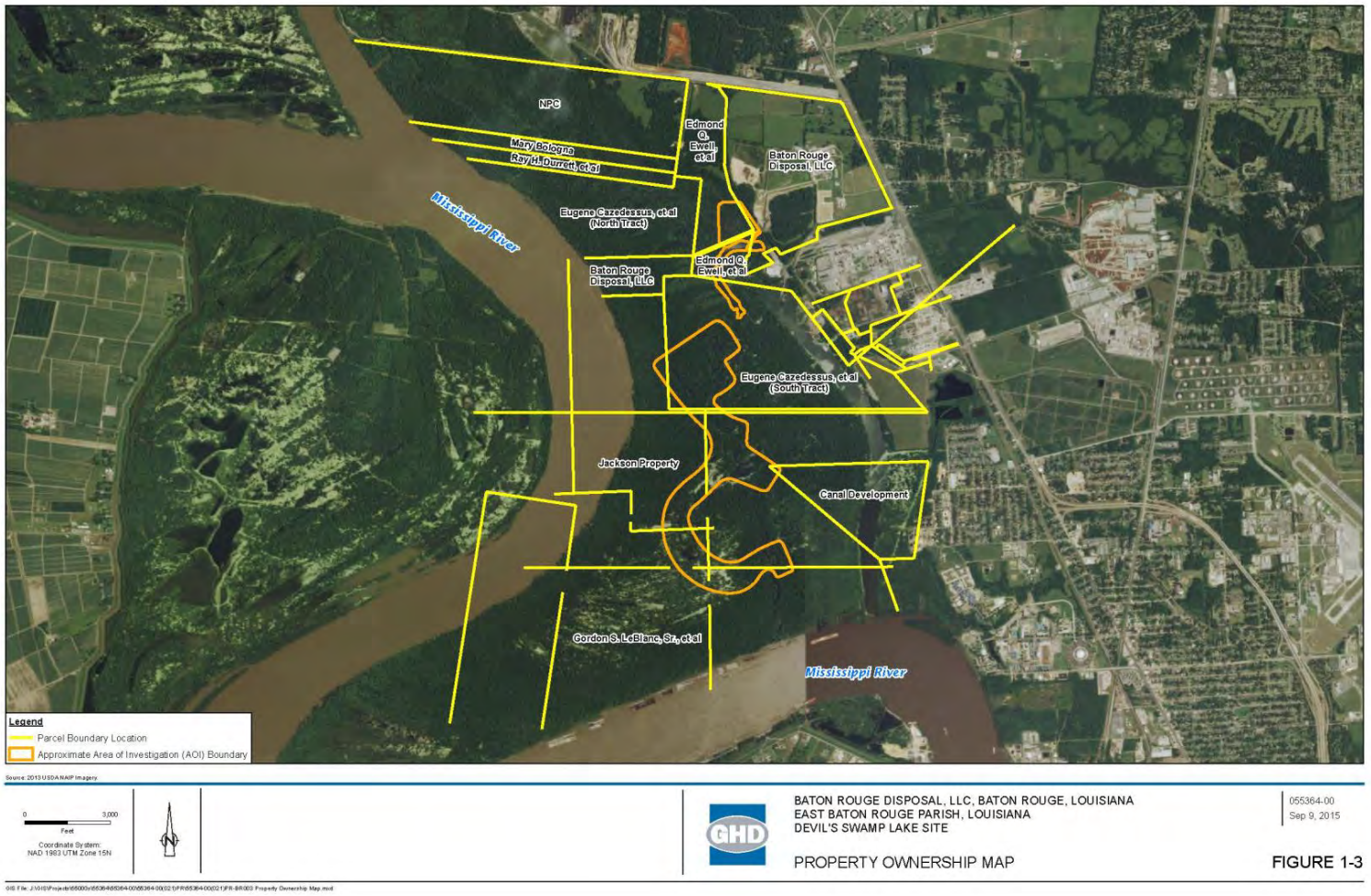
Figure 6 – Property Ownership Map (Over an aerial photograph)



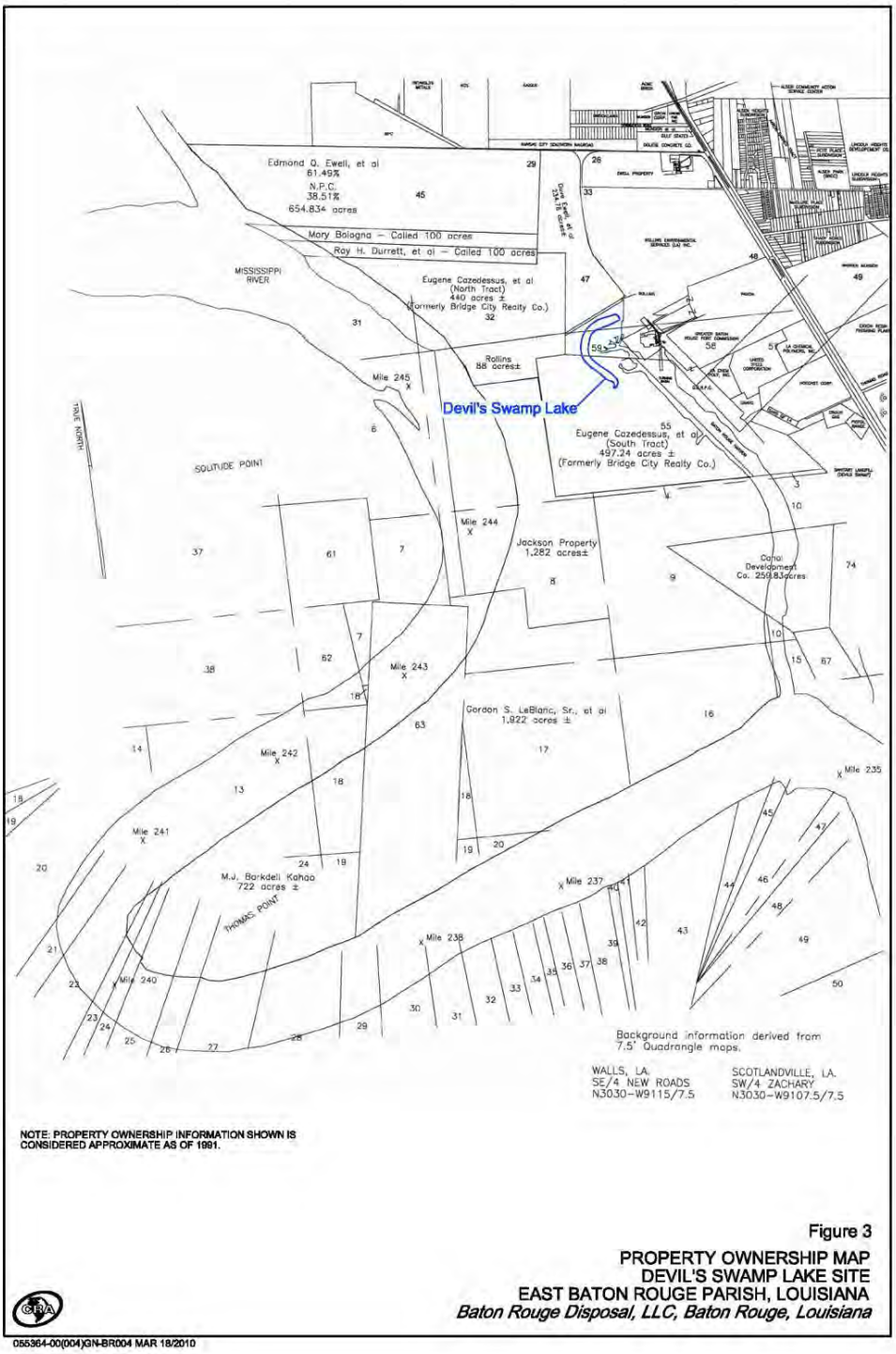


Figure 7 – Property Ownership Map

Figure 8 – Surrounding Land Use Map

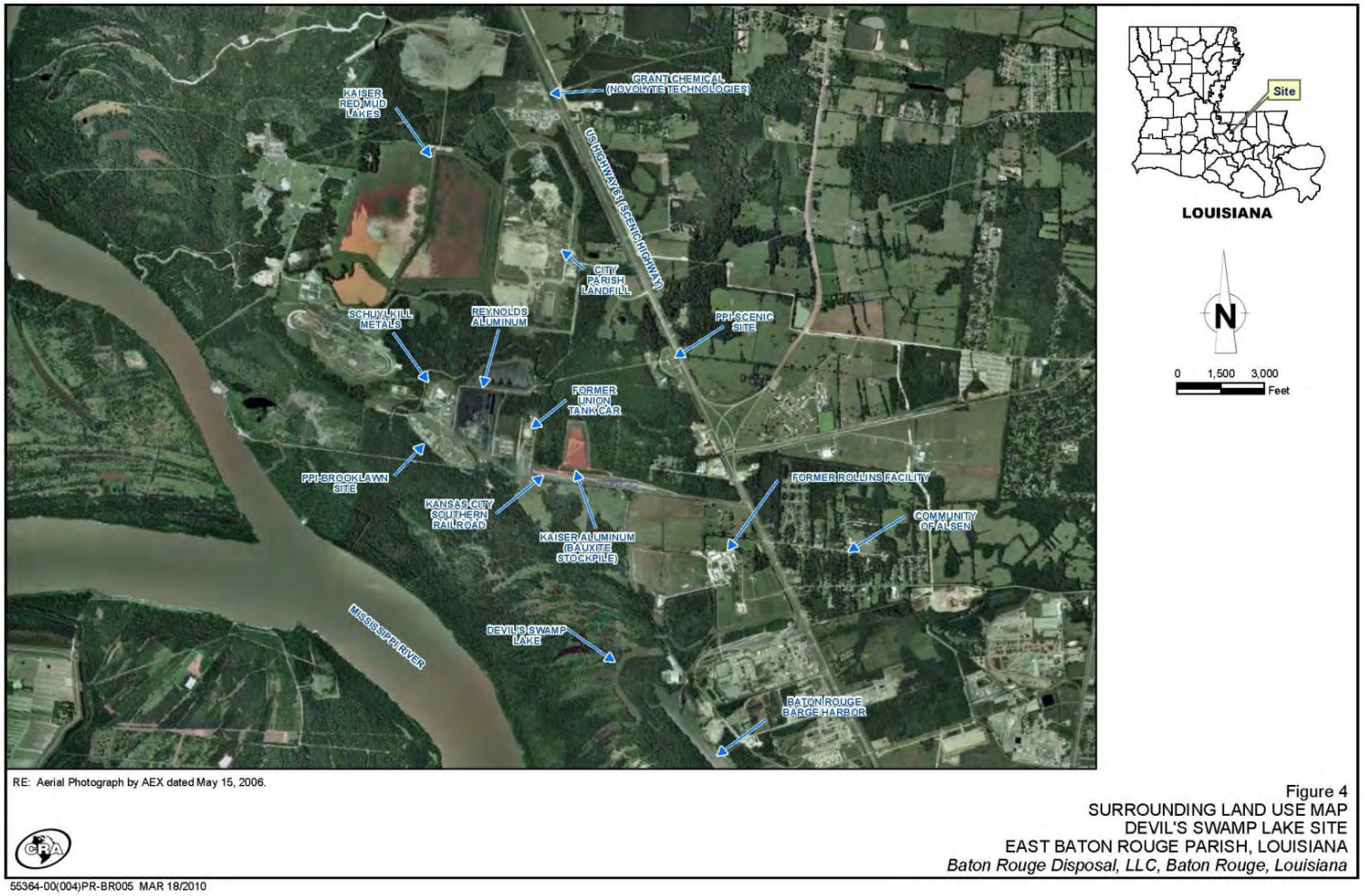


Figure 9 – Areas of Interest (AOIs) Investigated

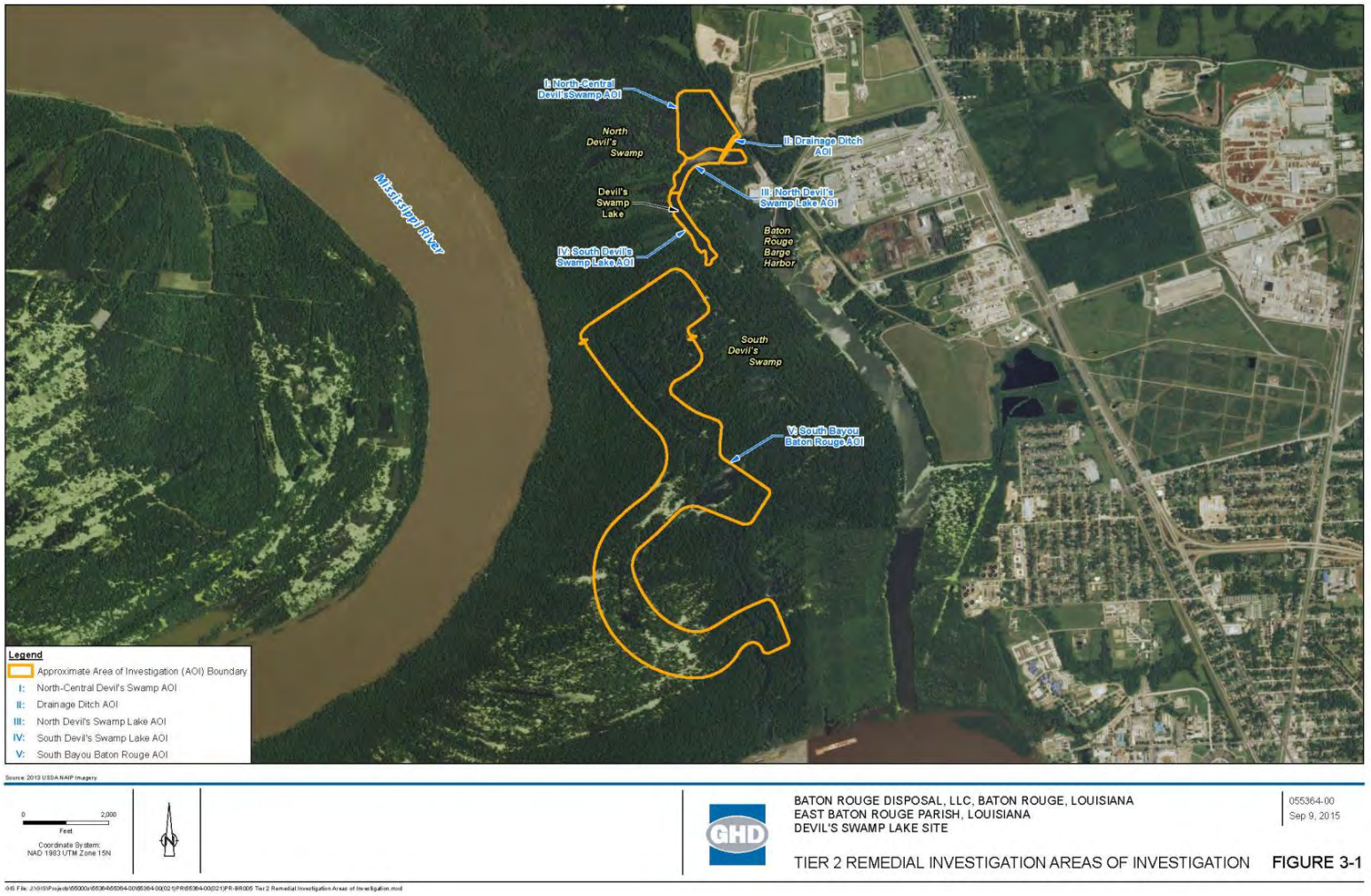


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Figure 10 – Tissue Sampling Areas

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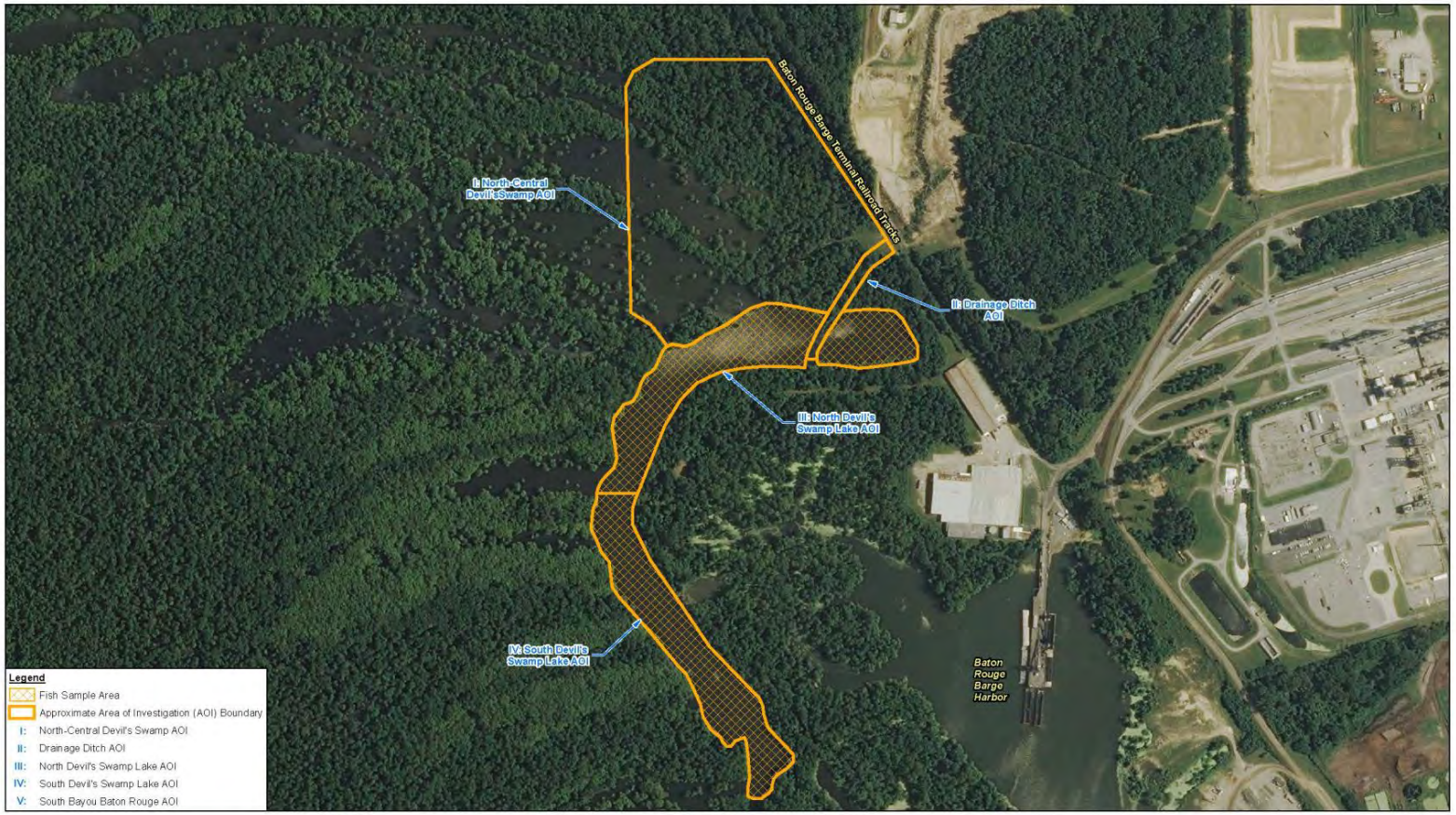

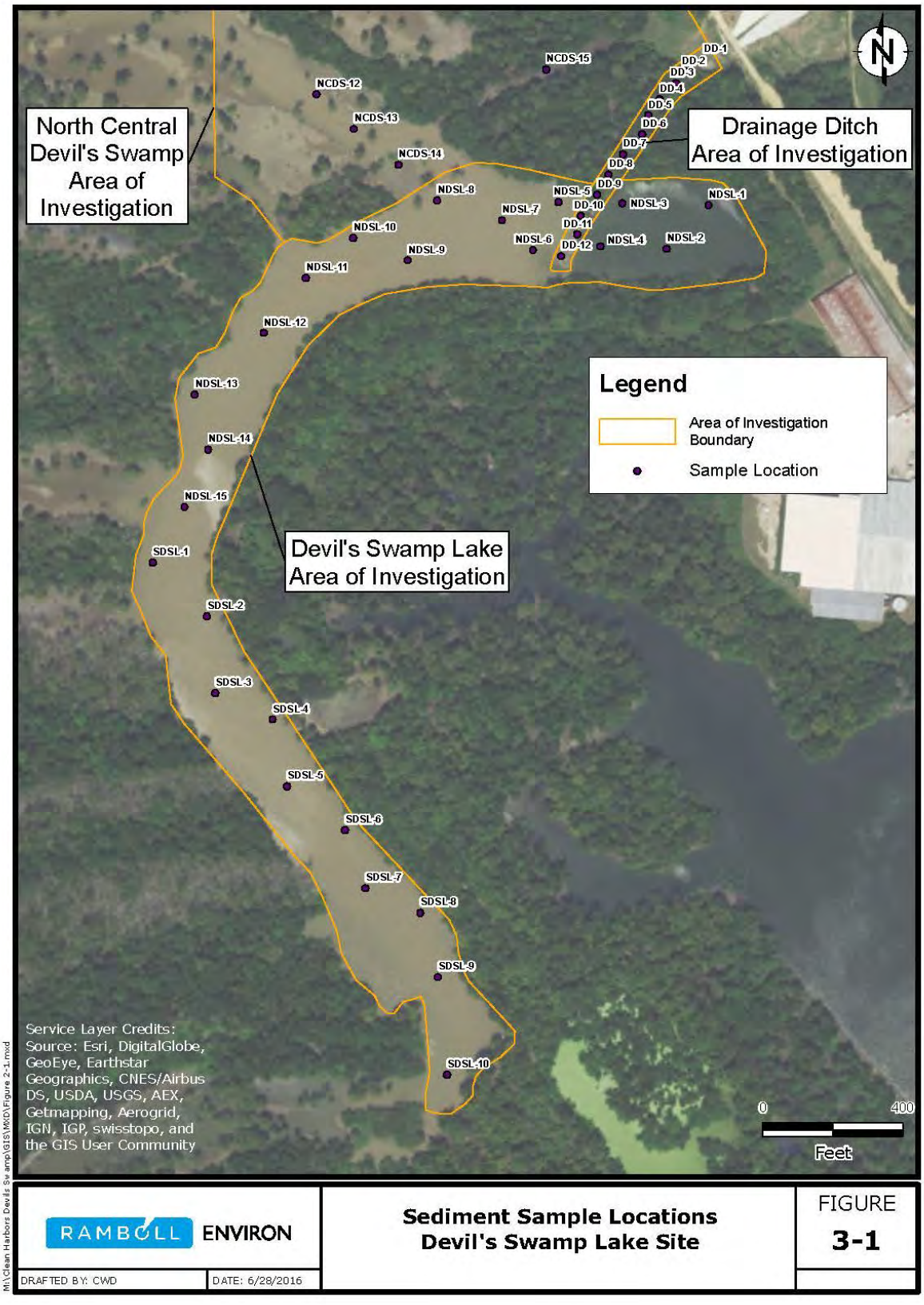

Figure 11- Sediment Sampling Areas

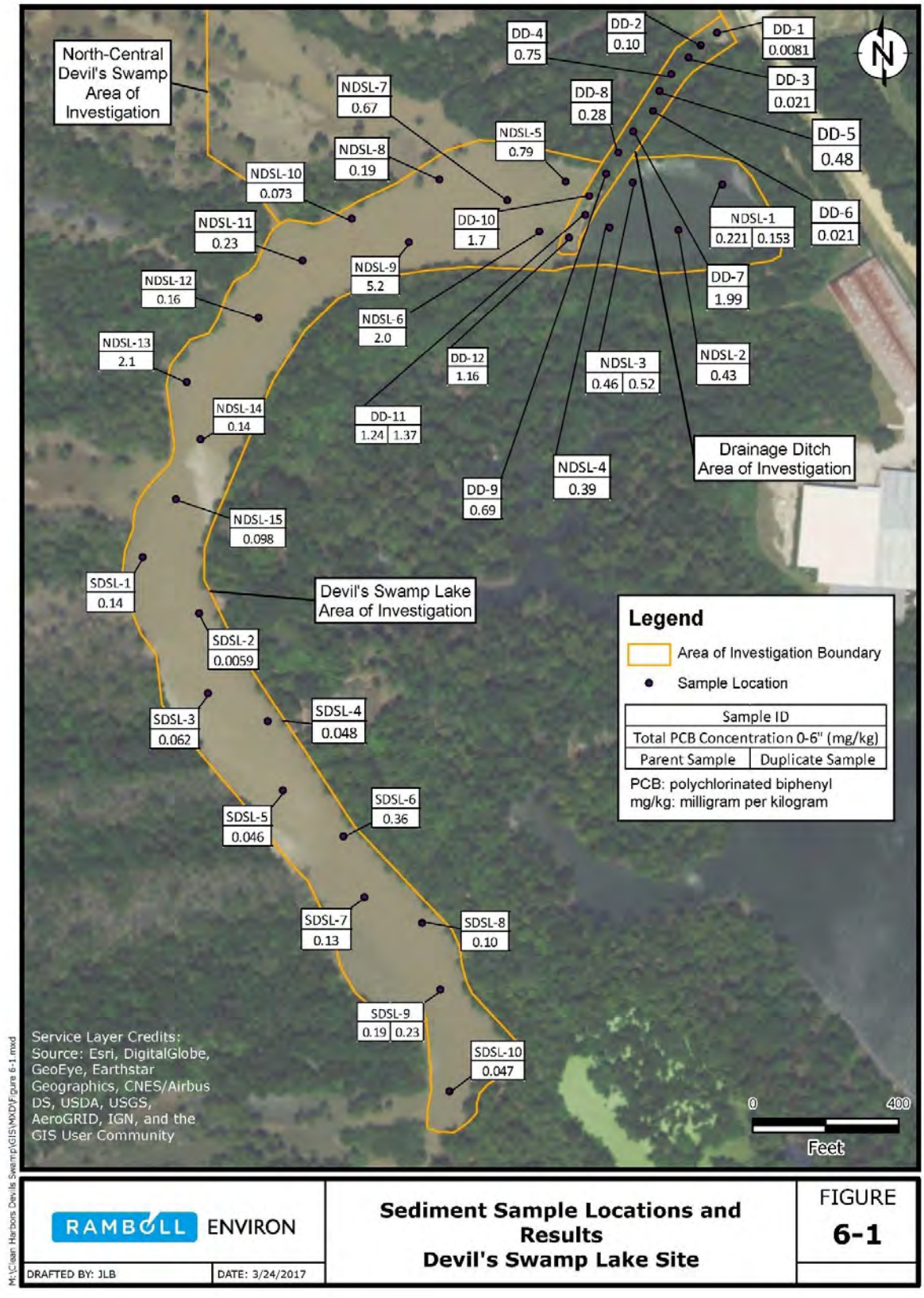

Figure 12 – Sediment Sample Results

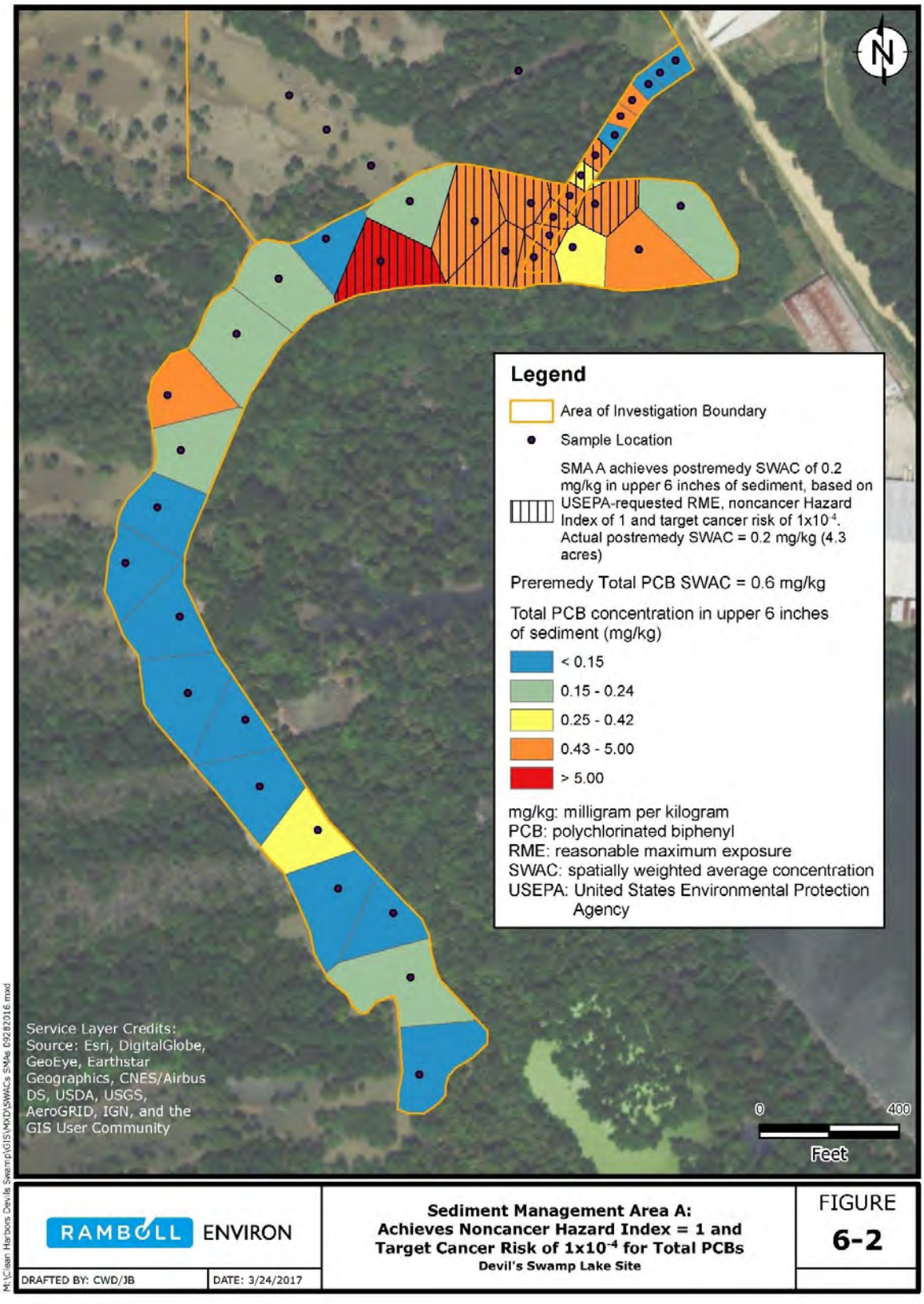

Figure 13 – Sediment Management Area (SMA) A

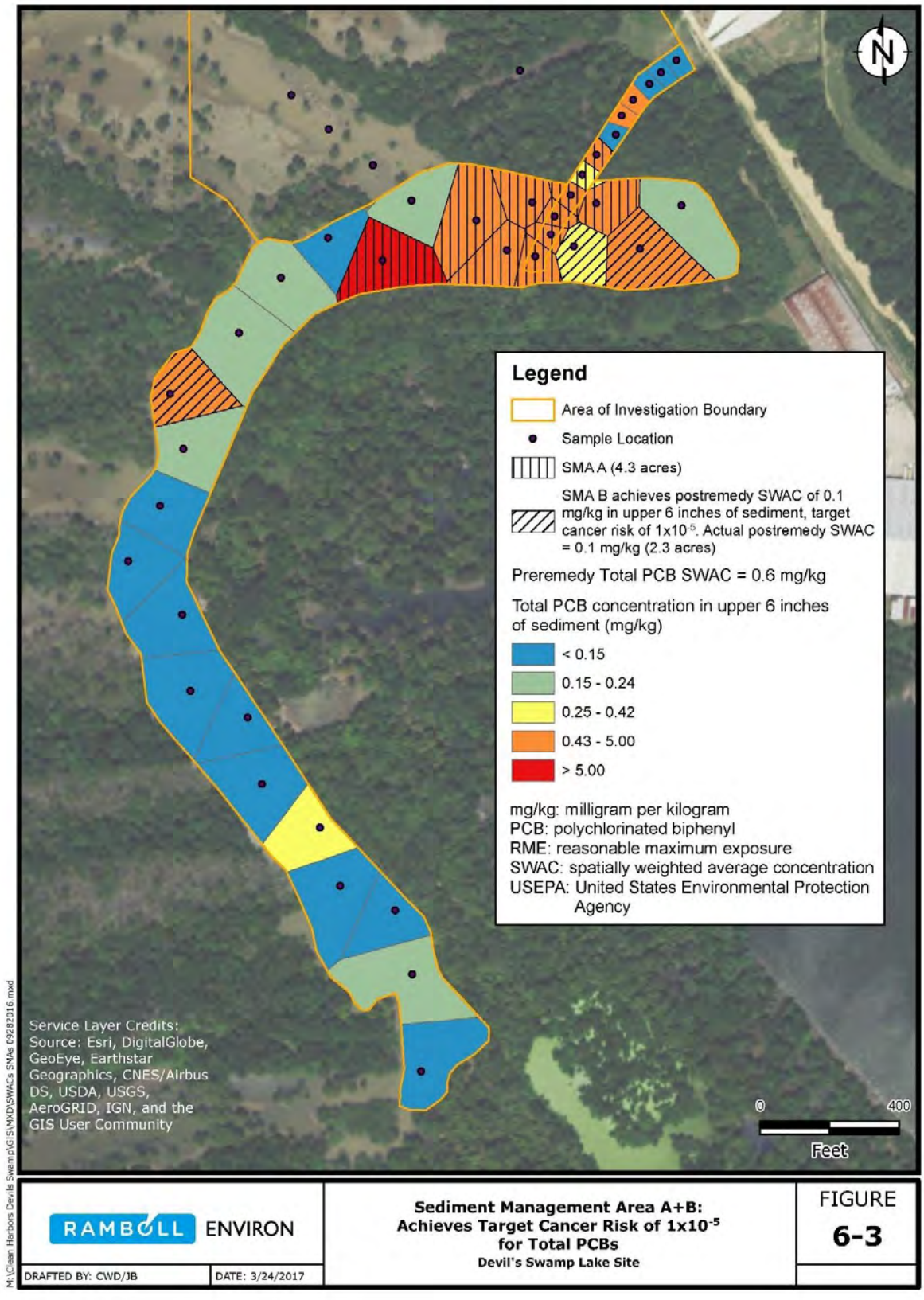

Figure 14 – Sediment Management Area (SMA) A + B

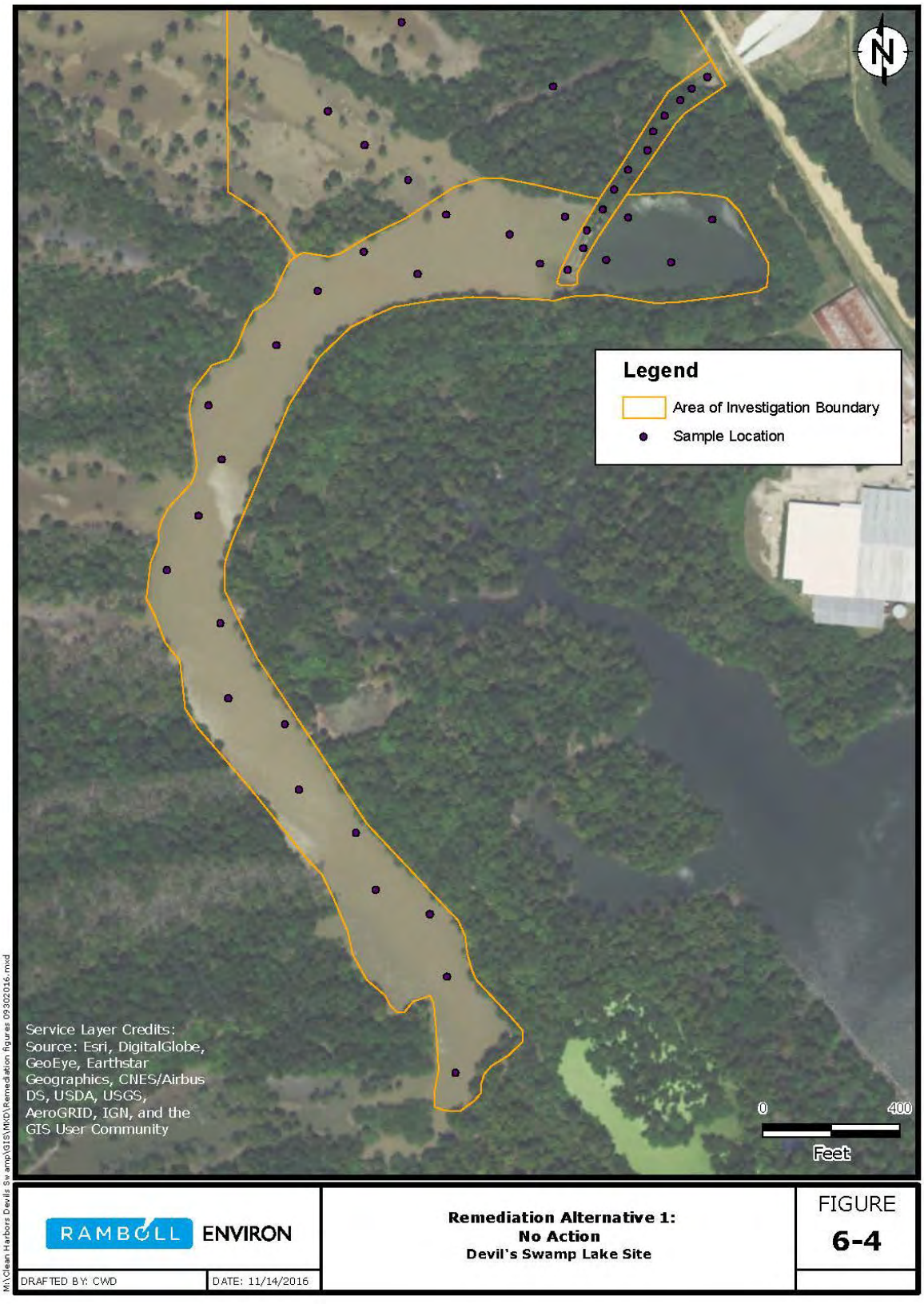

Figure 15 – Remediation Alternative 1: No Action

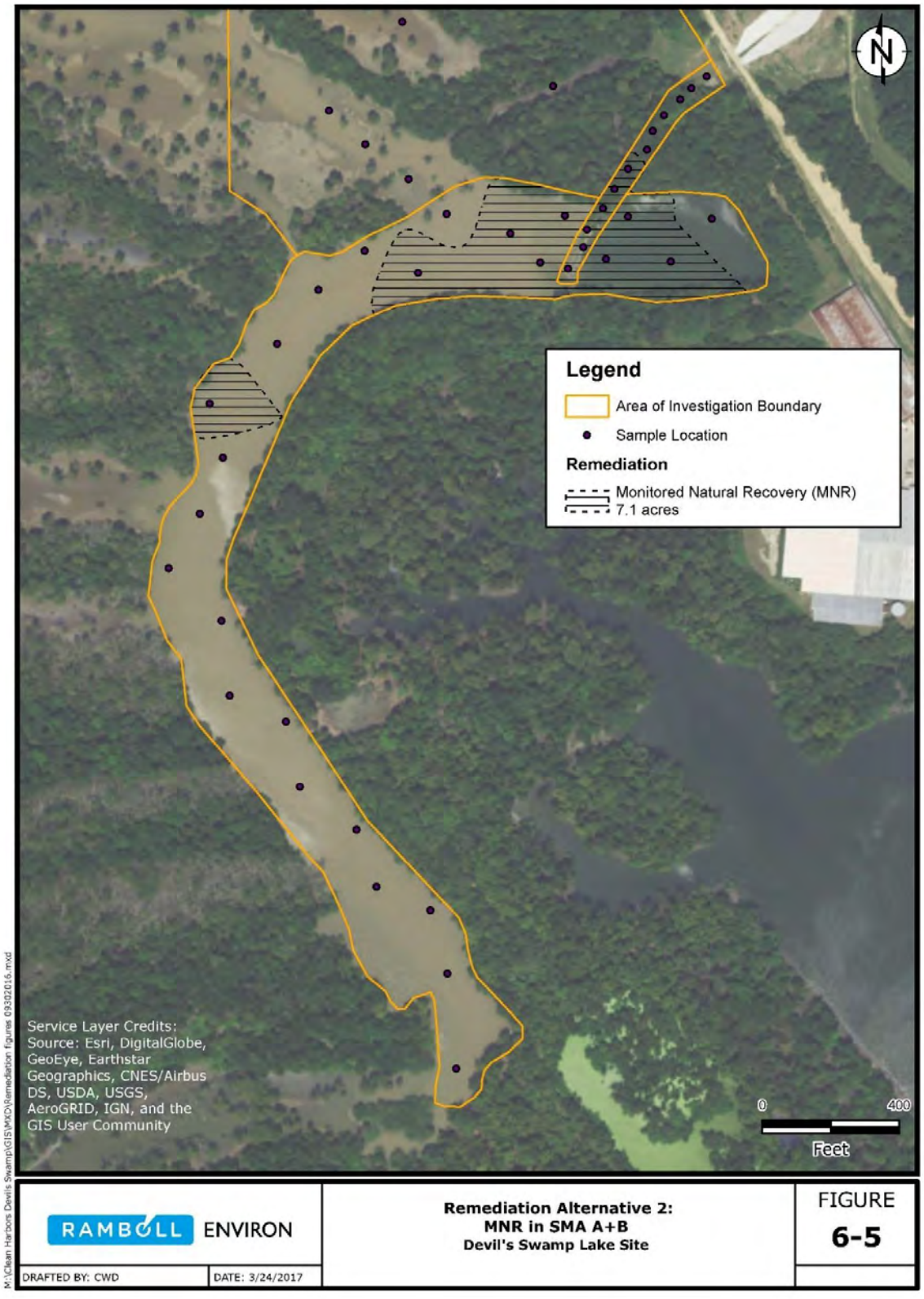

Figure 16- Remediation Alternative 2: Monitored Natural Recovery (MNR) in SMA A + B

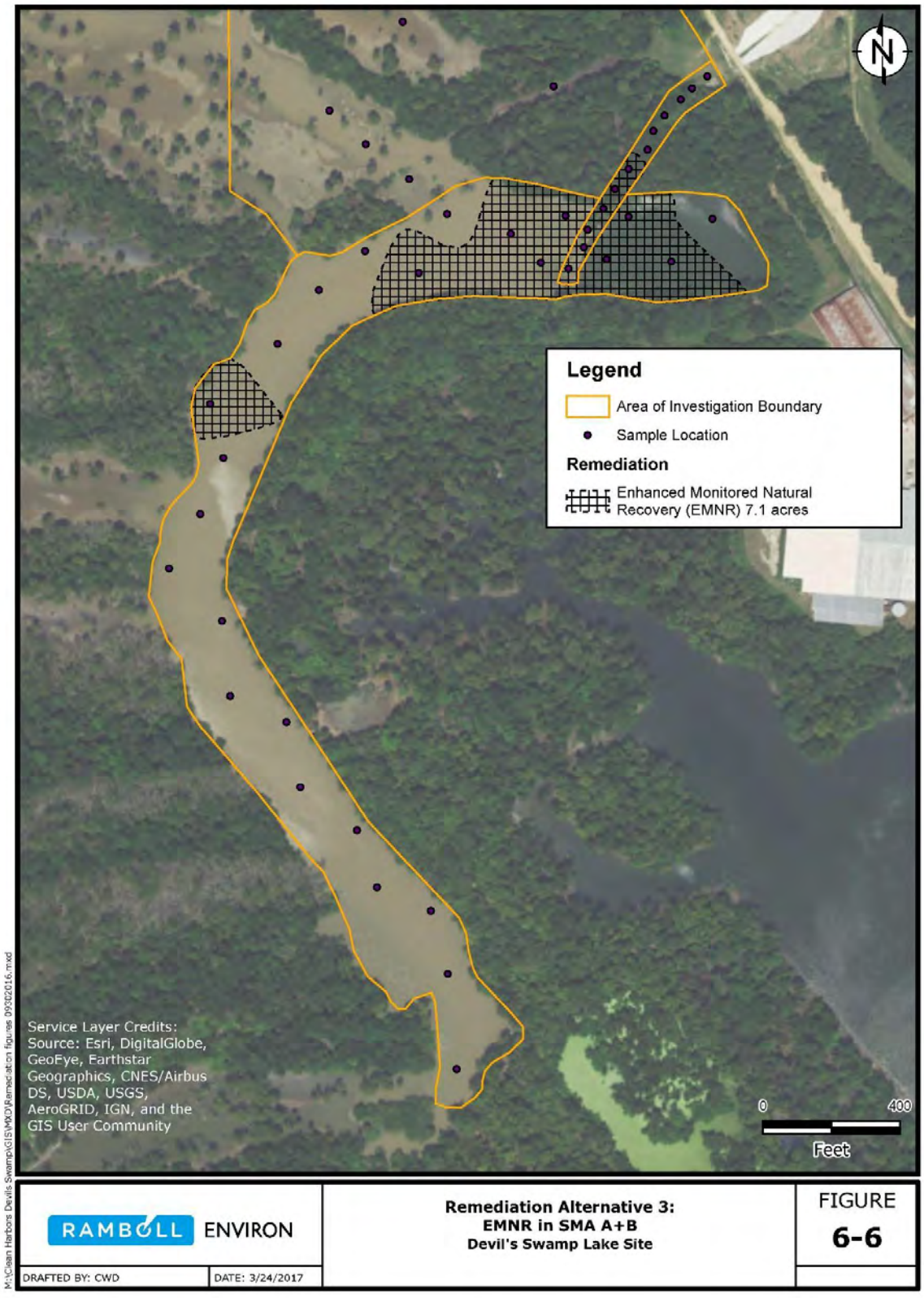

Figure 17 – Remediation Alternative 3: Enhanced Monitoring Natural Recovery (EMNR) in Sediment Management Area (SMA) A + B

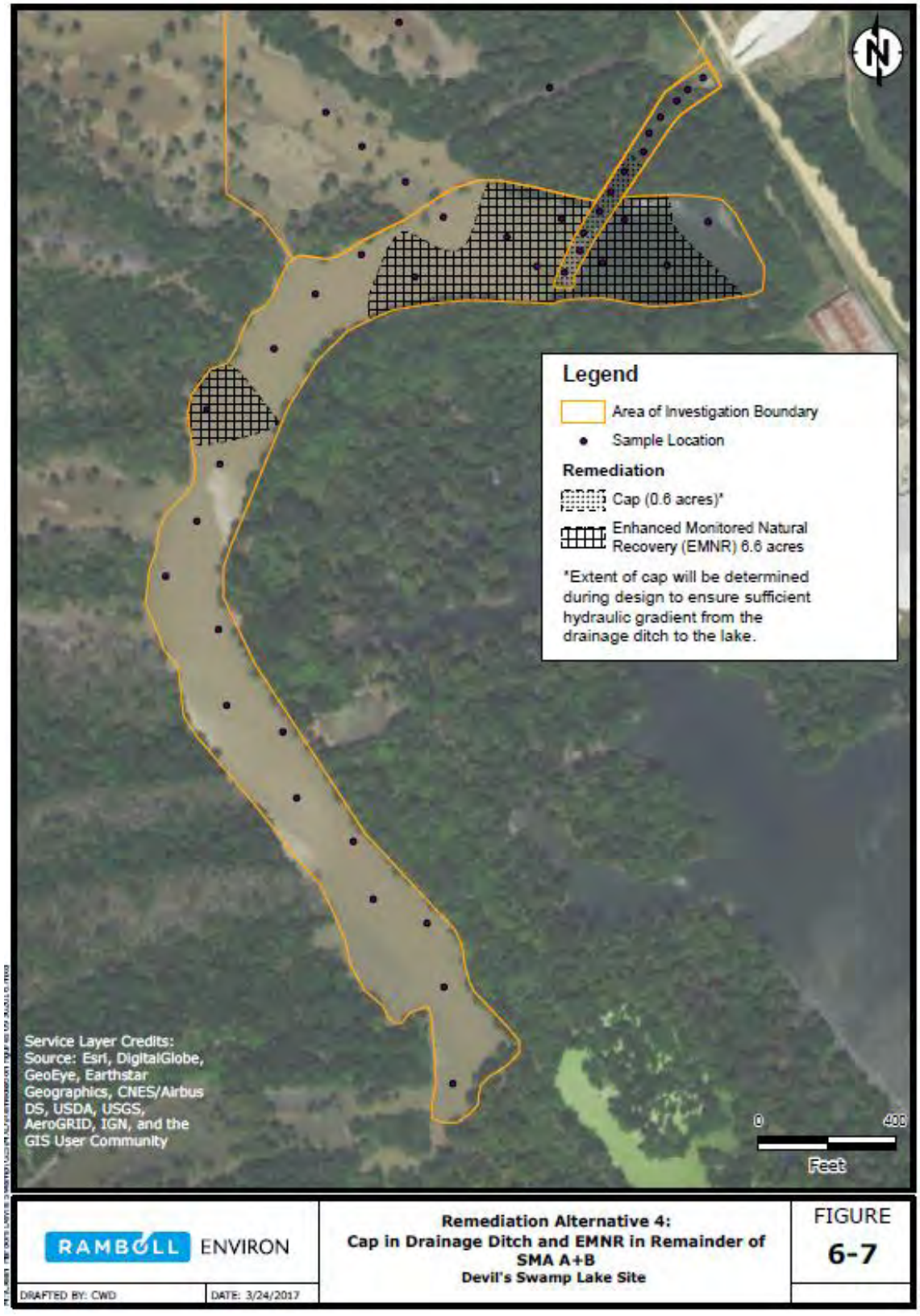

Figure 18 – Remediation Alternative 4: Cap in Drainage Ditch and EMNR in

Remainder of Sediment Management Area (SMA) A+B

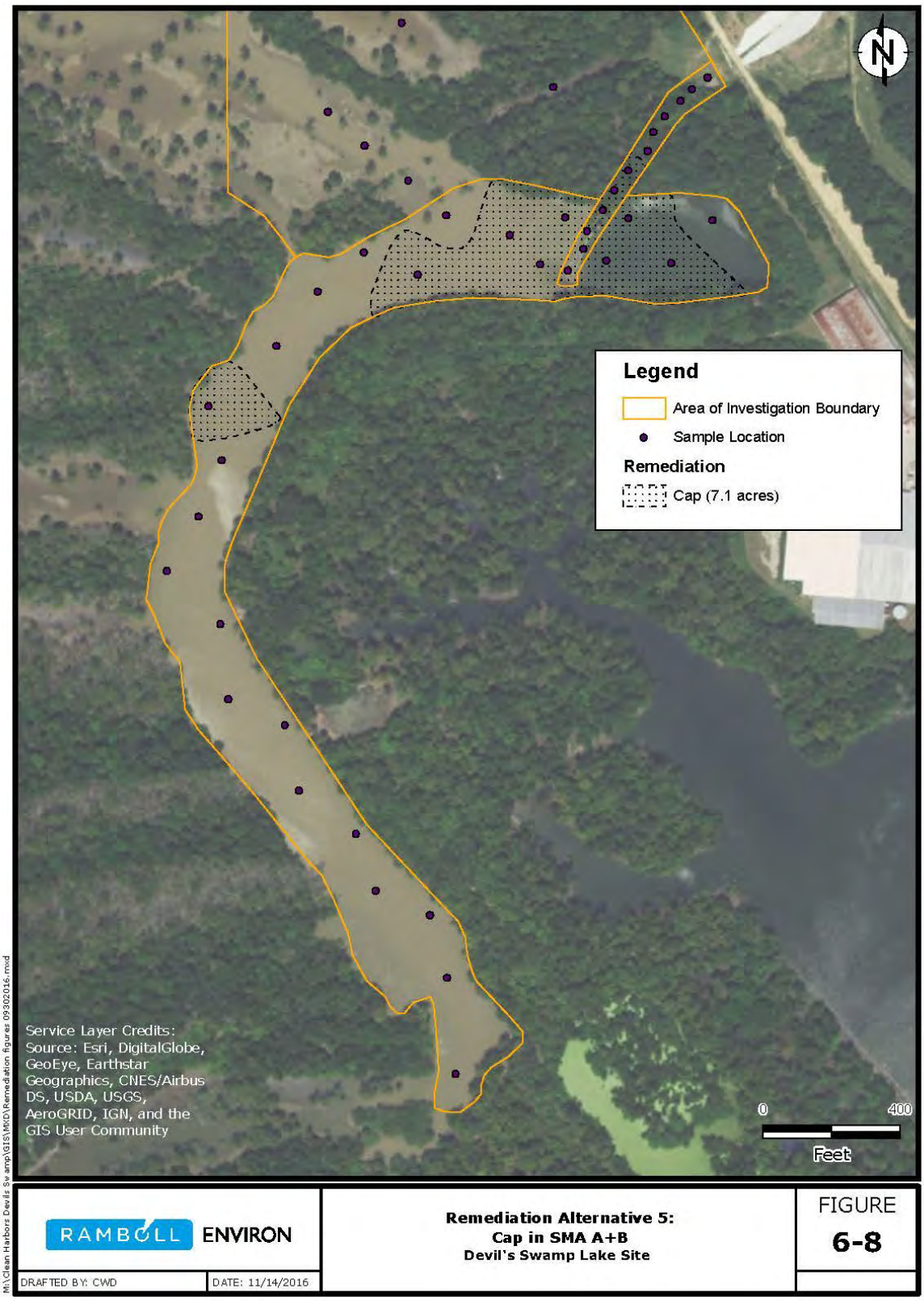

Figure 19 – Remediation Alternative 5: Cap in Sediment Management Area (SMA) A + B

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APPENDICES

Appendix E – Proposed Plan Public Meeting Transcript
Source: Court Reporters of Louisiana, L.L.C.

DEVIL'S SWAMP LAKE SUPERFUND SITE
PROPOSED PLAN PUBLIC MEETING

ALSEN RECREATION CENTER
601 RAFE MEYER ROAD
BATON ROUGE, LOUISIANA

OCTOBER 17, 2019
6:00 P.M.

REPORTED BY: LESLIE B. DOYLE, RPR, RMR, CRR

COURT REPORTERS OF LOUISIANA, L.L.C.
9522 Brookline Avenue, Suite 217
Baton Rouge, Louisiana 70809
PHONE (225) 201-9650 * FAX (225) 201-9651
E-Mail: Depos@courtreportersla.com

MS. COATS:

Good evening, everyone. We've got a couple of more people that is signing in, but I'd like to go on and get started just for the respect of your time and you coming out to join with us tonight.

My name is Janetta Coats. I am the Community Involvement Coordinator for the Devil's Swamp Lake Superfund Site.

Do we have any elected officials or representatives here with us tonight?

UNIDENTIFIED SPEAKER:

I'm not an elected official, but I'm a resident.

MS. COATS:

That's fine.

Would you like to say anything to your -- good evening?

MS. BATIESTE-WOODARD:

Good evening, everyone. I think everybody knows who I am. Justice of the Peace Constable Tracy Batieste-Woodard.

MS. COATS:

Okay. Just to let everyone know, this is a formal meeting tonight, and I'm kind of

jumping the gun a little bit just so that everyone will be aware. We do have a court reporter with us tonight. It is required because it is a public comment period on the proposed selected remedy for the Devil's Swamp Lake Superfund Site. Okay? So that's why we're here tonight.

So I'd like to go over a couple of things. Number one, if we could silence our cell phones. Again, we have a court reporter that's recording everything. And for those that may not be aware of the facilities, out the door here to your left and to my right is the ladies and men's room and the exit doors, just in case there is a reason or emergency for us to exit, and, plus, we have the fire marshal here, so I've got to cover that, just to make sure all things are covered.

We also have with us tonight our state officials, and they are -- raise your hand, please. Okay, they're in the back.

Do we have anyone here from our Health Department, as well? The Health Department folks are also in the back.

Now, again, the purpose of this

meeting is to share with you the alternative selected for the Devil's Swamp Lake Superfund Site, and the purpose of this meeting tonight is to receive public comments on EPA's proposed plan for the Devil's Swamp Lake Superfund Site. The proposed plan was placed in the information repository and posted on the Internet on September 30th, 2019, and to ensure that all comments, questions or concerns are captured by the court reporter, we will respond to the comments about the technical process or issues that need to be explained or clarified. The public meeting is not structured for any type of debate. It is to receive comments on the proposed plan. Okay? And although the public comment period has an end date, we will receive your comments tonight orally or in writing or via e-mails or in the mail. Okay? So there's a variety of ways that we will receive public comments on the proposed plan.

For your information, there was also a newspaper notice published in the newspaper on October 30th, 2019, notifying the residents that the proposed plan was available for public review. Again, oral comments will be received

on --

Yes, ma'am.

UNIDENTIFIED SPEAKER:

You mean on October 3rd or 30th?

UNIDENTIFIED SPEAKER:

The 30th is not here yet.

MS. COATS:

October 3rd. October 3rd. I'm sorry. October 3rd, 2019.

Written comments, again, can be mailed in, and I will give you guys the mailing address for those written comments. And after all the comments are received, then those comments will be included in EPA's administrative record.

So for those that desire to make comments tonight, we have a yellow card here that I'd like for you to put your name on and give it to me, and we'd like to do this in efforts to maintain the order so that we can kind of stay on track for those that desire to make comments tonight. Again, we have a court reporter, so we want to make sure that she's able to hear everything that we're saying so that it can be captured in the transcript.

So would anyone like a comment card? And you don't necessarily have to have a comment card if you want to make a comment tonight, but I'm just trying to, you know, kind of keep it flowing and in order so that every voice can be heard.

Okay. In addition to that, we also have a blue sheet of paper on the sign-in table in the back, and this can be used for you to write your comments on and submit them to EPA. That's if you desire. If not, again, there's other ways that you can submit your comments, as mentioned earlier. Okay?

So with that, we'll briefly go over the presentation that Bart Canellas -- he's the remedial project manager for the site. He will provide a presentation to you tonight, and then after the presentation is over, then we will open the floor for everyone to provide their comments for the record.

The court reporter that we have with us tonight, her name is Leslie Doyle. She's to my right here. She will be taking the comments.

So with that, I'd like to now turn the

mic over to Bart Canellas. He's the remedial project manager, and he will provide you with the presentation for the Devil's Swamp Lake Superfund Site. Thank you.

MS. RAY:

Excuse me. Before we start, can we get a little background information on him, besides his position?

MS. COATS:

Okay. Yes, absolutely. The question from --

MS. RAY:

Melvina Ray. Melvina Ray.

MS. COATS:

-- Melvina Ray is that she would like to hear Bart Canellas, the remedial project manager's -- Bart, I don't want to put you on the spot. Are you comfortable with that?

MR. CANELLAS:

Yes.

MS. COATS:

-- background on, I guess, his ability to do whatever.

But, anyway, yeah, she just wants to know your background, Bart. So we'll turn it

over to Bart. Thank you.

MR. CANELLAS:

First, good evening to everyone. My name is Bart Canellas. I am a environmental engineer. I am also a industrial engineer. I have two different kinds of degrees. I have been working with EPA for almost 30 years with the Superfund Remedial Program, and I have also worked with the state or territory of Puerto Rico with their environmental state program and also worked with different environmental consultants in the design and construction of environmental projects.

Will that answer your question?

MS. RAY:

No. I'm trying to find out what do you do there? What is your position? What do you do? I'm not speaking of your degrees or anything like that. What is your job performance there? What do you do?

MR. CANELLAS:

My --

MS. RAY:

What are you monitoring?

MR. CANELLAS:

My position is as a remedial project manager. I have different environmental projects in Louisiana, in Oklahoma and New Mexico. Some are projects that involve sediment contamination, like this one, and then I have other projects that involve federal facilities and different kinds of environmental problems within the Superfund Remedial Program or the Environmental Protection Agency.

MS. RAY:

So you're doing any monitoring to see if there's any issues or problems and come up with solutions how to solve them?

MR. CANELLAS:

Yes.

MS. RAY:

Is that correct?

MR. CANELLAS:

Yes. We have some charts in the back of the Superfund process. When people have a concern, they bring it to the attention of EPA. EPA investigate the problems, do some preliminary evaluations. If necessary, they do some site inspections and collect additional information. If there is a problem that may be

serious enough to present a potential problem to the environment or to the public health, the site continues to be investigated.

We do some investigations that we call remedial investigations. Based on the findings, we evaluate if there is any risk to the environment, to the birds, to the animals, to the fish, also evaluate if there is a risk to public health, to people; and based on those results, if some kind of solution or remedy is necessary, we evaluate the feasibility of what may be the best remedy or solution. After that, we also work remedial design, what kind of design is required. Eventually, we do construction. And once construction is complete, EPA continues to monitor the situation at the different projects, the sites, and based on the use of the site or the area, if we need to continue monitoring or checking on a site, we will continue that many times, at least every five years.

So it's a long process to address concerns that the public can bring to the attention of the EPA, and, again, we have this chart. We call it -- it's a road map. It's a

long process, but we are there for as long as is needed to resolve the problem.

MS. RAY:

Thank you.

MR. CANELLAS:

Well, you're welcome.

Well, again, thanks to everyone for attending here. Some of you have seen the information that I am going to present, and I will add also some new information to these pictures.

So we are talking about the Devil's Swamp Lake. This is a picture of what is the lake. The lake is a small lake within the big wetlands or the Devil's Swamp. Devil's Swamp is extremely large. It's over 12 square miles. This is just a small lake in the middle of the swamp.

We have a map here that shows the location of the lake. This is the entire swamp. And some of you in the community know that there is a barge canal. This is a picture or a map. It's a topographic map. Some of you may be more familiar if we look from an aerial photograph. We have the area of the swamp.

The lake is this small portion here. We have here the current Clean Harbors facility. Marked it in red. It used to be the former Rollins Environmental Services facility in the '60s and the '70s and the '80s. It's now Clean Harbors. There are all the industrial facilities, and the area of Alsen is this area here. So it's a complex setting of different uses, industrial facilities, wetlands, former disposal facilities, residential areas.

Starting my presentation, I will say the source of the contamination seems to originate from Rollins Environmental Services, the facility that operated a hazardous waste disposal site in the late '60s, the late '70s. The facility, Rollins, apparently had releases of contaminants to the swamp and to the lake, and this took place through a drainage ditch that went into the swamp and into the lake.

We have here a picture that shows -- this is the drainage ditch here within the facility, and then it discharged here into the swamp and the lake. This is the drainage ditch. As mentioning before, there is a lake. What we are looking into Superfund is a small

lake, about 37 acres, within the entire larger Devil's Swamp.

A little bit of background. EPA proposed Devil's Swamp Lake to what we call the National Priorities List in 2004. EPA then issued an order to potentially responsible parties to conduct an investigation and study. This took place in 2009. When we issue an order, we look to who is responsible. Responsible may be the facility that did the problem or the release in the '60s or the '70s. Now, if the facility is not there or no longer exists, well, new owners of the former facility can be responsible. That's why we issue this order to the current owner, Clean Harbors, and Clean Harbors is conducting this investigation on behalf of Baton Rouge Disposal, the current owner of that former Rollins facility.

So once we have the order issue, we started investigation, and when we were looking to investigation, we looked to the lake, but we also looked to areas north -- this is the lake. We looked to areas north of the lake, areas of the lake, area downstream from the lake on the south portion of Devil's Swamp. We looked into

portions of the south, Bayou Baton Rouge. It shows sort of in blue the pathway of the Bayou Baton Rouge. We also even looked to areas on the upper end of the barge canal.

MS. COATS:

Excuse me, Bart. If you could speak a little bit louder. Some people are saying they're having some problems hearing, so if we can speak just a little bit louder.

UNIDENTIFIED SPEAKER:

It's really -- it's really the refrigerators.

MS. COATS:

The refrigerators have -- yeah.

UNIDENTIFIED SPEAKER:

Yeah.

MS. COATS:

So if we can just bump it up a little bit.

MR. CANELLAS:

Okay.

So, again, we look up gradient. We look to the drainage ditch, to the lake, down gradient, everywhere around the lake and the swamp.

Similar picture to what I mentioned. Areas north, the lake, the barge canal, portion of the swamp further down, the Bayou Baton Rouge. And during this, we collected a number of different environmental samples. We took samples of sediment, samples of water. We even collected sample from fish, from crawfish, different kinds of fish. These are, for illustration, some of the sample points within the lake, but we also sample in the swamp, above the swamp, below, in the barge canal. It's a very extensive program of water, sediment, fish, crawfish, a little bit of everything.

We took those samples to evaluate if there was any risk to the environment, the birds, the animals, the fish, or to people. As I mentioned before, the use of the area of the land in the area, there is wetland, industrial, commercial, residential, recreational, a little bit of everything in this picture. The contaminant that we found that was of concern is something that we know as PCBs. It's an abbreviation for polychlorinated biphenyls. And we looked to the total PCBs, and some

version of the PCB is called dioxin-like PCBs. It's not dioxin, but they are somewhat similar, so we looked to PCBs in both ways.

Now, conducting our risk, we found that ecological, the fish, the birds, the mammals, there was no unacceptable risk. That's good. But looking to human health, we found unacceptable, an unacceptable non-carcinogenic risk. This is unacceptable to a recreational user consuming fish from the lake.

What is that recreational user? Someone that goes there fishing. We know that there is a fish consumption advisory, but some people may not be aware, or they may go there and go fishing and consume that kind of fish. The state has issued what they call a fish consumption advisory. They have posted signs like this in the swamp, but, again, some people may not be aware, they haven't seen the sign. The thing is, there may be some kind of unacceptable risk.

And EPA did this evaluation working in coordination with the Louisiana Department's Environmental Quality, the Louisiana

Department's Environmental Hospital, and other state and federal agencies. We all worked together to do this evaluation.

So we found there is a risk. What are we going to do? We need to reduce the risk that PCBs present, and we call these reduce the uptake of the PCBs that can be in the sediment. These PCBs, these contaminants, at the bottom of the lake, they will get into small bugs, insects, worms, little animals at the bottom of the lake. A more technical way -- technical word is the macro and the micro invertebrate, but those are the little bugs that fish may eat, and if the contaminant goes from the sediment into these little bugs and from these little bugs into the fish, a person goes fishing, consumes the fish, the contaminant gets into the person. So it's a long change of how the contamination is moving to the point it can affect a person.

So this is our strategy, what we want to do. We have established some limit of how many -- how much contaminants should be on the sediment, that you reduce the amount of contaminants on the fish, and then reduce the

risk on the people. So our objective: Reduce the contaminant concentrations in sediments in order to meet protective fish levels for people that may go and consume fish.

With an investigation in the lake, we identified some specific areas where these PCBs are present, and those are the area that we may need to remediate, find some solution, take some type of action. These are areas within the lake, and there is a portion of the old drainage ditch that went from the facility into the lake. In red here is portion of the ditch area that had too much contamination that we need to address in some way.

So what kind of remedies EPA have for site where there is contamination of sediments? Well, we can monitor natural recovery, which means we will be taking samples every number of years to see if the amount of contamination gets reduced in time. Somewhat similar, there is enhanced monitored natural recovery. Enhanced means let's try to do something to make this thing -- this reaction, this solution to move faster, enhance by doing something to decrease the amount of contaminants or make the

amount of contaminants not available for these bugs or micro invertebrates and to the fish so that we can reduce this risk problem. Another potential remedy is some kind of cover system, put some kind of barrier or cover so that the contaminant will not be there available to anybody. So, in general, these are typical remedies for sediment sites.

Going specifically into Devil's Swamp Lake, our proposed plan shows different alternative of what we can do. The first alternative is, hey, no action; we are not going to do anything. Well, we mention Alternative 1 so that we can have this to compare against other alternative. But taking no action is not a solution. Contaminants may remain there. The risk may remain there. Nothing has been done. But it's an alternative presented there so we can compare with other alternative.

If I look to an Alternative No. 2, it's monitored natural recovery. Well, from time to time, we're going to be taking additional samples to see how the level of contamination gets reduced in time. Now, this

depends on mother nature and the environment for this amount of contamination to reduce in time. We are not doing anything, just letting things happen, but monitoring sediments from time to time to see how the risk gets reduced.

Now, we can do something to make this going faster, and it's enhanced monitored natural recovery. On this kind of option, we put some kind of layer. It may be some kind of sand layer or cover over those areas of high concentration of contaminant so that they will not get into the bugs, into the fish and eventually affecting the people. So we do some kind of action with this layer, but we will also monitor to be sure that this thing that we are proposing is taking place.

And Alternative 4 is enhanced monitored natural recovery and cap. It's similar to the previous alternative, but we are now -- we are now talking about a cap on the drainage ditch. What is the drainage ditch? The drainage ditch is this area of the old original drainage ditch where there was a contamination. When we say "a cap," we may do the natural recovery of placing some kind of

sand layer or barrier, but on top, we may put some kind of rocks or armor so it will prevent any kind of erosion or disturbing the sediments in the case of a large flooding or some kind of action that can affect the sand layer on the area of the drainage ditch.

It's a little bit hard to see unless you get closer, but when the water level is down in the lake, you can see the old drainage ditch, that excavation there at the bottom. When the Mississippi River is up and the swamp is flooded, everything is under water. I have a photo. We know the ditch is here, and we look for including some kind of activity there in the area of the ditch. That's our Alternative No. 4, and it's -- well, at this time, we are proposing that this may be the remedy that we should implement.

There was also in our plan capping or cap, placing that sand layer and some kind of armor or rock. That's also another kind of alternative to consider. And in comparing this alternative, we look to, well, capping may provide some additional degree of protection on high-energy events, when there is a flooding or

a hurricane. But in terms of how protective it is for the swamp and the fish and people that may ignore the fish advisory and consume fish, the protectiveness is the same. 4 and 5, protectiveness is the same. While capping may sound a little bit stronger, well, if you start moving rocks, we may be doing some kind of damage to the swamp, to the lake, affect the quality in some way.

So when considering cap, we need to look to any potential damage to the habitat, and that kind of damage may be greater in the alternative of using a cap. Capping also may have a higher cost to the construction that's more expensive. On the other hand, we will be monitoring for several years. The monitoring for a cap may be less in terms of cost.

Our proposed plan shows some factors about our remedies. If we look to our proposed remedy on Alternative 4, it may be like around 2-and-a-half millions. If we go to our remedy for the cap, it may be around 3.4 millions. Enhanced natural recovery and the cap in the drainage ditch, at the end, the area of the lake and the swamp, it may recover in around 30

years. If we do the cap, it may be around 20 years. Again, these are estimates. We have to monitor to be sure if it's going to be 20 or 30 or 25 or 15. Our monitoring will tell how fast we are approaching our goals. If we implement these remedies, once it gets designed and construction goes forward, it may take around one or two years, the part for construction.

So what are -- what are our next steps? Well, the proposed plan was finalized, was issued. The public notice was published. Fact sheets were published and distributed and available through the website. 30-day public comment period is ongoing. We are now in the middle of this comment period. Public meeting is taking place right now, today.

And now we will be asking if you have any comments, questions, suggestions. The thing is, before a final decision is made by the EPA, EPA will respond to every comment that we receive from you, from the community, before making a final decision. Nothing has been selected. Different alternatives are presented. There is several documents, a lot of documents to try to support why we think one

alternative may be better than the other, but you may have different ideas, concerns. You may know something that we may not be aware.

So at the end, EPA may continue with the selecting the proposed remedy as final, EPA may modify what we are proposing based on your comments, or EPA may select a different remedy, different kind of solution. So we need to hear from you. Again, this is our lake, our Devil's Swamp Lake, and going to the very beginning, it all has to deal with the environment, the birds, the fish, the little bugs at the -- worms, insects, stuff at the bottom of the lake, eventually people.

This has been a long process. You may say, why you took so long? Bart, you have been here several times, several years. And it's because we have been looking to different kinds of potential problems in different areas so as to identify exactly what are the problems that we need to fix now.

I will finish my presentation with that. I think you have question or comment.

And, Janetta, can you take over and see what's --

MS. COATS: Okay. Thank you, Bart, for the presentation.

We had -- a couple of folks had come in just recently, so before we get into the official public comment period, I'd like to share with those that just made it how we will proceed in accepting comments from the public. We had -- again, as I mentioned earlier, we have the yellow comment cards. If you would like to get one of these to put your name on. Okay. Who else need a yellow sheet? Okay. Does anyone else need a yellow card for comments?

In addition to that -- and I want -- just want to make sure that I'm giving accurate instructions so that we can hear from everyone. Everyone voice matter, so we want to be able to hear from everyone tonight that desire to make a comment. Again, we have the blue sheets in the back. If you don't want to make a comment tonight, you can make a comment on this sheet or your own sheet and mail it in to EPA, or you can submit a written comment and mail it to us or send it via e-mail. So there's a variety of ways that you can submit comments for your

voice to be heard.

So what we'd like to do tonight, for those that have the cards, I'd like to take the cards up or -- is that okay with everybody, the way we are going to accept the comments tonight? Is everyone okay with that? Okay. Or would you like to just kind of go down each row and then come up?

MS. RAY:

Just find out who wants to make a comment.

MS. COATS:

Okay. So what we're going to do, we're going to take the microphone. So when you get ready to make your comment, if you would, please, come up to the microphone. Again, we have a court reporter that's recording everything tonight, so if you would say your name very clearly so the court reporter can record your name, and if it's an unusual name, please spell it so that it can be on the record correctly. I'm really bad with spelling names, so I would really just really mess it up if I had to record it. State your name and make your comment.

Again, guys, we are making comments. We're not debating the proposed plan alternative. We're taking comments. So a lot of the comments that you make tonight, it may not be answered tonight, but it will be answered in a responsiveness summary, and that will be provided to the public so that you can see that we actually did respond to your -- to your comment. Okay.

UNIDENTIFIED SPEAKER:

So if you had a question for Bart, you can't ask him a question?

MS. COATS:

No. No. That's not what I said. What I said was, we're taking --

UNIDENTIFIED SPEAKER:

No. I was asking.

MS. COATS:

Yes. All the questions will be posed to Bart, yes, but he will not answer all the questions tonight because this is a public comment period. So during public comment period, we don't go into answering back and forth with questions, because we want to make sure that the court reporter documents your

questions so that we can respond to your questions.

UNIDENTIFIED SPEAKER:

So can you ask questions during the comment period, or you just make comments right now?

MS. COATS:

You're making comments tonight. This is the public comment period. The public comment period began on September 30th, 2019, and ends on October 29th, 2019. So this will be making -- you will be making comments to the presentation that Bart just presented to you tonight.

In addition to, you should have received a fact sheet in the mail on the proposed plan that Bart just shared with you tonight. If you did not receive a fact sheet in the mail, please make sure that you sign our sign-in sheets in the back so that you will be on our mailing list. So in the future, if we missed you tonight, then you will be on our mailing list for future mail-outs.

MS. RAY:

As Representative Chauna Banks said,

we can make comments and questions, also, right?

MS. COATS:

Yes, ma'am. That is a comment. Yes. Yes. Comments, questions, yes. Yes, ma'am. So we'll go by rows. This is what you guys have said that you want to do, so we adhere to that. So we will go by the rows. You can come up to the microphone, state your name, and then make your comment.

MS. RAY:

Hi, everyone. My name is Melvina Ray. I live in Alsen. And I would like to go back to the scale where the funds have been -- will be spent over 30 years period. Can you go back to that scale and click back on the -- please?

COURT REPORTER:

Excuse me, Ms. Ray.

Could she spell her name?

MS. RAY:

Melvin, put a A on the end of it; last name Ray, R-A-Y. Melvina Ray.

Okay. I was just looking at the comparison of the alternatives. Is this funds that's to be spent within a 30-year period and

20-year period? Is that a proposed amount that could be spent? Question?

MR. CANELLAS:

Do you want me to clarify?

MS. COATS:

Okay. Go ahead. Go ahead.

MR. CANELLAS:

It's sort of a clarification. This is the total amount of funds. Within the studies, we have a cost analysis of how much may be the part of the construction and how much may be the cost of sampling and monitoring down the road for the next 20, 15, 30 years, for as long as it takes. And, again, this is an estimate of what we think it will cost total.

MS. RAY:

Yes.

MR. CANELLAS:

There is part, like a five-year reviews. If we need to keep coming every five years for the next 50 years, we will come back for the next 50 years.

MS. RAY:

So how much has been spent between the time of the Devil's Swamp up to now? Can that

be answered? I think that's a legit question.

MR. CANELLAS:

This is an amount of money of what a remedy may cost, money that has --

MS. RAY:

I understand the remedy may cost, but the question that I'm asking now is, how much has been spent through the amount within -- let's say, from the time you all started to 2019, how much has been spent?

MR. CANELLAS:

The -- the cost of the work done has been done under an order to the potential responsible parties. The company that we mentioned, they are doing this under an order. They are hiring their own consultants, their own people to do the work. EPA provides an oversight of the work they do in coordination with the state and other agency. So the amount of money spent is part of the work they had to do under an order --

MS. RAY:

That they had to spend?

MR. CANELLAS:

-- (speaking over one another.)

MS. RAY:

Okay. That they had to spend?

MR. CANELLAS:

They have to spend.

MS. RAY:

Okay. Well, how much have EPA spent doing all of this? I think that's a legit question, also. From the time they started, EPA, to 2019, how much have you all spent out?

MR. CANELLAS:

I don't have a specific number at this time, but you can present that as a comment, and EPA and the people that deal with funding of money will provide an appropriate answer within a responsiveness summary. I don't have that number with me right now.

MS. RAY:

Because I'm looking at the amount that's been spent, over the time period comparison to come, millions and millions of dollars. You know, with all of that being spent, people could have been bought out by that time.

UNIDENTIFIED SPEAKER:

Thank you.

MS. RAY:

That's the whole purpose what I'm getting to.

But I would like to know personally, and I'm sure everybody else want to know also, how much money, from the time EPA started to 2019, have you all spent? Because I'm sure that they had to hire people.

And I know my time is up, if somebody else wants the mic, but if I have time, I'll come back.

MS. COATS:

Thank you for your comment.

MR. CANELLAS:

Thank you.

MS. COATS:

Appreciate that.

Okay. Let's go back again, and I just want to reiterate again, guys, that during the public comment period, we take the comments. We don't do the debate back and forth. We're taking comments. Unless it's a technical issue that needs to be explained, and then Bart will explain that technical concern or that technical issue that you have.

So if we could, Bart, just to make sure that we are being productive in getting your comments to the proposed plan, the draft proposed plan on the alternative remedy that EPA is proposing to the public for your comments -- so, Bart, if we could pull -- if you can go back to the presentation, please, and show the alternative remedy that we are proposing to the public for cleaning up Devil's Swamp Lake.

MS. BANKS:

Will you go back to the comparison first? We want to get a picture of that. My phone died.

MR. CANELLAS:

The comparison is -- within the proposed plan, you may find this information, and you have it here also in the presentation.

MS. COATS:

Okay. So now if we can go to the alternative that EPA is proposing to clean up Devil's Swamp Lake. So this is what we are wanting to make comments on, guys, on the proposed alternative for cleaning up Devil's Swamp Lake. So this is the Alternative 4 that

we are proposing to clean up Devil's Swamp Lake.

UNIDENTIFIED SPEAKER:

(Inaudible.)

COURT REPORTER:

I'm sorry, ma'am. I can't hear you.

MS. COATS:

Again, remember, we have a court reporter, so any time we speak, guys, we need to come up to the microphone. No matter how small we feel that the comment or question is, we need to come up to the microphone, because EPA is required to document everything that is being said tonight. It has to be documented, and in order for it to be documented, we have to come up to the microphone so the court reporter can hear the comment that you have and document it, please. Thank you. Appreciate it. Thank you.

Can you please state your name, please?

UNIDENTIFIED SPEAKER:

Are we doing one side then the other? Are we doing one side then the other?

MS. COATS:

Yes, ma'am.

If you could state your name, spell any unusual spellings so the court reporter can record it.

MS. SHARON BATIESTE:

I am Sharon Batieste, a resident in the Alsen community for over 51-and-a-half years. My family, husband has been in Alsen 70 years.

First, I'd like to applaud the effort that EPA -- they still, after all of these years, that they recognize the negative impact. Not only the EPA -- what's wrong? I'm not talking loud? Okay. That they recognize the negative impact that has been placed on the Alsen/St. Irma Lee surrounding communities for decades.

I further -- I looked -- as I looked at the picture with the man swimming in the boat, I am reminded of citizens just getting drowned at Devil's Swamp. I think about the number of dollars that these figures were. I think about 3-and-a-half, $4 million could have bought out the community a long time ago. I think about the negative effects of the laws.

And I'm sure you know that is the land, the air, the water and our own soil. And for some reason, as I look around and saw the presence, I'm wondering, since this has been so rhetorical, the warmed over soup and beans, I'm wondering -- and I think, apparently, some of you know the effect that it has on the brains, the body, the sickness.

You know, a few years ago there was 300 residents. It has declined tremendously. I'm looking at neighbors every day that's gravely ill, people who have worked with EPA, DEQ, and we're still being faced with the same thing. So I'm thinking, what are we supposed to be, a bunch of fools that don't know your living conditions? I wonder how people who work in these positions, how do you sleep at night? What else can we do? I look at the living condition versus a health assessment. We've had -- and what happens? Right back here every so many years. What else? This is human life that's being played with. There have been other communities right here in Baton Rouge with not the effects with families relocating, so why is it so difficult that we are not

recognized? We pay taxes. We have elected officials.

So in your answering, please address some of this. This is a huge loss. And the cost. Again, I end and say, to give someone else, these Alternatives 4 and 5, what's that for? Let the people out of harm's way. That's it.

MS. COATS:

Thank you, Ms. Batieste.

Okay. Guys, let's go on this side. Again, please remember that you're making comments or questions, so when we respond to the comment or question in the responsiveness summary, it has to be stated in a comment or question related to the preferred alternative that EPA is proposing to the public to clean up Devil's Swamp Lake. Okay?

So we're going by rows, guys. That's what everyone agreed on, how we would accept comments. So we kind of got out of order, so let's kind of get back on track. So do we have anyone on the front row here that wants to --

Please come up to the microphone. Again, state your name, spell any unusual

spellings so the court reporter can document your name and have your name spelled correctly on the record.

MS. BANKS:

Okay. My name is spelled C-H-A-U-N-A Banks, B-A-N-K-S.

As it relates to the different alternatives, is it possible -- were public comments included in deciding the alternative? And is it possible that to -- in looking at all the alternatives, the first one was no action. So is it possible that no action could be the alternative as it relates to Devil's Swamp, which would be, sounds like, 3 to $4 million in savings, and that could be directed to the residents and, whereas, they do have an option to be bought out and let the whole community be industrial?

MR. CANELLAS:

For clarification, we have Alternative 1, no action, so that we have a baseline that we can compare the cost of other alternative. That's the reason for Alternative 1. On the other hand, doing no action, it will not meet the cleanup objective that we have. So at the

end, it will not be an acceptable alternative to solve the problem, but it's placed there -- yes, it's necessary for comparison with others. But any selected alternative or modified alternative needs to meet the cleanup objective that will be protective for the environment and for the public health.

MS. BANKS:

So in saying that, for instance, if everyone in this room, their public comment is that they would like EPA to buy them out, how would that be received? Also, do you all in any way confer with our elected officials on the federal level as it relates to Devil's Swamp, the alternatives or any of those? Those are my two questions. If everyone here says, we'd like you to abandon all the alternatives and look towards the public health, which means allowing residents to move out of the community. And, number two, do you all speak to our U.S. senators and congressmen that represent this area, and do you confer with them regarding the alternatives?

MS. COATS:

Thank you, Congresswoman Banks. Thank

you.

Okay. Next.

MS. BANKS:

The other question, we'll get back to?

MS. COATS:

No. Remember, this is a public comment period. We're calling comment periods to receive comments, guys, and then EPA responds back to it.

MS. BANKS:

Okay. Sure.

MS. COATS:

And for tonight, any technical issues that need to be clarified, then those will be clarified.

MS. BANKS:

Thank you.

MS. COATS:

But as far as giving direct answers to your questions, that's not structured as part --

MS. BANKS:

That's fine. After each speaker, you need to let them know whether or not this is going to be answered tonight.

MS. COATS:

All questions -- all questions and comments that we receive tonight will be answered in the responsiveness summary.

MS. BANKS:

Okay.

MS. COATS:

They may not be answered tonight, but they will be answered. That's the purpose of the public comment period. So you may not receive the answer tonight, but it will be answered. We want to make sure that everyone voice is heard and you're given an opportunity to provide your comment for tonight during the public comment period. So that's why we don't -- public comment periods are not debates, where we go back and forth to say why we did this or why we didn't do that. It's to receive your comments, and then the answers will be answered in the responsiveness summary, and then that will be provided to the public so that you know that your answer -- your question was answered or your comment was answered. That's the process that we have during the public comment period.

MS. RAY:

What's the time period --

MS. BANKS:

Right.

MS. RAY:

-- for the response of the answer?

MS. COATS:

The public comment period ends on October the 29th.

MS. RAY:

No, the response to -- for to give us the answers back, the questions that we ask tonight, what's the turnaround period?

MS. COATS:

Well, here's the thing guys. We're kind of getting off track a little bit, because we've already had inquiries about extending the public comment period.

MS. RAY:

What does the handbook say?

MS. COATS:

Ma'am?

MS. RAY:

What does the handbook say?

MS. COATS:

That's what the handbook says.

MS. RAY:

No. I'm saying the time period.

MS. COATS:

The time period to get back with you? It takes a while to respond to all the comments. It depends on --

MS. RAY:

30 days, 10 days? It has a time period.

MS. COATS:

Once the public comment period ends on the 29th is what -- it ends on the 29th. We have already got an inquiry to extend the public comment period an additional 30 days.

MS. RAY:

What does the handbook say about the respond period?

MS. BANKS:

After the -- after the 29th.

MR. CANELLAS:

The response -- the length of the response depends on the number of comments and the complexity of the comments.

MS. COATS:

Thank you, Bart.

MR. CANELLAS:

We need to address all the comments that we receive, and the reason that we have the court reporter is that we are sure that we grab every comment orally here or in writing, so that at the end of the responses come out, all the responses will be there for all the comments.

MS. COATS:

Thank you, Bart.

Please state your name.

MR. SHULER:

It's -- my name is Dan Shuler, S-H-U-L-E-R. I'm an environmental consultant. I'm still reviewing the alternatives, but I do have a question regarding the PRPs. Since the facility is a TSDF, treatment, storage, disposal facility, would it be possible to get a full list of all the potential responsible parties and their rankings? For example, if you had one hazardous waste generator that brought in an enormous amount of waste and then just if we could rank those. So is it possible to get a list of all the PRPs is my question.

MS. COATS:

Thank you for your comment.

MR. CANELLAS:

Thank you.

MS. COATS:

Okay. Let's go down the row here. Anyone else would like to make a comment here?

Yes, sir. If you would come up to the microphone. Again, state your name and spell any unusual spellings so the court reporter can make note of that.

MR. DOUGLAS:

My name's Claude Douglas, and I got a question and a concern, and it is that you focus on Devil's Swamp, but then, in my mind, I'm thinking about the Great Flood of 2016. Do you think that the contaminated area with the PCP and et cetera extended further, got a wider margin now than just Devil's Swamp, I mean, you know, and it's possible it might could be in the communities and thing, also?

MS. COATS:

Thank you, sir. Appreciate that.

Okay. Next?

Yes, ma'am.

MS. OLIVIER BATIESTE:

I am Olivier Batieste. I stay in Alsen, Louisiana. I've been standing here -- I've been staying here my whole entire life. I can remember growing up, coming to these same meetings, meeting with different people just like Mr. Bart, and everyone seems to have an alternative, but what we need is a solution. All the money that is being planned to be spent to do whatever y'all said y'all was going to do could be spent to relocate everyone. I'm getting older. My grandparents getting older. The elders and the older citizens of Alsen are dying out, and a lot of it is because of the poor health conditions down here.

And I understand you guys have families, you guys have jobs, and you really can't get too personal with us, but if it was you and your family and your kids, you wouldn't take it, and you wouldn't tolerate it. You guys are still going to get cut a check at the end of the day, but we're the ones that have to live here and breathe this air and put up with people like you guys that come in, have meetings, talk to us like we're remedial, like

we don't have any understanding, when the truth is we're just fed up and we're frustrated.

Basically, all the alternatives up there are the same besides Alternative No. 1, which was no action. The other ones, you really didn't break down and explain what was the difference.

So my final comment is, I don't agree with the alternatives. I agree with a solution, and I'd rather you guys relocate us than proceed with y'all alternatives.

MS. COATS:

Thank you.

MR. CANELLAS:

Thanks very much.

COURT REPORTER:

Ms. Batieste, is your name spelled with one T?

MS. OLIVIER BATIESTE:

B-A-T-I-E-S-T-E.

MS. COATS:

Okay. Do we have anyone else that desire to make a comment?

Okay. Yes, sir. If you would come up to the microphone and state your name.

And if we have anyone that's not able to come up to the microphone or do not desire to come up to the microphone, we have other methods that you can provide your comments. Again, you can mail them in or I can bring you the microphone in my hand and you can speak with the microphone that I have.

MR. FURQAN:

First name is Ahmad, A-H-M-A-D. The last name is Furqan, F-U-R-Q-A-N.

Okay. Good afternoon. I came here late, so I really didn't see or hear the whole presentation, but I got a good idea of what's going on. Now, I'm head of the household. I call it leader, because I am the leader at (b) (6) (b) (6), and I raised seven children there as the senior parent, and even though that they no longer live in this area, I still wonder what type of effect did I bring to my children by raising them in this environment.

Now, how much it going to cost, how y'all going to get it done is not really my concern. That's not nothing that I'm thinking about. What I'm thinking about is what it

going to cost me to sit up and watch you do whatever you plan on doing, you know, because if you honestly believe a scientific fact that that condition over there that y'all trying to clean up -- if it's a scientific fact that it having a effect on me and people in my residence, along with my loved ones, which is my neighbors, because my neighbors is second to my family, you know, even though I got some neighbors that I don't even -- can't even stomach, but they still my neighbors, and I have to show them love, just like I have to do the people in my family, you know.

And what my saying is -- my comment is, I want the best out the situation, you know. This is not our fault. This is not our mess-up, you know. So what's going on over there, that's something you got to take care of, but leave us out of it, and the only way you can do that -- and not $3 million, because $3 million back then, when it first happened, may be good, but we looking close to a half a billion or close to a billion, you know, because $3 million ain't going to really help us one family, especially my family, you know.

But all I'm saying is that, if it's a scientific fact that it's a danger to our health, move us. Move us. That's all I'm saying. Move us.

MS. COATS:

Thank you, sir. Appreciate your comment.

MR. CANELLAS:

Thank you.

MR. FURQAN:

And I will be getting a -- what you call that list, where everybody sign?

UNIDENTIFIED SPEAKER:

Petition.

MR. FURQAN:

Huh?

UNIDENTIFIED SPEAKER:

Petition.

MR. FURQAN:

Petition. Thank y'all.

MS. COATS:

Thank you, sir.

MR. CANELLAS:

Thank you.

MS. COATS:

Any additional?

Yes, ma'am. If you would come up to the front, please, and state your name.

MS. ADAMS:

I'm Blanche Adams, and I've been a resident of Alsen for 34 years, and I agree, along with my neighbors. I strongly oppose Alternative 1 through 5 and propose that we come up with Alternative 6, which is to buy the community out. So that's my comment.

MS. COATS:

Thank you. Thank you for your comment.

MS. BARROW:

I think I may be the last person.

Good afternoon, everyone. I'm Regina Barrow, State Senator for District 15, and this area is in my district, and so I am here tonight to hear what my constituents are saying, and it seems like the message has been pretty consistent in terms of the question and what they have asked as it relates to the relocation. And so, while that was not listed as an alternative, I want to know if that is a possibility.

Secondly, because I did write down a couple of things, I know that this site was placed on the National Priorities List in 2004, and so what I would like to know in terms -- that's not correct?

MS. COATS:

Again, it is a public comment period, but, for instance, the comment that she just made, that it was placed on the National Priorities List, those are the types of comments that EPA needs to clarify, because the site has not been placed on the National Priorities List. It has been proposed. So if that needs to be explained in any further detail, we can do that, but it is not on the National Priorities List, the NPL.

MS. BARROW:

Okay. That's what I thought I read, then, so I'm going to have to go back and check the website, because that's what it said. So if that's not the case, then what I'd like to know, in terms of the process, how long -- the timeline in terms of how long this has actually been going on, which I think someone asked earlier, and once this time period ends, even

if it's extended, what is the expected timeframe in terms of being able to receive answers to the questions?

And then, lastly, if Alternative 4 ends up being the solution, which seemingly, listening to this crowd, is not what they're asking for, but if it is, does this intersect at all with the Comite Diversion Canal project that is ongoing now?

MS. COATS:

Thank you for your comment. We appreciate it.

Any additional?

MR. FURQAN:

Yeah, I got something. You know, you can't put no time limit on the condition of my health, you know. See all this stuff, that's y'all. I'm not even concerned with all the rigmarole y'all got to go through, red tape or whatever you want to call it. I live here. I want something done now.

MS. COATS:

Thank you, sir.

MR. CANELLAS:

Janetta, excuse me.

MS. COATS:

We have another -- I think we have another --

MR. CANELLAS:

Excuse me. Could you ask her to clarify the last part of her comment?

MS. BARROW:

Me?

MR. CANELLAS:

Yes, please.

MS. BARROW:

So what do you mean? Are you familiar with the Comite --

MS. COATS:

He asked if you could clarify the last part of your comments.

MS. BARROW:

Are you familiar with the Comite Diversion Canal project that's ongoing now?

MS. COATS:

If we could, again, Bart -- we need to go to the microphone so the court reporter can record everything. She's having a hard time --

MS. BARROW:

Are you familiar with the Comite

Diversion Canal project that's ongoing now that's a part of a 30-year project that was a part of a flood control here in Baton Rouge and is actually --

MS. BATIESTE-WOODARD:

It's a part of -- it's going to go around.

MS. BARROW:

I don't know how far it is.

MS. BATIESTE-WOODARD:

It's a part. It's going to end up connecting, going around -- between Clean Harbors, which is Rollins, and -- yeah. It's right up --

MS. BARROW:

So it will intersect with the Comite?

MS. BATIESTE-WOODARD:

It meets up. From the map, it will meet up on the eastern -- on the western end, it will. It's going to affect.

MS. BARROW:

And if that does happen, then we need to know the outcome or the impact of that, because that's ongoing right now. That's the Comite Diversion Canal, which is actually being

built as we speak. I don't know how many miles we are from it, but maybe 2 or 3 miles away from here now.

MS. COATS:

Thank you for the clarification.

MR. CANELLAS:

Thank you.

MS. COATS:

Yes, ma'am. Please come up to the microphone again, please. Thank you.

MS. SHARON BATIESTE:

Thank you for allowing me to speak again. As I sat there, I thought about things that I'm not really sure of. I came in late, but it behooves me to ask, first of all, was a prayer submitted? You know, praying and faith, it doesn't work when we just all get together. There needs to be opening and closing prayer. I honor the Father in everything that I do.

I also -- I'm concerned about other residents up here who always, as neighbors talk, when we get a chance to make or to say public opinions, what's the hush. We all are enduring the same problem.

The other fact that I'd like you to

know and mention, each year and several times during the year, personally, I work hard with our children. It's awful, the ADHD, the sick children, the annoyed parents. This is horrible living. And I don't feel God intended this.

So I'd like to rationalize and say, please honor or work on what we ask for. I know in my home, we pay heavy taxes, and it's just awful. I understand our station -- no hurt to you, Joe, but, I mean, it's for real. I have to tell it like it is. I understand with the fires, other stations have to come. There's no water.

Given that, over there, right there in Devil's Swamp, you -- I see that you know -- there are people that are fishing every day. No type of enforcements. That's detrimental to health. I'm here not putting on. I'm here with the truth, because I know that, eventually, God has to make a change, and I do believe, as a result even of this meeting, hopefully, it will start a new era. Thank you.

MS. COATS:

Thank you.

MR. CANELLAS:

Thank you.

MS. COATS:

Okay. I think we have another comment. Please state your name.

MS. BARROW:

I apologize. Again, this is Regina Barrow.

I forgot to mention or ask in clarity, on the chart here -- and I see it's dated for January of 2001, so is this when it actually started, or is this chart -- or is this just a date or --

MS. COATS:

No, ma'am. Again, public comments on the proposed plan, but I will clarify that question that she just asked about the community involvement for the NPL sites. This is the process that EPA, Superfund Division, use to clean up Superfund sites, so it's just showing you the process that we go through to clean up a site. Even though it says 2001, that is still in place. It has not changed. The process to clean up Superfund sites has not changed, so that is current.

MS. BARROW:

So this is just general in terms of what it takes to clean up a Superfund site, --

MS. COATS:

All sites throughout the --

MS. BARROW:

-- but not this particular site?

MS. COATS:

No. Throughout the entire nation, all ten EPA regions use that same process.

Any additional questions?

Okay. Again, guys, we do encourage you to submit your comments to the alternative that EPA is proposing to the public. Your voice does matter, and if you have other ways that you feel is -- that will work for cleaning up Devil's Swamp, please propose that to EPA. It is the public comment period, and we do accept those.

So with -- if no additional comments from the floor, is it okay to close the official meeting for tonight and adjourn?

MS. SHARON BATIESTE:

God bless us. Take us home.

MS. COATS:

Okay. Thank you. The meeting is closed.

(MEETING ADJOURNED AT 7:22 P.M.)

R E P O R T E R ' S C E R T I F I C A T E

This transcript is valid only for a transcript accompanied by my original signature and original required seal on this page.

I, Leslie B. Doyle, Certified Court Reporter (LA Certificate #93096), in and for the State of Louisiana, as the officer before whom these proceedings were taken, do hereby certify that this public meeting proceeded as herein before set forth in the foregoing 61 pages; that these proceedings were reported by me in the stenotype reporting method, were prepared and transcribed by me or under my personal direction and supervision, and is a true and correct transcript to the best of my ability and understanding; that the transcript has been prepared in compliance with transcript format guidelines required by statute or by rules of the board, that I have acted in compliance with the prohibition on contractual relationships, as defined by Louisiana Code of Civil Procedure Article 1434 and in rules and advisory opinions of the board.

I further certify that I am not related to counsel or to the parties herein, nor am I otherwise interested in the outcome of this matter.

Signed this ___ day of _____, 2019.

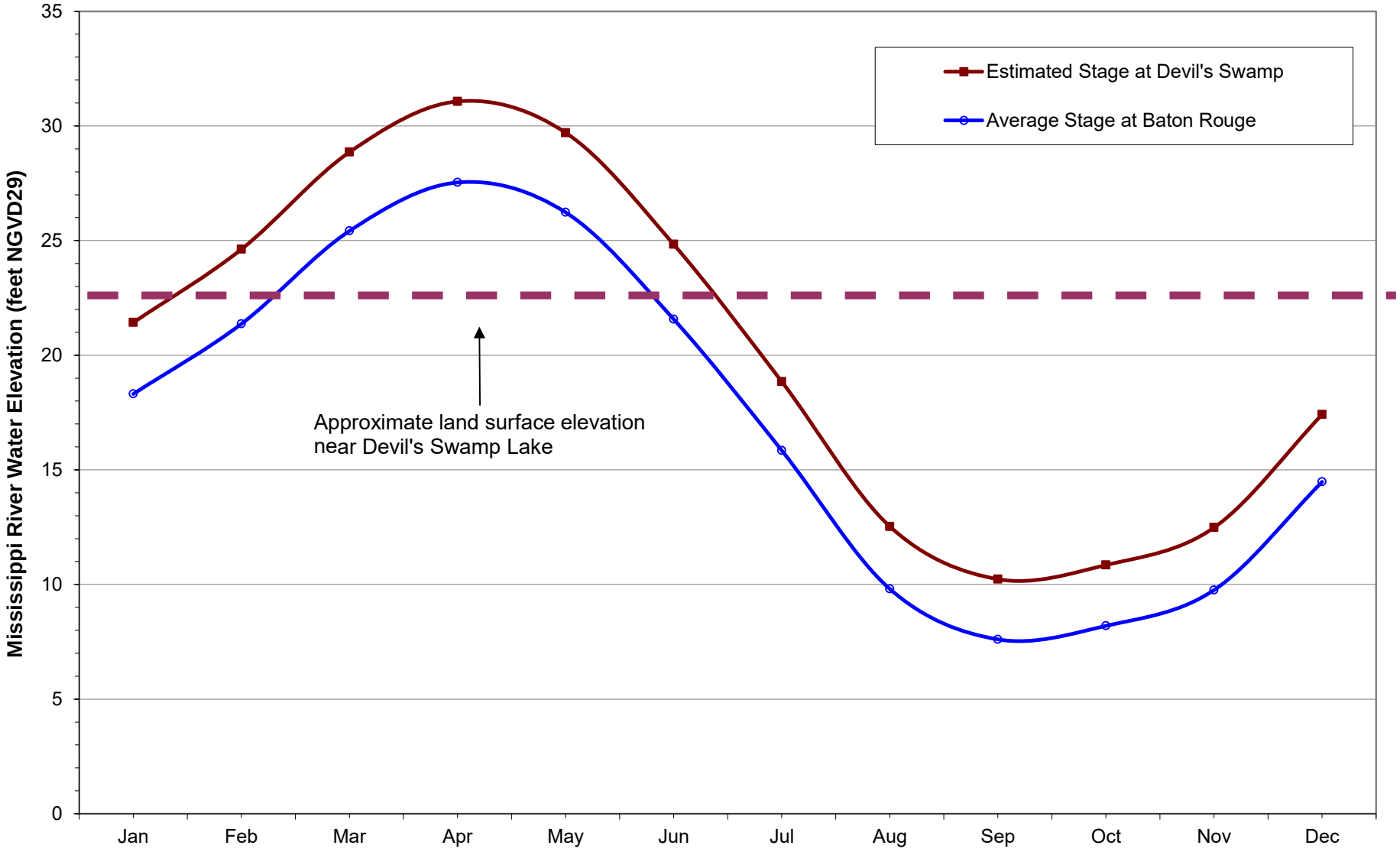
_____

LESLIE B. DOYLE, RPR, RMR, RDR
Certified Court Reporter
LA Certificate #93096

APPENDICES

Appendix F – Average Mississippi River Water Elevations
Source: Tier 2 Remedial Investigation, Exhibit 3

Exhibit 3
Average Annual Mississippi River Water Elevations
Tier 2 Remedial Investigation
Devil's Swamp Lake Site
East Baton Rouge Parish, Louisiana



Note: The Mississippi River water elevation at Devil's Swamp Lake (mile 245) is approximately 2.7-4.3 feet higher than the elevation at Baton Rouge (mile 228.4), depending on the relative stage.

Daily 8 am stage data obtained from U.S. Army Corps of Engineers for Gage 01160 at mile 228.4 for the period of 1/1/1935-11/7/2014.

GHD 055364 (21)
048786

APPENDICES

Appendix G – Total PCB Congeners and DLPCBs TEQ in Fish Results and Statistics
Source: Tier 2 Remedial Investigation, Appendix L

Sample	Total Congeners	DLPCB TEQ
Bass-1	6.45E-01	2.42E-05
Bass-2	5.96E-01	8.05E-06
Bass-3	7.28E-01	2.33E-05
Bass-4	3.94E-01	1.37E-05
Bass-5	5.10E-01	2.01E-05
Bass-6	5.32E-01	6.67E-06
Bass-7	5.79E-01	5.20E-06
Bass-8	8.32E-01	3.23E-05
Bass-9	8.47E-01	2.62E-05
Bass-10	5.11E-01	1.20E-05
Bass-11	5.48E-01	5.62E-06
Bass-12	5.12E-01	2.60E-05

	A	B	C	D	E	F	G	H	I	J	K	L	M
1				**General Statistics on Uncensored Full Data**									
2			Date/Time of Computation	9/15/2015 10:26:08 AM									
3			**User Selected Options**										
4			From File	ProUCL Input - Base Filets - Total Congeners and DLPCB TEQs.xls									
5			Full Precision	OFF									
6													
7	**From File: ProUCL Input - Base Filets - Total Congeners and DLPCB TEQs.xls**												
8													
9						**General Statistics for Uncensored Dataset**								
10													
11	**Variable**		**NumObs**	**# Missing**	**Minimum**	**Maximum**	**Mean**	**SD**	**SEM**	**MAD/0.675**	**Skewness**	**Kurtosis**	**CV**
12	Total Congeners		12	0	0.394	0.847	0.603	0.137	0.0396	0.0787	0.707	-0.163	0.228
13													
14						**Percentiles for Uncensored Dataset**								
15													
16	**Variable**		**NumObs**	**# Missing**	**10%ile**	**20%ile**	**25%ile(Q1)**	**50%ile(Q2)**	**75%ile(Q3)**	**80%ile**	**90%ile**	**95%ile**	**99%ile**
17	Total Congeners		12	0	0.51	0.511	0.512	0.564	0.665	0.712	0.822	0.839	0.845

1	**UCL Statistics for Uncensored Full Data Sets**											
2												
3	User Selected Options											
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5	From File	ProUCL Input - Base Filets - Total Congeners and DLPCB TEQs.xls										
6	Full Precision	OFF										
7	Confidence Coefficient	95%										
8	Number of Bootstrap Operations	2000										
9												
10												
11	**Total Congeners**											
12												
13	**General Statistics**											
14	Total Number of Observations	12			Number of Distinct Observations	12						
15					Number of Missing Observations	0						
16	Minimum	0.394			Mean	0.603						
17	Maximum	0.847			Median	0.564						
18	SD	0.137			Std. Error of Mean	0.0396						
19	Coefficient of Variation	0.228			Skewness	0.707						
20												
21	**Normal GOF Test**											
22	Shapiro Wilk Test Statistic	0.908			**Shapiro Wilk GOF Test**							
23	5% Shapiro Wilk Critical Value	0.859			Data appear Normal at 5% Significance Level							
24	Lilliefors Test Statistic	0.187			**Lilliefors GOF Test**							
25	5% Lilliefors Critical Value	0.256			Data appear Normal at 5% Significance Level							
26	**Data appear Normal at 5% Significance Level**											
27												
28	**Assuming Normal Distribution**											
29	**95% Normal UCL**				**95% UCLs (Adjusted for Skewness)**							
30	95% Student's-t UCL	0.674			95% Adjusted-CLT UCL (Chen-1995)	0.677						
31					95% Modified-t UCL (Johnson-1978)	0.675						
32												
33	**Gamma GOF Test**											
34	A-D Test Statistic	0.45			**Anderson-Darling Gamma GOF Test**							
35	5% A-D Critical Value	0.732			Detected data appear Gamma Distributed at 5% Significance Level							
36	K-S Test Statistic	0.162			**Kolmogrov-Smirnoff Gamma GOF Test**							
37	5% K-S Critical Value	0.245			Detected data appear Gamma Distributed at 5% Significance Level							
38	**Detected data appear Gamma Distributed at 5% Significance Level**											
39												

	A	B	C	D	E	F	G	H	I	J	K	L
40	**Gamma Statistics**											
41					k hat (MLE)	22.03			k star (bias corrected MLE)			16.57
42					Theta hat (MLE)	0.0274			Theta star (bias corrected MLE)			0.0364
43					nu hat (MLE)	528.6			nu star (bias corrected)			397.8
44					MLE Mean (bias corrected)	0.603			MLE Sd (bias corrected)			0.148
45									Approximate Chi Square Value (0.05)			352.6
46					Adjusted Level of Significance	0.029			Adjusted Chi Square Value			346.1
48	**Assuming Gamma Distribution**											
49	95% Approximate Gamma UCL (use when n>=50))					0.68	95% Adjusted Gamma UCL (use when n<50)					0.693
50												
51	**Lognormal GOF Test**											
52					Shapiro Wilk Test Statistic	0.938	**Shapiro Wilk Lognormal GOF Test**					
53					5% Shapiro Wilk Critical Value	0.859	Data appear Lognormal at 5% Significance Level					
54					Lilliefors Test Statistic	0.175	**Lilliefors Lognormal GOF Test**					
55					5% Lilliefors Critical Value	0.256	Data appear Lognormal at 5% Significance Level					
56	**Data appear Lognormal at 5% Significance Level**											
58	**Lognormal Statistics**											
59					Minimum of Logged Data	-0.93			Mean of logged Data			-0.529
60					Maximum of Logged Data	-0.166			SD of logged Data			0.222
62	**Assuming Lognormal Distribution**											
63					95% H-UCL	0.684			90% Chebyshev (MVUE) UCL			0.719
64					95% Chebyshev (MVUE) UCL	0.772			97.5% Chebyshev (MVUE) UCL			0.845
65					99% Chebyshev (MVUE) UCL	0.989						
67	**Nonparametric Distribution Free UCL Statistics**											
68	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
70	**Nonparametric Distribution Free UCLs**											
71					95% CLT UCL	0.668			95% Jackknife UCL			0.674
72					95% Standard Bootstrap UCL	0.664			95% Bootstrap-t UCL			0.689
73					95% Hall's Bootstrap UCL	0.687			95% Percentile Bootstrap UCL			0.665
74					95% BCA Bootstrap UCL	0.665						
75					90% Chebyshev(Mean, Sd) UCL	0.722			95% Chebyshev(Mean, Sd) UCL			0.776
76					97.5% Chebyshev(Mean, Sd) UCL	0.85			99% Chebyshev(Mean, Sd) UCL			0.997
78	**Suggested UCL to Use**											
79					95% Student's-t UCL	0.674						
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
83	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
84	For additional insight the user may want to consult a statistician.											

	A	B	C	D	E	F	G	H	I	J	K	L	M
1				**General Statistics on Uncensored Full Data**									
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5		Full Precision		OFF									
6													
7	**From File: ProUCL Input - Base Filets - Total Congeners and DLPCB TEQs.xls**												
8													
9						**General Statistics for Uncensored Dataset**								
10													
11	**Variable**		**NumObs**	**# Missing**	**Minimum**	**Maximum**	**Mean**	**SD**	**SEM**	**MAD/0.675**	**Skewness**	**Kurtosis**	**CV**
12	DLPCB TEQ		12	0	5.2000E-6	3.2300E-5	1.6945E-5	9.4977E-6	2.7418E-6	1.3306E-5	0.103	-1.56	0.561
13													
14							**Percentiles for Uncensored Dataset**						
15													
16	**Variable**		**NumObs**	**# Missing**	**10%ile**	**20%ile**	**25%ile(Q1)**	**50%ile(Q2)**	**75%ile(Q3)**	**80%ile**	**90%ile**	**95%ile**	**99%ile**
17	DLPCB TEQ		12	0	5.7250E-6	6.9460E-6	7.7050E-6	1.6900E-5	2.4650E-5	2.5640E-5	2.6180E-5	2.8945E-5	3.1629E-5

1	**UCL Statistics for Uncensored Full Data Sets**										
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3	User Selected Options										
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5	From File	ProUCL Input - Base Filets - Total Congeners and DLPCB TEQs.xls									
6	Full Precision	OFF									
7	Confidence Coefficient	95%									
8	Number of Bootstrap Operations	2000									
9											
10											
11	**DLPCB TEQ**										
12											
13	**General Statistics**										
14	Total Number of Observations	12				Number of Distinct Observations	12				
15						Number of Missing Observations	0				
16	Minimum	5.2000E-6				Mean	1.6945E-5				
17	Maximum	3.2300E-5				Median	1.6900E-5				
18	SD	9.4977E-6				Std. Error of Mean	2.7418E-6				
19	Coefficient of Variation	N/A				Skewness	0.103				
20											
21	**Normal GOF Test**										
22	Shapiro Wilk Test Statistic	0.908				**Shapiro Wilk GOF Test**					
23	5% Shapiro Wilk Critical Value	0.859				Data appear Normal at 5% Significance Level					
24	Lilliefors Test Statistic	0.165				**Lilliefors GOF Test**					
25	5% Lilliefors Critical Value	0.256				Data appear Normal at 5% Significance Level					
26	**Data appear Normal at 5% Significance Level**										
27											
28	**Assuming Normal Distribution**										
29	**95% Normal UCL**					**95% UCLs (Adjusted for Skewness)**					
30	95% Student's-t UCL	2.1869E-5				95% Adjusted-CLT UCL (Chen-1995)	2.1542E-5				
31						95% Modified-t UCL (Johnson-1978)	2.1882E-5				
32											
33	**Gamma GOF Test**										
34	A-D Test Statistic	0.551				**Anderson-Darling Gamma GOF Test**					
35	5% A-D Critical Value	0.739				Detected data appear Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic	0.195				**Kolmogrov-Smirnoff Gamma GOF Test**					
37	5% K-S Critical Value	0.247				Detected data appear Gamma Distributed at 5% Significance Level					
38	**Detected data appear Gamma Distributed at 5% Significance Level**										
39											
40	**Gamma Statistics**										
41	k hat (MLE)	2.928				k star (bias corrected MLE)	2.251				
42	Theta hat (MLE)	5.7875E-6				Theta star (bias corrected MLE)	7.5263E-6				
43	nu hat (MLE)	70.27				nu star (bias corrected)	54.03				
44	MLE Mean (bias corrected)	1.6945E-5				MLE Sd (bias corrected)	1.1293E-5				
45						Approximate Chi Square Value (0.05)	38.15				
46	Adjusted Level of Significance	0.029				Adjusted Chi Square Value	36.12				

	A	B	C	D	E	F	G	H	I	J	K	L
47												
48	**Assuming Gamma Distribution**											
49	95% Approximate Gamma UCL (use when n>=50))					2.4003E-5	95% Adjusted Gamma UCL (use when n<50)					2.5352E-5
50												
51	**Lognormal GOF Test**											
52	Shapiro Wilk Test Statistic					0.889	**Shapiro Wilk Lognormal GOF Test**					
53	5% Shapiro Wilk Critical Value					0.859	Data appear Lognormal at 5% Significance Level					
54	Lilliefors Test Statistic					0.201	**Lilliefors Lognormal GOF Test**					
55	5% Lilliefors Critical Value					0.256	Data appear Lognormal at 5% Significance Level					
56	**Data appear Lognormal at 5% Significance Level**											
57												
58	**Lognormal Statistics**											
59	Minimum of Logged Data					-12.17	Mean of logged Data					-11.17
60	Maximum of Logged Data					-10.34	SD of logged Data					0.665
61												
62	**Assuming Lognormal Distribution**											
63	95% H-UCL					2.8321E-5	90% Chebyshev (MVUE) UCL					2.7591E-5
64	95% Chebyshev (MVUE) UCL					3.2267E-5	97.5% Chebyshev (MVUE) UCL					3.8756E-5
65	99% Chebyshev (MVUE) UCL					5.1503E-5						
66												
67	**Nonparametric Distribution Free UCL Statistics**											
68	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
69												
70	**Nonparametric Distribution Free UCLs**											
71	95% CLT UCL					2.1455E-5	95% Jackknife UCL					2.1869E-5
72	95% Standard Bootstrap UCL					2.1369E-5	95% Bootstrap-t UCL					2.2398E-5
73	95% Hall's Bootstrap UCL					2.1110E-5	95% Percentile Bootstrap UCL					2.1252E-5
74	95% BCA Bootstrap UCL					2.1571E-5						
75	90% Chebyshev(Mean, Sd) UCL					2.5170E-5	95% Chebyshev(Mean, Sd) UCL					2.8896E-5
76	97.5% Chebyshev(Mean, Sd) UCL					3.4067E-5	99% Chebyshev(Mean, Sd) UCL					4.4225E-5
77												
78	**Suggested UCL to Use**											
79	95% Student's-t UCL					2.1869E-5						
80												
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
83	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
84	For additional insight the user may want to consult a statistician.											
85												

Sample	Total Congeners	DLPCB TEQ
055364-T2-070912-FT-CCATFISH-1(F)	5.41E-01	1.47E-05
055364-T2-071012-FT-CCATFISH-2(F)	5.95E-01	7.60E-06
055364-T2-071012-FT-CCATFISH-3(F)	3.20E-01	2.37E-05
055364-T2-071012-FT-CCATFISH-4(F)	6.30E-01	1.15E-05
055364-T2-071012-FT-CCATFISH-5(F)	1.04E+00	7.26E-06
055364-T2-071012-FT-CCATFISH-6(F)	2.05E+00	1.79E-05
055364-T2-071012-FT-CCATFISH-7(F)	1.62E+00	4.68E-05
055364-T2-071212-FT-CCATFISH-8(F)	5.82E-01	1.11E-05
055364-T2-071212-FT-CCATFISH-9(F)	4.66E-01	2.00E-05
055364-T2-071812-FT-CATFISH-10(F)	3.21E-01	6.66E-06
055364-T2-071912-FT-CATFISH-11(F)	3.37E-01	1.21E-05
055364-T2-071912-FT-CATFISH-12(F)	4.66E-01	4.12E-06

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5			Full Precision	OFF									
6													
7	**From File: ProUCL Input - Catfish Filets - Total Congeners and DLPCB TEQs.xls**												
8													
9						**General Statistics for Uncensored Dataset**								
10													
11	**Variable**		**NumObs**	**# Missing**	**Minimum**	**Maximum**	**Mean**	**SD**	**SEM**	**MAD/0.675**	**Skewness**	**Kurtosis**	**CV**
12	Total Congeners		12	0	0.32	2.054	0.748	0.553	0.16	0.238	1.7	2.062	0.739
13													
14						**Percentiles for Uncensored Dataset**								
15													
16	**Variable**		**NumObs**	**# Missing**	**10%ile**	**20%ile**	**25%ile(Q1)**	**50%ile(Q2)**	**75%ile(Q3)**	**80%ile**	**90%ile**	**95%ile**	**99%ile**
17	Total Congeners		12	0	0.322	0.363	0.433	0.562	0.733	0.961	1.566	1.817	2.007

1	**UCL Statistics for Uncensored Full Data Sets**										
2											
3	User Selected Options										
4	Date/Time of Computation	9/15/2015 10:47:12 AM									
5	From File	ProUCL Input - Catfish Filets - Total Congeners and DLPCB TEQs.xls									
6	Full Precision	OFF									
7	Confidence Coefficient	95%									
8	Number of Bootstrap Operations	2000									
9											
10											
11	**Total Congeners**										
12											
13	**General Statistics**										
14	Total Number of Observations	12			Number of Distinct Observations	12					
15					Number of Missing Observations	0					
16	Minimum	0.32			Mean	0.748					
17	Maximum	2.054			Median	0.562					
18	SD	0.553			Std. Error of Mean	0.16					
19	Coefficient of Variation	0.739			Skewness	1.7					
20											
21	**Normal GOF Test**										
22	Shapiro Wilk Test Statistic	0.75			**Shapiro Wilk GOF Test**						
23	5% Shapiro Wilk Critical Value	0.859			Data Not Normal at 5% Significance Level						
24	Lilliefors Test Statistic	0.335			**Lilliefors GOF Test**						
25	5% Lilliefors Critical Value	0.256			Data Not Normal at 5% Significance Level						
26	**Data Not Normal at 5% Significance Level**										
27											
28	**Assuming Normal Distribution**										
29	**95% Normal UCL**				**95% UCLs (Adjusted for Skewness)**						
30	95% Student's-t UCL	1.035			95% Adjusted-CLT UCL (Chen-1995)	1.094					
31					95% Modified-t UCL (Johnson-1978)	1.048					
32											
33	**Gamma GOF Test**										
34	A-D Test Statistic	0.823			**Anderson-Darling Gamma GOF Test**						
35	5% A-D Critical Value	0.74			Data Not Gamma Distributed at 5% Significance Level						
36	K-S Test Statistic	0.28			**Kolmogrov-Smirnoff Gamma GOF Test**						
37	5% K-S Critical Value	0.248			Data Not Gamma Distributed at 5% Significance Level						
38	**Data Not Gamma Distributed at 5% Significance Level**										
39											
40	**Gamma Statistics**										
41	k hat (MLE)	2.763			k star (bias corrected MLE)	2.128					
42	Theta hat (MLE)	0.271			Theta star (bias corrected MLE)	0.352					
43	nu hat (MLE)	66.31			nu star (bias corrected)	51.07					
44	MLE Mean (bias corrected)	0.748			MLE Sd (bias corrected)	0.513					
45					Approximate Chi Square Value (0.05)	35.66					
46	Adjusted Level of Significance	0.029			Adjusted Chi Square Value	33.7					
47											
48	**Assuming Gamma Distribution**										
49	95% Approximate Gamma UCL (use when n>=50))	1.072			95% Adjusted Gamma UCL (use when n<50)	1.134					
50											
51	**Lognormal GOF Test**										
52	Shapiro Wilk Test Statistic	0.884			**Shapiro Wilk Lognormal GOF Test**						
53	5% Shapiro Wilk Critical Value	0.859			Data appear Lognormal at 5% Significance Level						

	A	B	C	D	E	F	G	H	I	J	K	L
54					Lilliefors Test Statistic	0.237	**Lilliefors Lognormal GOF Test**					
55					5% Lilliefors Critical Value	0.256	Data appear Lognormal at 5% Significance Level					
56	**Data appear Lognormal at 5% Significance Level**											
57												
58	**Lognormal Statistics**											
59					Minimum of Logged Data	-1.14	Mean of logged Data	-0.482				
60					Maximum of Logged Data	0.72	SD of logged Data	0.608				
61												
62	**Assuming Lognormal Distribution**											
63					95% H-UCL	1.129	90% Chebyshev (MVUE) UCL	1.127				
64					95% Chebyshev (MVUE) UCL	1.307	97.5% Chebyshev (MVUE) UCL	1.557				
65					99% Chebyshev (MVUE) UCL	2.047						
66												
67	**Nonparametric Distribution Free UCL Statistics**											
68	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
69												
70	**Nonparametric Distribution Free UCLs**											
71					95% CLT UCL	1.011	95% Jackknife UCL	1.035				
72					95% Standard Bootstrap UCL	1.006	95% Bootstrap-t UCL	1.361				
73					95% Hall's Bootstrap UCL	1.391	95% Percentile Bootstrap UCL	1.013				
74					95% BCA Bootstrap UCL	1.125						
75					90% Chebyshev(Mean, Sd) UCL	1.227	95% Chebyshev(Mean, Sd) UCL	1.444				
76					97.5% Chebyshev(Mean, Sd) UCL	1.745	99% Chebyshev(Mean, Sd) UCL	2.336				
77												
78	**Suggested UCL to Use**											
79					95% H-UCL	1.129						
80												
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
83	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
84	For additional insight the user may want to consult a statistician.											
85												
86	**ProUCL computes and outputs H-statistic based UCLs for historical reasons only.**											
87	**H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.**											
88	**It is therefore recommended to avoid the use of H-statistic based 95% UCLs.**											
89	**Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.**											
90												

	A	B	C	D	E	F	G	H	I	J	K	L	M
1				**General Statistics on Uncensored Full Data**									
2			Date/Time of Computation	9/15/2015 10:49:30 AM									
3			**User Selected Options**										
4			From File	ProUCL Input - Catfish Filets - Total Congeners and DLPCB TEQs.xls									
5			Full Precision	OFF									
6													
7	**From File: ProUCL Input - Catfish Filets - Total Congeners and DLPCB TEQs.xls**												
8													
9						**General Statistics for Uncensored Dataset**								
10													
11	**Variable**		**NumObs**	**# Missing**	**Minimum**	**Maximum**	**Mean**	**SD**	**SEM**	**MAD/0.675**	**Skewness**	**Kurtosis**	**CV**
12	DLPCB TEQ		12	0	4.1234E-6	4.6802E-5	1.5294E-5	1.1510E-5	3.3226E-6	7.1915E-6	2.062	5.129	0.753
13													
14						**Percentiles for Uncensored Dataset**								
15													
16	**Variable**		**NumObs**	**# Missing**	**10%ile**	**20%ile**	**25%ile(Q1)**	**50%ile(Q2)**	**75%ile(Q3)**	**80%ile**	**90%ile**	**95%ile**	**99%ile**
17	DLPCB TEQ		12	0	6.7204E-6	7.3295E-6	7.5153E-6	1.1812E-5	1.8435E-5	1.9547E-5	2.3336E-5	3.4102E-5	4.4262E-5

1	**UCL Statistics for Uncensored Full Data Sets**										
2											
3	User Selected Options										
4	Date/Time of Computation	9/15/2015 10:50:35 AM									
5	From File	ProUCL Input - Catfish Filets - Total Congeners and DLPCB TEQs.xls									
6	Full Precision	OFF									
7	Confidence Coefficient	95%									
8	Number of Bootstrap Operations	2000									
9											
10											
11	**DLPCB TEQ**										
12											
13	**General Statistics**										
14	Total Number of Observations	12			Number of Distinct Observations	12					
15					Number of Missing Observations	0					
16	Minimum	4.1234E-6			Mean	1.5294E-5					
17	Maximum	4.6802E-5			Median	1.1812E-5					
18	SD	1.1510E-5			Std. Error of Mean	3.3226E-6					
19	Coefficient of Variation	N/A			Skewness	2.062					
20											
21	**Normal GOF Test**										
22	Shapiro Wilk Test Statistic	0.793			**Shapiro Wilk GOF Test**						
23	5% Shapiro Wilk Critical Value	0.859			Data Not Normal at 5% Significance Level						
24	Lilliefors Test Statistic	0.192			**Lilliefors GOF Test**						
25	5% Lilliefors Critical Value	0.256			Data appear Normal at 5% Significance Level						
26	**Data appear Approximate Normal at 5% Significance Level**										
27											
28	**Assuming Normal Distribution**										
29	**95% Normal UCL**				**95% UCLs (Adjusted for Skewness)**						
30	95% Student's-t UCL	2.1261E-5			95% Adjusted-CLT UCL (Chen-1995)	2.2873E-5					
31					95% Modified-t UCL (Johnson-1978)	2.1590E-5					
32											
33	**Gamma GOF Test**										
34	A-D Test Statistic	0.293			**Anderson-Darling Gamma GOF Test**						
35	5% A-D Critical Value	0.74			Detected data appear Gamma Distributed at 5% Significance Level						
36	K-S Test Statistic	0.142			**Kolmogrov-Smirnoff Gamma GOF Test**						
37	5% K-S Critical Value	0.248			Detected data appear Gamma Distributed at 5% Significance Level						
38	**Detected data appear Gamma Distributed at 5% Significance Level**										
39											
40	**Gamma Statistics**										
41	k hat (MLE)	2.577			k star (bias corrected MLE)	1.988					
42	Theta hat (MLE)	5.9343E-6			Theta star (bias corrected MLE)	7.6913E-6					
43	nu hat (MLE)	61.85			nu star (bias corrected)	47.72					
44	MLE Mean (bias corrected)	1.5294E-5			MLE Sd (bias corrected)	1.0846E-5					
45					Approximate Chi Square Value (0.05)	32.87					
46	Adjusted Level of Significance	0.029			Adjusted Chi Square Value	30.99					
47											
48	**Assuming Gamma Distribution**										
49	95% Approximate Gamma UCL (use when n>=50))	2.2206E-5			95% Adjusted Gamma UCL (use when n<50)	2.3547E-5					
50											

	A	B	C	D	E	F	G	H	I	J	K	L
51	**Lognormal GOF Test**											
52	Shapiro Wilk Test Statistic					0.982	**Shapiro Wilk Lognormal GOF Test**					
53	5% Shapiro Wilk Critical Value					0.859	Data appear Lognormal at 5% Significance Level					
54	Lilliefors Test Statistic					0.108	**Lilliefors Lognormal GOF Test**					
55	5% Lilliefors Critical Value					0.256	Data appear Lognormal at 5% Significance Level					
56	**Data appear Lognormal at 5% Significance Level**											
57												
58	**Lognormal Statistics**											
59	Minimum of Logged Data					-12.4	Mean of logged Data					-11.29
60	Maximum of Logged Data					-9.97	SD of logged Data					0.655
61												
62	**Assuming Lognormal Distribution**											
63	95% H-UCL					2.4511E-5	90% Chebyshev (MVUE) UCL					2.3988E-5
64	95% Chebyshev (MVUE) UCL					2.8014E-5	97.5% Chebyshev (MVUE) UCL					3.3601E-5
65	99% Chebyshev (MVUE) UCL					4.4576E-5						
66												
67	**Nonparametric Distribution Free UCL Statistics**											
68	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
69												
70	**Nonparametric Distribution Free UCLs**											
71	95% CLT UCL					2.0759E-5	95% Jackknife UCL					2.1261E-5
72	95% Standard Bootstrap UCL					2.0493E-5	95% Bootstrap-t UCL					2.5841E-5
73	95% Hall's Bootstrap UCL					4.5138E-5	95% Percentile Bootstrap UCL					2.0975E-5
74	95% BCA Bootstrap UCL					2.3419E-5						
75	90% Chebyshev(Mean, Sd) UCL					2.5261E-5	95% Chebyshev(Mean, Sd) UCL					2.9777E-5
76	97.5% Chebyshev(Mean, Sd) UCL					3.6043E-5	99% Chebyshev(Mean, Sd) UCL					4.8353E-5
77												
78	**Suggested UCL to Use**											
79	95% Student's-t UCL					2.1261E-5						
80												
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
83	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
84	For additional insight the user may want to consult a statistician.											
85												

Drainage Ditch	NCDS	NDSL	SBBR	SDSL
1.01E-06	1.75E-06	7.55E-06	3.14E-06	1.18E-05
6.68E-05	1.87E-08	2.64E-05	1.09E-06	1.01E-06
2.27E-05	1.89E-05	8.07E-06	5.97E-07	7.98E-06
	1.04E-05	5.54E-06	6.39E-07	
		2.68E-07	4.09E-07	
		2.25E-04		
		4.82E-06		
		3.41E-05		
		4.36E-06		

	A	B	C	D	E	F	G	H	I	J	K	L	M
1				**General Statistics on Uncensored Full Data**									
2		Date/Time of Computation		9/18/2015 9:10:14 AM									
3		**User Selected Options**											
4		From File		ProUCL Input - Sediment by AOI - Mammal TEQs.xls									
5		Full Precision		OFF									
6													
7	**From File: ProUCL Input - Sediment by AOI - Mammal TEQs.xls**												
8													
9						**General Statistics for Uncensored Data Sets**								
10													
11	**Variable**		**NumObs**	**# Missing**	**Minimum**	**Maximum**	**Mean**	**SD**	**SEM**	**MAD/0.675**	**Skewness**	**Kurtosis**	**CV**
12	Drainage Ditch		3	0	1.0070E-6	6.6843E-5	3.0179E-5	3.3551E-5	1.9371E-5	3.2144E-5	0.955	N/A	1.112
13	NCDS		4	0	1.8722E-8	1.8902E-5	7.7742E-6	8.7029E-6	4.3515E-6	7.7113E-6	0.72	-1.696	1.119
14	NDSL		9	0	2.6756E-7	2.2479E-4	3.5091E-5	7.2022E-5	2.4007E-5	4.7392E-6	2.865	8.37	2.052
15	SBBR		5	0	4.0900E-7	3.1433E-6	1.1748E-6	1.1281E-6	5.0449E-7	3.4031E-7	1.983	4.005	0.96
16	SDSL		3	0	1.0076E-6	1.1773E-5	6.9205E-6	5.4603E-6	3.1525E-6	5.6208E-6	-0.841	N/A	0.789
17													
18						**Percentiles for Uncensored Data Sets**								
19													
20	**Variable**		**NumObs**	**# Missing**	**10%ile**	**20%ile**	**25%ile(Q1)**	**50%ile(Q2)**	**75%ile(Q3)**	**80%ile**	**90%ile**	**95%ile**	**99%ile**
21	Drainage Ditch		3	0	5.3432E-6	9.6794E-6	1.1848E-5	2.2688E-5	4.4766E-5	4.9181E-5	5.8012E-5	6.2428E-5	6.5960E-5
22	NCDS		4	0	5.3948E-7	1.0602E-6	1.3206E-6	6.0879E-6	1.2541E-5	1.3814E-5	1.6358E-5	1.7630E-5	1.8648E-5
23	NDSL		9	0	3.5376E-6	4.6323E-6	4.8171E-6	7.5517E-6	2.6376E-5	2.9446E-5	7.2198E-5	1.4849E-4	2.0953E-4
24	SBBR		5	0	4.8439E-7	5.5978E-7	5.9748E-7	6.3854E-7	1.0856E-6	1.4972E-6	2.3202E-6	2.7317E-6	3.0610E-6
25	SDSL		3	0	2.4024E-6	3.7971E-6	4.4945E-6	7.9813E-6	9.8770E-6	1.0256E-5	1.1014E-5	1.1393E-5	1.1697E-5

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	9/20/2015 2:06:54 PM
From File	ProUCL Input - Sediment by AOI - Mammal TEQs.xls
Full Precision	OFF
Confidence Coefficient	95%
mber of Bootstrap Operations	2000

Drainage Ditch

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	1.0070E-6	Mean	3.0179E-5
Maximum	6.6843E-5	Median	2.2688E-5
SD	3.3551E-5	Std. Error of Mean	1.9371E-5
Coefficient of Variation	N/A	Skewness	0.955

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.963	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.255	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.512	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	8.6742E-5	95% Adjusted-CLT UCL (Chen-1995)	7.3450E-5
		95% Modified-t UCL (Johnson-1978)	8.8521E-5

Gamma GOF Test

Not Enough Data to Perform GOF Test

	A	B	C	D	E	F	G	H	I	J	K	L
41	**Gamma Statistics**											
42					k hat (MLE)	0.636			k star (bias corrected MLE)			N/A
43					Theta hat (MLE)	4.7460E-5			Theta star (bias corrected MLE)			N/A
44					nu hat (MLE)	3.815			nu star (bias corrected)			N/A
45					MLE Mean (bias corrected)	N/A			MLE Sd (bias corrected)			N/A
46									Approximate Chi Square Value (0.05)			N/A
47					Adjusted Level of Significance	N/A			Adjusted Chi Square Value			N/A
48												
49	**Assuming Gamma Distribution**											
50					95% Approximate Gamma UCL (use when n>=50))	N/A			95% Adjusted Gamma UCL (use when n<50)			N/A
51												
52	**Lognormal GOF Test**											
53					Shapiro Wilk Test Statistic	0.927			**Shapiro Wilk Lognormal GOF Test**			
54					5% Shapiro Wilk Critical Value	0.767			Data appear Lognormal at 5% Significance Level			
55					Lilliefors Test Statistic	0.289			**Lilliefors Lognormal GOF Test**			
56					5% Lilliefors Critical Value	0.512			Data appear Lognormal at 5% Significance Level			
57	**Data appear Lognormal at 5% Significance Level**											
58												
59	**Lognormal Statistics**											
60					Minimum of Logged Data	-13.81			Mean of logged Data			-11.37
61					Maximum of Logged Data	-9.613			SD of logged Data			2.178
62												
63	**Assuming Lognormal Distribution**											
64					95% H-UCL	1.382E+15			90% Chebyshev (MVUE) UCL			1.3452E-4
65					95% Chebyshev (MVUE) UCL	1.7809E-4			97.5% Chebyshev (MVUE) UCL			2.3856E-4
66					99% Chebyshev (MVUE) UCL	3.5735E-4						
67												
68	**Nonparametric Distribution Free UCL Statistics**											
69	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
70												
71	**Nonparametric Distribution Free UCLs**											
72					95% CLT UCL	6.2042E-5			95% Jackknife UCL			8.6742E-5
73					95% Standard Bootstrap UCL	N/A			95% Bootstrap-t UCL			N/A
74					95% Hall's Bootstrap UCL	N/A			95% Percentile Bootstrap UCL			N/A
75					95% BCA Bootstrap UCL	N/A						
76					90% Chebyshev(Mean, Sd) UCL	8.8292E-5			95% Chebyshev(Mean, Sd) UCL			1.1461E-4
77					97.5% Chebyshev(Mean, Sd) UCL	1.5115E-4			99% Chebyshev(Mean, Sd) UCL			2.2292E-4
78												

	A	B	C	D	E	F	G	H	I	J	K	L
79	**Suggested UCL to Use**											
80	95% Student's-t UCL					8.6742E-5						
81												
82	**Recommended UCL exceeds the maximum observation**											
83												
84	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
85	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
86	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
87	For additional insight the user may want to consult a statistician.											
88												
89												
90	**NCDS**											
91												
92	**General Statistics**											
93	Total Number of Observations				4		Number of Distinct Observations				4	
94							Number of Missing Observations				0	
95	Minimum				1.8722E-8		Mean				7.7742E-6	
96	Maximum				1.8902E-5		Median				6.0879E-6	
97	SD				8.7029E-6		Std. Error of Mean				4.3515E-6	
98	Coefficient of Variation				N/A		Skewness				0.72	
99												
100	**Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use**											
101	**guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.**											
102	**For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).**											
103	**Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0**											
104												
105	**Normal GOF Test**											
106	Shapiro Wilk Test Statistic				0.916		**Shapiro Wilk GOF Test**					
107	5% Shapiro Wilk Critical Value				0.748		Data appear Normal at 5% Significance Level					
108	Lilliefors Test Statistic				0.255		**Lilliefors GOF Test**					
109	5% Lilliefors Critical Value				0.443		Data appear Normal at 5% Significance Level					
110	**Data appear Normal at 5% Significance Level**											
111												
112	**Assuming Normal Distribution**											
113	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
114	95% Student's-t UCL				1.8015E-5		95% Adjusted-CLT UCL (Chen-1995)				1.6606E-5	
115							95% Modified-t UCL (Johnson-1978)				1.8276E-5	
116												

	A	B	C	D	E	F	G	H	I	J	K	L
117	**Gamma GOF Test**											
118	A-D Test Statistic					0.299	**Anderson-Darling Gamma GOF Test**					
119	5% A-D Critical Value					0.691	Detected data appear Gamma Distributed at 5% Significance Level					
120	K-S Test Statistic					0.261	**Kolmogrov-Smirnoff Gamma GOF Test**					
121	5% K-S Critical Value					0.414	Detected data appear Gamma Distributed at 5% Significance Level					
122	**Detected data appear Gamma Distributed at 5% Significance Level**											
123												
124	**Gamma Statistics**											
125	k hat (MLE)					0.413	k star (bias corrected MLE)					0.27
126	Theta hat (MLE)					1.8812E-5	Theta star (bias corrected MLE)					2.8795E-5
127	nu hat (MLE)					3.306	nu star (bias corrected)					2.16
128	MLE Mean (bias corrected)					7.7742E-6	MLE Sd (bias corrected)					1.4962E-5
129							Approximate Chi Square Value (0.05)					0.174
130	Adjusted Level of Significance					N/A	Adjusted Chi Square Value					N/A
131												
132	**Assuming Gamma Distribution**											
133	95% Approximate Gamma UCL (use when n>=50))					9.6282E-5	95% Adjusted Gamma UCL (use when n<50)					N/A
134												
135	**Lognormal GOF Test**											
136	Shapiro Wilk Test Statistic					0.868	**Shapiro Wilk Lognormal GOF Test**					
137	5% Shapiro Wilk Critical Value					0.748	Data appear Lognormal at 5% Significance Level					
138	Lilliefors Test Statistic					0.262	**Lilliefors Lognormal GOF Test**					
139	5% Lilliefors Critical Value					0.443	Data appear Lognormal at 5% Significance Level					
140	**Data appear Lognormal at 5% Significance Level**											
141												
142	**Lognormal Statistics**											
143	Minimum of Logged Data					-17.79	Mean of logged Data					-13.35
144	Maximum of Logged Data					-10.88	SD of logged Data					3.131
145												
146	**Assuming Lognormal Distribution**											
147	95% H-UCL					2.415E+12	90% Chebyshev (MVUE) UCL					6.9913E-5
148	95% Chebyshev (MVUE) UCL					9.3158E-5	97.5% Chebyshev (MVUE) UCL					1.2542E-4
149	99% Chebyshev (MVUE) UCL					1.8880E-4						
150												
151	**Nonparametric Distribution Free UCL Statistics**											
152	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
153												

	A	B	C	D	E	F	G	H	I	J	K	L
154	**Nonparametric Distribution Free UCLs**											
155					95% CLT UCL	1.4932E-5			95% Jackknife UCL			1.8015E-5
156					95% Standard Bootstrap UCL	N/A			95% Bootstrap-t UCL			N/A
157					95% Hall's Bootstrap UCL	N/A			95% Percentile Bootstrap UCL			N/A
158					95% BCA Bootstrap UCL	N/A						
159					90% Chebyshev(Mean, Sd) UCL	2.0829E-5			95% Chebyshev(Mean, Sd) UCL			2.6742E-5
160					97.5% Chebyshev(Mean, Sd) UCL	3.4949E-5			99% Chebyshev(Mean, Sd) UCL			5.1071E-5
161												
162	**Suggested UCL to Use**											
163					95% Student's-t UCL	1.8015E-5						
164												
165	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
166	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
167	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
168	For additional insight the user may want to consult a statistician.											
169												
170												
171	**NDSL**											
172												
173	**General Statistics**											
174					Total Number of Observations	9			Number of Distinct Observations			9
175									Number of Missing Observations			0
176					Minimum	2.6756E-7			Mean			3.5091E-5
177					Maximum	2.2479E-4			Median			7.5517E-6
178					SD	7.2022E-5			Std. Error of Mean			2.4007E-5
179					Coefficient of Variation	N/A			Skewness			2.865
180												
181	**Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use**											
182	**guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.**											
183	**For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).**											
184	**Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0**											
185												
186	**Normal GOF Test**											
187					Shapiro Wilk Test Statistic	0.516			**Shapiro Wilk GOF Test**			
188					5% Shapiro Wilk Critical Value	0.829			Data Not Normal at 5% Significance Level			
189					Lilliefors Test Statistic	0.395			**Lilliefors GOF Test**			
190					5% Lilliefors Critical Value	0.295			Data Not Normal at 5% Significance Level			
191	**Data Not Normal at 5% Significance Level**											
192												

	A	B	C	D	E	F	G	H	I	J	K	L
193	**Assuming Normal Distribution**											
194	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
195	95% Student's-t UCL					7.9733E-5	95% Adjusted-CLT UCL (Chen-1995)					9.9078E-5
196							95% Modified-t UCL (Johnson-1978)					8.3555E-5
197												
198	**Gamma GOF Test**											
199	A-D Test Statistic					0.722	**Anderson-Darling Gamma GOF Test**					
200	5% A-D Critical Value					0.776	Detected data appear Gamma Distributed at 5% Significance Level					
201	K-S Test Statistic					0.284	**Kolmogrov-Smirnoff Gamma GOF Test**					
202	5% K-S Critical Value					0.295	Detected data appear Gamma Distributed at 5% Significance Level					
203	**Detected data appear Gamma Distributed at 5% Significance Level**											
204												
205	**Gamma Statistics**											
206	k hat (MLE)					0.471	k star (bias corrected MLE)					0.388
207	Theta hat (MLE)					7.4544E-5	Theta star (bias corrected MLE)					9.0463E-5
208	nu hat (MLE)					8.473	nu star (bias corrected)					6.982
209	MLE Mean (bias corrected)					3.5091E-5	MLE Sd (bias corrected)					5.6342E-5
210							Approximate Chi Square Value (0.05)					2.161
211	Adjusted Level of Significance					0.0231	Adjusted Chi Square Value					1.641
212												
213	**Assuming Gamma Distribution**											
214	95% Approximate Gamma UCL (use when n>=50)					1.1339E-4	95% Adjusted Gamma UCL (use when n<50)					1.4932E-4
215												
216	**Lognormal GOF Test**											
217	Shapiro Wilk Test Statistic					0.933	**Shapiro Wilk Lognormal GOF Test**					
218	5% Shapiro Wilk Critical Value					0.829	Data appear Lognormal at 5% Significance Level					
219	Lilliefors Test Statistic					0.235	**Lilliefors Lognormal GOF Test**					
220	5% Lilliefors Critical Value					0.295	Data appear Lognormal at 5% Significance Level					
221	**Data appear Lognormal at 5% Significance Level**											
222												
223	**Lognormal Statistics**											
224	Minimum of Logged Data					-15.13	Mean of logged Data					-11.62
225	Maximum of Logged Data					-8.4	SD of logged Data					1.832
226												
227	**Assuming Lognormal Distribution**											
228	95% H-UCL					0.00146	90% Chebyshev (MVUE) UCL					9.6103E-5
229	95% Chebyshev (MVUE) UCL					1.2438E-4	97.5% Chebyshev (MVUE) UCL					1.6362E-4
230	99% Chebyshev (MVUE) UCL					2.4070E-4						
231												
232	**Nonparametric Distribution Free UCL Statistics**											
233	**Data appear to follow a Discernible Distribution at 5% Significance Level**											

234											
235	**Nonparametric Distribution Free UCLs**										
236	95% CLT UCL	7.4579E-5				95% Jackknife UCL	7.9733E-5				
237	95% Standard Bootstrap UCL	7.1778E-5				95% Bootstrap-t UCL	2.9846E-4				
238	95% Hall's Bootstrap UCL	2.6558E-4				95% Percentile Bootstrap UCL	8.0139E-5				
239	95% BCA Bootstrap UCL	1.0573E-4									
240	90% Chebyshev(Mean, Sd) UCL	1.0711E-4				95% Chebyshev(Mean, Sd) UCL	1.3974E-4				
241	97.5% Chebyshev(Mean, Sd) UCL	1.8502E-4				99% Chebyshev(Mean, Sd) UCL	2.7396E-4				
242											
243	**Suggested UCL to Use**										
244	95% Adjusted Gamma UCL	1.4932E-4									
245											
246	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										
247	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)										
248	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.										
249	For additional insight the user may want to consult a statistician.										
250											
251											
252	**SBBR**										
253											
254	**General Statistics**										
255	Total Number of Observations	5				Number of Distinct Observations	5				
256						Number of Missing Observations	0				
257	Minimum	4.0900E-7				Mean	1.1748E-6				
258	Maximum	3.1433E-6				Median	6.3854E-7				
259	SD	1.1281E-6				Std. Error of Mean	5.0449E-7				
260	Coefficient of Variation	N/A				Skewness	1.983				
261											
262	**Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use**										
263	**guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.**										
264	**For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).**										
265	**Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0**										
266											
267	**Normal GOF Test**										
268	Shapiro Wilk Test Statistic	0.736				**Shapiro Wilk GOF Test**					
269	5% Shapiro Wilk Critical Value	0.762				Data Not Normal at 5% Significance Level					
270	Lilliefors Test Statistic	0.331				**Lilliefors GOF Test**					
271	5% Lilliefors Critical Value	0.396				Data appear Normal at 5% Significance Level					
272	**Data appear Approximate Normal at 5% Significance Level**										
273											

	A	B	C	D	E	F	G	H	I	J	K	L
274	**Assuming Normal Distribution**											
275	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
276	95% Student's-t UCL					2.2503E-6	95% Adjusted-CLT UCL (Chen-1995)					2.4826E-6
277							95% Modified-t UCL (Johnson-1978)					2.3248E-6
278												
279	**Gamma GOF Test**											
280	A-D Test Statistic					0.51	**Anderson-Darling Gamma GOF Test**					
281	5% A-D Critical Value					0.685	Detected data appear Gamma Distributed at 5% Significance Level					
282	K-S Test Statistic					0.294	**Kolmogrov-Smirnoff Gamma GOF Test**					
283	5% K-S Critical Value					0.361	Detected data appear Gamma Distributed at 5% Significance Level					
284	**Detected data appear Gamma Distributed at 5% Significance Level**											
285												
286	**Gamma Statistics**											
287	k hat (MLE)					1.891	k star (bias corrected MLE)					0.89
288	Theta hat (MLE)					6.2124E-7	Theta star (bias corrected MLE)					1.3204E-6
289	nu hat (MLE)					18.91	nu star (bias corrected)					8.897
290	MLE Mean (bias corrected)					1.1748E-6	MLE Sd (bias corrected)					1.2454E-6
291							Approximate Chi Square Value (0.05)					3.265
292	Adjusted Level of Significance					0.0086	Adjusted Chi Square Value					1.964
293												
294	**Assuming Gamma Distribution**											
295	95% Approximate Gamma UCL (use when n>=50))					3.2013E-6	95% Adjusted Gamma UCL (use when n<50)					5.3223E-6
296												
297	**Lognormal GOF Test**											
298	Shapiro Wilk Test Statistic					0.898	**Shapiro Wilk Lognormal GOF Test**					
299	5% Shapiro Wilk Critical Value					0.762	Data appear Lognormal at 5% Significance Level					
300	Lilliefors Test Statistic					0.258	**Lilliefors Lognormal GOF Test**					
301	5% Lilliefors Critical Value					0.396	Data appear Lognormal at 5% Significance Level					
302	**Data appear Lognormal at 5% Significance Level**											
303												
304	**Lognormal Statistics**											
305	Minimum of Logged Data					-14.71	Mean of logged Data					-13.94
306	Maximum of Logged Data					-12.67	SD of logged Data					0.791
307												
308	**Assuming Lognormal Distribution**											
309	95% H-UCL					5.9303E-6	90% Chebyshev (MVUE) UCL					2.2831E-6
310	95% Chebyshev (MVUE) UCL					2.8092E-6	97.5% Chebyshev (MVUE) UCL					3.5395E-6
311	99% Chebyshev (MVUE) UCL					4.9739E-6						
312												
313	**Nonparametric Distribution Free UCL Statistics**											
314	**Data appear to follow a Discernible Distribution at 5% Significance Level**											

315											
316	**Nonparametric Distribution Free UCLs**										
317	95% CLT UCL	2.0046E-6				95% Jackknife UCL	2.2503E-6				
318	95% Standard Bootstrap UCL	1.9047E-6				95% Bootstrap-t UCL	7.6665E-6				
319	95% Hall's Bootstrap UCL	7.7063E-6				95% Percentile Bootstrap UCL	2.0873E-6				
320	95% BCA Bootstrap UCL	2.2226E-6									
321	90% Chebyshev(Mean, Sd) UCL	2.6882E-6				95% Chebyshev(Mean, Sd) UCL	3.3738E-6				
322	97.5% Chebyshev(Mean, Sd) UCL	4.3253E-6				99% Chebyshev(Mean, Sd) UCL	6.1944E-6				
323											
324	**Suggested UCL to Use**										
325	95% Student's-t UCL	2.2503E-6									
326											
327	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										
328	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)										
329	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.										
330	For additional insight the user may want to consult a statistician.										
331											
332											
333	**SDSL**										
334											
335	**General Statistics**										
336	Total Number of Observations	3				Number of Distinct Observations	3				
337						Number of Missing Observations	0				
338	Minimum	1.0076E-6				Mean	6.9205E-6				
339	Maximum	1.1773E-5				Median	7.9813E-6				
340	SD	5.4603E-6				Std. Error of Mean	3.1525E-6				
341	Coefficient of Variation	N/A				Skewness	-0.841				
342											
343	**Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use**										
344	**guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.**										
345	**For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).**										
346	**Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0**										
347											
348	**Normal GOF Test**										
349	Shapiro Wilk Test Statistic	0.972				**Shapiro Wilk GOF Test**					
350	5% Shapiro Wilk Critical Value	0.767				Data appear Normal at 5% Significance Level					
351	Lilliefors Test Statistic	0.244				**Lilliefors GOF Test**					
352	5% Lilliefors Critical Value	0.512				Data appear Normal at 5% Significance Level					
353	**Data appear Normal at 5% Significance Level**										
354											

	A	B	C	D	E	F	G	H	I	J	K	L
355	**Assuming Normal Distribution**											
356	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
357	95% Student's-t UCL					1.6126E-5	95% Adjusted-CLT UCL (Chen-1995)					1.0470E-5
358							95% Modified-t UCL (Johnson-1978)					1.5871E-5
359												
360	**Gamma GOF Test**											
361	**Not Enough Data to Perform GOF Test**											
362												
363	**Gamma Statistics**											
364	k hat (MLE)					1.339	k star (bias corrected MLE)					N/A
365	Theta hat (MLE)					5.1673E-6	Theta star (bias corrected MLE)					N/A
366	nu hat (MLE)					8.036	nu star (bias corrected)					N/A
367	MLE Mean (bias corrected)					N/A	MLE Sd (bias corrected)					N/A
368							Approximate Chi Square Value (0.05)					N/A
369	Adjusted Level of Significance					N/A	Adjusted Chi Square Value					N/A
370												
371	**Assuming Gamma Distribution**											
372	95% Approximate Gamma UCL (use when n>=50))					N/A	95% Adjusted Gamma UCL (use when n<50)					N/A
373												
374	**Lognormal GOF Test**											
375	Shapiro Wilk Test Statistic					0.865	**Shapiro Wilk Lognormal GOF Test**					
376	5% Shapiro Wilk Critical Value					0.767	Data appear Lognormal at 5% Significance Level					
377	Lilliefors Test Statistic					0.331	**Lilliefors Lognormal GOF Test**					
378	5% Lilliefors Critical Value					0.512	Data appear Lognormal at 5% Significance Level					
379	**Data appear Lognormal at 5% Significance Level**											
380												
381	**Lognormal Statistics**											
382	Minimum of Logged Data					-13.81	Mean of logged Data					-12.3
383	Maximum of Logged Data					-11.35	SD of logged Data					1.321
384												
385	**Assuming Lognormal Distribution**											
386	95% H-UCL					110.6	90% Chebyshev (MVUE) UCL					2.2122E-5
387	95% Chebyshev (MVUE) UCL					2.8690E-5	97.5% Chebyshev (MVUE) UCL					3.7806E-5
388	99% Chebyshev (MVUE) UCL					5.5712E-5						
389												
390	**Nonparametric Distribution Free UCL Statistics**											
391	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
392												

	A	B	C	D	E	F	G	H	I	J	K	L
393	**Nonparametric Distribution Free UCLs**											
394					95% CLT UCL	1.2106E-5			95% Jackknife UCL			1.6126E-5
395					95% Standard Bootstrap UCL	N/A			95% Bootstrap-t UCL			N/A
396					95% Hall's Bootstrap UCL	N/A			95% Percentile Bootstrap UCL			N/A
397					95% BCA Bootstrap UCL	N/A						
398					90% Chebyshev(Mean, Sd) UCL	1.6378E-5			95% Chebyshev(Mean, Sd) UCL			2.0662E-5
399					97.5% Chebyshev(Mean, Sd) UCL	2.6608E-5			99% Chebyshev(Mean, Sd) UCL			3.8288E-5
400												
401	**Suggested UCL to Use**											
402					95% Student's-t UCL	1.6126E-5						
403												
404	**Recommended UCL exceeds the maximum observation**											
405												
406	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
407	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
408	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
409	For additional insight the user may want to consult a statistician.											
410												
411	**Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be**											
412	**reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.**											

Sample	Sum of Congeners
Crawfish-1	2.81E-03
Crawfish-2	2.24E-03
Crawfish-3	2.13E-03
Crawfish-4	2.50E-03
Crawfish-5	2.67E-03
Crawfish-6	1.63E-02
Crawfish-7	3.03E-03
Crawfish-8	7.80E-04
Crawfish-9	2.63E-03
Crawfish-10	2.16E-03
Crawfish-11	1.49E-03
Crawfish-12	1.60E-03
Crawfish-13	2.20E-03
Crawfish-14	1.91E-03
Crawfish-15	2.14E-03

	A	B	C	D	E	F	G	H	I	J	K	L	M
1				**General Statistics on Uncensored Full Data**									
2			Date/Time of Computation	9/20/2015 2:21:15 PM									
3			**User Selected Options**										
4			From File	ProCUL Input - Sum of Congeners - 2013 - Crawfish Tails.xls									
5			Full Precision	OFF									
6													
7	**From File: ProCUL Input - Sum of Congeners - 2013 - Crawfish Tails.xls**												
8													
9						**General Statistics for Uncensored Dataset**								
10													
11	**Variable**		**NumObs**	**# Missing**	**Minimum**	**Maximum**	**Mean**	**SD**	**SEM**	**MAD/0.675**	**Skewness**	**Kurtosis**	**CV**
12	Sum of Congeners		15	0	7.8000E-4	0.0163	0.00311	0.00369	9.5213E-4	6.4108E-4	3.712	14.14	1.188
13													
14						**Percentiles for Uncensored Dataset**								
15													
16	**Variable**		**NumObs**	**# Missing**	**10%ile**	**20%ile**	**25%ile(Q1)**	**50%ile(Q2)**	**75%ile(Q3)**	**80%ile**	**90%ile**	**95%ile**	**99%ile**
17	Sum of Congeners		15	0	0.00154	0.00185	0.00202	0.0022	0.00265	0.0027	0.00294	0.00701	0.0144

1	**UCL Statistics for Uncensored Full Data Sets**										
2											
3	User Selected Options										
4	Date/Time of Computation	9/4/2015 11:41:17 AM									
5	From File	ProCUL Input - Sum of Congeners - 2013 - Crawfish Tails.xls									
6	Full Precision	OFF									
7	Confidence Coefficient	95%									
8	Number of Bootstrap Operations	2000									
9											
10											
11	**Sum of Congeners**										
12											
13	**General Statistics**										
14	Total Number of Observations	15			Number of Distinct Observations	15					
15					Number of Missing Observations	0					
16	Minimum	7.8000E-4			Mean	0.00311					
17	Maximum	0.0163			Median	0.0022					
18	SD	0.00369			Std. Error of Mean	9.5213E-4					
19	Coefficient of Variation	1.188			Skewness	3.712					
20											
21	**Normal GOF Test**										
22	Shapiro Wilk Test Statistic	0.429			**Shapiro Wilk GOF Test**						
23	5% Shapiro Wilk Critical Value	0.881			Data Not Normal at 5% Significance Level						
24	Lilliefors Test Statistic	0.441			**Lilliefors GOF Test**						
25	5% Lilliefors Critical Value	0.229			Data Not Normal at 5% Significance Level						
26	**Data Not Normal at 5% Significance Level**										
27											
28	**Assuming Normal Distribution**										
29	**95% Normal UCL**				**95% UCLs (Adjusted for Skewness)**						
30	95% Student's-t UCL	0.00478			95% Adjusted-CLT UCL (Chen-1995)	0.00565					
31					95% Modified-t UCL (Johnson-1978)	0.00493					
32											
33	**Gamma GOF Test**										
34	A-D Test Statistic	2.201			**Anderson-Darling Gamma GOF Test**						
35	5% A-D Critical Value	0.747			Data Not Gamma Distributed at 5% Significance Level						
36	K-S Test Statistic	0.352			**Kolmogrov-Smirnoff Gamma GOF Test**						
37	5% K-S Critical Value	0.224			Data Not Gamma Distributed at 5% Significance Level						
38	**Data Not Gamma Distributed at 5% Significance Level**										
39											
40	**Gamma Statistics**										
41	k hat (MLE)	2.005			k star (bias corrected MLE)	1.649					
42	Theta hat (MLE)	0.00155			Theta star (bias corrected MLE)	0.00188					
43	nu hat (MLE)	60.16			nu star (bias corrected)	49.46					
44	MLE Mean (bias corrected)	0.00311			MLE Sd (bias corrected)	0.00242					
45					Approximate Chi Square Value (0.05)	34.31					
46	Adjusted Level of Significance	0.0324			Adjusted Chi Square Value	32.76					
47											
48	**Assuming Gamma Distribution**										
49	95% Approximate Gamma UCL (use when n>=50))	0.00448			95% Adjusted Gamma UCL (use when n<50)	0.00469					
50											

	A	B	C	D	E	F	G	H	I	J	K	L
51	**Lognormal GOF Test**											
52	Shapiro Wilk Test Statistic					0.759	**Shapiro Wilk Lognormal GOF Test**					
53	5% Shapiro Wilk Critical Value					0.881	Data Not Lognormal at 5% Significance Level					
54	Lilliefors Test Statistic					0.281	**Lilliefors Lognormal GOF Test**					
55	5% Lilliefors Critical Value					0.229	Data Not Lognormal at 5% Significance Level					
56	**Data Not Lognormal at 5% Significance Level**											
57												
58	**Lognormal Statistics**											
59	Minimum of Logged Data					-7.156	Mean of logged Data					-6.044
60	Maximum of Logged Data					-4.118	SD of logged Data					0.628
61												
62	**Assuming Lognormal Distribution**											
63	95% H-UCL					0.00419	90% Chebyshev (MVUE) UCL					0.00429
64	95% Chebyshev (MVUE) UCL					0.00494	97.5% Chebyshev (MVUE) UCL					0.00585
65	99% Chebyshev (MVUE) UCL					0.00764						
66												
67	**Nonparametric Distribution Free UCL Statistics**											
68	**Data do not follow a Discernible Distribution (0.05)**											
69												
70	**Nonparametric Distribution Free UCLs**											
71	95% CLT UCL					0.00467	95% Jackknife UCL					0.00478
72	95% Standard Bootstrap UCL					0.00465	95% Bootstrap-t UCL					0.0108
73	95% Hall's Bootstrap UCL					0.0127	95% Percentile Bootstrap UCL					0.00496
74	95% BCA Bootstrap UCL					0.00597						
75	90% Chebyshev(Mean, Sd) UCL					0.00596	95% Chebyshev(Mean, Sd) UCL					0.00726
76	97.5% Chebyshev(Mean, Sd) UCL					0.00905	99% Chebyshev(Mean, Sd) UCL					0.0126
77												
78	**Suggested UCL to Use**											
79	95% Chebyshev (Mean, Sd) UCL					0.00726						
80												
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
83	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
84	For additional insight the user may want to consult a statistician.											
85												

Sample Location	Sample Identification	Sample Date	Depth	Location Description	Total Aroclors	D_Total Aroclors
DD-1	55364-T1-012111-SE-DD-1(0-6)	1/21/2011	(0-6) IN	Drainage Ditch	8.10E-03	1
DD-1	55364-T1-012111-SE-DD-1(6-12)	1/21/2011	(6-12) IN	Drainage Ditch	3.80E-03	1
DD-1	55364-T1-012111-SE-DD-1(12-18)	1/21/2011	(12-18) IN	Drainage Ditch	4.10E-03	1
DD-2	55364-T1-012111-SE-DD-2(0-6)	1/21/2011	(0-6) IN	Drainage Ditch	1.00E-01	1
DD-2	55364-T1-012111-SE-DD-2(6-12)	1/21/2011	(6-12) IN	Drainage Ditch	1.50E-02	1
DD-2	55364-T1-012111-SE-DD-2(12-18)	1/21/2011	(12-18) IN	Drainage Ditch	8.30E-02	1
DD-3	55364-T1-012111-SE-DD-3(0-6)	1/21/2011	(0-6) IN	Drainage Ditch	2.10E-02	1
DD-3	55364-T1-012111-SE-DD-3(6-12)	1/21/2011	(6-12) IN	Drainage Ditch	3.00E-03	1
DD-3	55364-T1-012111-SE-DD-3(12-18)	1/21/2011	(12-18) IN	Drainage Ditch	8.20E-04	1
DD-4	55364-T1-012111-SE-DD-4(0-6)	1/21/2011	(0-6) IN	Drainage Ditch	7.50E-01	1
DD-4	55364-T1-012111-SE-DD-4(6-12)	1/21/2011	(6-12) IN	Drainage Ditch	5.90E-01	1
DD-4	55364-T1-012111-SE-DD-4(12-18)	1/21/2011	(12-18) IN	Drainage Ditch	4.90E-01	1
DD-5	55364-T1-012111-SE-DD-5(0-6)	1/21/2011	(0-6) IN	Drainage Ditch	4.80E-01	1
DD-5	55364-T1-012111-SE-DD-5(6-12)	1/21/2011	(6-12) IN	Drainage Ditch	1.03E-02	1
DD-5	55364-T1-012111-SE-DD-5(12-18)	1/21/2011	(12-18) IN	Drainage Ditch	1.60E-03	1
DD-6	55364-T1-012411-SE-DD-6(0-6)	1/24/2011	(0-6) IN	Drainage Ditch	2.10E-02	1
DD-6	55364-T1-012411-SE-DD-6(6-12)	1/24/2011	(6-12) IN	Drainage Ditch	2.90E-03	1
DD-6	55364-T1-012411-SE-DD-6(12-18)	1/24/2011	(12-18) IN	Drainage Ditch	1.00E-06	0
DD-7	55364-T1-012011-SE-DD-7(0-6)	1/20/2011	(0-6) IN	Drainage Ditch	1.99E+00	1
DD-7	55364-T1-012011-SE-DD-7(6-12)	1/20/2011	(6-12) IN	Drainage Ditch	7.90E-03	1
DD-7	55364-T1-012011-SE-DD-7(12-18)	1/20/2011	(12-18) IN	Drainage Ditch	4.20E-03	1
DD-8	55364-T1-012011-SE-DD-8(0-6)	1/20/2011	(0-6) IN	Drainage Ditch	2.80E-01	1
DD-8	55364-T1-012011-SE-DD-8(6-12)	1/20/2011	(6-12) IN	Drainage Ditch	4.70E-02	1
DD-8	55364-T1-012011-SE-DD-8(12-18)	1/20/2011	(12-18) IN	Drainage Ditch	1.70E-03	1
DD-9	55364-T1-012011-SE-DD-9(0-6)	1/20/2011	(0-6) IN	Drainage Ditch	6.90E-01	1
DD-9	55364-T1-012011-SE-DD-9(6-12)	1/20/2011	(6-12) IN	Drainage Ditch	1.20E+00	1
DD-9	55364-T1-012011-SE-DD-9(12-18)	1/20/2011	(12-18) IN	Drainage Ditch	1.27E+00	1
DD-10	55364-T1-012011-SE-DD-10(0-6)	1/20/2011	(0-6) IN	Drainage Ditch	1.70E+00	1
DD-10	55364-T1-012011-SE-DD-10(6-12)	1/20/2011	(6-12) IN	Drainage Ditch	1.40E+00	1
DD-10	55364-T1-012011-SE-DD-10(12-18)	1/20/2011	(12-18) IN	Drainage Ditch	1.23E+00	1
DD-11	55364-T1-012011-SE-DD-11(0-6)	1/20/2011	(0-6) IN	Drainage Ditch	1.24E+00	1
DD-11	55364-T1-012011-SE-DD-11(6-12)	1/20/2011	(6-12) IN	Drainage Ditch	7.10E-01	1
DD-11	55364-T1-012011-SE-DD-11(12-18)	1/20/2011	(12-18) IN	Drainage Ditch	5.30E-01	1
DD-12	55364-T1-012011-SE-DD-12(0-6)	1/20/2011	(0-6) IN	Drainage Ditch	1.16E+00	1
DD-12	55364-T1-012011-SE-DD-12(6-12)	1/20/2011	(6-12) IN	Drainage Ditch	1.83E+00	1
DD-12	55364-T1-012011-SE-DD-12(12-18)	1/20/2011	(12-18) IN	Drainage Ditch	3.12E+00	1

	A	B	C	D	E	F	G	H	I	J	K	L	M
1				**General Statistics on Uncensored Data**									
2	Date/Time of Computation			9/18/2015 9:17:34 AM									
3	**User Selected Options**												
4	From File			ProUCL Input - Sediment - Drainage Ditch - Sum of Aroclors.xls									
5	Full Precision			OFF									
6													
7	**From File: ProUCL Input - Sediment - Drainage Ditch - Sum of Aroclors.xls**												
8													
9	**General Statistics for Censored Datasets (with NDs) using Kaplan Meier Method**												
10													
11	**Variable**		**NumObs**	**# Missing**	**Num Ds**	**NumNDs**	**% NDs**	**Min ND**	**Max ND**	**KM Mean**	**KM Var**	**KM SD**	**KM CV**
12	Total Aroclors		36	0	35	1	2.78%	1.0000E-6	1.0000E-6	0.583	0.551	0.742	1.273
13													
14	**General Statistics for Raw Dataset using Detected Data Only**												
15													
16	**Variable**		**NumObs**	**# Missing**	**Minimum**	**Maximum**	**Mean**	**Median**	**Var**	**SD**	**MAD/0.675**	**Skewness**	**CV**
17	Total Aroclors		35	0	8.2000E-4	3.12	0.6	0.28	0.573	0.757	0.411	1.454	1.262
18													
19	**Percentiles using all Detects (Ds) and Non-Detects (NDs)**												
20													
21	**Variable**		**NumObs**	**# Missing**	**10%ile**	**20%ile**	**25%ile(Q1**	**50%ile(Q2**	**75%ile(Q3**	**80%ile**	**90%ile**	**95%ile**	**99%ile**
22	Total Aroclors		36	0	0.0023	0.0041	0.00698	0.19	1.17	1.23	1.55	1.87	2.725

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	9/18/2015 9:15:59 AM
From File	ProUCL Input - Sediment - Drainage Ditch - Sum of Aroclors.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Total Aroclors

General Statistics

Total Number of Observations	36	Number of Distinct Observations	35
Number of Detects	35	Number of Non-Detects	1
Number of Distinct Detects	34	Number of Distinct Non-Detects	1
Minimum Detect	8.2000E-4	Minimum Non-Detect	1.0000E-6
Maximum Detect	3.12	Maximum Non-Detect	1.0000E-6
Variance Detects	0.573	Percent Non-Detects	2.778%
Mean Detects	0.6	SD Detects	0.757
Median Detects	0.28	CV Detects	1.262
Skewness Detects	1.454	Kurtosis Detects	2.158
Mean of Logged Detects	-2.363	SD of Logged Detects	2.649

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.795	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.934	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.231	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.15	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.583	Standard Error of Mean	0.126
SD	0.742	95% KM (BCA) UCL	0.78
95% KM (t) UCL	0.795	95% KM (Percentile Bootstrap) UCL	0.79
95% KM (z) UCL	0.79	95% KM Bootstrap t UCL	0.838
90% KM Chebyshev UCL	0.96	95% KM Chebyshev UCL	1.13
97.5% KM Chebyshev UCL	1.367	99% KM Chebyshev UCL	1.832

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.329	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.843	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.169	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.16	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.361	k star (bias corrected MLE)	0.349
Theta hat (MLE)	1.661	Theta star (bias corrected MLE)	1.718
nu hat (MLE)	25.28	nu star (bias corrected)	24.45
MLE Mean (bias corrected)	0.6	MLE Sd (bias corrected)	1.015

52	**Gamma Kaplan-Meier (KM) Statistics**											
53					k hat (KM)	0.617				nu hat (KM)		44.44
54					Approximate Chi Square Value (44.44, α)	30.15				Adjusted Chi Square Value (44.44, β)		29.61
55					95% Gamma Approximate KM-UCL (use when n>=50)	0.86				95% Gamma Adjusted KM-UCL (use when n<50)		0.875
56												
57	**Gamma ROS Statistics using Imputed Non-Detects**											
58	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
59	GROS may not be used when kstar of detected data is small such as < 0.1											
60	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
61	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
62					Minimum	8.2000E-4				Mean		0.586
63					Maximum	3.12				Median		0.19
64					SD	0.751				CV		1.283
65					k hat (MLE)	0.365				k star (bias corrected MLE)		0.353
66					Theta hat (MLE)	1.605				Theta star (bias corrected MLE)		1.659
67					nu hat (MLE)	26.27				nu star (bias corrected)		25.42
68					MLE Mean (bias corrected)	0.586				MLE Sd (bias corrected)		0.986
69										Adjusted Level of Significance (β)		0.0428
70					Approximate Chi Square Value (25.42, α)	14.93				Adjusted Chi Square Value (25.42, β)		14.57
71					95% Gamma Approximate UCL (use when n>=50)	0.997				95% Gamma Adjusted UCL (use when n<50)		1.022
72												
73	**Lognormal GOF Test on Detected Observations Only**											
74					Shapiro Wilk Test Statistic	0.874				**Shapiro Wilk GOF Test**		
75					5% Shapiro Wilk Critical Value	0.934				Detected Data Not Lognormal at 5% Significance Level		
76					Lilliefors Test Statistic	0.216				**Lilliefors GOF Test**		
77					5% Lilliefors Critical Value	0.15				Detected Data Not Lognormal at 5% Significance Level		
78	**Detected Data Not Lognormal at 5% Significance Level**											
79												
80	**Lognormal ROS Statistics Using Imputed Non-Detects**											
81					Mean in Original Scale	0.583				Mean in Log Scale		-2.543
82					SD in Original Scale	0.753				SD in Log Scale		2.824
83					95% t UCL (assumes normality of ROS data)	0.795				95% Percentile Bootstrap UCL		0.794
84					95% BCA Bootstrap UCL	0.826				95% Bootstrap t UCL		0.862
85					95% H-UCL (Log ROS)	45.34						
86												
87	**DL/2 Statistics**											
88	**DL/2 Normal**									**DL/2 Log-Transformed**		
89					Mean in Original Scale	0.583				Mean in Log Scale		-2.701
90					SD in Original Scale	0.753				SD in Log Scale		3.303
91					95% t UCL (Assumes normality)	0.795				95% H-Stat UCL		381.3
92	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
93												
94	**Nonparametric Distribution Free UCL Statistics**											
95	**Data do not follow a Discernible Distribution at 5% Significance Level**											
96												
97	**Suggested UCL to Use**											
98					99% KM (Chebyshev) UCL	1.832						
99												
100	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
101	Recommendations are based upon data size, data distribution, and skewness.											
102	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
103	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											

AOI	Sample ID	Total Aroclors	D_Total Aroclors
Drainage Ditch	DD-1	2.20E-04	1
Drainage Ditch	DD-2	1.20E-04	1
Drainage Ditch	DD-3	1.00E-04	1
Drainage Ditch	DD-4	1.20E-04	1
Drainage Ditch	DD-5	9.60E-05	1
Drainage Ditch	DD-6	1.40E-05	0
Drainage Ditch	DD-7	9.50E-05	1
Drainage Ditch	DD-8	9.80E-05	1
Drainage Ditch	DD-9	9.80E-05	1
Drainage Ditch	DD-10	1.09E-04	1
Drainage Ditch	DD-11	2.90E-05	1
Drainage Ditch	DD-12	1.40E-05	0

	A	B	C	D	E	F	G	H	I	J	K	L	M
1				**General Statistics on Uncensored Data**									
2	Date/Time of Computation			9/18/2015 9:22:58 AM									
3	**User Selected Options**												
4	From File			ProUCL Input - Surface Water- Drainage Ditch - Sum of Aroclors.xls									
5	Full Precision			OFF									
6													
7	**From File: ProUCL Input - Surface Water- Drainage Ditch - Sum of Aroclors.xls**												
8													
9	**General Statistics for Censored Datasets (with NDs) using Kaplan Meier Method**												
10													
11	**Variable**		**NumObs**	**# Missing**	**Num Ds**	**NumNDs**	**% NDs**	**Min ND**	**Max ND**	**KM Mean**	**KM Var**	**KM SD**	**KM CV**
12	Total Aroclors		12	0	10	2	16.67%	1.4000E-5	1.4000E-5	9.2750E-5	2.8777E-9	5.3644E-5	0.578
13													
14	**General Statistics for Raw Dataset using Detected Data Only**												
15													
16	**Variable**		**NumObs**	**# Missing**	**Minimum**	**Maximum**	**Mean**	**Median**	**Var**	**SD**	**MAD/0.675**	**Skewness**	**CV**
17	Total Aroclors		10	0	2.9000E-5	2.2000E-4	1.0850E-4	9.9000E-5	2.1832E-9	4.6724E-5	1.0378E-5	1.197	0.431
18													
19	**Percentiles using all Detects (Ds) and Non-Detects (NDs)**												
20													
21	**Variable**		**NumObs**	**# Missing**	**10%ile**	**20%ile**	**25%ile(Q1)**	**50%ile(Q2)**	**75%ile(Q3)**	**80%ile**	**90%ile**	**95%ile**	**99%ile**
22	Total Aroclors		12	0	1.5500E-5	4.2200E-5	7.8500E-5	9.8000E-5	1.1175E-4	1.1780E-4	1.2000E-4	1.6500E-4	2.0900E-4

	A	B	C	D	E	F	G	H	I	J	K	L
1	**UCL Statistics for Data Sets with Non-Detects**											
2												
3	User Selected Options											
4	Date/Time of Computation	9/18/2015 9:21:32 AM										
5	From File	ProUCL Input - Surface Water- Drainage Ditch - Sum of Aroclors.xls										
6	Full Precision	OFF										
7	Confidence Coefficient	95%										
8	Number of Bootstrap Operations	2000										
9												
10	**Total Aroclors**											
11												
12	**General Statistics**											
13	Total Number of Observations	12				Number of Distinct Observations	9					
14	Number of Detects	10				Number of Non-Detects	2					
15	Number of Distinct Detects	8				Number of Distinct Non-Detects	1					
16	Minimum Detect	2.9000E-5				Minimum Non-Detect	1.4000E-5					
17	Maximum Detect	2.2000E-4				Maximum Non-Detect	1.4000E-5					
18	Variance Detects	2.1832E-9				Percent Non-Detects	16.67%					
19	Mean Detects	1.0850E-4				SD Detects	4.6724E-5					
20	Median Detects	9.9000E-5				CV Detects	0.431					
21	Skewness Detects	1.197				Kurtosis Detects	4.573					
22	Mean of Logged Detects	-9.223				SD of Logged Detects	0.498					
23												
24	**Normal GOF Test on Detects Only**											
25	Shapiro Wilk Test Statistic	0.788				**Shapiro Wilk GOF Test**						
26	5% Shapiro Wilk Critical Value	0.842				Detected Data Not Normal at 5% Significance Level						
27	Lilliefors Test Statistic	0.303				**Lilliefors GOF Test**						
28	5% Lilliefors Critical Value	0.28				Detected Data Not Normal at 5% Significance Level						
29	**Detected Data Not Normal at 5% Significance Level**											
30												
31	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
32	Mean	9.2750E-5				Standard Error of Mean	1.6323E-5					
33	SD	5.3644E-5				95% KM (BCA) UCL	1.1908E-4					
34	95% KM (t) UCL	1.2206E-4				95% KM (Percentile Bootstrap) UCL	1.1908E-4					
35	95% KM (z) UCL	1.1960E-4				95% KM Bootstrap t UCL	1.2195E-4					
36	90% KM Chebyshev UCL	1.4172E-4				95% KM Chebyshev UCL	1.6390E-4					
37	97.5% KM Chebyshev UCL	1.9469E-4				99% KM Chebyshev UCL	2.5517E-4					
38												
39	**Gamma GOF Tests on Detected Observations Only**											
40	A-D Test Statistic	1.098				**Anderson-Darling GOF Test**						
41	5% A-D Critical Value	0.729				Detected Data Not Gamma Distributed at 5% Significance Level						
42	K-S Test Statistic	0.337				**Kolmogrov-Smirnoff GOF**						
43	5% K-S Critical Value	0.267				Detected Data Not Gamma Distributed at 5% Significance Level						
44	**Detected Data Not Gamma Distributed at 5% Significance Level**											

45											
46	**Gamma Statistics on Detected Data Only**										
47					k hat (MLE)	5.441		k star (bias corrected MLE)			3.876
48					Theta hat (MLE)	1.9939E-5		Theta star (bias corrected MLE)			2.7995E-5
49					nu hat (MLE)	108.8		nu star (bias corrected)			77.51
50					MLE Mean (bias corrected)	1.0850E-4		MLE Sd (bias corrected)			5.5113E-5
51											
52	**Gamma Kaplan-Meier (KM) Statistics**										
53					k hat (KM)	2.989		nu hat (KM)			71.75
54					Approximate Chi Square Value (71.75, α)	53.24		Adjusted Chi Square Value (71.75, β)			50.82
55					95% Gamma Approximate KM-UCL (use when n>=50)	1.2498E-4		95% Gamma Adjusted KM-UCL (use when n<50)			1.3095E-4
56											
57	**Gamma ROS Statistics using Imputed Non-Detects**										
58	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs										
59	GROS may not be used when kstar of detected data is small such as < 0.1										
60	For such situations, GROS method tends to yield inflated values of UCLs and BTVs										
61	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates										
62					Minimum	2.9000E-5		Mean			0.00176
63					Maximum	0.01		Median			1.0450E-4
64					SD	0.00385		CV			2.191
65					k hat (MLE)	0.323		k star (bias corrected MLE)			0.298
66					Theta hat (MLE)	0.00544		Theta star (bias corrected MLE)			0.0059
67					nu hat (MLE)	7.751		nu star (bias corrected)			7.147
68					MLE Mean (bias corrected)	0.00176		MLE Sd (bias corrected)			0.00322
69								Adjusted Level of Significance (β)			0.029
70					Approximate Chi Square Value (7.15, α)	2.251		Adjusted Chi Square Value (7.15, β)			1.856
71					95% Gamma Approximate UCL (use when n>=50)	0.00558		95% Gamma Adjusted UCL (use when n<50)			0.00677
72											
73	**Lognormal GOF Test on Detected Observations Only**										
74					Shapiro Wilk Test Statistic	0.759		**Shapiro Wilk GOF Test**			
75					5% Shapiro Wilk Critical Value	0.842		Detected Data Not Lognormal at 5% Significance Level			
76					Lilliefors Test Statistic	0.369		**Lilliefors GOF Test**			
77					5% Lilliefors Critical Value	0.28		Detected Data Not Lognormal at 5% Significance Level			
78	**Detected Data Not Lognormal at 5% Significance Level**										
79											
80	**Lognormal ROS Statistics Using Imputed Non-Detects**										
81					Mean in Original Scale	9.6627E-5		Mean in Log Scale			-9.387
82					SD in Original Scale	5.0578E-5		SD in Log Scale			0.592
83					95% t UCL (assumes normality of ROS data)	1.2285E-4		95% Percentile Bootstrap UCL			1.2103E-4
84					95% BCA Bootstrap UCL	1.2311E-4		95% Bootstrap t UCL			1.2596E-4
85					95% H-UCL (Log ROS)	1.4952E-4					
86											

	A	B	C	D	E	F	G	H	I	J	K	L
87	**DL/2 Statistics**											
88	**DL/2 Normal**						**DL/2 Log-Transformed**					
89					Mean in Original Scale	9.1583E-5				Mean in Log Scale		-9.664
90					SD in Original Scale	5.7855E-5				SD in Log Scale		1.124
91					95% t UCL (Assumes normality)	1.2158E-4				95% H-Stat UCL		3.4684E-4
92	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
93												
94	**Nonparametric Distribution Free UCL Statistics**											
95	**Data do not follow a Discernible Distribution at 5% Significance Level**											
96												
97	**Suggested UCL to Use**											
98					95% KM (Chebyshev) UCL	1.6390E-4						
99												
100	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
101	Recommendations are based upon data size, data distribution, and skewness.											
102	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
103	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
104												

APPENDICES

Appendix H – Human Health Risk Calculation
Source: Tier 2 Remedial Investigation, Appendix N

Table N-1

Risk Chracterization Based on the USEPA's Comments
Assumptions for a Recreational User Ingesting Fish and Crawfish
Tier 2 Remedial Investigation
Devil's Swamp Lake Site
East Baton Rouge Parish, Louisiana

Medium: Fish/Crawfish
Exposure Medium: Fish/Crawfish Tissue
Receptor Population: Recreational User
Receptor Age: Child and Adult

Exposure Route	Parameter Code	Parameter Definition	Units	Reasonable Maximum Exposure (RME) Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cfish/cf	Chemical Concentration in Fish/Crawfish	mg/kg	(1)	(1)	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate of Fish or Crawfish	g/meal	species-specific	(2)	$C_{fish/cf}$ x IR x CF x FI x CR x MF x ED x 1/BW x 1/AT
	CF	Conversion Factor	kg/g	1.00E-03	--	
	MF	Meal Frequency	meals/year	48	LDEQ, 2011 (3)	
	FI	Contaminated Fraction Ingested	unitless	0.5	USEPA, 1999	
	CR	Cooking Reduction Factor	unitless	0.7	LDEQ, 2011; USEPA, 2000a (4)	
	ED - Child	Exposure Duration	years	4	Assumption	
	ED - Adult	Exposure Duration	years	20	USEPA, 2014a (5)	
	BW - Child	Body Weight	kg	15	USEPA, 2014a	
	BW - Adult	Body Weight	kg	80	USEPA, 2014a	
	AT-C	Averaging Time (cancer)	days	25,550	USEPA, 1989b	
	AT-N	Averaging Time (non-cancer)	days	8,760	USEPA, 1989b	

Notes:

(1) Chemical concentrations in fish are Site-specific. Refer to Tables 9-2A through 9-4B.

(2) Species- specific consumption rates requested by the USEPA in August 11, 2015 email are:

Species	Adult RME (g/meal)	Child (2 to 6-yrs old) RME (g/meal)
Largemouth Bass	45.36	8.51
Channel Catfish	177	33
Crawfish	5	1

(3) For RME, the exposure frequency assumes that child (older than 2 years) and adult consume 4 meals per month for 12 months of the year (4 meals/month x 12 months/year for a total of 48 meals per year).

(4) Supported by multiple literature sources (Zabik and Zabik, 1995; Wilson et al., 1998; and Schecter et al., 1998).

(5) LDEQ (2011) recommends an exposure duration of 30 years. These values represent years spent ingesting fish as a child (years 0 to 2 excluded) and as an adult.

References:

LDEQ, 2011: Protocol for Issuing Public Health Advisories for Chemical Contaminants in Recreationally Caught Fish and Shellfish, May 2011 (revised February 2012).

Schecter, A., M. Dellarco, O. Papke, and J. Olson, 1998: A Comparison of Dioxins, Dibenzofurans, and Coplanar PCBs in Uncooked and Broiled Ground Beef, Catfish, and Bacon. Chemosphere 37:1723-1730.

USEPA, 1989b: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual, Part A OERR. EPA/540-1-89-002, December 1989.

USEPA, 1999: Human Health Risk Assessment, Devil's Swamp, December 1999.

USEPA, 2000a: Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories: Vol 1-3. (3rd Ed.) 823-B-00-008, Office of Water, U.S. Environmental Protection Agency, Washington DC, November 2000.

USEPA, 2004a: RAGs Volume 1, Human Health Evaluation Manual, Part E: Supplemental Guidance for Dermal Risk Assessment, EPA/540/R/99/005, July 2004.

USEPA, 2014a: Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors, OSWER Directive 9200.1-120, February 2014.

Wilson, D.W., N.M. Shear, D.J. Paustenbach, and P.S. Price, 1998: The Effects of Cooking Practices on the Concentration of DDT and PCB Compounds in the Edible Tissue of Fish. J. Exp. Anal. Environ. Epidem. 8:423-440.

Zabik, M.E., and M.J. Zabik, 1995: Tetrachlorodibenzo-p-dioxin Residue Reduction by Cooking/Processing of Fish Fillets Harvested from the Great Lakes. Bull. Environ. Contam. Toxicol. 55:264-269.

Table N-2

Risk Characterization Based on the USEPA's Comments
Reasonable Maximum Exposure Cancer Risks and Non-Cancer Hazards for a Recreational User Exposed to Total PCBs in Fish and Crawfish Over Entire Site
Tier 2 Remedial Investigation
Devil's Swamp Lake Site
East Baton Rouge Parish, Louisiana

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult and Child (2 to 6 yrs old)

Medium	Exposure Medium	Exposure Point	Exposure Route	Constituents of Potential Concern[1,2]	EPC[3,4]		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake (CDI)		CSF		Cancer Risk	Intake (CDI)		RfD		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Biological Tissue	Bass	Filet	Ingestion	Total PCB - High	6.7E-01	mg/kg	6.0E-06	mg/kg-d	2.0E+00	$(mg/kg\text{-}d)^{-1}$	1.E-05	1.8E-05	mg/kg-d	2.0E-05	mg/kg-d	9.E-01
	Catfish	Filet	Ingestion	Total PCB - High	1.1E+00	mg/kg	3.8E-05	mg/kg-d	2.0E+00	$(mg/kg\text{-}d)^{-1}$	8.E-05	1.1E-04	mg/kg-d	2.0E-05	mg/kg-d	5.E+00
	Crawfish	Tail	Ingestion	Total PCB - High	1.6E-02	mg/kg	1.6E-08	mg/kg-d	2.0E+00	$(mg/kg\text{-}d)^{-1}$	3.E-08	4.7E-08	mg/kg-d	2.0E-05	mg/kg-d	2.E-03
	Exposure Medium Total										9.E-05					6.E+00

Notes:

CDI = Chronic Daily Intake (mg/kg-day) = $C_{fish/crawfish}$ x IR x CF x FI x CR x MF x ED x (1/BW) x (1/AT).

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration - 95% Upper Confidence Limit on the geometric mean calculated via ProUCL (Refer to Tables 9-2A, 9-3A, and 9-4A).

mg/kg = milligrams per kilogram

mg/kg-d = milligrams per kilogram per day

PCB = Polychlorinated Biphenyl

RfD = Reference Dose

[1] Total PCB - High = PCBs assessed using the high risk USEPA toxicity category.

[2] Total PCB are based on the combined results for individual congeners.

[3] Non-detects were treated as 1/2 detection limit and were included in EPC calculations.

[4] Crawfish EPC uses the maximum detected value.

Table N-3

Risk Characterization Based on the USEPA's Comments
Reasonable Maximum Exposure Cancer Risks and Non-Cancer Hazards for a Recreational User Exposed to Dioxin-Like PCBs TEQ in Fish and Crawfish Over Entire Site
Tier 2 Remedial Investigation
Devil's Swamp Lake Site
East Baton Rouge Parish, Louisiana

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult and Child (2 to 6 yrs old)

Medium	Exposure Medium	Exposure Point	Exposure Route	Constituents of Potential Concern	EPC[1]		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					DLPCBs TEQ	Units	Intake (CDI)		CSF		Cancer Risk	Intake (CDI)		RfD		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Biological Tissue	Bass	Filet	Ingestion	DLPCBs TEQ	2.2E-05	mg/kg	1.96E-10	mg/kg-d	1.3E+05	$(mg/kg\text{-}d)^{-1}$	3.E-05	5.72E-10	mg/kg-d	7.0E-10	mg/kg-d	8.E-01
	Catfish	Filet	Ingestion	DLPCBs TEQ	2.2E-05	mg/kg	7.75E-10	mg/kg-d	1.3E+05	$(mg/kg\text{-}d)^{-1}$	1.E-04	2.26E-09	mg/kg-d	7.0E-10	mg/kg-d	3.E+00
	Crawfish	Tail	Ingestion	DLPCBs TEQ	1.6E-07	mg/kg	1.62E-13	mg/kg-d	1.3E+05	$(mg/kg\text{-}d)^{-1}$	2.E-08	4.71E-13	mg/kg-d	7.0E-10	mg/kg-d	7.E-04
	Exposure Medium Total										1.E-04					4.E+00

Notes:
CDI = Chronic Daily Intake (mg/kg-day) = $C_{fish/crawfish}$ x IR x CF x FI x CR x MF x ED x (1/BW) x (1/AT)
CSF = Cancer Slope Factor
DLPCBs = Dioxin-like PCBs
EPC = Exposure Point Concentration - 95% Upper Confidence Limit on the geometric mean calculated via ProUCL (Refer to Tables 9-2B, 9-3B, and 9-4B)
mg/kg = milligrams per kilogram
mg/kg-d = milligrams per kilogram per day
PCB = Polychlorinated Biphenyl
RfD = Reference Dose
TEQ = Toxicity Equivalency
[1]Non-detects were treated as 1/2 detection limit and were included in EPC calculations.

Table N-4

Risk Characterization Based on the USEPA's Comments
Reasonable Maximum Exposure Cancer Risks and Non-Cancer Hazards for a Recreational User Exposed to Dioxin-Like PCBs TEQ in Crawfish for Each Area of Investigation
Tier 2 Remedial Investigation
Devil's Swamp Lake Site
East Baton Rouge Parish, Louisiana

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult and Child (2 to 6 yrs old)

Medium	Exposure Medium	Exposure Point	Exposure Route	Constituents of Potential Concern	Area of Investigation	EPC[1,2]		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
						DLPCBs TEQ	Units	Intake (CDI)		CSF		Cancer Risk	Intake (CDI)		RfD		Hazard Quotient
								Value	Units	Value	Units		Value	Units	Value	Units	
Biological Tissue	Crawfish	Tail	Ingestion	DLPCBs TEQ	Drainage Ditch	1.4E-06	mg/kg	1.4E-12	mg/kg-d	1.3E+05	$(mg/kg\text{-}d)^{-1}$	2.E-07	4.1E-12	mg/kg-d	7.E-10	mg/kg-d	6.E-03
	Crawfish	Tail	Ingestion	DLPCBs TEQ	North Devil's Swamp Lake	3.1E-06	mg/kg	3.1E-12	mg/kg-d	1.3E+05	$(mg/kg\text{-}d)^{-1}$	4.E-07	9.0E-12	mg/kg-d	7.E-10	mg/kg-d	1.E-02
	Crawfish	Tail	Ingestion	DLPCBs TEQ	North-Central Devil's Swamp	3.8E-07	mg/kg	3.8E-13	mg/kg-d	1.3E+05	$(mg/kg\text{-}d)^{-1}$	5.E-08	1.1E-12	mg/kg-d	7.E-10	mg/kg-d	2.E-03
	Crawfish	Tail	Ingestion	DLPCBs TEQ	South Devil's Swamp Lake	2.5E-07	mg/kg	2.5E-13	mg/kg-d	1.3E+05	$(mg/kg\text{-}d)^{-1}$	3.E-08	7.3E-13	mg/kg-d	7.E-10	mg/kg-d	1.E-03
	Crawfish	Tail	Ingestion	DLPCBs TEQ	South Bayou Baton Rouge	4.7E-08	mg/kg	4.7E-14	mg/kg-d	1.3E+05	$(mg/kg\text{-}d)^{-1}$	6.E-09	1.4E-13	mg/kg-d	7.E-10	mg/kg-d	2.E-04
	Crawfish	Tail	Ingestion	DLPCBs TEQ	Area-Weighted	1.6E-07	mg/kg	1.6E-13	mg/kg-d	1.3E+05	$(mg/kg\text{-}d)^{-1}$	2.E-08	4.7E-13	mg/kg-d	7.E-10	mg/kg-d	7.E-04

Notes:

CDI = Chronic Daily Intake (mg/kg-day) = $C_{fish/crawfish}$ x IR x CF x FI x CR x MF x ED x (1/BW) x (1/AT)
CSF = Cancer Slope Factor
DLPCBs = Dioxin-like PCBs
EPC = Exposure Point Concentration (Refer to Table 9-4B)
mg/kg = milligrams per kilogram
mg/kg-d = milligrams per kilogram per day
PCB = Polychlorinated Biphenyl
RfD = Reference Dose
TEQ = Toxicity Equivalency

[1] Non-detects were treated as 1/2 detection limit and were included in EPC calculations.

[2] Exposure Area TEQ concentrations from CRA, 2014.

Reference:

CRA, 2014. 2014 Crawfish and Sediment Sample Summary. Tier 2 Remedial Investigation. August 2014.

APPENDICES

Appendix I – Remediation Alternatives Cost Estimate
Source: Feasibility Study, Appendix H

Devil's Swamp Lake Site
East Baton Rouge Parish, Louisiana
Feasibility Study
June 2018

Appendix H
Remediation Alternatives Cost Estimates

Developed for Purposes of Evaluation in the Feasibility Study
Likelihood of the Selection of Any Single Remedy Unknown

Appendix H - Table H-1
Summary of Remediation Alternative Cost Estimates
Devil's Swamp Lake

Activity	Remediation Alternative 2	Remediation Alternative 3	Remediation Alternative 4	Remediation Alternative 5
	MNR in SMA A+B	EMNR in SMA A+B	Cap in Drainage Ditch and EMNR in Remainder of SMA A+B	Cap in SMA A+B
Capital and Fixed Costs				
Preconstruction Sampling	$115,000	$148,000	$148,000	$148,000
General Construction Activities	$0	$758,000	$878,000	$758,000
Thin Cover / Cap	$0	$826,000	$938,000	$1,752,000
Thin Cover	$0	$826,000	$812,000	$0
Cap	$0	$0	$126,000	$1,752,000
Total Direct Construction Costs	$0	$1,584,000	$1,816,000	$2,510,000
Engineering, PM, & CM (15% of TDCC)	$0	$238,000	$273,000	$377,000
Contingency (15% of TDCC)	$0	$238,000	$273,000	$377,000
CAPITAL AND FIXED COSTS TOTAL	$115,000	$2,208,000	$2,510,000	$3,412,000
Operation and Maintenance Costs				
Cap Bathymetric Survey and Reporting	$0	$0	$150,000	$210,000
Cap Maintenance	$0	$0	$75,000	$180,000
Fish Tissue Monitoring and Reporting	$420,000	$420,000	$420,000	$280,000
Sediment Chemistry Monitoring and Reporting	$480,000	$480,000	$480,000	$0
Support During 5-Year Review Period	$90,000	$90,000	$90,000	$60,000
Total Direct Monioring Costs	$990,000	$990,000	$1,215,000	$730,000
Contingency (10% of Monitoring Costs)	$99,000	$99,000	$122,000	$73,000
O&M TOTAL	$1,089,000	$1,089,000	$1,337,000	$803,000
O&M PRESENT WORTH (including contingency)	$508,000	$508,000	$681,000	$473,000
TOTAL	$1,204,000	$3,297,000	$3,847,000	$4,215,000
TOTAL NET PRESENT WORTH (7% DISCOUNT RATE)	$623,000	$2,716,000	$3,191,000	$3,885,000

CM: construction management
EMNR: enhanced monitored natural recovery
MNR: monitored natural recovery
PM: project management
SMA: sediment management area
TDCC: total direct construction cost

Developed for Purposes of Evaluation in the Feasibility Study
Likelihood of the Selection of Any Single Remedy Unknown

Appendix H - Table H-2
Remediation Alternative 2 Cost Estimate
MNR in SMA A+B
Devil's Swamp Lake

CAPITAL AND FIXED COSTS

Item	Quantity	Units	Unit Cost	Total Cost
Preconstruction Sampling				**$115,000**
1.01 Preconstruction Work Plan	1	Lump Sum	$25,000	$25,000
1.02 Preconstruction Sediment Sampling	1	Lump Sum	$90,000	$90,000
			Total Preconstruction Costs	**$115,000**
			Total Direct Construction Costs	**$0**
			Engineering, PM, & CM (15% of TDCC)	**$0**
			Contingency (15% of TDCC)	**$0**
			Capital and Fixed Costs TOTAL	**$115,000**

OPERATION AND MAINTENANCE COSTS

Item	Quantity	Units	Cost per Event	Total Cost
Long-Term Monitoring and Maintenance				**$990,000**
2.01 Fish Tissue Monitoring and Reporting (Years 2, 5, 10, 15, 20, and 30)	6	event	$70,000	$420,000
2.02 Sediment Chemistry Monitoring and Reporting (Years 2, 5, 10, 15, 20, and 30)	6	event	$80,000	$480,000
2.03 Support During Five-Year Review Periods (Years 5, 10, 15, 20, 25, and 30)	6	event	$15,000	$90,000
			Total Direct Monitoring Costs	**$990,000**
			Contingency (10% of Monitoring Costs)	**$99,000**
			Monitoring TOTAL	**$1,089,000**
			Present Worth Direct Monitoring Costs	**$461,000**
			Contingency (10% of Monitoring Costs)	**$47,000**
			Monitoring Present Worth	**$508,000**
			TOTAL	**$1,204,000**
			PRESENT WORTH	**$623,000**

CM: construction management
MNR: monitored natural recovery
PM: project management
SMA: sediment management area
TDCC: total direct construction cost

Developed for Purposes of Evaluation in the Feasibility Study
Likelihood of the Selection of Any Single Remedy Unknown

Appendix H - Table H-3
Remediation Alternative 3 Cost Estimate
EMNR in SMA A+B
Devil's Swamp Lake

CAPITAL AND FIXED COSTS

Item	Quantity	Units	Unit Cost	Total Cost
Preconstruction Sampling				**$148,000**
1.01 Preconstruction Work Plan	1	Lump Sum	$25,000	$25,000
1.02 Preconstruction Sediment Sampling	1	Lump Sum	$90,000	$90,000
1.03 Preconstruction Hydraulic Monitoring	1	Lump Sum	$33,000	$33,000
			Total Preconstruction Costs	**$148,000**
General Construction				**$758,000**
2.01 Construction Management/On-Site Superintendent/Site Administration	1	Month	$68,000	$68,000
2.02 Mobilization Set Up, and Demobilization	1	Lump Sum	$450,000	$450,000
2.03 Health and Safety	1	Month	$32,000	$32,000
2.04 Set Up of Temporary Facilities	1	Staging Area	$35,000	$35,000
2.05 Temporary Facilities	1	Facility-Month	$20,000	$20,000
2.06 Breakdown Temporary Facilities	1	Staging Area	$35,000	$35,000
2.07 Install Access Road	7,000	Square Foot	$2.50	$17,500
2.08 Site Restoration	1	Staging Area	$100,000	$100,000
Construction Cost (EMNR)				**$826,000**
3.01 Sand Cover Materials in Drainage Ditch (Delivered and Placed)	532	Cubic Yard	$27	$14,364
3.02 Sand Cover Materials in Remainder of SMAs (Delivered and Placed)	5,856	Cubic Yard	$130	$761,280
3.03 Periodic Soundings/GPS Tracking to Document Progress	1	Month	$50,000	$50,000
			Total Direct Construction Costs	**$1,584,000**
			Engineering, PM, & CM (15% of TDCC)	**$238,000**
			Contingency (15% of TDCC)	**$238,000**
			Capital and Fixed Costs TOTAL	**$2,208,000**

OPERATION AND MAINTENANCE COSTS

Item	Quantity	Units	Cost per Event	Total Cost
Long-Term Monitoring and Maintenance				**$990,000**
4.01 Fish Tissue Monitoring and Reporting (Years 2, 5, 10, 15, 20, and 30)	6	event	$70,000	$420,000
4.02 Sediment Chemistry Monitoring and Reporting (Years 2, 5, 10, 15, 20, and 30)	6	event	$80,000	$480,000
4.03 Support During Five-Year Review Periods (Years 5, 10, 15, 20, 25, and 30)	6	event	$15,000	$90,000
			Total Direct Monitoring Costs	**$990,000**
			Contingency (10% of Monitoring Costs)	**$99,000**
			Monitoring TOTAL	**$1,089,000**
			Present Worth Direct Monitoring Costs	**$461,000**
			Contingency (10% of Monitoring Costs)	**$47,000**
			Monitoring Present Worth	**$508,000**
			TOTAL	**$3,297,000**
			PRESENT WORTH	**$2,716,000**

CM: construction management
EMNR: enhanced monitored natural recovery
PM: project management
SMA: sediment management area
TDCC: total direct construction cost

Developed for Purposes of Evaluation in the Feasibility Study
Likelihood of the Selection of Any Single Remedy Unknown

Appendix H - Table H-4
Remediation Alternative 4 Cost Estimate
Cap in Drainage Ditch and EMNR in Remainder of SMA A+B
Devil's Swamp Lake

CAPITAL AND FIXED COSTS

Item	Quantity	Units	Unit Cost	Total Cost
Preconstruction Sampling				**$148,000**
1.01 Preconstruction Work Plan	1	Lump Sum	$25,000	$25,000
1.02 Preconstruction Sediment Sampling	1	Lump Sum	$90,000	$90,000
1.03 Preconstruction Hydraulic Monitoring	1	Lump Sum	$33,000	$33,000
			Total Preconstruction Costs	**$148,000**
General Construction				**$878,000**
2.01 Construction Management/On-Site Superintendent/Site Administration	2	Month	$68,000	$136,000
2.02 Mobilization Set Up, and Demobilization	1	Lump Sum	$450,000	$450,000
2.03 Health and Safety	2	Month	$32,000	$64,000
2.04 Set Up of Temporary Facilities	1	Staging Area	$35,000	$35,000
2.05 Temporary Facilities	2	Facility-Month	$20,000	$40,000
2.06 Breakdown Temporary Facilities	1	Staging Area	$35,000	$35,000
2.07 Install Access Road	7,000	Square Foot	$2.50	$17,500
2.08 Site Restoration	1	Staging Area	$100,000	$100,000
Construction Cost (Cap)				**$126,000**
3.01 Cap Sand Layer and Armor Layer Materials in Drainage Ditch (Delivered and Placed)	1,065	Cubic Yard	$71	$75,601
3.02 Periodic Soundings/GPS Tracking to Document Progress	1	Month	$50,000	$50,000
Construction Cost (EMNR)				**$812,000**
4.01 Sand Cover Materials in Remainder of SMAs (Delivered and Placed)	5,856	Cubic Yard	$130	$761,332
4.02 Periodic Soundings/GPS Tracking to Document Progress	1	Month	$50,000	$50,000
			Total Direct Construction Costs	**$1,816,000**
			Engineering, PM, & CM (15% of TDCC)	**$273,000**
			Contingency (15% of TDCC)	**$273,000**
			Capital and Fixed Costs TOTAL	**$2,510,000**

OPERATION AND MAINTENANCE COSTS

Item	Quantity	Units	Cost per Event	Total Cost
Long-Term Monitoring and Maintenance				**$1,215,000**
5.01 Bathymetric Survey and Reporting (Years 2, 5, and 10)	3	event	$50,000	$150,000
5.02 Cap Maintenance (Years 2, 5, and 10)	3	event	$25,000	$75,000
5.03 Fish Tissue Monitoring and Reporting (Years 2, 5, 10, 15, 20, and 30)	6	event	$70,000	$420,000
5.04 Sediment Chemistry Monitoring and Reporting (Years 2, 5, 10, 15, 20, and 30)	6	event	$80,000	$480,000
5.05 Support During Five-Year Review Periods (Years 5, 10, 15, 20, 25, and 30)	6	event	$15,000	$90,000
			Total Direct Monitoring Costs	**$1,215,000**
			Contingency (10% of Monitoring Costs)	**$122,000**
			Monitoring TOTAL	**$1,337,000**
			Present Worth Direct Monitoring Costs	**$619,000**
			Contingency (10% of Monitoring Costs)	**$62,000**
			Monitoring Present Worth	**$681,000**
			TOTAL	**$3,847,000**
			PRESENT WORTH	**$3,191,000**

CM: construction management
EMNR: enhanced monitored natural recovery
PM: project management
SMA: sediment management area
TDCC: total direct construction cost

Developed for Purposes of Evaluation in the Feasibility Study
Likelihood of the Selection of Any Single Remedy Unknown

Appendix H - Table H-5
Remediation Alternative 5 Cost Estimate
Cap in SMA A+B
Devil's Swamp Lake

CAPITAL AND FIXED COSTS

Item	Quantity	Units	Unit Cost	Total Cost
Preconstruction Sampling				**$148,000**
1.01 Preconstruction Work Plan	1	Lump Sum	$25,000	$25,000
1.02 Preconstruction Sediment Sampling	1	Lump Sum	$90,000	$90,000
1.03 Preconstruction Hydraulic Monitoring	1	Lump Sum	$33,000	$33,000
			Total Preconstruction Costs	**$148,000**
General Construction				**$758,000**
2.01 Construction Management/On-Site Superintendent/Site Administration	1	Month	$68,000	$68,000
2.02 Mobilization Set Up, and Demobilization	1	Lump Sum	$450,000	$450,000
2.03 Health and Safety	1	Month	$32,000	$32,000
2.04 Set Up of Temporary Facilities	1	Staging Area	$35,000	$35,000
2.05 Temporary Facilities	1	Facility-Month	$20,000	$20,000
2.06 Breakdown Temporary Facilities	1	Staging Area	$35,000	$35,000
2.07 Install Access Road	7,000	Square Foot	$2.50	$17,500
2.08 Site Restoration	1	Staging Area	$100,000	$100,000
Construction Cost (Cap)				**$1,752,000**
3.01 Cap Sand Layer and Armor Layer Materials in Drainage Ditch (Delivered and Placed)	1,065	Cubic Yard	$71	$75,615
3.02 Cap Sand Layer and Armor Layer Materials in Remainder of SMAs (Delivered and Placed)	11,535	Cubic Yard	$141	$1,626,000
3.03 Periodic Soundings/GPS Tracking to Document Progress	1	Month	$50,000	$50,000
			Total Direct Construction Costs	**$2,510,000**
			Engineering, PM, & CM (15% of TDCC)	**$377,000**
			Contingency (15% of TDCC)	**$377,000**
			Capital and Fixed Costs TOTAL	**$3,412,000**

OPERATION AND MAINTENANCE COSTS

Item	Quantity	Units	Cost per Event	Total Cost
Long-Term Monitoring and Maintenance				**$730,000**
5.01 Bathymetric Survey and Reporting (Years 2, 5, and 10)	3	event	$70,000	$210,000
5.02 Cap Maintenance (Years 2, 5, and 10)	3	event	$60,000	$180,000
5.03 Fish Tissue Monitoring and Reporting (Years 5, 10, 15, and 20)	4	event	$70,000	$280,000
5.04 Support During Five-Year Review Periods (Years 5, 10, 15, and 20)	4	event	$15,000	$60,000
			Total Direct Monitoring Costs	**$730,000**
			Contingency (10% of Monitoring Costs)	**$73,000**
			Monitoring TOTAL	**$803,000**
			Present Worth Direct Monitoring Costs	**$430,000**
			Contingency (10% of Monitoring Costs)	**$43,000**
			Monitoring Present Worth	**$473,000**
			TOTAL	**$4,215,000**
			PRESENT WORTH	**$3,885,000**

CM: construction management
PM: project management
SMA: sediment management area
TDCC: total direct construction cost

Developed for Purposes of Evaluation in the Feasibility Study
Likelihood of the Selection of Any Single Remedy Unknown

Appendix H - Table H-6
Remediation Alternative Cost Estimate Assumptions
Devil's Swamp Lake

1	This opinion of probable cost was prepared using costs considered appropriate for typical operations. It is intended for use in comparing the relative cost of remediation alternatives. Actual costs may differ.
2	All preconstruction submittals are included in engineering/construction management costs.
3	All work will be timed to complete in one field season.
4	Material estimates for capping include required thickness with 10% increase to account for compaction and loss/waste of the lower most layers.
5	The following densities have been assumed: sand at 1.6 tons/cy, stone at 1.8 tons/cy.
6	EMNR and capping include a production rate of 320 cys per day for material placement.
7	EMNR and cap remedies assume the thin cover and/or cap material (pump sand) will be slurried in a mix tank, pumped by an in-line booster pump, and placed with a dredge barge.
8	Implementation of the remedial action will only require turbidity monitoring and no turbidity control. In addition, best management practices, such as operational controls and specialty equipment, will be used to limit suspended sediment.
9	No armor needed for EMNR. EMNR costs do not include the addition of amendments in the thin cover material.
10	Monitoring of the cap occurs at 2, 5 and 10 years. Long-term monitoring events for fish tissue for the capping remedy (Remediation Alternative 5) occur at 5, 10, 15, and 20 years.
11	The long-term monitoring duration spans 30 years for MNR and EMNR. Monitoring events occur at 2, 5, 10, 15, 20, and 30 years. Monitoring events assumed to include fish tissue monitoring and surface sediment monitoring.
12	As per EPA-540-R00-002 (A Guide to Developing and Documenting Cost Estimates During the Feasibility Study) and Office of Management and Budget (OMB), a 7% discount rate was applied to O&M costs for net present value calculations.

APPENDICES

Appendix J – State Fish Consumption Advisory for Devil's Swamp
Source: Louisiana Department of Health and Hospitals, Louisiana Department of Environmental Quality, and Louisiana Department of Wildlife & Fisheries

Bobby Jindal
GOVERNOR

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Wildlife & Fisheries
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The following fish consumption advisory was issued on 8/12/15 ***by the Department of Health & Hospitals, the Department of Environmental Quality, and the Department of Wildlife & Fisheries. For more information, please contact:***

DHH	DEQ	DWF
Shannon Soileau	**Keith Horn**	**Bobby Reed**
(888) 293-7020	**(225) 219-3793**	**(337) 488-3039**

ADVISORY FOR DEVIL'S SWAMP/BAYOU BATON ROUGE

In response to follow up sampling and analysis of finfish and crawfish, the Louisiana Department of Health & Hospitals (DHH), Department of Environmental Quality (DEQ), and Department of Wildlife & Fisheries (DWF) are updating the advisory for the Devil's Swamp/Bayou Baton Rouge Area (E. Baton Rouge Parish). The area of concern is bounded on the north by Hall Buck Marine Road, on the east by the bluffs and the Baton Rouge Barge Harbor and on the south and west by the Mississippi River.

DHH, DEQ and DWF advise the following:

- **DO NOT EAT FISH OR CRAWFISH FROM THIS AREA**

This update is based on limited sampling data from 2012-2013. Largemouth bass, channel catfish, crappie and bluegill samples from Devil's Swamp Lake and crawfish from swampy areas outside of the Lake were tested for hexachlorobenzene (HCB), hexachlorobutadiene (HCBD), polychlorinated biphenyls (PCBs), arsenic, lead and mercury. Unacceptable levels of PCBs and mercury were found in some species of finfish. Unacceptable levels of PCBs were also found in crawfish hepatopancreas (fat). This advisory supersedes a previous advisory issued for this area on 7/9/1993.

Due to historic water and sediment contamination that may continue to impact these water bodies, the agencies continue to advise the public not to swim nor participate in other primary water contact sports in the area of concern.

This advisory is issued as a precaution. Any further sampling data from this area will be evaluated to determine the need for modifications to the current recommendations. For more information regarding this advisory, contact the Department of Health and Hospitals at 1-888-293-7020. If you have questions or concerns about your health, please consult a physician.

Jimmy Guidry, M.D.
State Health Officer and Medical Director
Department of Health & Hospitals

J.T. Lane
Assistant Secretary, Office of Public Health
Department of Health & Hospitals

Kathy H. Kliebert
Secretary
Department of Health & Hospitals

Peggy M. Hatch
Secretary
Department of Environmental Quality

Robert J. Barham
Secretary
Department of Wildlife & Fisheries

APPENDICES

Appendix K – Tables

APPENDIX K
LIST OF TABLES

Table 1
Summary of Detailed Evaluation

Remedial Alternative	Evaluation Criterion						
	Overall Protection	**Compliance with ARARs**	**Long-Term Effectiveness**	**Reduction of TMV Through Treatment**	**Short-Term Effectiveness**	**Implementability**	**Cost Effectiveness**
1 No Action	Lowest. Risks from fish consumption exceed thresholds.	No. Does not meet the criterion.	Lowest.	No treatment.	No short term impacts.	No implementation would be associated.	No cost.
2 MNR in SMA A+B	Low. Reduced risks over time.	Time required uncertain.	Medium.	No treatment.	Low.	Readily implementable.	Lowest.
3 EMNR in SMA A+B	Medium. Immediately reduced exposure of fish to PCBs via the diet, would result in reduced risk to human health.	Yes.	Medium to High	No treatment. Amendments may be integrated with EMNR. Which would provide in situ treatment through the reduction of PCB bioavailability and toxicity.	Medium. EMNR and/or capping would involve Site access and equipment staging could harm wetland vegetation.	Implementable. Requires design and installation of a cover layer.	Medium.
4 Cap in Drainage Ditch and EMNR in SMA A+B	Medium. Similar to 3, with added measure of protection against remobilization	Yes.	High.	No treatment. Amendments may be integrated with EMNR. Which would provide in situ treatment through the reduction of PCB bioavailability and toxicity.	Medium to High. EMNR and/or capping would involve Site access and equipment staging could harm wetland vegetation.	Implementable. Requires design, installation of a cover layer, and selection of cap material	Medium to High.
5 Cap in SMA A+B	Similar to 4. Provides increase stability.	Yes.	High.	No treatment.	High. Similar to 4.	Implementable. Requires more complex design.	Highest.

TABLE 2
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS,
TO BE CONSIDERED

ARAR or TBC	Citation (If Available)	Description	Applicability
Chemical Specific			
Section 303 and 304 of the Clean Water Act and Louisiana Water Quality Standards.	Louisiana Administrative Code (LAC) Title 33, Part IX. Water Quality Chapter 11. Surface Water Quality Standards.	Section 303 of the CWA requires states to promulgate standards for the protection of water quality based on federal water quality criteria. Federal water quality criteria are established pursuant to Section 304.	Louisiana Surface Water Quality Standards are relevant to the evaluation of short-term and long-term effectiveness of the remedial alternatives.
Section 401 Water Quality Certification of the Clean Water Act as Administered by Louisiana.		During the construction, Section 401 requires that the applicant for federal permits obtain certification from the appropriate state agency that the action to be permitted will comply with state water quality standards.	Consultation with the LDEQ may be necessary to confirm that the final design of the selected alternative meets the substantive requirements of Section 401 of the CWA.
Location-Specific			
Clean Water Act, Section 404	33 USC § 1344 40 CFR Parts 230 and 231	Requires that no activity which adversely affects aquatic ecosystems, including wetlands, shall be permitted if a practicable alternative that has less adverse impacts is available. If there is no other practical alternative, impacts must be minimized.	Applicable during construction activities.
Endangered Species Act	16 USC § 1531 et. seq	Federal statute establishing programmatic protection for endangered and threatened species.	Applicable if threatened or endangered species are found onsite.
Executive Order No. 11988 Floodplains Management	42 Fed. Reg. 26951 (May 24, 1977)	Requires federal agencies to evaluate the potential effects of actions they may take in a floodplain to avoid adverse impacts in a floodplain.	Applicable because the site lies within a 100-year floodplain.

ARAR or TBC	Citation (If Available)	Description	Applicability
Executive Order No. 11990 Protection of Wetlands	42 Fed. Reg. 26961 (May 25, 1977)	Executive Order describes the circumstances where federal agencies should manage wetlands.	Applicable because the site lies within a 100-year floodplain and is a wetland.
National Flood Insurance – Federal Emergency Management Agency Operation Regulations and National Flood Insurance Program Regulations	42 USC § 4001 et seq; 42 USC § 4101	Prohibits alterations to river or floodplains that may increase potential for flooding.	Applicable if the potential for flooding is increased.
Fish and Wildlife Coordination Act	16 USC § 662 and 40 CFR 6.302	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 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	Applicable.
Migratory Bird Treaty Act	16 USC §§ 703-712 50 CFR 10.12	Requires continued consultation with the U.S. Fish and Wildlife Service during remedial design and remedial action activities to ensure that the cleanup of the site does not unnecessarily impact migratorv birds.	Establishes federal responsibility for the protection of international migratory bird resources
National Flood Insurance Program	42 USC § 4101 et. seq. 44 C.F.R Part 60	Prohibits alteration to river or floodplains that may increase potential for flooding.	Applicable because the site lies within a 1OO-year floodplain.
National Historic Preservation Act	16 USC § 470 et seq. 36 CFR Part 800	Proposed remedial actions must take into account effect on properties in or eligible for inclusion in the National Registry of Historic Places.	A Stage 1A cultural resource survey may be necessary for any active remediation to identify historic properties along the lakeshore to determine

ARAR or TBC	Citation (If Available)	Description	Applicability
			if any areas should be the subject of further consideration.
Bald and Golden Eagle Protection Act	16 USC § 668a-d	Makes it unlawful to take, import, export, possess, buy, sell, purchase, or barter any bald or golden eagle, nest, or egg.	Applicable if bald eagles or nest are observed in the swamp.
Action Specific			
Clean Water Act Section 404: Permits for dredged or fill material	33 USC § 1344	Section 404 of the Clean Water Act applies to dredging, in-water disposal, capping, construction of berms or levees, stream channelization, excavation and/or dewatering in navigable waters of the United States.	Applicable if remedial activities result in a discharge of a pollutant to navigable waters of the United States.
Clean Water Act Sections 303 and 304: Federal Water Quality Criteria	33 USC § 1313-14	Under § 303 (33 USC § 1313), individual states have established water quality standards to protect existing and attainable uses of surface water.	Applicable if remedial activities result in a discharge of a pollutant to navigable waters of the United States.
Occupational Safety and Health Act	29 CFR § 1904, 1910, and § 1926	Specifies minimum requirements to maintain worker health and safety during hazardous waste operations, including training and construction safety requirements.	Applicable.
Resource Conservation and Recovery Act (RCRA) Subchapter III: Hazardous Waste Management	42 USC §§ 6921 et. seq.; 40 C.F.R. Part 262	RCRA Subchapter III C and its implementing regulations regulate the management of hazardous wastes. 40 C.F.R. Part 262 regulates generators of hazardous wastes.	Applicable if waste materials generated during remedial activities contain RCRA listed hazardous wastes or exhibit a hazardous waste characteristic.
Toxic Substances Control Act PCB Regulations	15 USC § 2601 et. seq.; 40 C.F.R. Part 761	The Toxic Substances Control Act (TSCA) PCB regulations regulate PCBs from their manufacture to disposal.	Applicable if PCB remediation waste is generated during remedial activities.

ARAR or TBC	Citation (If Available)	Description	Applicability
Hazardous Materials Transportation Act	49 USC §§ 5101 et. seq.; 49 C.F.R. Parts 171-180	Standards for packaging, documenting and transporting hazardous materials.	Applicable if hazardous materials are transported off-site for treatment or disposal.
Noise Control Act	42 USC § 4901 et seq. (1972)	Noise abatement may be required.	Applicable if actions are identified as a public nuisance.
To Be Considered Criteria			
Protocol for Issuing Public Health Advisories for Chemical Contaminants in Recreationally Caught Fish and Shellfish	EPA has determined that this protocol is to be considered as part of the remedy selection process	Presents the state requirements specifically relevant to rescinding or modifying the current fish consumption advisory	Applicable since fishing activities take place at the Site
ARAR = applicable *or* relevant and appropriate requirement CFR = Code of Federal Regulations LAC = Louisiana Administrative Code TBCs = To Be Considered USC = United States Code			

APPENDICES

Appendix L – References

APPENDIX L
REFERENCES

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APPENDIX B

STATEMENT OF WORK

STATEMENT OF WORK

FOR THE REMEDIAL DESIGN AND REMEDIAL ACTION

DEVIL'S SWAMP LAKE SUPERFUND SITE

Baton Rouge City, East Baton Rouge Parish, State of Louisiana

EPA Region 6

TABLE OF CONTENTS

1. INTRODUCTION

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

1.2 Structure of the SOW

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

1.3 Scope of the Remedy. SDs shall complete the actions described in Section 1.4 and 2.12 of the Record of Decision (ROD) for the Devil's Swamp Lake Superfund Site (Site), including:

(a) Sediment capping to isolate underlying PCBs in drainage ditch sediment and to provide a clean sediment surface for habitat restoration;

(b) Application of Enhanced Monitored Natural Recovery in parts of the Sediment Management Areas A and B that are outside the drainage ditch;

(c) Long-term monitoring of sediment and biota;

(d) Maintenance of informational devices, as necessary, related to the state-issued fish consumption advisory; and

(e) Implementation of institutional controls.

1.4 The terms used in this SOW that are defined in CERCLA, in regulations promulgated under CERCLA, or in the Consent Decree (CD), have the meanings assigned to them in CERCLA, in such regulations, or in the CD, except that the term "Paragraph" or "¶" means a paragraph of the SOW, and the term "Section" means a section of the SOW, unless otherwise stated.

2. COMMUNITY INVOLVEMENT

2.1 Community Involvement Responsibilities

(a) EPA has the lead responsibility for developing and implementing community involvement activities at the Site. Previously, EPA developed a Community Involvement Plan (CIP) for the Site. Pursuant to 40 C.F.R. § 300.435(c), EPA shall review the existing CIP and determine whether it should be revised to describe further public involvement activities during the Work that are not already addressed or provided for in the existing CIP.

(b) If requested by EPA, SDs 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. SDs' 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 SDs' responsibilities for community involvement activities. All community involvement activities conducted by SDs at EPA's request are subject to EPA's oversight. Upon EPA's request, SDs shall establish a community information repository at or near the Site to house one copy of the administrative record.

(c) **SDs' CI Coordinator**. If requested by EPA, SDs shall, within 15 days, designate and notify EPA of SDs' Community Involvement Coordinator (SDs' CI Coordinator). SDs may hire a contractor for this purpose. SDs' notice must include the name, title, and qualifications of the SDs' CI Coordinator. SDs' CI Coordinator is responsible for providing support regarding EPA's community involvement activities, including coordinating with EPA's CI Coordinator regarding responses to the public's inquiries about the Site.

3. REMEDIAL DESIGN

3.1 RD Work Plan. SDs shall submit an RD Work Plan (RDWP) for EPA approval. The RDWP must include:

(a) Plans for implementing all RD activities identified in this SOW, in the RDWP, or required by EPA to be conducted to develop the RD;

(b) A description of the overall management strategy for performing the RD, including a proposal for phasing of design and construction, if applicable;

(c) A description of the proposed general approach to contracting, construction, operation, maintenance, and performance monitoring (construction, short-term, and long-term criteria) of the RA as necessary to implement the Work;

(d) A description of the responsibility and authority of all organizations and key personnel involved with the development of the RD;

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

(f) Description of any proposed pre-design investigation, e.g. surveying work to define topography and bathymetry, additional soil/sediment sampling to refine areas for remediation, evaluation of thin layer and armor capping material, evaluation of hydrological changes due to flooding in the swamp and the rerouting of Bayou Baton Rouge through the lake bed, and evaluation of the erosional effect of the rerouting, thus exposing deeper contaminants and creating additional areas that will require remediation;

(g) Description of any proposed treatability study; e.g., materials and amendment that may be integrated into the thin layer cover, thickens of the thin layer, cap material and armoring thickness;

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

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

(j) The following supporting deliverables described in ¶ 6.7 (Supporting Deliverables): Health and Safety Plan; and Emergency Response Plan.

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

3.3 **Pre-Design Investigation**. The purpose of the Pre-Design Investigation (PDI) is to address data gaps by conducting additional field investigations.

(a) **PDI Work Plan**. SDs shall submit a PDI Work Plan (PDIWP) 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;

(3) Cross references to quality assurance/quality control (QA/QC) requirements set forth in the Quality Assurance Project Plan (QAPP) as described in ¶ 6.7(d); and

(4) Means of obtaining baseline conditions for remedy performance monitoring, as necessary.

(b) Following the PDI, SDs shall submit a PDI Evaluation Report. This report must include:

(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;

(8) Conclusions and recommendations for either supplemental PDI or design parameters and criteria for the RD; and

(9) Recommendations on the need for any additional data collection based on the results of the PDI.

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

3.4 Treatability Study

(a) If EPA requires, SDs shall perform a Treatability Study (TS) for the purpose of identifying the thin sediment cover, sediment capping, and armoring materials; thickness to be used in the design; application methods; and amendments that may be integrated.

(b) SDs shall submit a TS Work Plan (TSWP) for EPA approval. SDs shall prepare the TSWP in accordance with EPA's *Guide for Conducting Treatability Studies under CERCLA, Final* (Oct. 1992), as supplemented for RD by the *Remedial Design/Remedial Action Handbook*, EPA 540/R-95/059 (June 1995).

(c) Following completion of the TS, SDs shall submit a TS Evaluation Report for EPA comment.

(d) EPA may require or the SDs may request to supplement the TS Evaluation Report and/or to perform additional treatability studies.

3.5 **Preliminary (30%) RD**. SDs shall submit a Preliminary (30%) RD 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 ¶ 7.3 (RA Schedule); and

(h) Updates of all supporting deliverables required to accompany the RDWP and the following additional supporting deliverables described in ¶ 6.7 (Supporting Deliverables): Field Sampling Plan; Quality Assurance Project Plan; Site Wide Long-term (Effectiveness) Monitoring Plan; Construction Quality Assurance/Quality Control Plan; O&M Plan; O&M Manual; and Institutional Controls Implementation and Assurance Plan.

3.6 **Intermediate (60%) RD**. SDs shall submit the Intermediate (60%) RD for EPA's comment. The Intermediate RD must: (a) be a continuation and expansion of the Preliminary RD; (b) address EPA's comments regarding the Preliminary RD; and (c) include the same elements as are required for the Preliminary (30%) RD.

3.7 **Pre-Final (95%) RD**. SDs shall submit the Pre-final (95%) RD 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 Intermediate 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, 2020 edition;

(b) A survey and engineering drawings showing existing Site 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/Intermediate RD;

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

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

3.8 **Final (100%) RD**. SDs shall submit the Final (100%) RD 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.

4. REMEDIAL ACTION

4.1 **RA Work Plan**. SDs shall submit a RA Work Plan (RAWP) for EPA approval that includes:

(a) A proposed RA Construction Schedule using a Gantt chart;

(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.

4.2 **Independent Quality Assurance Team**. SDs shall notify EPA of SDs' designated Independent Quality Assurance Team (IQAT). The IQAT will be independent of the Supervising Contractor. SDs may hire a third party for this purpose. SDs' notice must include the names, titles, contact information, and qualifications of the members of the IQAT. The IQAT will have the responsibility to determine whether Work is of expected quality and conforms to applicable plans and specifications. The IQAT will have the responsibilities as described in ¶ 2.1.3 of the *Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties*, EPA/540/G-90/001 (Apr. 1990).

4.3 **Meetings and Inspections**

(a) **Preconstruction Conference**. SDs 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). SDs 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), beginning upon contractor mobilization to the Site during the RA and concluding upon contractor de-mobilization from the Site, SDs shall meet regularly with EPA, either in person or virtually, and others as directed or determined by EPA, to discuss construction issues. SDs shall distribute an agenda and list of attendees

to all Parties prior to each meeting. SDs shall prepare minutes of the meetings and shall distribute the minutes to all Parties.

(c) **Inspections**

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

(2) Upon notification by EPA of any deficiencies in the RA Construction, SDs 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, SDs shall comply with any schedule provided by EPA in its notice of deficiency.

4.4 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 ¶ 4.4(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 ¶ 4.4(a) and ¶ 4.4(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 6 (if neither EPA Project Coordinator is available).

(d) For any event covered by ¶ 4.4(a) and ¶ 4.4(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 ¶ 4.4 are in addition to the reporting required by CERCLA § 103 or EPCRA § 304.

4.5 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.

4.6 Certification of RA Completion

(a) **RA Completion Inspection**. The RA is "Complete" for purposes of this ¶ 4.6 when it has been fully performed and the Performance Standards have been achieved. SDs shall schedule an inspection for the purpose of obtaining EPA's Certification of RA Completion. The inspection must be attended by SDs and EPA and/or their representatives.

(b) **RA Report**. Following the inspection, SDs shall submit a RA Report to EPA requesting EPA's Certification of RA Completion. The report must: (1) include certifications by a registered professional engineer and by SD's Project

Coordinator that the RA is complete; (2) include as-built drawings signed and stamped by a registered professional engineer; (3) be prepared in accordance with Chapter 2 (Remedial Action Completion) of EPA's *Close Out Procedures for NPL Sites* guidance (May 2011), as supplemented by *Guidance for Management of Superfund Remedies in Post Construction*, OLEM 9200.3-105 (Feb. 2017); (4) contain monitoring data to demonstrate that Performance Standards have been achieved; and (5) be certified in accordance with ¶ 6.5 (Certification).

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

(d) If EPA concludes, based on the initial or any subsequent RA Report requesting Certification of RA Completion, that the RA is Complete, EPA shall so certify to SDs. This certification will constitute the Certification of RA Completion for purposes of the CD, including Section XIV of the CD (Covenants by Plaintiff). Certification of RA Completion will not affect SDs' remaining obligations under the CD.

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

4.8 Certification of Work Completion

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

(b) **Work Completion Report**. Following the inspection, SDs shall submit a report to EPA requesting EPA's Certification of Work Completion. The report must: (1) include certifications by a registered professional engineer and by SDs' Project Coordinator that the Work, including all O&M activities, is complete; and (2) be certified in accordance with ¶ 6.5 (Certification). If the RA Report submitted under ¶ 4.6(b) includes all elements required under this ¶ 4.8(b), then the RA Report suffices to satisfy all requirements under this ¶ 4.8(b).

(c) If EPA concludes that the Work is not complete, EPA shall so notify SDs. EPA's notice must include a description of the activities that SDs must perform to complete the Work. EPA's notice must include specifications and a schedule for such activities or must require SDs to submit specifications and a schedule for

EPA approval. SDs shall perform all activities described in the notice or in the EPA-approved specifications and schedule.

(d) If EPA concludes, based on the initial or any subsequent report requesting Certification of Work Completion, that the Work is complete, EPA shall so certify in writing to SDs. Issuance of the Certification of Work Completion does not affect the following continuing obligations: (1) activities under the Periodic Review Support Plan; (2) obligations under Sections VIII (Property Requirements), XVIII (Retention of Records), and XVII (Access to Information) of the CD; (3) Institutional Controls obligations as provided in the Institutional Controls Implementation and Assurance Plan (ICIAP); (4) implementing further studies in support of EPA's Five-Year Reviews; (5) conducting periodic long-term performance monitoring activities of sediment and biota to verify the reduction of PCB concentrations in sediment and fish and/or invertebrates; and (6) reimbursement of EPA's Future Response Costs under Section X (Payments for Response Costs) of the CD.

5. REPORTING

5.1 **Progress Reports**. Commencing with the month following lodging of the CD and until EPA approves the RA Completion, SDs shall submit progress reports to EPA via electronic mail or another mutually agreed upon format on a monthly basis, except during field construction when progress reports will be submitted on a weekly 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 SDs;

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

(d) A description of all activities relating to RA Construction that are scheduled for the upcoming two weeks;

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

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

(g) A description of all activities undertaken in support of the Community Involvement Plan (CIP) during the reporting period and those to be undertaken in the upcoming two weeks.

5.2 **Notice of Progress Report Schedule Changes**. If the schedule for any activity described in the Progress Reports, including activities required to be described under ¶ 5.1(d), changes, SDs shall notify EPA of such change at least seven days before performance of the activity.

6. DELIVERABLES

6.1 **Applicability**. SDs shall submit deliverables for EPA approval or for EPA comment as specified in the SOW. If neither is specified, the deliverable does not require EPA's approval or comment. Paragraphs 6.2 (In Writing) through 6.4 (Technical Specifications) apply to all deliverables. Paragraph 6.5 (Certification) applies to any deliverable that is required to be certified. Paragraph 6.6 (Approval of Deliverables) applies to any deliverable that is required to be submitted for EPA approval.

6.2 **In Writing**. As provided in ¶ 88 of the CD, all deliverables under this SOW must be in writing in electronic form unless otherwise specified.

6.3 **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 ¶ 6.4. All other deliverables shall be submitted to EPA in the electronic form specified by the EPA Project Coordinator. If any deliverable includes maps, drawings, or other exhibits that are larger than 8.5" by 11", SDs shall also provide EPA with paper copies of such exhibits.

6.4 **Technical Specifications**

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

(b) Spatial data, including spatially-referenced data and geospatial data, should be submitted: (1) in the ESRI File Geodatabase format; and (2) as unprojected geographic coordinates in decimal degree format using North American Datum 1983 (NAD83) or World Geodetic System 1984 (WGS84) as the datum. If applicable, submissions should include the collection method(s). Projected coordinates may optionally be included but must be documented. Spatial data should be accompanied by metadata, and such metadata should be compliant with the Federal Geographic Data Committee (FGDC) Content Standard for Digital Geospatial Metadata and its EPA profile, the EPA Geospatial Metadata Technical Specification. An add-on metadata editor for ESRI software, the EPA Metadata Editor (EME), complies with these FGDC and EPA metadata requirements and is available at https://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 SDs does not, and is not intended to, define the boundaries of the Site.

6.5 **Certification**. All deliverables that require compliance with this ¶ 6.5 must be signed by the SDs' Project Coordinator, or other responsible official of SDs, 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.

6.6 **Approval of Deliverables**

(a) **Initial Submissions**

(1) After review of any deliverable that is required to be submitted for EPA approval under the CD or the SOW, EPA shall: (i) approve, in whole or in part, the submission; (ii) approve the submission upon specified conditions; (iii) disapprove, in whole or in part, the submission; or (iv) any combination of the foregoing.

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

(b) **Resubmissions**. Upon receipt of a notice of disapproval under ¶ 6.6(a) (Initial Submissions), or if required by a notice of approval upon specified conditions under ¶ 6.6(a), SDs 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 SDs to correct the deficiencies; or (5) any combination of the foregoing.

(c) **Implementation**. Upon approval, approval upon conditions, or modification by EPA under ¶ 6.6(a) (Initial Submissions) or ¶ 6.6(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) SDs 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 ¶ 6.6(a) or ¶ 6.6(b) does not relieve SDs of any liability for stipulated penalties under Section XIII (Stipulated Penalties) of the CD.

6.7 **Supporting Deliverables**. SDs shall submit each of the following supporting deliverables for EPA approval, except as specifically provided. SDs shall develop the deliverables in accordance with all applicable regulations, guidances, and policies (see Section 9 (References)). SDs 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. SDs shall develop the HASP in accordance with EPA's Emergency Responder Health and Safety and Occupational Safety and Health Administration (OSHA) requirements under 29 C.F.R. §§ 1910 and 1926. The HASP should cover RD activities and should be, as appropriate, updated to cover activities during the RA and updated to cover activities after RA completion. EPA does not approve the HASP, but will review it to ensure that all necessary elements are included and that the plan provides for the protection of human health and the environment.

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

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

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

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

(4) Notification activities in accordance with ¶ 4.4(b) (Release Reporting) in the event of a release of hazardous substances requiring reporting under Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community Right-to-know Act (EPCRA), 42 U.S.C. § 11004; and

(5) A description of all necessary actions to ensure compliance with ¶ 11 (Emergencies and Releases) of the CD in the event of an occurrence

during the performance of the Work that causes or threatens a release of Waste Material from the Site that constitutes an emergency or may present an immediate threat to public health or welfare or the environment.

(c) **Field Sampling Plan**. 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. SDs 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 SDs' quality assurance, quality control, and chain of custody procedures for all treatability, design, compliance, and monitoring samples. SDs 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(s), have reasonable access to laboratories used by SDs in implementing the CD (SDs' Labs);

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

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

(5) For SDs to provide EPA and the State with notice at least 15 days prior to any sample collection activity;

(6) For SDs 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 SDs, upon request, split samples and/or duplicate samples in connection with EPA's and the State's oversight sampling; and

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

(e) **Site Wide Monitoring Plan**. The purpose of the Site Wide Monitoring Plan (SWMP) is to obtain baseline information regarding the extent of contamination in affected media at the Site; to obtain information, through short- and long- term monitoring, about the movement of and changes in contamination throughout the Site, before and during implementation of the RA; to obtain information regarding contamination levels to determine whether Performance Standards (PS) are achieved; and to obtain information to determine whether to perform additional actions, including further Site monitoring. The SWMP must include:

(1) Description of the environmental media to be monitored;

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

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

(4) Description of verification sampling procedures, if requested by EPA;

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

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

(f) **Construction Quality Assurance/Quality Control Plan (CQA/QCP)**. The purpose of the Construction Quality Assurance Plan (CQAP) is to describe planned and systemic activities that provide confidence that the RA construction will satisfy all plans, specifications, and related requirements, including quality objectives. The purpose of the Construction Quality Control Plan (CQCP) is to describe the activities to verify that RA construction has satisfied all plans,

specifications, and related requirements, including quality objectives. The CQA/QCP must:

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

(2) Describe the PS required to be met to achieve Completion of the RA;

(3) Describe the activities to be performed: (i) to provide confidence that PS will be met; and (ii) to determine whether PS have been met;

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

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

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

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

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

(g) **O&M Plan**. The O&M Plan describes the requirements for inspecting, operating, and maintaining the RA. SDs 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 PS required to be met to implement the ROD;

(2) Description of activities to be performed: (i) to provide confidence that PS will be met; and (ii) to determine whether PS have been met;

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

(4) Description of corrective action in case of systems failure, including: (i) alternative procedures to prevent the release or threatened release of Waste Material which may endanger public health and the environment or may cause a failure to achieve PS; (ii) analysis of vulnerability and additional resource requirements should a failure occur; (iii) notification

and reporting requirements should O&M systems fail or be in danger of imminent failure; and (iv) community notification requirements; and

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

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

(i) **Institutional Controls Implementation and Assurance Plan**. The ICIAP describes plans to implement, maintain, and enforce the Institutional Controls (ICs) at the Site. SDs 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.

7. SCHEDULES

7.1 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. SDs 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.

7.2 RD Schedule

	Description of Deliverable, Task	**¶ Ref.**	**Deadline**
1	Remedial Design Work Plan (RDWP) Draft and Final	3.1	60 days after EPA's Authorization to Proceed regarding Supervising Contractor under CD (¶ 9.c)
2	Pre-Design Investigation Work Plan (PDIWP) Draft and Final	3.3(a)	60 days after EPA's Approval of the RDWP
2a	Supporting Deliverables as related to Pre-Design Work, including but not limited to Health and Safety Plan; Emergency Response Plan; Field Sampling Plan; Quality Assurance Project Plan	6.7(a) through 6.7(d)	60 days after EPA's Approval of the RDWP
3	Treatability Study Work Plan (TSWP) and Treatability Study Evaluation Report Drafts and Finals	3.4	60 days after EPA approval of Final PDI Evaluation Report
3a	Supporting Deliverables as related to Treatability Work, including but not limited to Health and Safety Plan; Emergency Response Plan; Field Sampling Plan; Quality Assurance Project Plan; Construction Quality Assurance/Quality Control Plan	6.7(a) through 6.7(d); and 6.7(f)	60 days after EPA approval of Final PDI Evaluation Report
4	Preliminary (30%) RD	3.5, 3.3(a)	60 days after EPA approval of Final Treatability Study Evaluation Report
5	Intermediate (60%) RD	3.6	60 days after the SD's receipt of EPA comments on Preliminary RD
6	Pre-final (90/95%) RD	3.7	60 days after the SD's receipt of EPA comments on Intermediate RD
7	Final (100%) RD	3.8	60 days after the SD's receipt of EPA comments on Pre-final RD

7.3 RA Schedule

	Description of Deliverable / Task	¶ Ref.	Deadline
1	Award RA contract		30 days after EPA Notice of Authorization to Proceed with RA
2	RA Work Plan	4.1	45 days after EPA Notice of Authorization to Proceed with RA
2a	Supporting Deliverables as related to Remedial Action Work, including but not limited to Health and Safety Plan; Emergency Response Plan; Field Sampling Plan; Quality Assurance Project Plan; Site Wide Monitoring; Construction Quality Assurance/Quality Control Plan; O&M Plan; O&M Manual; Institutional Controls Implementation and Assurance Plan	6.7(a) through 6.7(i)	45 days after EPA Notice of Authorization to Proceed with RA
3	Designate IQAT	4.2	30 days following Approval of RAWP
4	Preconstruction Conference	4.3(a)	15 days prior to RA Construction
5	Start of Construction		As specified in RAWP
6	Completion of Construction		As specified in RAWP
7	Final Inspection		60 days after SDs notify EPA, in a separate writing, of RA Completion
8	RA Report	4.6(b)	30 days after Final Inspection
8a	Supporting Deliverables as related to Post-Remedial Action Work and Monitoring, including but not limited to Long-term Site-wide Monitoring; O&M Plan; O&M Manual; Institutional Controls Implementation and Assurance Plan	6.7(a) through 6.7(i)	30 days after Final Inspection
9	Work Completion Report	4.8(b)	As determined by EPA
10	Periodic Review Support Plan	4.7	Four years after Start of RA Construction

8. STATE PARTICIPATION

8.1 **Copies**. SDs 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 SDs, send a copy of such document to the State.

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

(a) Any EPA approval or disapproval under ¶ 6.6 (Approval of Deliverables) of any deliverables that are required to be submitted for EPA approval; and

(b) Any disapproval of, or Certification of RA Completion under ¶ 4.6 (Certification of RA Completion), and any disapproval of, or Certification of Work Completion under ¶ 4.8 (Certification of Work Completion).

9. REFERENCES

9.1 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 ¶ 9.2:

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

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

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

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

(e) Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties, OSWER 9355.5-01, EPA/540/G-90/001 (Apr. 1990).

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

(g) Guide to Management of Investigation-Derived Wastes, OSWER 9345.303FS (Jan. 1992).

(h) Permits and Permit Equivalency Processes for CERCLA On-Site Response Actions, OSWER 9355.703 (Feb. 1992).

(i) Guidance for Conducting Treatability Studies under CERCLA, OSWER 9380.3-10, EPA/540/R92/071A (Nov. 1992).

(j) National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, 40 C.F.R. Part 300 (Oct. 1994).

(k) Guidance for Scoping the Remedial Design, OSWER 9355.0-43, EPA/540/R-95/025 (Mar. 1995).

(l) Remedial Design/Remedial Action Handbook, OSWER 9355.0-04B, EPA/540/R-95/059 (June 1995).

(m) EPA Guidance for Data Quality Assessment, Practical Methods for Data Analysis, QA/G-9, EPA/600/R-96/084 (July 2000).

(n) Comprehensive Five-year Review Guidance, OSWER 9355.7-03B-P, 540-R-01-007 (June 2001).

(o) Guidance for Quality Assurance Project Plans, QA/G-5, EPA/240/R02/009 (Dec. 2002).

(p) Institutional Controls: Third Party Beneficiary Rights in Proprietary Controls (Apr. 2004).

(q) Quality management systems for environmental information and technology programs -- Requirements with guidance for use, ASQ/ANSI E4:2014 (American Society for Quality, February 2014).

(r) Uniform Federal Policy for Quality Assurance Project Plans, Parts 1-3, EPA/505/B-04/900A though 900C (Mar. 2005).

(s) Superfund Community Involvement Handbook, SEMS 100000070 (January 2016), https://www.epa.gov/superfund/community-involvement-tools-and-resources.

(t) EPA Guidance on Systematic Planning Using the Data Quality Objectives Process, QA/G-4, EPA/240/B-06/001 (Feb. 2006).

(u) EPA Requirements for Quality Assurance Project Plans, QA/R-5, EPA/240/B-01/003 (Mar. 2001, reissued May 2006).

(v) EPA Requirements for Quality Management Plans, QA/R-2, EPA/240/B-01/002 (Mar. 2001, reissued May 2006).

(w) USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, ILM05.4 (Dec. 2006).

(x) USEPA Contract Laboratory Program Statement of Work for Organic Analysis, SOM01.2 (amended Apr. 2007).

(y) 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/sites/default/files/2014-08/documents/national_geospatial_data_policy_0.pdf.

(z) Summary of Key Existing EPA CERCLA Policies for Groundwater Restoration, OSWER 9283.1-33 (June 2009).

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

(bb) Providing Communities with Opportunities for Independent Technical Assistance in Superfund Settlements, Interim (Sep. 2009).

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

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

(ee) Groundwater Road Map: Recommended Process for Restoring Contaminated Groundwater at Superfund Sites, OSWER 9283.1-34 (July 2011).

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

(gg) Construction Specifications Institute's MasterFormat, available from https://www.csiresources.org/home.

(hh) Updated Superfund Response and Settlement Approach for Sites Using the Superfund Alternative Approach, OSWER 9200.2125 (Sep. 2012).

(ii) Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites, OSWER 9355.0-89, EPA/540/R-09/001 (Dec. 2012).

(jj) Institutional Controls: A Guide to Preparing Institutional Controls Implementation and Assurance Plans at Contaminated Sites, OSWER 9200.0-77, EPA/540/R-09/02 (Dec. 2012).

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

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

(mm) Guidance for Evaluating Completion of Groundwater Restoration Remedial Actions, OSWER 9355.0-129 (Nov. 2013).

(nn) Groundwater Remedy Completion Strategy: Moving Forward with the End in Mind, OSWER 9200.2-144 (May 2014).

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

9.2 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

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

APPENDIX C

MAPS OF THE SITE

0 0.1 0.2 0.3 0.4 0.5
Miles

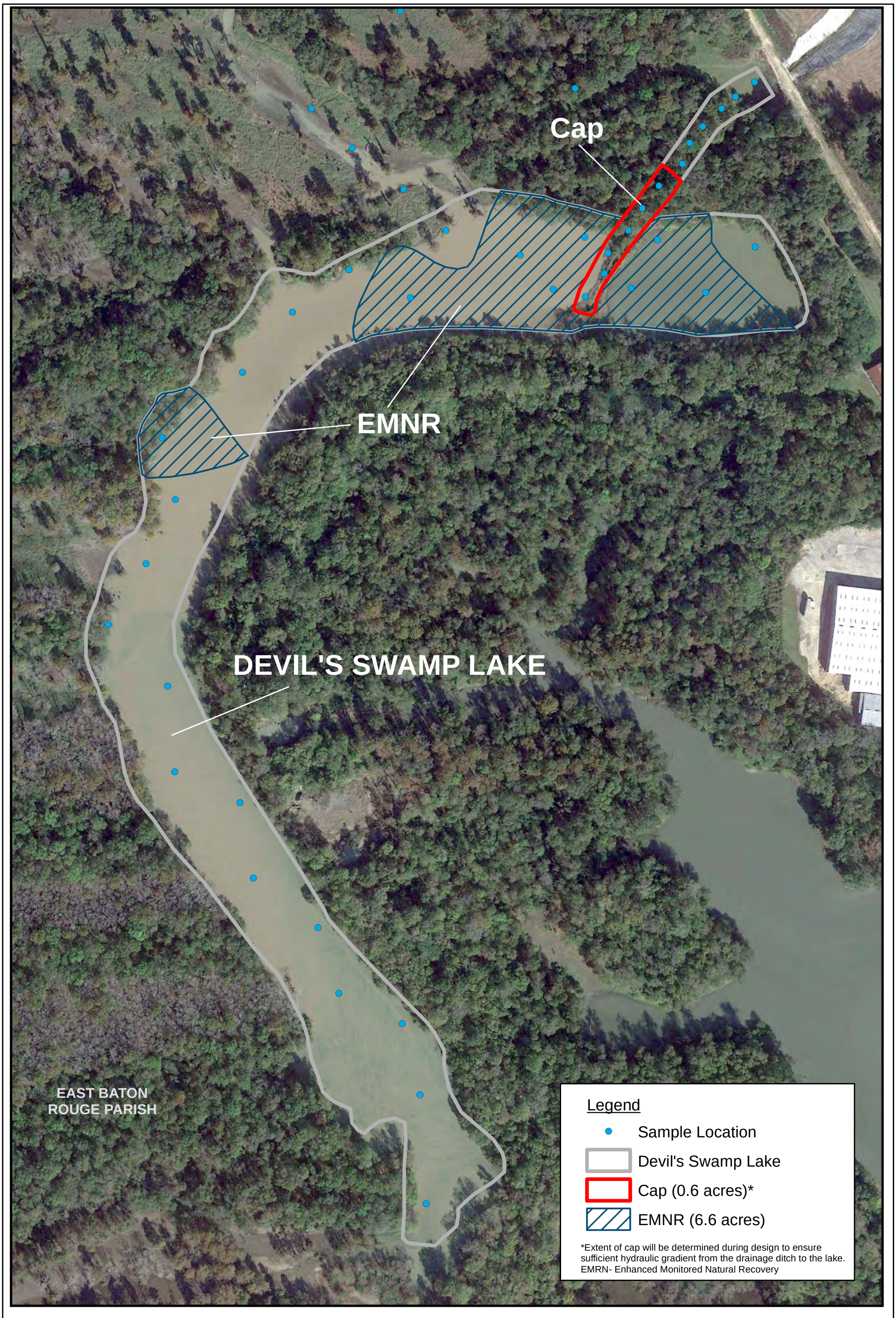
EPA Region 6
Superfund
GIS Support
10/7/2019

20191007ML03

ROD Figure 1 - Vicinity Map

Devil's Swamp Lake Superfund Site

Sources: Esri/World Topo Map;
Ramboll Environ 3/24/2017;
EPA Region 6 Superfund 10/4/2019.



0 100 200 300
Feet

EPA Region 6
Superfund
06/28/2019

20190628ML01

Figure 16 - Selected Remedy, Alternative 4

Cap in Drainage Ditch and Enhanced Monitored Natural Recovery (EMNR in SMA A+B)

Devil's Swamp Lake Site

Baton Rouge Disposal, LLC, Baton Rouge, Louisiana

Sources: Google Earth 11/2017;
Ramboll Environ 3/24/2017;
EPA Region 6 Superfund 6/28/2019.