

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF SOUTH CAROLINA
SPARTANBURG DIVISION

UNITED STATES OF AMERICA, <p style="text-align: center;">Plaintiff,</p> <p style="text-align: center;">v.</p> VIGINDUSTRIES INC., <p style="text-align: center;">Defendant.</p>	x	Civil Action No. 7:16-cv-00721-MGL
	x	

NOTICE OF LODGING OF PROPOSED CONSENT DECREE

Plaintiff, the United States of America, on behalf of the U.S. Environmental Protection Agency (EPA), hereby lodges with this Court the accompanying proposed consent decree in the above-captioned action (“Consent Decree”). No action is required by the Court at this time.

Final approval of the Consent Decree by the United States is contingent upon the review of public comment. Pursuant to Section 122(d)(2) of CERCLA, 42 U.S.C. § 9622(d)(2), 28 C.F.R. § 50.7, and Paragraph 95 of the proposed Consent Decree, the public will have thirty (30) days in which to submit comments to the United States on the Consent Decree. The 30-day period will begin on the date that notice of the lodging of the Consent Decree is published in the Federal Register. After the public comment period has expired, the United States will inform the Court of any public comments received. If, after reviewing the public comments, the United States concludes that the Consent Decree should be entered, the United States will seek its entry as a final order of the Court.

WHEREFORE, the United States respectfully requests that this Court receive the proposed Consent Decree for lodging only, and that it abstain from acting upon the same until the 30-day public comment period has expired and the United States advises the Court

whether, after evaluation of any comments received from the public, the United States supports entry of the Consent Decree.

Respectfully submitted this 7th day of March, 2016.

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UNITED STATES DISTRICT COURT
DISTRICT OF SOUTH CAROLINA
SPARTANBURG DIVISION

UNITED STATES OF AMERICA	x
Plaintiff,	
v.	Civil Action No. <u>7:16-cv-00721-MGL</u>
VIGINDUSTRIES INC.	
Defendant.	x

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 (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 International Mineral and Chemical Fertilizer Superfund Site in Spartanburg, South Carolina ("Site"), together with accrued interest, and (2) performance of response actions by defendant, Vigindustries Inc., 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 South Carolina (the "State") on March 26, 2015, 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. The defendant that has entered into this CD ("Settling Defendant") does not admit any liability to Plaintiff arising out of the transactions or occurrences alleged in this CD, nor does it acknowledge that the release or threatened release of hazardous substances at or from the Site constitutes an imminent and substantial endangerment to the public.

E. Settling Defendant entered into an Administrative Order by Consent (AOC) on July 10, 2001, which provided for a Focused Removal Action and a Remedial Investigation and Feasibility Study (RI/FS) at the Site pursuant to 40 C.F.R. § 300.430.

F. The Focused Removal Action activities were conducted between July and December 2002. Settling Defendant completed a Remedial Investigation (RI) Report on May 24, 2007, and a Feasibility Study (FS) Report on February 14, 2008. Among the remedies proposed in the FS, the preferred alternative was a removal action to address areas with the most significant soil contamination, followed by groundwater monitoring.

G. On October 3, 2009, Settling Defendant entered into an Administrative Settlement Agreement and Order on Consent for the removal action. The removal action was initiated in June 2010 and completed in April 2011 and consisted of excavation and offsite disposal of contaminated soils, placement of a neutralizing agent in the bottom of the excavation, and backfilling to grade. Groundwater monitoring conducted as part of the removal action revealed remaining groundwater contamination.

H. On May 1, 2014, Settling Defendant submitted a Focused FS setting out a series of proposed remedies to address the remaining groundwater contamination. The remedies were submitted for public comment in a proposed plan dated June 1, 2014. Notice of the proposed plan was published on June 10, 2014, in accordance with Section 117(b) of CERCLA, 42 U.S.C. § 9617(b). A public meeting was held on June 26, 2014. A copy of the transcript of the public

meeting is available to the public as part of the administrative record upon which the Regional Administrator, EPA Region 4, 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 25, 2014, 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 transcript of the public meeting. Notice of the final plan was published on March 27, 2015, in accordance with Section 117(b) of CERCLA, 42 U.S.C. § 9617(b). The main components of the selected remedy are infiltration galleries and institutional controls. The infiltration galleries consist of perforated piping installed below grade that is periodically dosed with a neutralizing agent to treat acidic soils. The selected remedy includes eight quarterly infiltration events within the affected soil area. The institutional controls for site-wide groundwater restrictions will be designed to prevent the use of groundwater until the constituent concentrations in groundwater reach remediation goals.

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

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 Settling Defendant 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 Settling Defendant. Solely for the purposes of this CD and the underlying complaint, Settling Defendant waives all objections and defenses that it may have to the jurisdiction of the Court or to venue in this District. Settling Defendant 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 Settling Defendant and their successors, and assigns. Any change in ownership or corporate or other legal status of Settling Defendant including, but not limited to, any transfer of assets or real or personal property, shall in no way alter Settling Defendant's responsibilities under this CD.

3. Settling Defendant shall provide a copy of this CD to each contractor hired to perform the Work and to each employee or agent of Settling Defendant representing Settling Defendant 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. Settling Defendant or its contractors shall provide written notice of the CD to all subcontractors hired to perform any portion of the Work. Settling Defendant 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 Settling Defendant 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 (ICs) are needed to implement the Remedial Action.

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

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

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

"DHEC" shall mean the South Carolina Department of Health and Environmental Control and any successor departments or agencies of the State.

"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.

"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)), ¶ 29 (Access to Financial Assurance), Section VII (Remedy Review), Section VIII (Property Requirements) (including the cost of attorney time and any monies paid to secure access and to secure, implement, monitor, maintain, or enforce Institutional Controls including the amount of just compensation), and Section XIII (Dispute Resolution), and all litigation costs. Future Response Costs shall also include all Interim Response Costs and all Interest on those Past Response Costs that Settling Defendant has agreed to pay under this Consent Decree that has accrued pursuant to 42 U.S.C. § 9607(a) during the period from July 10, 2015 to the Effective Date.

"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 July 10, 2015 and the Effective Date, or (b) incurred prior to the Effective Date but paid after that 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.

"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 <http://www.epa.gov/ocfopage/finstatement/superfundlint rate.htm>.

"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.

"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.

"Owner" shall mean Settling Defendant. The clause "Owner's Affected Property" means the Affected Property owned and controlled by Settling Defendant.

"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 Settling Defendant.

"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 July 10, 2015, plus Interest on all such costs that has accrued pursuant to 42 U.S.C. § 9607(a) through the Effective Date.

"Performance Standards" 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, 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 25, 2014, by the Regional Administrator, EPA Region 4 or his/her delegate, and all attachments thereto. The ROD is attached as Appendix A.

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

"Remedial Design" or "RD" shall mean those activities to be undertaken by Settling Defendant 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.

"Settling Defendant" shall mean Vigindustries Inc. and its successors and assigns, for itself and on behalf of the following entities: (1) The Vigoro Corporation ("Vigoro"), but only to the extent that Vigoro's liability with respect to the Site is based on its status as the parent company of Vigindustries Inc. and not to the extent that Vigoro's liability arose independently of such status; and (2) Mosaic Global Holdings Inc. ("Mosaic"), but only to the extent that Mosaic's liability with respect to the Site is based on its status as (a) the successor to IMC Global, Inc., International Minerals and Chemical Corporation, or IMC Fertilizer Group – Rainbow Division, (b) the parent company of Vigoro, or (c) the indirect parent company of Vigindustries Inc., and not to the extent that Mosaic's liability arose independently of such status.

"Site" shall mean the International Mineral and Chemical Fertilizer Superfund Site, encompassing approximately 40 acres, located at 515 North Street Extension in Spartanburg, Spartanburg County, South Carolina, and depicted generally on the map attached as Appendix C.

"State" shall mean the State of South Carolina.

"Statement of Work" or "SOW" shall mean the document describing the activities Settling Defendant 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 Settling Defendant 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); (3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27); and (4) any "hazardous waste" or "hazardous substance" as defined under South Carolina Code Title 44, Chapter 56.

"Work" shall mean all activities and obligations Settling Defendant is required to perform under this CD, except the activities required under Section XIX (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 Settling Defendant, to pay Past Response Costs and any Future Response Costs of the Plaintiff, and to resolve the claims of the Plaintiff against Settling Defendant as provided in this CD.

6. **Commitments by Settling Defendant.** Settling Defendant shall finance and perform the Work in accordance with this CD and all deliverables developed by Settling Defendant and approved or modified by EPA pursuant to this CD. Settling Defendant shall pay the United States for its Past Response Costs and any Future Response Costs as provided in this CD.

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

b. Settling Defendant may seek relief under the provisions of Section XII (Force Majeure) for any delay in the performance of the Work resulting from a failure to obtain, or a delay in obtaining, any permit or approval referenced in ¶ 8.a and required for the Work, provided that 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) Settling Defendant's Project Coordinator must have sufficient technical expertise to coordinate the Work. Settling Defendant's Project Coordinator may not be an attorney representing Settling Defendant in this matter and may not act as the Supervising Contractor. Settling Defendant's Project Coordinator may assign other representatives, including other contractors, to assist in coordinating the Work.

(2) EPA shall designate and notify Settling Defendant of its Project Coordinator and Alternate Project Coordinator. EPA may designate other representatives, which may include its employees, contractors and consultants, to oversee the Work. EPA's Project Coordinator/Alternate Project Coordinator will have the same authority as a remedial project manager 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) Settling Defendant's Project Coordinators shall meet with EPA's Project Coordinators on a mutually agreed upon schedule or as necessary, as determined by EPA.

b. **Supervising Contractor.** Settling Defendant's proposed Supervising Contractor must have 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) Settling Defendant shall designate, and notify EPA, within 10 days after the Effective Date, the name, contact information, and qualifications of the Settling Defendant's proposed Project Coordinator and Supervising Contractor.

(2) EPA, after a reasonable opportunity for review and comment by the State, shall issue notices of disapproval or authorizations to proceed regarding the proposed Project Coordinator and Supervising Contractor, as applicable. If EPA issues a notice of disapproval, Settling Defendant 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. Settling Defendant may select any coordinator/contractor covered by an authorization to proceed and shall, within 21 days, notify EPA of Settling Defendant's selection.

(3) Settling Defendant 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. Settling Defendant 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. Settling Defendant shall comply with the emergency and release response and reporting requirements under ¶ 4.3 (Emergency Response and Reporting) of the SOW. Subject to Section XV (Covenants by Plaintiff), nothing in this CD, including ¶ 4.3 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 Settling Defendant's failure to take appropriate response action under ¶ 4.3 of the SOW, EPA takes such action instead, Settling Defendant shall reimburse EPA under Section X (Payments for Response Costs) for all costs of the response action.

12. Community Involvement. If requested by EPA, Settling Defendant shall conduct community involvement activities under EPA's oversight as provided for in, and in accordance with, the SOW. Such activities may include, but are not limited to, designation of a Community Involvement Coordinator and implementation of a technical assistance plan. Costs

incurred by the United States 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 activities specified in the SOW and/or in deliverables developed under the SOW in order to achieve 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 Settling Defendant of such modification. If Settling Defendant objects to the modification, it may, within 30 days after EPA's notification, seek dispute resolution under Section XIII.

b. The SOW and/or related work plans shall be modified: (1) in accordance with the notice of modification issued by EPA pursuant to Paragraph 13.a; or (2) if Settling Defendant invokes dispute resolution, in accordance with the final resolution of the dispute. The modification shall be incorporated into and enforceable under this CD, and Settling Defendant shall implement all work required by such modification. Settling Defendant 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 the 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.** Settling Defendant shall conduct, in accordance with ¶ 6.7(j) (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.** Settling Defendant 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. **Settling Defendant's Obligation to Perform Further Response Actions.** If EPA selects further response actions relating to the Site, EPA may require Settling Defendant to perform such further response actions, but only to the extent that the reopener conditions in ¶ 64 and ¶ 65 (United States' Pre- and Post-Certification Reservations) are satisfied. Settling Defendant may invoke the procedures set forth in Section XIII (Dispute Resolution) to dispute (a) EPA's determination that the reopener conditions of ¶ 64 or ¶ 65 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 ¶ 48 (Record Review).

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

VIII. PROPERTY REQUIREMENTS

20. **Proprietary Controls.** Settling Defendant shall execute and record, with respect to the Affected Property owned by Settling Defendant, in accordance with the procedures of this ¶ 20, Proprietary Controls that: (i) grant a right of access to conduct any activity regarding the CD, including those activities listed in ¶ 20.a; and (ii) grant the right to enforce the land, water, or other resource use restrictions set forth in ¶ 20.b.

a. **Access Requirements.** The following is a list of activities for which access is required regarding such 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 ¶ 80 (Work Takeover);

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

(9) Assessing Settling Defendant's compliance with the CD;

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

(11) Implementing, monitoring, maintaining, reporting on, or enforcing any Institutional Controls.

b. **Land, Water, or Other Resource Use Restrictions.** The following is the land, water, or other resource use restriction applicable to the Affected Property: For contaminated groundwater exceeding maximum contaminant levels ("MCLs") at the Site, prohibit all uses that could lead to human exposure.

c. **Grantees.** The Proprietary Controls must be granted to one or more of the following persons and their representatives, as determined by EPA: the United States, the State, Settling Defendant, if any, and other appropriate grantees. Proprietary Controls in the nature of a Uniform Environmental Covenants Act (UECA) document granted to persons other than the United States must include a designation that EPA is a "third-party beneficiary" allowing EPA to maintain the right to enforce the Proprietary Controls without acquiring an interest in real property.

d. **Initial Title Evidence.** Settling Defendant shall, within 45 days after the Effective Date:

(1) **Record Title Evidence.** Submit to EPA title evidence acceptable to EPA that: (i) names the proposed insured or the party in whose favor the title evidence runs, or the party who will hold the real estate interest, or if that party is uncertain, names the United States, the State, Settling Defendant, or "To Be Determined;" (ii) covers the Affected Property that is to be encumbered; (iii) demonstrates that the person or entity that will execute and record the Proprietary Controls is the owner of such Affected Property; (iv) identifies all record matters that affect title to the Affected Property, including all prior liens, claims, rights (such as easements), mortgages, and other encumbrances (collectively, "Prior Encumbrances"); and (v) includes complete, legible copies of such Prior Encumbrances; and

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

e. **Release or Subordination of Prior Liens, Claims, and Encumbrances.**

(1) Settling Defendant shall secure the release, subordination, modification, or relocation of all Prior Encumbrances on the title to the Affected Property revealed by the title evidence or otherwise known to Settling Defendant, unless EPA waives this requirement as provided under ¶ 20.e(2)-(4).

(2) Settling Defendant may, by the deadline under ¶ 20.d, submit an initial request for waiver of the requirements of ¶ 20.e(1) regarding one or more Prior Encumbrances, on the grounds that such Prior Encumbrances cannot defeat or adversely affect the rights to be granted by the Proprietary Controls and cannot interfere with the remedy or result in unacceptable exposure to Waste Material.

(3) Settling Defendant may, within 90 days after the Effective Date, or if an initial waiver request has been filed, within 45 days after EPA's determination on the initial waiver request, submit a final request for a waiver of the requirements of ¶ 20.e(1) regarding any particular Prior Encumbrance on the grounds that Settling Defendant could not obtain the release, subordination, modification, or subordination of such Prior Encumbrance despite best efforts.

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

(5) Settling Defendant shall complete its obligations under ¶ 20.e(1) regarding all Prior Encumbrances: within 180 days after the Effective Date; or if an initial waiver request has been filed, within 135 days after EPA's determination on the initial waiver request; or if a final waiver request has been filed, within 90 days after EPA's determination on the final waiver request.

f. Update to Title Evidence and Recording of Proprietary Controls.

(1) Settling Defendant shall submit to EPA for review and approval, by the deadline specified in ¶ 20.e(5), all draft Proprietary Controls and draft instruments addressing Prior Encumbrances. The Proprietary Controls must be in substantially the form attached hereto as Appendix D.

(2) Upon EPA's approval of the proposed Proprietary Controls and instruments addressing Prior Encumbrances, Settling Defendant shall, within 15 days, update the original title insurance commitment (or other evidence of title acceptable to EPA) under ¶ 20.d. If the updated title examination indicates that no liens, claims, rights, or encumbrances have been recorded since the effective date of the original commitment (or other title evidence), Settling Defendant shall secure the immediate recordation of the Proprietary Controls and instruments addressing Prior Encumbrances in the appropriate land records. Otherwise, Settling Defendant shall secure the release, subordination, modification, or relocation under ¶ 20.e(1), or the waiver under ¶ 20.e(2)-(4), regarding

any newly-discovered liens, claims, rights, and encumbrances, prior to recording the Proprietary Controls and instruments addressing Prior Encumbrances.

(3) If Settling Defendant submitted a title insurance commitment under ¶ 20.d, then upon the recording of the Proprietary Controls and instruments addressing Prior Encumbrances, Settling Defendant shall obtain a title insurance policy that: (i) is consistent with the original title insurance commitment; (ii) is for \$100,000; (iii) is issued to the United States, Settling Defendant, or other person approved by EPA; and (iv) is issued on a current American Land Title Association (ALTA) form or other form approved by EPA.

(4) Settling Defendant shall, within 60 days after recording the Proprietary Controls and instruments addressing Prior Encumbrances, or such other deadline approved by EPA, provide to the United States and to all grantees of the Proprietary Controls: (i) certified copies of the recorded Proprietary Controls and instruments addressing Prior Encumbrances showing the clerk's recording stamps; and (ii) the title insurance policy or other approved form of updated title evidence dated as of the date of recording of the Proprietary Controls and instruments.

g. Settling Defendant shall monitor, maintain, enforce, and annually report on all Proprietary Controls required under this CD.

h. Settling Defendant shall not Transfer its Affected Property until it has executed and recorded all Proprietary Controls and instruments addressing Prior Encumbrances regarding such Affected Property in accordance with this ¶ 20.

21. **Agreements Regarding Access and Non-Interference.**

a. Settling Defendant shall, with respect to the Affected Property owned by Settling Defendant:

(1) Provide Plaintiff and its representatives, contractors, and subcontractors with access at all reasonable times to such Affected Property to conduct any activity regarding the CD, including those listed in ¶ 20.a (Access Requirements); and

(2) Refrain from using such Affected Property in any manner that EPA determines will: (i) pose an unacceptable risk to human health or to the environment due to exposure to Waste Material, or (ii) interfere with or adversely affect the implementation, integrity, or protectiveness of the Remedial Action. The restrictions include those listed ¶ 20.b (Land, Water, or Other Resource Use Restrictions).

b. Settling Defendant shall not Transfer its Affected Property without first securing EPA's approval of, and transferee's consent to, an agreement that: (i) is enforceable by Settling Defendant and Plaintiff; and (ii) requires the transferee to provide access to and refrain from using the Affected Property to the same extent as is provided under ¶ 21.a.

22. **Best Efforts.** As used in this Section, "best efforts" means the efforts that a reasonable person in the position of Settling Defendant 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 Proprietary Controls, agreements, releases, subordinations, modifications, or relocations of Prior Encumbrances that affect the title to the Affected Property, as applicable. If Settling Defendant is 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 EPA deems it appropriate, it may assist Settling Defendant, or take independent action, in obtaining such Proprietary Controls, agreements, releases, subordinations, modifications, or relocations of Prior Encumbrances that affect the title to the Affected Property, as applicable. All costs incurred by the United States in providing such assistance or taking such action, including the cost of attorney time and the amount of monetary consideration or just compensation paid, constitute Future Response Costs to be reimbursed under Section X (Payments for Response Costs).

23. 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, Settling Defendant shall cooperate with EPA's efforts to secure and ensure compliance with such Institutional Controls.

24. In the event of any Transfer of the Affected Property owned by Settling Defendant, unless the United States otherwise consents in writing, Settling Defendant shall continue to comply with their obligations under the CD, including their obligation to provide or secure access, to implement, maintain, monitor, and report on Institutional Controls, and to abide by such Institutional Controls.

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

IX. FINANCIAL ASSURANCE

26. In order to ensure completion of the Work, Settling Defendant shall secure financial assurance, initially in the amount of \$2,190,000 ("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 the "Financial Assurance" category on the Cleanup Enforcement Model Language and Sample Documents Database at <http://cfpub.epa.gov/compliance/models/>, and satisfactory to EPA. Settling Defendant may use multiple mechanisms if they are limited to surety bonds guaranteeing payment, letters of credit, trust funds, and/or insurance policies.

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

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

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

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

27. Settling Defendant has selected, and EPA has found satisfactory, as an initial financial assurance a surety bond prepared in accordance with ¶ 26. Within 30 days after the Effective Date, or 30 days after EPA's approval of the form and substance of Settling Defendant's financial assurance, whichever is later, Settling Defendant 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 Paula Painter, Program Analyst, Superfund Division, U.S. EPA, Region 4, and to the United States, as specified in Section XX (Notices and Submissions).

28. Settling Defendant shall diligently monitor the adequacy of the financial assurance. If Settling Defendant becomes aware that the financial assurance provided under this Section is inadequate or otherwise no longer satisfies the requirements of this Section, Settling Defendant shall notify EPA 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 Settling Defendant of such determination. Settling Defendant 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 Settling Defendant, 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. Settling Defendant shall follow the procedures of ¶ 30 (Modification of Financial Assurance) in seeking approval of, and submitting documentation for, the revised or alternative financial assurance mechanism. Settling Defendant's inability to secure and submit to EPA financial assurance in accordance with this Section shall in no way excuse performance of any other requirements of this CD, including, without limitation, the obligation of Settling Defendant to complete the Work in accordance with the terms of this CD.

29. Access to Financial Assurance.

a. If EPA issues a notice of implementation of a Work Takeover under 68.b, then, in accordance with any applicable financial assurance, EPA is entitled to: (1) the performance of the Work; and (2) require that any funds guaranteed be paid in accordance with ¶ 29.d.

b. If EPA is notified by the issuer of a financial assurance mechanism that it intends to cancel such mechanism, and Settling Defendant 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 II 29.d.

c. If, upon issuance of a notice of implementation of a Work Takeover under ¶ 68.b, EPA is unable for any reason to promptly secure the resources guaranteed under any applicable financial assurance mechanism, whether in cash or in kind, to continue and complete the Work, then EPA may demand an amount, as determined by EPA, sufficient to cover the cost of the remaining Work to be performed. Settling Defendant shall, within 60 days of such demand, pay the amount demanded as directed by EPA.

d. Any amounts required to be paid under this ¶ 29 shall be, as directed by EPA: (1) paid to EPA in order to facilitate the completion of the Work by EPA or by another person; or (2) 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 a Special Account created for Settling Defendant 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 ¶ 29 must be reimbursed as Future Response Costs under Section X (Payments for Response Costs).

30. Modification of Amount, Form, or Terms of Financial Assurance. Settling Defendant 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 ¶ 27, 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 Settling Defendant of its decision to accept or reject a requested reduction or change pursuant to this Paragraph. Settling Defendant 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, the final administrative decision, or the final judicial decision resolving such dispute under Section XIII (Dispute Resolution). Any decision made by EPA on a request submitted under this Paragraph to change the form or terms of a financial assurance mechanism shall be made in EPA's sole and unreviewable discretion, and such decision shall not be subject to challenge by Settling Defendant 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, Settling Defendant shall submit to EPA documentation of the reduced, revised, or alternative financial assurance mechanism in accordance with ¶ 27.

31. **Release, Cancellation, or Discontinuation of Financial Assurance.** Settling Defendant may release, cancel, or discontinue any financial assurance provided under this Section only: (a) if EPA issues a Certification of Work Completion under ¶ 4.7 (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 to Section XIII (Dispute Resolution).

X. PAYMENTS FOR RESPONSE COSTS

32. **Payments by Settling Defendant for United States' Past Response Costs.**

a. Within 30 days after the Effective Date, Settling Defendant shall pay to EPA \$ 116,635.85 in payment for unreimbursed Past Response Costs. Payment shall be made in accordance with ¶ 34.a (instructions for Past Response Cost payments).

b. **Deposit of Past Response Costs Payment.** The total amount to be paid by Settling Defendant pursuant to ¶ 32.a shall be deposited by EPA in the EPA Hazardous Substance Superfund.

33. **Payments by Settling Defendant for Future Response Costs.** Settling Defendant shall pay to EPA all Future Response Costs not inconsistent with the NCP. On a periodic basis, EPA will send Settling Defendant a bill requiring payment that includes a Scorpions cost report, which includes direct and indirect costs incurred by EPA, its contractors, subcontractors, and DOJ. Settling Defendant shall make all payments within 60 days after Settling Defendant's receipt of each bill requiring payment, except as otherwise provided in ¶ 35, in accordance with ¶ 34.b. (instructions for Future Response Cost payments). The total amount to be paid by Settling Defendant pursuant to this ¶ 33 shall be deposited by EPA in the EPA Hazardous Substance Superfund Account.

34. **Payment Instructions.**

a. **Past Response Costs Payments.**

(1) The Financial Litigation Unit (FLU) of the United States Attorney's Office for the District of South Carolina shall provide Settling Defendant, in accordance with ¶ 90, with instructions regarding making payments to DOJ on behalf of EPA. The instructions must include a Consolidated Debt Collection System (CDCS) number to identify payments made under this CD.

(2) For all payments subject to this ¶ 34.a, Settling Defendant shall make such payment by Fedwire Electronic Funds Transfer (EFT) to the U.S. DOJ account, in accordance with the instructions provided under ¶ 34.a(1), and including references to the CDCS Number, Site/Spill ID Number A4H1, and DJ Number 90-11-3-11251.

(3) For all payments made under this ¶ 34.a, Settling Defendant shall send notices, including references to the CDCS, Site ID, and DJ numbers, to the United States, EPA, and the EPA Cincinnati Finance Center, all in accordance with ¶ 90.

b. Future Response Cost Payments and Stipulated Penalties

(1) For all payments subject to this ¶ 34.b, Settling Defendant shall make such payment by Fedwire Electronic Funds Transfer (EFT), referencing the Site/Spill ID and DJ numbers. The Fedwire EFT payment must be sent as follows:

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

(2) For all payments made under this ¶ 34.b, Settling Defendant must include references to the Site/Spill ID and DJ numbers. At the time of any payment required to be made in accordance with ¶ 34.b, Settling Defendant shall send notices that payment has been made to the United States, EPA, and the EPA Cincinnati Finance Center, all in accordance with ¶ 90. All notices must include references to the Site/Spill ID and DJ numbers.

35. Contesting Future Response Costs. Settling Defendant may submit a Notice of Dispute, initiating the procedures of Section XIII (Dispute Resolution), regarding any Future Response Costs billed under ¶ 33 (Payments by Settling Defendant for Future Response Costs) if it determines that EPA has made a mathematical error or included a cost item that is not within the definition of Future Response Costs, or if it believes EPA incurred excess costs as a direct result of an EPA action that was inconsistent with a specific provision or provisions of the NCP. 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 XX (Notices and Submissions). Such Notice of Dispute shall specifically identify the contested Future Response Costs and the basis for objection. If Settling Defendant submits a Notice of Dispute, Settling Defendant shall pay all uncontested Future Response Costs to the United States within 30 days after Settling Defendant’s receipt of the bill requiring payment. Simultaneously, Settling Defendant shall 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. Settling Defendant shall send to the United States, as provided in Section XX (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, Settling Defendant shall pay the sums due (with accrued interest) to the United States within 7 days after the resolution of the dispute. If Settling Defendant prevails concerning any aspect of the contested costs, Settling Defendant 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. Settling Defendant shall be disbursed any balance of the escrow account. All payments to the United States under this Paragraph shall be made in accordance with ¶ 34. The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XIII (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding Settling Defendant's obligation to reimburse the United States for its Future Response Costs.

36. **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, Settling Defendant shall pay Interest on the unpaid balance. The Interest on Past Response Costs under this Paragraph 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 Settling Defendant's payment. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to Plaintiff by virtue of Settling Defendant's failure to make timely payments under this Section including, but not limited to, payment of stipulated penalties pursuant to ¶ 52 (Stipulated Penalty Amounts —Work).

XI. INDEMNIFICATION AND INSURANCE

37. Settling Defendant's 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 Settling Defendant as EPA's authorized representative under Section 104(e) of CERCLA, 42 U.S.C. § 9604(e). Settling Defendant 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 Settling Defendant, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on Settling Defendant's behalf or under its control, in carrying out activities pursuant to this CD, including, but not limited to, any claims arising from any designation of Settling Defendant as EPA's authorized representative under Section 104(e) of CERCLA. Further, Settling Defendant agrees to pay the United States all costs it incurs including, but not limited to, attorneys' fees and other expenses of litigation and settlement arising from, or on account of, claims made against the United States based on negligent or other wrongful acts or omissions of Settling Defendant, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on its 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 Settling Defendant in carrying out activities pursuant to this CD. Neither Settling Defendant nor any such contractor shall be considered an agent of the United States.

b. The United States shall give Settling Defendant notice of any claim for which the United States plans to seek indemnification pursuant to this ¶ 37, and shall consult with Settling Defendant prior to settling such claim.

38. Settling Defendant covenants not to sue and agrees not to assert any claims or causes of action against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between Settling Defendant 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, Settling Defendant 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 Settling Defendant and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays.

39. **Insurance.** No later than 15 days before commencing any Work at the Site, Settling Defendant 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 \$1,000,000, for any one occurrence, and automobile liability insurance with limits of \$1,000,000, combined single limit, naming the United States as an additional insured with respect to all liability arising out of the activities performed by or on behalf of Settling Defendant pursuant to this CD. In addition, for the duration of this CD, Settling Defendant 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 Settling Defendant in furtherance of this CD. Prior to commencement of the Work, Settling Defendant shall provide to EPA certificates of such insurance and a copy of each insurance policy. Settling Defendant shall resubmit such certificates and copies of policies each year on the anniversary of the Effective Date. If Settling Defendant demonstrates 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, Settling Defendant need provide only that portion of the insurance described above that is not maintained by the contractor or subcontractor.

XII. FORCE MAJEURE

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

41. If any event occurs or has occurred that may delay the performance of any obligation under this CD for which Settling Defendant intends or may intend to assert a claim of force majeure, Settling Defendant shall notify EPA's Project Coordinator orally or, in his or her absence, EPA's Alternate Project Coordinator or, in the event both of EPA's designated representatives are unavailable, the Director of the Superfund Division, EPA Region 4, within 72 hours of when Settling Defendant first knew that the event might cause a delay. Within seven days thereafter, Settling Defendant 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; Settling Defendant's rationale for attributing such delay to a force majeure; and a statement as to whether, in the opinion of Settling Defendant, such event may cause or contribute to an endangerment to public health or welfare or the environment. Settling Defendant shall include with any notice all available documentation supporting its claim that the delay was attributable to a force majeure. Settling Defendant shall be deemed to know of any circumstance of which Settling Defendant, any entity controlled by Settling Defendant, or Settling Defendant's contractors or subcontractors knew or should have known. Failure to comply with the above requirements regarding an event shall preclude Settling Defendant 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 ¶ 40 and whether Settling Defendant has exercised its best efforts under ¶ 40, EPA may, in its unreviewable discretion, excuse in writing Settling Defendant's failure to submit timely or complete notices under this Paragraph.

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

43. If Settling Defendant elects to invoke the dispute resolution procedures set forth in Section XIII (Dispute Resolution) regarding EPA's decision, Settling Defendant shall do so no later than 15 days after receipt of EPA's notice. In any such proceeding, Settling Defendant 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 Settling Defendant complied with the requirements of ¶ 40 and ¶ 41. If Settling Defendant carries this burden, the delay at issue shall be deemed not to be a violation by Settling Defendant of the affected obligation of this CD identified to EPA and the Court.

44. 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 Settling

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

XIII. DISPUTE RESOLUTION

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

46. A dispute shall be considered to have arisen when one party sends the other party 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.

47. **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, Settling Defendant invokes 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 Settling Defendant. The Statement of Position shall specify Settling Defendant's position as to whether formal dispute resolution should proceed under ¶ 48 (Record Review) or ¶ 49.

b. Within 30 days after receipt of Settling Defendant's Statement of Position, EPA will serve on Settling Defendant 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 ¶ 48 (Record Review) or ¶ 49. Within 30 days after receipt of EPA's Statement of Position, Settling Defendant may submit a Reply.

c. If there is disagreement between EPA and Settling Defendant as to whether dispute resolution should proceed under ¶ 48 (Record Review) or ¶ 49, the Parties to the dispute shall follow the procedures set forth in the Paragraph determined by EPA to be applicable. However, if Settling Defendant ultimately appeals to the Court to resolve the dispute, the Court shall determine which ¶ is applicable in accordance with the standards of applicability set forth in ¶¶ 48 and 49.

48. **Record Review.** Formal dispute resolution for disputes pertaining to the selection or adequacy of any response action and all other disputes that are accorded review on the administrative record under applicable principles of administrative law shall be conducted

pursuant to the procedures set forth in this Paragraph. For purposes of this Paragraph, the adequacy of any response action includes, without limitation, the adequacy or appropriateness of plans, procedures to implement plans, or any other items requiring approval by EPA under this CD and the adequacy of the performance of response actions taken pursuant to this CD. Nothing in this CD shall be construed to allow any dispute by Settling Defendant regarding the validity of the ROD's provisions.

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

b. The Director of the Superfund Division, EPA Region 4, will issue a final administrative decision resolving the dispute based on the administrative record described in ¶ 48.a. This decision shall be binding upon Settling Defendant, subject only to the right to seek judicial review pursuant to ¶ 48.c and 48.d.

c. Any administrative decision made by EPA pursuant to ¶ 48.b shall be reviewable by this Court, provided that a motion for judicial review of the decision is filed by Settling Defendant 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 Settling Defendant's motion.

d. In proceedings on any dispute governed by this Paragraph, Settling Defendant shall have the burden of demonstrating that the decision of the Superfund Division Director is arbitrary and capricious or otherwise not in accordance with law. Judicial review of EPA's decision shall be on the administrative record compiled pursuant to ¶ 48.a.

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

a. The Director of the Superfund Division, EPA Region 4, will issue a final decision resolving the dispute based on the statements of position and reply, if any, served under ¶ 47. The Superfund Division Director's decision shall be binding on Settling Defendant unless, within 10 days after receipt of the decision, Settling Defendant files with the Court and serves on EPA 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 Settling Defendant's motion.

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

50. The invocation of formal dispute resolution procedures under this Section does not extend, postpone, or affect in any way any obligation of Settling Defendant under this CD, except as provided in ¶ 35 (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 ¶ 58. 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 Settling Defendant does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XIV (Stipulated Penalties).

XIV. STIPULATED PENALTIES

51. Settling Defendant shall be liable for stipulated penalties in the amounts set forth in ¶¶ 52 and 53 to the United States for failure to comply with the requirements of this CD specified below, unless excused under Section XII (Force Majeure). "Compliance" by Settling Defendant shall include completion of all activities and obligations, including payments, required under this CD or any deliverable approved under this CD, in accordance with all applicable requirements of law, this CD, the SOW, and any deliverables approved under this CD and within the specified time schedules established by this CD.

52. Stipulated Penalty Amounts - Work (Including Payments and Excluding Deliverables).

a. The following stipulated penalties shall accrue per violation per day for any noncompliance identified in ¶ 52.b:

Period of Noncompliance	Penalty Per Violation Per Day
1st through 14th day	\$ 250
15th through 30th day	\$ 500
31st day and beyond	\$ 1,000

b. Compliance Milestones

(1) Payment of Past Response Costs as set forth in ¶¶ 32 and 34.a;
 (2) Payment of Future Response Costs as set forth in ¶¶ 33 and 34.b;
 (3) Milestones for tasks listed in the tables under ¶ 7.2 and ¶ 7.3 of the SOW.

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

53. Stipulated Penalty Amounts - Deliverables.

a. Material Defects. 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 ¶ 51. The provisions of Section XIII (Dispute Resolution) and Section XIV (Stipulated Penalties) shall govern the accrual and payment of any stipulated penalties regarding Settling Defendant's submissions under this CD.

b. The following stipulated penalties shall accrue per violation per day for failure to submit timely or adequate deliverables pursuant to the CD and the SOW.

Period of Noncompliance	Penalty Per Violation Per Day
1st through 14th day	\$ 250
15th through 30th day	\$ 500
31st day and beyond	\$ 1,000

54. In the event that EPA assumes performance of a portion or all of the Work pursuant to ¶ 68 (Work Takeover), Settling Defendant shall be liable for a stipulated penalty in the amount of \$ 60,000. Stipulated penalties under this Paragraph are in addition to the remedies available under ¶ 29 (Access to Financial Assurance) and ¶ 68 (Work Takeover).

55. 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 Settling Defendant of any deficiency; (b) with respect to a decision by the Director of the Superfund Division, EPA Region 4, under ¶ 48.b or ¶ 49.a of Section XIII (Dispute Resolution), during the period, if any, beginning on the 21st day after the date that Settling Defendant's reply to EPA's Statement of Position is received until the date that the Director issues a final decision regarding such dispute; or (c) with respect to judicial review by this Court of any dispute under Section XIII (Dispute Resolution), during the period, if any, beginning on the 31st day after the Court's receipt of the final submission regarding the dispute until the date that the Court issues a final decision regarding such dispute. Nothing in this CD shall prevent the simultaneous accrual of separate penalties for separate violations of this CD.

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

57. All penalties accruing under this Section shall be due and payable to the United States within 30 days after Settling Defendant's receipt from EPA of a written demand for payment of the penalties, unless Settling Defendant invokes the Dispute Resolution procedures

under Section XIII (Dispute Resolution) within the 30-day period. All payments to the United States under this Section shall indicate that the payment is for stipulated penalties and shall be made in accordance with ¶ 34.b (instructions for future response cost payments).

58. Penalties shall continue to accrue as provided in ¶ 55 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, Settling Defendant 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 ¶ 58.c;

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

59. If Settling Defendant fails to pay stipulated penalties when due, Settling Defendant shall pay Interest on the unpaid stipulated penalties as follows: (a) if Settling Defendant has timely invoked dispute resolution such that the obligation to pay stipulated penalties has been stayed pending the outcome of dispute resolution, Interest shall accrue from the date stipulated penalties are due pursuant to ¶ 58 until the date of payment; and (b) if Settling Defendant fails to timely invoke dispute resolution, Interest shall accrue from the date of demand under ¶ 57 until the date of payment. If Settling Defendant fails to pay stipulated penalties and Interest when due, the United States may institute proceedings to collect the penalties and Interest.

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

61. 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 Settling Defendant's violation of this CD or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Section 122(l) of CERCLA, 42 U.S.C. § 9622(l), provided, however, that the United States shall not seek civil penalties pursuant to Section 122(l) of CERCLA for any violation for which a stipulated penalty is provided in this CD, except in the case of a willful violation of this CD.

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

XV. COVENANTS BY PLAINTIFF

63. **Covenants for Settling Defendant by United States.** Except as provided in ¶ 64 and ¶ 65 (United States' Pre- and Post-Certification Reservations), and ¶ 67 (General Reservations of Rights), the United States covenants not to sue or to take administrative action against Settling Defendant 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 Settling Defendant of its obligations under this CD. These covenants extend only to Settling Defendant and not to any other person.

64. **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 Settling Defendant 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 indicate that the RA is not protective of human health or the environment.

65. **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 Settling Defendant 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.

66. For purposes of ¶ 64 (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 ¶ 65 (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.

67. **General Reservations of Rights.** The United States reserves, and this CD is without prejudice to, all rights against Settling Defendant with respect to all matters not expressly included within the Plaintiffs covenants. Notwithstanding any other provision of this CD, the United States reserves all rights against Settling Defendant with respect to:

- a. liability for failure by Settling Defendant 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 Settling Defendant when such ownership commences after signature of this CD by Settling Defendant ;
- d. liability based on the operation of the Site by Settling Defendant when such operation commences after signature of this CD by Settling Defendant and does not arise solely from Settling Defendant's performance of the Work;
- e. liability based on Settling Defendant's transportation, treatment, storage, or disposal, or arrangement for transportation, treatment, storage, or disposal of Waste Material at or in connection with the Site, other than as provided in the ROD, the Work, or otherwise ordered by EPA, after signature of this CD by Settling Defendant;
- 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).

68. **Work Takeover.**

a. In the event EPA determines that Settling Defendant: (1) has ceased implementation of any portion of the Work; (2) is seriously or repeatedly deficient or late in its performance of the Work; or (3) is implementing the Work in a manner that may cause an endangerment to human health or the environment, EPA may issue a written notice ("Work Takeover Notice") to Settling Defendant. Any Work Takeover Notice issued by EPA will specify the grounds upon which such notice was issued and will provide Settling Defendant 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 ¶ 68.a, Settling Defendant has not remedied to EPA's satisfaction the circumstances giving rise to EPA's issuance of the relevant Work Takeover Notice, EPA may at any time thereafter assume the performance of all or any portion of the Work as EPA deems necessary ("Work Takeover"). EPA will notify Settling Defendant in writing (which writing may be electronic) if EPA determines that implementation of a Work Takeover is warranted under this ¶ 68.b. Funding of Work Takeover costs is addressed under ¶ 29 (Access to Financial Assurance).

c. Settling Defendant may invoke the procedures set forth in ¶ 48 (Record Review), to dispute EPA's implementation of a Work Takeover under ¶ 68.b. However, notwithstanding Settling Defendant's invocation of such dispute resolution procedures, and during the pendency of any such dispute, EPA may in its sole discretion commence and continue a Work Takeover under ¶ 68.b until the earlier of (1) the date that Settling Defendant remedies, to EPA's satisfaction, the circumstances giving rise to EPA's issuance of the relevant Work Takeover Notice, or (2) the date that a final decision is rendered in accordance with ¶ 48 (Record Review) requiring EPA to terminate such Work Takeover.

69. 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.

XVI. COVENANTS BY SETTLING DEFENDANT

70. **Covenants by Settling Defendant.** Subject to the reservations in ¶ 72, Settling Defendant covenants not to sue and agrees not to assert any claims or causes of action against the United States with respect to the Site and this CD, including but not limited to:

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

b. any claims under CERCLA §§ 107 or 113, RCRA Section 7002(a), 42 U.S.C. § 6972(a), or state law regarding the Site 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 South Carolina Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, or at common law.

71. Except as provided in ¶ 74 (Waiver of Claims by Settling Defendant) and ¶ 81 (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 XV (Covenants by Plaintiff), other than in ¶ 67.a (claims for failure to meet a requirement of the CD), 67.g (criminal liability), and 67.h (violations of federal/state law during or after implementation of the Work), but only to the extent that Settling Defendant's claims arise from the same response action, response costs, or damages that the United States is seeking pursuant to the applicable reservation.

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

73. 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).

74. **Waiver of Claims by Settling Defendant.**

a. Settling Defendant agrees not to assert any claims 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 Settling Defendant 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, 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 of 200 pounds of solid materials;

b. **Exceptions to Waiver.**

(1) The waiver under this ¶ 74 shall not apply with respect to any defense, claim, or cause of action that Settling Defendant may have against any person otherwise covered by such waiver if such person asserts a claim or cause of action relating to the Site against Settling Defendant.

(2) The waiver under this ¶ 74 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.

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

XVII. EFFECT OF SETTLEMENT; CONTRIBUTION

76. Except as provided in ¶ 74 (Waiver of Claims by Settling Defendant), nothing in this CD shall be construed to create any rights in, or grant any cause of action to, any person not a Party to this CD. Except as provided in Section XVI (Covenants by Settling Defendant), 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).

77. The Parties agree, and by entering this CD this Court finds, that this CD constitutes a judicially-approved settlement pursuant to which Settling Defendant 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 XV (Covenants by Plaintiff), other than in 67.a (claims for failure to meet a requirement of the CD), 67.g (criminal liability), and 67.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.

78. 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 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).

79. Settling Defendant 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.

80. Settling Defendant 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 Settling Defendant. In addition, Settling Defendant 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.

81. **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, Settling Defendant 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 XV (Covenants by Plaintiff).

XVIII. ACCESS TO INFORMATION

82. Settling Defendant 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 Settling Defendant's possession or control or that of their contractors or agents relating to Work 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. Settling Defendant 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.

83. Privileged and Protected Claims.

a. Settling Defendant 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 Settling Defendant complies with ¶ 83.b, and except as provided in ¶ 83.c.

b. If Settling Defendant asserts 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, Settling Defendant shall provide the Record to Plaintiff in redacted form to mask the privileged or protected portion only. Settling Defendant shall retain all Records that it claims 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 Settling Defendant's favor.

c. Settling Defendant 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 Settling Defendant is required to create or generate pursuant to this CD.

84. **Business Confidential Claims.** Settling Defendant may assert that all or part of a Record provided to Plaintiff under this Section or Section XIX (Retention of Records) is business confidential to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Settling Defendant shall segregate and clearly identify all Records or parts thereof submitted under this CD for which Settling Defendant asserts business confidentiality claims. Records submitted to EPA determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies the Records when they are submitted to EPA, or if EPA has notified Settling Defendant 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 Settling Defendant.

85. 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.

86. 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.

XIX. RETENTION OF RECORDS

87. Until 10 years after Settling Defendant's receipt of EPA's Certification of Work Completion under ¶ 4.7 (Certification of Work Completion) of the SOW, Settling Defendant 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 to its liability under CERCLA with respect to the Site, provided, however, that Settling Defendant must retain, in addition, all Records that relate to the liability of any other person under CERCLA with respect to the Site. Settling Defendant 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 to the performance of the Work. Settling Defendant (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.

88. At the conclusion of this record retention period, Settling Defendant 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 ¶ 83 (Privileged and Protected Claims), Settling Defendant shall deliver any such Records to EPA.

89. Settling Defendant certifies that, to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed, or otherwise disposed of any Records (other than identical copies) relating to its potential liability regarding the Site since notification of potential liability by the United States or the State and that it has fully complied with any and all EPA and State requests for information regarding the Site pursuant to Sections 104(e) and 122(e)(3)(B) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e)(3)(B), and Section 3007 of RCRA, 42 U.S.C. § 6927, and state law.

XX. NOTICES AND SUBMISSIONS

90. 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 persons specified below at the addresses 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 # 90-11-3-11251

As to EPA:

Franklin Hill
Director, Superfund Division
U.S. Environmental Protection Agency
Region 4
61 Forsyth Street
Atlanta, Georgia 30303
Hill.franklin@epa.gov

Giezelle Bennett
EPA Project Coordinator
U.S. Environmental Protection Agency
Region 4
61 Forsyth Street
Atlanta, Georgia 30303
Bennett.giezelle@epa.gov

As to the Regional Financial Management Officer: Paula Painter
Program Analyst
U.S. Environmental Protection Agency
61 Forsythe Street
Atlanta, Georgia 30303
Painter.paula@epa.gov

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 the State: Greg Cassidy
State Project Coordinator
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201
cassidga@dhec.sc.gov

As to Settling Defendant: Jim Brandt
Settling Defendant's Project Coordinator
The Mosaic Company
1700-2010 12th Ave.
Box 7500
Regina, SK, Canada S4P 0M3
jim.brandt@mosaicco.com

Sarah J. Sorenson
Environmental Counsel
The Mosaic Company
3033 Campus Dr., Suite E490
Plymouth, MN 55441
sarah.sorenson@mosaicco.com

XXI. RETENTION OF JURISDICTION

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

XXII. APPENDICES

92. 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 map of the Site.

"Appendix D" is the draft form of Proprietary Controls.

XXIII. MODIFICATION

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

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

XXIV. LODGING AND OPPORTUNITY FOR PUBLIC COMMENT

95. 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. Settling Defendant consents to the entry of this CD without further notice.

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

XXV. SIGNATORIES/SERVICE

97. Each signatory to this CD and the Deputy Section of the Environmental Enforcement Section 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.

98. Settling Defendant 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 Settling Defendant in writing that it no longer supports entry of the CD.

99. Settling Defendant 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 Settling Defendant with respect to all matters arising under or relating to this CD. Settling Defendant 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. Settling Defendant need not file an answer to the complaint in this action unless or until the Court expressly declines to enter this CD.

XXVI. FINAL JUDGMENT

100. 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.

101. Upon entry of this CD by the Court, this CD shall constitute a final judgment between and among the United States, and Settling Defendant. The Court: finds that there is no just reason for delay and therefore enters this judgment as a final judgment under Fed. R. Civ. P. 54 and 58.

SO ORDERED THIS _____ DAY OF _____, 20_.

United States District Judge

Signature Page for *United States v. Vigindustries Inc.* Consent Decree

FOR THE UNITED STATES OF AMERICA:

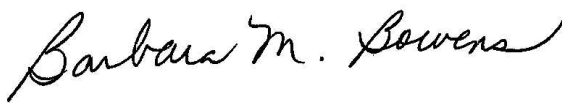
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Signature Page for *United States v. Vigindustries Inc.* Consent Decree

FOR THE UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY, REGION 4:

3/3/16
Date



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Signature Page for *United States v. Vigindustries Inc.* Consent Decree

FOR VIGINDUSTRIES INC.:

2/4/16
Date



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Agent authorized to Accept Service on
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APPENDIX A (Part 1 of 3)

RECORD OF DECISION

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4**



**RECORD OF DECISION
INTERNATIONAL MINERAL AND CHEMICAL CORPORATION (IMC)
FERTILIZER SUPERFUND SITE
SPARTANBURG, SOUTH CAROLINA**

AUGUST 2014



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ABBREVIATIONS AND ACRONYMS

AOC	Administrative Order on Consent
ARARs	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CIP	Community Involvement Plan
COC	Contaminants of Concern
COPC	Contaminants of Potential Concern
DNT	Dinitrotoluene
EJ	Environmental Justice
EPA	U.S. Environmental Protection Agency
ESI	Expanded Site Inspection
FFS	Focused Feasibility Study
FS	Feasibility Study
HI	Hazard Index
HRS	Hazard Ranking System
HQ	Hazard Quotient
IEUBK	Integrated Exposure Uptake Biokinetic Model
IC	Institutional Control
IMC	International Mineral and Chemical Corporation
Mg/kg	Milligrams per kilogram
kg	Kilogram
MCL	Maximum Contaminant Level
$\mu\text{g/l}$	Microgram per liter
MNA	Monitored Natural Attenuation
MW	Monitoring Well
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
PSA	Preliminary Site Assessment
PRP	Potentially Responsible Party
RAA	Removal Action Areas
RAO	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
RfD	Reference Dose
RI	Remedial Investigation
RI/FS	Remedial Investigation and Feasibility Study
RME	Reasonable Maximum Exposure
SARA	Superfund Amendments and Reauthorization Act

ABBREVIATIONS AND ACRONYMS

SCDHEC	South Carolina Department of Health and Environmental Control
SDWA	Safe Drinking Water Act
SI	Site Inspection
SLERA	Screening Level Ecological Risk Assessment
SPLP	Synthetic Precipitation Leaching Procedure
SSL	Soil Screening Level
SVOC	Semi-volatile organic compound
TAL	Target Analyte List
TCL	Target Compound List
TAP	Technical Assistance Program
TCLP	Toxicity Characteristic Leaching Procedure
USC	United States Code
VOCs	Volatile Organic Compounds

IMC SUPERFUND SITE**RECORD OF DECISION****PART 1: THE DECLARATION****1.1 Site Name and Location**

The International Mineral and Chemical Corporation (IMC) Superfund Site is located on 40.83 acres in the Arkwright community, south of the city of Spartanburg, Spartanburg County, South Carolina. The National Superfund Database Identification Number is SCD003350493.

1.2 Statement of Basis and Purpose

This decision document selects the remedial action for the International Mineral and Chemical Corporation Superfund Site (IMC Site, the Site). The remedy was selected in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), 42 United States Code (USC) §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 CFR Part 300, as amended. The remedial action selected is Alternative 2 – Infiltration Galleries. This remedy is described in detail in Section 12.0 (Selected Remedy) of this Record of Decision (ROD).

This decision is based on the Administrative Record for the IMC Site, which has been developed in accordance with Section 113(k) of CERCLA, 42 USC§9613(k). This Administrative Record is available for review at the Spartanburg County Library in Spartanburg, South Carolina, and at the United States Environmental Protection Agency (EPA) Region 4 Records Center in Atlanta, Georgia. The Administrative Record Index (Appendix D) identifies each of the items comprising the Administrative Record upon which the selection of the remedial action is based. The State of South Carolina, acting through the Department of Health and Environmental Control (SCDHEC) concurs with the selected remedy.

1.3 Assessment of the Site

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

1.4 Description of the Selected Remedy

The selected remedy for the IMC Site is Alternative 2, which is estimated to cost \$2,190,000. The components of the remedy are described in detail in Section 12.0 (Selected Remedy) of this ROD. The major components of this alternative are:

IMC SUPERFUND SITE**RECORD OF DECISION**

- Infiltration galleries in and downgradient of the former sulfuric acid area to address the low pH soil and groundwater.
- Periodic application of a neutralizing solution
- Periodic sampling and analysis of monitoring wells.
- Institutional controls for site-wide groundwater use restrictions.

1.5 Statutory Determinations

The selected remedy will achieve the requirements of CERCLA §121, and the regulatory requirements of the NCP. This remedy 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 or resource recovery technologies to the maximum extent practicable.

The selected remedy also satisfies the statutory preference for treatment as a principal element of the remedy (i.e., reduce the toxicity, mobility, or volume of hazardous substances through treatment). The low pH soil and the contaminated groundwater will be treated in-situ using a neutralization chemical.

Restrictions on the use of groundwater are necessary to ensure protectiveness in the short term because the selected remedy will not immediately reduce contaminant levels in groundwater to levels that allow for unlimited use and unrestricted exposure. Until groundwater contaminants are below cleanup levels and the Site is available for unlimited use and unrestricted exposure, EPA will perform five year reviews to ensure the protectiveness of human health and the environment. A policy review will be conducted within five years after the completion of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

1.6 ROD Data Certification Checklist

The following information is included in the Decision Summary (Part II) of this ROD. Additional information can be found in the Administrative Record file for this Site:

- Chemicals of concern and their respective concentrations – Section 7
- Baseline risk represented by the chemicals of concern – Section 7
- Remediation levels (i.e. cleanup levels) established for the chemicals of concern and the basis for these goals – Section 12

IMC SUPERFUND SITE

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- Current and reasonably anticipated future land use assumptions and current and potential future beneficial uses of groundwater used in the baseline risk assessment and this ROD – Section 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 12
- Potential land and groundwater use that will be available at the Site as a result of the Selected Remedy – Section 12
- Key factor(s) that led to selecting the remedy – Section 12

1.7 Authorizing Signature


This ROD documents the selected remedy for contamination at the IMC Site. This remedy was selected by the EPA with the concurrence of SC DHEC (Appendix A). The Director of the Superfund Division (EPA, Region 4) has been delegated the authority to approve and sign this ROD.

U.S. Environmental Protection Agency (Region 4)

By:


Randall Chaffins, Acting Director
Superfund Division

Date:



IMC SUPERFUND SITE**RECORD OF DECISION****PART 2: THE DECISION SUMMARY**

This Decision Summary provides a description of the Site-specific factors and analyses that led to the selection of the remedy for the Site. It includes background information about the Site, the nature and extent of contamination found at the Site, the assessment of human health and environmental risks posed by the contaminants at the Site, a description of previous cleanup activities, and the identification and evaluation of remedial action alternatives for the Site.

1.0 SITE NAME, LOCATION, AND DESCRIPTION

The IMC Site is an approximately 41-acre site located in the Arkwright community just south of Spartanburg, South Carolina (**Figure 1**). The facility was operated from about 1910 until closure in 1987 for nitrogen-phosphorus-potassium fertilizer production. The coordinates of the center of the site are 34°55'12" North latitude and 81°55'30" West longitude [U.S. Geological Survey (USGS, 1980)].

The Superfund Enterprise Management System (SEMS) Identification Number is SCD003350493. The lead agency for the IMC Site is the EPA. The SC DHEC is the support agency.

The Site is located on 40.83 acres. The facility is generally bounded on the north by undeveloped property and portions of Fairforest Creek, on the east by Fairforest Creek, to the south by the Arkwright Dump, a Superfund site and a few residential properties, and on the west by Seaboard Coast rail line. Other industrial properties in the vicinity of the Site include a Mt. Vernon Mills facility to the immediate northwest, an active Rhodia Chemical Company facility to the immediate southwest, and the inactive Arkwright Mills property to the north-northwest. Locations of these facilities are shown on **Figure 2**. The land uses in the vicinity of the Site include industrial, residential, and undeveloped properties.

The Site is characterized by 90 feet of relief. The portions of the property at the North Street Extension entrance are typified by ground surface elevations of approximately 700 feet above mean sea level (msl). However, much of the property adjacent to Fairforest Creek is no more than about 625 feet above msl. The elevation of Fairforest Creek east of the Site is about 610 feet above msl. Portions of the Site are within the 100 year-floodplain of Fairforest Creek.

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Figure 1
Site Location Map



IMC SUPERFUND SITE

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Figure 2
Industrial Properties in the Vicinity of the IMC Site

IMC SUPERFUND SITE**RECORD OF DECISION****2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES****2.1 Site History**

IMC Global, Inc., or related companies, including International Minerals and Chemical Corporation and IMC Fertilizer Group – Rainbow Division, owned or operated the facility from about 1910 until closure of the facility in 1986. During that time, the facility was operated for nitrogen-phosphorus-potassium (NPK) fertilizer production. Typical fertilizer manufacturing operations during the time included the use of phosphate rock to produce superphosphate as well as the use of other types of raw materials, including fish scraps, bone meal, and cotton hulls, as sources of plant nutrients. **Figure 3** illustrates a facility layout for former fertilizer manufacturing operations (*circa*. 1953). Limited information is available regarding operations at the Site before approximately 1947. As of approximately 1947, there were three primary operations at the Site. Those site operations included the following:

- A sulfuric acid production process which was constructed in 1947 and operated until 1970
- A superphosphate production process which continued operation until 1986
- A fertilizer mixing operation that continued, with process modifications, until 1986

Sulfuric Acid Production Plant

The sulfuric acid plant appears to have been constructed in approximately 1947 and likely began operations the following year. The plant was closed and dismantled in approximately 1970. In the manufacture of sulfuric acid, the plant used a “burner” to oxidize elemental sulfur and then added water to four lead-lined reaction chambers containing the oxidized sulfur. An aqueous sulfuric acid solution condensed in the reaction chambers and was collected and stored in aboveground on-site tanks within bermed concrete pads. The sulfuric acid was then used in the superphosphate production process. There was no waste stream associated with the production of sulfuric acid.

The sulfuric acid plant was located east of the main production and warehouse building (Fertilizer Building). Aerial photographs of the facility from the years of sulfuric acid plant operation suggest that the acid plant had a number of ponds - perhaps as many as five. Anecdotal evidence indicates that these ponds were used to store water from Fairforest Creek that would have been used in the acid production process.

IMC SUPERFUND SITE

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Figure 3- Facility Layout Map

IMC SUPERFUND SITE**RECORD OF DECISION**

The elemental sulfur for use in the process was received by rail. That material was stored outdoors at tines, near the railroad-unloading trestle at the northeast corner of the plant. The acid plant was dismantled in approximately 1970. When the fertilizing mixing operation ceased in 1986, the sulfuric acid tanks were cleaned out (**Figure 4**). The tanks were removed and sent off-site during deconstruction of the facility in 1999.



Figure 4
Former Sulfuric Acid Tanks

Superphosphate Production Process

Superphosphate was produced by combining sulfuric acid with phosphate rock, which was shipped to the plant by rail. Calcium sulfate or "gypsum" was not segregated during the superphosphate production process; instead, it remained with the superphosphate and was sold as part of the product. Thus, the Site did not have gypsum stacks.

Available information indicates that the production of superphosphate occurred in a "mixing den" into which phosphate rock and sulfuric acid were added. Because the mixing of sulfuric acid and phosphate rock is an exothermic reaction, the superphosphate product was able to flow from the mixing den to a cooling bin where it cooled and hardened. The cooling bin was apparently located in the Fertilizer Building. Former plant personnel have indicated that off-specification superphosphate was reprocessed through the superphosphate production process.

IMC SUPERFUND SITE**RECORD OF DECISION**

Records indicate that the superphosphate production process had a wet scrubber system associated with it. The scrubbers collected particulate matter and other emissions from the superphosphate process. Scrubber water, and any materials captured by the scrubbers, appears to have discharged to scrubber lagoons located south of the Fertilizer Building.

Fertilizer Mixing Process

Before the early to mid-1960s, the plant also made pulverized fertilizer by mixing a number of dry sources of nitrogen, potassium, and phosphate into a fertilizer product. Raw materials for this mixing process likely included superphosphate, potash, fillers such as sand, limestone, or dirt, and a dry nitrogen source such as ammonium sulfate.

In the mid-1960s, the plant appears to have converted to the production of granulated fertilizer. In addition to the raw materials used in the pulverized fertilizer production process, several other raw materials including phosphoric acid, anhydrous ammonia, nitrogen solutions, and urea would have been used in production of mono-ammonium phosphate, di-ammonium phosphate, and triple super phosphate. From time to time in the 1980s, the plant also used small amounts of fertilizer micronutrients in the granulation process. It is possible that one of these micronutrients might have been electric arc furnace dust, which was a valuable source of zinc – a necessary crop nutrient. In general, the plant received very small quantities of micronutrients – usually one pallet of 50-pound bags – at any one time and used one or two pallets of such material per year. The pallets were stored in the Fertilizer Building near the loading dock.

During both the production of pulverized fertilizer and the subsequent production of granulated fertilizer, wet scrubbers were used to capture particulate and other emissions from the production process. Scrubber water, together with material captured by the scrubbers, was then discharged to the scrubber lagoons located south of the Fertilizer Building. The granulation process shut down in 1986.

Between the 1930s and 1950s, scrubber towers were added to the superphosphate production process. The scrubbers collected particulate matter and other emissions from the superphosphate process. Wastewater generated from emission control measures for the scrubbers was routed through drainage features to on-site settling ponds. Wastewater settling ponds (scrubber ponds), operated on the site as a component of the scrubber emission control process, were located in the south central portion of the property. Additionally, five small surface impoundments were located in the northeastern portion of the facility property and are known to have been active from the late 1950s until 1970.

IMC SUPERFUND SITE**RECORD OF DECISION**

Before approximately the mid-1970s, the plant had two primary lagoons, one of which was used to capture scrubber water and the other of which was used to capture plant sewage. After the plant received a municipal sewage treatment hookup, in approximately 1974, the lagoons were redesigned, with the old sewage lagoon divided into two lagoons and expanded. One of these new lagoons was used for scrubber water; the other was used to capture storm water. The old scrubber lagoon continued to be used for scrubber water.

In 1987, after the plant closed, the lagoons were cleaned and dredged. Dredged material was reworked into fertilizer products at other IMC fertilizer production facilities. The five small surface impoundments in the northeastern portion of the facility were also closed by backfilling. In 1987, IMC sold the property to Mr. William McDaniel. The property was used by subsequent owners to store textile equipment until approximately 1999. In 1999, Vigindustries, a wholly owned indirect subsidiary of IMC Global, Inc., voluntarily reacquired the property and initiated demolition of the remaining facility buildings (**Figure 5**).



Figure 5
Photo of the demolition of the remaining buildings

Following demolition, only the security fence, some asphalt paving, the concrete floors to the main fertilizer building, the office and garage areas, and the former above ground bulk fuel storage area remain. The concrete potash storage area and a concrete pad north of the former trestle also remain. **Figure 6** shows a current photo of the Site.

IMC SUPERFUND SITE

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Figure 6 – Site Photo 2011

IMC SUPERFUND SITE**RECORD OF DECISION**

A small below ground explosives bunker was located near the eastern end of the facility. This bunker was inspected by EPA during site demolition activities in 1999. The bunker was found to be empty and no further action was required (**Figure 7**).



Figure 7 – Explosives Bunker

2.2 Previous Investigations and Enforcement Activities

A considerable amount of environmental data have been collected at the Site since closure of facility operations in 1986. Several hydrogeological assessments were initially conducted under the direction of the Wastewater Division of SC DHEC as part of closure of operating activities. In 1998, EPA began to conduct assessments of the Site.

In September 1991, the potentially responsible party (PRP) performed a preliminary site assessment (PSA) for the Industrial Wastewater Division of SC DHEC. During the PSA, groundwater, surface water and surface soil samples were collected. Fluoride and lead were detected in unfiltered groundwater at concentrations exceeding their respective MCLs. Fluoride was also elevated in the unfiltered surface water sample.

Three hydrogeologic assessments were also conducted in December 1993, August 1994, and February 1995. Activities conducted included the installation of monitoring wells and sampling and analysis of new and existing monitoring wells. Analyses of groundwater samples collected indicated the presence of metals, which exceeded primary and secondary MCLs. Groundwater at the facility was determined to flow eastward toward Fairforest Creek. The assessments recommended that continued groundwater monitoring be conducted.

IMC SUPERFUND SITE**RECORD OF DECISION**

In September 1998, EPA conducted a site inspection (SI). The primary objective of the SI was to support generation of a hazard ranking system (HRS) score to determine if the site warranted placement on the National Priorities List (NPL). Surface soil samples were collected from previous operational areas and from the former wastewater ponds. The SI reported that several inorganic constituents were present in surface soil over background concentrations. Groundwater samples were collected from five on-site monitoring wells and from a residential well located on North Street. The predominance of detections in groundwater was associated with inorganic compounds. Six surface water and sediment samples (two background) were collected from Fairforest Creek. Two additional sediment samples were collected upgradient and downgradient of the Site from the unnamed tributary (southern stream). Only one inorganic compound (manganese) in surface water and one inorganic (sodium) in sediments exceeded background criteria. The SI recommended that additional data be collected for the Site.

In January 2000, EPA conducted an expanded site inspection (ESI) at the site. The ESI included collection of 6 surface soil samples, 7 subsurface soil samples, 15 sediment samples, and 15 surface water samples. ESI samples were analyzed for the volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) on the target compound list (TCL), including pesticides and PCBs, and inorganic compounds on the target analyte list (TAL). Dioxin and furan analyses were performed on 5 surface soil and 5 sediment samples. Radiochemical analyses were also performed on 5 surface soil samples and samples from all 15 sediment sampling locations. The ESI recommended that further studies be conducted at the Site.

Under a permit with the wastewater division of SC DHEC, IMC agreed to conduct semiannual groundwater sampling of site monitoring wells. Seven on-site groundwater monitoring wells and surface water from two locations in Fairforest Creek were sampled on a routine basis. Groundwater and surface water samples were analyzed in the semiannual events for site-specific inorganic parameters. The semiannual groundwater monitoring program was discontinued following the December 2003 event due to the initiation of remedial investigation (RI) field activities.

To assist in project planning for the upcoming RI/feasibility study (FS), site reconnaissance activities were conducted in January and February 2001. Thirty-eight test pits were advanced across the Site to assist in the visual delineation of areas potentially used during historic facility operations for the disposal of plant debris and to determine the location and extent of residual wastewater solids in the former pond area.

In July 2001, EPA and Vigindustries entered into an administrative order by consent (consent order) to conduct an RI/FS and a removal action at the IMC Site.

IMC SUPERFUND SITE**RECORD OF DECISION**

Prior to the initiation of the RI/FS investigation activities, residual fertilizer and process materials in the area of the former manufacturing operations were delineated, removed, and properly disposed. These focused removal action activities were conducted between July and December 2002 in accordance with the final focused removal action workplan. The purpose of the focused removal action was to reduce available exposure/migration pathways and reduce potential exposure concentrations. Three removal action areas (RAAs) were identified. The three RAAs are shown on **Figure 8**.

A description of the three removal areas is as follows:

Removal Action Area No. 1 (RAA #1) - Fertilizer residuals and entrained surface soils located immediately adjacent to the southern and eastern portions of the former manufacturing structures.

Removal Action Area No. 2 (RAA #2) - Two existing stockpiles of fertilizer-containing soils; one located adjacent to the former trestle and one located in the former potash storage area in the southern portion of the facility.

Removal Action Area No. 3 (RAA #3) - The area encompassing the five small closed surface impoundments located in the northeast and eastern portions of the facility property.

Approximately 4,500 tons of soil were removed from the three RAAs and sent off site for disposal at the Republic Landfill in Union County, South Carolina. Soils in these areas were excavated, sampled for disposal characterization, and transported to the landfill as nonhazardous material. Approximately 11,000 tons of soil were removed from RAA #3B and RAA #3C. Soils from these areas were treated in situ prior to loading and transport for off-site disposal. Following in situ treatment and prior to loading, samples were collected from treated soils to verify that they were nonhazardous. Grab samples from the sidewall locations and excavation bottoms were collected to provide a screening level evaluation of excavation completion prior to confirmation sampling. The samples were analyzed for total lead. The target lead level was 750 ppm. Based on indications from the screening level grab samples, removal activities were deemed to be complete. EPA approved the RI/FS work plan in May 2004.

3.0 COMMUNITY PARTICIPATION

Public participation activities prior to the issuance of this ROD included community interviews for the preparation of a Community Involvement Plan in January 2007, and the distribution of fact sheets in October 2001, January 2003, August 2003, June 2004, April 2007, January 2008 and June 2014. Copies of all project documents are available in the Administrative Record file in EPA's Region 4 office in Atlanta, Georgia and at

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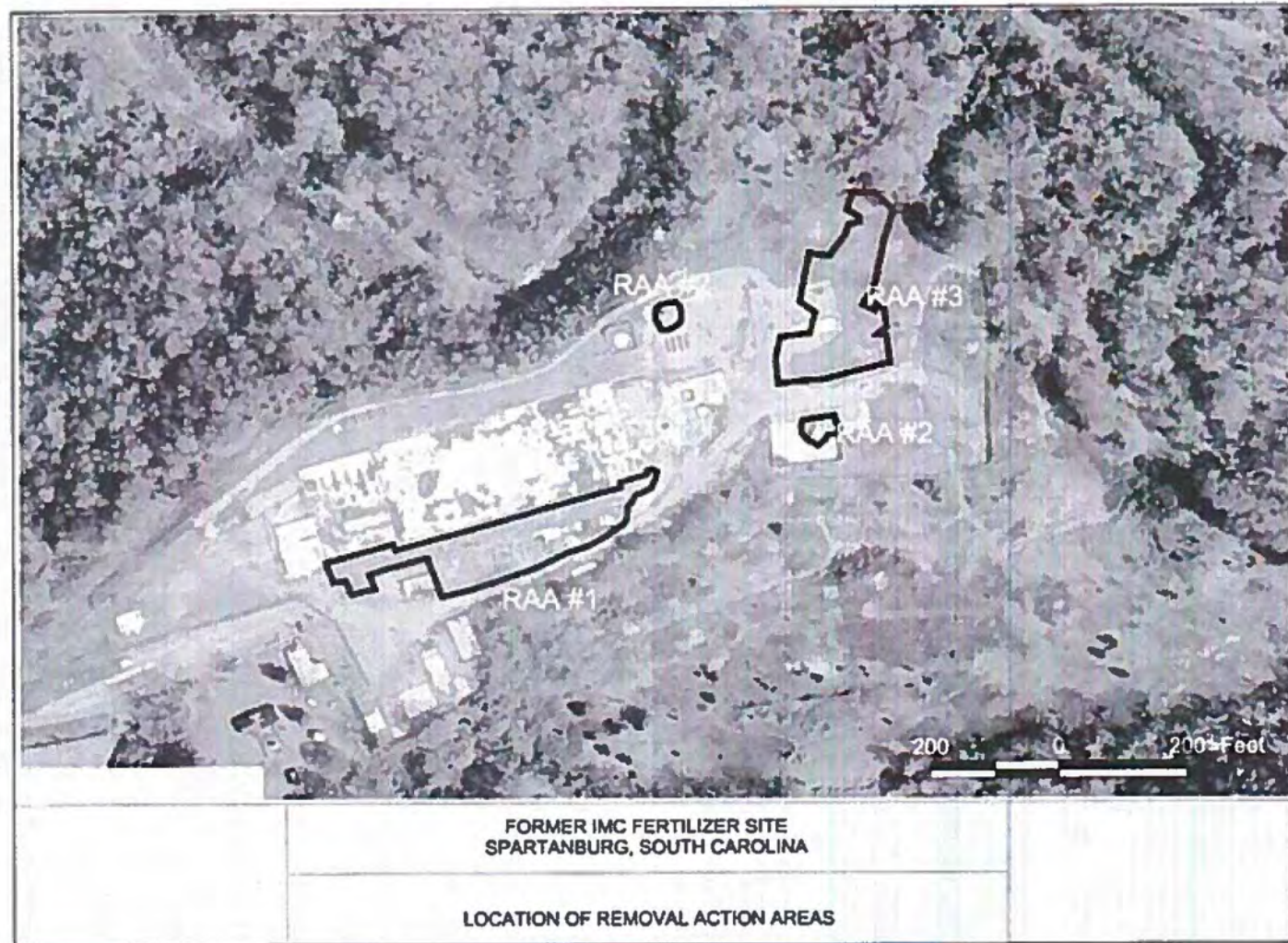


Figure 8

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the Spartanburg County Public Library on Church Street in Spartanburg, SC. The notice of the availability of these documents was published in the Spartanburg Herald on June 10, 2014. The public meeting was held on June 26, 2014. The public comment period began on June 9, 2014 and concluded on July 9, 2014.

4.0 SCOPE AND ROLE OF OPERABLE UNIT OR RESPONSE ACTION

The IMC Site was addressed as one operable unit during the PRP-lead RI/FS. The scope of the investigation was to determine the nature and extent of contamination at the Site, including process residuals, soil, and groundwater, as well as surface water and sediment in Fairforest Creek. Section 5 further discusses the nature and extent of contamination in more detail.

This ROD selects actions that will remediate groundwater contamination that pose unacceptable risks. Ingestion of contaminated groundwater extracted from the contaminated plume poses a current and potential future risk to human health because the concentration of contaminants exceeds maximum contaminant levels (MCLs) for drinking water (as specified in the Safe Drinking Water Act) or exceeds EPA's acceptable risk range for those constituents without a MCL. This action is a final action and will prevent current or future exposure to groundwater contamination above concentrations noted in Table 21.

Site-specific remedial action objectives (RAOs) are described in detail in Section 8 of the ROD. RAOs indicate the exposure routes that will be addressed through the remedial action in order to prevent exposure to site COCs.

5.0 SITE CHARACTERISTICS

This section of the ROD provides a brief comprehensive overview of the IMC Site's soils, geology, surface water hydrology, and hydrogeology; the sampling strategy chosen for the Site; the conceptual site model; and the nature and extent of contamination at the Site. Detailed information about the Site's characteristics can be found in the RI Report.

5.1 OVERVIEW OF THE SITE

The IMC Site is an approximately 41-acre site located in the Arkwright community just south of Spartanburg, Spartanburg County, South Carolina. The land uses in the vicinity of the Site include industrial, residential, and undeveloped properties.

IMC SUPERFUND SITE**RECORD OF DECISION****5.2 SURFACE AND SUBSURFACE FEATURES**

With the exception of the facility area, which is surrounded by a security fence, the Site is undeveloped. Within the facility area, the building foundations are still present; building demolition was completed in 1999. Just to the south of the fenced facility area is an open field where the former scrubber and sewage lagoons were once located.

The Site is characterized by 90 feet of relief. The facility area is located on a ridge that drops off sharply to the north towards Fairforest Creek and to the south towards the open field. The ridge slopes eastward towards Fairforest Creek. The portions of the property at the North Street Extension entrance (west end of the site) are typified by ground surface elevations of approximately 700 feet above msl. However, much of the property adjacent to Fairforest Creek to the east is no more than about 625 feet above msl.

Only one surface water body that flows year round is located on the Site. This surface water body, Fairforest Creek, borders the site on part of the northern and eastern property boundaries. Fairforest Creek is sinuous but flows primarily from the northwest to the southeast. The elevation of Fairforest Creek is about 610 feet above msl at the eastern portions of the site. Portions of the site are within its 100 year-floodplain. Generally, Fairforest Creek has an annual mean flow rate of approximately 39 cubic feet per second (cfs). In addition to Fairforest Creek, two unnamed tributaries that are oriented east-west are located in the southern portion of the site. These streams, referred to as the northern intermittent stream and southern stream, are shown on **Figure 9**. The northern intermittent stream is located in the open field in the area where the former scrubber and sewage lagoons were once located. This tributary drains eastward towards Fairforest Creek. The southern stream marks the southern property boundary of the site and is actually a ditch that was constructed to divert water from the western portion of the site around the former scrubber and sewage lagoons. The southern stream separates the site property from the Arkwright Dump property. This tributary also flows eastward and discharges into Fairforest Creek. Surface water runoff from northern portions of the Arkwright Dump drain into the southern stream.

The Site is located in the Inner Piedmont Physiographic Province of South Carolina and therefore, is underlain with massive crystalline bedrock. This province consists of massive crystalline igneous and metamorphic rocks with low permeability and is characterized by a moderate relief and gently sloping topographic features. The Cecil-Davidson-Pacolet soil association underlies the facility. The soils are unconsolidated

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Figure 9
Surface Water Features

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and are primarily derived from the in situ chemical weathering of the detrital bedrock. The unconsolidated material consists of both soil and saprolite and is collectively known as regolith. The regolith extends from ground surface to depths as much as 140 feet bls. The thickness of the regolith is generally proportional to the degree of bedrock fracturing. The Inner Piedmont Belt underlies the regolith. The Inner Piedmont Belt is composed of metamorphic rock types such as biotite gneiss, biotite schist, quartzite hornblende gneiss, and other gabbroic rocks.

Cross sections were prepared to illustrate hydrogeologic conditions at the Site. The locations of the cross sections are shown on **Figure 10** and cross section A-A' is shown on **Figure 11**. The remaining cross sections can be found in the RI Report. The depth to bedrock at the Site ranges from 17 feet bls at well location MW-7 A, adjacent to Fairforest Creek, to 49 feet bls at well location MW-12A, downgradient of the former sulfuric acid plant area. Boring descriptions indicate that bedrock consists of heavily fractured biotite mica schist in the southern portion of the Site, as indicated by well MW-4A and MW-5B, and by dense granitic gneiss along the eastern portion of the Site, as indicated by wells MW-7 A, MW-9A, MW-IIA, and MW-12A. Overlying the bedrock site-wide, saprolite was observed at depths varying from 4 feet to 14 feet bls. Weathered residual soils were observed above the saprolite throughout most of the site. Alluvial soils were observed above the saprolite in areas within close proximity to the Fairforest Creek. The presence of relic rock fabric (or structure) was used to differentiate between saprolite and soil (either residuum or alluvial).

The soils encountered at the Site are generally formed by in-place weathering of the underlying bedrock. The exception to this is the fill material and the wastewater/process residuals encountered in the southern and eastern portions of the site, in the vicinity of the former scrubber and sewage lagoons. Soils across the Site were generally described as sandy to silty clay and silty sand. The process residuals are visually distinct from the surrounding soils and were described primarily as gray silt. In some areas, residuals were further described as being clayey or sandy.

Groundwater in the area occurs in a complex, interconnected, two-media system composed of a zone of saprolite/regolith and the underlying fractured bedrock. Individual aquifers within the area are not extensive, and most of the water in the area is supplied by streams and lakes. The aquifer is usually unconfined; however, in some areas the saprolite acts as a confining unit due to its low permeability compared to underlying Piedmont rocks. Almost all groundwater recharge occurs by precipitation in the form of rainfall. The water table is generally found at the saprolite-bedrock interface. Most high-yield wells in the area are drilled to depths less than 250 feet bls because the number of fractures decreases with depth.

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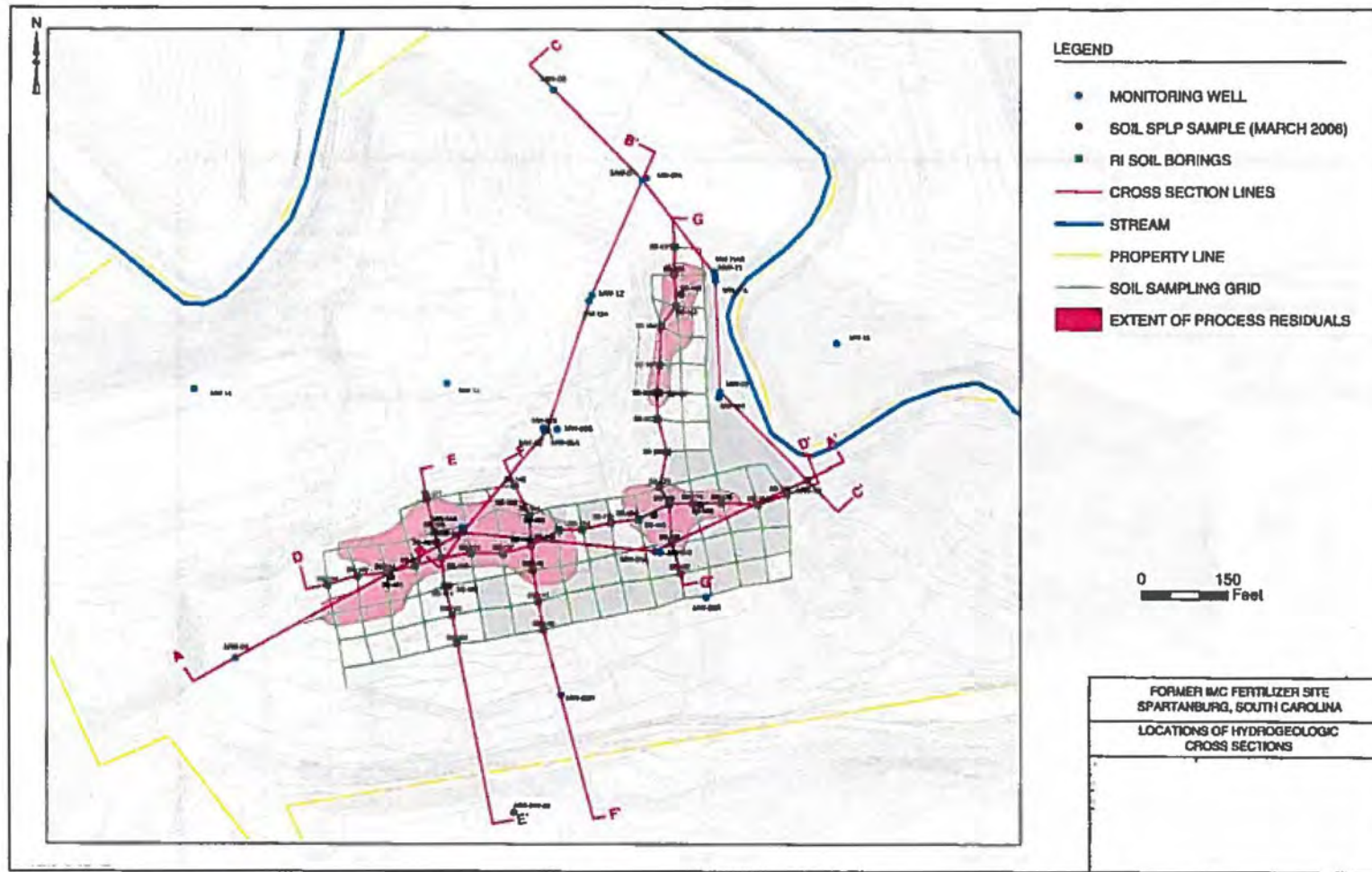


Figure 10

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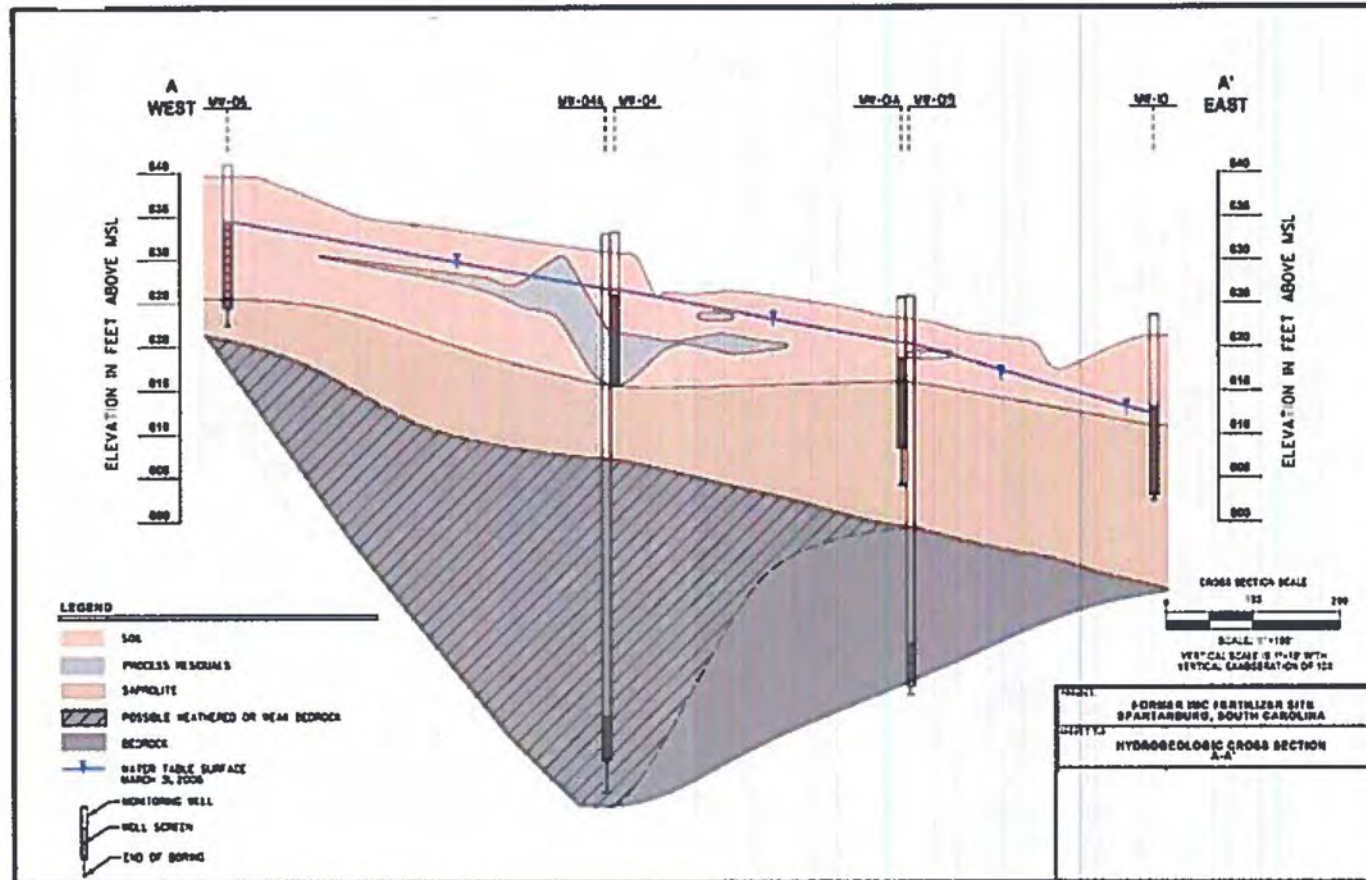


Figure 11

IMC SUPERFUND SITE**RECORD OF DECISION**

The monitoring wells located on-site and one monitoring well located off-site are used to assess groundwater quality and site hydrogeologic conditions. The off-site monitoring well, MW-15 is located on the opposite side of Fairforest Creek from the Site (across from on-site well pair MW-9/9A). Water levels were measured in the on-site monitoring wells and staff gages as well as the monitoring wells located at the adjacent Arkwright Dump Site. These water levels were used to prepare the water table map presented in **Figure 12**.

Shallow groundwater at the Site occurs under water table conditions within the saprolite. Depth to groundwater ranges from approximately 64 feet bls at monitoring well MW-14 to approximately 2 feet bls at monitoring well MW-01A. Groundwater flow at the Site is to the north, northeast, and east towards Fairforest Creek. The lower surface water elevations in Fairforest Creek as compared to groundwater elevations in adjacent monitoring wells indicate that groundwater at the site discharges into Fairforest Creek. There is no indication of groundwater flow towards the southern stream, bordering the property to the south, or the Arkwright Dump Site.

Groundwater from the Arkwright Dump Site flows to the northeast towards the IMC Site and to the east towards Fairforest Creek. Groundwater in the northern portion of the Arkwright Dump Site appears to flow across the southeastern portion of the IMC property towards Fairforest Creek. A portion of this groundwater appears to discharge into the southern stream. Slug tests were performed to determine hydraulic conductivities for the aquifer. Slug tests were analyzed using the Bower and Rice methodologies. The average hydraulic conductivity for the water table wells was estimated to be 2.58 feet/ day with an effective porosity of 0.30 based on the type of soils observed at the Site. The estimated hydraulic gradient of the water table is 0.027 feet/foot. The average linear velocity for the water table aquifer is estimated to be 85 feet per year. Vertical gradients ranged from approximately -0.13 feet/feet in well pair MW-4/4A to +0.03 feet/feet in well pair MW-9/9A. Minor downward gradients were observed in well pairs indicate some connection exists between the upper saprolite, lower saprolite, and the underlying bedrock.

5.3 RI SAMPLING STRATEGY

The field sampling activities were conducted in two phases. The objectives developed for the Initial RI field activities were as follows:

- To assess the extent of residual process materials at the Site.

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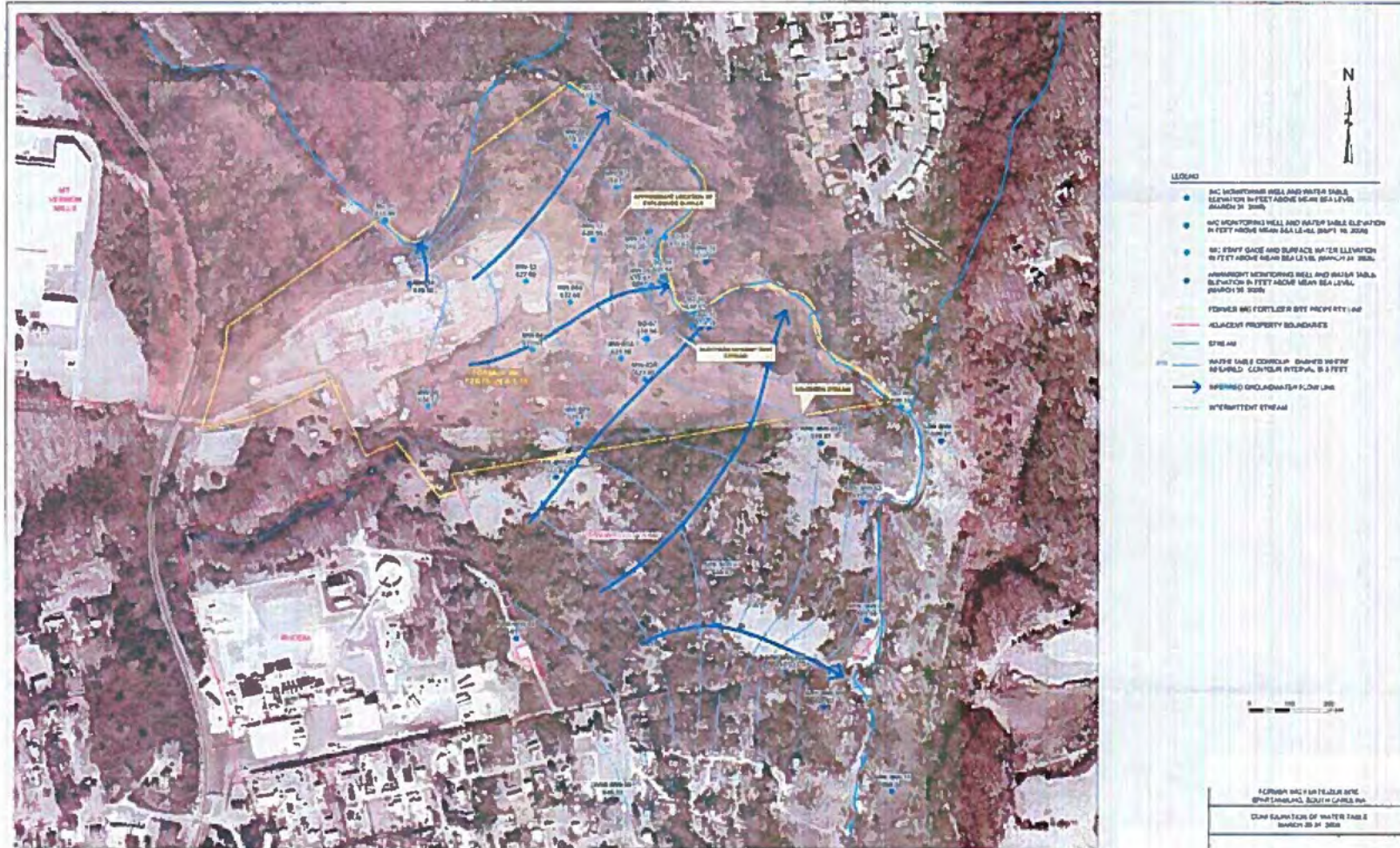


Figure 12
 Water Table Configuration

IMC SUPERFUND SITE**RECORD OF DECISION**

• To refine the nature and distribution of site-related contaminants in surface and subsurface soils in the vicinity of potential source areas and other areas including the following (**Figure 13**):

- Process residuals
- Soils in the vicinity of the Former Sulfuric Acid Plant, Raw Materials Process Area, and area east of RAA#3
- Soils on the northern side of the former manufacturing building
- Soils in the vicinity of the former office area
- Test pits
- Other areas

The objectives developed for the Supplemental RI field activities were as follows:

- To further assess the extent of process residuals on the eastern portion of the Site.
- To further refine the nature, distribution, and leaching potential of specific site-related COPCs in surface and subsurface soils including:
 - Process residuals
 - Soils in the vicinity of the Former Sulfuric Acid Plant, Raw Materials Process Area, and area east of RAA#3
 - Soils on the northern side of the former manufacturing building
- To further understand the nature and distribution of site-related contaminants in groundwater, including groundwater near potential source areas at the Site.
- To further define groundwater flow characteristics and relationship to surface water bodies.
- To assess the presence of site-related contaminants in the sediment pore water beneath Fairforest Creek.
- To assess the presence of site-related contaminants in sediment, and surface water in Fairforest Creek.

Prior to conducting the RI investigation at the site, a radiation survey was performed. The radiation survey was generally conducted in the areas of the Site where the RI soil investigation was conducted. Ionizing radiation was measured at a total of 47 locations. Ionizing radiation measurements obtained during the survey were all similar and ranged from 11 $\mu\text{R/h}$ to 45 $\mu\text{R/h}$ at surface soil locations in the process residual area.

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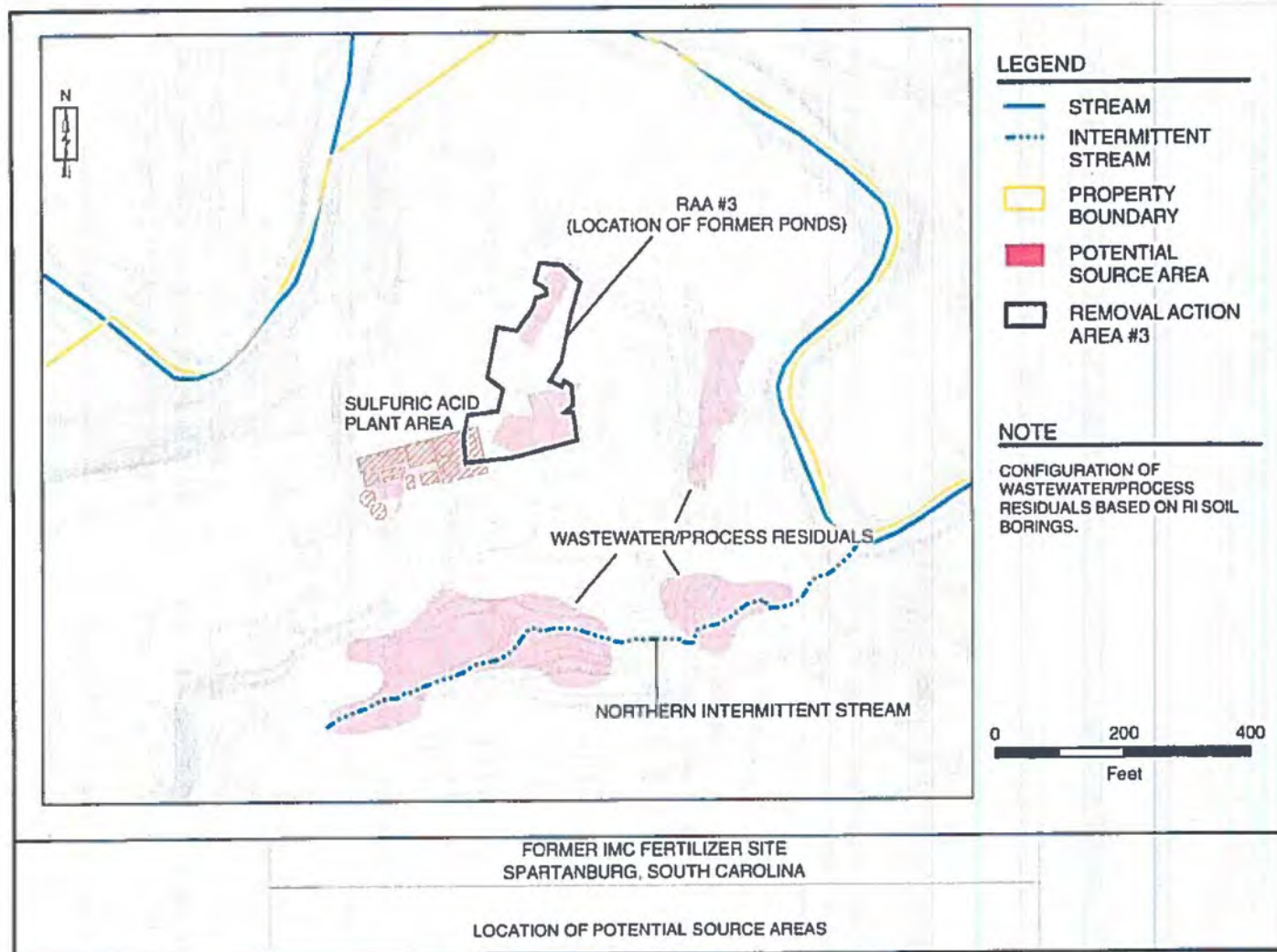


Figure 13

IMC SUPERFUND SITE**RECORD OF DECISION**

Background locations had ionizing radiation measurements ranging from of 11.4 $\mu\text{R/h}$ to 36 $\mu\text{R/h}$. Nearly all of the measurements made elsewhere at the Site fell between these two measured background values. Ionizing radiation measurements were consistent with background measurements.

5.4 Nature and Extent of Soil Contamination

Site areas have been divided into the following sub-areas based on former plant operations as well as historic focused areas of investigation:

- Process Residuals Areas
- Former Sulfuric Acid Plant and Raw Materials Areas
- Remedial Action Area RAA#3
- Area North of Former Manufacturing Building
- Former Office Area
- Test Pits

Process Residuals Areas

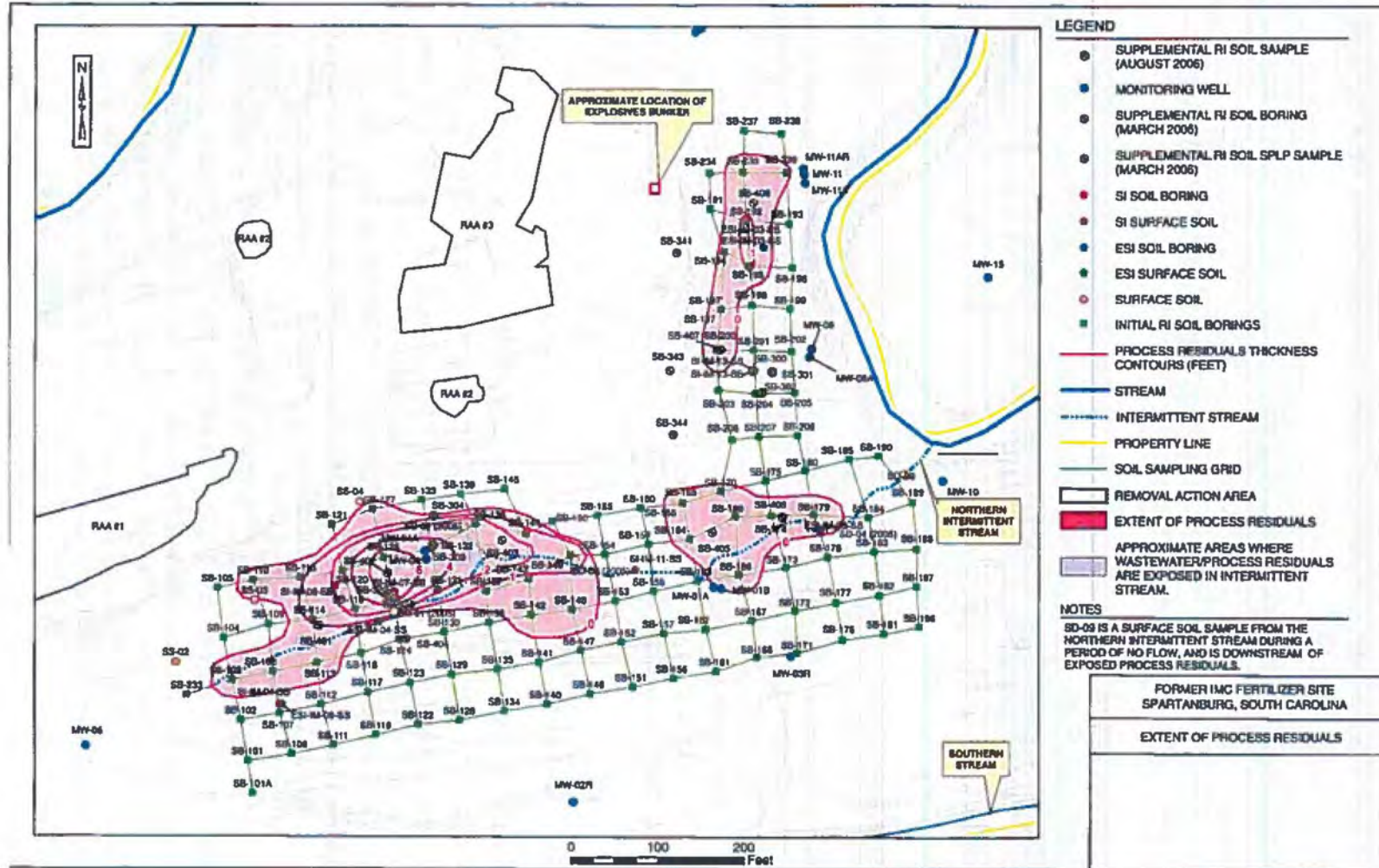
Process residuals areas are those areas where residuals derived from facility manufacture of fertilizer and from air pollution control equipment were hydraulically placed. The three distinct areas of process residuals were visually identified in the field from inspection of soil borings and surface exposures in the northern intermittent stream. These three areas are defined as the: Southwestern Process Residuals Area, Southeastern Process Residuals Area, and Northeastern Process Residuals Area (**Figure 14**).

Southwestern Process Residuals Area

The Southwestern Process Residuals Area represents over 80 percent of the residual mass of the three areas shown. This mass is estimated to consist of approximately 4,650 cy of wastewater/process residuals. The body of residuals is defined by a sediment basin (lagoon) centered on the northern intermittent stream. To address characterization of contaminants of potential concern (COPCs) in process residuals and the adjoining soils area to the south, investigations included samples that were analyzed for metals by both compositional and synthetic precipitation leaching procedure (SPLP) methods. RI results indicated levels of arsenic up to 37 mg/kg, leading to arsenic being included as a COPC in this area. RI results also indicated chromium concentrations up to 1604 mg/kg leading to chromium being included as a COPC in this area. Lead concentration levels ranged from 6.2 to 220 mg/kg in soil and process residuals samples from this area. Fluoride is a COPC characteristically related to the production of fertilizers. Fluoride concentrations ranged from 19 mg/kg to

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14,000 mg/kg The site-specific soil screening level (SSL) for fluoride is 5.4 mg/kg. The sample results indicate that process residual samples typically have the highest observed concentrations (79 mg/kg to 16,000 mg/kg), while concentrations in soils beneath the process residual have lower concentrations (19 mg/kg to 710 mg/kg). While highly leachable, fluoride is assumed to be a widely distributed COPC within the process residuals area. 2,4-DNT and 2,6-DNT were COPCs observed in the process residuals area at a concentration greater than the SSL of 0.0002 mg/kg. Process residual samples had 2,4-DNT and 2,6-DNT concentrations of 120 mg/kg and 3.5 mg/kg, respectively.

Southeastern Process Residuals Area

As with the Southwestern Process Residuals Area, the body of residuals is centered on the northern intermittent stream, however the body of process residuals is less than 1 foot thick. Process residual sample exposed in the northern intermittent stream at the downstream end of the area had an elevated arsenic concentration of 150 mg/kg, while the downstream soil sample had the lowest arsenic concentration of 2.3 mg/kg. Chromium was below the background concentration 76.7 mg/kg in samples from this area. Total lead concentrations were greater than the SSL of 400 mg/kg in process residual samples from three borings obtained from this area at concentrations of 410 mg/kg, 600 mg/kg, and 540 mg/kg. SPLP analyses indicate that lead is leachable from the process residuals area at levels exceeding the action level for lead in groundwater. Fluoride in process residuals concentrations ranged from 400 to 900 mg/kg. These fluoride concentrations are less than those detected in the Southwestern Process Residuals area, however the levels detected are significantly higher than the SSL of 5.4 mg/kg. SPLP analysis of fluoride indicates that fluoride may leach to groundwater from process residuals in this area. 2,4-DNT and 2,6-DNT are COPCs observed in the process residuals area at a concentration greater than the SSL of 0.0002 mg/kg

Northeastern Process Residuals and Adjoining Area

The thickness of process residuals in this area is generally less than 1 foot. There is no identifiable drainage ditch or stream through this limited area of process residuals. In the process residuals, chromium was below background concentrations, arsenic was greater than background concentrations in only one process residual sample and lead was present at concentrations greater than the SSL of 400 mg/kg. Fluoride ranged from 14 to 110 mg/kg (above the SSL of 4.5 mg/kg) in the four samples collected in this area. In the adjoining area, additional sampling was conducted to specifically delineate the extent of lead, selenium and PCBs adjacent to the south end of the process residual area. Lead was detected at concentrations ranging from 29 to 1,400 mg/kg. In addition selenium concentrations ranged from 1.1 to 1.6 mg/kg and PCBs were detected at a concentration of 23 mg/kg.

IMC SUPERFUND SITE**RECORD OF DECISION****Former Sulfuric Acid Plant and Raw Materials Process Areas**

The area of the Former Sulfuric Acid Plant and Raw Materials operations was investigated and arsenic, cadmium, lead and PCBs were determined to be COPCs in this sub-area. Samples were taken during the initial and supplemental RIs and none of the borings contained arsenic concentrations greater than the site-specific background of 12 mg/kg, thus the extent of arsenic above background is limited to surface soils at only two locations within this sub area. Samples were also analyzed for cadmium. Only one boring exhibited cadmium concentrations above background; therefore, the extent above background within the former sulfuric acid and Raw Process Materials area is limited. Lead was analyzed for and compared to the SSL of 400 mg/kg. Results from samples collected at borings showed concentrations of 600 and 590 mg/kg indicating that the extent of lead above the soil SSL in this sub-area is limited to a small area of surface soils. One soil boring (4.4 mg/kg) identified concentrations of PCBs above the SSL of 1 mg/kg during the Initial RI. Supplemental borings indicate that PCB concentrations greater than the SSLs in this sub-area is limited. 2,4-DNT was a COPC observed at only one location in this area of the site at a concentration (0.49 mg/kg) greater than the SSL of 0.0002 mg/kg.

Remedial Action Area #3 (RAA#3)

RAA#3 represents an area where soils from a group of five former impoundments were removed. Confirmation samples were collected within the footprint of the excavation, and RI samples were collected adjacent to but outside of the footprint to the east. Analysis of soil samples indicated the isolated presence of lead and PCB concentrations greater than SSLs in remaining soils. Lead is present above SSLs in one surface soil sample outside of the excavation footprint. PCB concentrations were greater than the SSL of 1 mg/kg at three isolated sampling points within the excavation footprint at concentrations of 15.7 mg/kg, 1.29 mg/kg, and 1.26 mg/kg. 2,4-DNT was observed at only two locations in this area of the site at concentrations greater than the SSL of 0.0002 mg/kg. 2,4-DNT was detected at concentrations of 0.051 mg/kg and 0.16 mg/kg.

Area North of Manufacturing Building

Two COPCs (arsenic and PAHs) were identified in the area north of the Manufacturing Building during the Initial RI and examined further in the Supplemental RI. Arsenic concentrations were detected above the background concentration of 12 mg/kg during the initial RI in soil in this area. Supplemental samples exhibited concentrations exceeding background for arsenic. The extent of arsenic above background was limited to the area of rail access to the former building and has been bounded by the wall of the building and the embankment to the north. This is the only contiguous area of arsenic

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concentrations above background on the Site, and may be related to railroad ballast or wood preservatives in the rail ties. PAHs were also detected in soil on the north side of the Former Manufacturing Building during the Initial RI and were further analyzed during the Supplemental RI. PAHs are not related to the production of fertilizer. PAHs may be related to creosotes that were contained within the wooden railroad ties found along the access to the building.

Former Office Area

COPCs were not detected above SSLs in this area of the Site.

Test Pits

Test Pits were advanced in the area east of the former potash storage area. Samples from the test pits were analyzed for arsenic and lead and observed concentrations were below background levels for both COPCs.

Other Areas

Other areas were investigated during the SI, ESI, and removal action phases. These include areas on the south side of the Former Building and outlier areas of the Site. No COPCs were identified in these other areas.

5.5 Nature and Extent of Groundwater Contamination

Groundwater at the Site is monitored via a network of monitoring wells (**Figure 15**). Six of these locations consist of vertical well nests installed to monitor the extent of COPCs with depth. Analysis of groundwater flow characteristics indicated that groundwater from the site flows towards Fairforest Creek where it discharges. The Supplemental RI included a well located on the opposite side of Fairforest Creek from the Site, to assess the potential for groundwater flow beneath the Creek. In addition to groundwater sampling, RI investigations included extensive sediment pore water sampling along the site side of Fairforest Creek (see locations on **Figure 16**). Sediment pore water results were used to confirm and calibrate the geometry of groundwater distribution for the specific COPCs. Results of these investigations confirm that groundwater flow from the Site discharges at Fairforest Creek.

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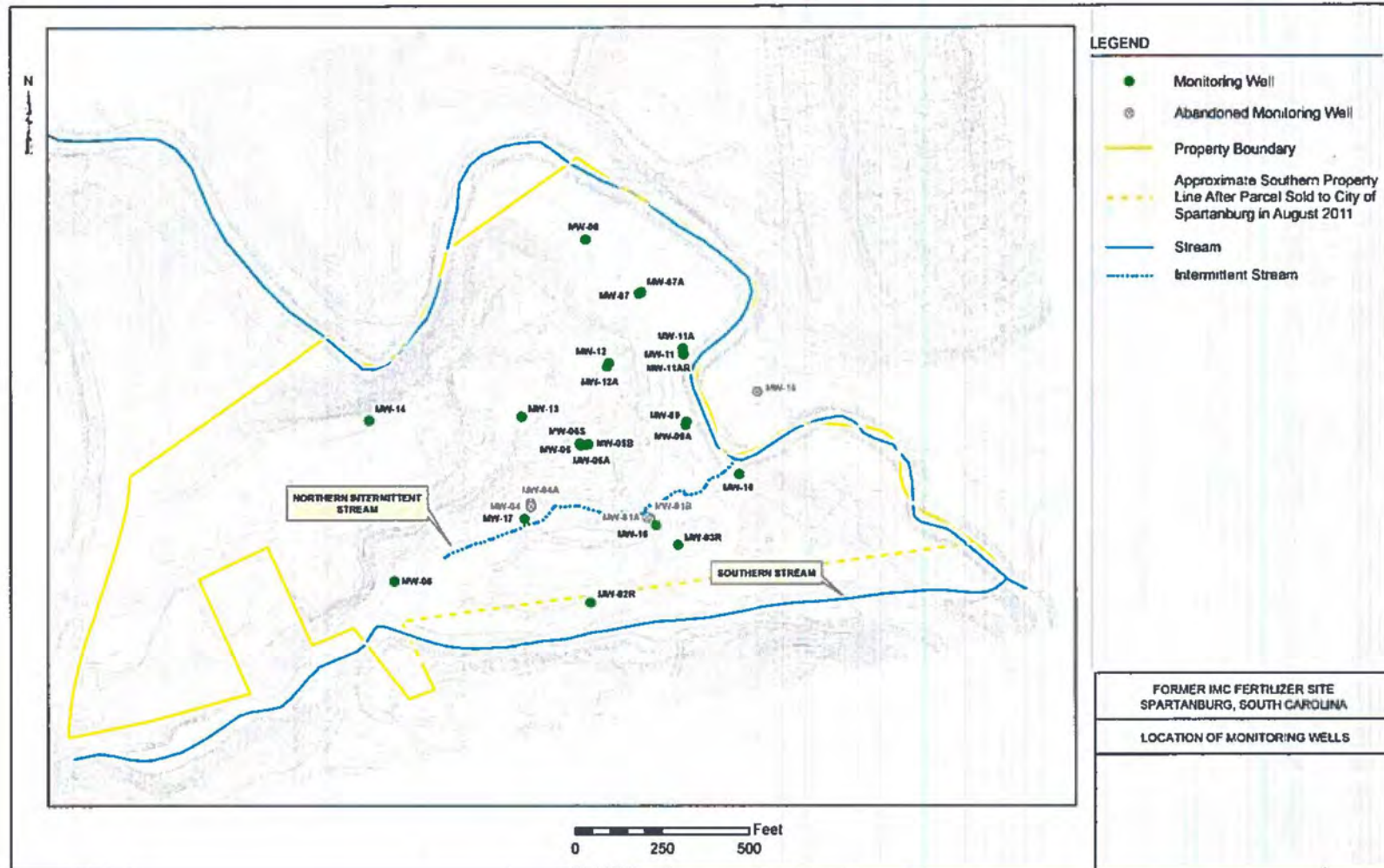


Figure 15

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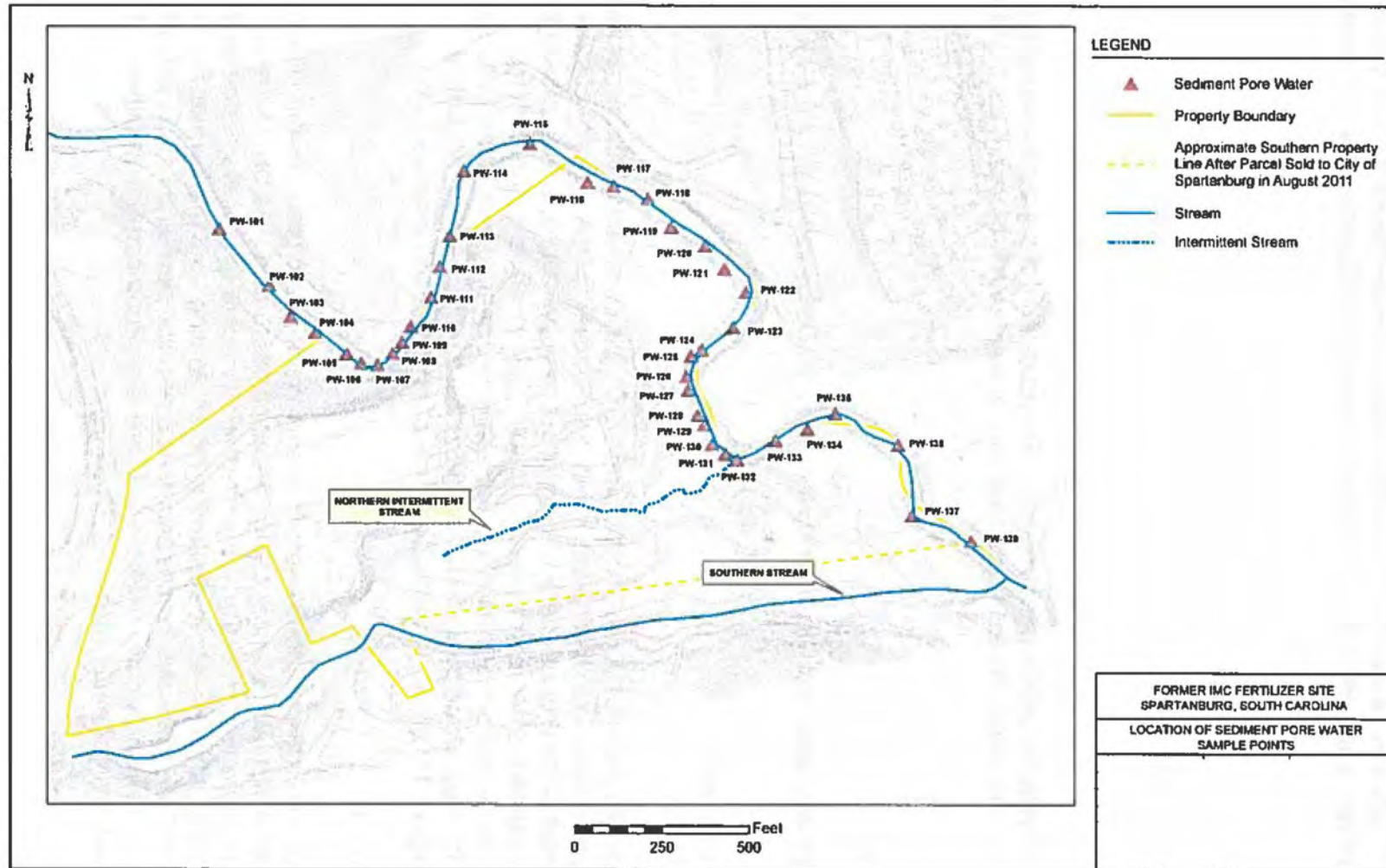


Figure 16

IMC SUPERFUND SITE**RECORD OF DECISION**

COPCs in groundwater include the following metals that exceeded federal and state maximum contaminant levels (MCLs) in groundwater during Supplemental RI sampling in 2006:

- Arsenic
- Beryllium
- Cadmium
- Lead
- Selenium
- Thallium

Results of analyses for VOCs performed in 2006 indicated that tetrachloroethene was below its MCLs, however, the following compounds were carried forward as COPCs in groundwater:

- Benzene
- Vinyl chloride

Wet chemistry and other analytes carried through as COPCs included the following:

- Fluoride
- Nitrate (as nitrogen)
- Gross Beta

The presence of a number of the above-listed COPCs is consistent with former fertilizer production operations. The distribution within groundwater for the majority of these COPCs correlates with either specific soil/process residual source areas, or with low pH observations related to operational source areas. Vinyl chloride concentrations; however are an exception, and likely indicate an upgradient source at the Arkwright Dump Site. To support the conclusion regarding the effects of pH on the plume geometry, **Figure 17**, an isoconcentration map of pH has been prepared.

Distribution of pH

Figure 17 illustrates the distribution of pH observations in site groundwater. The map clearly indicates that two separate source areas characterized by a pH <4 are present. One pH plume is derived from the area near the mass core of process residuals in the vicinity of MW-04 while the other appears to be emanating from the Former Sulfuric Acid Plant and Raw Materials Processing Areas. A minor plume (pH <5) is indicated to be discharging from the vicinity of MW-14. There is a strong correlation between the pH distribution and the geometry of the COPC distributions.

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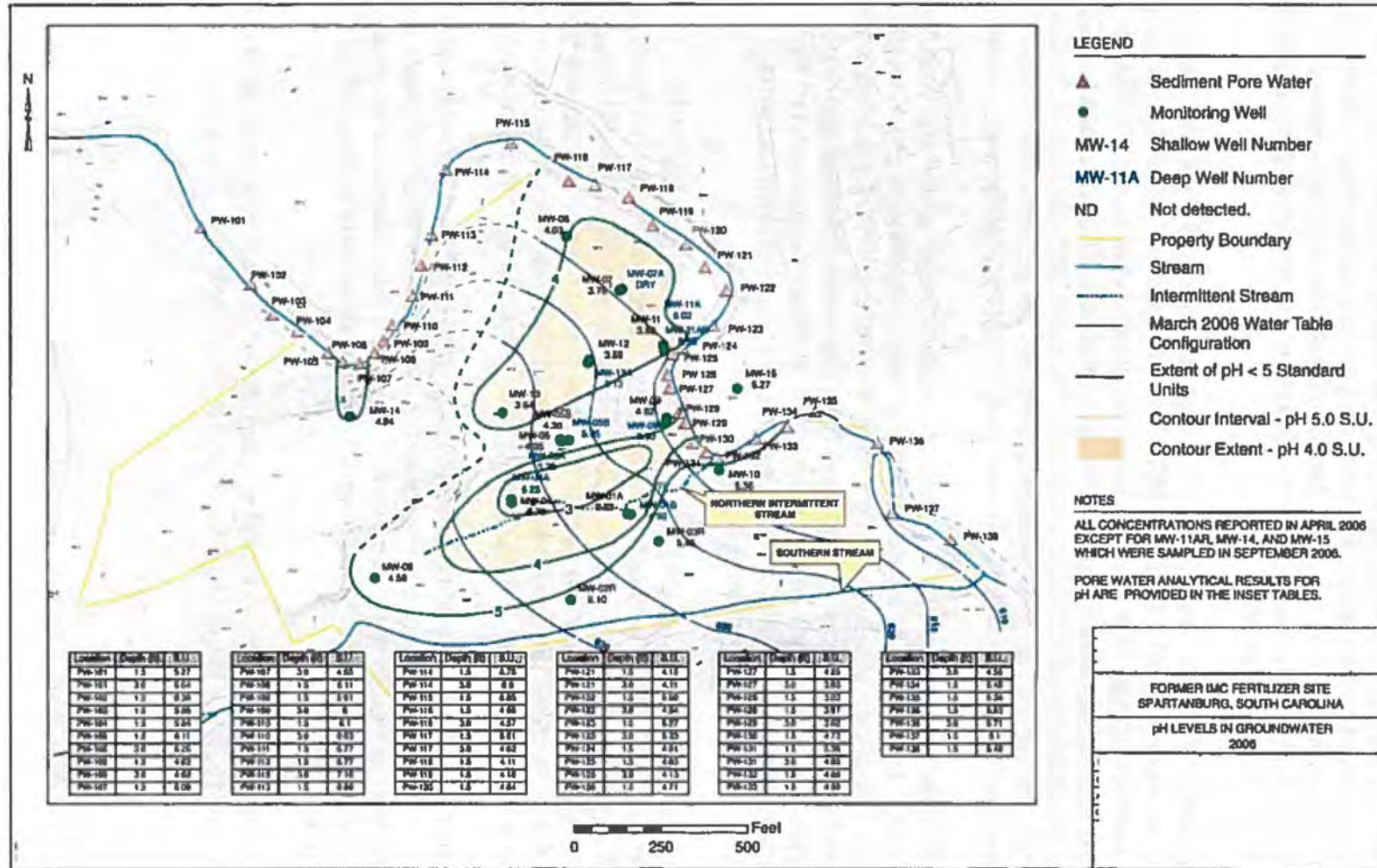


Figure 17

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Inasmuch as most metallic COPCs found in the groundwater are not significant constituents in the manufacture of fertilizer, it is likely that acid water derived from hydraulically placed process residuals and from loss of acid process water in the Sulfuric Acid Plant and Raw Materials Process area have leached these COPCs from the native soil and saprolite units beneath the Site. While the original source of most of these COPCs is natural, the process of their leaching is the result of fertilizer production activities, an anthropogenic cause.

Figure 18 presents the distribution of arsenic concentrations in the groundwater. Two limited plumes of arsenic greater than the MCL of 0.01 mg/L are present, one plume in the vicinity of monitoring well MW-04 and the other plume in the vicinity of MW-07. Arsenic is not a significant constituent in fertilizer production. While arsenic is a COPC in soils, these groundwater observations are not coincident with elevated concentrations detected in soils, rather they appear to be related to low pH groundwater. Thus the source of arsenic is likely associated with acid leaching of natural formation minerals.

Figure 19 illustrates the distribution of beryllium in groundwater. Beryllium was not identified as a COPC in site soils for either risk-based or migration to groundwater considerations. The plume of beryllium exceeding the MCL of 0.004 mg/L appears to originate in the Former Sulfuric Acid Plant and Raw Materials Processing Areas. However, beryllium is not a significant constituent in fertilizer production and its presence in the groundwater appears to be related to low pH and subsequent dissolution from natural geologic formations.

The distribution of cadmium in groundwater is presented in **Figure 20**. While cadmium is a COPC in site soils, the geometry of the cadmium plume in excess of the MCL of 0.005 mg/L also appears related to low pH levels in the Former Sulfuric Acid Plant and Raw Materials Processing Areas. A minor contribution also appears to be coming from the core of the process residuals near MW-04, where pH values are also low. The source in groundwater is likely attributable to natural formation materials.

Two limited plumes of lead exceeding the EPA action level for lead in groundwater of 0.015 mg/L are present. One plume is limited to a small zone near Fairforest Creek and may be related to the Former Sulfuric Acid Plant and Raw Materials Process Areas. The other plume appears limited to the immediate area of MW-04 in the core of the process residuals.

Fluoride is a COPC in site soils and can be a significant component from the phosphate ore used as a raw material in the fertilizer manufacturing process. The sources of the

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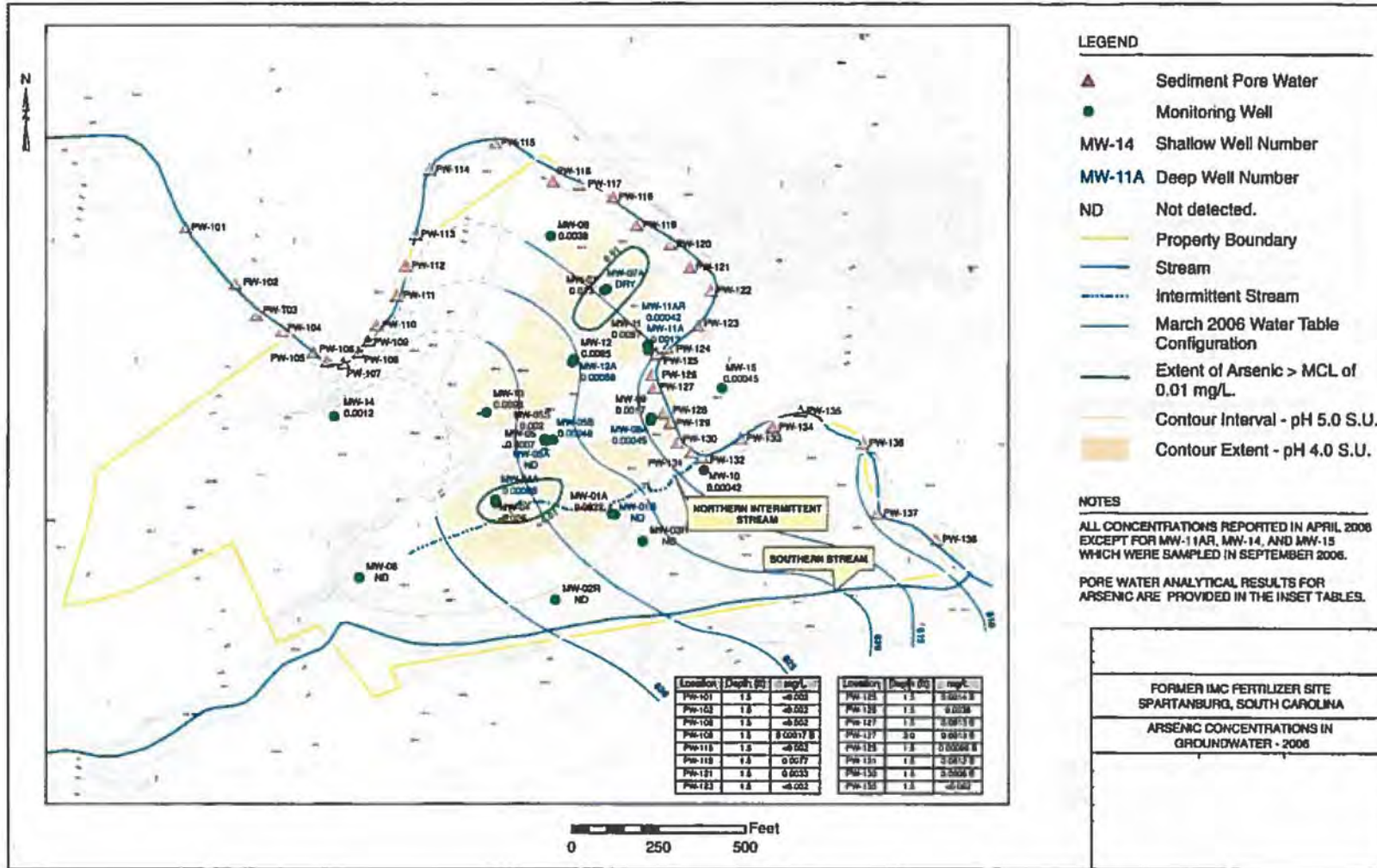


Figure 18

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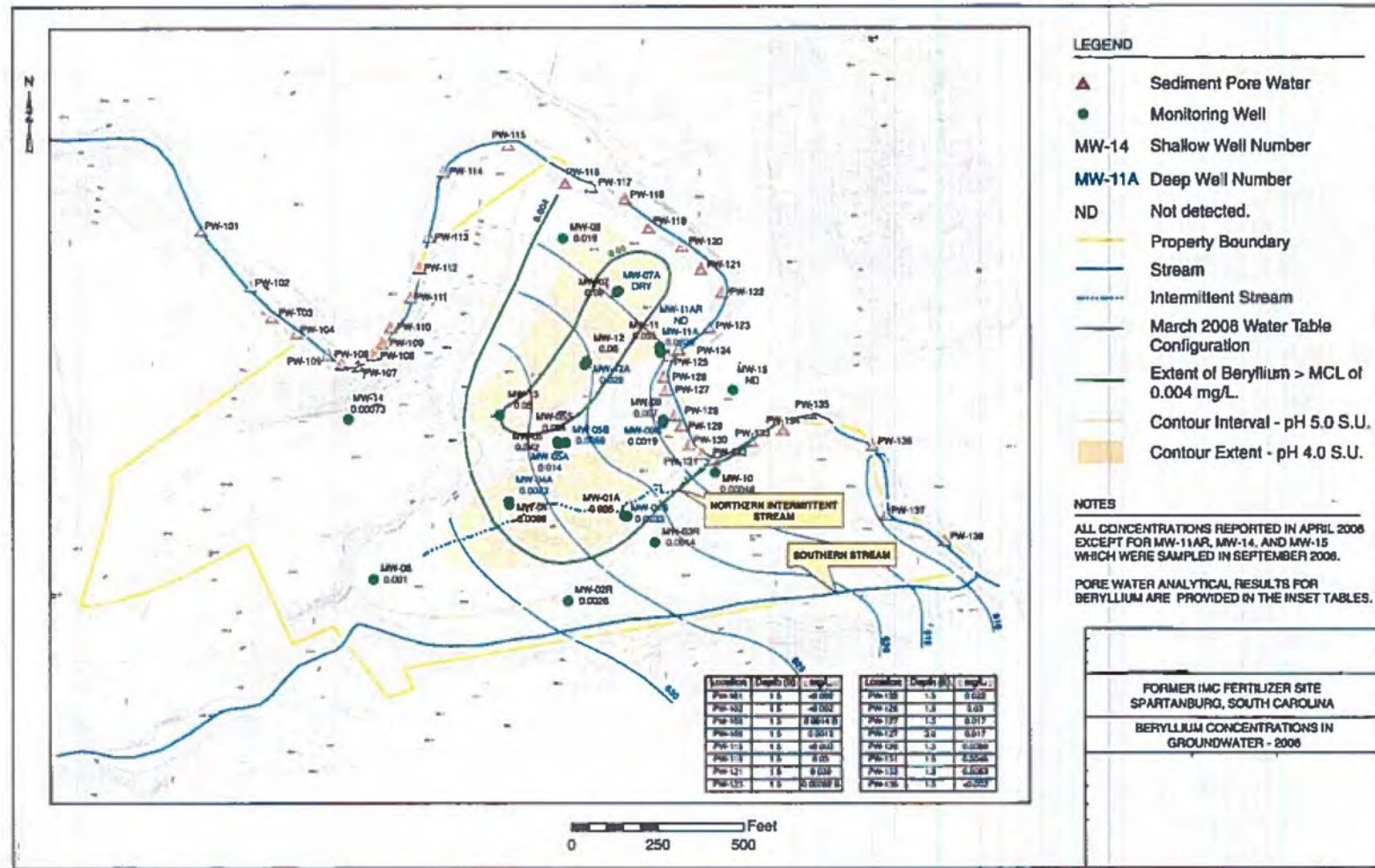


Figure 19

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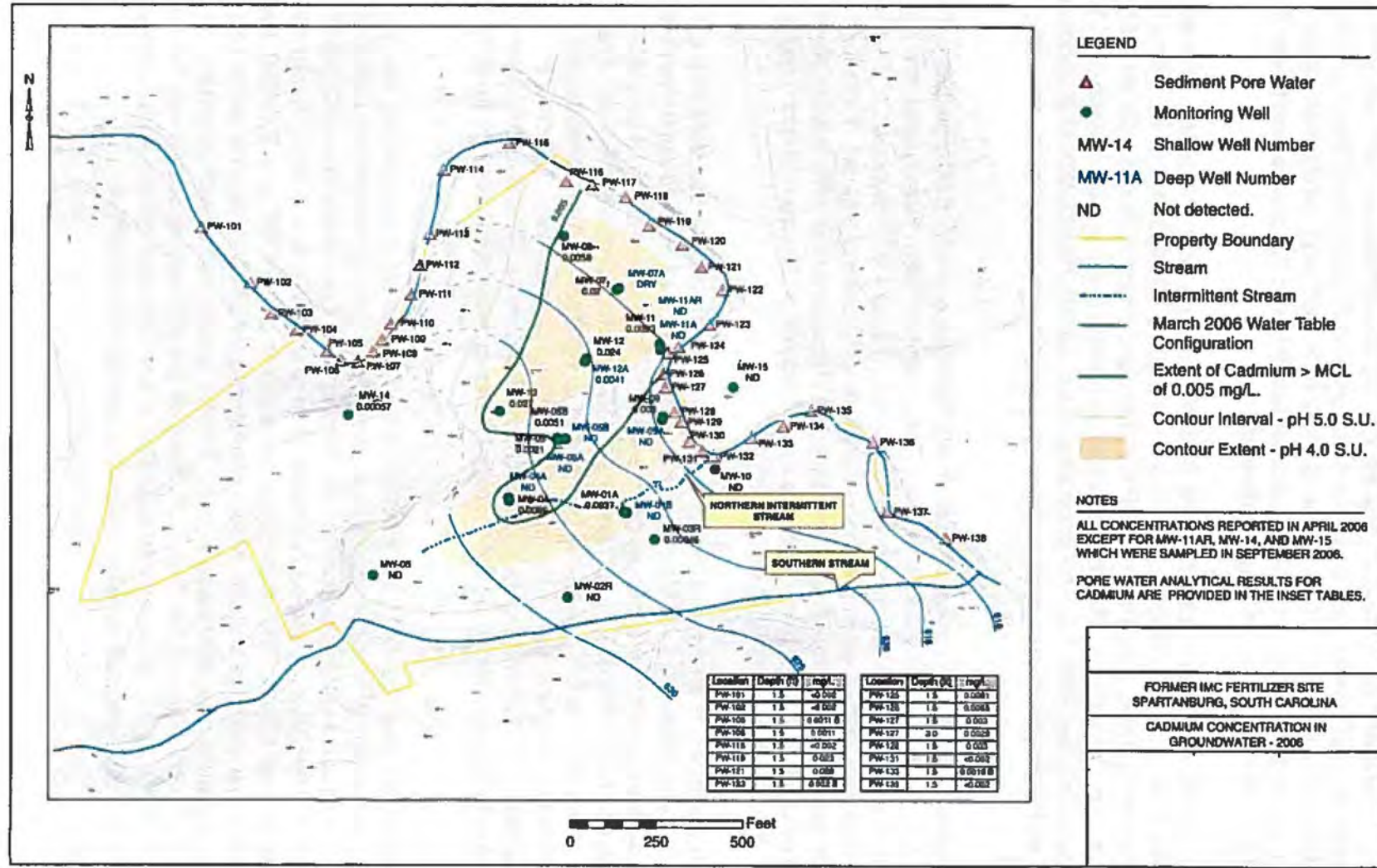


Figure 20

IMC SUPERFUND SITE**RECORD OF DECISION**

fluoride in groundwater, as shown on **Figure 21**, are concentrated in two areas; (1) a plume greater than 200 mg/L has origin from the Former Sulfuric Acid Plant and Raw Materials Process Areas, and (2) a plume greater than 500 mg/L which has origin from the core of the wastewater/process residuals areas. Both of the plumes correlate highly with the observations of low pH in groundwater.

Nitrate is a significant component from the fertilizer manufacturing process. The source of the nitrate plume in groundwater, as shown on **Figure 22**, appears to be primarily from the Former Sulfuric Acid Plant and Raw Materials Process Areas with an additional contribution from the Process Residuals areas. A minor plume is also indicated in the area of monitoring well MW-14. The geometry of the nitrate distribution in groundwater correlates well with the low pH observations associated with former manufacturing operations.

Sulfate is also a significant component from the fertilizer manufacturing process. The sulfate plume closely mimics the pH plume. The plume exhibits two core areas, each with sulfate concentrations greater than 2,000 mg/L. **Figure 23** presents the distribution and concentrations observed in the monitoring wells. These core areas originate from the Former Sulfuric Acid Plant and Raw Materials Process Areas and the Southwestern Process Residual areas. A minor plume is also indicated in the area of monitoring well MW-14 on the north side of the former building.

Gross beta levels were measured in groundwater. The area of Gross beta that exceeds the Safe Drinking Water Act (SDWA) comparison criterion of 50 pico curies per liter (pCi/L) is contained within the low pH plume area. A limited detection of benzene greater than its MCL of 0.005 mg/L was observed at monitoring well MW-05. The presence of benzene in this area may be related to operations maintenance, as benzene is not a constituent in mineral fertilizer. Vinyl chloride was detected at monitoring well MW-02R in excess of the MCL of 0.002 mg/L. The source of the plume of vinyl chloride is indicated to be the Arkwright Dump Site which borders the Site to the south.

Although 2,4-DNT and 2,6-DNT were retained as COPCs for groundwater, there are no MCLs for comparison of the concentrations observed in the groundwater. Distribution of 2,4-DNT in groundwater is presented on **Figures 24**. Concentrations of 2,4-DNT ranged from 0.19 mg/L in samples collected from well MW-9 to 8.3 mg/L in samples collected from well MW-4. The highest concentrations of 2,4-DNT and 2,6-DNT have been observed in samples collected from monitoring well MW-4 located within the core of the southwestern process residual body. These results, along with analytical results for soil samples collected at the Site, indicate that the process residuals are the source of 2,4-DNT and 2,6-DNT found in groundwater at the Site and not the small explosives bunker located 500 feet northeast and semi-downgradient of MW-4.

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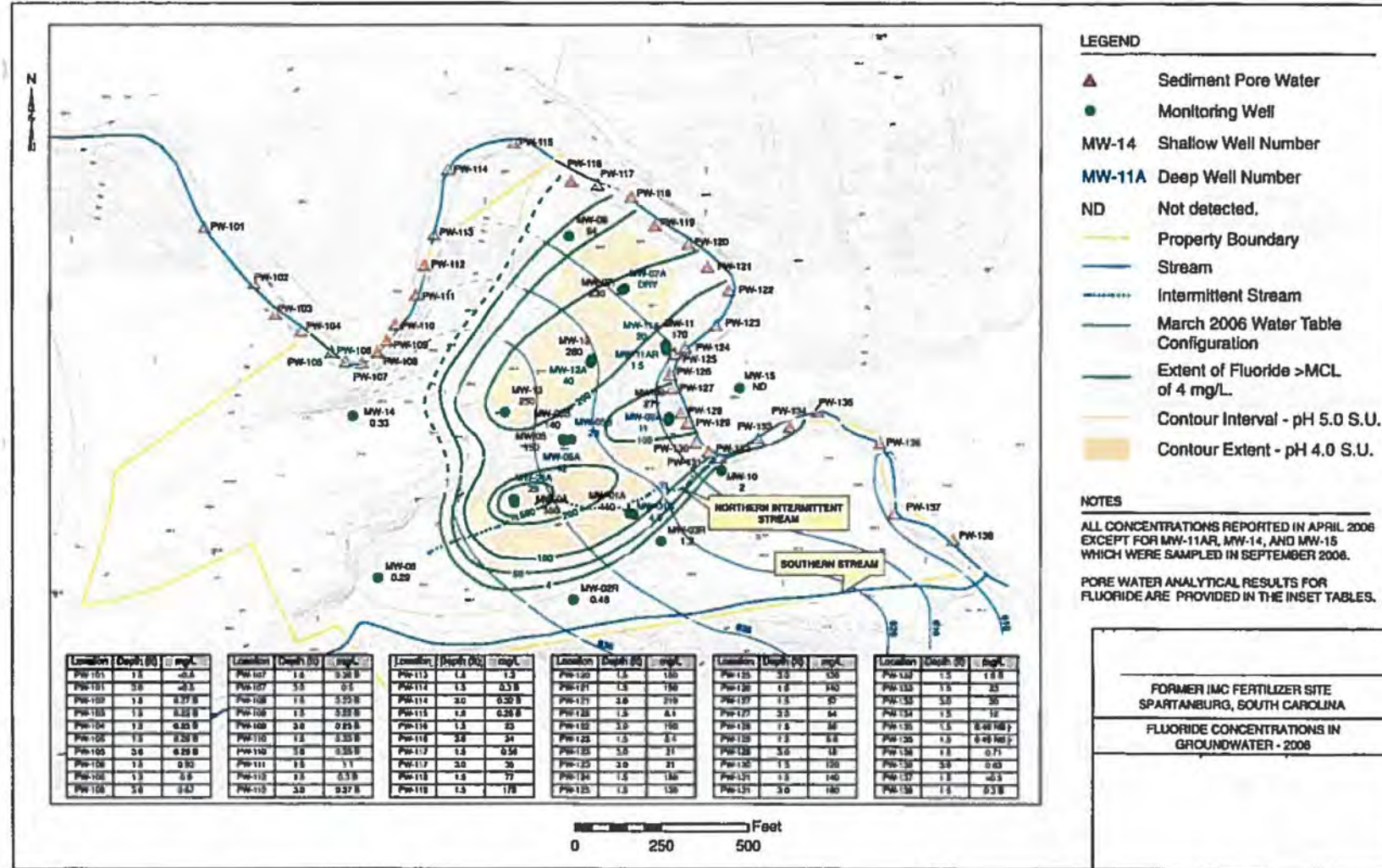


Figure 21

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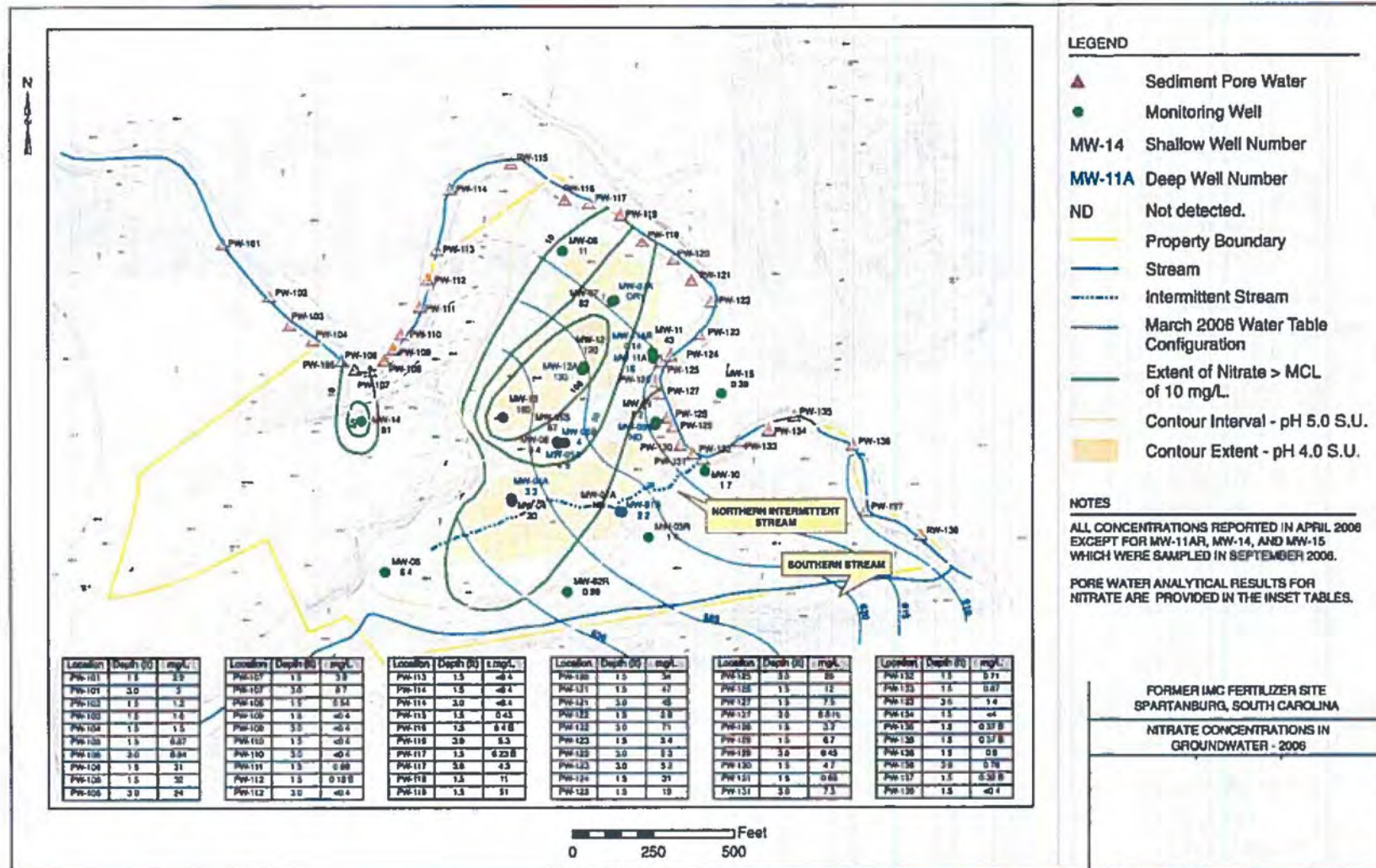


Figure 22

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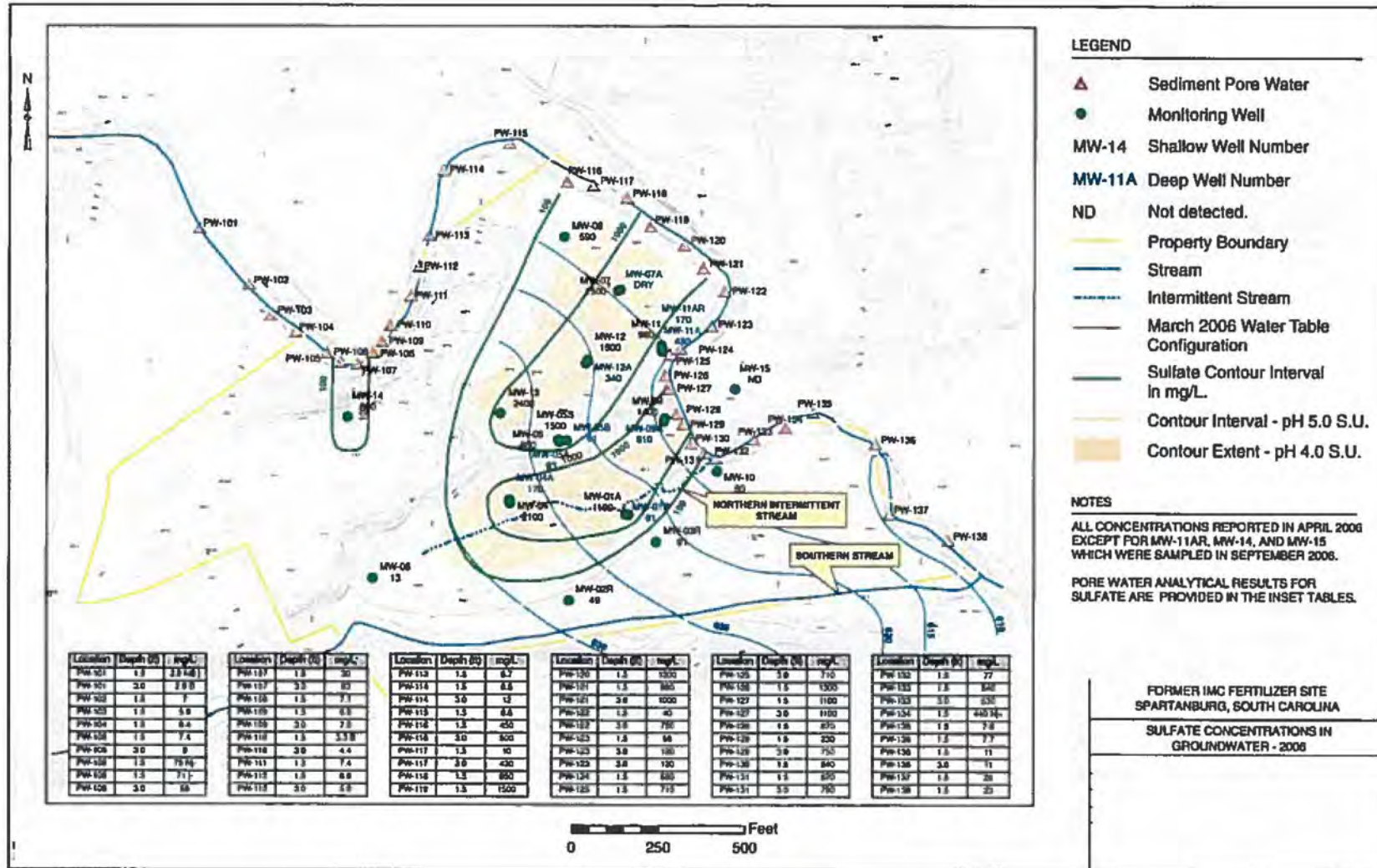


Figure 23

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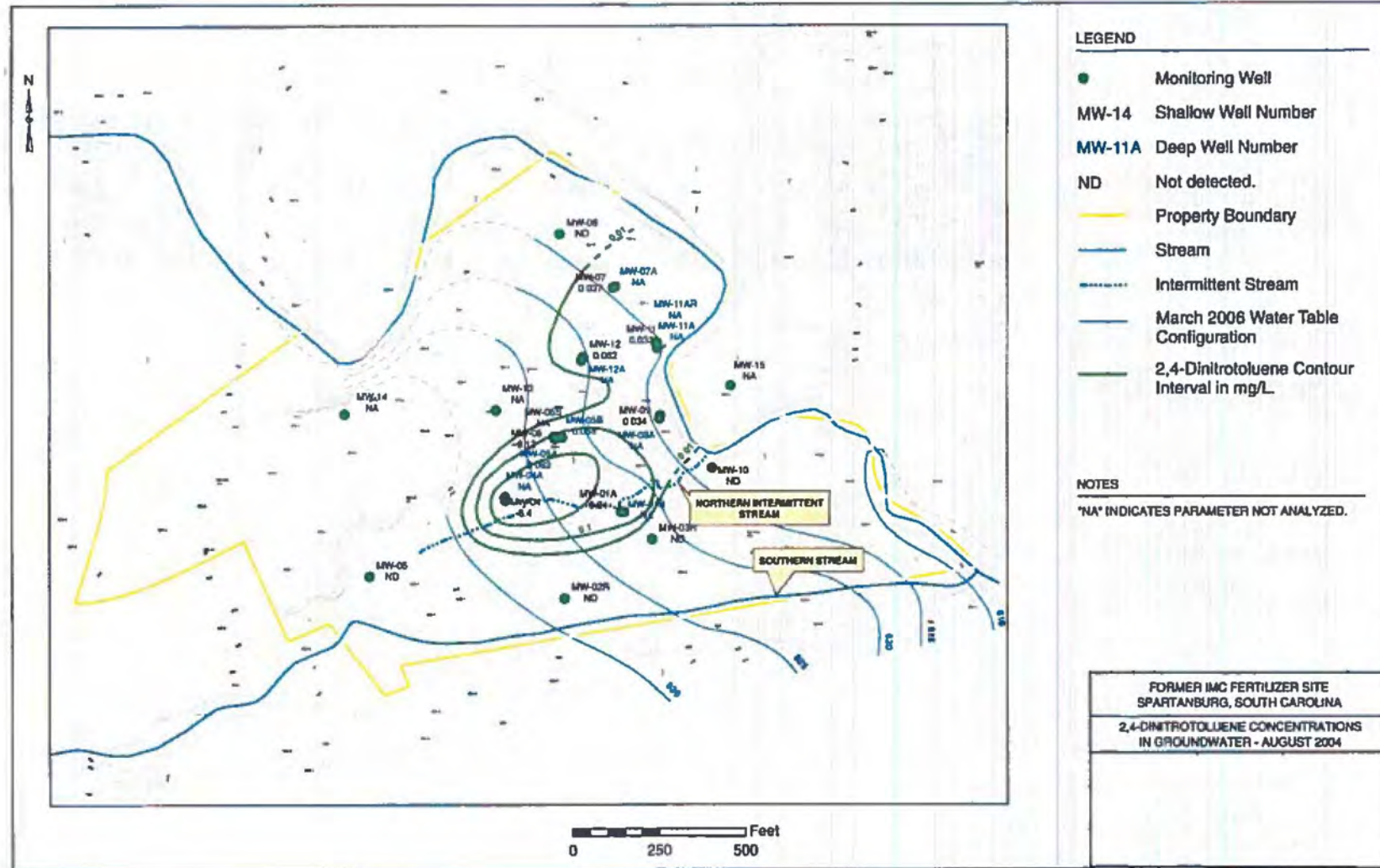


Figure 24

IMC SUPERFUND SITE**RECORD OF DECISION****5.6 Nature and Extent of Surface Water Contamination**

Discussion of surface water quality is divided into two separate areas; (1) the surface waters of Fairforest Creek, and (2) the Southern Stream that runs along the boundary of the site adjacent to the Arkwright Dump Site. COPCs for each area are different. Surface water sampling locations are shown on **Figure 25**.

Fairforest Creek

Background values for Fairforest Creek are those surface water concentrations detected at upstream sampling points SW-01 and SW-02. Manganese was the only COPC for Fairforest Creek surface water. Manganese does not have a surface water quality criterion. Most surface water samples were above the background level of 0.058 mg/L, ranging from 0.058 mg/L at SW-04 to 0.87 mg/L at SW-06. Because lead exceeded SC DHEC Surface Water Criterion at each surface water sampling location, including background locations, lead was included in this evaluation. There was no identifiable trend detected. Surface water results indicate the absence of a significant impact to water quality from discharge of site ground waters to Fairforest Creek.

Southern Stream

The upstream background sampling location is ESI-IM-12-SW. Each of the downstream sample locations are near the northern edge of the Arkwright Dump. The results for COPCs determined for surface waters in this stream were compared to background levels. COPCs for this stream are manganese, iron and bis(2-ethylhexyl)phthalate. Manganese in samples downstream of the background sample ranged from 0.11 to 0.14 mg/L exceeding the background level of 0.064 mg/L. Iron in samples downstream of the background sample ranged from 0.6 to 1.1 mg/L exceeding the background level of 0.064 mg/L. There is no surface water criterion for iron. One detection of bis(2-ethylhexyl)phthalate was made downstream of the non-detect background sample. ESI-IM-13-SW exhibited a concentration of 0.017 mg/L. This location is near the northern edge of the Arkwright Dump. Inasmuch as the southern stream receives the vast majority of its flow from run-off from the Arkwright Dump, elevated concentrations of COPCs are likely attributable to that source.

5.7 Nature and Extent of Sediment Contamination**Fairforest Creek Sediment**

Sediment samples were obtained at locations coincident with surface water samples. Results were compared to background concentrations. Results for COPCs in the Creek sediments were compared to background at SD-01 and SD-02. Concentrations for

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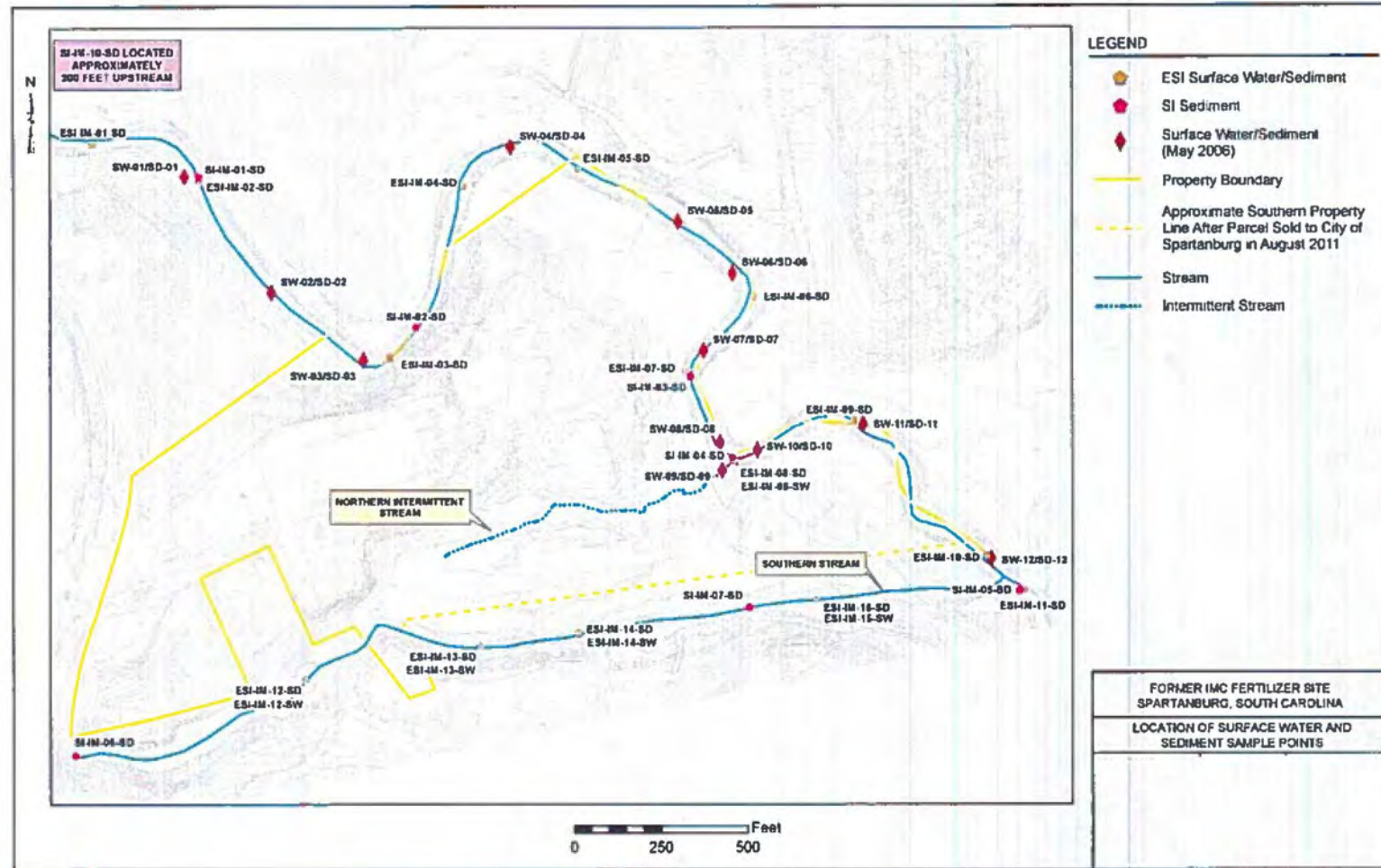


Figure 25

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arsenic ranged from 0.67 to 1.8 mg/kg at downstream sampling locations. The upstream background level of arsenic in Fairforest Creek sediment is 0.83 mg/kg. The highest concentration was detected in sediment just downstream of the confluence of the northern intermittent stream with Fairforest Creek at SD-10. Downstream concentrations for lead ranged from 4.4 to 13 mg/kg compared to the background of 4.0 mg/kg. Downstream concentrations of manganese ranged from 38 to 62 mg/kg bracketing the background concentration of 49 mg/kg in stream sediments. Nitrates were detected in only two downstream sediment samples (SD-07 and SD-10) at concentrations of 4.5 and 2.1 mg/kg, respectively, and as compared to a background concentration of <5.4 mg/kg.

Southern Stream Sediments

Sediment samples were obtained in the southern stream and the results were compared to upstream background concentrations. Benzo(a)pyrene was retained as the COPC in sediments in this stream; concentrations were highest in the background sample at 0.25 mg/kg.

5.8 Non-Time Critical Removal Action (NTCRA)

On September 30, 2009, a NTCRA memo was issued for the Site. The application of a NTCRA to specifically address contaminated soil and process residuals at the site in lieu of a remedial action (RA) to address affected media at the Site had the potential to reduce the duration and administrative costs of the response action. EPA determined that the NTCRA would be protective of human health and the environment and would be consistent with any future RA. The NTCRA did not address groundwater, surface water, or sediment at the Site. A Proposed Action Fact Sheet was issued in May 2009 and was the subject of two public meetings held in Spartanburg, SC on June 11, 2009 and July 23, 2009. Soil cleanup levels were developed for the NTCRA. These levels and the basis for them are presented in **Table 1** below.

Table 1 – NTCRA Soil Cleanup Levels

CONSTITUENT	CLEANUP LEVEL (mg/kg)	BASIS FOR CLEANUP LEVEL
2,4-DNT	0.48	Contract Required Quantitation Limit (CRQL)
2,6-DNT	0.48	CRQL
PCBs	5.9	Background concentration
Arsenic	12	Hazard Index (HI) =1
Lead	500	OSWER Directive 9355.4-12 for industrial use
Fluoride	260	Background concentration

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NTCRA activities were initiated in June 2010 and were completed in April 2011. The activities performed as part of the NTCRA reduced available exposure/migration pathways and reduced concentrations of Site COPCs. The NTCRA activities addressed three process residual areas, three small areas of material consistent with process residuals, and four affected soil areas. These 10 areas are shown on **Figure 26** and include the following:

- Three process residual areas referred to as the Southwest Process Residual (SWPR), Southeast Process Residual (SEPR), and Northeast Process Residual (NEPR) areas located south and east of the former manufacturing building area. Each of these areas was covered with clean overburden.
- One area of material consistent with process residuals was present southeast of the three process residual areas referenced above in an area referred to as the "Geophysical Anomaly." Two additional areas were located near the southeast corner of the fence area surrounding the former manufacturing building area.
- Four areas of soil were identified as having arsenic or polychlorinated biphenyl (PCB) concentrations greater than the cleanup levels. These areas are identified as affected soil areas AS-A through AS-D.

Additionally, the following materials were also addressed as part of the NTCRA activities (**Figure 27**):

- The miscellaneous materials (construction debris) located in a small area south of the NEPR area.
- A small below-ground explosives bunker that was located near the eastern end of the facility.
- Remnants of a steel tank which appeared to be a former process vessel.
- Treated timbers and debris that were previously disposed of on the ridge northeast of the Former Sulfuric Acid Plant.

The NTCRA activities included excavation of process residuals, materials consistent with process residuals, affected soil, and miscellaneous materials; confirmation testing of underlying soils; transportation of excavated impacted materials for disposal at the Republic Landfill in Union County, SC; and site restoration.

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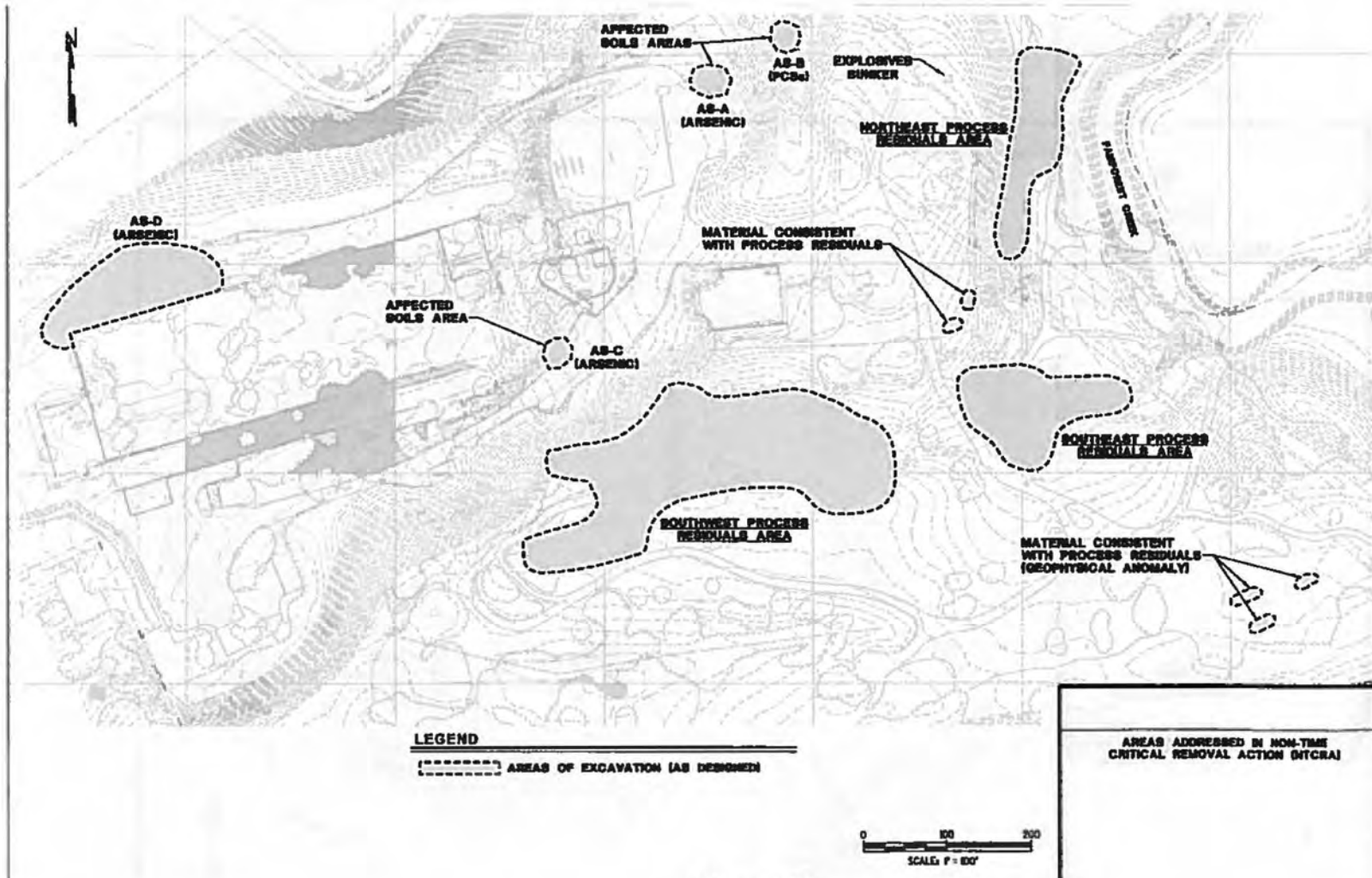


Figure 26

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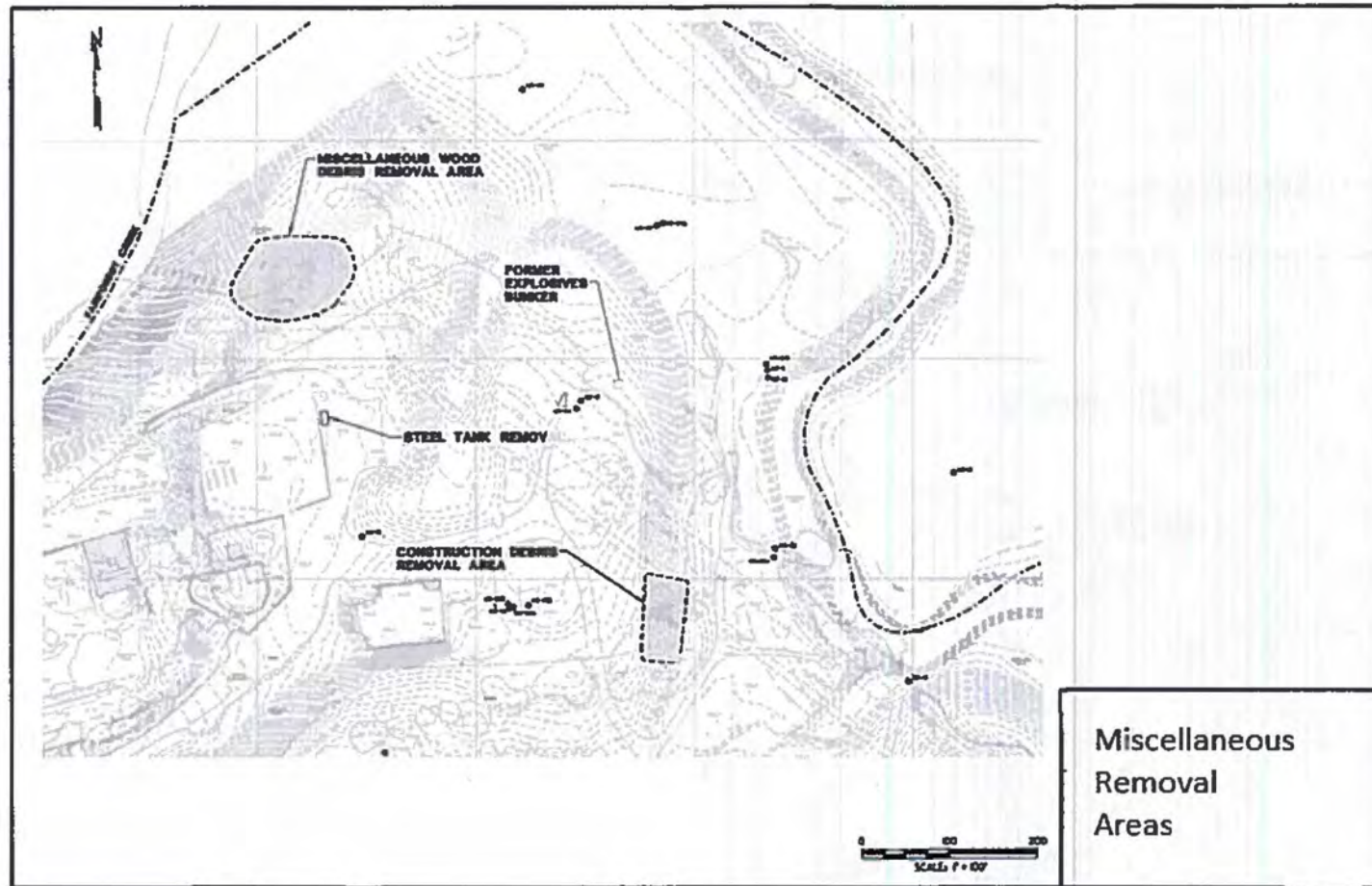


Figure 27

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The initial extent of the excavations was based on analytical and soil boring data generated during the RI. In areas where process residuals and material consistent with process residuals were being removed, the excavations once initiated were continued until the visual extent of materials were removed. After initial excavations were complete, confirmation soils samples were collected from the bottom and side walls of each excavation to determine if cleanup levels had been met (**Figure 28**).

The total volume of clean overburden and process residuals/affected soil removed from each area is summarized in **Table 2** below:

EXCAVATION AREA	OVERBURDEN REMOVAL QUANTITIES (cubic yards)	PROCESS RESIDUAL/AFFECTED- SOIL REMOVAL QUANTITIES (cubic yards)
AS-A	0	275
AS-B	0	60
AS-C	0	115
AS-D	0	1,285
Anomaly Area	0	1,000
SEPR	1,450	14,300
SWPR	5,100	3,375
NEPR	475	1,300
Total	7,025	21,710

A small below-ground explosives bunker was located near the eastern end of the facility. An explosives expert opened and inspected the bunker. The bunker was found to be empty with no residue or miscellaneous explosive components. It was determined that the bunker was safe for demolition. The explosives bunker was removed and demolished on June 22, 2010.

As part of the NTCRA activities, miscellaneous materials were removed from the site for disposal. These materials consisted of the following: remnants of a steel tank, possibly a former process vessel, that was located near the Former Sulfuric Acid Plant; timbers previously used to support a rail track to the former facility that were located on the ridge to the northeast of the Former Sulfuric Acid Plant; and construction debris located between the NEPR and SWPR areas.

Excavated process residuals and affected soil (27,272.18 tons (1,243 truckloads)), and miscellaneous materials/construction debris (2,632.54 tons (130 truckloads)) were transported by truck to the Republic Landfill in Union County, SC for disposal.

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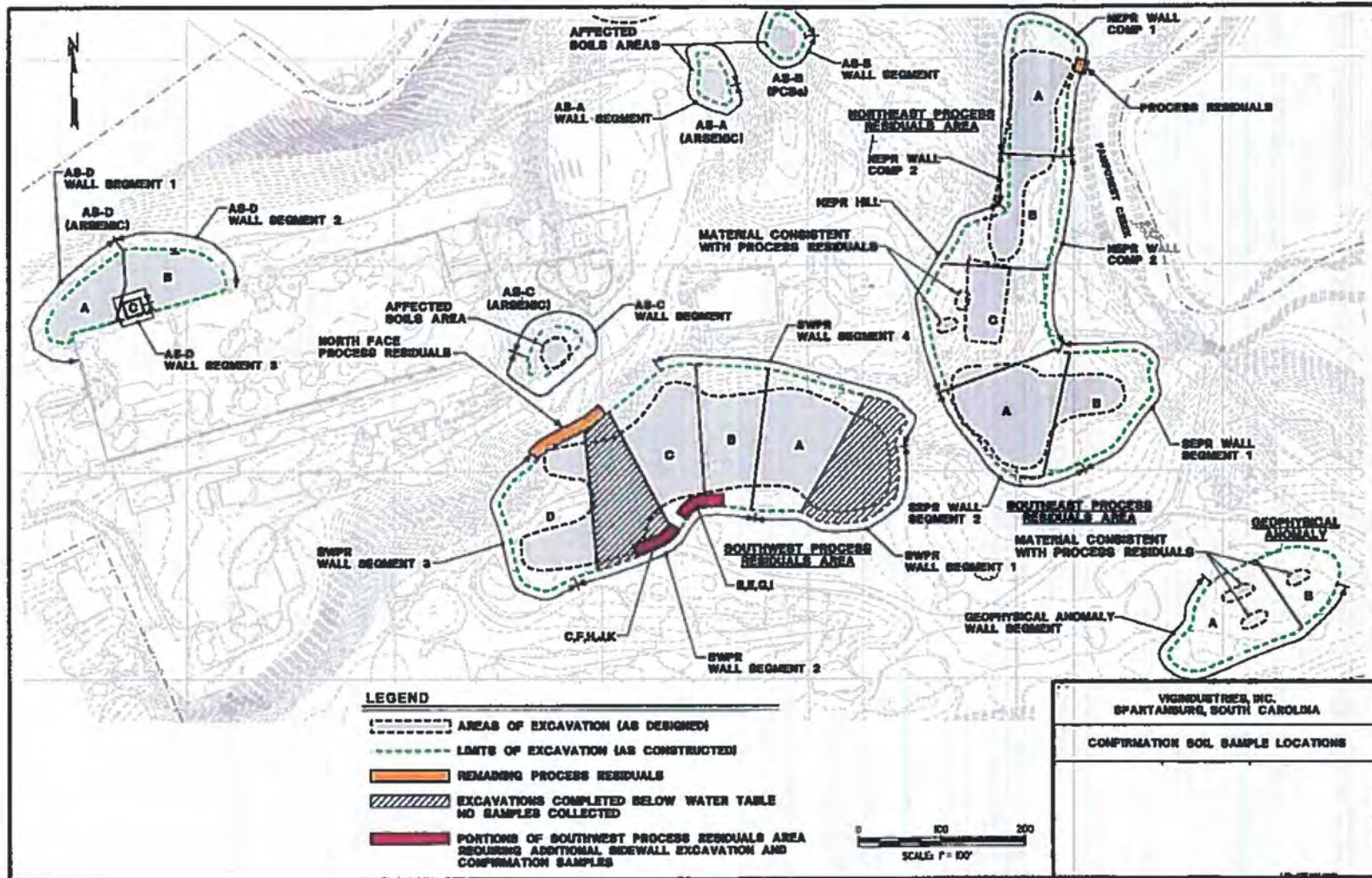


Figure 28

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Following excavation of the process residuals from the Process Residuals areas, a pH neutralizing/buffering agent was placed in the bottom of the excavations prior to site restoration activities. Crushed limestone with aggregate diameters ranging from 1 to 2 inches was selected for use as the pH neutralization/ buffering agent. A 6-inch thick layer of crushed limestone was placed in the bottom of the excavations created by the removal of process residuals. Approximately 2,875 tons of limestone was placed as part of the NTCRA restoration activities.

5.8 Post-NTCRA Groundwater Monitoring

A groundwater monitoring program was instituted after the NTCRA. A baseline monitoring event was conducted in June 2010 prior to the removal. The removal action was completed in February 2011 and the initial post-removal monitoring event was conducted in May 2011. Five monitoring events were conducted between May 2011 and May 2013.

As illustrated previously, with the exception of nitrate at MW-14, the specific areas of groundwater contaminants were generally within the Process Residuals Area and the Northeast Area where pH was less than 5.0 s.u. The constituent with the most extensive groundwater area was fluoride. Prior to the NTCRA, there appeared to be two areas on the site that acted as sources of low pH to groundwater; the former Process Residuals and the Former Sulfuric Acid Plant areas.

Post-NTCRA groundwater monitoring results (**Table 3**) reflect notable improvements in groundwater quality in the Process Residuals Area. Concentrations for most COCs declined compared to pre-NTCRA concentrations while pH values increased. Prior to the NTCRA, arsenic, cadmium, lead, and nitrate concentrations in groundwater in the vicinity of the Process Residuals Area were greater than their respective MCLs. Concentrations in groundwater in this area are now below the MCLs. While beryllium and fluoride concentrations in groundwater at the Process Residuals Area remain above MCLs, both constituents exhibit decreases in concentration since completion of the NTCRA.

Post-NTCRA groundwater monitoring results demonstrate that the NTCRA activities, which included removal of process residuals and affected soil, and addition of limestone to the bottom of the resulting excavations prior to backfilling, has resulted in a positive impact on groundwater quality at the Process Residual Area. No further source removal action is planned for this area; performance groundwater monitoring will continue.

Groundwater in the Northeast Area of the Site continues to have a number of COCs detected at concentrations greater than MCLs/action levels and relatively low pH

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Table 3
Groundwater Trends (PPB)

CONSTITUENT	PROCESS RESIDUAL AREA		NORTHEAST AREA	
	RI (2004)	POST-NTCRA (11/2012)	RI (2004)	POST-NTCRA (11/2012)
Groundwater Conc. > MCL/Action Level				
Arsenic	46	ND	3.9	6.2
Beryllium	37	24.2	76	92.8
Cadmium	13	0.47	31	17.6
Fluoride	610,000	74,000	200,000	211,000
Lead	180	4.8	120	47.2
Nitrate	48,000	4,800	98,000	142,000
Selenium	51	ND	110	ND
Thallium	3	ND	5.6	ND
Risk Assessment Groundwater COC (Risk > 10⁻⁶ or HI >1.0)				
Aluminum	330,000	55,900	350,000	252,000
Cobalt	480	71.4	81	71.9
Manganese	30,000	6,730	24,000	17,300
Nickel	230	134	37	342
Vanadium	280	64.4	57	142
Zinc	2,700	512	2,600	2,190
2,4-DNT	8,300	1,310	120	79.2
2,6-DNT	170	ND	32	51.6

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values. While some constituent concentrations have fluctuated up and down slightly, overall concentrations have remained relatively stable since completion of the Focused Removal Action completed in 2002 and the NTCRA completed in 2011. One exception is nitrate which has exhibited recent increasing trends in downgradient monitoring wells MW-7 and MW-8.

In October 2013, an evaluation was conducted to determine the source of the low pH in the Northeast Area groundwater. The evaluation included collecting subsurface soil samples, analyzing for soil pH, and conducting bench scale tests for in situ neutralization of the acid. Soil samples were collected from 33 soil borings (**Figure 29**). Continuous soil samples were collected from ground surface to either tool refusal or the water table. Prior to this sampling event, it was anticipated that low pH values would be found in soils in the immediate vicinity of the Former Sulfuric Acid Plant operational area with the lowest pH values found in the shallow soils (less than eight feet in depth). The pH values in affected areas actually tended to decrease with depth with the lowest values found greater than 10 feet bls with low pH soils generally extending vertically to the groundwater table. Borings with low-pH soils (less than 3.5 s.u.) were typically found in the eastern portions of the Former Sulfuric Acid Plant area. The areal extent of low-pH soil, is about 1.3 acres, and the soils with low pH values are typically found at approximately 10 to 25 feet bls.

Bench scale tests were conducted to evaluate options for neutralizing the soil pH and groundwater pH. Bench tests for soil included elutriation with deionized water and neutralization with three chemical solutions: magnesium oxide, 1 M sodium bicarbonate, and 0.5 M sodium bicarbonate-disodium lactate. The results indicated that the soil required approximately 10 mmoles of sodium carbonate per kilogram (wet weight) of soil to raise the pH above 6 s.u. or a 0.1 percent dose, based on weight. Bench scale tests (titrations) for direct groundwater neutralization were conducted using sodium hydroxide and sodium carbonate. The results indicated that large amounts of gelatinous solids were generated that can be expected to clog soil pores if in situ groundwater treatment were conducted at the site. Additives such as citrate can prevent the formation of solids, but the effect is eventually reversed.

5.9 CONCEPTUAL SITE MODEL

The Site conceptual model is illustrated in **Figure 30**. The figure depicts sources, exposure pathways, and exposure points as determined during the RI. The figure also indicates which exposure pathways had risk/hazard levels exceeding EPA's acceptable range.

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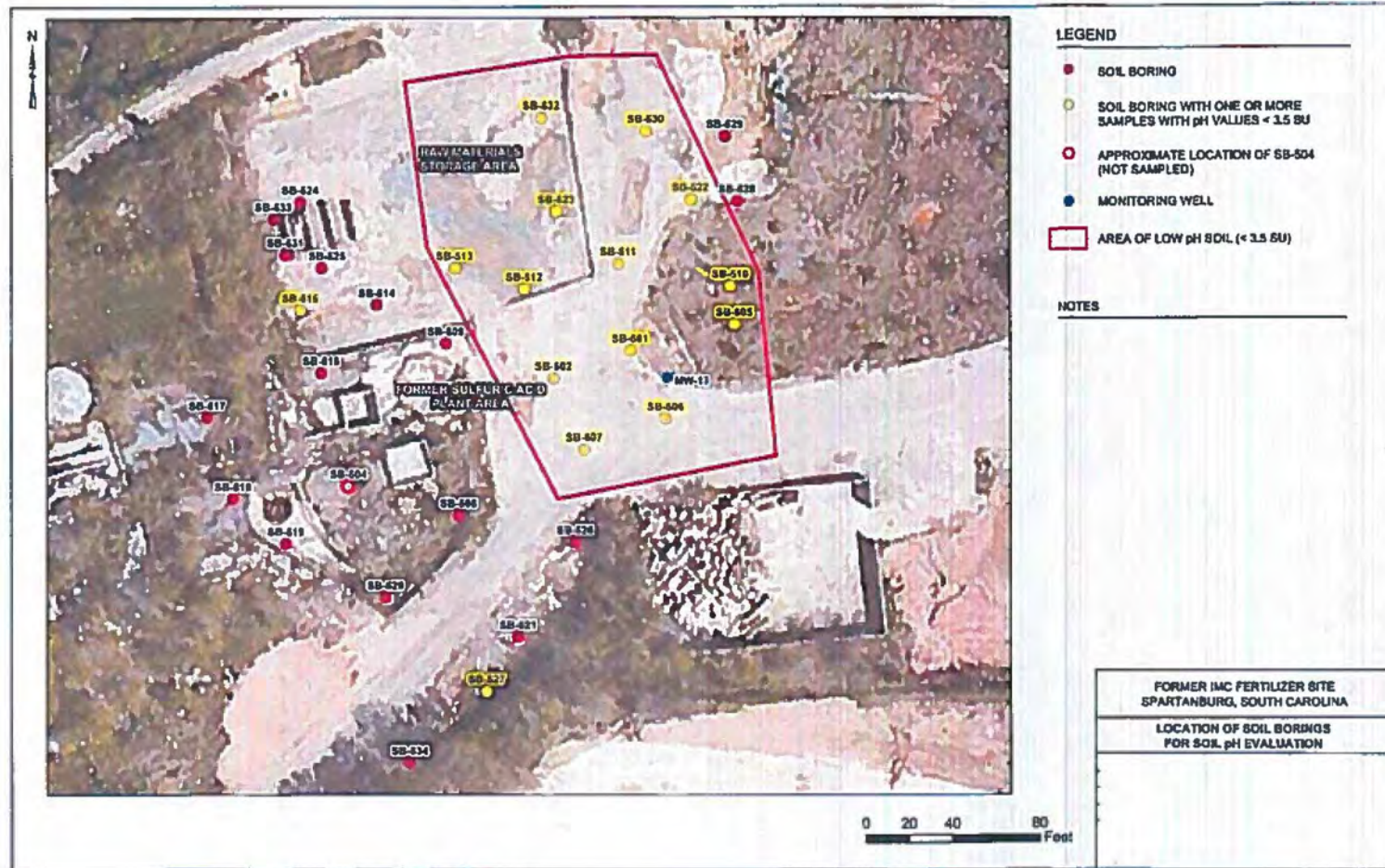


Figure 29

APPENDIX A (Part 2 of 3)

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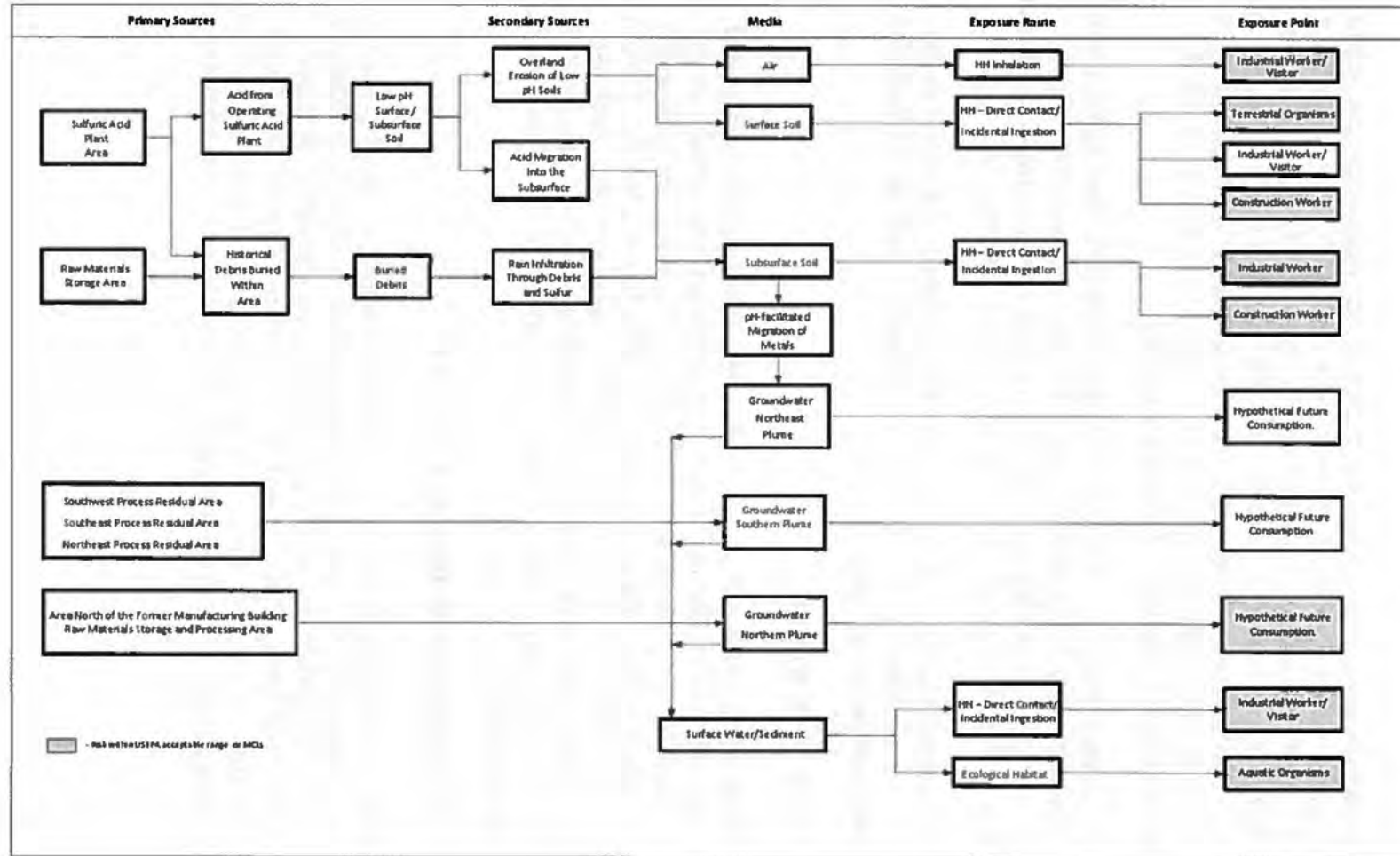


Figure 30 - Site Conceptual Model

IMC SUPERFUND SITE**RECORD OF DECISION****6.0 CURRENT AND POTENTIAL LAND AND RESOURCE USES**

The IMC Site is presently unoccupied and no intact buildings remain on site. Remnants of production structures remain; sections of concrete walls and floors, and railroad ties. The remainder of the Site is heavily vegetated with trees and other natural vegetation. Industrial properties in the vicinity include a Mt. Vernon Mills facility to the northwest, an active Rhodia Chemical Company facility to the southwest, and the inactive Arkwright Mills property to the northwest (**Figure 2**). The land uses in the vicinity of the Site include industrial, residential, and undeveloped properties.

Public water is available in the area. Spartanburg Water System uses surface water from three lakes within Spartanburg County: Lake William C. Bowen, Municipal Reservoir #1, and Lake Taylor H. Blalock. All South Carolina groundwater is classified as GB as defined in R.61-58, State Primary Drinking Water Regulations.

The site owner, in partnership with the local group, ReGenesis is exploring reuse options that will benefit the community and will be compatible with the remediation and operation and maintenance of the Site.

7.0 SUMMARY OF SITE RISKS

This section of the ROD provides a summary of the IMC Site's human health and environmental risks. A Baseline Human Health Risk Assessment (HHRA) for the Site was completed in April 2007 and updated in July 2014. The HHRA estimates the human health risks that the IMC Site could pose if no actions were taken. It is one of the factors EPA considers in deciding whether to take actions at a site. The risk assessment also identifies the contaminants and exposure pathways that need to be addressed by the remedial action. A Screening Level Ecological Risk Assessment for the IMC Site was completed in April 2007.

7.1 Summary of Human Health Risk Assessment

The HHRA involves the following four steps: 1) data evaluation, to identify site-related contaminants of concern (COCs); 2) exposure assessment, to determine potential exposure pathways and quantify the magnitude of potential exposure; 3) toxicity assessment, to determine types of effects associated with exposures; and 4) risk characterization, to quantify cancer risks and non-cancer health hazards associated with specific exposures at the Site. The complete HHRA can be found in the RI which is included in the Administrative Record.

IMC SUPERFUND SITE**RECORD OF DECISION****7.1.1 Identification of Contaminants of Concern**

COPCs are those constituents, identified through a conservative toxicity screening process, which are most likely to contribute to an unacceptable human health and ecological risk, if any exists. The selection of site-specific human health COPCs was conducted consistent with *Supplemental Guidance to Risk Assessment Guidance for Superfund (RAGS): Region 4 Bulletins, Human Health Risk Assessment* (USEPA, 200Gb). The identification of site-specific ecological COPCs was performed and documented in the *Screening Level Ecological Risk Assessment* and approved in the *Refinement of Ecological COPCs* submittal.

The following COPCs were identified for the IMC Site:

- **Surface Soil** - 2,4-DNT, Acetophenone, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Dieldrin, Heptachlor epoxide, Dioxin/furans, PCBs, Aluminum, Antimony, Arsenic, Cadmium, Cyanide, Fluoride, Iron, Lead, Mercury, Nitrate-N, Thallium, and Vanadium.
- **Subsurface Soil** - Benzo(a)anthracene, Benzo(a)pyrene, Dibenzo(a,h)anthracene, 2,4-DNT, Aldrin, Dieldrin, Dioxin/furans, PCBs, Aluminum, Arsenic, Fluoride, Lead, Nitrate-N, and Vanadium.
- **Sediment** – Acetophenone, Benzo(a)pyrene, Arsenic, Iron, Lead, Manganese, Nitrate-N, and Vanadium.
- **Surface Water** - bis(2-Ethylhexyl)phthalate, Iron, and Manganese.
- **Groundwater** - alpha-BHC, Aluminum, beta-BHC, Arsenic, Benzene, Beryllium, bis(2-Ethylhexyl)phthalate, Cadmium, Chloroform, Chromium, Cyanide, Cobalt, 1,3-Dinitrobenzene, 2,4-DNT, Copper, 2,6-DNT, 2-Methylnaphthalene, Fluoride, Naphthalene, Iron, 2-Nitrotoluene, Lead, 4-Nitrotoluene, Manganese, Nickel, Tetrachloroethene, 2,4,6-Trinitrotoluene, Nitrate-N, Vinyl Chloride, Selenium, Xylenes, Thallium, Vanadium, and Zinc.

7.1.2 Exposure Assessment

The objective of the exposure assessment is to estimate the type and magnitude of potential exposures to COPCs in environmental media associated with the site. The exposure assessment for the Site follows the guidance in RAGS (EPA, 1989) and addresses the following elements:

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- Characterization of the exposure setting
- Identification of migration and exposure pathways
- Quantification of exposure

Characterization of Exposure Setting

As a component of characterizing the exposure setting for the Site, potential human receptors and their expected types of exposure to the COPCs present at the Site were identified for current and hypothetical future land use scenarios. These potential human receptors represent those segments of the population most likely to come into contact with the COPCs present in environmental media at the Site.

Given the location of the Site, human populations that may potentially be exposed to COPCs under the current land use scenario are limited to construction workers. Fencing and accessibility limitations limit trespasser exposure to surface soil, sediment, and surface water in the area. However, to maintain conservative evaluations in this baseline human health risk assessment, a trespasser scenario is evaluated for the Site under current land use conditions.

Under a hypothetical future land use scenario, which could involve industrial or commercial development of the Site, potential exposure to COPCs is limited to industrial worker exposure to surface soils and commercial worker exposure to surface soils and surface water in Fairforest Creek.

Shallow groundwater in the vicinity of the Site is not currently used, and is not reasonably expected to be used, as a potable water source. Therefore, potential groundwater ingestion pathways are considered incomplete for all receptors under consideration for current land uses, and were not quantitatively evaluated in the risk assessment for those receptors.

The baseline risk assessment includes an evaluation of residential exposures under a hypothetical future land use scenario. The hypothetical residential scenario assumes incidental exposure to soils and surface water and ingestion exposure to groundwater through installation and use of a potable water supply well into the water table aquifer below the site rather than utilizing the available city water supply.

Identification of Migration and Exposure Pathways

The conceptual site model (**Figure 30**) reflects historical releases from manufacturing process areas and wastewater ponds, the COPCs for each affected environmental medium, and the migration and transport potential of this constituent to potential receptors. An exposure pathway is the means by which a constituent moves from a

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source to a receptor. A completed exposure pathway has the following elements:

- Constituent source
- Mechanism for constituent release and environmental transport medium
- Feasible route of potential exposure

Completed exposure pathways are the means by which potentially exposed populations (receptors) come into contact with site-related COPCs. Site-specific physical and operational characteristics contribute to those segments of the human population that have realistic probabilities of exposure to the site. Access to the Site is controlled by security fencing limiting potential current human receptors to construction workers and illegal trespassers. Evaluation of hypothetical future exposure scenarios was expanded to include a wider scope of potential human receptors however unlikely.

The completed exposure pathways evaluated under current land use scenarios for potential human receptors at the site are as follows:

- Construction worker exposure to COPCs in surface and subsurface soil, drainage feature sediments, and surface water
- Adolescent trespasser exposure to COPCs in surface soil, intermittent drainage sediment, and surface water

The exposure pathways evaluated for the human receptor under hypothetical future land use scenarios at the site are as follows:

- Industrial worker exposure to surface and subsurface soil
- Commercial worker exposure to surface soil and surface water
- Adult resident exposure to COPCs in surface soil, surface water, and groundwater

The exposure routes associated with the potentially completed exposure pathways evaluated for the Site are as follows:

Current Land Use**Construction Worker**

- Incidental ingestion of surface soil, subsurface soil, sediment, and surface water
- Dermal contact with surface soil, subsurface soil, sediment, and surface water
- Particulate inhalation of surface soil and subsurface soil

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Adolescent Trespasser

- Incidental ingestion of surface soil, sediment, and surface water
- Dermal contact with surface soil, sediment, and surface water
- Particulate inhalation of surface soil

Future Land Use

Industrial Worker

- Incidental ingestion of surface and subsurface soil
- Dermal contact with surface and subsurface soil
- Particulate inhalation of surface and subsurface soil

Commercial Worker

- Incidental ingestion of surface soil and surface water
- Dermal contact with surface soil and surface water
- Particulate inhalation of surface soil

Resident

- Incidental ingestion of surface soil and surface water
- Dermal contact with surface soil and surface water
- Particulate inhalation of surface soil
- Ingestion of groundwater as a primary drinking water source

The potential exposure to site-related COPCs for each receptor is represented by a chronic daily intake (CDI). The CDI for an individual receptor is estimated from the exposure point concentration of each COPC in each environmental medium. Consistent with Region 4 Supplemental Guidance (USEPA, 2000), the exposure point concentrations (**Table 4**) used for estimating CDIs are the lesser of the maximum concentration for each COPC or the 95 percent upper confidence limit (95% UCL) of the mean concentration.

7.1.3 Toxicity Assessment

The toxicity assessment identifies the potential effects that are generally associated with exposure to a given chemical. EPA typically evaluates two types of toxic effects: carcinogenic effects and non-carcinogenic effects. To quantify carcinogenic effects, the EPA has derived slope factors (SFs) for those chemicals found to cause a dose-related, statistically significant increase in tumor incidence in an exposed population relative to the incidence of tumors observed in an unexposed population. These dose-related incidence rates are usually determined in a laboratory study. SFs are typically developed based on oral toxicity studies and are reported as risk per dose in units of inverse milligrams per kilogram body weight per day $[(\text{mg}/\text{kg}\cdot\text{day})^{-1}]$. The SFs are used

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Table 4 – Exposure Point Concentrations				
ENVIRONMENTAL MEDIA	COPC	MAXIMUM OBSERVED CONCENTRATION	CALCULATED 95% UCL	EXPOSURE POINT ^(3,4) CONCENTRATION
Surface Soil (mg/kg)	Aluminum	53,000	26,186	26,186
	Antimony	4	2.5	2.5
	Arsenic	16	6	6
	Cadmium	3.5	1.35	1.35
	Cyanide	0.96	0.96	0.96
	Iron	76,000	37,749	37,749
	Lead	990	254	254
	Mercury	0.4	0.18	0.18
	Thallium	0.83	0.4	0.4
	Vanadium	180	85	85
	Fluoride	150	102	102
	Nitrate	5.3	3	3
	2,4-Dinitrotoluene	ND	ND	ND
	Acetophenone	ND	ND	ND
	Benzo(a)anthracene	2.3	0.47	0.47
	Benzo(a)pyrene	2.8	0.47	0.47
	Benzo(b)fluoranthene	2.8	0.55	0.55
	Dibenzo(a,h)anthracene	0.49	0.17	0.17
	Indeno(1,2,3-cd)pyrene	1.2	0.59	0.59
	Dieldrin	0.061	0.013	0.013
	Heptachlor epoxide	0.0086	0.002	0.002
	Aroclor-1254	1.5	0.28	0.28
Aroclor-1260	0.4	0.08	0.08	
Dioxins/Furans(WHO)	0.0002008	0.000049	0.000049	

IMC SUPERFUND SITE**RECORD OF DECISION**

ENVIRONMENTAL MEDIA	COPC	MAXIMUM OBSERVED CONCENTRATION	CALCULATED 95% UCL	EXPOSURE POINT (3,4) CONCENTRATION
Subsurface Soil (mg/kg)	Aluminum	60,000	28,866	28,866
	Arsenic	64	8.7	8.7
	Lead	780	133	133
	Vanadium	230	90	90
	Fluoride	2,700	393	393
	Nitrate	59	22	22
	Benzo(a)pyrene	1	0.10	0.10
	Benzo(a)anthracene	4	0.13	0.13
	Dibenzo(a,h)anthracene	0.245	0.23	0.23
	Aldrin	0.45	0.017	0.017
	Dieldrin	0.32	0.028	0.028
	Aroclor-1254	12	0.44	0.44
	Aroclor-1260	3.7	0.22	0.22
	Dioxins/Furans(WHO)	0.0001	0.0001	0.0001
Groundwater (mg/L)	Alpha-BHC	0.000056	0.000056	0.000056
	beta-BHC	0.000091	0.000038	0.000038
	Benzene	0.059	0.029	0.029
	Chlorform	0.00079	0.00058	0.00058
	2-Nitrotoluene	0.0023	0.0023	0.0023
	4-Nitrotoluene	0.0012	0.0012	0.0012
	2,4-Dinitrotoluene	1.73	0.403	0.403
	2,6-Dinitrotoluene	0.0516	0.00707	0.00707
	1,3-Dinitrobenzene	0.0017	0.0017	0.0017
	2,4,6-Trinitrotoluene	0.0023	0.0023	0.0023
	Naphthalene	0.0031	0.0031	0.0031
	2-Methylnaphthalene	0.0044	0.0044	0.0044

IMC SUPERFUND SITE**RECORD OF DECISION**

ENVIRONMENTAL MEDIA	COPC	MAXIMUM OBSERVED CONCENTRATION	CALCULATED 95% UCL	EXPOSURE POINT ^(a) CONCENTRATION
Groundwater (con't) (mg/L)	Tetrachloroethene	0.0048	0.0028	0.0028
	Vinyl Chloride	0.0023	0.00077	0.00077
	Xylenes	0.064	0.017	0.017
	Aluminum	257	97.95	97.95
	Arsenic	0.0943	0.0046	0.0046
	Beryllium	0.0928	0.0263	0.0263
	Cadmium	0.0186	0.00979	0.00979
	Chromium	0.079	0.016	0.016
	Cobalt	0.741	0.35	0.35
	Copper	0.26	0.15	0.15
	Cyanide	0.013	0.013	0.013
	Fluoride	211	93.34	93.34
	Iron	58	40	40
	Lead	0.0472	0.0132	0.0132
	Manganese	18.2	8.952	8.952
	Nickel	1.51	0.398	0.398
	Nitrate-N	142	63.9	63.9
	Selenium	ND	ND	ND
	Thallium	0.0775	0.00341	0.00341
	Vanadium	0.142	0.0345	0.0345
Zinc	2.19	0.85	0.85	

Notes: Exposure point concentrations updated to reflect conditions following completion of the NTCRA.
For groundwater, red values are updated; black values are for constituents that were not analyzed post-NTCRA.

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to quantify the potential risk of cancer associated with a given exposure. To quantify non-carcinogenic effects, EPA has derived reference doses (RfDs) that represent a threshold of toxicity. RfDs are expressed in units of mg/kg-day and represent "an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime" (EPA, 1989).

7.1.4 Risk Characterization

In the baseline risk characterization, the results of the toxicity and exposure assessments are summarized and integrated into quantitative and qualitative expressions of potential risk for carcinogenic compounds and into a HI for noncarcinogenic compounds. According to RAGS (USEPA, 1989), the risk characterization is complete only when the numerical expressions of potential risk are accompanied by explanatory text interpreting and qualifying the results. In addition, the baseline risk characterization presents RME and average/CTE to baseline site conditions in the absence of additional site controls or remediation. **Tables 5 through 18** provide a summary of the risk calculations based on RME and CTE.

The HQ is a quantitative estimate of the potential hazard associated with individual noncarcinogenic compounds. The HQ is the ratio of the intake (COI) for each COPC to the RID for that constituent. HQs for individual COPCs are summed, where appropriate, to calculate the HIs for a pathway. If multiple pathways exist, appropriate pathway HIs are added together to calculate a site HI. A total site HI of less than 1 indicates that no significant hazard is likely, even for sensitive individuals. A HI of greater than 1 indicates that there may be a potential hazard at the Site.

Potential risks for individual constituents are calculated by multiplying the intake (COI: mg/kg-day) by the SF (mg/kg-day)⁻¹ to give a unitless chemical-specific risk. Chemical-specific potential risks that are the result of the same exposure route are summed to give the pathway risk; if multiple pathways exist, appropriate pathway risks are summed resulting in the total carcinogenic risk for a specific receptor population.

The EPA has established the range of 1×10^{-4} to 1×10^{-6} as target maximum limits for potential excess lifetime carcinogenic risks. A risk value of 1×10^{-4} indicates that for every 10,000 persons exposed to the site, an additional one person is estimated to potentially develop cancer in excess of the normal population. USEPA considers those exposure pathways with a potential cumulative risk in excess of 1×10^{-4} to represent an excessive risk to a receptor population (EPA, 1989; EPA, 1998).

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Table 5
Summary of Incremental Risk and Hazard Quotients
Construction Worker – Surface Soil

CONSTITUENT	RME		GTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Ingestion				
Inorganics				
Aluminum	NC	0.085	NC	0.022
Antimony	NC	0.020	NC	0.005
Arsenic	4.19E-07	0.065	5.56E-08	0.017
Cadmium	NC	0.004	NC	0.001
Cyanide	NC	0.000	NC	0.000
Iron	NC	NC	NC	NC
Lead	NC	NC	NC	NC
Mercury	NC	NC	NC	NC
Thallium	NC	NC	NC	NC
Vanadium	NC	0.039	NC	0.010
Fluoride	NC	0.006	NC	0.001
Nitrate	NC	0.000	NC	0.000
Organics				
2,4-Dinitrotoluene	NC	NC	NC	NC
Acetophenone	NC	NC	NC	NC
Benzo(a)anthracene	1.60E-08	NC	2.12E-09	NC
Benzo(a)pyrene	1.60E-07	NC	2.12E-08	NC
Benzo(b)fluoranthene	1.84E-08	NC	2.44E-09	NC
Dibenzo(a,h)anthracene	5.83E-08	NC	7.73E-09	NC
Indeno(1,2,3-cd)pyrene	1.97E-08	NC	2.61E-09	NC
Pesticides/PCBs				
Dieldrin	9.52E-09	0.001	1.26E-09	0.000
Heptachlor epoxide	7.05E-10	0.0004	9.36E-11	0.000
Aroclor-1254	2.61E-08	0.046	3.47E-09	0.012
Aroclor-1260	7.50E-09	NC	9.96E-10	NC
Dioxins/Furans				
Dioxins/Furans(WHO)	3.38E-07	NC	4.49E-08	NC
Total Ingestion	1.07E-06	0.27	1.42E-07	0.07

IMC SUPERFUND SITE**RECORD OF DECISION**

Table 5
Summary of Incremental Risk and Hazard Quotients
Construction Worker – Surface Soil

CONSTITUENT	RME		CTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Dermal				
Inorganics				
Aluminum	NC	0.0003	NC	0.00005
Antimony	NC	0.0006	NC	0.00008
Arsenic	1.73E-09	0.0003	1.27E-10	0.00004
Cadmium	NC	0.0007	NC	0.00011
Cyanide	NC	0.0000	NC	0.00000
Iron	NC	NC	NC	NC
Lead	NC	NC	NC	NC
Mercury	NC	NC	NC	NC
Thallium	NC	NC	NC	NC
Vanadium	NC	0.0062	NC	0.00091
Fluoride	NC	0.0003	NC	0.00000
Nitrate	NC	0.0000	NC	0.00000
Organics				
2,4-Dinitrotoluene	NC	NC	NC	NC
Acetophenone	NC	NC	NC	NC
Benzo(a)anthracene	6.58E-10	NC	4.83E-11	NC
Benzo(a)pyrene	6.58E-09	NC	4.83E-10	NC
Benzo(b)fluoranthene	7.56E-10	NC	5.55E-11	NC
Dibenzo(a,h)anthracene	2.40E-09	NC	1.76E-10	NC
Indeno(1,2,3-cd)pyrene	8.12E-10	NC	5.96E-11	NC
Pesticides/PCBs				
Dieldrin	3.92E-10	0.00003	2.88E-11	0.00001
Heptachlor epoxide	2.91E-11	0.00002	2.13E-12	0.00000
Aroclor-1254	1.08E-09	0.0019	7.90E-11	0.00028
Aroclor-1260	3.09E-10	NC	2.27E-11	NC
Dioxins/Furans				
Dioxins/Furans(WHO)	1.39E-08	NC	1.02E-09	NC
Total Dermal	2.87E-08	0.010	2.11E-09	0.001

IMC SUPERFUND SITE

RECORD OF DECISION

Table 5
Summary of Incremental Risk and Hazard Quotients
Construction Worker – Surface Soil

CONSTITUENT	RME		GTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Inhalation				
Inorganics				
Aluminum	NC	0.0011	NC	0.0010
Antimony	NC	NC	NC	NC
Arsenic	7.69E-11	NC	3.37E-11	NC
Cadmium	7.18E-12	NC	3.15E-12	NC
Cyanide	NC	NC	NC	NC
Iron	NC	NC	NC	NC
Lead	NC	NC	NC	NC
Mercury	NC	0.0000	NC	0.0000
Thallium	NC	NC	NC	NC
Vanadium	NC	NC	NC	NC
Fluoride	NC	NC	NC	NC
Nitrate	NC	NC	NC	NC
Organics				
2,4-Dinitrotoluene	NC	NC	NC	NC
Acetophenone	NC	NC	NC	NC
Benzo(a)anthracene	1.24E-13	NC	5.42E-14	NC
Benzo(a)pyrene	1.24E-12	NC	5.45E-13	NC
Benzo(b)fluoranthene	1.42E-13	NC	6.23E-14	NC
Dibenzo(a,h)anthracene	4.51E-13	NC	1.98E-13	NC
Indeno(1,2,3-cd)pyrene	1.53E-13	NC	6.69E-14	NC
Pesticides/PCBs				
Dieldrin	1.76E-13	NC	7.71E-14	NC
Heptachlor epoxide	1.30E-14	NC	5.67E-15	NC
Aroclor-1254	4.79E-13	NC	2.10E-13	NC
Aroclor-1260	1.38E-13	NC	6.03E-14	NC
Dioxins/Furans				
Dioxins/Furans(WHO)	4.80E-12	NC	2.10E-12	NC
Total Inhalation	9.18E-11	0.001	4.02E-11	0.0010

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Table 6 - Summary of Incremental Risk and Hazard Quotients
Construction Worker – Subsurface Soil

CONSTITUENT	RME		GTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Ingestion				
Inorganics				
Aluminum	NC	0.09	NC	0.025
Arsenic	6.02E-07	0.09	7.99E-08	0.025
Lead	NC	NC	NC	NC
Vanadium	NC	0.04	NC	0.011
Fluoride	NC	0.02	NC	0.006
Nitrate	NC	0.000	NC	0.000
Organics				
Benzo(a)pyrene	3.43E-08	NC	4.56E-09	NC
Benzo(a)anthracene	4.38E-09	NC	5.81E-10	NC
Dibenzo(a,h)anthracene	7.74E-08	NC	1.03E-08	NC
Pesticides/PCBs/D&Fs				
Aldrin	1.29E-08	0.002	1.72E-09	0.000
Dieldrin	2.06E-08	0.002	2.73E-09	0.000
Aroclor-1254	4.07E-08	0.07	5.40E-09	0.019
Aroclor-1260	2.05E-08	NC	2.72E-09	NC
TEQ - WHO	7.67E-07	NC	1.02E-07	0.000
Total Ingestion	1.58E-06	0.32	2.10E-07	0.09
Dermal				
Inorganics				
Aluminum	NC	0.0004	NC	0.0001
Arsenic	2.48E-09	0.0004	1.82E-10	0.0001
Lead	NC	NC	NC	NC
Vanadium	NC	0.0066	NC	0.0010
Fluoride	NC	0.0001	NC	0.0000
Nitrate	NC	0.0000	NC	0.0000
Organics				
Benzo(a)pyrene	1.42E-10	NC	1.04E-11	NC
Benzo(a)anthracene	1.80E-10	NC	1.32E-11	NC
Dibenzo(a,h)anthracene	3.19E-09	NC	2.34E-10	NC
Pesticides/PCBs/D&Fs				
Aldrin	5.33E-10	0.0001	3.92E-11	0.0000
Dieldrin	8.49E-10	0.0001	6.23E-11	0.0000
Aroclor-1254	1.68E-09	0.0029	1.23E-10	0.0004
Aroclor-1260	8.44E-11	NC	6.20E-12	NC
TEQ-WHO	3.16E-09	NC	2.32E-10	NC
Total Dermal	1.23E-08	0.011	9.03E-10	0.002

IMC SUPERFUND SITE**RECORD OF DECISION**

Table 6
Summary of Incremental Risk and Hazard Quotients
Construction Worker – Subsurface Soil

CONSTITUENT	RME		CTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Inhalation				
Inorganics				
Aluminum	NC	0.001	NC	0.001
Arsenic	1.11E-10	NC	4.84E-11	NC
Lead	NC	NC	NC	NC
Vanadium	NC	NC	NC	NC
Fluoride	NC	NC	NC	NC
Nitrate	NC	NC	NC	NC
Organics				
Benzo(a)pyrene	2.68E-13	NC	1.17E-13	NC
Benzo(a)anthracene	3.39E-14	NC	1.49E-14	NC
Dibenzo(a,h)anthracene	6.00E-13	NC	2.63E-13	NC
Pesticides/PCBs/D&Fs				
Aldrin	2.40E-13	NC	1.05E-13	NC
Dieldrin	3.81E-13	NC	1.67E-13	NC
Aroclor-1254	7.47E-13	NC	3.27E-13	NC
Aroclor-1260	3.76E-13	NC	1.65E-13	NC
TEQ-WHO	1.09E-11	NC	4.77E-12	NC
Total Inhalation	1.24E-10	0.0012	5.43E-11	0.0010

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Table 7
Summary of Incremental Risk and Hazard Quotients
Construction Worker – Sediment

CONSTITUENT	RME		CTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Ingestion				
Inorganics				
Arsenic	9.69E-08	0.015	1.29E-08	0.004
Iron	NC	NC	NC	NC
Lead	NC	NC	NC	NC
Manganese	NC	0.007	NC	0.002
Vanadium	NC	0.008	NC	0.002
Nitrate	NC	6.1E-06	NC	1.6E-06
Organics				
Acetophenone	NC	1.4E-06	NC	3.7E-07
Benzo(a)pyrene	8.42E-08	NC	1.12E-08	NC
Total Ingestion	1.81E-07	0.03	2.40E-08	0.008
Dermal				
Inorganics				
Arsenic	3.99E-10	0.0001	2.93E-11	9.1E-06
Iron	NC	NC	NC	NC
Lead	NC	NC	NC	NC
Manganese	NC	0.0007	NC	0.00011
Vanadium	NC	0.0012	NC	0.00018
Nitrate	NC	2.5E-08	NC	3.7E-09
Organics				
Acetophenone	NC	5.7E-09	NC	8.4E-10
Benzo(a)pyrene	3.47E-10	NC	2.55E-11	NC
Total Dermal	7.46E-10	0.002	5.48E-11	0.0003

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Table 8
Summary of Incremental Risk and Hazard Quotients
Construction Worker – Surface Water

CONSTITUENT	RME		CTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Ingestion				
Inorganics				
Iron	NC	NC	NC	NC
Manganese	NC	0.00059	NC	0.00051
Organics				
<i>Bis (2-ethylhexyl)phthalate</i>	3.33E-10	0.00008	1.46E-10	0.00007
Total Ingestion	3.33E-10	0.00067	1.46E-10	0.0006
Dermal				
Inorganics				
Iron	NC	NC	NC	NC
Manganese	NC	0.016	NC	0.012
Organics				
<i>Bis (2-ethylhexyl)phthalate</i>	1.19E-08	0.0030	4.39E-09	0.0022
Total Dermal	1.19E-08	0.019	4.39E-09	0.014

IMC SUPERFUND SITE**RECORD OF DECISION**

Table 9
Summary of Incremental Risk and Hazard Quotients
Adolescent Trespasser – Surface Soil

CONSTITUENT	RME		GTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Ingestion				
Inorganics				
Aluminum	NC	0.0038	NC	0.0019
Antimony	NC	0.0009	NC	0.0005
Arsenic	1.89E-07	0.0029	4.74E-08	0.0015
Cadmium	NC	0.0002	NC	0.0001
Cyanide	NC	0.0000	NC	0.0000
Iron	NC	NC	NC	NC
Lead	NC	NC	NC	NC
Mercury	NC	NC	NC	NC
Thallium	NC	NC	NC	NC
Vanadium	NC	0.0018	NC	0.0009
Fluoride	NC	0.0002	NC	0.0001
Nitrate	NC	0.0000	NC	0.0000
Organics				
2,4-Dinitrotoluene	NC	NC	NC	NC
Acetophenone	NC	NC	NC	NC
Benzo(a)anthracene	7.22E-09	NC	1.81E-09	NC
Benzo(a)pyrene	7.22E-08	NC	1.81E-08	NC
Benzo(b)fluoranthene	8.30E-09	NC	2.08E-09	NC
Dibenzo(a,h)anthracene	2.64E-08	NC	6.59E-09	NC
Indeno(1,2,3-cd)pyrene	8.91E-09	NC	2.23E-09	NC
Pesticides/PCBs				
Dieldrin	4.31E-09	0.0000	1.08E-09	0.0000
Heptachlor epoxide	3.19E-10	0.0000	7.98E-11	0.0000
Aroclor-1254	1.18E-08	0.0006	2.95E-09	0.0003
Aroclor-1260	3.39E-09	NC	8.49E-10	NC
Dioxins/Furans				
Dioxins/Furans(WHO)	1.53E-07	NC	3.82E-08	NC
Total Ingestion	4.85E-07	0.011	1.21E-07	0.005

IMC SUPERFUND SITE

RECORD OF DECISION

Table 9
Summary of Incremental Risk and Hazard Quotients
Adolescent Trespasser – Surface Soil

CONSTITUENT	RME		CTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Dermal				
Inorganics				
Aluminum	NC	1.1E-04	NC	8.5E-06
Antimony	NC	1.7E-04	NC	1.4E-05
Arsenic	5.22E-09	8.1E-05	2.11E-10	6.6E-06
Cadmium	NC	2.2E-04	NC	1.8E-05
Cyanide	NC	1.9E-07	NC	1.6E-08
Iron	NC	NC	NC	NC
Lead	NC	NC	NC	NC
Mercury	NC	NC	NC	NC
Thallium	NC	NC	NC	NC
Vanadium	NC	1.9E-03	NC	1.5E-04
Fluoride	NC	6.9E-06	NC	5.6E-07
Nitrate	NC	8.2E-09	NC	6.7E-10
Organics				
2,4-Dinitrotoluene	NC	NC	NC	NC
Acetophenone	NC	NC	NC	NC
Benzo(a)anthracene	1.99E-09	NC	8.06E-11	NC
Benzo(a)pyrene	1.99E-08	NC	8.06E-10	NC
Benzo(b)fluoranthene	2.29E-09	NC	9.27E-11	NC
Dibenzo(a,h)anthracene	7.26E-09	NC	2.94E-10	NC
Indeno(1,2,3-cd)pyrene	2.45E-09	NC	9.95E-11	NC
Pesticides/PCBs				
Dieldrin	1.19E-09	1.0E-05	4.81E-11	8.4E-07
Heptachlor epoxide	8.79E-11	5.2E-06	3.56E-12	4.2E-07
Aroclor-1254	3.25E-09	5.7E-04	1.32E-10	4.6E-05
Aroclor-1260	9.35E-10	NC	3.79E-11	NC
Dioxins/Furans				
Dioxins/Furans(WHO)	4.21E-08	NC	1.71E-09	NC
Total Dermal	8.67E-08	0.003	3.51E-09	0.0002

IMC SUPERFUND SITE**RECORD OF DECISION**

Table 9
Summary of Incremental Risk and Hazard Quotients
Adolescent Trespasser – Surface Soil

CONSTITUENT	RME		CTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Inhalation				
Inorganics				
Aluminum	NC	1.5E-05	NC	4.9E-06
Antimony	NC	NC	NC	NC
Arsenic	1.03E-11	NC	1.72E-12	NC
Cadmium	9.65E-13	NC	1.61E-13	NC
Cyanide	NC	NC	NC	NC
Iron	NC	NC	NC	NC
Lead	NC	NC	NC	NC
Mercury	NC	1.6E-09	NC	5.4E-10
Thallium	NC	NC	NC	NC
Vanadium	NC	NC	NC	NC
Fluoride	NC	NC	NC	NC
Nitrate	NC	NC	NC	NC
Organics				
2,4-Dinitrotoluene	NC	NC	NC	NC
Acetophenone	NC	NC	NC	NC
Benzo(a)anthracene	1.66E-14	NC	2.77E-15	NC
Benzo(a)pyrene	1.67E-13	NC	2.79E-14	NC
Benzo(b)fluoranthene	1.91E-14	NC	3.19E-15	NC
Dibenzo(a,h)anthracene	6.07E-14	NC	1.01E-14	NC
Indeno(1,2,3-cd)pyrene	2.05E-14	NC	3.42E-15	NC
Pesticides/PCBs				
Dieldrin	2.36E-14	NC	3.94E-15	NC
Heptachlor epoxide	1.74E-15	NC	2.90E-16	NC
Aroclor-1254	6.44E-14	NC	1.07E-14	NC
Aroclor-1260	1.85E-14	NC	3.09E-15	NC
Dioxins/Furans				
Dioxins/Furans(WHO)	6.45E-13	NC	1.08E-13	NC
Total Inhalation	1.23E-11	0.00001	2.06E-12	0.000005

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Table 10
Summary of Incremental Risk and Hazard Quotients
Adolescent Trespasser – Sediment

CONSTITUENT	RME		CTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Ingestion				
Inorganics				
Arsenic	4.38E-08	0.0007	1.10E-08	0.00034
Iron	NC	NC	NC	NC
Lead	NC	NC	NC	NC
Manganese	NC	0.00033	NC	0.00016
Vanadium	NC	0.00035	NC	0.00018
Nitrate	NC	2.7E-07	NC	1.4E-07
Organics				
Acetophenone	NC	6.3E-08	NC	3.1E-08
Benzo(a)pyrene	3.81E-08	NC	9.52E-09	NC
Total Ingestion	8.19E-08	0.0014	2.05E-08	0.0007
Dermal				
Inorganics				
Arsenic	1.21E-09	0.00002	4.89E-11	0.00000
Iron	NC	NC	NC	NC
Lead	NC	NC	NC	NC
Manganese	NC	0.00023	NC	0.00002
Vanadium	NC	0.00038	NC	0.00003
Nitrate	NC	7.5E-09	NC	6.1E-10
Organics				
Acetophenone	NC	1.7E-09	NC	1.4E-10
Benzo(a)pyrene	1.05E-09	NC	4.25E-11	NC
Total Dermal	2.26E-09	0.0006	9.14E-11	0.0001

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Table 11
Summary of Incremental Risk and Hazard Quotients
Adolescent Trespasser – Surface Water

CONSTITUENT	RME		GTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Ingestion				
Inorganics				
Iron	NC	NC	NC	NC
Manganese	NC	0.00009	NC	0.00004
Organics				
<i>Bis (2-ethylhexyl)phthalate</i>	4.97E-10	0.00001	1.24E-10	6.2E-06
Total Ingestion	4.97E-10	0.0001	1.24E-10	0.00005
Dermal				
Inorganics				
Iron	NC	NC	NC	NC
Manganese	NC	0.00091	NC	0.00024
Organics				
<i>Bis (2-ethylhexyl)phthalate</i>	6.77E-09	0.000169	9.15E-10	0.00005
Total Dermal	6.77E-09	0.0011	9.15E-10	0.00029

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Table 12
Summary of Incremental Risk and Hazard Quotients
Industrial Worker – Surface Soil

CONSTITUENT	RME		CTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Ingestion				
Inorganics				
Aluminum	NC	0.013	NC	0.0022
Antimony	NC	0.003	NC	0.0005
Arsenic	1.59E-06	0.010	1.00E-07	0.0017
Cadmium	NC	0.001	NC	0.0001
Cyanide	NC	0.000	NC	0.0000
Iron	NC	NC	NC	NC
Lead	NC	NC	NC	NC
Mercury	NC	NC	NC	NC
Thallium	NC	NC	NC	NC
Vanadium	NC	0.006	NC	0.0010
Fluoride	NC	0.001	NC	0.0001
Nitrate	NC	0.000	NC	0.0000
Organics				
2,4-Dinitrotoluene	NC	NC	NC	NC
Acetophenone	NC	NC	NC	NC
Benzo(a)anthracene	6.05E-08	NC	3.81E-09	NC
Benzo(a)pyrene	6.05E-07	NC	3.81E-08	NC
Benzo(b)fluoranthene	6.95E-08	NC	4.38E-09	NC
Dibenzo(a,h)anthracene	2.21E-07	NC	1.39E-08	NC
Indeno(1,2,3-cd)pyrene	7.46E-08	NC	4.71E-09	NC
Pesticides/PCBs				
Dieldrin	3.61E-08	0.000	2.27E-09	0.0000
Heptachlor epoxide	2.67E-09	0.000	1.68E-10	0.0000
Aroclor-1254	9.89E-08	0.007	6.24E-09	0.0012
Aroclor-1260	2.84E-08	NC	1.79E-09	NC
Dioxins/Furans				
Dioxins/Furans(WHO)	1.28E-06	NC	8.08E-08	NC
Total Ingestion	4.06E-06	0.04	2.56E-07	0.007

IMC SUPERFUND SITE**RECORD OF DECISION**

Table 12
Summary of Incremental Risk and Hazard Quotients
Industrial Worker – Surface Soil

CONSTITUENT	RME		CTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Dermal				
Inorganics				
Aluminum	NC	0.00035	NC	0.00005
Antimony	NC	0.00055	NC	0.00008
Arsenic	4.31E-08	0.00027	2.28E-09	0.00004
Cadmium	NC	0.00072	NC	0.00011
Cyanide	NC	0.00000	NC	0.00000
Iron	NC	NC	NC	NC
Lead	NC	NC	NC	NC
Mercury	NC	NC	NC	NC
Thallium	NC	NC	NC	NC
Vanadium	NC	0.00619	NC	0.00091
Fluoride	NC	0.00002	NC	0.00000
Nitrate	NC	0.00000	NC	0.00000
Organics				
2,4-Dinitrotoluene	NC	NC	NC	NC
Acetophenone	NC	NC	NC	NC
Benzo(a)anthracene	1.64E-08	NC	8.69E-10	NC
Benzo(a)pyrene	1.64E-07	NC	8.69E-09	NC
Benzo(b)fluoranthene	1.89E-08	NC	1.00E-09	NC
Dibenzo(a,h)anthracene	6.00E-08	NC	3.17E-09	NC
Indeno(1,2,3-cd)pyrene	2.03E-08	NC	1.07E-09	NC
Pesticides/PCBs				
Dieldrin	9.81E-09	0.00003	5.19E-10	0.00001
Heptachlor epoxide	7.27E-10	0.00002	3.84E-11	0.00000
Aroclor-1254	2.69E-08	0.00188	1.42E-09	0.00028
Aroclor-1260	7.73E-09	NC	4.09E-10	NC
Dioxins/Furans				
Dioxins/Furans(WHO)	3.48E-07	NC	1.84E-08	NC
Total Dermal	7.17E-07	0.010	3.79E-08	0.001

IMC SUPERFUND SITE**RECORD OF DECISION**

Table 12
Summary of Incremental Risk and Hazard Quotients
Industrial Worker – Surface Soil

CONSTITUENT	RME		CTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Inhalation				
Inorganics				
Aluminum	NC	0.0007	NC	0.0006
Antimony	NC	NC	NC	NC
Arsenic	1.15E-09	NC	3.64E-10	NC
Cadmium	1.08E-10	NC	3.40E-11	NC
Cyanide	NC	NC	NC	NC
Iron	NC	NC	NC	NC
Lead	NC	NC	NC	NC
Mercury	NC	0.0000	NC	0.0000
Thallium	NC	NC	NC	NC
Vanadium	NC	NC	NC	NC
Fluoride	NC	NC	NC	NC
Nitrate	NC	NC	NC	NC
Organics				
2,4-Dinitrotoluene	NC	NC	NC	NC
Acetophenone	NC	NC	NC	NC
Benzo(a)anthracene	1.86E-12	NC	5.85E-13	NC
Benzo(a)pyrene	1.87E-11	NC	5.89E-12	NC
Benzo(b)fluoranthene	2.13E-12	NC	6.73E-13	NC
Dibenzo(a,h)anthracene	6.77E-12	NC	2.14E-12	NC
Indeno(1,2,3-cd)pyrene	2.29E-12	NC	7.22E-13	NC
Pesticides/PCBs				
Dieldrin	2.64E-12	NC	8.32E-13	NC
Heptachlor epoxide	1.94E-13	NC	6.13E-14	NC
Aroclor-1254	7.19E-12	NC	2.27E-12	NC
Aroclor-1260	2.07E-12	NC	6.52E-13	NC
Dioxins/Furans				
Dioxins/Furans(WHO)	7.20E-11	NC	2.27E-11	NC
Total Inhalation	1.38E-09	0.0007	4.34E-10	0.0006

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Table 13 - Summary of Incremental Risk and Hazard Quotients
Industrial Worker – Subsurface Soil

CONSTITUENT	RME		CTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Ingestion				
Inorganics				
Aluminum	NC	0.014	NC	0.002
Arsenic	2.28E-06	0.014	1.44E-07	0.002
Lead	NC	NC	NC	NC
Vanadium	NC	0.006	NC	0.001
Fluoride	NC	0.003	NC	0.001
Nitrate	NC	0.0000	NC	0.000
Organics				
Benzo(a)pyrene	1.30E-07	NC	8.21E-09	NC
Benzo(a)anthracene	1.66E-08	NC	1.05E-09	NC
Dibenzo(a,h)anthracene	2.93E-07	NC	1.85E-08	NC
Pesticides/PCBs/D&Fs				
Aldrin	4.90E-08	0.0003	3.09E-09	0.0000
Dieldrin	7.80E-08	0.0003	4.92E-09	0.0000
Aroclor-1254	1.54E-07	0.011	9.72E-09	0.002
Aroclor-1260	7.76E-08	NC	4.89E-09	NC
TEQ - WHO	2.90E-06	NC	1.83E-07	NC
Total Ingestion	5.98E-06	0.05	3.77E-07	0.009
Dermal				
Inorganics				
Aluminum	NC	0.0004	NC	0.0001
Arsenic	6.2E-08	0.0004	3.3E-09	0.0001
Lead	NC	NC	NC	NC
Vanadium	NC	0.0066	NC	0.0010
Fluoride	NC	0.0001	NC	0.0000
Nitrate	NC	0.0000	NC	0.0000
Organics				
Benzo(a)pyrene	3.5E-09	NC	1.9E-10	NC
Benzo(a)anthracene	4.5E-09	NC	2.4E-10	NC
Dibenzo(a,h)anthracene	8.0E-08	NC	4.2E-09	NC
Pesticides/PCBs/D&Fs				
Aldrin	1.3E-08	0.0001	7.0E-10	0.0000
Dieldrin	2.1E-08	0.0001	1.1E-09	0.0000
Aroclor-1254	4.2E-08	0.0029	2.2E-09	0.0004
Aroclor-1260	2.1E-08	NC	1.1E-09	NC
TEQ - WHO	7.9E-07	NC	4.2E-08	NC
Total Dermal	1.04E-06	0.011	5.48E-08	0.002

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Table 13
Summary of Incremental Risk and Hazard Quotients
Industrial Worker – Subsurface Soil

CONSTITUENT	RME		CTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Inhalation				
Inorganics				
Aluminum	NC	7.18E-04	NC	6.29E-04
Arsenic	1.66E-09	NC	5.23E-10	NC
Lead	NC	NC	NC	NC
Vanadium	NC	NC	NC	NC
Fluoride	NC	NC	NC	NC
Nitrate	NC	NC	NC	NC
Organics				
Benzo(a)pyrene	4.02E-12	NC	1.27E-12	NC
Benzo(a)anthracene	5.09E-13	NC	1.60E-13	NC
Dibenzo(a,h)anthracene	9.00E-12	NC	2.84E-12	NC
Pesticides/PCBs/D&Fs				
Aldrin	3.61E-12	NC	1.14E-12	NC
Dieldrin	5.71E-12	NC	1.80E-12	NC
Aroclor-1254	1.12E-11	NC	3.53E-12	NC
Aroclor-1260	5.64E-12	NC	1.78E-12	NC
TEQ - WHO	1.63E-10	NC	5.15E-11	NC
Total Inhalation	1.86E-09	0.0007	5.87E-10	0.0006

IMC SUPERFUND SITE**RECORD OF DECISION**

Table 14
Summary of Incremental Risk and Hazard Quotients
Commercial Worker – Surface Soil

CONSTITUENT	RME		CTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Ingestion				
Inorganics				
Aluminum	NC	0.013	NC	0.0022
Antimony	NC	0.003	NC	0.0005
Arsenic	1.59E-06	0.010	1.00E-07	0.0017
Cadmium	NC	0.001	NC	0.0001
Cyanide	NC	0.000	NC	0.0000
Iron	NC	NC	NC	NC
Lead	NC	NC	NC	NC
Mercury	NC	NC	NC	NC
Thallium	NC	NC	NC	NC
Vanadium	NC	0.006	NC	0.0010
Fluoride	NC	0.001	NC	0.0001
Nitrate	NC	0.000	NC	0.0000
Organics				
2,4-Dinitrotoluene	NC	NC	NC	NC
Acetophenone	NC	NC	NC	NC
Benzo(a)anthracene	6.05E-08	NC	3.81E-09	NC
Benzo(a)pyrene	6.05E-07	NC	3.81E-08	NC
Benzo(b)fluoranthene	6.95E-08	NC	4.38E-09	NC
Dibenzo(a,h)anthracene	2.21E-07	NC	1.39E-08	NC
Indeno(1,2,3-cd)pyrene	7.46E-08	NC	4.71E-09	NC
Pesticides/PCBs				
Dieldrin	3.61E-08	0.000	2.27E-09	0.0000
Heptachlor epoxide	2.67E-09	0.000	1.68E-10	0.0000
Aroclor-1254	9.89E-08	0.007	6.24E-09	0.0012
Aroclor-1260	2.84E-08	NC	1.79E-09	NC
Dioxins/Furans				
Dioxins/Furans(WHO)	1.28E-06	NC	8.08E-08	NC
Total Ingestion	4.06E-06	0.04	2.56E-07	0.007

IMC SUPERFUND SITE**RECORD OF DECISION**

Table 14
Summary of Incremental Risk and Hazard Quotients
Commercial Worker – Surface Soil

CONSTITUENT	RME		GTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Dermal				
Inorganics				
Aluminum	NC	0.0003	NC	5.1E-05
Antimony	NC	0.0006	NC	8.1E-05
Arsenic	4.31E-08	0.0003	2.28E-09	3.9E-05
Cadmium	NC	0.0007	NC	1.1E-04
Cyanide	NC	0.0000	NC	9.4E-08
Iron	NC	NC	NC	NC
Lead	NC	NC	NC	NC
Mercury	NC	NC	NC	NC
Thallium	NC	NC	NC	NC
Vanadium	NC	0.0062	NC	9.1E-04
Fluoride	NC	0.0000	NC	3.3E-06
Nitrate	NC	0.0000	NC	4.0E-09
Organics				
2,4-Dinitrotoluene	NC	NC	NC	NC
Acetophenone	NC	NC	NC	NC
Benzo(a)anthracene	1.64E-08	NC	8.69E-10	NC
Benzo(a)pyrene	1.64E-07	NC	8.69E-09	NC
Benzo(b)fluoranthene	1.89E-08	NC	1.00E-09	NC
Dibenzo(a,h)anthracene	6.00E-08	NC	3.17E-09	NC
Indeno(1,2,3-cd)pyrene	2.03E-08	NC	1.07E-09	NC
Pesticides/PCBs				
Dieldrin	9.81E-09	0.0000	5.19E-10	5.0E-06
Heptachlor epoxide	7.27E-10	0.0000	3.84E-11	2.5E-06
Aroclor-1254	2.69E-08	0.0019	1.42E-09	2.8E-04
Aroclor-1260	7.73E-09	NC	4.09E-10	NC
Dioxins/Furans				
Dioxins/Furans(WHO)	3.48E-07	NC	1.84E-08	NC
Total Dermal	7.17E-07	0.010	3.79E-08	0.001

IMC SUPERFUND SITE**RECORD OF DECISION**

Table 14
Summary of Incremental Risk and Hazard Quotients
Commercial Worker – Surface Soil

CONSTITUENT	RME		GTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Inhalation				
Inorganics				
Aluminum	NC	6.52E-04	NC	0.0006
Antimony	NC	NC	NC	NC
Arsenic	1.15E-09	NC	3.64E-10	NC
Cadmium	1.08E-10	NC	3.40E-11	NC
Cyanide	NC	NC	NC	NC
Iron	NC	NC	NC	NC
Lead	NC	NC	NC	NC
Mercury	NC	7.24E-08	NC	6.34E-08
Thallium	NC	NC	NC	NC
Vanadium	NC	NC	NC	NC
Fluoride	NC	NC	NC	NC
Nitrate	NC	NC	NC	NC
Organics				
2,4-Dinitrotoluene	NC	NC	NC	NC
Acetophenone	NC	NC	NC	NC
Benzo(a)anthracene	1.86E-12	NC	5.85E-13	NC
Benzo(a)pyrene	1.87E-11	NC	5.89E-12	NC
Benzo(b)fluoranthene	2.13E-12	NC	6.73E-13	NC
Dibenzo(a,h)anthracene	6.77E-12	NC	2.14E-12	NC
Indeno(1,2,3-cd)pyrene	2.29E-12	NC	7.22E-13	NC
Pesticides/PCBs				
Dieldrin	2.64E-12	NC	8.32E-13	NC
Heptachlor epoxide	1.94E-13	NC	6.13E-14	NC
Aroclor-1254	7.19E-12	NC	2.27E-12	NC
Aroclor-1260	2.07E-12	NC	6.52E-13	NC
Dioxins/Furans				
Dioxins/Furans(WHO)	7.20E-11	NC	2.27E-11	NC
Total Inhalation	1.38E-09	0.0007	4.34E-10	0.0006

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Table 15
Summary of Incremental Risk and Hazard Quotients
Commercial Worker – Surface Water

CONSTITUENT	RME		CTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Ingestion				
Inorganics				
Iron	NC	NC	NC	NC
Manganese	NC	0.0006	NC	0.0005
Organics				
<i>Bis</i> (2-ethylhexyl)phthalate	8.32E-09	0.00008	2.62E-09	0.00007
Total Ingestion	8.32E-09	0.0007	2.62E-09	0.0006
Dermal				
Inorganics				
Iron	NC	NC	NC	NC
Manganese	NC	0.016	NC	0.012
Organics				
<i>Bis</i> (2-ethylhexyl)phthalate	2.99E-07	0.0030	7.89E-08	0.0022
Total Dermal	2.99E-07	0.019	7.89E-08	0.014

IMC SUPERFUND SITE**RECORD OF DECISION**

Table 16
Summary of Incremental Risk and Hazard Quotients
Resident – Surface Soil

CONSTITUENT	RME		GTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Ingestion				
Inorganics				
Aluminum	NC	0.036	NC	0.0024
Antimony	NC	0.009	NC	0.0006
Arsenic	5.33E-06	0.028	1.07E-07	0.0018
Cadmium	NC	0.002	NC	0.0001
Cyanide	NC	0.000	NC	0.0000
Iron	NC	NC	NC	NC
Lead	NC	NC	NC	NC
Mercury	NC	NC	NC	NC
Thallium	NC	NC	NC	NC
Vanadium	NC	0.017	NC	0.0011
Fluoride	NC	0.002	NC	0.0002
Nitrate	NC	0.000	NC	0.0000
Organics				
2,4-Dinitrotoluene	NC	NC	NC	NC
Acetophenone	NC	NC	NC	NC
Benzo(a)anthracene	2.03E-07	NC	4.07E-09	NC
Benzo(a)pyrene	2.03E-06	NC	4.07E-08	NC
Benzo(b)fluoranthene	2.34E-07	NC	4.68E-09	NC
Dibenzo(a,h)anthracene	7.41E-07	NC	1.49E-08	NC
Indeno(1,2,3-cd)pyrene	2.51E-07	NC	5.03E-09	NC
Pesticides/PCBs				
Dieldrin	1.21E-07	0.000	2.43E-09	0.0000
Heptachlor epoxide	8.98E-09	0.000	1.80E-10	0.0000
Aroclor-1254	3.32E-07	0.006	6.66E-09	0.0004
Aroclor-1260	9.55E-08	NC	1.91E-09	NC
Dioxins/Furans				
Dioxins/Furans(WHO)	4.30E-06	NC	8.63E-08	NC
Total Ingestion	1.36E-05	0.10	2.74E-07	0.007

IMC SUPERFUND SITE**RECORD OF DECISION**

Table 16
Summary of Incremental Risk and Hazard Quotients
Resident – Surface Soil

CONSTITUENT	RME		CTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Dermal				
Inorganics				
Aluminum	NC	0.002	NC	0.0003
Antimony	NC	0.003	NC	0.0004
Arsenic	3.04E-07	0.002	1.22E-08	0.0002
Cadmium	NC	0.004	NC	0.0006
Cyanide	NC	0.000	NC	0.0000
Iron	NC	NC	NC	NC
Lead	NC	NC	NC	NC
Mercury	NC	NC	NC	NC
Thallium	NC	NC	NC	NC
Vanadium	NC	0.036	NC	0.0049
Fluoride	NC	0.000	NC	0.0000
Nitrate	NC	0.000	NC	0.0000
Organics				
2,4-Dinitrotoluene	NC	NC	NC	NC
Acetophenone	NC	NC	NC	NC
Benzo(a)anthracene	1.16E-07	NC	4.64E-09	NC
Benzo(a)pyrene	1.16E-06	NC	4.64E-08	NC
Benzo(b)fluoranthene	1.33E-07	NC	5.34E-09	NC
Dibenzo(a,h)anthracene	4.23E-07	NC	1.70E-08	NC
Indeno(1,2,3-cd)pyrene	1.43E-07	NC	5.73E-09	NC
Pesticides/PCBs				
Dieldrin	6.91E-08	0.000	2.77E-09	0.0000
Heptachlor epoxide	5.12E-09	0.000	2.05E-10	0.0000
Aroclor-1254	1.89E-07	0.011	7.60E-09	0.0015
Aroclor-1260	5.44E-08	NC	2.18E-09	NC
Dioxins/Furans				
Dioxins/Furans(WHO)	2.45E-06	NC	9.84E-08	NC
Total Dermal	5.05E-06	0.06	2.02E-07	0.008

IMC SUPERFUND SITE**RECORD OF DECISION**

Table 16
Summary of Incremental Risk and Hazard Quotients
Resident – Surface Soil

CONSTITUENT	RME		CTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Inhalation				
Inorganics				
Aluminum	NC	0.0012	NC	0.00077
Antimony	NC	NC	NC	NC
Arsenic	2.45E-09	NC	4.92E-10	NC
Cadmium	2.29E-10	NC	4.60E-11	NC
Cyanide	NC	NC	NC	NC
Iron	NC	NC	NC	NC
Lead	NC	NC	NC	NC
Mercury	NC	0.0000	NC	0.00000
Thallium	NC	NC	NC	NC
Vanadium	NC	NC	NC	NC
Fluoride	NC	NC	NC	NC
Nitrate	NC	NC	NC	NC
Organics				
2,4-Dinitrotoluene	NC	NC	NC	NC
Acetophenone	NC	NC	NC	NC
Benzo(a)anthracene	3.95E-12	NC	7.92E-13	NC
Benzo(a)pyrene	3.97E-11	NC	7.97E-12	NC
Benzo(b)fluoranthene	4.54E-12	NC	9.10E-13	NC
Dibenzo(a,h)anthracene	1.44E-11	NC	2.89E-12	NC
Indeno(1,2,3-cd)pyrene	4.87E-12	NC	9.77E-13	NC
Pesticides/PCBs				
Dieldrin	5.62E-12	NC	1.13E-12	NC
Heptachlor epoxide	4.13E-13	NC	8.29E-14	NC
Aroclor-1254	1.53E-11	NC	3.07E-12	NC
Aroclor-1260	4.40E-12	NC	8.82E-13	NC
Dioxins/Furans				
Dioxins/Furans(WHO)	1.53E-10	NC	3.07E-11	NC
Total Inhalation	2.93E-09	0.001	5.88E-10	0.0008

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Table 17
Summary of Incremental Risk and Hazard Quotients
Resident – Surface Water

CONSTITUENT	RME		CTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Ingestion				
Inorganics				
Iron	NC	NC	NC	NC
Manganese	NC	0.00082	NC	0.0005
Organics				
Bis (2-ethylhexyl)phthalate	1.40E-08	0.00012	2.80E-09	0.000078
Total Ingestion	1.40E-08	0.001	2.80E-09	0.0006
Dermal				
Inorganics				
Iron	NC	NC	NC	NC
Manganese	NC	0.28	NC	0.13
Organics				
Bis (2-ethylhexyl)phthalate	6.31E-06	0.053	8.43E-07	0.023
Total Dermal	6.31E-06	0.33	8.43E-07	0.15

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Table 18
Summary of Incremental Risk and Hazard Quotients
Resident – Groundwater

CONSTITUENT	RME		CTE	
	CARCINOGENIC RISK	HAZARD QUOTIENT	CARCINOGENIC RISK	HAZARD QUOTIENT
Ingestion				
Inorganics				
Aluminum	NC	2.7	NC	1.3
Arsenic	8.10E-05	0.4	1.14E-05	0.2
Beryllium	1.33E-03	0.4	1.86E-04	0.2
Cadmium	NC	0.5	NC	0.3
Chromium	NC	0.0	NC	0.0
Cobalt	NC	0.5	NC	0.2
Copper	NC	0.1	NC	0.1
Cyanide	NC	0.0	NC	0.0
Fluoride	NC	42.6	NC	19.9
Iron	NC	NC	NC	NC
Lead	NC	NC	NC	NC
Manganese	NC	12.3	NC	5.7
Nickel	NC	0.5	NC	0.3
Nitrate-N	NC	1.1	NC	0.5
Selenium	NC	NC	NC	NC
Thallium	NC	NC	NC	NC
Vanadium	NC	0.1	NC	0.1
Zinc	NC	0.1	NC	0.0
Organics				
Alpha-BHC	4.14E-06	NC	5.82E-07	NC
Beta-BHC	8.03E-07	NC	1.13E-07	NC
Benzene	1.87E-05	0.20	2.63E-06	0.09
Chloroform	4.15E-08	0.00	5.83E-09	0.00
2-Nitrotoluene	NC	0.00	NC	0.00
4-Nitrotoluene	NC	0.00	NC	0.00
2,4-Dinitrotoluene	3.22E-03	5.52	4.52E-04	2.58
2,6-Dinitrotoluene	5.64E-05	0.10	7.93E-06	0.05
1,3-Dinitrobenzene	NC	0.47	NC	0.29
2,4,6-Trinitrotoluene	8.10E-07	0.13	5.93E-08	0.03
Naphthalene	5.82E-07	0.00	8.18E-08	0.00
2-Methylnaphthalene	NC	NC	NC	NC
Tetrachloroethene	1.71E-06	0.01	2.40E-07	0.00
Vinyl Chloride	1.27E-05	0.01	1.78E-06	0.00
Xylenes	NC	0.00	NC	0.00
Total Ingestion	4.72E-03	67.8	6.63E-04	31.8

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Table 19 presents a summary of estimated noncarcinogenic hazards and incremental carcinogenic risks for the potentially exposed populations at the Site based on RME assumptions. A HI below 1.0 indicates that adverse noncarcinogenic health effects for these receptors are not expected to occur under the exposures evaluated.

EPA has established a range of 1×10^{-4} to 1×10^{-6} for excess lifetime carcinogenic risks. Future land use scenarios and RME assumptions for the hypothetical resident was estimated to be greater than the upper end of the EPA target risk range. This estimated incremental potential RME risk for hypothetical future residential use of groundwater was responsible for estimated risks above EPA's risk range.

7.1.5 Constituent of Concern (COC) Determination

COCs are defined as those COPCs that significantly contribute to an exposure pathway that either exceeds a 1×10^{-4} cumulative incremental cancer risk; or exceeds a non-carcinogenic HI of 1. Generally, exceeding a 1×10^{-4} cumulative site risk level and a HI of 1 warrants action under CERCLA. Constituents are considered as significant contributors to the pathway risk, and therefore included as COCs, if their individual carcinogenic risk contribution is greater than 1×10^{-6} and their noncarcinogenic HQ is greater than 0.1.

Groundwater COCs are also identified by comparison to appropriate ARARs. In this case, the exposure point concentrations of groundwater COPCs were compared to federal and state primary MCLs. On this basis, beryllium, cadmium, lead, benzene, fluoride, thallium and nitrate are designated as groundwater COCs.

7.1.6 Uncertainty Analysis

The primary goal of the uncertainty analysis is to provide a discussion of the key assumptions made in the risk assessment that may significantly influence the estimate of potential risk. Uncertainty is inherent in all of the principle components of the risk assessment. A discussion of the sources of uncertainty contributing to the potential risk and the associated effects (overestimation or underestimation of risk) of these factors is presented herein. In the absence of empirical- or site-specific data, assumptions are developed based on best estimates of exposure or dose-response relationships. To assist in the development of these estimates, EPA (1989, 1991) recommends the use of guidelines and standard factors in risk assessments conducted under CERCLA. The use of these standard factors is intended to promote consistency among risk assessments where assumptions must be made. Although the use of standard factors undoubtedly promotes comparability, their usefulness in accurately predicting potential risk is directly related to their applicability to the actual site-specific conditions.

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Table 19
Hazard and Incremental Risk Summary by Media

Receptor/Media of Concern	RME		CTE	
	Risk	Hazard	Risk	Hazard
Current Land Use				
Construction Worker				
Surface Soil	1.10E-06	0.28	1.44E-07	0.073
Subsurface Soil	1.59E-06	0.34	2.11E-07	0.089
Sediment	1.82E-07	0.032	2.41E-08	0.008
Surface Water	3.95E-09	0.018	1.47E-09	0.013
Total for Receptor	2.88E-06	0.67	3.81E-07	0.18
Adolescent Trespasser				
Surface Soil	5.72E-07	0.014	1.25E-07	0.006
Sediment	8.42E-08	0.002	2.06E-08	0.001
Surface Water	2.55E-09	0.001	4.01E-10	0.0003
Total for Receptor	6.59E-07	0.017	1.46E-07	0.007
Future Land Use				
Industrial Worker				
Surface Soil	4.78E-06	0.051	2.95E-07	0.009
Subsurface Soil	7.02E-06	0.060	4.33E-07	0.011
Total for Receptor	1.18E-05	0.11	7.28E-07	0.020
Commercial Worker				
Surface Soil	4.78E-06	0.051	2.95E-07	0.009
Surface Water	9.88E-08	0.018	2.65E-08	0.013
Total for Receptor	4.88E-06	0.069	3.22E-07	0.022
Resident				
Surface Soil	1.87E-05	0.16	4.77E-07	0.015
Surface Water	1.93E-06	0.30	2.58E-07	0.13
Groundwater	4.72E-03	67.8	6.63E-04	31.8
Total for Receptor	4.76E-03	68	6.64E-04	32

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The potential noncarcinogenic hazard and carcinogenic risk estimates for the Site are based on a number of assumptions that incorporate varying degrees of uncertainty resulting from many sources, including the following:

- Environmental monitoring and data evaluation
- Assumptions in the selection of exposure pathways and scenarios
- Estimation of the magnitude of exposure under selected exposure scenarios
- Assumptions in the expression of potential noncarcinogenic hazard and carcinogenic risk

Several factors introduced in the risk assessment may contribute to the uncertainty of the potential risk estimates, including the following:

- Sampling concentrated in areas at the site believed to be affected by constituents (biased sampling) is likely to overestimate exposure.
- Use of environmental data qualified as estimated potentially biases the actual value low or high.
- Using EPA-approved toxicity values with low confidence ratings and high uncertainty factors could potentially overestimate or underestimate the risk calculated in the RI.
- Using toxicity values that are largely based on animal studies and extrapolated to humans could potentially overestimate or underestimate the risk calculated in this RI.
- Not quantitatively evaluating constituents that do not have toxicity data may underestimate actual risk.
- Not quantitatively evaluating synergistic or cumulative toxicity effects associated with the co-occurrence of COPCs in environmental media may underestimate actual risk.
- Compounding conservative assumptions in the risk assessment yield extremely conservative (overestimated) potential risk estimates.
- Assuming constituents present in soils and sediment have a significant tendency to desorb from the soil and pass through the skin is likely to overestimate exposure.
- Using 95% UCL and maximum concentrations is likely to overestimate intakes since actual exposure is probably at lower concentrations.
- The assumption that ingestion exposures correspond to populations spending their entire workdays within the localized affected areas of the site overestimates exposure.

The following discussions detail the key assumptions and uncertainties in each phase of the risk assessment that resulted in a significant contribution to total potential risk.

Characterization of Affected Media

The intent of the RI conducted for the site was to characterize the nature and extent of contamination in various media and potential risk(s) to human health and the environment. To achieve this goal in a timely, cost-effective manner, the investigation

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focused on those areas of the Site that were known or suspected to be affected by chemical releases. In the absence of a representative sample population (*i.e.*, an equally distributed number of data points from all portions of the Site), the available data used in the baseline risk assessment were assumed to be representative of the entire Site. For the industrial worker and construction worker, this assumption is more likely to overestimate risk than to underestimate it, since potential receptors may spend less time in the sampled areas than the site as a whole.

Exposure Assessment

There are numerous assumptions made in the exposure assessment, including the selection of exposure routes, scenarios, and factors (*e.g.*, contact rates, exposure frequency, body weight) used to estimate exposure doses. The RME was used to develop exposure doses and is defined as the "maximum exposure that is reasonably expected to occur at the site (EPA, 1989)." Several variables that determine the exposure dose for the RME are based on high-end (typically 90th percentile or greater) estimates. These variables are as follows:

- Exposure concentration is the 95% UCL or the maximum concentration observed.
- Intake rate is an upper bound or maximum value.
- Exposure frequency is an average or upper-bound value.
- Exposure duration is an upper-bound value.
- Fraction ingested is an upper-bound (conservative) value.

Therefore, the calculated RME dose for any given constituent, which results from a multiplication of these selected variables, represents a high-end value and a conservative estimate of the actual exposure dose. The use of this exposure dose, coupled with conservative estimates of toxicity, will yield a potential risk result that represents a high-end estimate of the likelihood of noncarcinogenic effects.

Toxicity Assessment

In order for a potential risk to be present, both exposure to the COC and toxicity at the predicted exposure levels must exist. The toxicological uncertainties primarily relate to the methodology by which carcinogenic and noncarcinogenic criteria (*i.e.*, CSFs and RfDs) are developed. The toxicity values developed by EPA are designed to represent a conservative position, may not reflect the current scientific consensus, and in most instances, will result in an overestimation of potential hazards.

There is considerable scientific debate regarding the nature of dioxin toxicity. The EPA-mandated cancer slope factor of 150,000 (mg/kg-day)⁻¹ is relied upon in incremental risk estimates for this baseline risk assessment. This CSF, published in HEAST, does not represent agency-wide consensus and is footnoted in the HEAST citation as under review and subject to change. However, this value is relied upon for risk assessments

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under the CERCLA framework. This value may be changed (higher or lower) based on the EPA dioxin reassessment scheduled to be finalized soon. For dermal contact exposures in this baseline risk assessment, oral slope factors and reference doses adjusted for dermal exposure are used. The adjustments are based on studies on each individual parameter when available. However, the uncertainty involved in this adjustment method is high. For inhalation exposures in this baseline risk assessment, EPA has requested that a provisional inhalation SF be used for benzo(a)pyrene. This value has been developed by the National Center for Environmental Assessment (NCEA) and is based on a hamster evaluation using benzo(a)pyrene (USEPA, 2000b). The uncertainty involved in using a provisional inhalation slope factor could underestimate or overestimate risk for this constituent.

7.2 Summary of the Ecological Risk Assessment

This section documents the ecological risk evaluations conducted for the Site. The role of the ecological risk assessment is to 1) determine whether unacceptable risks might be posed to ecological receptors from chemical stressors, 2) derive constituent concentrations which would ensure that unacceptable risks are not posed to ecological receptors, and 3) provide the information necessary to make a risk management decision concerning the practical need and extent of remedial action.

The ecological risk assessment process as defined by guidance can consist of eight steps and five scientific management decision points (SMDPs). The ecological risk assessment process includes the following steps:

- Preliminary Problem Formulation and Ecological Effects Evaluation
- Preliminary Exposure Estimate and Risk Calculation
- Problem Formulation: Assessment Endpoint Selection and Formulation of Testable Hypothesis
- Conceptual Model Development: Conceptual Model Measurement Endpoint Selection and Study Design
- Site Assessment to Confirm Ecological Sampling and Analysis Plan
- Site Field Investigation
- Risk Characterization
- Risk Management

Consistent with EPA guidance, the SMDP follow Steps 2 through 5 and Step 8. At the conclusion of the screening level ecological risk assessment (Step 1 and 2) for the Site, the initial SMDP of the ecological risk assessment process was reached. The Screening Level Ecological Risk Assessment (SLERA; RMT, 2002) indicated that potential conditions exist which result in or may result in a HQ greater than 1.0 for constituents observed at the Site; therefore, a refinement of COPC and problem formulation (Step 3)

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was prepared. Ecological COPCs for surface water and sediment were not identified. The industrial nature of the site lacks quality ecological habitat areas capable of supporting ecological populations. Upon reaching the SMDP at the conclusion of the ecological COPC refinement process, additional ecological evaluations of the Site were not warranted. This information supports that an expanded problem formulation does not need to be prepared and further ecological risk evaluations are not deemed necessary for the Site.

7.3 Basis for Remedial Action

The response action selected in this ROD is necessary to protect public health or welfare or the environment from actual releases of hazardous substances into the environment. A 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 $1E-4$ (using 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 index is greater than one (using RME assumptions for either the current or reasonably anticipated future land use or current or potential use of ground/surface water). The response action is warranted because:

- Groundwater contains contaminants above the MCLs that contribute to an unacceptable risk. The groundwater exposures had the highest excess cancer risks and non-carcinogenic risks of the exposure scenarios evaluated. However, for both current and future populations to be exposed to contaminants would require that untreated potable supply wells be used in the contaminated plumes. Currently, all residences and businesses have access to City water.

8.0 REMEDIAL ACTION OBJECTIVES (RAOs)

RAOs are Site-specific clean-up objectives established for protecting human health and the environment. RAOs specify contaminants and media of concern, and potential exposure pathways and receptors [40 C.F.R. § 300.430 (e)(2)(i)]. RAOs indicate a contaminant level and an exposure route, rather than a contaminant level alone, because protection of human and ecological receptors may be achieved by reducing or eliminating exposure pathways as well as by reducing contaminant concentrations.

The RAOs were developed based on the results of the Human Health and Ecological Risk Assessment and based on ARARs. RAOs were not developed for soils, sediments, or surface water, as these three media do not pose elevated risk to human health or the environment based on the results of the Risk Assessment. RAOs were developed for groundwater, which poses elevated risk through hypothetical future ingestion by residents residing on the IMC Property. RAOs may be qualitative (e.g., to

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prevent exposure to contaminated groundwater) or quantitative (e.g., to specify the maximum contaminant concentration in groundwater).

The IMC groundwater plume is defined as COC impacted groundwater in the underlying aquifer of the IMC Property. Groundwater RAOs are presented in **Table 20**.

Environmental Media	Table 20 Remedial Action Objectives
Groundwater	<p>For Human Health</p> <ul style="list-style-type: none"> • Prevent future human exposure (dermal contact, ingestion, and inhalation) to groundwater with contaminants above levels that are protective of beneficial groundwater use. • To restore groundwater to beneficial use in a reasonable time frame <p>For Environmental Protection</p> <ul style="list-style-type: none"> • To minimize migration of COCs from site groundwater to surface water.

8.1 Cleanup Levels

Cleanup levels are a subset of the RAOs, and they provide the measurable levels for the remedial actions for each medium. In the preamble to the final NCP, EPA explained that cleanup levels are based on applicable or relevant and appropriate requirements (ARARs) where they exist. In the cases where cleanup levels are not based on ARARs, numerical cleanup levels were developed following the EPA guidance document entitled *Risk Assessment Guidance for Superfund: Volume 1 – Human Health Evaluation Manual (Part B, Development of Risk Based Preliminary Remediation Goals)*, Interim, December 1991 (EPA, 1991a) and USEPA's Office of Solid Waste and Emergency Response (OSWER) Directive 9355.0-30, *Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions* (EPA, 1991b).

To meet the RAOs of reducing potential risk and migration at the Site, cleanup levels are established for use in reviewing the RA alternatives. Cleanup levels may be based on human health risk assessment, ecological risk assessment, potential migration to groundwater, and/or groundwater and surface water ARARs.

Chemical-specific ARARs are available for groundwater in the form of Federal/State-specific groundwater standards. Site groundwater concentrations greater than Federal/State-specific groundwater standards are the following constituents: Beryllium, Fluoride, Cadmium, Nitrate, Lead, Benzene, and Thallium. Clean-up levels for groundwater are listed in **Table 21**.

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**Table 21
Groundwater Cleanup Levels**

Contaminant	MCL (ug/l)	Max Found (ug/l)
Beryllium	4	93
Cadmium	5	18
Thallium	2	5.5
Lead	15	47
Fluoride	4,000	211,000
Nitrate	10,000	142,000
Benzene	5	59
2,4-DNT	10 (PQL)	1,310

PQL – practical quantitation limit

Potential migration from soil to groundwater was discussed previously. The RI concluded that process residuals were a likely source of low pH, metals, fertilizer constituents, and DNTs to groundwater. Process residuals were removed during the NTCRA. The Former Sulfuric Acid Plant area was also identified as a source area of low pH to groundwater. Although control of future migration has been identified as a remedial objective, specific soil cleanup levels for migration control are not proposed. Rather the distinct low pH source area is addressed in the remedial alternatives. The low pH source area is characterized as subsurface soil with a soil pH value less than 3.5 s.u. The low pH source area in the Former Sulfuric Acid Plant area is estimated to be 31,700 cubic yards. This volume is based on information obtained during the October 2013 low pH soil evaluation.

Assuming a saturated thickness ranging from 10 to 25 feet and a porosity of 0.3, the volume of potentially affected groundwater is estimated to range from 17 to 44 million gallons.

9.0 DESCRIPTION OF REMEDIAL ALTERNATIVES

Several potentially applicable remedial alternatives were assembled and screened to identify those that warrant a more detailed analysis. The alternatives were screened based on the anticipated effectiveness, implementability, and relative cost with respect to IMC Site conditions. Based on the results of the preliminary screening process, the remedial alternatives listed below have been retained for detailed analysis.

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- 1: No Action.
- 2: Infiltration Galleries and ICs.
- 3: Phytoremediation and ICs.
- 4: Ex Situ Soil Treatment and Replacement

The following table lists the capital costs, O&M costs, and total present worth costs of each of the retained Remedial Alternatives:

Alternative	Capital Cost	Annual O&M Costs	Present Value (3% rate of return)
1 - No Action	\$0	\$0	\$0
2 – Infiltration Galleries	\$1,150,000	\$100,400	\$2,190,000
3 - Phytoremediation	\$492,000	\$117,600	\$2,300,000
4 – Ex Situ Soil Treatment and Replacement	\$4,119,000	\$100,400	\$5,160,000

9.1 Common Elements of Each Remedial Alternative

With the exception of Alternative 1, all the remedial action alternatives include:

- ICs are 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 a remedy. Institutional controls for site-wide groundwater use restrictions would be kept in place until cleanup levels in groundwater are met. In addition to the institutional controls, engineered controls such as the existing security fencing would be maintained to limit access to the Site.
- Performance monitoring would include a baseline sampling event just prior to implementing the remedy and semiannual groundwater monitoring following implementation. If monitoring data suggest, after a reasonable record has been established that less frequent monitoring is appropriate, then the monitoring frequency will be reduced. Two to four additional groundwater monitoring wells are proposed to monitor the performance of this alternative. On an annual basis, an upstream and downstream surface water sample will be collected from Fairforest Creek to confirm that water quality is maintained. Surface water samples will be collected for the same analytical parameters as groundwater. If

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the groundwater monitoring frequency is adjusted, surface water sampling will be conducted at the same frequency as groundwater sampling.

9.2 Description of Alternatives/Remedy Components**9.2.1 Alternative 1 – No Action**

Estimated Capital Costs:	\$0
Annual O&M Costs:	\$0
Total Present Worth Costs:	\$0
Estimated time to construct:	None
Estimated time to achieve RAOs:	None

As required by the NCP, the No Action alternative, reflecting no further action for groundwater or the source of low pH to groundwater, is evaluated as a baseline for comparison to other alternatives. Under this alternative, reduction in COC concentrations will rely on natural physical and chemical processes. Neither groundwater use restriction nor a groundwater monitoring program will be implemented under this alternative.

9.2.2 Alternative 2: Infiltration Galleries

Estimated Capital Costs:	\$1,150,000
Annual O&M Costs:	\$100,400
Total Present Worth Costs:	\$2,190,000
Estimated time to construct:	3 months
Estimated time to achieve RAOs:	15 years

Alternative 2 consists of source remediation for the Northeast groundwater area by applying neutralization chemicals to subsurface soil in the source area. **Figure 31** depicts a hypothetical layout of infiltration galleries. Each gallery would be constructed of perforated 2-foot diameter pipe laid horizontally at a depth of 8 to 10 feet bls. The infiltration galleries are proposed to be arrayed in three rows. The first row is located within the affected soil area. The second row is located about one-third the distance from the affected soil area to Fairforest Creek. The third row is located about half the distance from the second row to Fairforest Creek. Each pipe would be filled with a neutralizing chemical solution such as sodium carbonate. The chemical would drain by gravity from the pipe, neutralizing underlying soil. Eventually, the infiltrated

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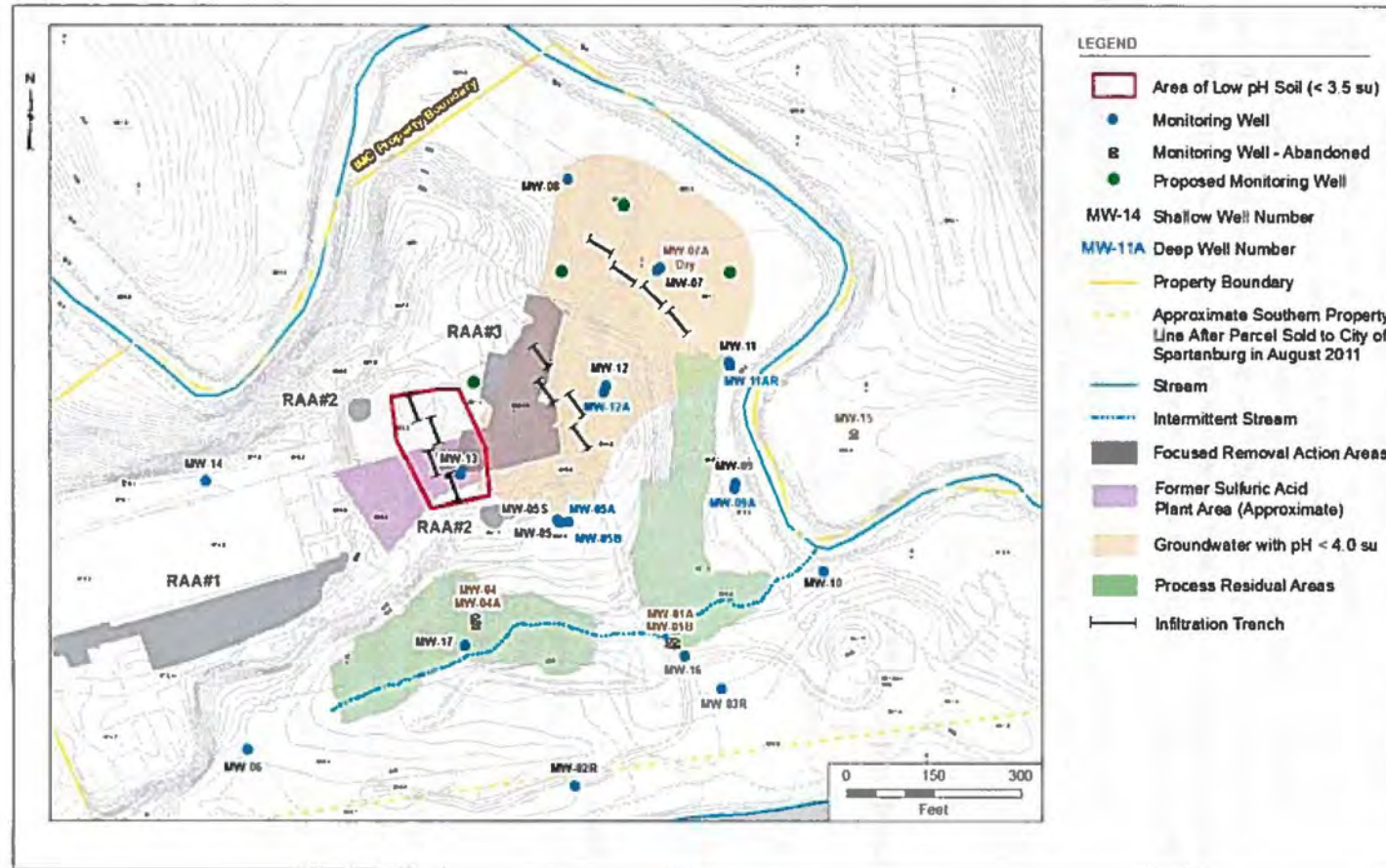


Figure 31
Alternative 2 – Infiltration Galleries

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neutralization chemical would begin to neutralize groundwater beneath and downgradient of the infiltration galleries, or, at a minimum, the treated soil would cease to be a continuing source of low pH to the groundwater. The metals present in the affected groundwater above MCLs are the result of native minerals being mobilized by the low pH conditions. Increasing the pH of the groundwater will allow the metals to precipitate from the groundwater flow. Increasing pH is expected to also have a positive effect on fluoride and nitrate concentrations in groundwater. Fluoride is anticipated to bond with existing aluminum and become less soluble in the aquifer as the pH increases. Nitrate is subject to denitrification under favorable geochemical conditions, one of which is a pH near neutral. Fluoride and nitrate are anticipated to attenuate in the affected groundwater area as the effects of the previous removal actions and increasing groundwater pH values become apparent over time.

Eight quarterly infiltration events are proposed for the infiltration galleries within the affected soil area. Four infiltration events are proposed for the downgradient infiltration galleries. The timing of downgradient infiltration events is anticipated to be quarterly, but the timing and distribution of downgradient infiltration will be adjusted as appropriate based on performance monitoring results.

Operation and Maintenance (O&M) Components

O&M components include groundwater monitoring and reporting, inspecting the fence and mowing the site twice a year.

Expected Outcomes

Once continuing sources of low pH to the groundwater have been neutralized, permanent improvement of the downgradient groundwater is expected to occur. Low pH groundwater increases the solubility of metals and causes some naturally occurring metals in soil to dissolve into the groundwater at concentrations exceeding their respective MCLs. When the pH of groundwater in the affected area increases sufficiently, these metals will no longer be present in groundwater above their MCLs. As the pH of groundwater increases, fluoride will bond with the aluminum present in the groundwater to form insoluble compounds. While nitrate is not anticipated to be directly affected by changes in groundwater pH, previous removal actions have removed the sources of nitrates at the Site, so groundwater concentrations will diminish over time. Once the groundwater becomes closer to neutral pH, conditions may become favorable for denitrification.

IMC SUPERFUND SITE**RECORD OF DECISION****9.2.3 Alternative 3: Phytoremediation**

Estimated Capital Costs:	\$492,000
Annual O&M Costs:	\$117,600
Total Present Worth Costs:	\$2,300,000
Estimated time to construct:	6 months
Estimated time to achieve RAOs:	30 years

Alternative 3 addresses the affected groundwater in the Northeast groundwater area by providing hydraulic containment using a phytoremediation system. This is accomplished by the installation of rows of trees in the downgradient area of the low pH plume. An array of approximately 150 trees in three rows on 10-foot centers is proposed, but subject to revision during RD. Several species of trees (to be determined) will be incorporated into the design. The downgradient portion of the affected groundwater area, along the floodplain of Fairforest Creek, was selected for the phytoremediation system because the water table is located about 10 feet bls and bedrock is located about 20 feet bls – providing reasonable conditions for phytoremediation to be successful. Nearer the source area, the water table is much deeper, making it harder for the root systems of the trees to reach the water table. The trees would be installed using Tree Well® technology that forces the tree roots to reach downward to the affected shallow groundwater. In addition to hydraulic containment provided by transpiration of groundwater, sequestration of metals and neutralizing of pH is anticipated to occur to some extent in the immediate vicinity of the tree roots. **Figure 32** shows the proposed location for phytoremediation.

This alternative does not include additional source material remediation beyond what has already been conducted. However, site-wide performance groundwater monitoring is included in this alternative. Two to four additional wells would be installed to monitor the performance of the phytoremediation system.

Operation and Maintenance (O&M) Components

Once the trees are installed, ongoing inspection will be required. In addition, the Site will be mowed and the fence inspected twice a year. Groundwater monitoring and reporting is also included.

Expected Outcomes

Phytoremediation provides some hydraulic control of the Northeast affected groundwater area via rhizofiltration and phytovolatilization and also provides some removal of constituents in the affected groundwater area via sequestration at the root zone of the trees. Installation of trees to maintain hydraulic control of the low pH plume

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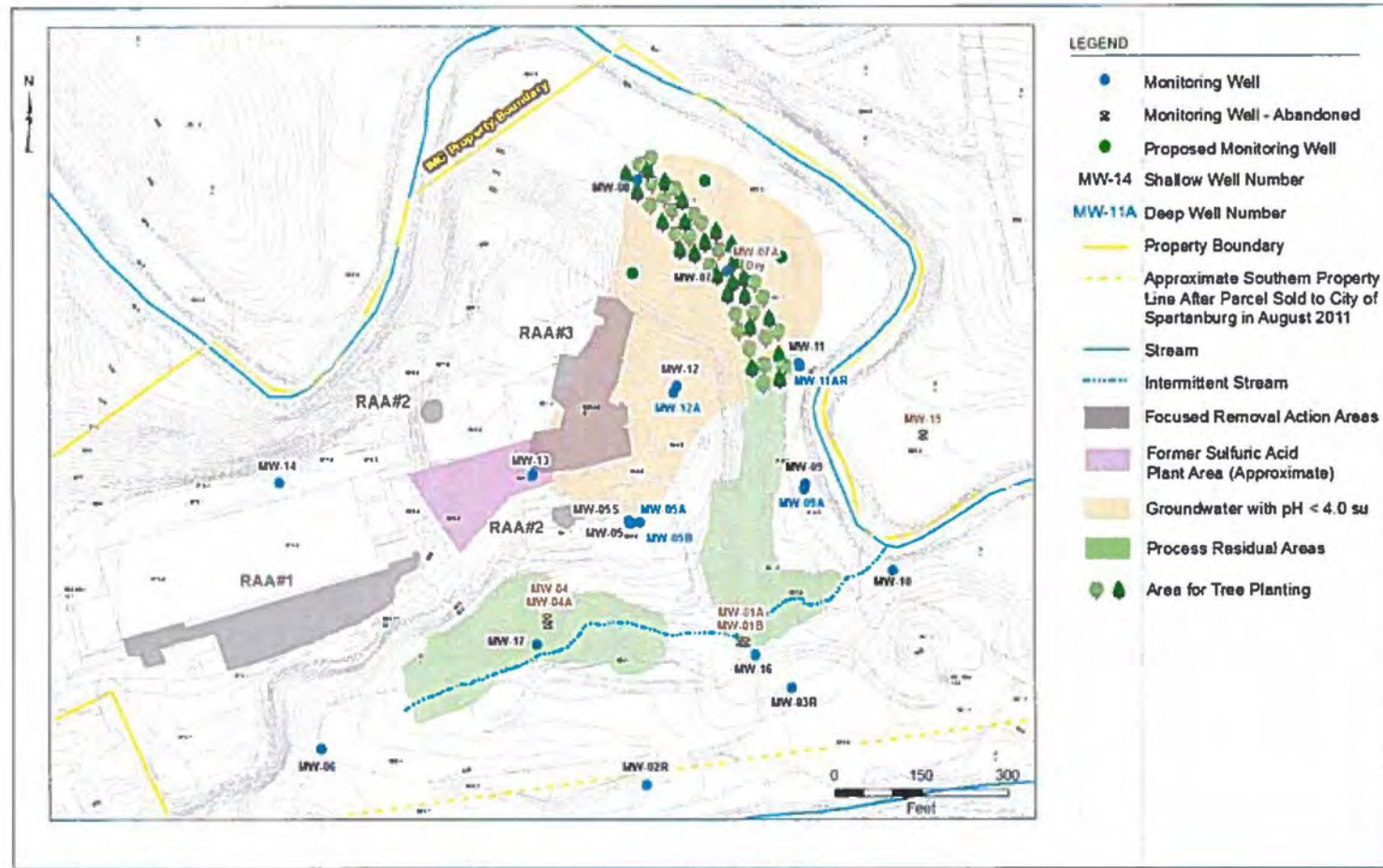


Figure 32
 Alternative 3 - Phytoremediation
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would effectively mitigate the further downgradient flow of groundwater and would be effective as long as the trees are in place and transpiring. To the extent that sequestration of COCs and neutralizing of pH occurs within the phytoremediation system, these processes would be effective and permanent. When the pH of groundwater in the affected area increases sufficiently by natural flushing, these COCs would no longer be soluble above their MCLs.

9.2.4 Alternative 4: Ex Situ Soil Treatment and Replacement

Estimated Capital Costs:	\$4,119,000
Annual O&M Costs:	\$100,400
Total Present Worth Costs:	\$5,160,000
Estimated time to construct:	6 months
Estimated time to achieve RAOs:	15 years

Alternative 4 includes the excavation and treatment of subsurface low pH soil in the Former Sulfuric Acid Plant area that serves as a continuing source for low pH to the Northeast Area groundwater. To access the affected soil (low pH source material), overburden soil would need to be removed and set aside for later backfilling of the excavation. Additional unaffected soil would also be removed along the excavation sidewalls to create stable, safe slopes. The low pH soil would be mixed with a neutralizing agent. Treatment of the soil would likely occur within the excavation, but the soil would be moved and mechanically mixed during treatment. By neutralizing the low pH source in the subsurface soil, the pH in the underlying and downgradient groundwater would increase. The metals present in the affected groundwater above MCLs are the result of native minerals being mobilized by the low pH conditions.

Increasing the pH of the groundwater will allow the metals to precipitate from the groundwater flow. Increasing pH is expected to also have a positive effect on fluoride and nitrate concentrations in groundwater. Fluoride is anticipated to complex with existing aluminum and become less soluble in the aquifer as the pH increases. Nitrate is subject to denitrification under favorable geochemical conditions, one of which is a pH near neutral. Fluoride and nitrate are anticipated to attenuate in the affected groundwater area as the effects of the previous removal actions and increasing groundwater pH values become apparent over time. **Figure 33** shows the location of the excavation for Alternative 4.

Operation and Maintenance

Annual costs included for this alternative include mowing and inspecting the fence twice a year and groundwater monitoring/reporting.

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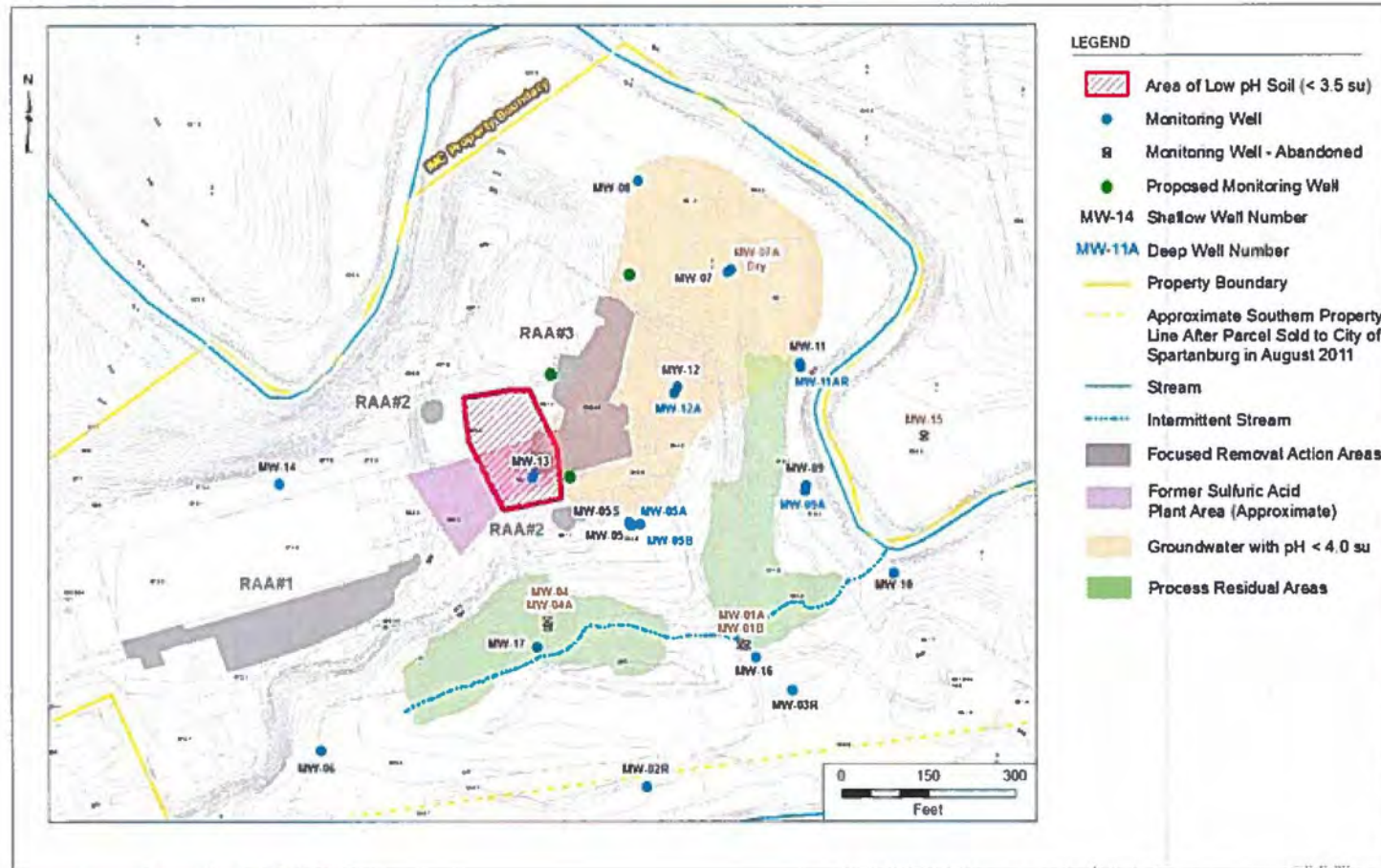


Figure 33
 Alternative 4 – Ex Situ Soil Treatment and Replacement

IMC SUPERFUND SITE**RECORD OF DECISION****Expected Outcomes**

Excavation and treatment of low pH soil with neutralizing chemicals would effectively and permanently treat the source of low pH to affected groundwater, allowing the pH of groundwater to increase over time. Low pH groundwater increases the solubility of metals and causes some naturally occurring metals in soil to dissolve into the groundwater at concentrations exceeding their respective MCLs. When the pH of groundwater in the Northeast groundwater area is sufficiently increased, these metals would no longer be soluble above their MCLs.

9.3 Distinguishing Features

Distinguishing features among the alternatives include:

- Alternatives 2 and 3 are in-situ treatment.
- Alternative 4 addresses soil only.
- Alternative 4 is ex-situ treatment.

9.4 Key ARARs for the Alternatives

Alternative 1 does not have any action-, chemical-, or location-specific ARARs since there are no remedial actions associated with this alternative.

Action-Specific ARARs unique to Alternative 2 include federal underground injection control requirements (40 CFR 144.82(a)(1)) and South Carolina underground injection well operation, monitoring and abandonment requirements applicable to Class V.A. injections wells including "subsurface distribution systems" such as infiltration galleries (SCDHEC R. 61-87).

ARARs common to Alternatives 2, 3 and 4 include RCRA waste characterization, storage and disposal requirements for excavated soils, cuttings from well installation, and/or wastewaters (40 CFR Parts 262, 264, 265, 268 and SCDHEC R. 61-79), and South Carolina monitoring well installation, operation and abandonment requirements (SCDHEC R. 61-71H). These alternatives all involve land disturbance activities and thus must also comply with South Carolina regulatory requirements for managing storm water runoff (SCDHEC R. 61-9, R. 72-307I) and fugitive dust emissions from land disturbing activities (SCDHEC R. 61-62.6 Section III).

Alternatives 2 and 3 pose potential impacts to aquatic systems from land disturbance activities in or near floodplains and/or wetlands and thus must also meet the Location-specific ARARs associated with protection of Fairforest Creek, the floodplain of Fairforest Creek, and the wetlands around Fairforest Creek. These requirements

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include Clean Water Act ARARs prohibiting the discharge of dredge or fill material into waters of the United States including jurisdictional wetlands (40 CFR 230.10), general conditions in the Nationwide Permit (38) Cleanup of Hazardous and Toxic Waste that are relevant and appropriate to jurisdictional wetlands (33 CFR 323.3(b)), and Executive Orders 11990 and 11988 "to-be-considered" in actions involving potential impacts to, or taking place within, wetlands or floodplains, respectively.

Alternatives 2, 3 and 4 all involve technologies designed to meet the groundwater restoration RAO and thus must satisfy the chemical-Specific ARARs used in developing the Site groundwater cleanup goals, which include SDWA MCLs and the equivalent South Carolina Primary Drinking Water Regulations as set forth in R.61-58.

10.0 COMPARATIVE ANALYSIS OF ALTERNATIVES

This section of the ROD compares the alternatives against the nine criteria listed in 40 C.F.R. § 300.430(e)(9)(iii) of the NCP, noting how each compares to the other alternatives. A more detailed evaluation of the alternatives against the nine criteria can be found in the FFS. As required, EPA evaluated the alternatives using the nine criteria listed in the NCP. Two of the nine criteria, overall protection of human health and the environment and compliance with ARARs, are threshold criteria. If an alternative does not meet these two criteria, it cannot be considered any further as the Site remedy.

Five of the criteria are balancing criteria: long-term effectiveness and permanence; reduction of toxicity, mobility, or volume of contaminants through treatment; short-term effectiveness; implementability; and cost. The EPA can make tradeoffs between the alternatives with respect to the balancing criteria.

Two of the criteria are modifying criteria, state/support agency acceptance and community acceptance.

10.1 Overall Protection of Human Health and the Environment

This criterion determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment. This is a threshold criterion.

Migration of low pH source material at the source area through infiltration to groundwater is not addressed in Alternatives 1 and 3. Alternatives 2 and 4 provide source area remediation. Alternative 2 provides source area remediation via infiltration trenches that directly neutralize low pH source material beneath the trenches and groundwater downgradient of the trenches. Alternative 4 provides source area remediation by excavating and directly mixing neutralization chemicals in subsurface soil within the delineated source area. Alternatives 2, 3 and 4 are protective of human

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health because these alternatives, over time, restore groundwater to be used as a drinking water source. Alternatives 2 through 4 provide institutional controls to ensure the groundwater is not used as a drinking water source until it is restored. Alternatives that include source control are expected to have better protection of human health and the environment because they reduce the time frame for restoration of groundwater.

10.2 Compliance with ARARs

This criterion addresses whether or not a remedy is expected to meet any identified "applicable" or "relevant and appropriate" federal or more stringent state environmental laws or regulations (i.e., ARARs) under CERCLA Section 121(d). Alternatively, it will evaluate whether a waiver of an ARAR can be invoked under CERCLA Section 121(d)(4).

Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those promulgated state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable. 40 C.F.R. § 300.5.

Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. Similarly, only those promulgated state standards that are identified in a timely manner and are more stringent than federal requirements may be relevant and appropriate. 40 C.F.R. § 300.5.

All alternatives except Alternative 1 would be designed to comply with action- and location-specific ARARs. Key ARARs for each alternative are provided in Section 9.4 of this ROD.

10.3 Long-Term Effectiveness and Permanence

The long-term effectiveness and permanence of remedial alternatives describes how well an alternative maintains its level of protection of human health and the environment (the first threshold criterion) and its attainment of ARARs (the second threshold criterion) over time.

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Long-term effectiveness varies between the alternatives on the basis of completeness and permanence. Alternatives 2, 3, and 4 include institutional controls and performance monitoring until remedial objectives are attained. Alternatives 2 and 4 supplement institutional controls and increase long-term effectiveness because they address the source of low pH materials to groundwater. Alternative 3 supplements institutional controls with some hydraulic control of the affected groundwater and is expected to also provide some in situ treatment of the affected groundwater at downgradient portions of the Northeast groundwater area, but would have a negligible effect on the overall time frame to achieve remedial goals.

10.4 Reduction of Toxicity, Mobility or Volume of Contaminants Through Treatment

Reduction of Toxicity, Mobility or Volume (T/M/V) describes in more detail the mechanism(s) by which each alternative attains the level of protection of human health and the environment (the first threshold criterion) and the attainment of ARARs (the second threshold criterion). The source remediation component of Alternatives 2 and 4 treat or remove low pH materials and further reduce the mobility of COCs. The mobility, toxicity, and volume of affected groundwater are addressed in Alternatives 2 and 3. Alternative 3 is expected to provide some in situ treatment of affected groundwater.

10.5 Short-Term Effectiveness

The short-term effectiveness of remedial alternatives relates to how well an alternative achieves a level of protection of human health and the environment (the first threshold criterion) and attains ARARs (the second threshold criterion) during implementation or installation of the remedial alternative. In some cases, implementation of the alternative could temporarily increase risk and exposure pathways to receptors. Alternative 1 would have little to no adverse short-term effects on the local community. Alternatives 2, 3, and 4 would potentially have a moderate impact on the neighboring residential area because of truck traffic associated with bringing materials onto the site to implement the remedies.

Alternative 1 would have no adverse effects on site workers. Excavations that are potentially a part of Alternatives 2, 3 and 4 have a potential for short-term adverse effects, but these can be controlled by safe construction practices. pH adjusting chemicals to be handled in association with Alternatives 2 and 4 have a potential for short-term adverse effects, but these can be controlled by work practices.

10.6 Implementability

Implementing remedial alternatives involves design, planning, construction or installation, and operation of the various machinery and human components of remedial

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technologies. The efficiency with which an alternative can be installed and operated impacts how well an alternative achieves its level of protection (the first threshold criterion) and attains ARARs (the second threshold criterion). In some cases, implementation of the alternative could be technically difficult or impossible given site-specific limitations. The No Action alternative is the simplest alternative to implement.

None of the alternatives have significant implementability issues. Alternative 3, which includes installation of downgradient treatment components, may require consideration of floodplain/wetland issues. Alternative 2 may require an UIC permit to apply neutralizing/buffering agents at the low pH source area via an infiltration trench. Phytoremediation included in Alternative 3 could be adversely impacted by low pH if pH adjustments are not made in the localized area.

10.7 Cost

This criterion evaluates the estimated capital and O&M costs as well as present worth costs. Present worth costs are the total costs of an alternative over time in terms of today's dollars (i.e., present worth costs correct for expected inflation). The cost estimates are expected to be accurate within a range of +50 to -30 percent.

The costs for Alternatives 2 through 4 are based upon the various construction costs (capital costs), O&M costs that are required for implementation, and groundwater monitoring and reporting costs. Alternative 1 has no cost associated with it because no actions are taken. The capital cost associated with implementing Alternative 3 is low compared to Alternatives 2 and 4, but that alternative does not address the source of low pH to groundwater. Therefore, the duration of Alternative 3 is longer and the total present worth is higher relative to Alternative 2. Of the alternatives that address the source of low pH to groundwater, Alternative 2 has a significantly lower overall cost compared to Alternative 4.

10.8 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. This is a modifying criterion. The SC DHEC supports the EPA's selection of Alternative 2 for site remediation.

10.9 Community Acceptance

This criterion considers whether the local community agrees with the EPA's analyses and preferred alternative. Comments received on the Proposed Plan are important indicators of community acceptance. This is a modifying criterion. The Proposed Plan Fact Sheet was mailed to the public prior to the commencement of the public comment period which ran from June 9 to July 9, 2014. The notice of the availability of project

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documents was published in the Spartanburg Herald on June 10, 2014. The public meeting was held on June 26, 2014.

10.10 Summary of the Comparative Analysis

Based on the comparative analysis above, Alternative 2 is the best alternative for the IMC Site. It addresses the low pH soil and the low pH groundwater both at the source and downgradient. It is relatively safe, cost-effective, and easily implemented.

11.0 PRINCIPAL THREAT WASTES

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site, whenever practicable. 40 C.F.R. §300.430(a)(1)(iii). Principal threat wastes are source materials that are considered highly toxic or highly mobile, that cannot be reliably contained, or present a significant risk to human health or the environment. The IMC Site does not contain principal threat wastes.

Low pH soils (less than 3.5 s.u.) decrease with depth with the lowest values found greater than 10 feet bls, generally extending vertically to the groundwater table. pH does not have a risk based target, however low pH soil causes low pH water which in turn mobilizes naturally occurring metals from native soil at concentrations above the groundwater cleanup levels. The low pH soils are located in the former sulfuric acid area. This area is considered to be the primary source of metals impacts to groundwater at the IMC Site.

The selected remedy satisfies the statutory preference for treatment as a principal element of the remedy (i.e., reduce the toxicity, mobility, or volume of hazardous substances through treatment) since the low pH soil is being treated.

12.0 SELECTED REMEDY

Alternative 2, the selected remedial alternative for the IMC Site, will address the contaminated groundwater and the low pH soil at the Site. It provides for in-situ treatment of the soil and groundwater that contains contaminants above the cleanup levels. ICs will be implemented to specifically restrict future withdrawal of groundwater from the IMC Site until it is restored.

Alternative 2 meets the threshold criteria, protection of human health and the environment and compliance with ARARs. It also provides the best balance among the balancing criteria and meets the acceptance of the state (SC DHEC) and the community.

IMC SUPERFUND SITE**RECORD OF DECISION****12.1 Summary of the Rationale for the Selected Remedy**

Alternative 2 was chosen because of the combination of ease of implementation, good results from the NTCRA, and treatment of contamination in-situ. Alternative 2 meets both the threshold criteria - protection of human health and the environment and compliance with ARARs. It also provides the best balance among the balancing criteria and meets the acceptance of the state (SC DHEC) and the community.

12.2 Description of the Selected Remedy

The following is a description of the Selected Remedy. Although the EPA does not expect significant changes to this remedy, it may undergo minor changes as a result of the remedial design and construction processes. Any changes to the remedy described in this ROD would be documented using a technical memorandum in the Administrative Record, an Explanation of Significant Differences (ESD) or a ROD amendment, as appropriate and consistent with the NCP and with EPA policy and guidance.

12.2.1 Cleanup Levels

The hypothetical groundwater future ingestion pathway was the only pathway in the HHRA with potential risks/hazards above EPA target range. The cleanup levels are based on the chemical-specific ARARs (e.g., MCLs or non-zero MCLGs). **See Table 21** for a complete list of groundwater cleanup levels.

12.2.2 Volume of Contamination Requiring Remediation

The low pH source area in the Former Sulfuric Acid Plant area is estimated to be approximately 31,700 cubic yards. This volume is based on information obtained during the October 2013 low pH soil evaluation described previously. The delineation of affected source material will be refined during the RD.

The affected groundwater area addressed in this ROD is shown in **Figure 34**. Assuming a saturated thickness ranging from 10 to 25 feet and a porosity of 0.3, the volume of potentially affected groundwater, as delineated in Figure 34, is estimated to range from 17 to 44 million gallons.

12.2.3 Components of the Selected Remedy

The selected remedy for source remediation is infiltration galleries, groundwater monitoring and ICs to achieve cleanup levels at the IMC Site.

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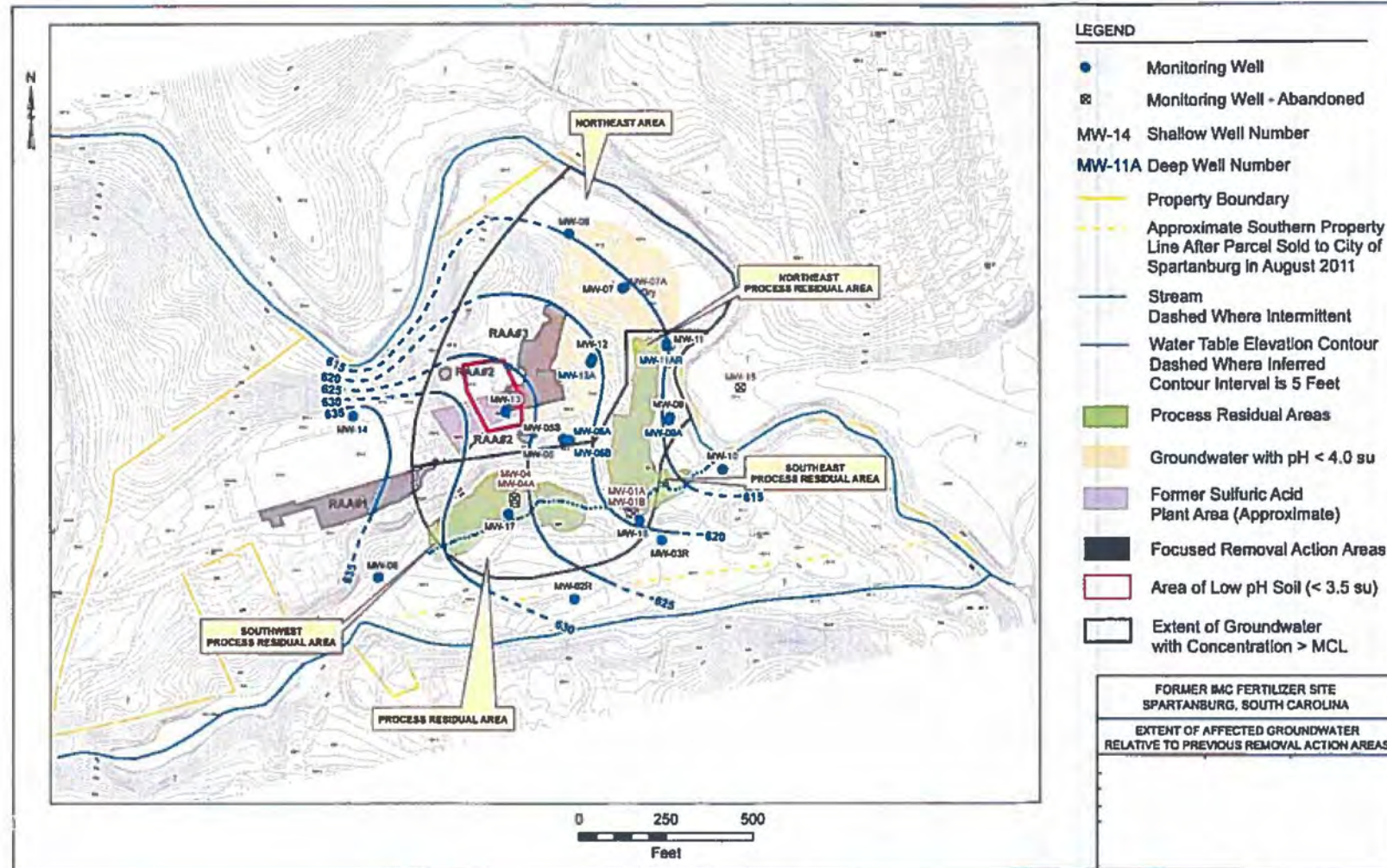


Figure 34

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The components of the selected remedy are:

- Installation of a series of infiltration galleries. Each gallery will be constructed of perforated 2-foot diameter pipe laid horizontally at a depth of 8 to 10 feet bls. The infiltration galleries are proposed to be arrayed in three rows. The first row is located within the affected soil area. The second row is located about one-third the distance from the affected soil area to Fairforest Creek. The third row is located about half the distance from the second row to Fairforest Creek.
- Each pipe would be filled with a neutralizing chemical solution such as sodium carbonate. The chemical would drain by gravity from the pipe, neutralizing underlying soil. Over time, the infiltrated neutralization chemical would begin to neutralize groundwater beneath and downgradient of the infiltration galleries, or, at a minimum, the treated soil would cease to be a continuing source of low pH to the groundwater.
- Eight quarterly infiltration events are proposed for the infiltration galleries within the affected soil area. Four infiltration events are proposed for the downgradient infiltration galleries. The timing of downgradient infiltration events is anticipated to be quarterly, but the timing and distribution of downgradient infiltration will be adjusted as appropriate based on performance monitoring results.
- Institutional controls for site-wide groundwater use restrictions will be kept in place until constituent concentrations in groundwater are at or below MCLs. In addition to the institutional controls, engineered controls such as the existing security fencing would be maintained to limit access to the Site.
- Periodic performance groundwater monitoring would be conducted as part of this remedy. Performance monitoring would include a baseline sampling event just prior to implementing the remedy and semiannual groundwater monitoring following implementation. If monitoring data suggest, after a reasonable record has been established, that less frequent monitoring is appropriate, then the monitoring frequency will be reduced. Two to four additional groundwater monitoring wells are proposed to monitor the performance of this remedy.
- On an annual basis, an upstream and downstream surface water sample will be collected from Fairforest Creek to confirm that water quality is maintained.
- In the Process Residual groundwater area, source material has been removed, limestone placed in the excavations prior to backfilling to provide buffering to the low pH groundwater and remediation of groundwater is occurring. Performance groundwater monitoring will be conducted in this area also.

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The goal of the remedial action is to restore the groundwater to its beneficial use within a reasonable time frame. Until this goal is achieved, ICs will be implemented to prevent human exposure to contaminated groundwater. Public water is available in the area and is supplied from municipal wells.

12.3 SUMMARY OF THE ESTIMATED REMEDY COSTS

Table 22 provides line item costs used in the cost estimate. This estimate is expected to be within +50% and -30% of the actual costs of the remedy. The remedy is estimated to cost \$2.19 million.

Table 22 - Alternative 2 Present Worth Cost Estimate

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	SUBTOTAL	TOTAL
CAPITAL COSTS					
Source Remediation					
Mobilization	1	L.S.	31,000	31,000	
Site Preparation/Restoration	1	L.S.	129,000	129,000	
Trenching	1	L.S.	370,000	370,000	
Demobilization	1	L.S.	20,000	20,000	
Chemical Fill	1	L.S.	240,000	240,000	
					\$790,000
Wells and IC					
Engineering Plan and IC Document	1	L.S.	20,000	20,000	
Monitoring Wells	4	well	6,500	26,000	
					\$46,000
Permitting/Design/Consulting				83,600	
Contingency (25%)				229,900	
Total Capital Costs					\$1,150,000
O&M COSTS					
Mow 2 times a year				6,400	
Inspect fence 2 times a year				2,000	
Groundwater monitoring and reporting				92,000	
Total Annual Costs			\$100,400 (15 year present worth)	\$1,042,152	
Total Cost for Remedy					\$2,190,000

12.4 EXPECTED OUTCOME OF THE SELECTED REMEDY

The expected outcome of the selected remedy is the restoration of the groundwater that will allow for its unrestricted use. Groundwater is affected by contaminants from this Site. Groundwater flows toward and discharges into surface water, however, RI sampling revealed little impact. The ecological risk assessment concluded that the risks were negligible and no further ecological investigation was warranted. **Table 23** summarizes the cleanup levels and the risks when cleanup levels are achieved.

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Table 23 - Cleanup Levels and Associated Risk

CHEMICAL OF CONCERN	Groundwater Cleanup Levels (ug/L)	Basis	Risk at Cleanup Level ¹	
			Risk	HQ
Beryllium	4	MCL	2.2 E-4	0.05
Cadmium	5	MCL	NC	0.27
Lead	15	Federal Action Level	NC	NC
Thallium	2	MCL	NC	NC
Fluoride	4,000	MCL	NC	1.8
Nitrate	10,000	MCL	NC	0.17
Benzene	5	MCL	3.23 E-6	0.03
2,4-DNT	10	RL	8.0 E-5	0.1

ug/L - Micrograms per liter
 RL - Laboratory reporting limit
 NC - Not calculated due to absence of published slope factor and/or reference dose
¹ - Risk calculated based on hypothetical future residential use of groundwater as the sole potable source of water. This exposure pathway is not a completed pathway at this Site.

MCL - EPA Maximum Contaminant Level

13.0 STATUTORY DETERMINATIONS**13.1 Protection of Human Health and the Environment**

This remedy protects human health and the environment by neutralizing low pH source material that acts as a continuing source of low pH to the groundwater and by neutralizing groundwater downgradient of the source area. As the continuing source is depleted, natural processes, over time, will restore groundwater quality. Performance monitoring allows the progress of this remedy to be tracked. Existing monitoring wells are located just downgradient of the three proposed lines of infiltration galleries. Two to four additional monitoring wells will improve the distribution of monitoring locations for this remedy. Institutional and engineering controls would be used to protect human health and the environment in the short term while treatment and natural processes are underway. The exceedances of metals MCLs in the affected groundwater area are the result of natural formation constituents being mobilized by low pH conditions. pH adjustment is expected to have a positive effect on fluoride and nitrate concentrations in groundwater. Fluoride is anticipated to combine with existing aluminum and become less soluble in the aquifer as the groundwater pH increases. Nitrate is subject to denitrification under favorable geochemical conditions, one of which is a pH near neutral. Fluoride and nitrate are anticipated to attenuate in the affected groundwater area as the effects of the previous removal actions and neutralization become apparent over time. Although affected groundwater is unlikely to be consumed under any reasonably anticipated future land use, institutional controls would ensure that supply wells are not installed in the affected area until constituent concentrations in groundwater are at or below MCLs.

IMC SUPERFUND SITE**RECORD OF DECISION****13.2 Compliance with Applicable or Relevant and Appropriate Requirements**

Section 121(d) of CERCLA, as amended, specifies in part, that remedial actions for cleanup of hazardous substances must comply with requirements and standards under federal or more stringent state environmental laws and regulations that are applicable or relevant and appropriate (i.e., ARARs) to the hazardous substances or particular circumstances at a site unless such ARAR(s) are waived under CERCLA Section 121(d) (4). See also 40 C.F.R. § 300.430(f)(1)(ii)(B). ARARs include only federal and state environmental or facility siting laws/regulations and do not include occupational safety or worker protection requirements. Compliance with OSHA standards is required by 40 C.F.R. § 300.150 and therefore the CERCLA requirement for compliance with or waiver of ARARs does not apply to OSHA standards.

Under CERCLA Section 121(e)(1), federal, state, or local permits are not required for the portion of any removal or remedial action conducted entirely 'on-site' as defined in 40 C.F.R. § 300.5. See also 40 C.F.R. §§ 300.400(e)(1) & (2). Also, CERCLA response actions must only comply with the "substantive requirements," not the administrative requirements of a regulation or law. Administrative requirements include permit applications, reporting, record keeping, inspections, and consultation with administrative bodies. Although consultation with state and federal agencies responsible for issuing permits is not required, it is often recommended for determining compliance with certain requirements such as those typically identified as Location-Specific ARARs. See EPA, OSWER Directives No. 9234.1-01 and 9234.1-02, CERCLA Compliance with Other Laws Manual: Parts 1 and Part II (August 1988 and 1989).

Applicable requirements, as defined in 40 C.F.R. § 300.5, means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, or contaminant, remedial action, location, or other circumstance at a CERCLA site. Only those state standards that are identified by the state in a timely manner and that are more stringent than federal requirements may be applicable. Relevant and appropriate requirements, as defined in 40 C.F.R. § 300.5, means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, or contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at a CERCLA site that their use is well suited to the particular site. Only those state standards that are identified by the state in a timely manner and that are more stringent than federal requirements may be relevant and appropriate.

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Per 40 C.F.R. § 300.400(g)(5), only those state standards that are promulgated, are identified in a timely manner, and that are more stringent than federal requirements may be applicable or relevant and appropriate. For purposes of identification and notification of promulgated state standards, the term promulgated means that the standards are of general applicability and are legally enforceable. State ARARs are considered more stringent where there is no corresponding federal ARAR, where the State ARAR provides a more stringent concentration of a contaminant, or where a State ARAR is broader in scope than a federal requirement. See EPA, OSWER Pub. No. 9234.2-05/FS, CERCLA Compliance with State Requirements (December 1989).

In addition to ARARs, the lead and support agencies may, as appropriate, identify other advisories, criteria, or guidance to be considered for a particular release that may be useful in developing Superfund remedies. See 40 C.F.R. § 300.400(g)(3). The "to-be-considered" (TBC) category consists of advisories, criteria, or guidance that were developed by EPA, other federal agencies, or states that may assist in determining, for example health-based levels for a particular contaminant for which there are no ARARs or the appropriate method for conducting an action. TBCs are not considered legally enforceable and, therefore, are not considered to be applicable for a site but typically are evaluated along with Chemical-specific ARARs as part of the risk assessment to determine protective cleanup levels. See EPA, OSWER Directives No. 9234.1-01 and 9234.1-02, CERCLA Compliance with Other Laws Manual: Parts 1 and Part II (August 1988 and 1989), Section 1.4.

In accordance with 40 C.F.R. § 300.400(g), EPA and the State of South Carolina have identified the potential ARARs and TBCs for the evaluated alternatives. **Tables 24, 25, and 26** lists respectively the Chemical-, Action, and Location-Specific ARARs/TBCs for the selected remedial alternative.

ARAR Categories

For purposes of ease of identification, the EPA has created three categories of ARARs: Chemical-, Location- and Action-Specific. Under 40 C.F.R. § 300.400(g)(5), the lead and support agencies shall identify their specific ARARs for a particular site and notify each other in a timely manner as described in 40 C.F.R. § 300.515(d). Chemical-, and Location-Specific ARARs should be identified as early as scoping phase of the Remedial Investigation, while Action-Specific ARARs are identified as part of the Feasibility Study for each remedial alternative. See 40 C.F.R. §§ 300.430(b)(9) & 300.430(d)(3).

Action-Specific ARARs/TBC Guidance

Action-specific ARARs are usually technology-based or activity-based requirements or limitations that control actions taken at hazardous waste sites. Action-Specific requirements often include performance, design and controls, or restrictions on

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particular kinds of activities related to management of hazardous substances. Action-specific ARARs are triggered by the types of remedial activities and types of wastes that are generated, stored, treated, disposed, emitted, discharged, or otherwise managed. **Table 25** lists the potential Action-Specific ARARs for the remedial action, including RCRA waste characterization, storage and disposal requirements (from 40 CFR Parts 262, 264, 265, 268 and SCDHEC R. 61-79), federal underground injection control requirements (40 CFR 144.82(a)(1)), South Carolina underground injection well operation, monitoring and abandonment requirements applicable to Class V.A. injection wells including "subsurface distribution systems" such as infiltration galleries (SCDHEC R. 61-87), South Carolina monitoring well installation, operation and abandonment requirements (SCDHEC R. 61-71H). During installation of the underground infiltration galleries, overburden soil will be excavated and then replaced above the infiltration galleries. Soil cuttings will also be generated if additional monitoring wells are required. While it is anticipated that the soil cuttings and overburden soil will be non-hazardous, the soils will be tested and managed in accordance with RCRA waste characterization, storage and disposal requirements, as necessary. The remedial action must also comply with South Carolina regulatory requirements for managing storm water runoff (SCDHEC R. 61-9, R. 72-307I) and fugitive dust emissions from land disturbing activities (SCDHEC R. 61-62.6 Section III).

Chemical-Specific ARARs/TBC Guidance

Chemical-Specific ARARs are usually health or risk based numerical values limiting the amount or concentration of a chemical that may be found in, or discharged to, the environment. The Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs) at 40 C.F.R. Part 141 and the state or federal ambient water quality criteria established under Section 303 or 304 of the Clean Water Act are examples of Chemical-Specific ARARs used to establish remediation levels for restoration of groundwater that are current or potential sources of drinking water and restoration of surface water to meet its designated uses or classifications, respectively. See 40 C.F.R. §§ 300.430(e)(2)(i)(B), (C), & (E).

Table 24 lists the Chemical-Specific ARARs for the Site, which includes SDWA MCLs and the equivalent South Carolina Primary Drinking Water Regulations as set forth in R.61-58. All inorganic and organic contaminants in underground sources of drinking water may not exceed the MCLs. In addition, the requirements in 40 CFR 141.80(a) Subpart I, known as the "lead and copper rule," establish the federal action level for lead. Lead concentrations in groundwater must not exceed 0.015 mg/L.

Location-Specific ARARs/TBC Guidance

Location-Specific requirements establish restrictions on permissible concentrations of hazardous substances or establish requirements for how activities will be conducted because they are in special locations (e.g., wetlands, floodplains, critical habitats,

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Table 24 - Chemical-Specific ARARs, Former IMC Fertilizer Site			
Action/Media	Requirements	Prerequisite	Citation(s)
Classification of ground water	All South Carolina groundwater is classified Class GB under SCDHEC R. 61-68H.9, which meets the definition of underground sources of drinking water.	Groundwater, except within mixing zones, within the state of South Carolina – applicable	SCDHEC Reg. 61-68H.2
Restoration of ground water as a potential drinking water source	All inorganic and organic contaminants in underground sources of drinking water may not exceed Maximum Contaminant levels (MCLs) as set forth in R.61-58, State Primary Drinking Water Regulations. <u>Site Contaminants of Concern:</u> Arsenic 0.01 mg/L Beryllium 0.004 mg/L Cadmium 0.005 mg/L Selenium 0.05 mg/L Thallium 0.002 mg/L Fluoride 4.0 mg/L Nitrate 10.0 mg/L Benzene 0.005 mg/L	Groundwater classified as underground source of drinking water (USDW) as (defined in SCDHEC Reg. 61-68B.62) – relevant and appropriate	SCDHEC Reg. 61-68H.9.b 40 CFR Part 141 Subpart G (<i>National Primary Drinking Water Regulations</i>)
	The requirements of this Subpart I constitute the national primary drinking water regulations for lead. The lead action level is exceeded if the concentration of lead is greater than 0.015 mg/L.	Groundwater classified as underground source of drinking water – relevant and appropriate	40 CFR 141.80(a) 40 CFR 141.80(c)(1)
	Shall not exceed concentrations or amounts such as to interfere with use, actual or intended, as determined by SCDHEC.	Presence of waste, pesticides, other synthetic organic compounds, deleterious substances, or constituents thereof not specified in SCDHEC R. 61-68H.9a or b. in Class GB groundwater – relevant and appropriate	SCDHEC R. 61-68H.9.c

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Table 25 - Action-Specific ARARs/TBCs, Former IMC Fertilizer Site			
Action	Requirements	Prerequisite	Citation
General Construction Standards — All Land-disturbing Activities (i.e., excavation, clearing, grading, etc.)			
Managing storm water runoff from land-disturbing activities	Must comply with the substantive requirements for stormwater management and sediment control of <i>NPDES Construction General (CG) Permit for Stormwater Discharges No. SCR100000, issued under R.122.8 and developed consistent with the conditions in R.61-9.122.41 applicable to all permits.</i>	Large and small construction activities (as defined in R. 61-9 and SCR100000) of more than 1 acre of land – applicable	SCDHEC R. 61-9.122.41 and 122.28(a)(2)(i)
	Coverage under the CG Permit requires development of a stormwater management and sediment control plan which is to be consistent, at a minimum, to the substantive standards listed in SC Regulation 72-300, unless specifically exempted by SC Regulation 72-302.A Note: The stormwater and sediment control plan will be included in an appropriate EPA-approved CERCLA RD/RA document.	Large and small construction activities (as defined in R. 61-9 and SCR100000) of more than 1 acre of land – TBC	<i>NPDES Construction General (CG) Permit for Stormwater Discharges, Permit No. SCR100000</i>
	The stormwater management and sediment control plan shall contain at a minimum the information provided in the following subsections: <ul style="list-style-type: none"> • A plan for temporary and permanent vegetative and structural erosion and sediment control measures which specify the erosion and sediment control measures to be used during all phases of the land disturbing activity and a description of their proposed operation; • Provisions for stormwater runoff control during the land disturbing activity and during the life of the facility meeting the peak discharge rate and velocities requirements in subsections (e)1. and (e)2. of this section. 	Activities involving more than two (2) acres and less than five (5) acres of actual land disturbance which are not part of a larger common plan of development or sale – applicable	SCDHEC R. 72-307I(3)(d) and (e) – <i>South Carolina Storm Water Management and Sediment Reduction Regulations</i>
Managing fugitive dust emissions from land disturbing activities	Emissions of fugitive particulate matter shall be controlled in such a manner and to the degree that it does not create an undesirable level of air pollution. Volatile organic compounds shall not be used for dust control purposes. Oil treatment is also prohibited.	Activities that will generate fugitive particulate matter (Statewide) – applicable	SCDHEC R. 61-62.6 Section III(a)- <i>Control of Fugitive Particulate Matter Statewide</i> SCDHEC R. 61-62.6 Section III(d)

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Table 25 - Action-Specific ARARs/TBCs, Former IMC Fertilizer Site			
Action	Requirements	Prerequisite	Citation
<i>Monitoring Well Installation, Operation, and Abandonment</i>			
Installation of Permanent and Temporary Monitoring Wells	All monitoring wells shall be drilled, constructed, maintained, operated, and/or abandoned to ensure that underground sources of drinking water are not contaminated.	Construction of permanent and temporary monitoring wells, as defined in R. 61-71B – applicable	SCDHEC R. 61-71H.1(b)
Installation of Permanent Conventionally Installed or Direct Push Monitoring Wells	Wells shall be grouted from the top of the bentonite seal to the land surface. Grout is to be composed of neat cement, a bentonite cement mixture, or high solids sodium bentonite grout.	Construction of permanent conventionally installed or direct push monitoring wells, as defined in R. 61-71B – applicable	SCDHEC R. 61-71H.2.a.(1),(2) [<i>conventionally installed wells</i>] SCDHEC R. 61-71H.3.b.(1),(2) [<i>direct push wells</i>]
	The diameter of the annular space shall be large enough to allow for forced injection of grout through a tremie pipe. All grouting shall be accomplished using forced injection to emplace the grout. When emplacing the grouting material, the tremie pipe shall be lowered to the bottom of the zone to be grouted. The tremie pipe shall be kept full continuously from start to finish of the grouting procedure, with the discharge end of the tremie pipe being continuously submerged in the grout until the zone to be grouted is completely filled.		SCDHEC R. 61-71H.2.a.(3),(4) [<i>conventionally installed wells</i>] SCDHEC R. 61-71H.3.b.(3),(4) [<i>direct push wells</i>]
	A cement or aggregate reinforced concrete pad at the ground surface of appropriate durability and strength, considering the setting and location of each well, that extends six inches beyond the borehole diameter and six inches below ground surface is required. The pad shall be capable of preventing infiltration between the surface casing and the borehole to the subsurface.		SCDHEC R. 61-71H.2.a.(5) [<i>conventionally installed wells</i>] SCDHEC R. 61-71H.3.b.(5) [<i>direct push wells</i>]

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Table 25 - Action-Specific ARARs/TBCs, Former IMC Fertilizer Site			
Action	Requirements	Prerequisite	Citation
Installation of Permanent Conventionally Installed or Direct Push Monitoring Wells (cont'd)	<p>Well Construction and Materials Standards –</p> <p>(1) Casing shall be of sufficient strength to withstand normal forces encountered during and after well installation and be composed of material so as to minimally affect water quality analyses.</p> <p>(2) Casing shall have a sufficient diameter to provide access for sampling equipment.</p> <p>(3) A properly hydrated bentonite seal with a minimum thickness of twelve inches directly above the filter pack shall be used, if the well has a filter pack.</p> <p>(4) The monitoring well intake or screen design shall minimize formational materials from entering the well. The filter pack 17 shall be utilized opposite the well screen as appropriate in so that parameter analyses will be minimally affected.</p> <p>(5) A locking cap or other security devices to prevent damage and/or vandalism shall be used.</p> <p>(6) Monitoring wells completed below grade shall be in a watertight vault with a well cap to prevent infiltration of surface water into the well.</p>	Construction of permanent conventionally installed or direct push monitoring wells, as defined in R. 61-71B – applicable	<p>SCDHEC R. 61-71H.2.b. <i>[conventionally installed wells]</i></p> <p>SCDHEC R. 61-71H.3.c <i>[direct push wells]</i></p>
	All monitoring wells shall be properly labeled with an identification plate immediately upon well completion. The identification plate shall be constructed of a durable, weatherproof, rustproof, material. The identification plate shall be permanently secured to the well casing or enclosure floor around the casing where it is readily visible and shall identify: (1) company name and certification number of the driller who installed the well; (2) date well was completed; (3) total depth (feet); (4) casing depth (feet); (5) screened Interval; (6) designator and/or identification number.		<p>R. 61-71H.2.c. <i>[conventionally installed wells]</i></p> <p>SCDHEC R. 61-71H.3.d <i>[direct push wells]</i></p>
Additional Requirements for Installation of Direct Push Monitoring Wells	Direct push wells cannot be installed below a confining layer unless it can be demonstrated to the satisfaction of the Department that cross-contamination of the aquifer systems can be prevented.	Construction of direct push monitoring wells, as defined in R. 61-71B – applicable	R. 61-71H.3.a.

IMC SUPERFUND SITE**RECORD OF DECISION****Table 25 - Action-Specific ARARs/TBCs, Former IMC Fertilizer Site**

Action	Requirements	Prerequisite	Citation
Installation of Temporary Monitoring Wells	<p>Construction and Materials –</p> <p>(1) Casing shall be of sufficient strength to withstand normal forces encountered during and after well installation and be 20 composed of material so as to minimally affect water quality analyses.</p> <p>(2) Casing shall have a sufficient diameter to provide access for sampling equipment.</p> <p>(3) The monitoring well intake or screen design shall minimize formational materials from entering the well. The filter pack or intake shall be utilized opposite the well screen as appropriate so that parameter analyses will be minimally affected.</p>	Construction of temporary monitoring wells, as defined in R. 61-71B – applicable	SCDHEC R. 61-71H.4.a.
	All temporary monitoring wells shall be sealed with a watertight cap or seal until abandoned. Temporary monitoring wells shall be maintained such that they are not a source or channel of contamination before they are abandoned.	Operation and maintenance of temporary monitoring wells, as defined in R. 61-71B – applicable	SCDHEC R. 61-71H.4.b.
Abandonment of Permanent Conventionally Installed Monitoring Wells	Abandonment of permanent conventionally installed monitoring wells shall be by forced injection of grout or pouring through a tremie pipe starting at the bottom of the well and proceeding to the surface in one continuous operation. The well shall be filled with either neat cement, bentonite-cement, or 20% high solids sodium bentonite grout, from the bottom of the well to the land surface.	Abandonment of permanent conventionally installed monitoring wells – applicable	SCDHEC R. 61-71H.2.e.

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Table 25 - Action-Specific ARARs/TBCs, Former IMC Fertilizer Site			
Action	Requirements	Prerequisite	Citation
Abandonment of Permanent Direct Push Monitoring Wells	<p>(1) Permanent direct push wells that do not penetrate a confining layer shall be abandoned by removing all casing from the subsurface and be grouted by forced injection through a tremie pipe from the total depth to the land surface, or by forced injection or pouring of neat cement, bentonite-cement, or 20% high solids sodium bentonite grout through a tremie pipe starting at the bottom of the well and proceeding to the surface.</p> <p>(2) Direct push wells that penetrate a confining layer shall be abandoned by forced injection or pouring of neat cement, bentonite-cement, or 20% high solids sodium bentonite grout through a tremie pipe starting at the bottom of the well and proceeding to the surface in one continuous operation.</p>	Abandonment of permanent direct push monitoring wells, as defined in R.61-71B – applicable	SCDHEC R. 61-71H.2.f.

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Table 25 - Action-Specific ARARs/TBCs, Former IMC Fertilizer Site			
Action	Requirements	Prerequisite	Citation
Abandonment of Temporary Conventionally Installed or Direct Push Monitoring Wells	<p>(1) All temporary monitoring wells shall be abandoned within 5 days of borehole completion.</p> <p>(2) A conventionally drilled temporary well shall be abandoned by forced injection of neat cement, bentonite-cement, or 20% high solids sodium bentonite grout through a tremie pipe starting at the bottom of the well and proceeding to the surface in one continuous operation.</p> <p>(3) A temporary direct push well that does not penetrate a confining layer shall be abandoned by forced injection of neat cement, bentonite-cement, or 20% high solids sodium bentonite grout through a tremie pipe after the sampling device has been removed.</p> <p>(4) A temporary direct push well that penetrates a confining layer shall be abandoned by forced injection of neat cement, bentonite-cement, or 20% high solids sodium bentonite grout through the sampling device as the sampling device is removed from the sub-surface. Abandonment shall occur during the initial withdrawal from the original push borehole and not by a separate tremie tool after the sampling device has been removed to ensure the breach in the confining layer is permanently sealed.</p>	Abandonment of temporary conventionally installed or direct push monitoring wells, as defined in R.61-71B – applicable	SCDHEC R. 61-71H.4.c.
<i>Underground Infiltration Galleries - Installation, Operation, and Abandonment</i>			
Injection of reagents through underground infiltration galleries	An injection activity cannot allow the movement of fluid containing any contaminant into USDWs, if the presence of that contaminant may cause a violation of the primary drinking water standards under 40 CFR part 141, other health based standards, or may otherwise adversely affect the health of persons. This prohibition applies to well construction, operation, maintenance, conversion, plugging, closure, or any other injection activity.	Class V wells [as defined in 40 CFR 144.6(e)] used to inject reagents – applicable	40 CFR 144.82(a)(1)
	The movement of fluids containing wastes or contaminants into underground sources of drinking	Operation of wells, including subsurface fluid distribution systems, as defined in	SCDHEC R.61-87.5

APPENDIX A (Part 3 of 3)

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Table 25 - Action-Specific ARARs/TBCs, Former IMC Fertilizer Site			
Action	Requirements	Prerequisite	Citation
	<p>water as a result of injection is prohibited if the presence of the waste or contaminant:</p> <ul style="list-style-type: none"> • May cause a violation of any drinking water standard under R61-58.5; or, • May otherwise adversely affect the health of persons. 	R. 61-87.2(Z), for underground injection of any fluids into the subsurface or ground waters of the State of South Carolina – applicable	
	No person shall construct, use or operate a Class V.A. well for injection in violation of R61-87.5.	Class V.A injection wells [as classed in R.61-87.11(E)(1)(g)], including subsurface fluid distribution system [as defined in 87.2(Z)] for use in experimental technologies – applicable	SCDHEC R.61-87.11(E)(2)(b)
Operation of underground infiltration galleries	<p>At a minimum, the following information concerning the injection formation shall be determined or calculated:</p> <p>(1) Fluid pressure;</p> <p>(2) Estimated fracture pressure;</p> <p>(3) Physical and chemical characteristics of the injection zone.</p> <p>Note: Depending upon how the chemical reagent is introduced to the infiltration galleries this requirement may be considered.</p>	Operation of Class V.A. wells, including subsurface fluid distribution systems, as defined in R. 61-87.2(Z), for underground injection of any fluids into the subsurface or ground waters of the State of South Carolina – applicable	SCDHEC R.61-87.14(D)
	Shall at all times properly operate and maintain all facilities and systems of treatment and controls which are installed or used.		SCDHEC R.61-87.13(X)
	Shall report malfunction of injection system which may cause fluid migration into or between underground sources of drinking water; shall immediately stop injection upon determination that the injection system has malfunctioned and could cause fluid migration into or between underground sources of drinking water; shall not restart the injection system until the malfunction has been corrected.		SCDHEC R.61-87.13(EE)
Monitoring of underground infiltration galleries	An appropriate number of monitoring wells shall be completed into the injection zone and into any underground sources of drinking water which could be	Monitoring of Class V.A. wells, including a subsurface fluid distribution system, as defined in R. 61-87.2(Z), used for	SCDHEC R.61-87.14(G)(1)

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Table 25 - Action-Specific ARARs/TBCs, Former IMC Fertilizer Site			
Action	Requirements	Prerequisite	Citation
	affected by the injection operation. These wells shall be located in such a fashion as to detect any excursion of injection fluids, process by-products, or formation fluids outside the injection area or zone. If the operation may be affected by subsidence or catastrophic collapse the monitoring wells shall be located so that they will not be physically affected.	underground injection of any fluids into the subsurface or ground waters of the State of South Carolina – applicable	
	In determining the number, location, construction and frequency of monitoring of the monitoring wells the following criteria shall be considered: (a) The population relying on the USDW affected or potentially affected by the injection operation; (b) The proximity of the injection operation to points of withdrawal of drinking water; (c) The local geology and hydrogeology; (d) The operating pressures and whether a negative pressure gradient is being maintained; (e) The nature and volume of the injected fluid, the formation water, and the process by-products; and (f) The injection well density.		SCDHEC R.61-87.14(G)(2)
	Monitoring requirements shall, at a minimum, specify: <ul style="list-style-type: none"> • Monitoring of the nature of injected fluids with sufficient frequency to yield representative data on its characteristics; • Monitoring of injection pressure and either flow rate or volume semi-monthly, or metering and daily recording of injected and produced fluid volumes as appropriate • Monitoring of the fluid level in the injection zone semi-monthly, where appropriate and monitoring of the parameters chosen to measure water quality in the monitoring wells semi-monthly. Note: Monitoring of injections and monitoring wells will be conducted pursuant to an EPA-approved monitoring plan documented in appropriate CERCLA RD/RA		SCDHEC R.61-87.14(G)(3)(a),(b),(d)

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Table 25 - Action-Specific ARARs/TBCs, Former IMC Fertilizer Site			
Action	Requirements	Prerequisite	Citation
	document.		
Plugging and abandonment of infiltration galleries	The well to be abandoned shall be in a state of static equilibrium with the mud weight equalized top to bottom, by a method prescribed by the Department prior to the placement of the cement plug(s).	Abandonment of Class V.A wells, including subsurface fluid distribution systems, as defined in R. 61-87.2(Z), for underground injection of any fluids into the subsurface or ground waters of the State of South Carolina – applicable.	SCDHEC R.87.15(B)
	The well must be plugged in such a manner which will not allow the movement of fluids either into or between underground sources of drinking water.		SCDHEC R.87.15(C)
	Wells must be closed in a manner that complies with prohibition of fluid movement in 40 CFR 144.82(a). Also, any soil, gravel, sludge, liquids, or other materials removed from or adjacent to the well must be disposed or otherwise managed in accordance with substantive applicable Federal, State, and local regulations and requirements.	Class V wells [as defined in 40 CFR 144.6(e)] used to inject reagents – applicable	40 CFR 144.82(b)
Waste Characterization and Storage <i>(e.g., excavated soils, soil cuttings from well installation, monitoring well purge water)</i>			
Characterization of solid waste	Must determine if solid waste is a hazardous waste using the following method: Should first determine if waste is excluded from regulation under 40 CFR 261.4; and	Generation of solid waste as defined in 40 CFR 261.2 – applicable	40 CFR 262.11(a) SCDHEC R. 61-79 262.11(a)
	Must determine if waste is listed as hazardous waste under 40 CFR Part 261.	Generation of solid waste which is not excluded under 40 CFR 261.4(a) – applicable	40 CFR 262.11(b) SCDHEC R. 61-79 262.11(b)
	Must determine whether the waste is (characteristic waste) identified in subpart C of 40 CFR Part 261 by either: (1) Testing the waste according to the methods set forth in subpart C of 40 CFR part 261, or according to an equivalent method approved by the Administrator	Generation of solid waste which is not excluded under 40 CFR 261.4(a) – applicable	40 CFR 262.11(c) SCDHEC R. 61-79 262.11(c)

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Table 25 - Action-Specific ARARs/TBCs, Former IMC Fertilizer Site			
Action	Requirements	Prerequisite	Citation
	under 40 CFR 260.21; or (2) Applying knowledge of the hazard characteristic of the waste in light of the materials or the processes used.		
	Must refer to Parts 261, 262, 264, 265, 266, 268, and 273 of Chapter 40 for possible exclusions or restrictions pertaining to management of the specific waste.	Generation of solid waste which is determined to be hazardous waste – applicable	40 CFR 262.11(d) SCDHEC R. 61-79 262.11(d)
Determinations for management of hazardous waste ¹	Must determine each EPA Hazardous Waste Number (waste code) applicable to the waste in order to determine the applicable treatment standards under 40 CFR 268 <i>et seq.</i> <i>Note:</i> This determination may be made concurrently with the hazardous waste determination required in Sec. 262.11 of this chapter.	Generation of hazardous waste for storage, treatment or disposal – applicable	40 CFR 268.9(a) SCDHEC R. 61-79 268.9(a)
	Must determine the underlying hazardous constituents [as defined in 40 CFR 268.2(i)] in the characteristic waste.	Generation of RCRA characteristic hazardous waste (and is not D001 non-wastewaters treated by CMBST, RORGS, or POLYM of Section 268.42 Table 1) for storage, treatment or disposal – applicable	40 CFR 268.9(a) SCDHEC R. 61-79 268.9(a)
	Must determine if the hazardous waste meets the treatment standards in 40 CFR 268.40, 268.45, or 268.49 by testing in accordance with prescribed methods or use of generator knowledge of waste. <i>Note:</i> This determination can be made concurrently with the hazardous waste determination required in 40 CFR 262.11.	Generation of hazardous waste for storage, treatment or disposal – applicable	40 CFR 268.7(a) SCDHEC R. 61-79 268.7(a) (1)

¹ During installation of the underground infiltration galleries, overburden soil will be excavated and then replaced above the infiltration galleries. Soil cuttings will also be generated if additional monitoring wells are required. While it is anticipated that the soil cuttings and overburden soil will be non-hazardous, the soils will be tested and managed in accordance with RCRA waste characterization, storage and disposal requirements, as necessary.

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Table 25 - Action-Specific ARARs/TBCs, Former IMC Fertilizer Site			
Action	Requirements	Prerequisite	Citation
Temporary storage of hazardous waste in containers	<p>A generator may accumulate hazardous waste at the facility provided that:</p> <ul style="list-style-type: none"> waste is placed in containers that comply with 40 CFR 265.171-173; and the date upon which accumulation begins is clearly marked and visible for inspection on each container container is marked with the words "hazardous waste"; or 	Accumulation of RCRA hazardous waste on site as defined in 40 CFR 260.10 – applicable	<p>40 CFR 262.34(a)(1) and (2) SCDHEC R. 61-79 262.34(a) (1) and (2)</p> <p>40 CFR 264.34(a)(3) SCDHEC R. 61-79 262.34(a) (3)</p>
	<ul style="list-style-type: none"> container may be marked with other words that identify the contents. 	Accumulation of 55 gal. or less of RCRA hazardous waste or 1 quart of acutely hazardous waste listed in 261.33(e) at or near any point of generation – applicable	40 CFR 262.34(c)(1) SCDHEC R. 61-79 262.34(c) (1)
Use and management of hazardous waste in containers	If container holding waste is not in good condition (e.g. severe rusting, structural defects), or if it begins to leak, must transfer waste into container in good condition.	Storage of RCRA hazardous waste in containers – applicable	40 CFR 265.171 SCDHEC R. 61-79 265.171
	Must use a container made or lined with materials which will not react with, and are otherwise compatible with, the hazardous waste to be stored, so that the ability of the container to contain the waste is not impaired.		40 CFR 265.172 SCDHEC R. 61-79 265.172
	<p>A container holding hazardous waste must always be closed during storage, except when necessary to add or remove waste.</p> <p>A container holding hazardous waste must not be opened, handled, or stored in a manner which may rupture the container or cause it to leak.</p>		40 CFR 265.173(a) and (b) SCDHEC R. 61-79 265.173(a) and (b)
Storage of hazardous waste in container area	Area must have a containment system designed and operated in accordance with 40 CFR 265.175(b).	Storage of RCRA hazardous waste in containers <i>with free liquids</i> – applicable	40 CFR 264.175(a) SCDHEC R. 61-79 264.175(a)
	Area must be sloped or otherwise designed and operated to drain liquid from precipitation, or	Storage of RCRA-hazardous waste in containers that <i>do not contain free liquids</i> (other than F020, F021, F022,	40 CFR 265.175(c)(1) and (2)

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Table 25 - Action-Specific ARARs/TBCs, Former IMC Fertilizer Site			
Action	Requirements	Prerequisite	Citation
	Containers must be elevated or otherwise protected from contact with accumulated liquid.	F023, F026 and F027) – applicable	SCDHEC R. 61-79 265.175(c) (1) and (2)
Closure of RCRA container storage unit	At closure, all hazardous waste and hazardous waste residues must be removed from the containment system. Remaining containers, liners, bases, and soils containing or contaminated with hazardous waste and hazardous waste residues must be decontaminated or removed. [Comment: At closure, as throughout the operating period, unless the owner or operator can demonstrate in accordance with 40 CFR 261.3(d) of this chapter that the solid waste removed from the containment system is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of parts 262 through 266 of this chapter].	Storage of RCRA hazardous waste in containers in a unit with a containment system – applicable	40 CFR 264.178
Waste treatment and disposal — contaminated soils, monitoring well purge water			
Disposal of solid waste	Shall ultimately dispose of solid waste at facilities and/or sites permitted or registered by the Department for processing or disposal of that waste stream.	Generation of solid waste intended for off-site disposal – relevant and appropriate	SCDHEC R. 61-107.5(D)(3)
Disposal of RCRA-hazardous waste in an off-site land-based unit	May be land disposed if it meets the requirements in the table "Treatment Standards for Hazardous Waste" at 40 CFR 268.40 before land disposal.	Land disposal, as defined in 40 CFR 268.2, of restricted RCRA waste – applicable	40 CFR 268.40(a) SCDHEC R. 61-79 268.40(a)

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Table 25 - Action-Specific ARARs/TBCs, Former IMC Fertilizer Site			
Action	Requirements	Prerequisite	Citation
	All underlying hazardous constituents (as defined in 40 CFR 268.2(i)) must meet the Universal Treatment Standards, found in 40 CFR 268.48 Table UTS prior to land disposal.	Land disposal of restricted RCRA characteristic wastes (D001-D043) that are not managed in a wastewater treatment system that is regulated under the CWA, that is CWA equivalent, or that is injected into a Class I nonhazardous injection well – applicable	40 CFR 268.40(e) SCDHEC R. 61-79 268.40(e)
	Must be treated according to the alternative treatment standards in 40 CFR 268.49(c) or Must be treated according to the UTSs [specified in 40 CFR 268.48 Table UTS] applicable to the listed and/or characteristic waste contaminating the soil prior to land disposal.	Land disposal, as defined in 40 CFR 268.2, of restricted hazardous soils – applicable	40 CFR 268.49(b) SCDHEC R. 61-79 268.49(b)
	To determine whether a hazardous waste identified in this section exceeds the applicable treatment standards of 40 CFR 268.40, the initial generator must test a sample of the waste extract or the entire waste, depending on whether the treatment standards are expressed as concentration in the waste extract or waste, or the generator may use knowledge of the waste. If the waste contains constituents (including UHCs in the characteristic wastes) in excess of the applicable UTS levels in 40 CFR 268.48, the waste is prohibited from land disposal, and all requirements of part 268 are applicable, except as otherwise specified.	Land disposal of RCRA toxicity characteristic wastes (D004-D011) that are newly identified (i.e., wastes or soil identified by the TCLP but not the Extraction Procedure) – applicable	40 CFR 268.34(f) SCDHEC R. 61-79 268.34(f)

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Table 25 - Action-Specific ARARs/TBCs, Former IMC Fertilizer Site			
Action	Requirements	Prerequisite	Citation
<i>Transportation of Wastes</i>			
Transportation of hazardous waste <i>on-site</i>	The generator manifesting requirements of 40 CFR 262.20 through 262.32(b) do not apply. Generator or transporter must comply with the requirements set forth in 40 CFR 263.30 and 263.31 in the event of a discharge of hazardous waste on a private or public right-of-way.	Transportation of hazardous wastes on a public or private right-of-way within or along the border of contiguous property under the control of the same person, even if such contiguous property is divided by a public or private right-of-way – applicable	40 CFR 262.20(f) SCDHEC R. 61-79 262.20(f)
Transportation of hazardous waste <i>off-site</i>	Must comply with the generator requirements of 40 CFR 262.20-23 for manifesting, Sect. 262.30 for packaging, Sect. 262.31 for labeling, Sect. 262.32 for marking, Sect. 262.33 for placarding, Sect. 262.40, 262.41(a) for record keeping requirements, and Sect. 262.12 to obtain EPA ID number.	Generator who initiates the off-site shipment of RCRA-hazardous waste – applicable	40 CFR 262.10(h) SCDHEC R. 61-79 262.10(h)
Transportation of hazardous materials	Shall be subject to and must comply with all applicable provisions of the HMTA and DOT HMR at 49 CFR 171-180.	Any person who, under contract with a department or agency of the federal government, transports "in commerce," or causes to be transported or shipped, a hazardous material – applicable	49 CFR 171.1(c)
Transportation of samples (i.e. solid waste, soils and wastewaters)	Are not subject to any requirements of 40 CFR Parts 261 through 268 or 270 when: <ul style="list-style-type: none"> • the sample is being transported to a laboratory for the purpose of testing; or • the sample is being transported back to the sample collector after testing. • the sample is being stored by sample collector before transport to a lab for testing. 	Samples of solid waste <u>or</u> a sample of water, soil for purpose of conducting testing to determine its characteristics or composition – applicable	40 CFR 261.4(d)(1)(i)-(iii) SCDHEC R. 61-79 261.4(d) (1)

IMC SUPERFUND SITE

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Table 25 - Action-Specific ARARs/TBCs, Former IMC Fertilizer Site			
Action	Requirements	Prerequisite	Citation
	<p>In order to qualify for the exemption in 40 CFR 261.4 (d)(1)(i) and (ii), a sample collector shipping samples to a laboratory must:</p> <ul style="list-style-type: none"> • Comply with U.S. DOT, U.S. Postal Service, or any other applicable shipping requirements. • Assure that the information provided in (1) thru (5) of this section accompanies the sample. • Package the sample so that it does not leak, spill, or vaporize from its packaging. 		<p>40 CFR 261.4(d)(2)</p> <p>40 CFR 261.4(d)(2)(ii)(A) and (B)</p> <p>SCDHEC R. 61-79 261.4(d) (2)(ii)(A) and (B)</p>
Monitoring Well Installation, Operation, and Abandonment			
Underground Infiltration Galleries - Installation, Operation, and Abandonment			
Waste Characterization and Storage <i>(e.g., excavated soils, soil cuttings from well installation, monitoring well purge water)</i>			
Waste treatment and disposal — contaminated soils, monitoring well purge water			
Transportation of Wastes			

ARAR = applicable or relevant and appropriate requirement
 CFR = Code of Federal Regulations
 CWA = Clean Water Act of 1972
 DEACT = deactivation
 DOT = U.S. Department of Transportation
 EPA = U.S. Environmental Protection Agency
 HMR = Hazardous Materials Regulations
 HMTA = Hazardous Materials Transportation Act
 LDR = Land Disposal Restrictions

NPDES = National Pollutant Discharge Elimination System
 RCRA = Resource Conservation and Recovery Act of 1976
 SCDHEC = South Carolina Department of Health and Environmental Control
 TBC = to be considered
 TCLP = Toxicity Characteristic Leaching Procedure
 UHC = underlying hazardous constituents
 UTS = Universal Treatment Standard
 WWTU = Waste Water Treatment Unit

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Table 26 - LOCATION SPECIFIC ARARs and TBC – Former IMC Fertilizer Site

Location Characteristics	Requirements	Prerequisite	Citation
<i>Floodplains and Wetlands (associated with Fairforest Creek)</i>			
Location encompassing aquatic ecosystem as defined in 40 CFR 230.3(c)	Except as provided under CWA §404(b)(2), no discharge of dredged or fill material is permitted if there is a practicable alternative that would have less adverse impact on the aquatic ecosystem or if it will cause or contribute to significant degradation of the waters of the United States.	Actions that involves the discharge of dredged or fill material into <i>waters of the United States</i> including jurisdictional wetlands – relevant and appropriate	40 CFR 230.10(a) and (c)
	Except as provided under CWA §404(b)(2), no discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken that will minimize potential adverse impacts of the discharge on the aquatic ecosystem. 40 CFR 230.70 et seq. identifies such possible steps.		40 CFR 230.10(d)
Nationwide Permit Program	Must comply with the substantive requirements of the NWP 38, General Conditions, as appropriate.	Discharge of dredged or fill material into <i>waters of the United States</i> , including jurisdictional wetlands – relevant and appropriate	Nationwide Permit (38) – <u>Cleanup of Hazardous and Toxic Waste</u> 33 CFR 323.3(b)
Presence of wetlands	Requires Federal agencies to evaluate action to minimize the destruction, loss or degradation of wetlands and to preserve and enhance beneficial values of wetlands.	Actions that involve potential impacts to, or take place within, wetlands – TBC	Executive Order 11990 – <i>Protection of Wetlands</i> - Section 1.(a)
Presence of floodplains	Shall consider alternatives to avoid, to the extent possible adverse effects and incompatible development in the floodplain.	Federal actions that involve potential impacts to, or take place within, floodplains – TBC	Executive Order 11988 – <i>Floodplain Management</i> -Section 2.(a)(2)

ARAR = applicable or relevant and appropriate requirement

CFR = Code of Federal Regulations

EPA = U.S. Environmental Protection Agency

SCDHEC = South Carolina Department of Health and Environmental Control

CWA = Clean Water Act

TBC = to be considered

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streams). The Location-Specific ARARs/TBC guidance for the selected remedial alternative are listed in **Table 26**. The Location-specific ARARs for the Site are associated with protection of Fairforest Creek, the floodplain of Fairforest Creek, and the wetlands around Fairforest Creek. These requirements include Clean Water Act ARARs prohibiting the discharge of dredge or fill material into waters of the United States including jurisdictional wetlands that will adversely impact aquatic ecosystems (40 CFR 230.10), general conditions in the Nationwide Permit (38) Cleanup of Hazardous and Toxic Waste that are relevant and appropriate to jurisdictional wetlands (33 CFR 323.3(b)), and Executive Orders 11990 and 11988 "to-be-considered" in actions involving potential impacts to, or taking place within, wetlands or floodplains, respectively.

Requirements Applicable to Off-Site Activities

Any remediation wastes that are generated (e.g., excavated soils, soils cuttings from well boring, or monitoring well purge water) and subsequently transferred off-site or transported in commerce along public right-of-ways must meet any applicable requirements (including administrative portions) such as those for packaging, labeling, marking, manifesting, and placarding requirements for hazardous materials (40 CFR 262.10(h), SCDHEC R. 61-79 262.10(h); 49 CFR 171.1(c)). In addition, CERCLA Section 121(d)(3) provides that the off-site transfer of any hazardous substance, pollutant, or contaminant generated during CERCLA response actions be sent to a treatment, storage, or disposal facility that is in compliance with applicable federal and state laws and has been approved by EPA for acceptance of CERCLA waste. See also 40 C.F.R. § 300.440 (so called "Off-Site Rule").

13.3 Cost Effectiveness

The selected remedy is cost effective because the remedy's costs are proportional to its overall effectiveness. This determination was made by evaluating the overall effectiveness of those alternatives that satisfied the threshold criteria (i.e. that are protective of human health and the environment and comply with all Federal and any more stringent State ARARs). Overall effectiveness was evaluated 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). The overall effectiveness of each alternative was then compared to each alternative's costs to determine cost-effectiveness. The relationship of the overall effectiveness of this alternative was determined to be proportional to its costs and hence represents a reasonable value for the money to be expended. The present worth cost of the selected remedy was comparable to the other in-situ technologies but was chosen because of its proven abilities and its expected long term effectiveness.

IMC SUPERFUND SITE**RECORD OF DECISION****13.4 Utilization of Permanent Solutions to the Maximum Extent Practicable**

EPA has determined that the Selected Remedy represents the maximum extent to which permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable can be utilized at the Site. Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA has determined that the Selected Remedy provides the best balance in terms of the five balancing criteria, while also considering the statutory preference for treatment as a principal element, and considering State and community acceptance. The Selected Remedy treats the contaminants in groundwater. It satisfies the criteria for long-term effectiveness by removing the contaminants from the groundwater. The Selected Remedy does not present short-term risks different from the other treatment alternatives. There are no special implementability issues that set the Selected Remedy apart from any of the other alternatives evaluated.

13.5 Preference for Treatment as a Principal Element

EPA has determined that the in-situ treatment of the low pH soil and the groundwater will meet the statutory preference for the selection of a remedy that involves treatment as a principal element.

13.6 Five-Year Review Requirement

According to the NCP, 40 C.F.R. §300.430(f)(4)(ii), 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, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

Until groundwater contaminants are below cleanup levels and the Site is available for unlimited use and unrestricted exposure, EPA will perform five year reviews to ensure the protectiveness of human health and the environment. A policy review will be conducted within five years after the completion of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

14.0 RESPONSIVENESS SUMMARY

The proposed plan was issued in June 2014. The public comment period began on June 9, 2014 and ended on July 9, 2014. EPA received no comments on the proposed plan during the comment period. The public meeting for the proposed plan was held on June 26, 2014 at a neighborhood community center. Representatives of EPA, SC

IMC SUPERFUND SITE

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DHEC and the PRP group were in attendance. The State Representative that represents the area attended, as well as approx. 25 local residents. The transcript of the meeting is provided in Appendix C.

APPENDIX A
SC DHEC CONCURRENCE LETTER



Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

August 21, 2014

Randall Chaffins, Acting Director
Superfund Division
US EPA, Region IV
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, Georgia 30303

Re: International Mineral and Chemical Corporation (IMC) Fertilizer Superfund Site
Record of Decision

Dear Randall:

The Department has reviewed and concurs with all parts of the Record of Decision (ROD) dated August 2014 for the International Mineral and Chemical Corporation (IMC) Fertilizer Superfund Site located in Spartanburg County, South Carolina. In concurring with this ROD, the South Carolina Department of Health and Environmental Control (SCDHEC) agrees that the Selected Remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), 42 United States Code (USC) §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 CFR Part 300, as amended. The Selected Remedy is Alternative 2 – Infiltration Galleries. The response action selected in this ROD is necessary to protect the public health and the environment from actual or threatened releases of hazardous substances.

Alternative 2, the selected remedial alternative for the IMC Site, will address the contaminated groundwater and the low pH soil at the Site. It provides for in-situ treatment of the soil and groundwater that contains contaminants above the cleanup levels. Institutional Controls will be implemented at the IMC Site to limit use to commercial, industrial, and/or recreational purposes. Institutional Controls will also be implemented to specifically restrict future withdrawal of groundwater from the IMC Site.

Neel to Chafins
7/14/14
Page 2

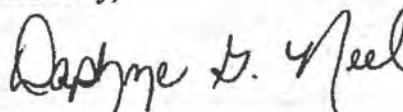
The Selected Remedy for the IMC Site is estimated to cost \$2,190,000 for the entire site. It is expected to take 15 years to achieve the remedial action objectives. The major components of this alternative are:

- Infiltration galleries in and downgradient of the former sulfuric acid area
- Periodic application of a neutralizing solution
- Mandatory five-year reviews over the course of a 30-year period
- Institutional controls such as deed notices and limitations on land use and site-wide groundwater use restrictions

SCDHEC agrees that the Selected Remedy presented in the ROD 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, are cost-effective, and utilize permanent solutions and alternative treatment technologies to the maximum extent practicable.

If you should have any questions regarding the Department's concurrence with the ROD, please contact Greg Cassidy at (803) 898-0910.

Sincerely,



Daphne G. Neel, Bureau Chief
Division of Land and Waste Management

CC: Don Siron, BLWM
Ken Taylor, BLWM
Susan Fulmer, BLWM
Greg Cassidy, BLWM
Kayse Jarman, BLWM
Giezelle Bennett, EPA
EQC Upstate
50879, file

APPENDIX B
PUBLIC MEETING TRANSCRIPT

IMC SITE SPARTANBURG, SOUTH CAROLINA PROPOSED PLAN
Public Meeting on 06/26/2014

1 IMC SITE
2 SPARTANBURG, SOUTH CAROLINA
3 PROPOSED PLAN
4 PUBLIC MEETING
5 JUNE 26, 2014
6 6:33 P.M.

ORIGINAL

7
8
9 LOCATION
10 C.C. Woodson Community Center
11 210 Bomar Avenue
12 Spartanburg, South Carolina 30906
13

14
15 APPEARANCES
16 HONORABLE HAROLD MITCHELL
17 District 31 Representative
18 COUNCILMAN ROBERT REEDER
19 GIEZELLE BENNETT
20 Remedial Project Manager
21 L'TONYA SPENCER
22 Community Involvement Coordinator
23 DAN MADISON
24 Mosaic Consultant
25 GREG CASSIDY
South Carolina DHEC
KAYSE JARMAN
South Carolina DHEC

IMC SITE SPARTANBURG, SOUTH CAROLINA PROPOSED PLAN
Public Meeting on 06/26/2014

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<p>1 MS. SPENCER: Good evening. We are going to go 2 ahead and get started. Hopefully, if more people 3 come in they will join the conversation as we go. 4 My name is L'Tonya Spencer. I am with the 5 Environmental Protection Agency, and I am your 6 Community Involvement Coordinator for the IMC Site. 7 And we are here tonight to talk to you about what we 8 are proposing to complete the cleanup of the site. 9 Giezelle Bennett is the Remedial Project Manager, 10 she will be presenting. 11 Introduce yourselves. 12 MR. CASSIDY: I'm Greg Cassidy with South 13 Carolina DHEC.</p>	<p>1 It shows the IMC Site and also industries 2 surrounding it, Arkwright, Rhodia, Mount Vernon 3 Mills. You all are probably very familiar with the 4 area. 5 Okay. The site activity. In July 2001, 6 the EPA signed an agreement with the owner of the 7 property to investigate the contamination at the 8 site. And the first thing that was done was a 9 removal. It was done to remove residual 10 contamination that was found at the site. That was 11 in 2002, they removed 15,000 tons of contaminated 12 soil and debris. 13 In 2004 to 2006 we did what we call a 14 remedial investigation, where we investigated and 15 found out where all the contamination was on the 16 property. 17 In 2008 we did a feasibility study where 18 we looked at various alternatives to cleaning up 19 that contamination. 20 During that remedial investigation we 21 found that additional process residuals were below 22 the water table, thus they were continuing to 23 negatively impact the groundwater. And when I say 24 "process residuals," I mean production waste from 25 actual fertilizer production. And this is a picture</p>
<p>14 MS. JARMAN: I'm Kayse Jarman with South 15 Carolina DHEC also. 16 REPRESENTATIVE MITCHELL: Harold Mitchell. 17 MS. SPENCER: Honorable Harold Mitchell. 18 What we are going to do is go ahead and 19 get started. Giezelle is going to do her 20 presentation. You have copies of her presentation 21 to follow along with her. And after she finishes 22 her presentation we will have a question-and-answer 23 session. Because we are having the meeting 24 transcribed, if you have any questions, if you will 25 state your name first and then ask your question or</p>	<p>1 of it. And trusty Dan there has a picture showing 2 what it is. 3 This slide shows how the contamination was 4 in 2008. The blue part is all the groundwater 5 contamination that we had that was above the 6 drinking water standards. The pink are still 7 additional process residuals that were left. And 8 the brown is surface soil that was also still 9 contaminated. 10 At that time the decision was made to do a 11 non-time critical removal action. And why did we do 12 that? Well, it allowed the known sources of 13 contamination to be addressed quickly. And we were 14 also going to monitor, to determine if it had a 15 positive impact on the groundwater. 16 The non-time critical removal action was 17 conducted in 2010 to 2011, and it addressed those 18 areas that were on the previous slide, the surface 19 soil. We also had an empty explosives bunker and 20 the rest of process residuals. So another 21,000 21 cubic yards of material were removed. But more 22 important than that, they put down 2,875 tons of 23 limestone in the bottom of the excavations, and that 24 was to help pH adjustment. And I will talk about 25 that a little bit later.</p>
Page 3	Page 5
<p>1 make your statement so that we will have a record of 2 it for the record of decision for the Executive 3 Summary, because this will be part of taking your 4 comments for the thirty-day comment period. 5 Giezelle. 6 MS. BENNETT: Good evening everyone, and 7 welcome to the meeting. Today we are going to talk 8 about the proposed plan for the IMC Site, the 9 International Mineral and Chemical site. 10 Just a brief background, the site was a 11 fertilizer production facility. It operated from 12 1910 to 1986. And the fertilizer consisted of 13 nitrogen phosphorus and potassium. And they also 14 used sulphuric acid in the process. 15 The property is forty acres in size and is 16 located right here in the Arkwright Community. The 17 site is considered industrial, but, as you know, 18 quite a few people live near the site. 19 This is a picture of how the site looked 20 right after the facility was closed. And the next 21 picture shows the site as it looks today. All the 22 buildings have been removed. The only things there 23 are concrete foundations and foliage, and it's 24 partially fenced. 25 And this is an aerial view of the site.</p>	<p>1 of it. And trusty Dan there has a picture showing 2 what it is. 3 This slide shows how the contamination was 4 in 2008. The blue part is all the groundwater 5 contamination that we had that was above the 6 drinking water standards. The pink are still 7 additional process residuals that were left. And 8 the brown is surface soil that was also still 9 contaminated. 10 At that time the decision was made to do a 11 non-time critical removal action. And why did we do 12 that? Well, it allowed the known sources of 13 contamination to be addressed quickly. And we were 14 also going to monitor, to determine if it had a 15 positive impact on the groundwater. 16 The non-time critical removal action was 17 conducted in 2010 to 2011, and it addressed those 18 areas that were on the previous slide, the surface 19 soil. We also had an empty explosives bunker and 20 the rest of process residuals. So another 21,000 21 cubic yards of material were removed. But more 22 important than that, they put down 2,875 tons of 23 limestone in the bottom of the excavations, and that 24 was to help pH adjustment. And I will talk about 25 that a little bit later.</p>

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<p style="text-align: right;">Page 6</p> <p>1 So this slide shows the monitoring results 2 that were conducted. As I told you, the non-time 3 critical removal action was done in 2010, 2011, and 4 as you can see on this table the contamination in 5 the groundwater dramatically dropped. Some things 6 were 100 percent. But this was just in three years 7 that the impact from that removal was felt on the 8 groundwater. But as dramatic as that was, we still 9 have some contamination in what we call the 10 northeast area that's a concern. And this slide 11 shows groundwater with a very low pH level. 12 And this next table shows what that slide, 13 that previous slide showed, that as you saw from the 14 other area, the numbers dramatically dropped. In 15 this area, they didn't dramatically drop. In some 16 instances, you can see they went up. So this is the 17 area that we need to address now (indicating). 18 So looking at trying to find a reason why 19 the groundwater had a low pH, an investigation was 20 done in the old sulphuric acid plant area. And the 21 soil doesn't contain contaminants above the cleanup 22 goals. But the areas you see in yellow, the soil 23 has a pH of less than three and a half. 24 And I don't know if you're familiar with 25 the pH scale, but 1 is acidic and 12 is a base. So</p>	<p style="text-align: right;">Page 8</p> <p>1 These are what we call federal and state maximum 2 contaminant levels, or drinking water standards. 3 Now, I want to be clear that nobody is 4 drinking the water there. This whole area is on 5 city water. And we will put deed restrictions so 6 nobody will ever be able to drink the drinking 7 water. But it's a federal and state law that if you 8 contaminate groundwater, then you're supposed to 9 restore it. So that's our objective. 10 And as you can see, fluoride and nitrate 11 are the two things that are most prevalent in the 12 groundwater. And I have a handout that you all 13 probably picked up at the beginning that says a 14 little bit about fluoride and nitrate in water. 15 So four alternatives were developed to 16 address the contamination that we found. The first 17 was no action. That's do nothing. And we always 18 have to consider that as a baseline, something to 19 compare the results of the other ones to. 20 We also have infiltration galleries with 21 institutional controls, phytoremediation with 22 institutional controls, and excavation and treatment 23 outside of the excavation site, and then on-site 24 disposal with institutional controls. 25 Now, this is just a proposal, the</p>
<p style="text-align: right;">Page 7</p> <p>1 this soil is near acid range. And you can say, 2 well, what's the big deal about low pH? 3 Well, rain falls through that soil that 4 has the low pH. And, you know, everybody has heard 5 of acid rain. Well, in essence, the rain goes 6 through the low pH soil and then that, in turn, 7 mobilizes the naturally occurring metals in the 8 soil. So the rain goes through the soil, the low pH 9 soil, turns to acid rain. And then that leaches out 10 all of the metals that are naturally occurring in 11 the soil, so then you have groundwater 12 contamination. So it's not coming from the 13 fertilizer production, per se, but the area that 14 they used is causing the contamination. And this 15 low pH soil, it starts at ten feet below ground 16 surface. And the depth of water in this area is 17 twenty-two to twenty-four feet. And the groundwater 18 flows towards Fairforest Creek. 19 So now what do we hope to achieve in this 20 cleanup? Well, we want to prevent human exposure to 21 the groundwater contamination. We want to minimize 22 any migration of the contaminants from the 23 groundwater to the surface water at Fairforest 24 Creek, and we want to restore the groundwater to 25 beneficial use. So we have remediation goals.</p>	<p style="text-align: right;">Page 9</p> <p>1 Infiltration Galleries. And it will be further 2 developed in a remedial design. But basically, what 3 we are looking is a series of eight to ten-foot deep 4 trenches. And each trench will have a two-foot 5 diameter perforated pipe. And those pipes will be 6 filled with neutralizing solution like sodium 7 carbonate, so something to address the acid. You 8 know, you give it a base and it meets somewhere in 9 the middle, hopefully. 10 And institutional controls, when we are 11 talking about institutional controls, we are talking 12 about deed restrictions and beefing up the physical 13 restrictions like fully fencing the site. It's only 14 partially fenced now. But anyway, that would 15 propose a cost of two million sixty thousand 16 dollars. 17 The next alternative is phytoremediation. 18 And I don't know if you have heard of this or not, 19 but trees actually help with the cleanup. So they 20 would put approximately 150 trees in three rows. 21 And we would use something called TreeWell 22 technology. And I don't know if you have ever seen 23 roots, sometimes roots grow out on the surface of 24 the soil. Well, this kind of technology would make 25 them grow downward so they could absorb the</p>

**IMC SITE SPARTANBURG, SOUTH CAROLINA PROPOSED PLAN
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<p align="right">Page 10</p> <p>1 contaminated groundwater and it cleans it up. 2 We would also have institutional controls 3 on that as well, and that price would be 2.29 4 million. 5 The fourth alternative is we would 6 strictly just address the low pH soil only. We 7 would excavate everything in that red shape there, 8 and we would treat it with a neutralizing agent. 9 Dig it up, treat it, and then put it back down in 10 the same hole. And that price would be 5.1 million 11 dollars. 12 So the next table is the Summary. The No 13 Action, of course, is no dollars. The Infiltration 14 Galleries are 2.06 million. Phytoremediation came 15 in at 2.29 million, and the Excavation and putting 16 it back in the hole would be 5.1 million dollars. 17 Our next step was we do a comparative 18 analysis. We have nine criteria that we have to use 19 to compare the different alternatives. And whatever 20 alternative that we choose must meet the first two. 21 It must be protective of human health and 22 environment, and it must comply with all federal and 23 state laws. After then we would look at long-term 24 and short-term effectiveness, if it reduces the 25 toxicity mobility and volume of the contamination,</p>	<p align="right">Page 12</p> <p>1 MS. SIMS: Elaine Sims. What all they 2 proposing on here, to build something on these sites 3 that already been cleaned up? Or did I come in late 4 and I don't know -- I was kind of late coming in, so 5 I don't know exactly where you was talking about. 6 MS. BENNETT: This is at the IMC Site. 7 MS. SIMS: What do they planning on doing with 8 it? Is someone planning on doing something with it 9 at the site? 10 MS. BENNETT: You mean after we finish the 11 cleanup? 12 MS. SIMS: Has it not been cleaned up? 13 MS. BENNETT: All the soil has been cleaned up, 14 but now the groundwater needs to be cleaned up. 15 MS. SIMS: Okay. So they are coming back in 16 here to do the -- someone is coming back in to do 17 the groundwater of it? 18 MS. BENNETT: Right. Right. 19 MS. SIMS: So where is the water? Who is it 20 affecting, someone who using well water or something 21 like that? 22 MS. BENNETT: No. That's the thing. It's not 23 affecting anybody. The groundwater from this site 24 flows and goes into Fairforest Creek. And once it 25 gets there, it mixes with the water that's already</p>
<p align="right">Page 11</p> <p>1 is it easily implemented and, of course, the cost. 2 And the last two are State Acceptance from 3 South Carolina DHEC, in this case, and the community 4 acceptance, which is why we asked for comments. 5 So based upon the comparative analysis and 6 looking at the various alternatives, the one that 7 the EPA is recommending and DHEC is recommending is 8 Alternative 2. Why? Because it addresses both the 9 low pH soil and the resulting contaminated 10 groundwater. It's safe, effective, it's easily 11 implemented, and it's cost effective. 12 And that's the end of my presentation. 13 MS. SPENCER: So at this point we are going to 14 have the questions and answers. And we do have a 15 transcriptionist, so again, if you have questions or 16 you want to make a statement or a comment, please 17 state your name first and then give your question or 18 your comment. 19 I know some people came in late, so if you 20 have had an opportunity to look through the 21 presentation and you have questions or you want her 22 to go back and explain something you didn't quite 23 understand, no question is a dumb question, so 24 please ask. 25 Any questions?</p>	<p align="right">Page 13</p> <p>1 there. So am I answering your question? 2 MS. SIMS: Uh-huh. Is it almost similar to 3 what they are taking on over in Anderson with their 4 water? You know, they having a problem with their 5 water right now. 6 MS. BENNETT: I don't know anything about that. 7 MS. SIMS: It has been on the news, they are 8 having problems with their water. 9 So this water is just going into 10 Fairforest Creek -- 11 MS. BENNETT: Right. 12 MS. SIMS: -- and mixing in with the regular 13 water? 14 MS. BENNETT: It's mixing in with the surface 15 water, so this doesn't affect your drinking water at 16 all. 17 MS. SIMS: Would it not? 18 MS. BENNETT: No, it doesn't. If you were 19 living right there, on the property, and you had a 20 drinking water well, then I would say yes, it 21 affects you. But if you don't live there and you're 22 not drinking water right from that site, then no, it 23 doesn't affect South Spartanburg's drinking water. 24 MS. SIMS: So when they clear up this water, 25 then what are they going to do with the site? What</p>

IMC SITE SPARTANBURG, SOUTH CAROLINA PROPOSED PLAN
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1 they going to do with the site, just clear it up?

2 MS. BENNETT: Well, the EPA's vision is to

3 clean it up, restore soil and groundwater, so what

4 we consider unlimited use; that somebody can come in

5 and develop it or put whatever they want to on the

6 site without it being contaminated; without it

7 harming anybody.

8 MS. SIMS: You saying "whatever." Now, it

9 can't be no whatever they want to put in there.

10 Because if you cleaning up the water now for

11 contamination, we don't want somebody to come in

12 there and build something that's going to

13 contaminate it again.

14 MS. BENNETT: No. Well, it will have deed

15 restrictions on it. There will be certain things

16 that you can and cannot do. And I think

17 Mr. Mitchell, the Honorable Harold Mitchell can

18 address that about long-term --

19 MS. SIMS: Is this the only site they talking

20 about, the IMC site?

21 MS. BENNETT: That's the only one we are

22 talking about. Right.

23 MS. SPENCER: Any other questions, comments?

24 MS. BENNETT: Do you want to take it from here?

25 MS. SPENCER: Mr. Mitchell.

Page 15

1 MS. SIMS: So the people that living in

2 Fairforest will come here, you know? So the people

3 living in Fairforest Creek, down that way, their

4 water is not being contaminated?

5 MS. SPENCER: They are on city water.

6 MS. SIMS: So where is this water going?

7 MS. BENNETT: Right here, in Fairforest Creek.

8 MS. REEDER: Fairforest Creek doesn't run off

9 into a supply, a water supply, I don't think so.

10 MS. SIMS: That's what I'm saying, where is the

11 water going? I mean, you know, where does

12 Fairforest Creek go? Where does it go?

13 MS. REEDER: It's just a natural resource. It

14 doesn't supply any resource for human consumption.

15 MS. SIMS: But where is it going? It's just

16 going out, just making its way anywhere? Where does

17 it end up at?

18 MS. REEDER: It's a mainstream throughout the

19 city.

20 MS. SIMS: Do you know where it goes?

21 MS. REEDER: It's a mainstream throughout the

22 city, but it doesn't supply -- it's not a runoff in

23 any kind of physical resource.

24 MR. CASSIDY: Greg Cassidy with South Carolina

25 DHEC. The water is the groundwater. Underneath all

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1 the ground there is what's called aquifers of water.

2 And so this is a layer of water that sits mainly in

3 that area that was listed on that map. And I don't

4 know if you can get to that one that has the shaded

5 area there, but as it goes towards Fairforest Creek

6 there is actually less and less impact on that

7 groundwater as it goes. Now, there is a little bit

8 that go goes into the creek, but the flow of the

9 creek is so much that you don't even detect it in

10 the creek.

11 MS. SIMS: So why didn't they get this far when

12 they was cleaning up the site? If they had known it

13 was contaminated, why they didn't do it all at once?

14 Why they got to come back now if they never did get

15 it --

16 MS. SPENCER: The first part was for the soil.

17 Now they are coming back for the water.

18 MS. SHACKLEFORD: So it's done in stages.

19 MS. SPENCER: Yes.

20 MS. SIMS: Okay.

21 REPRESENTATIVE MITCHELL: If you can go back to

22 where she was asking on an earlier part, in 2001

23 when you showed the 15,000 tons of soil that was

24 removed, it shows on there, during the stages, what

25 was removed up to this point right now. And what is

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1 still impacted is what they are addressing on the

2 ground. It's on page six, there was a Consent Order

3 back in 2002 where a lot of this started with the

4 removals and then addressing those ponds. And over

5 time the more -- I guess over that time, going back

6 up to 2011, '10, '11, and it's still seeing with the

7 monitoring that it's still impacting. So what they

8 are looking at now is how do you actually address

9 that groundwater and deal with the pH, the problems

10 with the pH that's on -- I forgot the table that you

11 had it on.

12 MS. BENNETT: We consider this to be the last

13 phase of it. We have done two removals of soil.

14 And now this action will address the groundwater,

15 and then that should totally clean up the site.

16 MS. SIMS: So they will have to go through all

17 of Fairforest Creek, whatever area that this water

18 is at, and clean that up too?

19 MS. BENNETT: No.

20 MS. SIMS: It's just on that site that they

21 going to clean up?

22 MS. BENNETT: Right.

23 MS. SIMS: So what happens to the water that's

24 gone through Fairforest Creek then, it's still going

25 to be contaminated?

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<p>1 MS. BENNETT: This groundwater is not 2 contaminating Fairforest Creek. It flows to it. 3 But if you can imagine a big bathtub full of water, 4 if you drop one drop in it, then it's not going to 5 look blue just because you drop a blue drop in it, 6 because it's going to dissipate. And that's what 7 happens with this. 8 MS. SIMS: As it flows through to Fairforest 9 Creek, it gets less and less contaminated? 10 MS. BENNETT: Right. 11 MS. SIMS: But it wasn't contaminated. 12 REPRESENTATIVE MITCHELL: And I think, too, she 13 came in on the part where you didn't -- not talking 14 about what is the contamination that you're talking 15 about, as far as -- 16 MS. SIMS: Okay. Maybe I missed that part, 17 then. I don't mean to set you back. 18 MS. BENNETT: That's all right. 19 REPRESENTATIVE MITCHELL: Ms. Giezelle, you 20 have two charts in here where you're showing how 21 that process of groundwater monitoring results over 22 the pre and post -- 23 MS. BENNETT: This one (indicating)? 24 REPRESENTATIVE MITCHELL: -- how the 25 percentages decrease?</p>	<p>1 that soil and won't move and go into the 2 groundwater. So it's kind of a difficult thing to 3 think about. 4 MS. SIMS: So they would have had to take all 5 the contaminated soil from that site in order for it 6 not to go into the groundwater that you're talking 7 about for the iron and all that stuff? Suppose it's 8 still raining, you know, the rain, so that site was 9 already contaminated. 10 MS. BENNETT: It's just the areas that had a 11 low pH soil that we have to worry about. The whole 12 site doesn't have low pH soil, just that one last 13 area. 14 MR. CASSIDY: Most of the like contaminants 15 that we are seeing were stuff that you would see in 16 most soil. 17 MS. SIMS: Like I go dig up my yard right now, 18 I can find the pH there? 19 MR. CASSIDY: Not pH, per se, but the metals 20 are there. But if you had that low pH and rain came 21 through, they would go through in your yard, as 22 well. So there are metals that are perfectly fine 23 if they are not in your groundwater and not moving. 24 MS. REEDER: Is this a one-time permanent fix 25 or will there have to be ongoing monitoring and you</p>
Page 19	Page 21
<p>1 MS. BENNETT: Yes. 2 REPRESENTATIVE MITCHELL: Like your lead that 3 was 180 is down to 4.8, and then the percent 4 increased about 97 percent? 5 MS. BENNETT: Right. That was the impact of 6 that removal. 7 MS. SIMS: So do the rain have an affect on 8 that water on that site? 9 MS. BENNETT: Well, it does, in that it 10 infiltrates that low pH soil that I was telling you 11 about. And that, in turn, makes the metals in the 12 soil get into the groundwater, because that soil has 13 low pH. So if we raise the pH of that soil and 14 raise the pH of the groundwater, then we won't have 15 to worry about the metals in the groundwater any 16 more. 17 MR. CASSIDY: In reality here, when we talk 18 about pH we are not talking about like the soil 19 actually being contaminated. It's really that the 20 soil has a low pH, which makes it more acid. And 21 when water comes through, it becomes acid water and 22 that causes the metals that are already in that soil 23 to move and become mobile and they go into the 24 groundwater. And so if we can raise the pH up of 25 that soil layer there, those metals will stay in</p>	<p>1 may have to come in and do an investigation in the 2 future? 3 MS. BENNETT: Well, they are proposing to do 4 eight episodes, you know, of infiltrations, putting 5 in a liquid and letting it infiltrate, and then 6 after that we will monitor it. The same as we did 7 after the removals that we did, we will be 8 monitoring the groundwater to see what kind of 9 impact it's having, whether it's positive. So no, 10 we won't just do it and leave. We will do it and 11 monitor, make sure it's working. 12 MR. DAWKINS: Sidney Dawkins. Who is the 13 determining factor of what process they are going to 14 try to use to make the cleanup? You know, you had 15 the three proposals. 16 MS. BENNETT: Right. 17 MR. DAWKINS: Who is going to make that 18 decision? Are y'all going to have the community 19 have a say so in that? 20 MS. BENNETT: Well, as you saw, one of the 21 criteria was community acceptance. So what we do 22 is, we propose one of the things and we tell you why 23 we think it's the best. And we solicit your 24 comments. And you can say, "No. I think you ought 25 to plant trees" or "No, I think you ought to dig it</p>

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<p align="right">Page 22</p> <p>1 up." And we have to consider all of that during the 2 commenting period. 3 MR. DAWKINS: And where are the funds going to 4 come from for which process they are going to choose 5 to do? 6 MS. BENNETT: Well, this is what we call a PRP 7 lead. The site owner is paying for it. 8 MR. DAWKINS: Okay. 9 MS. REEDER: Is there any monitoring going on 10 with the adjacent sites, with like the Mount Vernon 11 Mills or the Rhodia site? 12 MS. BENNETT: Those aren't Superfund sites. 13 MR. CASSIDY: At the Arkwright facility we have 14 ongoing monitoring, plus we have -- we have had 15 monitoring going on at the IMC site from a previous 16 work, but I'm not sure about Mount Vernon. 17 MS. SIMS: Where is that? 18 REPRESENTATIVE MITCHELL: Mount Vernon, the one 19 that's above the tract of land. Mount Vernon, right 20 above the railroad tracks in the textile mill. 21 MS. SIMS: Okay. Okay. I hear you. So they 22 tearing that down too? 23 REPRESENTATIVE MITCHELL: No. I'm just 24 saying -- 25 MS. REEDER: I was just asking whether someone</p>	<p align="right">Page 24</p> <p>1 MS. SPENCER: Can you state your name for us? 2 MS. REEDER: I'm sorry. My name is Willa 3 Reeder. W-I-L-L-A, last name is Reeder, 4 R-E-E-D-E-R. 5 The neighborhood I live in is adjacent to 6 the fertilizer plant. To what extent has the 7 contamination from the fertilizer soil, water 8 runoff, et cetera, filtrated to some degree within 9 the mile radius in which we live? 10 And the reason I ask that is because in my 11 yard we had an amazing sinkhole. Just walking 12 through, and boom, my son's leg, it went all the way 13 down to his knee. And it has created major 14 concerns, having to dig up this and do that and do 15 all kinds of things that was related to the 16 deterioration of the piping that is underground that 17 carries our water. And when I'm sitting and 18 listening to this, knowing that any type of mineral 19 that creates an acid base in soil, you know, over a 20 period of time could something be building up far 21 beyond just the fertilizer site? 22 MS. BENNETT: Not that we know of. When we -- 23 when I say "we," the company did those two removals, 24 so you know -- I don't have the picture now, but 25 they took over -- I'd say over 300 samples all over</p>
<p align="right">Page 23</p> <p>1 was monitoring. 2 REPRESENTATIVE MITCHELL: And then the textile 3 mill, the Arkwright Textile Mill monitors there, as 4 well. There is some up above, right there on 5 Fairforest Creek as well, and those were done in 6 2007. 7 MS. REEDER: Is this internal or do they have 8 an external procedure? 9 REPRESENTATIVE MITCHELL: Ma'am? 10 MS. REEDER: Is this something that the 11 company, itself, handles, or do they have a 12 certified agency to come in? 13 REPRESENTATIVE MITCHELL: This one has a 14 voluntary cleanup agreement with the textile mill 15 right now along here (indicating). That was done 16 under DHEC order there, a voluntary cleanup 17 agreement. So there are two wells that are there, 18 because that was something I think we had fifteen 19 years looking at monitoring on that one. And then 20 you have got the monitoring wells that are at the 21 Arkwright dump, and then those wells that have been 22 in place at the fertilizer plant since '86, 1986. 23 MS. SPENCER: Any other questions? 24 MS. REEDER: I do. This property has 25 nothing --</p>	<p align="right">Page 25</p> <p>1 this facility, you know, to try to hone in on where 2 the contamination actually was. And so they had a 3 pretty good idea of the outline of how far it went 4 out. 5 MR. CASSIDY: Most everything, I think, on the 6 site would lead toward Fairforest Creek from the 7 site. So almost nothing goes back toward -- 8 MS. REEDER: So Fairforest would be like a 9 buffer for the contamination entering into 10 Fairforest -- 11 MS. BENNETT: So you live on the other side? 12 MS. REEDER: Yes. Fairforest Creek, we are on 13 the other side. I don't think that's Fairforest 14 going over on the other side. 15 REPRESENTATIVE MITCHELL: No. It's a tributary 16 coming from Duncan Park. That's coming from the 17 lake at Duncan Park. 18 MS. REEDER: I mean, I'm sitting here thinking, 19 and I just know that this happened, and I don't know 20 what it is they are going to do. 21 MS. BENNETT: And they also put a monitoring 22 well on the other side of Fairforest Creek. 23 REPRESENTATIVE MITCHELL: You're talking about 24 that, this one right here, Ms. Reeder? That's that 25 tributary you're talking about right there, that</p>

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<p align="right">Page 26</p> <p>1 comes from up here, right here. And the lake at 2 Duncan Park, that's where that one flows, right 3 there. And your house is right here, on Lincoln 4 (indicating). But it's flowing down from here. And 5 where that pond, here, it was flowing in right here, 6 coming into Fairforest Creek here, that little -- I 7 think there is a trench that was cut way back, I 8 think -- looking at it, back in 1989 when they were 9 looking at that when it was flowing into Fairforest 10 Creek, those ponds into Fairforest Creek at that 11 point there (indicating).</p> <p>12 MS. REEDER: Did they use any fertilizer to try 13 to grow the grass back? I mean, this is something 14 our water system is dealing with. And I'm sitting 15 here thinking about all of the above, and I'm going, 16 "For what?" Okay. It was just a question.</p> <p>17 MS. BENNETT: You know, the city water, they 18 have all kinds of things they have to go through, 19 qualifications and regulations and everything. So 20 the water that they delivering has to meet all of 21 those limits.</p> <p>22 MS. REEDER: I was just concerned because had 23 that been a small child, that whole body would have 24 submerged into the ground. My son is about six-two, 25 and it went up to his knee.</p>	<p align="right">Page 28</p> <p>1 Institutional controls, exactly what does that 2 entail?</p> <p>3 MS. BENNETT: That would entail deed 4 restriction, deed notifications. It will put limits 5 on what people can do on the site. It will specify 6 that no groundwater wells can be put on the site, 7 those kind of things. And those will be recorded on 8 the deed for that property.</p> <p>9 REPRESENTATIVE MITCHELL: There is a deed 10 restriction right now on the Arkwright landfill and 11 the textile mill and the North Street dump right 12 now, as far as those restrictions that are there.</p> <p>13 MS. BENNETT: So it will also be on this site, 14 as well.</p> <p>15 MS. SPENCER: Yes, sir. Could you state your 16 name, please.</p> <p>17 REPRESENTATIVE MITCHELL: Harold Mitchell. I 18 wanted to ask you just one last clarification, even 19 for those that came in, looking at the two 20 alternatives, it looks like even at alternative 4, 21 if you excavate everything off, compared to number 22 2, digging those -- well, go back to number 4. If 23 you dig everything off, it's kind of like what you 24 did in 2002, you have a huge excavation and you 25 still saw problems.</p>
<p align="right">Page 27</p> <p>1 MS. BENNETT: I have heard of sinkholes 2 swallowing whole houses. It's something to think 3 about, I guess.</p> <p>4 MS. SPENCER: Any other questions, comments? 5 Anything need to be clarified? Anything not 6 understood?</p> <p>7 MS. REEDER: I understand that you're 8 suggesting alternative number 2. What action -- who 9 will you receive this action from? Who will confirm 10 that this is what the community will support?</p> <p>11 MS. BENNETT: What we do is, we are soliciting 12 comments now. So if you have a comment either for 13 or against, you could let us know. And after the 14 end of that thirty-day comment period, we consider 15 both what the community has to say, what the state 16 has to say, and we come up with a final decision. 17 And that will be embodied in what we call a Record 18 Of Decision, or ROD, and L'Tonya will notify 19 everybody of that.</p> <p>20 MS. SPENCER: And, actually, your comments 21 tonight are being taken on record. That's why we 22 were asking everybody to state your name.</p> <p>23 MS. REEDER: Could you clarify, again, for the 24 institutional controls that you have scripted under 25 alternative two, Infiltration Galleries.</p>	<p align="right">Page 29</p> <p>1 But alternative 2 looks like where your 2 eight to ten foot trenches, filling it with a 3 neutralizing solution, sodium carbonate, it looks 4 like with the 2 -- I mean, could you explain it? It 5 looks like you're adding something in to help raise 6 the pH, compared to number 4, just moving soil out 7 of there. Am I correct in that?</p> <p>8 MS. BENNETT: Right. Alternative 2 addresses 9 both the low pH soil and the low pH groundwater. So 10 as you can see, on alternative 2 you have a series 11 of trenches throughout that plume that we have.</p> <p>12 Now, alternative 4 will address just the 13 soil.</p> <p>14 REPRESENTATIVE MITCHELL: And so if we get 15 fixated on looking at the price, saying that that 16 may be the better fix because it's five million, in 17 reality, in looking at that, it's not addressing the 18 solution, like you're saying, with that pH. This is 19 just removing soil. As we saw in 2002, removing the 20 soil, you still had problems with, you know, your pH 21 and other things that we thought would be addressed 22 by just removal.</p> <p>23 MS. BENNETT: Right. Well, in reality, you 24 know, if you remove all of that low pH soil, 25 eventually the groundwater would clean up. But it</p>

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1 would take a lot longer than alternative 2 would.
 2 REPRESENTATIVE MITCHELL: And that's what I'm
 3 saying. I mean, I think alternative 2 looks like if
 4 you remove and do what you're proposing to, that
 5 could help --
 6 MS. BENNETT: It will be a lot faster.
 7 REPRESENTATIVE MITCHELL: Faster to get the pH
 8 to where it needs to be.
 9 MS. BENNETT: Yeah. I didn't go through the
 10 times that they are estimating, but alternative 4, I
 11 think, is estimated at thirty years, whereas
 12 alternative 2 is estimated at fifteen. So, I mean,
 13 you cut it in half.
 14 MS. SIMS: These are the three alternatives
 15 that they are thinking of doing to the site?
 16 MS. BENNETT: Right.
 17 MS. SIMS: And the costs?
 18 MS. BENNETT: Right. I think there is a chart
 19 in there, toward the end, that summarizes how much
 20 it costs. And the owner of the property is Mosaic,
 21 Vigindustries, and they have been paying for the
 22 investigations and the removals, thus far.
 23 Well, we will be here if y'all want to
 24 come up and talk to us and ask us something
 25 individually.

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1 MS. SPENCER: Mr. Mitchell.
 2 REPRESENTATIVE MITCHELL: Harold Mitchell.
 3 Page four, is that the area where we are talking
 4 about here on this, page four, this diagram, that
 5 area?
 6 MS. BENNETT: That's just a general picture of
 7 the site.
 8 MS. SPENCER: It's not the exact location?
 9 MS. BENNETT: No, it's not the exact location
 10 of where the sulphuric acid plant is.
 11 REPRESENTATIVE MITCHELL: Because just for
 12 clarification for the people here, that's at the
 13 back part of the plant back here, at the site back
 14 here (indicating)?
 15 MS. SIMS: I was fixing to ask what part of the
 16 site is they trying to clear up? It's on the back
 17 end of it?
 18 REPRESENTATIVE MITCHELL: It's back down there.
 19 Right here, it's back here (indicating).
 20 MS. SIMS: I asked where the location was. And
 21 since it's in the back area of it, the place that's
 22 going to be cleaned up, since they did the whole
 23 area, they just got that little piece of area that
 24 they need to work on or try to clean up?
 25 REPRESENTATIVE MITCHELL: Just clarification

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1 now, through the years, as far as taking down the
 2 facility, what happened, it was deconstructed in
 3 2002 -- 2000? Well, 2000, when it was
 4 deconstructed, they went back to this point, 2001,
 5 that was the 15,000 tons that were removed. And
 6 over that course of time they continued, and that's
 7 where -- right there, where they are at, is this
 8 last piece that needs to be addressed.
 9 MS. SIMS: What they going to do about the
 10 Mount Vernon Mill thing, then?
 11 REPRESENTATIVE MITCHELL: It's closed.
 12 MS. SIMS: It's closed down too, ain't it?
 13 REPRESENTATIVE MITCHELL: Yes. They just went
 14 out of business, like all the other textile mills.
 15 And they have been trying to sell it for the last --
 16 MS. SIMS: Do they have anything to run off
 17 over there in there too?
 18 REPRESENTATIVE MITCHELL: No. That one was
 19 monitored by the state.
 20 MS. SPENCER: State your name.
 21 MS. WOODRUFF: Frances Woodruff. So once all
 22 this all is cleaned up, what is being recommended
 23 that be replaced, to be replaced, who has the say?
 24 MS. BENNETT: Well, the owner of the property
 25 has a say, but he is working with Mr. Mitchell on --

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1 the Mosaic Company.
 2 REPRESENTATIVE MITCHELL: If you can follow the
 3 arrow right here (indicating), this is the Arkwright
 4 dump site and this is the fertilizer -- here is the
 5 railroad track. And that's North Street. This is
 6 the entire fertilizer plant site. That's the
 7 Arkwright dump site. The state sent in the EPA.
 8 They finished this. This is capped. This is what
 9 we are talking about, this area back here. This,
 10 going back, is the old textile mill, which has a
 11 cleanup and restrictions on it.
 12 These two sites were the two Superfund
 13 caliber sites here with those restrictions
 14 (indicating), they can't do anything, Ms. Jarman,
 15 right, as far as any kind of structures on this
 16 facility?
 17 MS. JARMAN: That's correct.
 18 REPRESENTATIVE MITCHELL: Now, remember back
 19 during that time we talked about some potential
 20 reuses? At that time Councilman Reeder was on the
 21 council, we had talked about parks. Right now you
 22 can't maintain a park the size of, you know, an
 23 acre. This is forty-seven acres here. Thirty
 24 acres -- you know, the combined acreage, there is no
 25 way that the city or the county is going to maintain

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<p style="text-align: right;">Page 34</p> <p>1 something like that in a park. You can't put any 2 kinds of structures on it. So what we had looked at 3 maybe five years ago now, going up to it, was now 4 Rhodia is Solvay. Solvay Chemicals is in here now. 5 The two that we were looking at, and I think you can 6 see -- on page four, you can see those on the 7 document here. The IMC site, you can see those 8 towers that are the Duke Energy towers that are on 9 the site, right here (indicating), what we had 10 looked at and talked about was, in talking with Duke 11 Energy, was developing a solar farm combining both 12 of the sites. And this is something that we are 13 currently -- had a talk back with -- we had those 14 meetings back in the end of 2013 with the EPA, DHEC, 15 Duke Energy, Grow Solar that actually develops these 16 solar farms, and looking at the two sites combined 17 of being able to create the solar farm. 18 The thing that had our utility company, 19 Duke Energy, concerned at one point was that we 20 didn't have a bill, a legislation in the state, like 21 North Carolina, to get the tax credits. This year 22 we just got that passed, so that changes things 23 for -- you know, as far as Duke Energy is concerned, 24 they are trying to look at creating some pilots for 25 solar farms like SC&G has done in the lower part of</p>	<p style="text-align: right;">Page 36</p> <p>1 back for the community. Because you remember, in 2 the beginning, Regenesis was created of the 3 Arkwright community and Forest Park community, both 4 of which now have their 501(c)(3)s. And so this is 5 something that the owner of the solar farm, in 6 selling that energy back, would be able to, to both 7 those nonprofits have some kind of compensation, the 8 stream being able to go to two nonprofits that would 9 benefit from the actual solar farm, itself. So that 10 is a potential, as far as on the reuse, that would 11 keep people off the site, because this site is 12 already fenced in. There is a partial fence around 13 here and on the top part. But the thing is is to 14 keep people off of that site and making sure, as 15 some of the comments that have come in before, no 16 one wants to see another industrial facility come 17 back in there. 18 What kind of benefit could -- what is the 19 best benefit to the community at this point? And 20 that's where, right now, looking at the potential of 21 a solar farm. So that's where we are with the 22 regulatory agencies, the utility and the property 23 owners, both the City of Spartanburg and Mosaic at 24 this point. 25 MS. WOODRUFF: Frances Woodruff. What, besides</p>
<p style="text-align: right;">Page 35</p> <p>1 the state. So this is an attraction for them, 2 because of the City of Spartanburg, a company that's 3 at the table. So it's attractive to them to 4 develop, you know, this potential solar farm that 5 can tie into their lines and sell that energy back 6 to Duke. 7 Now, the benefit out of that, that's part 8 of what is being worked on now. If you look -- and 9 that was one of things that Mosaic had stated and Ed 10 Memmott, City Manager, making sure that there was -- 11 you know, the solar farms would not impact the cap 12 and what they have already completed on the cleanup 13 of the Arkwright dump. 14 Grow Solar is a company that has actually 15 developed solar farms on landfills and have done it 16 in North Carolina. But what we are looking at, 17 since this is a newly capped landfill, is making 18 sure that there is not an impact and the settling. 19 But with the technology that Grow Solar, what they 20 have put on some other solar farms and we are seeing 21 in some other areas is seeing if it can be done here 22 and that fertilizer plant site and generate -- you 23 know, the whole talk is seeing how -- you know, 24 being able to generate a productive use that could 25 create some kind of revenue and a revenue stream</p>	<p style="text-align: right;">Page 37</p> <p>1 that solar, would be equivalent to placing something 2 else there? 3 REPRESENTATIVE MITCHELL: Well, as I stated, 4 you can't put any structures. And when you look at 5 the only -- it's like recreational reuse, who is 6 going to maintain it? And we see where we are right 7 now with the county, they have already identified 8 their projects for parks. What's in the county 9 right now on this side, you have both the 295 10 complex with the soccer fields. And what the 11 Housing Authority in Spartanburg County is looking 12 at on this Page property down there on Sims Chapel, 13 right now that's the whole point, to try to, you 14 know, build that park in this community here. And 15 you see how long that has taken for that two 16 acres -- two acres, to build that park. So thirty 17 acres -- 18 MS. WOODRUFF: I'm saying like a plant like 19 Solvay, no plants like that could just come in 20 there? 21 REPRESENTATIVE MITCHELL: And that's why, with 22 those restrictions -- like the restriction on the 23 North Street dump and the Arkwright Mill, it as both 24 of that on there, as far as residential use. 25 MS. WOODRUFF: Is all that in this pamphlet,</p>

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1 the restrictions and stuff?
 2 MS. SPENCER: No. That's what she was talking
 3 about earlier. When she said there were deed
 4 restrictions on what you could and could not do with
 5 the property, that's what she was talking about
 6 earlier.
 7 MS. WOODRUFF: I heard that part, but it didn't
 8 specify what could and what couldn't and what was
 9 restricted and what wasn't.
 10 MS. JARMAN: They are not in place yet, at IMC
 11 yet.
 12 MS. SPENCER: Yeah. They are not in place yet.
 13 But she gave an example of what would be on the deed
 14 restrictions.
 15 MS. WOODRUFF: Because I recognize Solvay, and
 16 before we knew anything, it was there, and so we
 17 don't want that to happen again.
 18 MS. SPENCER: You're saying you don't want
 19 something industrial, another industrial structure.
 20 MS. WOODRUFF: True that.
 21 REPRESENTATIVE MITCHELL: And Solvay, because
 22 of the zoning, zoning restrictions in here, when
 23 that was proposed, it was nothing, and it wasn't
 24 even on the radar screen. But you remember, they
 25 told the residents that they were going to be

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1 apartment complexes. And there was no zoning, no
 2 one said anything, and the next thing you know that
 3 chemical storage facility became GAF Chemicals, the
 4 chemical storage they started in there first. And
 5 that permit kept going down there.
 6 Well, can I answer her question? She said
 7 it was still not zoned, that's the problem in
 8 Spartanburg County and some of the other places,
 9 nobody wants zoning. They don't anybody to tell
 10 them what to do. It's just like the people in
 11 Fairmont, they didn't want zoning, but you ended up
 12 with the Palmetto Landfill. Remember when they
 13 stopped the race track from coming in there? They
 14 stopped the race track, but they didn't want zoning.
 15 You can't have both. If it's open zoning, I mean,
 16 you can put whatever as long as, you know, no one
 17 shows up and protests for the use. Just like you
 18 see a lot of your adult entertainment clubs up
 19 there -- I said "entertainment" because I didn't
 20 want to say strip clubs.
 21 MS. WOODRUFF: I thought you were going to say
 22 you owned one of them.
 23 REPRESENTATIVE MITCHELL: Is that right,
 24 Councilman Reeder?
 25 COUNCILMAN REEDER: That's true. But as long

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1 as the city, we are in charge of that landfill fence
 2 around there, there will be no structure on there,
 3 because no structure can go on there. Because you
 4 cannot impact the ceiling that's there that will
 5 come in there, and then we are back in the same
 6 situation of going back and doing a cleanup.
 7 REPRESENTATIVE MITCHELL: In fact, if you look
 8 at Fairforest Creek right here, everything on this
 9 side of the creek is in the county. Look what's on
 10 this side. And if you go to the other side, do you
 11 see those facilities within the city? No. There
 12 are restrictions. That's why you can't get people
 13 to understand that they want to stop things, but
 14 they about want zoning, because it's like you can't
 15 tell me what to do in my yard.
 16 MS. WOODRUFF: They do that anyway. They do
 17 that anyway.
 18 REPRESENTATIVE MITCHELL: This whole thing
 19 about zoning restrictions, when that whole thing
 20 came up and they said that they didn't want zoning,
 21 we don't want anybody telling us what to do, that's
 22 when you ended up with GAF. Because remember, the
 23 Arkwright, Fuller Acres Community, there was a
 24 restrictive covenant on those properties back to
 25 that subdivision. But, you know, for the zoning

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1 purpose there is no zoning. When the folks said
 2 that they were going to build the apartments and
 3 they flipped and came in with a chemical storage,
 4 they were able to do that because there were no
 5 restrictions there.
 6 MS. WOODRUFF: Okay. Like the property that's
 7 before the railroad track that has been cleared away
 8 coming down North Street, if they wanted to put some
 9 kind of plant or something out in that area --
 10 REPRESENTATIVE MITCHELL: You're talking about
 11 that's Mount Vernon, on top of the hill?
 12 MS. WOODRUFF: Across from that.
 13 REPRESENTATIVE MITCHELL: I mean, there is
 14 still no zoning out there. But what did they do?
 15 They haven't been able to get anybody attractive to
 16 come back to the property.
 17 MS. WOODRUFF: So that property goes out to
 18 Mount Vernon.
 19 REPRESENTATIVE MITCHELL: Mount Vernon. And
 20 what they basically did, they cleared out all the
 21 trees here. And as you can see, the owner of the
 22 property here did the same thing (indicating). And
 23 they did it just going around the corner.
 24 A lot folks that are out of state that are
 25 purchasing a lot of these properties, are, you know,

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<p align="right">Page 42</p> <p>1 cutting for the timber, they are making money off of 2 these properties we see in here. That has been kind 3 of -- 4 MS. WOODRUFF: So nobody owns that? 5 REPRESENTATIVE MITCHELL: Yes. The owner that 6 owns it, he had has been paying taxes on it and he 7 can't do anything with it. So they were trying to 8 look at some kind of way of recouping some money off 9 of that site, so they started cutting the timber on 10 the front side and down the side of that of Mount 11 Vernon Mills. 12 MS. WOODRUFF: So we can really look for 13 anything up there. 14 REPRESENTATIVE MITCHELL: You know -- I mean, 15 we have regulatory agencies here. If someone 16 applies to put something together, wouldn't there be 17 a permitting period process that folks can comment 18 on? Because they can't grandfather that existing 19 permit from that facility, can they? 20 MS. JARMAN: I'm not really sure about the 21 public commenting on, say, like industrial plants 22 and stuff like that. I can't say. I don't know. 23 REPRESENTATIVE MITCHELL: But they just 24 can't -- 25 MS. JARMAN: Of course the county office would</p>	<p align="right">Page 44</p> <p>1 going back to it, they did a removal back in 2002, 2 and in 2014 we are still at the same state. So 3 looking at what they are talking about, if they do 4 another removal, as she stated, it will be thirty 5 years of looking at the pH in the soils to clear, 6 compared to digging those trenches and putting 7 those -- 8 MS. BENNETT: Solutions. 9 REPRESENTATIVE MITCHELL: -- solutions in 10 there, sodium carbonate or whatever the solutions 11 that you would inject, it would end up raising those 12 pH levels at a faster rate than what we are talking 13 about that impact the last piece of that area there 14 on the site. So that's why I say -- I was asking 15 you questions and saying that, you know, five 16 million dollars to remove everything and you're 17 going to still end up probably with the same thing 18 and a longer rate for that pH to raise, correct, 19 Ms. Giezelle? 20 MS. BENNETT: Correct. 21 MS. REEDER: Is that your guess? 22 REPRESENTATIVE MITCHELL: Yes. 23 MS. WOODRUFF: Whenever they get ready to come 24 in and do this cleanup, is there going to be any 25 threat to the neighbors or any harm to us, harm</p>
<p align="right">Page 43</p> <p>1 have some say for that also. 2 MS. WOODRUFF: So would it be publicized? 3 REPRESENTATIVE MITCHELL: Yes. And that has 4 been the problem with Mount Vernon, is that they 5 haven't been able to get anybody in because of what 6 has taken place in that area. The owners had said 7 before that they know that this community is not 8 going to welcome that, so that has been a problem. 9 And then with the hospital on North Street, with 10 those new duplexes that they built there, they know 11 that they are going to have an outcry from the 12 people in there. So that's why they have had 13 problems and troubles with getting someone 14 attractive to come in there. 15 MS. WOODRUFF: There is a rumor that Housing 16 Authority buying all that property back there and 17 clearing it out. 18 MS. SPENCER: Do we have any more questions 19 concerning the IMC site? Refocus. 20 MS. REEDER: I do have just one final one, and 21 I will be finished with it. With our representative 22 and councilman who have followed this, for those of 23 us who are not as informed, is alternative number 2 24 one that you would embrace? 25 REPRESENTATIVE MITCHELL: Listening to her,</p>	<p align="right">Page 45</p> <p>1 coming? 2 MS. BENNETT: That was one of the criteria. 3 That's called short-term effectiveness. And no, 4 there won't be any. They will have the trucks that 5 will come in with the excavation equipment and that 6 kind of thing. 7 MS. WOODRUFF: I mean, is that not going to 8 stir up a lot of dust and dirt? 9 MS. BENNETT: No. They will have requirements 10 for that. If it's a dry, windy day, they will have 11 to wet down the soil so it doesn't have any dust or 12 anything. And that would be a requirement. 13 REPRESENTATIVE MITCHELL: And that was done in 14 the past when the community -- that comment period, 15 that's where Mosaic, when they put that tent around 16 the facility and the water trucks and dug those 17 trenches around the facility and made sure none of 18 the runoff ran into Fairforest Creek, that's the way 19 they did that back then, so they have been 20 consistent, over time, of making sure that that was 21 done properly, where it didn't blow off into the 22 neighborhood. 23 MS. WOODRUFF: We had quite a big dust storm 24 going through when they, you know, brought the soil 25 down and dumped it. You know, when they put the</p>

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1 dirt down there.

2 REPRESENTATIVE MITCHELL: That was capping a

3 landfill.

4 MS. WOODRUFF: That's what I'm saying.

5 REPRESENTATIVE MITCHELL: But I'm saying this

6 is Mosaic. That's not Mosaic. I mean, when they

7 were doing the landfill and you are excavating dirt

8 prior to capping that landfill.

9 MS. WOODRUFF: Right.

10 COUNCILMAN REEDER: And that was not harmful.

11 REPRESENTATIVE MITCHELL: That wasn't

12 contaminated.

13 COUNCILMAN REEDER: That wasn't contaminated.

14 MS. WOODRUFF: I'm saying, what they bringing

15 is harmful going on there.

16 MS. SPENCER: And in this particular situation

17 they are just digging a trench. They won't be

18 taking soil through the neighborhood. They are

19 digging a trench on site.

20 MR. CASSIDY: Of the alternatives presented,

21 the impact on the community is going to be minimal.

22 But it's going to be most minimal with that

23 alternative, compared to the other two alternatives.

24 You know, there would be a lot more potential to see

25 some effect with the other alternatives.

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1 MS. REEDER: What is the duration?

2 MS. BENNETT: It's just an estimate, but they

3 are thinking that it will be like fifteen years.

4 But as far as active remediation, it probably will

5 be, what, three to four years, Dan? That's the

6 Mosaic contractor.

7 MR. MADISON: Well, the actual excavations will

8 be very quickly when we put the pipe in. And then

9 there will be a couple years of periodically adding

10 more solution to the trenches.

11 MS. JARMAN: She wants to know the time period

12 of construction, how long will the construction be?

13 MR. MADISON: Construction? I can't say off

14 the top of my head, but we are talking about, you

15 know --

16 MS. BENNETT: Three months, at the most?

17 MR. MADISON: Yes.

18 MS. SPENCER: State your name, Dan.

19 MR. MADISON: Dan Madison.

20 MS. SPENCER: Did that answer your question,

21 Ms. Reeder?

22 MS. REEDER: Yes.

23 MS. SPENCER: Any other questions?

24 If there aren't any more questions, but if

25 you think of something afterwards, in the proposed

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1 plan there is a sheet in the back. If you want to

2 write your comment or question on that sheet and

3 mail it to Giezelle, or you can send it e-mail. If

4 you have e-mail, you can send your e-mail to

5 Giezelle. You can do it afterwards, if you think

6 about it, or if you think of a question afterwards.

7 Or if you think of something and you don't

8 have an e-mail, my information -- call me. I will

9 type it up for you and put your name on it and give

10 it to Giezelle. Otherwise, thank you all for coming

11 out tonight. We appreciate your participation and

12 your interest in the site. And if you have any

13 questions, again, Giezelle's information, as well as

14 mine, is in the proposed plan fact sheet. Thank

15 you.

16 (IMC Proposed Plan Public Meeting Concluded At 7:30

17 P.M.)

18

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CERTIFICATE

I, the undersigned, Elaine L.

Grove-DeFreitas, RPR, Notary Public, in and for the

State of South Carolina, do hereby certify that the

foregoing IMC Site Public Meeting was taken on the

26th day of June 2014,

That the foregoing is an accurate

transcription of the proceedings.

IN WITNESS WHEREOF, I have hereunto set my

hand and seal this 30th day of June 2014.



Elaine L. Grove-DeFreitas, RPR

Notary Public for South Carolina

My Commission Expires: 6-25-2020

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CERTIFICATE

I, the undersigned, Elaine L. Grove-DeFreitas, RPR, Notary Public, in and for the State of South Carolina, do hereby certify that the foregoing IMC Site Public Meeting was taken on the 26th day of June 2014.

That the foregoing is an accurate transcription of the proceedings.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 30th day of June 2014.



Elaine L. Grove-DeFreitas, RPR
Notary Public for South Carolina
My Commission Expires: 6-25-2020

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APPENDIX C
ADMINISTRATIVE RECORD INDEX

07/15/2014 10:27 am

[Draft]

**Administrative Record Index
for the
INTERNATIONAL MINERALS AND CHEMICALS (IMC) SITE**

SCD003350493

1.0 PRE-REMEDIAL**1.9 Site Inspection Documents**

1. "Final Site Inspection Report, International Minerals and Chemical Corp. (IMC), Spartanburg, Spartanburg County, South Carolina, Revision 1," Tetra Tech EM, Inc. (March 22, 1999)

1.10 Expanded Site Inspection Documents

1. "Expanded Site Inspection Report, International Minerals and Chemical Corp., Spartanburg, Spartanburg County, South Carolina, Revision 1," Tetra Tech EM Inc. (November 16, 2000)

2.0 REMOVAL RESPONSE**2.1 Correspondence**

1. Letter from Greg Cassidy and Kayse Jarman, South Carolina Department of Health and Environmental Control (SCDHEC) to Giezelle S. Bennett, USEPA Region IV. Providing the SCDHEC's concurrence with the current version of the Action Memorandum for the IMC Fertilizer Site. (March 31, 2009)
2. Cross-Reference: "Responsiveness Summary, International Minerals and Chemicals (IMC) Site, Spartanburg, Spartanburg County, South Carolina," USEPA Region IV. (September 30, 2009) [Filed and cited in entry 2.9 REMOVAL RESPONSE - Action Memoranda].
3. Email from Greg Cassidy, SCDHEC to Addressees. Subject: IMC. (10:39 AM). (December 02, 2009)
4. Email from Greg Cassidy, SCDHEC to Addressees (with attachment). Subject: IMC NTCRA Work Plan Solid Waste ARARs. (04:46 PM). (December 09, 2009)
5. Letter from Debra Waters, The Mosaic Company to Giezelle Bennett, USEPA (with attachment). Regarding Mosaic's Workplan for the non-time critical removal action planned for the Site. (January 14, 2010)
6. Letter from Giezelle Bennett, USEPA to Debra Waters, The Mosaic Company. Regarding EPA and SCDHEC's approval of the May 7, 2010 Non-Time Critical Removal Action (NTCRA) Workplan. (May 20, 2010)
7. Email from Giezelle Bennett, USEPA to Addressees (with attachment). Subject: FW: IMC submittals. (1:00 PM). (November 04, 2010)
8. Letter from Giezelle Bennett, USEPA to Jim Brandt, Mosaic Company. Subject: Notice of Completion of Work, International Mineral & Chemical (IMC) Site, Spartanburg, SC. (August 08, 2011)

2.2 Sampling and Analysis Data

1. Letter from Dan O. Madison, TRC Solutions to Giezelle Bennett, USEPA (with attachment). Subject: Analytical results for May 2011 Semiannual Groundwater Monitoring Event, Former IMC Fertilizer Site, Spartanburg, South Carolina. (June 23, 2011)

2.4 Work Plans and Progress Reports

1. "Non-Time Critical Removal Action (NTCRA) Workplan and Design Report, Former IMC Fertilizer Site, Spartanburg, South Carolina," RMT. (October 2009)

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2.0 REMOVAL RESPONSE**2.4 Work Plans and Progress Reports**

2. Letter from Robert W. Hanley, RMT to Tina Hadden, USACE. Regarding the Non-Time Critical Removal Action (NTCRA) Workplan and Design Report for the Former IMC Fertilizer Site. (October 12, 2009)
3. Email From Greg Cassidy, SCDHEC to Addressees. Subject: IMC NTCRA Work Plan. (11:34 AM). (October 28, 2009)
4. "Non-Time Critical Removal Action (NTCRA) Workplan and Design Report, Former IMC Fertilizer Site, Spartanburg, South Carolina," RMT. (November 2009)
5. Letter from Greg Cassidy and Kayse Jarman, SCDHEC to Giezelle Bennett, USEPA. Regarding comments for the Non-Time Critical Removal Action (NTCRA) Workplan and Design Report, Dated October 2009. (November 03, 2009)
6. Letter from Giezelle Bennett, USEPA to Debra Waters, The Mosaic Company (with attachment). Providing comments for the Non-Time Critical Removal Action (NTCRA) Workplan and Design Report, Dated October 2009. (November 04, 2009)
7. Letter from Giezelle Bennett, USEPA to Debra Waters, The Mosaic Company (with attachment). Providing comments for the Non-Time Critical Removal Action (NTCRA) Workplan and Design Report. (February 09, 2010)
8. Letter from Dan O. Madison, RMT to Giezelle Bennett, USEPA (with attachment). Providing responses to comments for the Non-Time Critical Removal Action (NTCRA) Workplan and Design Report. (March 05, 2010)
9. Letter from Greg Cassidy, SCDHEC to Giezelle Bennett, USEPA. Regarding comments for the Non-Time Critical Removal Action (NTCRA) Workplan and Design Report, dated March 5, 2010. (April 19, 2010)
10. "Non-Time Critical Removal Action (NTCRA) Workplan and Design Report, Former IMC Fertilizer Site, Spartanburg, South Carolina," RMT. (May 2010)
11. Letter from Debra Waters, The Mosaic Company to Giezelle Bennett, USEPA. Regarding USEPA and SCDHEC review comments on the Non-Time Critical Removal Action (NTCRA) Workplan and Design Report for the Former IMC Fertilizer Site. (May 03, 2010)

2.8 Removal Response Reports

1. Letter from Karen Saucier, RMT to William Joyner, USEPA (with attachment). Providing the Revised Focused Removal Action Workplan for the Former IMC Fertilizer Site in Spartanburg, South Carolina. (July 17, 2002)
2. "Non-Time Critical Removal Action (NTCRA) Report, Former IMC Fertilizer Site, Spartanburg, South Carolina, May 2011, Revised June 2011, Appendix D - Manifests [Part 1 of 2]," [2 of 3], RMT, Inc. (June 01, 2011)
3. "Non-Time Critical Removal Action (NTCRA) Report, Former IMC Fertilizer Site, Spartanburg, South Carolina, May 2011, Revised June 2011, Appendix D - Manifests [Part 2 of 2]," [3 of 3], RMT, Inc. (June 01, 2011)
4. "Non-Time Critical Removal Action (NTCRA) Report, Former IMC Fertilizer Site, Spartanburg, South Carolina, May 2011, Revised June 2011," [1 of 3], RMT, Inc. (June 01, 2011)

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2.0 REMOVAL RESPONSE**2.9 Action Memoranda**

1. Action Memorandum from Giezelle S. Bennett, USEPA Region IV to Franklin E. Hill, USEPA Region IV. Regarding the request for and documentation of the proposed non-time-critical removal action (NTCRA) to address contaminated soil and process residuals at the International Mineral and Chemical Corporation (IMC) Fertilizer Site, Spartanburg, Spartanburg County, South Carolina. (September 30, 2009) [Includes the Responsiveness Summary] [Note: Due to the CONFIDENTIAL nature, a portion of this document has been withheld. Withheld material is available for, Judicial review only, at EPA Region IV, Atlanta, Georgia.].
2. Revised Enforcement Action Memorandum from Giezelle S. Bennett, USEPA Region IV to Franklin E. Hill, USEPA Region IV. Regarding a Change in Scope at the International Mineral and Chemical (IMC) Site, Spartanburg, Spartanburg County, South Carolina. (June 01, 2010)

3.0 REMEDIAL INVESTIGATION (RI)**3.1 Correspondence**

1. Letter from Giezelle Bennett, EPA Region IV to James Van Nortwick, Vigindustries, Inc. Stating that the May 5, 2004 replacement pages for the Remedial Investigation/Feasibility Study (RI/FS) Workplan were acceptable and the RI/FS workplan and associated documents dated May 2004 are approved. (May 11, 2004)
2. Letter from Dan Madison, RMT Integrated Environmental Solutions to Giezelle Bennett, EPA Region IV. Regarding the schedule for RI Field Activities at the IMC Fertilizer Site North Street Extension, Spartanburg, South Carolina. (May 17, 2004)
3. Letter from Dan Madison, RMT Integrated Environmental Solutions to Giezelle Bennett, EPA Region IV (with attachment). Regarding Supplemental Sampling of Wastewater/Process Residuals. (June 15, 2005)
4. Letter from Dan Madison and Karen Saucier, RMT, Inc. to Giezelle Bennett, EPA Region IV (with attachments). Regarding Supplemental Sampling of Wastewater/Process Residuals for the former IMC Fertilizer Site, Spartanburg, South Carolina. (August 31, 2005)
5. Letter from Dan Madison and Karen Saucier, RMT, Inc. to Giezelle Bennett, EPA Region IV (with attachments). Regarding the Revised Supplemental Remedial Investigation (RI) Workplan for the former IMC Superfund Site, Spartanburg, South Carolina. (February 22, 2006)
6. Letter from Dan Madison and Karen Saucier, RMT, Inc. to Giezelle Bennett, EPA Region IV (with attachments). Regarding Phase II Supplemental Remedial Investigation (RI) Work Scope for the former IMC Superfund Site, Spartanburg, South Carolina. (August 10, 2006)
7. Letter from Giezelle Bennett, EPA Region IV to Karen Saucier, RMT, Inc. Stating that the Phase II Supplemental Remedial Investigation (RI) Work Scope dated August 10, 2006 is approved. (August 18, 2006)
8. Letter from Dan Madison, RMT, Inc to Giezelle Bennett, EPA Region IV. Regarding the location for monitoring well MW-15 in the Phase II Supplemental RI Work Scope. (August 23, 2006)
9. Letter from Don Rigger, EPA Region IV to Keith Lindler, SCDHEC. Memorializing agreements reached between EPA and SCDHEC during the December 5, 2006 conference call. (December 22, 2006)

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3.0 REMEDIAL INVESTIGATION (RI)**3.1 Correspondence**

10. Letter from Donald Siron and Harriet Gilkerson, SCDHEC to Debra Waters, The Mosaic Company. Regarding response to January 3, 2007 letter outlining Mosaic's position on six additional sampling actions the Department had requested. (January 12, 2007)
11. Letter from Dan Madison, RMT, Inc to Giezelle Bennett, EPA Region IV (with attachments). Regarding workplan to assess the geophysical anomaly. (February 13, 2007)
12. Letter from Dan Madison, RMT, Inc to Giezelle Bennett, EPA Region IV. Regarding the request to abandon monitoring well MW-15. (April 11, 2007)
13. Letter from Giezelle Bennett, EPA Region IV to Dan Madison, RMT, Inc. Stating that the request of April 11, 2007 to abandon monitoring well MW-15 is approved. (April 13, 2007)
14. Letter from Giezelle Bennett, EPA Region IV to Debra Waters, The Mosaic Company. Stating that the Remedial Investigation (RI) Report for the IMC Superfund Site dated April 2007 is approved with stipulations. (May 24, 2007)
15. Letter from Dan Madison and Karen Saucier, RMT, Inc. to Giezelle Bennett, EPA Region IV (with attachments). Regarding the summary of assessment activities with a geophysical anomaly identified near the southern property line of the Former IMC Fertilizer Site. (June 06, 2007)
16. Email from Dan Madison, RMT, Inc. to Giezelle Bennett, EPA Region IV. Regarding Proposed clean up levels to be used in the Action Memorandum for the Former IMC Fertilizer site. (January 19, 2009)
17. Meeting Summary - Reuse of Formerly Contaminated Properties in Spartanburg, SC. (November 12, 2013)
18. Email from Cynthia Peurifoy, USEPA to Addressees (with attachment). Subject: RE: Spartanburg Redevelopment Meeting Notes. (12:13 PM). (December 04, 2013)
19. Email from Dan Madison, TRC Solutions to Giezelle Bennett, USEPA. Subject: RE: December 17, 2013 Spartanburg Meeting. (2:58 PM). (January 06, 2014)
20. Email from Tim Heinle, Gro Solar to Addressees. Subject: RE: December 17, 2013 Spartanburg Meeting. (10:13 AM). (January 06, 2014)
21. Email from Giezelle Bennett, USEPA to Addressees (with attachment). Subject: December 17, 2013 Meeting Notes. (1:46 PM). (January 15, 2014)
22. Email from Tim Heinle, Gro Solar to Addressees. Subject: RE: December 17, 2013 Meeting Notes. (6:34 PM). (January 15, 2014)
23. Email from Cynthia Peurifoy, USEPA to Addressees. Subject: Fwd: Duke Energy's interest in Solar Farm at Arkwright Superfund Sites. (4:41 PM). (February 24, 2014)
24. Letter from Franklin E. Hill, USEPA to Harold Mitchell, ReGenesis. Subject: Support for renewable energy development on the Arkwright Dump and International Mineral and Chemical (IMC) Superfund Sites. (March 21, 2014)

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3.0 REMEDIAL INVESTIGATION (RI)**3.2 Sampling and Analysis Data**

1. Memorandum from Rick Gillam, EPA Region IV to Bill Joyner, EPA Region IV. Regarding the Preliminary Air Modeling for International Materials and Chemical (IMC) Corp. Superfund Site located in Spartanburg, South Carolina. (November 08, 2001)
2. Letter from Dan Madison, RMT, Inc. to Giezelle Bennett, EPA Region IV (with attachments). Regarding grid locations selected for laboratory analysis. (July 15, 2004)
3. Letter from Dan O. Madison, RMT Integrated Environmental Solutions to Giezelle Bennett, EPA Region IV (with attachments). Regarding the proposed analytical parameters and second round groundwater samples at the IMC Fertilizer Site North Street Extension, Spartanburg, South Carolina. (July 28, 2004)
4. Memorandum from Brian Striggow, EPA Region IV to Giezelle Bennett, EPA Region IV (with attachments). Regarding temporary well sampling associated with IMC Fertilizer SESD Project #07-0339. (April 04, 2007)
5. Letter from Judy Canova, South Carolina Department of Health and Environmental Control (SCDHEC) to Giezelle Bennett, EPA Region IV (with attachment). Regarding the IMC Sampling Trip Report for May 15, 2007 and May 16, 2007. (June 11, 2007)
6. Memorandum from Brian Striggow, EPA Region IV to Giezelle Bennett, EPA Region IV. Regarding the results of the temporary well sampling associated with IMC Fertilizer SESD Project #07-0339. (June 14, 2007)
7. Letter from Dan Madison, RMT to Reginald E. Robinson, South Carolina Department of Health and Environmental Control (with attachment). Regarding comments on SCDHEC's Former IMC Fertilizer Site Sampling Trip Report. (June 19, 2007)
8. Technical Memorandum from Dan Madison, RMT to Giezelle Bennett, EPA Region IV (with attachments). Regarding SCDHEC Stream Sampling Event, May 15-16, 2007. (June 19, 2007)
9. Technical Memorandum from Dan Madison, RMT to Giezelle Bennett, EPA Region IV (with attachments). Regarding analytical results for groundwater sample splits collected from temporary wells at the Former IMC Fertilizer Site, Spartanburg, South Carolina. (July 02, 2007)
10. Letter from Dan O. Madison, TRC Solutions to Giezelle Bennett, USEPA (with attachment). Subject: Analytical results for October/November 2011 Semiannual Groundwater Monitoring Event, Former IMC Fertilizer Site, Spartanburg, South Carolina. (February 06, 2012)
11. Letter from Dan O. Madison, TRC Solutions to Giezelle Bennett, USEPA (with attachment). Subject: Analytical results for May 2012 Semiannual Groundwater Monitoring Event, Former IMC Fertilizer Site, Spartanburg, South Carolina. (July 31, 2012)
12. Letter from Dan O. Madison, TRC Solutions to Giezelle Bennett, USEPA (with attachment). Subject: Analytical results for November 2012 Semiannual Groundwater Monitoring Event, Former IMC Fertilizer Site, Spartanburg, South Carolina. (January 22, 2013)
13. Email from Dan Madison, TRC Solutions to Giezelle Bennett, USEPA (with attachments). Subject: FW: Updated Risks Support Tables - IMC. (9:09 am). (July 07, 2014)
14. Email from Dan Madison, TRC Solutions to Giezelle Bennett, USEPA (with attachment). Subject: RE: IMC. (5:05 pm). (July 11, 2014)

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3.0 REMEDIAL INVESTIGATION (RI)**3.4 Work Plans and Progress Reports**

1. "Remedial Investigation and Feasibility Study (RI/FS) Workplan, IMC Fertilizer Site, Spartanburg, South Carolina," RMT, Inc. (May 2004) [Contains May 2003 Focused Removal Report, Volume 1 of 2 as attachment H].
2. Letter from Dan Madison and Karen Saucier, RMT, Inc. to Giezelle Bennett, EPA Region IV (with attachments). Regarding the proposed Supplemental Remedial Investigation (RI) Workplan at the Former IMC Superfund Site, Spartanburg, South Carolina. (December 16, 2005)
3. Technical Memorandum from Dan Madison and Karen Saucier, RMT, Inc. to Giezelle Bennett, EPA Region IV (with attachments). Regarding the Supplemental Remedial Investigation (RI) Workplan. (July 14, 2006)

3.7 Applicable or Relevant and Appropriate Requirements (ARARs)

1. Letter from Giezelle Bennett, EPA Region IV to Reginald Robinson, SCDHEC. Regarding a request for identification of State of South Carolina Applicable or Relevant and Appropriate Requirements (ARARs) that pertain to the International Mineral and Chemical Corp. (IMC) Superfund Site located in Spartanburg, South Carolina. (April 25, 2007)
2. Letter from Harriet Gilkerson, SCDHEC to Giezelle Bennett, EPA Region IV (with attachment). Providing a response to the request for identification of State of South Carolina Applicable or Relevant and Appropriate Requirements (ARARs) that pertain to the International Mineral and Chemical Corp. (IMC) Superfund Site located in Spartanburg, South Carolina. (May 15, 2007)

3.8 Interim Deliverables

1. "Focused Removal Report, Former IMC Fertilizer Site, Spartanburg, South Carolina, Volume 2 of 2," RMT, Inc. (May 2003) [Note: This document, comprised of sampling and analysis data, is not included in the Administrative Record but may be reviewed, by appointment only, at EPA Region IV, Atlanta, Georgia.].
2. Cross-Reference: "Focused Removal Report, Former IMC Fertilizer Site, Spartanburg, South Carolina, Volume 1 of 2," RMT, Inc. (May 2003) [Filed and cited in Appendix H - Focused Removal Report as entry 1 in 3.4 REMEDIAL INVESTIGATION (RI) - Work Plans and Progress Reports].
3. "Refinement of Ecological Chemicals of Potential Concern, Former IMC Fertilizer Site, Spartanburg County, South Carolina," RMT, Inc. (August 2003)
4. "Remedial Investigation and Feasibility Study Health & Safety Plan, IMC Fertilizer Site, Spartanburg, South Carolina," RMT, Inc. (October 2003)
5. "Remedial Investigation and Feasibility Study Sampling and Analysis Plans, IMC Fertilizer Site, Spartanburg, South Carolina," RMT, Inc. (May 2004)

3.10 Remedial Investigation (RI) Reports

1. "Remedial Investigation (RI) Report, Former IMC Fertilizer Site, Spartanburg, South Carolina, Volume 1 of 2," RMT, Inc. (April 2007)

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3.0 REMEDIAL INVESTIGATION (RI)**3.10 Remedial Investigation (RI) Reports**

2. "Remedial Investigation (RI) Report, Former IMC Fertilizer Site, Spartanburg, South Carolina, Volume 2 of 2," RMT, Inc. (April 2007) [Note: A portion of this document, comprised of sampling and analysis data, is not included in the Administrative Record but may be reviewed, by appointment only, at EPA Region IV, Atlanta, Georgia.].

3.11 Health Assessments

1. "Health Consultation, International Minerals and Chemical, Spartanburg, Spartanburg County, South Carolina," Agency for Toxic Substances and Disease Registry (ATSDR). (November 08, 1999)

3.12 Endangerment Assessments

1. "Screening Level Ecological Risk Assessment, IMC Fertilizer Site, Spartanburg, South Carolina," RMT Integrated Environmental Solutions. (March 2002)
2. Letter from Karen Saucier, RMT Integrated Environmental Solutions to William Joyner, EPA Region IV (with attachment). Regarding responses to the technical review comments provided by the USEPA on the revised screening level ecological risk assessment. (March 26, 2002)

4.0 FEASIBILITY STUDY (FS)**4.1 Correspondence**

1. Letter from Dan O. Madison, TRC Environmental Corporation to Giezelle Bennett, USEPA. Subject: Request for extension for submittal of responses to Agency review comments dated December 5, 2013, Focused Feasibility Study For Groundwater. (January 06, 2014)
2. Letter from Giezelle Bennett, USEPA to Jim Brandt, Mosaic. Subject: Approval of the Focused Feasibility Study (FFS) Report, IMC Superfund Site, Spartanburg, SC. (June 02, 2014)

4.2 Sampling and Analysis Data

1. Email from Dan Madison, TRC Solutions to Giezelle Bennett, USEPA (with attachments). Subject: FW: Replacement Pages for IMC FFS Report. (9:09 am). (July 14, 2014)

4.9 Feasibility Study (FS) Reports

1. "Feasibility Study (FS) Report, Former IMC Fertilizer Site, Spartanburg, South Carolina," RMT, Inc. (February 2008)
2. "Focused Feasibility Study (FFS) Report Former IMC Fertilizer Site Spartanburg, South Carolina, July 2013, Revised March 2014 and May 2014," TRC Solutions. (May 2014)

4.10 Proposed Plans for Selected Remedial Action

1. "EPA Proposes Action on International Mineral & Chemical (IMC) Site, Spartanburg, South Carolina," EPA Region IV. (May 2009)
2. "Superfund Proposed Plan Fact Sheet, International Mineral & Chemical (IMC) Site, Spartanburg, South Carolina," EPA Region IV. (June 2014)

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7.0 REMEDIAL ACTION (RA)**7.8 Remedial Action Documents**

1. Letter from Willie Morgan, SCDHEC to John Dickinson, EPA Region IV (with attachment). Providing a copy of the Closure Plan for International Minerals & Chemical Corporation, Spartanburg, South Carolina. (August 14, 1986)

9.0 STATE COORDINATION**9.3 EPA/State Contracts**

1. "Clean Water Act Section 404 Joint Federal and State Application, Former IMC Fertilizer Site, Spartanburg County, South Carolina," RMT. (October 2009)

10.0 ENFORCEMENT**10.11 EPA Administrative Orders**

1. Administrative Order on Consent for Remedial Investigation/Feasibility Study and Removal Action, In the Matter of: IMC Fertilizer Site, North Street Extension Spartanburg, Spartanburg, SC, Vigindustries Respondent, EPA Docket No. CERCLA-01-3753-C. (July 10, 2001)
2. Administrative Settlement Agreement and Order on Consent for Removal Action, In the Matter of: International Minerals and Chemicals Superfund Alternative Site, Spartanburg, Spartanburg County, South Carolina, Vigindustries, Inc. Respondent, CERCLA Docket No. CERCLA-04-2010-3751. (October 03, 2009)

11.0 POTENTIALLY RESPONSIBLE PARTIES (PRP)**11.9 PRP-Specific Correspondence**

1. Letter from Robert Jourdan, USEPA Region IV to Michael Daneker, Arnold and Porter. Notifying Vigindustries, Inc. of potential liability for remedial investigation/feasibility study (RI/FS) and demand for payment in reference to the IMC Fertilizer Site, Spartanburg, South Carolina. (June 21, 2001)
2. Letter from Rosalind Brown, USEPA to Michael Daneker, International Mineral & Chemical, Inc. (with attachment). Regarding the demand for reimbursement of past costs expended at the IMC Fertilizer Superfund Site. (July 13, 2005) [Note: Due to CONFIDENTIAL nature, a portion of this document has been withheld. Withheld material is available for, Judicial review only, at EPA Region IV, Atlanta, Georgia.]

13.0 COMMUNITY RELATIONS**13.1 Correspondence**

1. Letter from Chuck Claunch, Duke Energy Carolinas to Harold Mitchell, Jr., ReGenesis, Subject: Arkwright Community. (February 25, 2014)

13.6 Community Relations Plans

1. "Community Involvement Plan, International Minerals and Chemicals Site, Spartanburg, Spartanburg County, South Carolina," Black & Veatch Special Projects Corp. (July 27, 2001)

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13.0 COMMUNITY RELATIONS

13.9 Fact Sheets

1. Cross Reference: "Superfund Proposed Plan Fact Sheet, International Mineral & Chemical (IMC) Site, Spartanburg, South Carolina," EPA Region IV. (June 2014) [Filed and cited in Entry Number 2 of 4.10 FEASIBILITY STUDY (FS) - Proposed Plans for Selected Remedial Action]

17.0 SITE MANAGEMENT RECORDS

17.4 Site Audio-Visuals

1. Letter of transmittal from Dan Madison, RMT, Inc. to Giezelle Bennett, EPA Region IV (with attachments). Regarding photographs of soils from borings that penetrated wastewater/process residuals at the Former IMC Fertilizer Site. (May 26, 2005)

APPENDIX B
STATEMENT OF WORK

REMEDIAL DESIGN/REMEDIAL ACTION

STATEMENT OF WORK

INTERNATIONAL MINERAL AND CHEMICAL SUPERFUND SITE

Spartanburg, Spartanburg County, State of South Carolina

EPA Region 4

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9. REFERENCES21

1. INTRODUCTION

- 1.1 Purpose of the SOW.** This Statement of Work (SOW) sets forth the procedures and requirements for implementing the Work.
- 1.2 Structure of the SOW.** Section 2 (Community Involvement) sets forth EPA's and Settling Defendant's responsibilities for community involvement. Section 3 (Remedial Design) sets forth the process for developing the RD, which includes the submission of specified primary deliverables. Section 4 (Remedial Action) sets forth requirements regarding the completion of the RA, including primary deliverables related to completion of the RA. Section 5 (Reporting) sets forth Settling Defendant's reporting obligations. Section 6 (Deliverables) describes the content of the supporting deliverables and the general requirements regarding Settling Defendant's 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, and Section 9 (References) provides a list of references, including URLs.
- 1.3** The Scope of the Remedy includes the actions described in Part 2, Section 12 of the ROD, including installation of infiltration galleries in and downgradient of the former sulfuric acid area to address the low pH soil and groundwater; periodic application of a neutralizing solution; periodic sampling and analysis of monitoring wells; and implementation of institutional controls for site-wide groundwater use restrictions.
- 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 "11" means a paragraph 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. During the RI/FS phase, EPA developed a Community Involvement Plan (CIP) for the Site, dated July 27, 2001. 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 that are not already addressed or provided for in the existing CIP, including, if applicable, any Technical Assistance Grant (TAG), any use of the Technical Assistance Services for Communities (TASC) contract, and any Technical Assistance Plan (TAP).

- (b) If requested by EPA, Settling Defendant shall support EPA's community involvement activities. This may include providing online access to initial submissions and updates of deliverables to (1) Community Advisory Groups, (2) 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 Settling Defendant responsibilities for community involvement activities. All community involvement activities conducted by Settling Defendant at EPA's request are subject to EPA's oversight.
- (c) **Settling Defendant's CI Coordinator.** If requested by EPA, Settling Defendant shall, within 15 days, designate and notify EPA of Settling Defendant's Community Involvement Coordinator (Settling Defendant's CI Coordinator). Settling Defendant may hire a contractor for this purpose. Settling Defendant's notice must include the name, title, and qualifications of Settling Defendant's CI Coordinator. Settling Defendant's CI Coordinator is responsible for providing support regarding EPA's community involvement activities, including coordinating with EPA's CI Coordinator regarding responses to the public's inquiries about the Site.

2.2 Settling Defendant's Responsibilities for Technical Assistance

- (a) If EPA requests, Settling Defendant shall arrange for a qualified community group to receive the services of a technical advisor(s) who can: (i) help group members understand Site cleanup issues (specifically, to interpret and comment on Site-related documents developed under this SOW); and (ii) share this information with others in the community. The technical advisor(s) will be independent from Settling Defendant. Settling Defendant's TAP assistance will be limited to no more than \$50,000, except as provided in ¶ 2.2(d)(3), and will end when EPA issues the Certification of Work Completion under ¶ 4.7. Settling Defendant shall implement this requirement under a TAP.
- (b) If EPA requests, Settling Defendant shall cooperate with EPA in soliciting interest from community groups regarding a TAP at the Site. If more than one community group expresses an interest in a TAP, Settling Defendant shall cooperate with EPA in encouraging the groups to submit a single joint application for a TAP.
- (c) If EPA requests, Settling Defendant shall, within 30 days, submit a proposed TAP for EPA approval. The TAP must describe Settling Defendant's plans for the qualified community group to receive independent technical assistance. The TAP must include the following elements:
 - (1) For Settling Defendant to arrange for publication of a notice in local media that it has received a Letter of Intent (LOI) to submit an application for a TAP. The notice should explain how other interested groups may also try to combine efforts

with the LOI group or submit their own applications, by a reasonable specified deadline;

- (2) For Settling Defendant to review the application(s) received and determine the eligibility of the community group(s). The proposed TAP must include eligibility criteria as follows:
 - (i) A community group is eligible if it is: (a) comprised of people who are affected by the release or threatened release at the Site; and (b) able to demonstrate its ability to adequately and responsibly manage TAP-related responsibilities.
 - (ii) A community group is ineligible if it is: (a) a potentially responsible party (PRP) at the Site, represents such a PRP, or receives money or services from a PRP (other than through the TAP); (b) affiliated with a national organization; (c) an academic institution; (d) a political subdivision; (e) a tribal government; (f) a group established or presently sustained by any of the above ineligible entities; or (g) a group in which any of the above ineligible entities is represented.
- (3) For Settling Defendant to notify EPA of its determination on eligibility of the applicant group(s) to ensure that the determination is consistent with the SOW before notifying the group(s);
- (4) If more than one community group submits a timely application, the requirement that Settling Defendant review each application and evaluate each application based on the following elements:
 - (i) The extent to which the group is representative of those persons affected by the Site; and
 - (ii) The effectiveness of the group's proposed system for managing TAP-related responsibilities, including its plans for working with its technical advisor and for sharing Site-related information with other members of the community.
- (5) For Settling Defendant to document its evaluation of, and its selection of, a qualified community group, and to brief EPA regarding its evaluation process and choice. EPA may review Settling Defendant's evaluation process to determine whether the process satisfactorily follows the criteria in ¶ 2.2(c)(4). TAP assistance may be awarded to only one qualified group at a time;
- (6) For Settling Defendant to notify all applicants about Settling Defendant's decision;
- (7) For Settling Defendant to designate a person (TAP Coordinator) to be its primary contact with the selected community group;
- (8) A description of Settling Defendant's plans to implement the requirements of 2.2(d) (Agreement with Selected Community Group); and

(9) Requirement that Settling Defendant submit quarterly progress reports regarding the implementation of the TAP.

(d) **Agreement with Selected Community Group**

(1) Settling Defendant shall negotiate an agreement with the selected community group that specifies the duties of Settling Defendant and the community group. The agreement must specify the activities that may be reimbursed under the TAP and the activities that may not be reimbursed under the TAP. The list of allowable activities must be consistent with 40 C.F.R. § 35.4070 (e.g., obtaining the services of an advisor to help the group understand the nature of the environmental and public health hazards at the Site and the various stages of the response action, and communicating Site information to others in the community). The list of non-allowable activities must be consistent with 40 C.F.R. § 35.4075. TAP assistance cannot be used for the following purposes: developing new information (e.g., conducting testing and monitoring activities); activities related to lawsuits or other legal actions, or for attorney fees; community group members' travel or tuition/training expenses; political activity and lobbying; community group activities such as parties and celebrations; or reopening or challenging final EPA decisions.

(2) The agreement must provide that Settling Defendant's review of the Community Group's recommended choice for Technical Advisor will be limited, consistent with 40 C.F.R. §§ 35.4190 and 35.4195, to criteria such as whether the advisor has relevant knowledge, academic training, and relevant experience as well as the ability to translate technical information into terms the community can understand.

(3) The agreement must provide that the Community Group is eligible for additional TAP assistance, if it can demonstrate that it has effectively managed its TAP responsibilities to date, and that at least three of the following 10 factors are satisfied:

(i) EPA expects that more than eight years (beginning with the initiation of the RI/FS) will pass before construction completion will be achieved;

(ii) EPA requires treatability studies or evaluation of new and innovative technologies;

(iii) EPA reopens the ROD;

(iv) The public health assessment (or related activities) for the Site indicates the need for further health investigations or health-related activities;

(v) After Settling Defendant's selection of the Community Group for the TAP, EPA designates additional operable units at the Site;

- (vi) EPA issues an Explanation of Significant Differences for the ROD;
 - (vii) After Settling Defendant's selection of the Community Group, a legislative or regulatory change results in significant new Site information;
 - (viii) Significant public concern about the Site exists, as evidenced by, e.g., relatively large turnouts at meetings, the need for multiple meetings, the need for numerous copies of documents to inform community members, etc.;
 - (ix) Any other factor that, in EPA's judgment, indicates that the Site is unusually complex; or
 - (x) A RI/FS costing at least \$2 million was performed at the Site.
- (4) Settling Defendant is entitled to retain any unobligated TAP funds upon EPA's Certification of Work Completion under ¶ 4.7.
- (5) Settling Defendant shall submit a draft of the proposed agreement to EPA for its comments.

3. REMEDIAL DESIGN

3.1 RD Work Plan. Settling Defendant shall submit a Remedial Design (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 monitoring of the Remedial Action (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 anticipated problems (e.g., data gaps);
- (f) Descriptions of any applicable permitting requirements and other regulatory requirements;
- (g) Description of plans for obtaining access in connection with the Work, such as property acquisition, property leases, and/or easements; and

- (h) All supporting deliverables required to accompany the RDWP as specified in the RD Schedule set forth in ¶ 7.2 ("RD Schedule").
- 3.2** Settling Defendant shall meet with EPA to discuss design issues as necessary or as directed by EPA.
- 3.3 Preliminary (30%) RD.** Settling Defendant 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) All supporting deliverables required to accompany the Preliminary RD as specified in the RD Schedule.
- 3.4 Pre-Final (95%) RD.** Settling Defendant 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 Preliminary RD. The Pre-final RD will serve as the approved Final (100%) RD if EPA approves the Pre-final RD without comments. The Pre-final RD must include:
- (a) A complete set of construction drawings and specifications that are: (1) certified by a registered professional engineer; (2) suitable for procurement; and (3) follow the Construction Specifications Institute's Master Format 2012 or other suitable format approved by EPA;
 - (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 RD;

- (d) A specification for photographic documentation of the RA; and
- (e) Supporting deliverables as specified in the RD Schedule.

3.5 Final (100%) RD. Settling Defendant 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 deliverables.

4. REMEDIAL ACTION

4.1 RA Work Plan. Settling Defendant shall submit a RA Work Plan (RAWP) for EPA approval that includes:

- (a) A proposed RA Construction Schedule using one of the following formats: critical path method, Gantt chart, or PERT;
- (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 Meetings and Inspections

- (a) **Preconstruction Conference.** Settling Defendant 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). Settling Defendant shall document and distribute conference outcomes to all Parties.
- (b) **Periodic Meetings.** During the construction portion of the RA (RA Construction), Settling Defendant shall meet regularly with EPA, and others as directed or determined by EPA, to discuss construction issues. Settling Defendant shall provide an agenda to EPA regarding construction issues prior to each meeting. Settling Defendant shall document and distribute meeting outcomes to all Parties.
- (c) **Inspections**
 - (1) EPA shall conduct periodic inspections of the Work. The Supervising Contractor or other designee shall accompany EPA during inspections.
 - (2) With the exception of steel-toed footwear, Settling Defendant shall provide personal protective equipment needed for EPA personnel and any oversight officials to access the Site and perform their oversight duties.

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

4.3 Emergency Response and Reporting

- (a) **Emergency Response and Reporting.** If any event occurs during performance of the Work that causes or threatens to cause a release of Waste Material on, at, or from the Site and that either constitutes an emergency situation or that may present an immediate threat to public health or welfare or the environment, Settling Defendant shall: (1) immediately take all appropriate action to prevent, abate, or minimize such release or threat of a release; (2) within 24 hours notify the authorized EPA officer (as specified in ¶ 4.3(c)) orally; and (3) take such actions in consultation with the authorized EPA officer and in accordance with all applicable provisions of the Health and Safety Plan, the Emergency Response Plan, and any other deliverable approved by EPA under the SOW.
- (b) **Release Reporting.** Upon the occurrence of any event during performance of the Work that Settling Defendant is required to report pursuant to Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community Right-to-know Act (EPCRA), 42 U.S.C. § 11004, Settling Defendant shall, in accordance with regulatory requirements, notify the authorized EPA officer orally.
- (c) The "authorized EPA officer" for purposes of the oral notifications and consultations under ¶ 4.3(a) and ¶ 4.3(b) is the EPA Project Coordinator, the EPA Alternate Project Coordinator (if the EPA Project Coordinator is unavailable), or the EPA Emergency Response Team, Region 4 (if neither EPA Project Coordinator is available).
- (d) For any event covered by ¶ 4.3(a) and ¶ 4.3(b), Settling Defendant or a designated representative 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 ¶ 4.3 are in addition to the reporting required by CERCLA § 103 or EPCRA § 304.

4.4 Off-Site Shipments

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

4.5 RA Construction Completion

- (a) For purposes of this ¶ 4.5, "RA Construction" comprises, for any RA that involves the construction and operation of a system to achieve Performance Standards (for example, groundwater or surface water restoration remedies), the construction of such system and the performance of all activities necessary for the system to function properly and as designed.
- (b) **Inspection of Constructed Remedy.** Settling Defendant shall schedule an inspection to review the construction and operation of the system and to review whether the system is functioning properly and as designed. The inspection must be attended by Settling Defendant and EPA or their representatives. A re-inspection must be conducted if requested by EPA.
- (c) **Shakedown Period.** There shall be a shakedown period of up to one year, unless extended in accordance with 40 C.F.R. § 300.435(f)(2), for EPA to review whether the remedy is functioning properly and performing as designed. Settling Defendant shall provide such information as EPA requests for such review.

- (d) **RA Report.** Following the shakedown period, Settling Defendant shall submit an "RA Report" requesting EPA's determination that RA Construction has been completed. The RA Report must: (1) include statements by a registered professional engineer and by Settling Defendant's Project Coordinator that construction of the system is complete and that the system is functioning properly and as designed; (2) include a demonstration, and supporting documentation, that construction of the system is complete and that the system is functioning properly and as designed; (3) include as-built drawings signed and sealed by a registered professional engineer; (4) be prepared in accordance with Chapter 2 (Remedial Action Completion) of EPA's Close Out Procedures for NPL Sites guidance (May 2011); and (5) be certified in accordance with ¶ 6.5 (Certification).
- (e) If EPA determines that RA Construction is not complete, EPA shall so notify Settling Defendant. EPA's notice must include a description of, and schedule for, the activities that Settling Defendant must perform to complete RA Construction. EPA's notice may include a schedule for completion of such activities or may require Settling Defendant to submit a proposed schedule for EPA approval. Settling Defendant shall perform all activities described in the EPA notice in accordance with the schedule.
- (f) If EPA determines, based on the initial or any subsequent RA Report, that RA Construction is complete, EPA shall so notify Settling Defendant.

4.6 Certification of RA Completion

- (a) **Monitoring Report.** Settling Defendant shall submit a Monitoring Report to EPA requesting EPA's Certification of RA Completion. The report must: (1) include certifications by a registered professional engineer; 2) be prepared in accordance with Chapter 2 (Remedial Action Completion) of EPA's Close Out Procedures for NPL Sites guidance (May 2011); 3) contain monitoring data to demonstrate that Performance Standards have been achieved; and 4) be certified in accordance with ¶ 6.5 (Certification).
- (b) If EPA concludes that the RA is not Complete, EPA shall so notify Settling Defendant. EPA's notice must include a description of any deficiencies. EPA's notice may include a schedule for addressing such deficiencies or may require Settling Defendant to submit a schedule for EPA approval. Settling Defendant shall perform all activities described in the notice in accordance with the schedule.
- (c) If EPA concludes, based on the initial or any subsequent Monitoring Report requesting Certification of RA Completion, that the RA is Complete, EPA shall so certify to Settling Defendant. This certification will constitute the Certification of RA Completion for purposes of the CD, including Section XV of the CD (Covenants by Plaintiff). Certification of RA Completion will not affect Settling Defendant's remaining obligations under the CD.

4.7 Certification of Work Completion

- (a) **Work Completion Inspection.** Settling Defendant shall schedule an inspection for the purpose of obtaining EPA's Certification of Work Completion. The inspection must be attended by Settling Defendant and EPA or their representatives.
- (b) **Work Completion Report.** Following the inspection, Settling Defendant 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 Settling Defendant's Project Coordinator that the Work, including all O&M activities, is complete; and (2) be certified in accordance with ¶ 6.5 (Certification).
- (c) If EPA concludes that the Work is not complete, EPA shall so notify Settling Defendant. EPA's notice must include a description of the activities that Settling Defendant must perform to complete the Work. EPA's notice must include specifications and a schedule for such activities or must require Settling Defendant to submit specifications and a schedule for EPA approval. Settling Defendant 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 Settling Defendant. 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 XIX (Retention of Records) and XVIII (Access to Information) of the CD; (3) Institutional Controls obligations as provided in the Institutional Control Implementation and Assurance Plan (ICIAP); and (4) 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, Settling Defendant shall submit progress reports to EPA on a monthly basis, or on a less frequent basis if 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 Settling Defendant;
- (c) A description of all deliverables that Settling Defendant submitted to EPA;

- (d) A description of all activities relating to RA Construction that are scheduled for the next six weeks;
- (e) An updated RA Construction Schedule, together with information regarding percentage of completion, delays encountered or anticipated that may affect the future schedule for implementation of the Work, and a description of efforts made to mitigate those delays or anticipated delays;
- (f) A description of any modifications to the work plans or other schedules that Settling Defendant has proposed or that have been approved by EPA; and
- (g) A description of all activities undertaken in support of the Community Involvement Plan (CIP) during the reporting period and those to be undertaken in the next six weeks.

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, Settling Defendant shall notify EPA of such change at least 7 days before performance of the activity.

6. DELIVERABLES

6.1 Applicability. Settling Defendant 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 ¶ 90 of the CD, all deliverables under this SOW must be in writing unless otherwise specified.

6.3 All deliverables must be submitted by the deadlines in the RD Schedule or RA Schedule, as applicable. Settling Defendant shall submit all deliverables to EPA in electronic form. If any deliverable includes maps, drawings, or other exhibits that are larger than 8.5" by 11", Settling Defendant shall also provide the EPA Project Coordinator with paper copies of such exhibits. All deliverables that may be submitted in electronic form may be submitted by e- mail, unless specified otherwise by EPA, this CD, or this SOW.

6.4 Technical Specifications

- (a) Sampling and monitoring data should be submitted in standard regional Electronic Data Deliverable (EDD) format, as set forth at <http://www.epa.gov/region4/superfund/allresource/edd/edd.html>. 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 methods. Projected coordinates may optionally be included but must be documented. Spatial data should be accompanied by metadata, and such metadata should be compliant with the Federal Geographic Data Committee (FGDC) Content Standard for Digital Geospatial Metadata and its EPA profile, the EPA Geospatial Metadata Technical Specification. An add-on metadata editor for ESRI software, the EPA Metadata Editor (EME), complies with these FGDC and EPA metadata requirements and is available at <https://edg.epa.gov/EME/>.
- (c) Each file must include an attribute name for each site unit or sub-unit submitted. Consult <http://www.epa.gov/geospatial/policies.html> for any further available guidance on attribute identification and naming.
- (d) Spatial data submitted by Settling Defendant 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 Settling Defendant's Project Coordinator, or other responsible official of Settling Defendant, 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 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), Settling Defendant shall, within 30 days or such longer time as specified by EPA in such notice, correct the deficiencies and resubmit the deliverable for approval. Within 5 days of receiving such notice, Settling Defendant may request an extension of the time to resubmit. 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 Settling Defendant 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) Settling Defendant 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 Settling Defendant of any liability for stipulated penalties under Section XIV (Stipulated Penalties) of the CD.

6.7 Supporting Deliverables. Settling Defendant shall submit each of the following supporting deliverables for EPA approval, except as specifically provided. The deliverables must be submitted, for the first time, by the deadlines in the RD Schedule or the RA Schedule, or any other EPA-approved schedule, as applicable. Settling Defendant shall develop the deliverables in accordance with all applicable regulations, guidances, and policies (see Section 9 (References)). Settling Defendant shall update each of these supporting deliverables as necessary or appropriate during the course of the Work, and 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. Settling Defendant 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 dates for meetings 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 ¶ 4.3(b) (Release Reporting) in the event of a release of hazardous substances requiring reporting under Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community Right-to-know Act (EPCRA), 42 U.S.C. § 11004; and
 - (5) A description of all necessary actions to ensure compliance with Paragraph 11 (Emergencies and Releases) of the CD in the event of an occurrence during the performance of the Work that causes or threatens a release of Waste Material from the Site that constitutes an emergency or may present an immediate threat to public health or welfare or the environment.
- (c) **Field Sampling Plan.** The Field Sampling Plan (FSP) supplements the QAPP and 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. Settling Defendant 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) addresses sample analysis and data handling regarding the Work. The QAPP must include a detailed explanation of Settling Defendant's quality assurance, quality control, and chain of custody procedures for all treatability, design, compliance, and monitoring samples. Settling Defendant shall develop the QAPP in accordance with *EPA Requirements for Quality Assurance Project Plans*, QA/R-5, EPA/240/B-01/003 (Mar. 2001, reissued May 2006); *Guidance for Quality Assurance Project Plans.*, QA/G-5, EPA/240/R 02/009 (Dec. 2002); and *Uniform Federal Policy for Quality Assurance Project Plans*, Parts 1-3,

EPA/505/B-04/900A through 900C (Mar. 2005). The QAPP also must include procedures:

- (1) To ensure that EPA and its authorized representative have reasonable access to laboratories used by Settling Defendant in implementing the CD (Settling Defendant's Labs);
 - (2) To ensure that Settling Defendant's Labs analyze all samples submitted by EPA pursuant to the QAPP for quality assurance monitoring;
 - (3) To ensure that Settling Defendant's Labs perform all analyses using EPA-accepted methods (i.e., the methods documented in *USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis*, ILM05.4 (Dec. 2006); *USEPA Contract Laboratory Program Statement of Work for Organic Analysis*, SOM01.2 (amended Apr. 2007); and *USEPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods (Multi-Media, Multi-Concentration)*, ISM01.2 (Jan. 2010)) or other methods acceptable to EPA;
 - (4) To ensure that Settling Defendant's Labs participate in an EPA-accepted QA/QC program or other program QA/QC acceptable to EPA;
 - (5) For Settling Defendant to provide EPA with notice at least 21 days prior to any sample collection activity;
 - (6) For Settling Defendant to provide split samples and/or duplicate samples to EPA and DHEC upon request;
 - (7) For EPA to take any additional samples that they deem necessary;
 - (8) For EPA to provide to Settling Defendant, upon request, split samples and/or duplicate samples in connection with EPA's oversight sampling; and
 - (9) For Settling Defendant to submit to EPA 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 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 any other Site-related requirements;
 - (4) Description of verification sampling procedures;
 - (5) Description of deliverables that will be generated in connection with monitoring, including sampling schedules, laboratory records, monitoring reports, and monthly and annual reports to EPA and State agencies; and
 - (6) Description of proposed additional monitoring and data collection actions (such as increases in frequency of monitoring, and/or installation of additional monitoring devices in the affected areas) in the event that results from monitoring devices indicate changed conditions (such as higher than expected concentrations of the contaminants of concern or groundwater contaminant plume movement).
- (f) **Construction Quality Assurance/Quality Control Plan (CQA/QCP).** The purpose of the Construction Quality Assurance Plan (CQAP) is to describe planned and systemic activities that provide confidence that the RA construction will satisfy all plans, specifications, and related requirements, including quality objectives. The purpose of the Construction Quality Control Plan (CQCP) is to describe the activities to verify that RA construction has satisfied all plans, specifications, and related requirements, including quality objectives. The CQA/QCP must:
- (1) Identify, and describe the responsibilities of, the organizations and personnel implementing the CQA/QCP;
 - (2) Describe the Performance Standards (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. Settling Defendant shall develop the O&M Plan in accordance with *Operation and Maintenance in the Superfund Program*, OSWER 9200.1 37FS, EPA/540/F-01/004 (May 2001). The O&M Plan must include the following additional requirements:
- (1) Description of 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. Settling Defendant shall develop the O&M Manual in accordance with *Operation and Maintenance in the Superfund Program*, OSWER 9200.1 37FS, EPA/540/F-01/004 (May 2001).
- (i) **Institutional Controls Implementation and Assurance Plan.** The Institutional Controls Implementation and Assurance Plan (ICIAP) describes plans to implement, maintain, and enforce the Institutional Controls (ICs) at the Site. Settling Defendant 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.
- (j) **Periodic Review Support Plan.** The Periodic Review Support Plan addresses the studies and investigations that Settling Defendant 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"). Settling Defendant 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.

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. Settling Defendant 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	Deliverable or Task	Included Supporting Deliverables	¶ Ref.	Deadline
1	TAP	Deliverable		2.2(c)	30 days after EPA request
2	Designate TAP Coordinator	Task		2.2(c)(7)	15 days after EPA request
3	RDWP	Deliverable	HASP, ERP, FSP, QAPP, SWMP, TSWP	3.1	60 days after EPA's Authorization to Proceed regarding Supervising Contractor under CD ¶ 9.c

4	Preliminary (30%) RD	Deliverable	CQA/QCP, O&M Plan, O&M Manual, ICIAP	3.3	60 days after EPA approval of Final RDWP
5	Pre-final (90/95%) RD	Deliverable	Same as above	3.4	90 days after EPA comments on Preliminary or Intermediate RD
6	Final (100%) RD	Deliverable	Same as above	3.5	30 days after EPA comments on Pre-final RD

7.3 RA Schedule

	Description of Deliverable / Task	Deliverable or Task	¶ Ref.	Deadline
1	Award RA contract	Task	9.c of CD	45 days after EPA Notice of Authorization to Proceed with RA
2	RAWP	Deliverable	4.1	30 days after EPA Notice of Authorization to Proceed with RA
3	Pre-Construction Conference	Task	4.2(a)	10 days after Approval of RAWP
4	Start of Construction	Task	4.2(a)	30 days after Approval of RAWP
5	Completion of Construction	Task		
6	Pre-final Inspection	Task	4.5(b)	10 days after completion of construction
7	Pre-final Inspection Report	Deliverable	4.5(d)	45 days after completion of Pre-final Inspection
8	Final Inspection	Task		10 days after Completion of Work identified in Pre-final Inspection Report
9	RA Report/Monitoring Report	Deliverable	4.5(d)	60 days after Final Inspection
10	Work Completion Report	Deliverable	4.7(b)	
11	Periodic Review Support Plan	Deliverable	6.7(j)	Five years after Start of RA Construction

8. STATE PARTICIPATION

- 8.1 Copies.** Settling Defendant shall, at any time it sends a deliverable to EPA, send a copy of such deliverable to the State. EPA shall, at any time it sends a notice, authorization, approval, disapproval, or certification to Settling Defendant, 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 approval or disapproval of the Construction Phase under ¶ 4.5 (RA Construction Completion), 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 ¶ 4.7 (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 9345.3-03FS (Jan. 1992).

- (h) Permits and Permit Equivalency Processes for CERCLA On-Site Response Actions, OSWER 9355.7-03 (Feb. 1992).
- (i) Guidance for Conducting Treatability Studies under CERCLA, OSWER 9380.3-10, EPA/540/R-92/071A (Nov. 1992).
- (j) National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, 40 C.F.R. Part 300 (Oct. 1994).
- (k) Guidance for Scoping the Remedial Design, OSWER 9355.0-43, EPA/540/R-95/025 (Mar. 1995).
- (l) Remedial Design/Remedial Action Handbook, OSWER 9355.0-04B, EPA/540/R-95/059 (June 1995).
- (m) EPA Guidance for Data Quality Assessment, Practical Methods for Data Analysis, QA/G-9, EPA/600/R-96/084 (July 2000).
- (n) Operation and Maintenance in the Superfund Program, OSWER 9200.1-37FS, EPA/540/F-01/004 (May 2001).
- (o) Comprehensive Five-year Review Guidance, OSWER 9355.7-03B-P, 540-R-01-007 (June 2001).
- (p) Guidance for Quality Assurance Project Plans, QA/G-5, EPA/240/R-02/009 (Dec. 2002).
- (q) Institutional Controls: Third Party Beneficiary Rights in Proprietary Controls (Apr. 2004).
- (r) Quality Systems for Environmental Data and Technology Programs -- Requirements with Guidance for Use, ANSI/ASQ E4-2004 (2004).
- (s) Uniform Federal Policy for Quality Assurance Project Plans, Parts 1-3, EPA/505/B-04/900A through 900C (Mar. 2005).
- (t) Superfund Community Involvement Handbook, EPA/540/K-05/003 (Apr. 2005).
- (u) EPA Guidance on Systematic Planning Using the Data Quality Objectives Process, QA/G-4, EPA/240/B-06/001 (Feb. 2006).
- (v) EPA Requirements for Quality Assurance Project Plans, QA/R-5, EPA/240/B-01/003 (Mar. 2001, reissued May 2006).
- (w) EPA Requirements for Quality Management Plans, QA/R-2, EPA/240/B-01/002 (Mar. 2001, reissued May 2006).

- (x) USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, ILM05.4 (Dec. 2006).
- (y) USEPA Contract Laboratory Program Statement of Work for Organic Analysis, SOM01.2 (amended Apr. 2007).
- (z) EPA National Geospatial Data Policy, CIO Policy Transmittal 05-002 (Aug. 2008), available at <http://www.epa.gov/geospatial/policies.html> and [http://www.epa.gov/geospatial/does/National Geospatial Data Policy.pdf](http://www.epa.gov/geospatial/does/National_Geospatial_Data_Policy.pdf).
- (aa) Summary of Key Existing EPA CERCLA Policies for Groundwater Restoration, OSWER 9283.1-33 (June 2009).
- (bb) Principles for Greener Cleanups (Aug. 2009), available at <http://www.epa.gov/oswer/greenercleanups/>.
- (cc) Providing Communities with Opportunities for Independent Technical Assistance in Superfund Settlements, Interim (Sep. 2009).
- (dd) USEPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods (Multi-Media, Multi-Concentration), ISM01.2 (Jan. 2010).
- (ee) Close Out Procedures for National Priorities List Sites, OSWER 9320.2-22 (May 2011).
- (ff) Groundwater Road Map: Recommended Process for Restoring Contaminated Groundwater at Superfund Sites, OSWER 9283.1-34 (July 2011).
- (gg) Recommended Evaluation of Institutional Controls: Supplement to the "Comprehensive Five-Year Review Guidance," OSWER 9355.7-18 (Sep. 2011).
- (hh) Construction Specifications Institute's MasterFormat 2012, available from the Construction Specifications Institute, www.csinet.org/masterformat.
- (ii) Updated Superfund Response and Settlement Approach for Sites Using the Superfund Alternative Approach, OSWER 9200.2-125 (Sep. 2012)
- (jj) Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites, OSWER 9355.0-89, EPA/540/R-09/001 (Dec. 2012).
- (kk) Institutional Controls: A Guide to Preparing Institutional Controls Implementation and Assurance Plans at Contaminated Sites, OSWER 9200.0-77, EPA/540/R-09/02 (Dec. 2012).

- (ll) EPA's Emergency Responder Health and Safety Manual, OSWER 9285.3-12 (July 2005 and updates), <http://www.epaosc.org/HealthSafetyManual/manual-index.htm>
- (mm) Broader Application of Remedial Design and Remedial Action Pilot Project Lessons Learned, OSWER 9200.2-129 (Feb. 2013).
- (nn) Guidance for Evaluating Completion of Groundwater Restoration Remedial Actions, OSWER 9355.0-129 (Nov. 2013).
- (oo) Groundwater Remedy Completion Strategy: Moving Forward with the End in Mind, OSWER 9200.2-144 (May 2014).

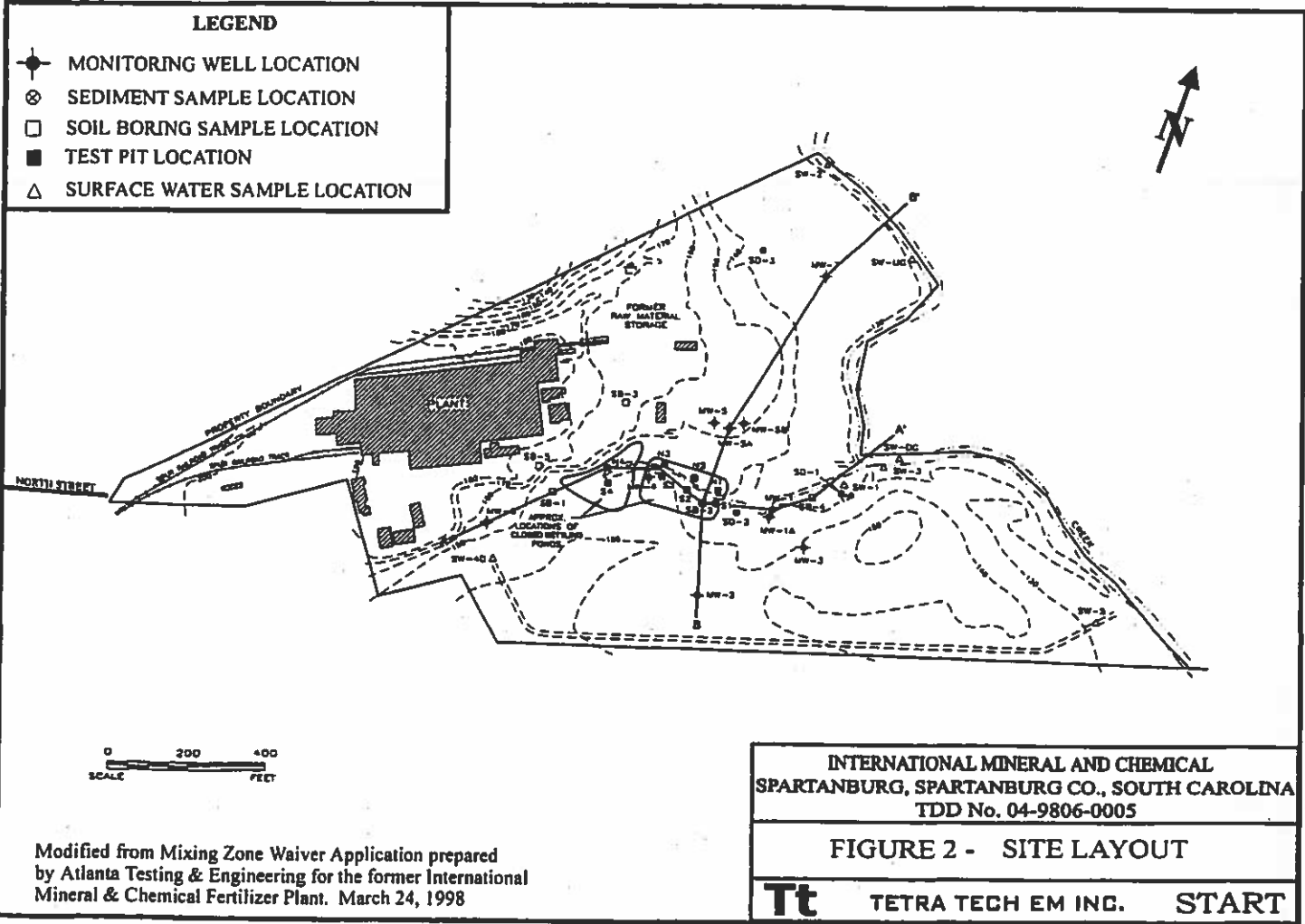
9.2 A more complete list may be found on the following EPA Web pages:

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

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

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

APPENDIX C
SITE MAP



Modified from Mixing Zone Waiver Application prepared by Atlanta Testing & Engineering for the former International Mineral & Chemical Fertilizer Plant. March 24, 1998

APPENDIX D

DRAFT FORM OF PROPRIETARY CONTROLS

WHEREAS, it is the intention of all parties that the USEPA is a third party beneficiary of such restrictions and such restrictions shall be enforceable by the USEPA, the Department, and their successor agencies.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS that Declarant hereby declares and covenants on behalf of itself and its successors and assigns that the Property described in **Exhibit A** shall be held, mortgaged, transferred, sold, conveyed, leased, occupied, and used subject to the following covenants and restrictions, which shall touch and concern and run with the title to the Property.

1. Declarant covenants for itself, its successors and assigns that Property shall not be used for the following purposes without prior written approval from the Department or its successor agency: residential; agricultural; child day care facilities; schools; or elder care facilities.
2. Declarant covenants for itself, its successors and assigns that Property shall not be used for recreational purposes without written approval from the USEPA and the Department or its successor agency;
3. Declarant covenants for itself, its successors and assigns that groundwater from the Property that exceeds Maximum Contaminant Levels is prohibited from all uses that could result in human exposure without prior written approval from the USEPA and the Department or its successor agency.
4. Declarant covenants for itself, its successors and assigns that the Property shall not be used in a manner that would interfere with the groundwater remediation system without prior written approval from the USEPA and the Department or its successor agency.
5. Declarant covenants for itself, its successors and assigns that no groundwater wells shall be drilled or otherwise constructed on the Property without prior written approval from the USEPA and the Department or its successor agency.
6. Declarant covenants for itself, its successors and assigns that the USEPA, the Department, their successor agencies, and all other parties performing response actions under the USEPA's and the Department's oversight, shall be provided access to oversee the response action and for: i) inspecting the Property; ii) monitoring; iii) verifying information; iv) sampling; v) assessing the need for additional response or quality control practices; vi) assessing Declarant's compliance with the CD; vii) assessing compliance with land use restrictions required by the CD; viii) taking samples as necessary to enforce the CD; ix) implementing the work required under the CD; and x) inspecting and copying records. So long as Declarant is owner of the Property, USEPA, the Department, their successor agencies and all other parties performing response actions under the USEPA and the Department's oversight shall be accompanied by Declarant or Declarant's designee while at the Property. However, nothing in the preceding sentence limits any authority of the USEPA, the Department, or their successor agencies 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

hazardous substances at the Property, or to direct or order such action, or seek an order from a court, to protect human health and the environment or to prevent, respond to, or minimize an actual or threatened release of hazardous substances on, at, or from the Property.

7. The covenants and restrictions set forth herein shall run with the title to the Property and shall be binding upon Declarant, its successors and assigns and any future owners of the Property. Declarant, its successors and assigns, and any future owners of the Property, shall include the following notice on all deeds, mortgages, plats, or any legal instruments used to convey any interest in the Property (failure to comply with this paragraph does not impair the validity or enforceability of these covenants):

NOTICE: This Property is Subject to Declaration of Covenants and Restrictions recorded on the ____ day of _____ 201_, at Book _____ Page _____, Officer of the Register of Deeds, and any subsequent Amendments Recorded thereto.

8. Declarant shall file this Declaration with the Deed for the Property and the Map in a timely fashion in the Office of Register of Deeds of Spartanburg County, South Carolina, and shall re-record it at any time the Department may require to preserve its rights. Declarant shall pay all recording costs and taxes necessary to record this document in the public records. Declarant shall provide a filed, stamped copy of same to the USEPA and the Department within sixty (60) days of recordation. The copy shall show the date and Book and Page number where the Declaration has been recorded. The contact person for the USEPA is Director, Superfund Division, USEPA Region 4, 61 Forsyth Street SW, Atlanta, GA 30303-8960. The contact person for the Department is Director, Division of Site Assessment, Remediation, and Revitalization, SCDHEC, 2600 Bull Street, Columbia, SC 29201.
9. This Declaration shall remain in place until such time as the USEPA and the Department have made a written determination that the covenants and restrictions set forth herein are no longer necessary. This Declaration shall not be amended without the written consent of the USEPA or the Department or their successor agencies. The Department shall not consent to any amendment or termination of the Declaration without the consent of the USEPA.
10. Declarant, its successors and assigns, and any future owners of the Property, shall submit to the Department and the USEPA a statement of maintenance of the covenants and restrictions as set forth herein annually by May 31st of every year. This reporting requirement is the obligation of each owner of the Property, or a portion of the Property, as of May 31st of each year. Once title to all or a portion of the Property has been conveyed by Declarant or any subsequent owner, such predecessor in title shall no longer have any responsibility for submission of the Report with respect to the Property it previously owned. Declarant, its successors and assigns, and any future owners of the Property, shall provide the following notice in each Report:

“The covenants and restrictions applicable to this Property are being properly maintained, and no development or use which is inconsistent with the Declaration of Covenants and Restrictions has occurred since the date of the last annual report.”

- 11. It is expressly agreed that the USEPA is not the recipient of a real property interest but is a third party beneficiary of the Declaration of Covenants and Restrictions and, as such, has the rights of enforcement.
- 12. This Declaration only applies to the Property expressly identified in Exhibit A and does not impair the USEPA or the Department’s authority with respect to the Property or other real property under the control of Declarant.

IN WITNESS WHEREOF, Declarant has caused this instrument to be executed as of the date first above written.

Vigindustries Inc.
A STATE OF DELAWARE CORPORATION

WITNESSES:

By:

STATE OF _____

COUNTY OF _____

I, _____ (Notary Public), do hereby certify that, _____, an authorized representative of Vigindustries Inc., personally appeared before me this day and acknowledged the due execution of the foregoing instrument, on behalf of the Corporation.

Witness my hand and official seal this _____ day of _____, 20__.

Notary Public for _____

My Commission Expires: _____

IN WITNESS WHEREOF, the Agency has caused this instrument to be executed as of the date first above written.

South Carolina Department of Health and Environmental Control

WITNESSES:

By:

Daphne G. Neel, Chief
Bureau of Land and Waste Management
Environmental Quality Control

STATE OF _____

COUNTY OF _____

I, _____ (Notary Public), do hereby certify that, _____, Daphne G. Neel, Chief of the Bureau Land and Waste Management in the South Carolina Department of Health and Environmental Control, personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

Witness my hand and official seal this _____ day of _____, 20__.

Notary Public for _____

My Commission Expires: _____

This Declaration is hereby approved by the United States Environmental Protection Agency as a third party beneficiary this ____ day of _____, 2016.

United States Environmental Protection Agency

By: _____
Franklin E. Hill.
Director, Superfund Division
U.S. Environmental Protection Agency
Region 4