

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7**

IN THE MATTER OF:)
Jasper County Site)
Superfund Site)
Jasper County, Missouri)
)
Farmland Industries Missouri)
Remediation Trust,)
)
Respondent,)
)
)
Proceeding Under Sections 104,)
106, 107 & 122 of the)
Comprehensive Environmental)
Response, Compensation, and)
Liability Act, as amended,)
42 U.S.C. §§ 9604, 9606, 9607)
and 9622.)
_____)

**ADMINISTRATIVE SETTLEMENT AND
ORDER ON CONSENT FOR
TREATABILITY STUDY**

U.S. EPA Region 7
Docket No. CERCLA-07-2016-0004

**ADMINISTRATIVE SETTLEMENT AND ORDER ON CONSENT FOR
TREATABILITY STUDY**

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I. JURISDICTION AND GENERAL PROVISIONS

1. This Settlement Agreement and Administrative Order on Consent (“Settlement Agreement”) is entered into voluntarily by the United States Environmental Protection Agency (“EPA”) and Farmland Industries Missouri Remediation Trust (hereinafter, “Respondent”). This Settlement Agreement provides that Respondent shall undertake a Treatability Study (“TS”), including various procedures and technical analyses as set forth in the TS Work Plan, attached as Appendix A hereto. EPA plans to use the TS results in the Remedial Design of the Remedial Action selected in EPA’s 2004 Amendment to the Record of Decision for the Jasper County Superfund Site (“Site”), Operable Unit No. 01, as modified by the amendment to the Record of Decision 2013, (“ROD”); and, more specifically, the EPA selected remedial action for the Respondent’s Property. The property subject to this Settlement Agreement is identified as parcel 18100200000003000 by Jasper County, known as the Farmland Industries, Gypstack Property, located at 301 State Line Avenue, Joplin, Missouri 64802, and more specifically described in the attached legal description, Appendix B hereto, (“Property”). In performing its obligations under this Settlement, the Respondent is subject to a Trust Agreement dated April 30, 2004, attached as Appendix C hereto. In addition, Respondent shall reimburse the United States for certain response costs that it incurs, as provided herein.

2. This Settlement Agreement is issued under the authority vested in the President of the United States by Sections 104, 106, 107, and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (“CERCLA”), as amended, 42 U.S.C. §§ 9604, 9606, 9607, and 9622. This authority was delegated to the EPA Administrator by Executive Order 12580 (52 *Fed. Reg.* 2923, Jan. 29, 1987) and further delegated to EPA Regional Administrators by EPA Delegation No. 14-14-C. This authority was further re-delegated by the Regional Administrator of EPA Region 7 to the Superfund Division Director,

with the concurrence of Regional Counsel, by Regional delegation R7-14-014-C, dated January 1, 1995.

3. EPA and Respondent recognize that this Settlement Agreement has been negotiated in good faith and that the actions undertaken by Respondent in accordance with this Settlement Agreement do not constitute an admission of any liability. Respondent does not admit, and retains the right to controvert in any subsequent proceedings other than proceedings to implement or enforce this Settlement Agreement, the validity of the findings of fact, conclusions of law, and determinations in this Settlement Agreement. Respondent agrees to comply with, and be bound by, the terms of this Settlement Agreement and further agrees that it will not contest the basis or validity of this Settlement Agreement or its terms.

4. The objectives of EPA and Respondent in entering into this Settlement Agreement are to protect public health or welfare or the environment at the Property by the design of response actions at the Property by Respondent, to reimburse response costs of EPA, and to resolve the claims of EPA against Respondent as provided in this Settlement Agreement.

5. In accordance with the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300, *et seq.*, as amended (“NCP”), and Section 121(f)(1)(F) of CERCLA, 42 U.S.C. § 9621(f)(1)(F), EPA notified the State of Missouri (the “State”) on or about October 29, 2015, of negotiations with potentially responsible parties regarding the implementation of this Treatability Study component of the remedial design for the Site, and EPA has provided the State with an opportunity to participate in such negotiations and be a party to this Settlement Agreement.

6. In accordance with Section 122(j)(1) of CERCLA, 42 U.S.C. § 9622(j)(1), EPA notified the U.S. Department of Interior, Fish and Wildlife Service, on October 29, 2015, of

negotiations with potentially responsible parties regarding the release of hazardous substances that may have resulted in injury to the natural resources under federal trusteeship and encouraged the trustee to participate in the negotiation of this Settlement Agreement.

II. PARTIES BOUND

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

8. The signatories to this Settlement Agreement certify that they are authorized to execute and legally bind the parties they represent.

9. Respondent shall ensure that its contractors, subcontractors, and representatives receive a copy of this Settlement Agreement and comply with this Settlement Agreement. Respondent shall be responsible for any noncompliance with this Settlement Agreement. With regard to the activities undertaken pursuant to this Settlement Agreement, each contractor and subcontractor of Respondent shall be deemed to be in a contractual relationship with Respondent within the meaning of Section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3).

III. DEFINITIONS

10. Unless otherwise expressly provided herein, terms used in this Settlement Agreement that are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or its implementing regulations. Whenever terms listed below are used in this Settlement Agreement, in the documents attached to this Settlement Agreement, or incorporated by reference into this Settlement Agreement, the following definitions shall apply:

- a. “CERCLA” shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. § 9601, *et seq.*
- b. “Day” shall mean a calendar day. In computing any period of time under this Settlement Agreement, where the last day would fall on a Saturday, Sunday, or federal holiday, this period shall run until the close of business of the next working day.
- c. “Effective Date” shall be the effective date of this Settlement Agreement as provided in Section XXVII (Effective Date and Subsequent Modification).
- d. “EPA” shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.
- e. “MDNR” shall mean the Missouri Department of Natural Resources and any successor departments or agencies of the State.
- f. “Future Response Costs” shall mean a lump sum payment of \$4,000, to be paid to EPA in accordance with paragraph 59, herein. The Parties agree that this lump sum payment is for all costs, including, but not limited to, direct and indirect costs, that the United States incurs in reviewing or developing plans, reports and other deliverables pursuant to this Settlement Agreement, in overseeing implementation of the Work, or otherwise implementing, overseeing, or enforcing this Settlement Agreement, including payroll costs, contractor costs, travel costs, laboratory costs, the costs incurred pursuant to Paragraphs 38 (Emergency Response) and Paragraph 82 (Work Takeover), and the costs incurred by the United States in enforcing the terms of this Settlement Agreement, including all costs incurred in connection with Dispute Resolution pursuant to Section XVI (Dispute Resolution) and all litigation costs.
- g. “EPA Hazardous Substance Superfund” shall mean the Hazardous Substance Superfund established by the Internal Revenue Code, 26 U.S.C. § 9507.
- h. “Interest” shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually on October 1 of each year, in accordance with CERCLA § 107(a), 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.¹
- i. “National Contingency Plan” or “NCP” shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105

¹ The Superfund currently is invested in 52-week MK notes. The interest rate for these MK notes changes on October 1 of each year. Current and historical rates are available online at http://www.epa.gov/budget/finstatement/superfund/int_rate.htm.

of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, *et seq.*, including any amendments thereto.

j. “Paragraph” shall mean a portion of this Settlement Agreement identified by an Arabic numeral.

k. “Parties” shall mean EPA and Respondent.

l. “Property” shall mean the Respondent’s real property identified as parcel 18100200000003000 by Jasper County, known as the Farmland Industries, Gypstack Property, located at 301 State Line Avenue, Joplin, Missouri 64802, and more specifically described in Appendix B hereto. The portion of the Property to be used for the repository described in paragraphs 13 and 14, Section IV, Findings of Facts, herein, is identified on the attached map included with Appendix B hereto.

m. “Record of Decision” or “ROD” shall mean the EPA Record of Decision relating to OU 01 at the Site, and all attachments thereto that the Regional Administrator, EPA Region 7, or his/her delegate, signed 2004, as amended in 2013. The 2013 ROD Amendment is attached as Appendix D hereto.

n. “Treatability Study Work Plan” or “TS Work Plan” shall mean the plan attached hereto as Appendix A.

o. “Section” shall mean a portion of this Settlement Agreement identified by a Roman numeral and includes one or more paragraphs.

p. “Site” shall mean the Jasper County Superfund Site, encompassing approximately 250 square miles, located at Jasper County, Missouri, as described in the ROD.

q. “State” shall mean the State of Missouri.

r. “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 the Solid Waste Disposal Act (also known as the Resource Conservation and Recovery Act or “RCRA”), 42 U.S.C. § 6903(27); and 4) any “hazardous substance” under § 260.500 of the Revised Statutes of Missouri (“RSMo”).

s. “Work” shall mean all activities and obligations Respondent is required to perform under this Settlement Agreement including the TS Work Plan, except those required by Section XIII (Record Retention).

IV. FINDINGS OF FACT

11. The Respondent owns certain real property, the Property, also known as the Farmland Industries, Gypstack Property, specifically described in Exhibit A, which contains the legal description of Respondent's Property. The Property contains about 165 acres all located within the Site. Approximately 65 acres of the Property is covered with mining wastes and waste gypsum that are subject to the Work under this Settlement Agreement.

12. EPA has taken actions at the Jasper County Superfund Site in response to a release or a substantial threat of a release of hazardous substances within the Site. On August 30, 1990 (55 Fed. Reg. 35502), pursuant to section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed the Site on the National Priorities List, set forth at 40 C.F.R. Part 300, Appendix B. Pursuant to the ROD, the EPA selected a remedial action for this Site and Respondent's Property.

13. On May 11, 2011, an EF 5 Tornado struck the city of Joplin causing widespread destruction of over 7,000 residences and substantial loss of life. EPA determined in the 2013 ROD Amendment that the remedial action selected in 2004 should be changed to include excavation of contaminated materials (lead mining wastes) discovered in the footprint of these destroyed homes in the Expedited Debris Removal (EDR) area in Joplin. According to the ROD Amendment, EPA authorized and funded the City of Joplin under a Cooperative Agreement to excavate and dispose of this contaminated material from the EDR area, see 2013 ROD Amendment, attached as Appendix D hereto. EPA determined in the ROD Amendment that Respondent's Property and its associated Gypstack waste pile is an appropriate repository for disposal of these contaminated materials.

14. The Respondent's Property requires remediation. The EPA selected remedial action is to contain the mining wastes and Gypstack repository at the Respondent's Property, install an engineered cap and control run-off and leachate. In addition to containment and final capping, under the 2013 ROD Amendment, Section 5.2, EPA Region 7 determined that that Gypstack waste pile is the appropriate location for the contaminated materials from the EDR area in Joplin described in the preceding paragraph, and the new aboveground, long-term waste repository for disposal of contaminated soils from undeveloped areas in the Site, see Appendix D hereto.

15. The Site is in the Missouri portion of the Tri-State Mining District, which also includes portions of Kansas and Oklahoma. Historically, lead and zinc mining, milling and smelting operations generated about 150 million tons of mining and milling wastes within the Site, of which about 11 million tons remain on-site and some of these mining and milling wastes are on about 65 acres of the Respondent's Property.

16. The Remedial Investigation (RI) conducted at the Site identified that the mining wastes contain concentrations of heavy metals, primarily cadmium, lead, and zinc, (i.e., the contaminants of concern or COCs) that cause unacceptable risk to human health and the environment. In addition, the RI identified COCs in the surface waters due to migration of mining wastes into surface water bodies. The levels of COCs in surface waters at this Site cause unacceptable risk to aquatic life.

17. Mining and milling wastes and soil samples collected from the property adjacent to the Respondent's Property contain levels of cadmium, lead, and zinc at levels exceeding the action levels EPA selected for the remedy, i.e., concentrations at 40 parts per million (ppm) cadmium, 400 ppm lead, and 6,400 ppm zinc. The data from mining and milling wastes and soil

samples collected at adjacent properties show the maximum levels of the COCs at 290 ppm cadmium, 8,000 ppm lead, and 24,200 ppm zinc. In addition, mining and milling wastes and contaminated run-off from such wastes on the Respondent's Property are eroding and migrating to Short Creek, which contributes to contamination in the sediments. Sediment samples collected from Short Creek downstream of Respondent's Property contain levels of the COCs above the action levels established by EPA in the ROD, which are 17 ppm cadmium, 220 ppm lead, and 2,950 ppm zinc. The highest contaminant levels of the COCs observed in sediment samples from Short Creek downgradient of Respondent's Property are 211 ppm cadmium, 5,870 ppm lead, and 24,800 ppm zinc.

V. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the Findings of Fact set forth above, as well as the Administrative Record supporting this Settlement Agreement, EPA has determined that:

18. The Jasper County Superfund Site is a "facility" as defined in Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

19. The contamination found at the Site, as identified in the Findings of Fact above, includes cadmium, lead, and zinc, which are all "hazardous substance(s)" as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

20. Respondent is a "person" as defined in Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

21. Respondent is a responsible party as defined in Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), and is subject to this Settlement Agreement under Section 106(a) of CERCLA, 42 U.S.C. § 9606(a). Specifically, Respondent is the "owner" and "operator" of the Property, which is included in the Site and is a "facility," as defined by Section 101(20) of CERCLA, 42

U.S.C. § 9601(20), and within the meaning of Section 107(a)(1) of CERCLA, 42 U.S.C. § 9607(a)(1).

22. The conditions described in Paragraphs 15, 16 and 17 of the Findings of Fact above constitute an actual or threatened “release” of a hazardous substance from the facility as defined by Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

VI. SETTLEMENT AGREEMENT AND ORDER

23. Based upon the foregoing Findings of Fact, Conclusions of Law, Determinations, and the Administrative Record for this Site, it is hereby Ordered and Agreed that Respondent shall comply with all provisions of this Settlement Agreement, including, but not limited to, all attachments to this Settlement Agreement and all documents incorporated by reference into this Settlement Agreement.

VII. DESIGNATED PROJECT MANAGER AND COORDINATORS

24. Respondent shall retain one or more contractor(s) to perform the Work and shall notify EPA of the name(s) and qualifications of such contractor(s) within 30 days of the Effective Date. Respondent shall also notify EPA of the name(s) and qualification(s) of any other contractor(s) or subcontractor(s) retained to perform the Work at least 15 days prior to commencement of such Work. EPA retains the right to disapprove of any or all of the contractors and/or subcontractors retained by Respondent. If EPA disapproves of a selected contractor, Respondent shall retain a different contractor and shall notify EPA of that contractor’s name and qualifications within 15 days of EPA’s disapproval. With respect to any contractor proposed to be Supervising Contractor, Respondent shall demonstrate that the proposed contractor has a quality system that complies with ANSI/ASQC E4-1994, “Specifications and Guidelines for Quality Systems for Environmental Data Collection and

Environmental Technology Programs,” (American National Standard, January 5, 1995), by submitting a copy of the proposed contractor’s Quality Management Plan (QMP). The QMP should be prepared in accordance with “EPA Requirements for Quality Management Plans (QA/R-2)” (EPA/240/B-01/002, March 2001) or equivalent documentation as determined by EPA. Any decision not to require submission of the contractor’s QMP should be documented in a memorandum from the EPA’s Project Coordinator and Regional Quality Assurance personnel to the Site file.

25. Respondent has designated, and EPA has not disapproved, the following individual as Project Coordinator, who shall be responsible for administration of all actions by Respondent required by this Settlement Agreement:

Kamyar Manesh, Trustee
FI Missouri Remediation Trust
c/o SELS Administrative Services LLC
11206 Thompson Avenue
Lenexa, Kansas 66219

Receipt by Respondent’s Project Coordinator of any notice or communication from EPA relating to this Settlement Agreement shall constitute receipt by Respondent. To the greatest extent possible, the Project Coordinator shall be present on-site or readily available during site work.

26. EPA has designated Mark Doolan of the Region 7, Superfund Division as its Project Coordinator for this Site. Except as otherwise provided in this Settlement Agreement, Respondent shall direct all submissions required by this Settlement Agreement to EPA’s Project Coordinator, at 110 W. Church, Webb City, Missouri 64870 by express mail, unless other delivery method is specified by EPA’s Project Coordinator.

27. EPA's Project Coordinator shall have the authority lawfully vested in a Remedial Project Manager ("RPM") and On-Scene Coordinator ("OSC") by the NCP. In addition, EPA's Project Coordinator shall have the authority, consistent with the NCP, to halt, conduct, or direct any Work required by this Settlement Agreement or to take or direct any other necessary response action when the Project Coordinator determines that conditions at the Site may present an immediate endangerment to public health, welfare, or the environment. Absence of the EPA Project Coordinator from the area under study pursuant to this Settlement Agreement shall not be cause for the stoppage or delay of Work unless specifically directed by the EPA Project Coordinator.

28. EPA and Respondent shall have the right, subject to Paragraphs 24 and 25, to change their respective designated Project Coordinators. Respondent shall notify EPA 30 days before such a change is made. The initial notification may be made orally, but shall be promptly followed by a written notice.

VIII. WORK TO BE PERFORMED

29. Respondent shall perform all actions necessary to implement the Work in accordance with the TS Work Plan, see Appendix A hereto, and this Settlement Agreement.

30. TS Work Plan and Implementation.

a. Respondent shall implement the TS Work Plan in accordance with the schedule included in the TS Work Plan, see Appendix A hereto.

b. Submission of Deliverables

i. Respondents shall direct all submissions required by this Settlement Agreement and TS Work Plan to the EPA Project Coordinator in accordance with the schedule set forth in the TS Work Plan, see Appendix A hereto.

ii. Respondent shall submit all deliverables in electronic form, and provide one hard copy of all submissions.

31. Health and Safety Plan. Within 15 days after the Effective Date, Respondent shall prepare and submit to EPA for review and comment a plan that ensures the protection of the public health and safety during performance of on-Site work under this Settlement Agreement. This plan shall be prepared in accordance with EPA's Standard Operating Safety Guide (PUB 9285.1-03, PB 92-963414, June 1992). In addition, the plan shall comply with all currently applicable Occupational Safety and Health Administration ("OSHA") regulations found at 29 C.F.R. Part 1910. If EPA determines that it is appropriate, the plan shall also include contingency planning. Respondent shall incorporate all changes to the plan recommended by EPA and shall implement the plan during the pendency of the removal action.

32. Respondent shall conduct all work in accordance with the TS Work Plan, the ROD, CERCLA, the NCP, and all applicable EPA guidance. EPA's Project Coordinator shall use his or her best efforts to inform Respondent if new or revised guidances may apply to the Work.

33. Respondent shall perform the tasks and submit the deliverables that the TS Work Plan sets forth. EPA will approve, approve with conditions, modify, or disapprove each deliverable that Respondent submits under this Settlement Agreement and the TS Work Plan, pursuant to Section IX (EPA Approval of Plans). Each deliverable must include all listed items as well as items that the TS Work Plan indicates that Respondent shall prepare and submit to EPA for review and approval.

34. Upon EPA's approval, this Settlement Agreement incorporates any reports, plans, specifications, schedules, and attachments that this Settlement Agreement or the TS Work Plan requires. With the exception of extensions that EPA allows in writing or certain provisions within Section XVII of this Settlement Agreement (*Force Majeure*), any non-compliance with

such EPA-approved reports, plans, specifications, schedules, and attachments shall be considered a violation of this Settlement Agreement and will subject Respondent to stipulated penalties in accordance with Section XVIII of this Settlement Agreement (Stipulated Penalties).

35. If any unanticipated or changed circumstances exist at the Site that may significantly affect the Work or schedule, Respondent shall notify the EPA Project Coordinator by telephone within 24 hours of discovery of such circumstances. Such notification is in addition to any notification required by XVII (Force Majeure).

36. If EPA determines that additional tasks, including, but not limited to, additional investigatory work or engineering evaluation, are necessary to complete the Work, EPA shall notify Respondent in writing. Respondent shall submit a workplan to EPA for the completion of such additional tasks within 30 days after receipt of such notice, or such longer time as EPA agrees. The workplan shall be completed in accordance with the same standards, specifications, and requirements of other deliverables pursuant to this Settlement Agreement. EPA will review and comment on, as well as approve, approve with conditions, modify, or disapprove the workplan pursuant to Section IX (EPA Approval of Plans). Upon approval or approval with modifications of the workplan, Respondent shall implement the additional work in accordance with the schedule of the approved workplan. Failure to comply with this Subsection, including, but not limited to, failure to submit a satisfactory workplan, shall subject Respondent to stipulated penalties as set forth in Section XVIII (Stipulated Penalties).

37. Quality Assurance and Sampling.

a. Respondent shall use quality assurance/quality control and other technical activities and chain of custody procedures for all treatability samples in accordance with "EPA Requirements for Quality Assurance Project Plans (QA/R5)" (EPA/240/B-01/003, March 2001, reissued May 2006), Guidance for "Guidance for Quality Assurance Project Plans (QA/G-5)" (EPA/240/R-02/009, December 2002), and subsequent amendments to such guidelines upon notification by EPA to Respondent of such amendment. Amended

guidelines shall apply only to procedures conducted after such notification and sampling. Respondent shall only use laboratories that have a documented Quality System that complies with ANSI/ASQC E-4 1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" (American National Standard, January 5, 1995), and "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B-01/002, March 2001), or equivalent documentation as determined by EPA.

b. Upon request, Respondent shall allow split or duplicate samples to be taken by EPA. Respondent shall notify EPA not less than 28 days in advance of any sample collection activity, unless shorter notice is agreed to by EPA. In addition, EPA shall have the right to take any additional samples that EPA deems necessary. Upon request, EPA shall allow Respondent to take split or duplicate samples of any samples EPA takes as part of EPA's oversight of Respondent's implementation of the Work.

c. Respondent shall submit to EPA, in the next monthly progress report, copies of the results of all sampling and/or tests or other data obtained or generated by or on behalf of Respondent with respect to the Site or the implementation of this Settlement Agreement unless EPA agrees otherwise.

d. Notwithstanding any provision of this Settlement Agreement, the United States 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.

38. Emergency Response and Notification of Releases.

a. In the event of any action or occurrence during performance of the Work that causes or threatens a release of Waste Material from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Respondent shall immediately take all appropriate action to prevent, abate, or minimize such release or threat of release and shall immediately notify the EPA Project Coordinator, or, in the event of his/her unavailability, the EPA emergency spill line at 913-281-0991. Respondent shall take such actions in consultation with EPA's Project Coordinator, or other available authorized EPA officer, and in accordance with all applicable provisions of this Settlement Agreement, including, but not limited to, the Health and Safety Plans, the Contingency Plans, and any other applicable plans or documents developed pursuant to the TS Work Plan. In the event that Respondent fails to take appropriate response action as required by this Paragraph, and EPA takes such action instead, Respondent shall reimburse EPA all costs of the response action not inconsistent with the NCP, pursuant to Section XV (Payment of Response Costs).

b. In addition, in the event of any release of a hazardous substance from the Site, Respondent shall immediately notify the National Response Center at (800) 424-8802. Respondent shall submit a written report to EPA within 7 days after each release, setting forth the events that occurred and the measures taken, or to be taken,

to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, and not in lieu of, reporting under Section 103(c) of CERCLA, 42 U.S.C. § 9603(c), and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. § 11004, *et seq.*

IX. EPA APPROVAL OF PLANS, REPORTS AND OTHER DELIVERABLES

39. Initial Submissions. After review of any plan, report, or other item that is required to be submitted for approval pursuant to this Settlement Agreement, EPA will: (a) approve, in whole or in part, the submission; (b) approve the submission upon specified conditions; (c) disapprove, in whole or in part, the submission; or (d) any combination of the foregoing.

40. Modify Initial Submission. EPA also may modify the initial submission to cure deficiencies in the submission if (1) EPA determines that disapproving the submission and awaiting a resubmission would cause substantial disruption to the Work, or (2) 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 plan, report, or deliverable.

41. Resubmissions. Upon receipt of a notice of disapproval under Paragraph 39 (c) or (d), or if required by a notice of approval upon specified conditions under Paragraph 39 (b), Respondent shall, within 15 days or such longer time as specified by EPA in such notice, correct the deficiencies and resubmit the plan, report, or other deliverable for approval. After review of the resubmitted plan, report, or other deliverable, EPA may: (a) approve, in whole or in part, the resubmission; (b) approve the resubmission upon specified conditions; (c) modify the resubmission; (d) disapprove, in whole or in part, the resubmission, requiring Respondent to correct the deficiencies; or (e) any combination of the foregoing.

42. Material Defects. If an initially submitted or resubmitted plan, report, or other deliverable contains a material defect, and the plan, report, or other deliverable is disapproved or modified by EPA under Paragraph 39, 40 or 41 due to such material defect, then the material defect shall constitute a lack of compliance for purposes of Paragraph 71, Stipulated Penalties. The provisions of Section XVI (Dispute Resolution) and Section XVIII (Stipulated Penalties) shall govern the accrual and payment of any stipulated penalties regarding Respondent' submissions under this Section.

43. Implementation. Upon approval, approval upon conditions, or modification by EPA under Paragraph 39 (Initial Submissions), Paragraph 40 (Modified Initial Submission) or Paragraph 41 (Resubmissions), of any plan, report, or other deliverable, or any portion thereof:

a. such plan, report, or other deliverable, or portion thereof, shall be incorporated into and enforceable under this Settlement Agreement; and

b. Respondent shall take any action required by such plan, report, or other deliverable, or portion thereof, subject only to its right to invoke the Dispute Resolution procedures set forth in Section XVI (Dispute Resolution) with respect to the modifications or conditions made by EPA. The implementation of any non-deficient portion of a plan, report, or other deliverable submitted or resubmitted under Paragraph 39, 40 or 41 shall not relieve Respondent of any liability for stipulated penalties under Section XVIII (Stipulated Penalties).

X. PROGRESS REPORTS

44. Reporting. In addition to any other requirement of this Settlement Agreement, Respondent shall submit to EPA one copy of written monthly progress reports that: (a) describe the actions that have been taken toward achieving compliance with this Settlement Agreement during the previous month; (b) include a summary of all results of sampling and tests and all other data received or generated by Respondent or its contractors or agents in the previous month; (c) identify all plans, reports, and other deliverables required by this Settlement Agreement completed and submitted during the previous month; (d) describe all actions,

including, but not limited to, data collection and implementation of work plans, that are scheduled for the next six weeks and provide other information relating to the progress of construction, including, but not limited to, critical path diagrams, Gantt charts and Pert charts; (e) include information regarding percentage of completion, unresolved 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; and (f) include any modifications to the work plans or other schedules that Respondent has proposed to EPA or that have been approved by EPA. Respondent shall submit these progress reports to EPA by the tenth day of every month following the Effective Date until EPA notifies Respondent pursuant to Paragraph 109 (Notice of Completion of Work). If requested by EPA, Respondent shall also provide briefings for EPA to discuss the progress of the Work.

45. Respondent shall submit one (1) copy of all plans, reports, or other deliverables required by this Settlement Agreement, or any approved work plan. Upon request by EPA, Respondent shall submit such documents in electronic form. All data evidencing Property conditions shall be submitted to EPA in electronic form.

46. Final Report. Within 90 days after completion of all Work required by this Settlement Agreement, Respondent shall submit for EPA review and approval a final report summarizing the actions taken to comply with this Settlement Agreement. The final report shall conform, at a minimum, with the requirements set forth in Section 300.165 of the NCP entitled "OSC Reports." The final report shall include the following certification by a responsible corporate official of the Respondent:

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.

XI. SITE ACCESS

47. Respondent owns or controls the Property at this Site where access is needed to implement this Settlement Agreement. Respondent shall, commencing on the Effective Date, provide EPA, the State, the City of Joplin and their representatives, including contractors, with access at all reasonable times to the Property to conduct any activity related to this Settlement Agreement and for any remedial actions in accordance with the ROD, as amended, from the effective date of this Settlement Agreement and for two years after the Notice of Completion of the Work, Paragraph 109 herein. Respondent shall, at least 30 days prior to the conveyance of any interest in real property at the Site, give written notice to the transferee that the property is subject to this Settlement Agreement and written notice to EPA and the State of the proposed conveyance, including the name and address of the transferee. Respondent also agrees to require that its successors comply with the immediately preceding sentence, this Section, and Section XII (Access to Information).

48. Notwithstanding any provision of this Settlement Agreement, EPA and the State retain all of their access authorities and rights including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

XII. ACCESS TO INFORMATION

49. Respondent shall provide to EPA and the State, upon request, copies of all records, reports, documents and other information including in such electronic format (herein "Records") within its possession or control or that of its contractors or agents relating to activities at the Site or to the implementation of this Settlement Agreement, including, but not

limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Respondent shall also make available to EPA and the State, for purposes of investigation, information gathering, or testimony, its employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

50. Respondent may assert business confidentiality claims covering part or all of the documents or information submitted to EPA and the State under this Settlement Agreement 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). 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 Records submitted to EPA and the State, or if EPA has notified Respondent that the Records are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such Records without further notice to Respondent. Respondent shall segregate and clearly identify all Records submitted under this Settlement Agreement for which Respondent asserts business confidentiality claims.

51. Respondent may assert that certain Records are privileged under the attorney-client privilege or any other privilege recognized by federal law. If the Respondent asserts such a privilege in lieu of providing Records, it shall provide EPA and the State with the following: (a) the title of the Record; (b) the date of the Record; (c) the name and title of the author of the Record; (d) the name and title of each addressee and recipient; (e) a description of the contents of the Record; and (f) the privilege asserted by Respondent. If a claim of privilege applies only to a portion of a Record, the Record shall be provided to EPA in redacted form to mask the privileged

portion only. Respondent shall retain all Records that they claim to be privileged until EPA has had a reasonable opportunity to challenge the privilege claim and any such challenge has been resolved in Respondent's favor. However, no Record created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged or confidential.

52. No claim of confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other documents or information evidencing conditions at, or around, the Site.

XIII. RECORD RETENTION

53. During the pendency of this Settlement Agreement and for a minimum of 10 years after Respondent's receipt of EPA's notification pursuant to Section XXVIII (Notice of Completion of Work), Respondent shall preserve and retain all non-identical copies of Records now in its possession or control or which come into its possession or control that relate in any manner to the performance of the Work or the liability of any person under CERCLA with respect to the Site. Respondent must retain, and also instruct its contractors and agents to preserve, all non-identical copies of the last draft or final version of any Records (including Records in electronic form) now in its possession or control or that come into its possession or control that relate in any manner to the performance of the Work, provided, however, that each Respondent (and its contractor and agents) must retain, in addition, copies of all data generated during performance of the Work and not contained in the aforementioned Records to be retained. Each of the above record retention requirements shall apply regardless of any corporate retention policy to the contrary.

54. At the conclusion of this document retention period, Respondent shall notify EPA and the State at least 90 days prior to the destruction of any such Record and, upon request by EPA or the State, Respondent shall deliver any such Record to EPA or the State. Respondent may assert that certain Records are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Respondent asserts such a privilege, they shall provide EPA with the following: (a) the title of the Record; (b) the date of the Record; (c) the name and title, affiliation (e.g., company or firm) of the author of the Record; (d) the name and title of each addressee and recipient; (e) a description of the subject of the Record; and (f) the privilege asserted by Respondent. If a claim of privilege applies only to a portion of a Record, the Record shall be provided to EPA in redacted form to mask the privileged portion only. Respondent shall retain all Records that they claim to be privileged until EPA has had a reasonable opportunity to challenge the privilege claim and any such challenge has been resolved in Respondent's favor. However, no Record created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

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

XIV. COMPLIANCE WITH OTHER LAWS

56. Respondent shall undertake all action that this Settlement Agreement requires in accordance with the requirements of all applicable local, state, and federal laws and regulations, unless an exemption from such requirements is specifically provided by law or in this Settlement Agreement. The activities conducted pursuant to this Settlement Agreement, if approved by EPA, shall be considered consistent with the NCP.

57. Except as provided in Section 121(e) of CERCLA, 42 U.S.C. § 9621(e), and the NCP, no permit shall be required for any portion of the Work conducted entirely on-site. Where any portion of the Work requires a federal or state permit or approval, Respondent shall submit timely applications and take all other actions necessary to obtain and to comply with all such permits or approvals.

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

XV. PAYMENT OF RESPONSE COSTS

59. Payment for Future Response Costs:

a. Respondent shall pay to EPA the sum of \$4,000 for Future Response Costs to be incurred by EPA within 30 days of the Effective Date of this Settlement Agreement.

b. Respondent shall make such payment by a certified or cashier's check or checks made payable to "EPA Hazardous Substance Superfund," referencing the name and address of the party/parties making payment, the Site name, the EPA Region and Site/Spill ID Number 0736, and the EPA docket number for this action. Respondent shall send the check(s) to: EPA Superfund, U.S. Environmental Protection Agency Superfund Payments – CFC, P.O. Box 979076, St. Louis, Missouri 63197-9000.

c. At the time of payment, Respondent shall send notice that such payment has been made to: Jane Kloeckner, EPA Region 7, Office of Regional Counsel, 11201 Renner Boulevard., Lenexa, Kansas 66219, Regional Comptroller's Office, and EPA Cincinnati Finance Center by email at cinwd_acctsreceivable@epa.gov, or by mail to

EPA Cincinnati Finance Office, 26 W. Martin Luther King Drive, Cincinnati, Ohio 45268. This notice will include copies of the transmittal letter and the check.

d. The total amount that Respondent shall pay pursuant to Subparagraph 59(a) shall be deposited in the Oronogo/Duenweg Mining Belt Superfund Site (a/k/a Jasper County Superfund Site), Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

60. Interest. In the event that said payment for Future Response Costs is not made within 30 days of the Effective Date of this Settlement Agreement, Respondent shall pay Interest on the unpaid balance. The Interest on Future Response Costs shall begin to accrue on due date and shall continue to accrue until the date of payment. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Respondent's failure to make timely payment under this Section, including but not limited to, payment of stipulated penalties pursuant to Section XVIII (Stipulated Penalties).

XVI. DISPUTE RESOLUTION

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

62. If Respondent objects to any EPA action taken pursuant to this Settlement Agreement, it shall notify EPA in writing of its objection(s) within 10 business days after such action, unless the objection(s) has/have been resolved informally. EPA and Respondent shall have 21 days from EPA's receipt of Respondent's written objection(s) to resolve the dispute through formal negotiations (the "Negotiation Period"). The Negotiation Period may be extended at the sole discretion of EPA.

63. Any agreement reached by the Parties pursuant to this Section shall be in writing and shall, upon signature by the Parties, be incorporated into and become an enforceable part of this Settlement Agreement. If the Parties are unable to reach an agreement within the Negotiation Period, an EPA management official at the Superfund Division Director level or higher will issue a written decision on the dispute to Respondent. EPA's decision shall be incorporated into and become an enforceable part of this Settlement Agreement. Following resolution of the dispute, as provided by this Section, Respondent shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with EPA's decision, whichever occurs.

64. The invocation of formal dispute resolution procedures under this Section shall not extend, postpone, or affect in any way any obligation of Respondent under this Settlement Agreement, not directly in dispute, unless EPA otherwise in writing. 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 Paragraph 63. Notwithstanding the stay of payment, stipulated penalties shall accrue from the first day of noncompliance with any applicable provision of this Settlement Agreement. In the event that Respondent does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XVIII (Stipulated Penalties).

XVII. FORCE MAJEURE

65. "Force majeure," for purposes of this Settlement Agreement, is defined as any event arising from causes beyond the control of Respondent, or of any entity controlled by Respondent, including, but not limited to, their contractors and subcontractors, that delays or prevents performance of any obligation under this Settlement Agreement despite Respondent's

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

66. If any event occurs or has occurred that may delay the performance of any obligation under this Settlement Agreement for which Respondent intends or may intend to assert a claim of force majeure, Respondent shall notify the EPA 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 Waste Management Division, EPA Region 7, within 48 Hours of when Respondent first knew that the event might cause a delay. Within two (2) days thereafter, Respondent shall provide in writing to EPA an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Respondent’s rationale for attributing such delay to a force majeure; and a statement as to whether, in the opinion of Respondent, such event may cause or contribute to an endangerment to public health or welfare, or the environment. Respondent shall include with any notice all available documentation supporting their claim that the delay was attributable to a force majeure. Respondent shall be deemed to know of any circumstance of which Respondent, any entity controlled by Respondent, or Respondent’s contractors knew or should have known. Failure to comply with the above requirements regarding an event shall preclude Respondent from

asserting any claim of force majeure regarding that event, provided, however, that if EPA, despite the late notice, is able to assess to its satisfaction whether the event is a force majeure under Paragraph 65 and whether Respondent has exercised its best efforts under Paragraph 65, EPA may, in its unreviewable discretion, excuse in writing Respondent's failure to submit timely notices under this Paragraph.

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

68. If Respondent elects to invoke the dispute resolution procedures set forth in Section XVI (Dispute Resolution), it shall do so no later than 15 days after receipt of EPA's notice. In any such proceeding, Respondent shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Respondent complied with the requirements of Paragraphs 65 and 66. If Respondent carries this burden, the delay at issue shall be deemed not to be a violation by Respondent of the affected obligation of this Settlement Agreement identified to EPA.

XVIII. STIPULATED PENALTIES

69. Respondent shall be liable to EPA for stipulated penalties in the amounts set forth in Paragraphs 70 and 71 for failure to comply with the requirements of this Settlement Agreement specified below, unless excused under Section XVII (Force Majeure). “Compliance” by Respondent shall include completion of the activities under this Settlement Agreement or any work plan or other plan approved under this Settlement Agreement identified below in accordance with all applicable requirements of law, this Settlement Agreement, the TS Work Plan, and any plans, reports or other deliverables approved by EPA pursuant to this Settlement Agreement and within the specified time schedules established by, and approved under, this Settlement Agreement.

70. Stipulated Penalty Amounts - Work.

a. The following stipulated penalties shall accrue per violation per day for any noncompliance identified in Subparagraph 71.b:

<u>Penalty Per Violation (Per Day)</u>	<u>Period of Noncompliance (Days)</u>
\$ 100.00	1-14
\$200.00	15-30
\$350.00	31-60
\$500.00	61 and beyond

b. Compliance Milestones

- **Failure to make timely payment of Future Response Costs**
- **Failure to submit a Health and Safety Plan**

71. Stipulated Penalty Amounts - Reports.

a. The following stipulated penalties shall accrue per violation per day for failure to submit timely or adequate reports and deliverables pursuant to Paragraph 30 of this Settlement Agreement.

<u>Penalty Per Violation (Per Day)</u>	<u>Period of Noncompliance (Days)</u>
\$250.00	1-14
\$500.00	15-30
\$750.00	31-60
\$1,000.00	61 and beyond.

72. In the event that EPA assumes performance of all or any portion of the Work pursuant to Paragraph 82, Work Takeover, Respondent shall be liable for a stipulated penalty in the amount of \$5,000.

73. 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 Section IX (EPA Approval of Plans), during the period, if any, beginning on the 31st day after EPA's receipt of such submission until the date that EPA notifies Respondent of any deficiency; and b) with respect to a decision by the EPA Management Official at the Division Director level or higher, under Paragraph 63 of Section XVI (Dispute Resolution), during the period, if any, beginning on the 21st day after the Negotiation Period begins until the date that the EPA management official issues a final decision regarding such dispute. Penalties shall continue to accrue during any dispute resolution period, and shall be paid within 15 days after the agreement or the receipt of EPA's decision or order.

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

75. Respondent shall pay EPA all penalties accruing under this Section within 30 days of Respondent's receipt from EPA of a demand for payment of the penalties, unless Respondent invokes the dispute resolution procedures under Section XVI (Dispute Resolution). All payments to EPA under this Section shall be paid by certified or cashier's check(s) made payable to "EPA Hazardous Substances Superfund," shall be mailed to

U.S. Environmental Protection Agency
Superfund Payments - CFC
P.O. Box 979076
St. Louis, Missouri 63197-9000

and shall indicate that the payment is for stipulated penalties, and shall reference the EPA Region and Site/Spill ID Number 0736, the EPA Docket Number CERCLA-07-2016-0004, and the name and address of the party/parties making payment. Copies of the check(s) paid pursuant to this Section, and any accompanying transmittal letter(s), shall be sent to EPA Region 7 as provided in Paragraph 59(c).

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

77. Penalties shall continue to accrue during any dispute resolution period but need not be paid until 30 days after the dispute is resolved by agreement or by receipt of EPA's decision.

78. If Respondent fails to pay stipulated penalties when due. Respondent shall pay Interest on the unpaid stipulated penalties as follows: (a) if Respondent has timely invoked dispute resolution such that the obligation to pay stipulated penalties has been stayed pending the outcome of dispute resolution, Interest shall accrue from the date stipulated penalties are due pursuant to Paragraph 73 until the date of payment; and (b) if Respondent fails to timely invoke

dispute resolution, Interest shall accrue from the date of demand under Paragraph 74 until the date of payment. If Respondent fails to pay stipulated penalties and Interest when due, the United States may institute proceedings to collect the penalties and Interest. Nothing in this Settlement Agreement shall be construed as prohibiting, altering, or in any way limiting the ability of EPA to seek any other remedies or sanctions available by virtue of Respondent's violation of this Settlement Agreement or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Sections 106(b) and 122(l) of CERCLA, 42 U.S.C. §§ 9606(b) and 9622(l), and punitive damages pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3); provided, however, that EPA shall not seek civil penalties pursuant to Section 106(b) or 122(l) of CERCLA or punitive damages pursuant to Section 107(c)(3) of CERCLA for any violation for which a stipulated penalty is provided herein, except in the case of a willful violation of this Settlement Agreement or in the event that EPA assumes performance of a portion or all of the Work pursuant to Section XX (Reservation of Rights by EPA, work takeover), Paragraph 82. Notwithstanding any other provision of this Section, EPA may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this Settlement Agreement.

XIX. COVENANTS BY EPA

79. In consideration of the actions that Respondent will perform and the payments that Respondent will make under the terms of this Settlement Agreement, and except as otherwise specifically provided in this Settlement Agreement, EPA covenants not to sue or to take administrative action against Respondent pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606 and 9607(a), for the Work performed under this Settlement Agreement and Future Response Costs. These covenants take effect upon the Effective Date and are conditioned

upon Respondent's complete and satisfactory performance of all obligations under this Settlement Agreement, including, but not limited to, payment of Future Response Costs, pursuant to Section XV (Payment of Response Costs). These covenants extend only to Respondent and do not extend to any other person.

XX. RESERVATION OF RIGHTS BY EPA

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

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

- a. claims based on a failure by Respondent to meet a requirement of this Settlement Agreement;
- b. liability for costs not included within the definition of Future Response Costs;
- c. liability for performance of response action other than the Work including but not limited to Remedial Design and Remedial Action at the Property;
- d. criminal liability;

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

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

g. liability arising from the past, present, or future disposal, release, or threat of release of Waste Materials outside of the Site; and

h. liability for costs incurred, or to be incurred, by the Agency for Toxic Substances and Disease Registry related to the Site.

82. Work Takeover. In the event EPA determines that Respondent has ceased implementation of any portion of the Work, is seriously or repeatedly deficient or late in its performance of the Work, or is implementing the Work in a manner that may cause an endangerment to human health or the environment, EPA may issue a written notice to Respondent and assume the performance of all or any portion(s) of the Work as EPA deems necessary. Respondent may invoke the procedures set forth in Section XVI (Dispute Resolution) to dispute EPA's determination that takeover of the Work is warranted under this Paragraph. However, notwithstanding Respondent's invocation of such dispute resolution procedures, and during the pendency of any such dispute, EPA may in its sole discretion commence and continue a Work Takeover until the earlier of the date that Respondent remedies, to EPA's satisfaction, the circumstances giving rise to EPA's issuance of the relevant Work Takeover Notice, or the date that a written decision terminating such Work Takeover is rendered in accordance with Paragraph 82. Costs that the United States incurs in performing the Work pursuant to this Paragraph shall be considered Future Response Costs that Respondent shall pay pursuant to Section XV (Payment of Response Costs). Notwithstanding any other provision of this Settlement Agreement, EPA retains all authority and reserves all rights to take any and all response actions authorized by law.

XXI. COVENANTS BY RESPONDENT

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

a. any direct or indirect claim for reimbursement from the Hazardous Substance Superfund established by 26 U.S.C. § 9507, based on Sections 106(b)(2), 107, 111, 112, or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law;

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

c. any claim against the United States pursuant to Sections 107 and 113 of CERCLA, 42 U.S.C. §§ 9607 and 9613, relating to the Work or payment of Future Response Costs.

84. The covenants in paragraph 83 shall not apply in the event the United States brings a cause of action or issues an Settlement Agreement pursuant to any of the reservations set forth in Section XX (Reservation of Rights by EPA), other than in Paragraph 81.a (claims for failure to meet a requirement of the Settlement Agreement) or Paragraph 81.d (criminal liability), but only to the extent that Respondent's claims arise from the same response action, response costs, or damages that the United States is seeking pursuant to the applicable reservation.

85. Respondent reserves, and this Settlement Agreement is without prejudice to, claims against the United States subject to the provisions of Chapter 171 of Title 28 of the United States Code, and brought pursuant to any statute other than CERCLA or RCRA and for which the waiver of sovereign immunity is found in a statute other than CERCLA or RCRA, for money damages for injury or loss of property or personal injury or death caused by the negligent

or wrongful act or omission of any employee of the United States, as that term is defined in 28 U.S.C. § 2671, while acting within the scope of his or her office or employment under circumstances where the United States, if a private person, would be liable to the claimant in accordance with the law of the place where the act or omission occurred. However, the foregoing shall not include any claim based on EPA's selection of response actions, or the oversight or approval of Respondent's plans, reports, other deliverables, or activities.

86. Nothing in this Settlement Agreement 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).

87. Claims Against De Micromis Parties. Respondent agrees not to assert any claims and to waive all claims or causes of action (including but not limited to claims or causes of action under Sections 107(a) or 113 of CERCLA) that it may have for all matters relating to the Site against any person where the person's liability to Respondent with respect to the Site is based solely on having arranged for disposal or treatment, or for transport for disposal or treatment, of hazardous substances at the Site, or having accepted for transport for disposal or treatment of hazardous substances at the Site, if all or part of the disposal, treatment, or transport occurred before April 1, 2001, and the total amount of material containing hazardous substances contributed by such person to the Site was less than 110 gallons of liquid materials or 200 pounds of solid materials.

88. The waiver in Paragraph 86 shall not apply with respect to any defense, claim, or cause of action that the Respondent may have against any person meeting the above criteria, if such person asserts a claim or cause of action relating to the Site against the Respondent. This

waiver also shall not apply to any claim or cause of action against any person meeting the above criteria, if EPA determines:

a. that such person has failed to comply with any EPA requests for information or administrative subpoenas issued pursuant to Section 104(e) or 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) or 9622(e), or Section 3007 of RCRA, 42 U.S.C. § 6927, or has impeded or is impeding, through action or inaction, the performance of a response action or natural resource restoration with respect to the Site, or has been convicted of a criminal violation for the conduct to which this waiver would apply and that conviction has not been vitiated on appeal or otherwise; or

b. that the materials containing hazardous substances contributed to the Site by such person have contributed significantly, or could contribute significantly, either individually or in the aggregate, to the cost of response action or natural resource restoration at the Site.

XXII. OTHER CLAIMS

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

90. Except as expressly provided in Paragraphs 86 (Claims Against De Micromis Parties), Section XIX (Covenants Sue by EPA), nothing in this Settlement Agreement constitutes a satisfaction of, or release from, any claim or cause of action against Respondent or any person not a party to this Settlement Agreement, for any liability such person may have under CERCLA, other statutes, or common law, including, but not limited to, any claims of the United States for costs, damages, and interest under Sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607.

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

XXIII. EFFECT OF SETTLEMENT/CONTRIBUTION

92. Except as provided in Paragraph 86 (Claims Against De Micromis Parties), nothing in this Settlement Agreement shall be construed to create any rights in, or grant any cause of action to, any person not a Party to this Settlement Agreement. Except as provided in Section XXI (Covenants by Respondents), 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 which each Party may have with respect to any matter, transaction, or occurrence relating in any way to the Site against any person not a Party hereto. Nothing in this Settlement Agreement 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).

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

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

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

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

97. Effective upon signature of this Settlement Agreement by the Respondent, it agrees that the time period commencing on the date of its signature and ending on the date EPA receives from the Respondent the payment required by Section XV (Payment of Response Costs)

and, if any, Section XVIII (Stipulated Penalties) shall not be included in computing the running of any statute of limitations potentially applicable to any action brought by the United States related to the “matters addressed” as defined in Paragraph 93 and that, in any action brought by the United States related to the “matters addressed,” the Respondent will not assert, and may not maintain, any defense or claim based upon principles of statute of limitations, waiver, laches, estoppel, or other defense based on the passage of time during such period. If EPA gives notice to Respondent that it will not make this Settlement Agreement effective, the statute of limitations shall begin to run again commencing ninety days after the date such notice is sent by EPA.

XXIV. INDEMNIFICATION

98. Respondent shall indemnify, save, and hold harmless the United States, its officials, agents, contractors, subcontractors, employees, and representatives from any and all claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, or subcontractors, in carrying out actions pursuant to this Settlement Agreement. In addition, Respondent agrees to pay the United States all costs incurred by the United States, including, but not limited to, attorney’s fees and other expenses of litigation and settlement, arising from, or on account of, claims made against the United States based on negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on its behalf or under its control, in carrying out activities pursuant to this Settlement Agreement. The United States shall not be held out as a party to any contract entered into, by, or on behalf of Respondent in carrying out activities pursuant to this Settlement Agreement. Neither Respondent nor any such contractor shall be considered an agent of the United States.

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

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

XXV. INSURANCE

101. At least 15 days prior to commencing any on-Site Work under this Settlement Agreement, Respondent shall ensure that its third party contractors conducting work at the Property secure and shall maintain for the duration of this Settlement Agreement commercial general liability insurance and automobile insurance with limits of one (1) million dollars, combined single limit, naming the EPA as an additional insured with respect to all liability arising out of the activities performed by or on behalf of Respondents pursuant to this Settlement Agreement. Within the same period, Respondent shall provide EPA with certificates of such insurance. Respondent shall submit such certificates each year on the anniversary of the Effective Date. In addition, for the duration of the Settlement Agreement, Respondent shall satisfy, or shall ensure that its contractors or subcontractors satisfy, all applicable laws and

regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Respondent in furtherance of this Settlement Agreement.

XXVI. INTEGRATION/APPENDICES

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

103. In the event of a conflict between any provision of this Settlement Agreement and the provisions of any document attached to this Settlement Agreement or submitted or approved pursuant to this Settlement Agreement, the provisions of this Settlement Agreement shall control.

104. The following documents are attached to and incorporated into this Settlement Agreement:

- “Appendix A” is the Treatability Study Work Plan
- “Appendix B” is Gypstack Property, Legal Description and Map
- “Appendix C” is the Respondent's Trust Agreement, April 30, 2004
- “Appendix D” is the OU 1, ROD Amendment 2013.

XXVII. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION

105. This Settlement Agreement shall be effective upon the date the Settlement Agreement is signed by EPA.

106. The EPA Project Coordinator may modify the TS Work Plan schedule in writing or by oral direction. Any oral modification will be memorialized in writing by EPA promptly, but shall have as its effective date the date of the EPA Project Coordinator's oral direction. Any other requirements of this Settlement Agreement may be modified in writing by mutual agreement of the parties. If Respondent seeks permission to deviate from the TS Work Plan

schedule, Respondent's Project Coordinator shall submit a written request to EPA for approval outlining the proposed modification and its basis. Respondent may not proceed with the requested deviation until receiving oral or written approval from the EPA Project Coordinator pursuant to this Paragraph.

107. This Settlement Agreement including the Statement of Work for the Treatability Study may be amended by mutual agreement of EPA and Respondent. Such amendments shall be in writing and shall be effective when signed by EPA Superfund Division Director.

108. No informal advice, guidance, suggestion, or comment by the EPA Project Coordinator or other EPA representatives regarding reports, plans, specifications, schedules, or any other writing submitted by Respondent shall relieve Respondent of its obligation to obtain any formal approval required by this Settlement Agreement, or to comply with all requirements of this Settlement Agreement, unless it is formally modified.

XXVIII. NOTICE OF COMPLETION OF WORK

109. When EPA determines, after EPA's review of the Final Report, that all Work has been fully performed in accordance with this Settlement Agreement, with the exception of any continuing obligations required by this Settlement Agreement, including record retention, EPA will provide written notice to Respondent. If EPA determines that any such Work has not been completed in accordance with this Settlement Agreement, EPA will notify Respondent, provide a list of the deficiencies, and require that Respondent modify the Work Plan if appropriate to correct such deficiencies. Respondent shall implement the modified and approved Work Plan and shall submit a modified Final Report in accordance with the EPA notice. Failure by Respondent to implement the approved modified Work Plan shall be a violation of this Settlement Agreement.

The UNDERSIGNED PARTY enters into this Settlement Agreement, EPA Docket No. CERCLA-07-2016-0004, relating to the Treatability Study for the Gypstack Property and the ROD, Jasper County Superfund Site in Jasper County, Missouri:

Agreed this 4th day of March, 2016.

For Respondent: Kamyar Manesh
By: Kamyar Manesh
Title: Trustee, FI Missouri Remediation Trust

It is so ORDERED AND AGREED this 8th day of March, 2016.

BY: Mary P. Peterson
Mary P. Peterson
Director
Superfund Division

DATE: 3/8/2016

EFFECTIVE DATE: 3/8/2016

Appendix A

Treatability Study Work Plan



CB&I (Formerly Shaw Environmental, Inc.)
11206 Thompson Avenue
Lenexa, KS 66219
913-451-1224
Fax: 913-317-2660

January 7, 2016

Mr. Don Van Dyke, Project Manager
Superfund Section
Hazardous Waste Program
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

Mr. Mark Doolan, Remedial Project Manager
Superfund Section
U.S Environmental Protection Agency
Region 7
11201 Renner Blvd
Lenexa, KS 66219

Final Dye Trace Test Work Plan

Leachate Collection System Treatability Study

FI Missouri Remediation Trust Property, Joplin, Missouri

FI Missouri Remediation Trust (Trust) was directed by Missouri Department of Natural Resources (MDNR) and Environmental Protection Agency (EPA) to prepare a treatability/feasibility work plan for long term management of leachate from phosphogypsum pile (Gypstack) in Joplin Missouri. In April 2012, a leachate collection system was constructed to collect the leachate emanating from the north and west extents of the Gypstack before impacting Short Creek and route it to a catch basin located on top of the Gypstack. Leachate discharges to a catch basin infiltrates back into the Gypstack.

Long term remedial options will be evaluated for managing leachate emanating from the Gypstack. Data related to the chemistry and volume of the leachate emanating from the Gypstack has been collected since December 2012 will be used in the evaluation. The complexity of the Gypstack's hydrology makes the interpretation of a water balance difficult due to the unknown hydrogeologic features underlying the gypstack, such as buried mine shafts, former creek channel, springs, etc. The placement of soil/mine waste on top of the Gypstack is anticipated to result in the reduction in the volume of precipitation that infiltrates into the Gypstack and contributes to the generation of leachate. Dye trace testing is proposed to determine the contribution of the leachate discharged to the catch basin to the total volume of leachate collected by the leachate collection system. This information will be used to evaluate the total volume of leachate that may require treatment as part of a long term remedial action.

In 2014, the EPA began utilizing the Gypstack as a repository for mine waste impacted soil from the City of Joplin and nearby Oronogo-Duenweg Mine Belt Superfund Sites. The EPA plans to use the Gypstack for another 5 years as a repository and to construct an engineered cover over the Gypstack following the completion of the project. Since the start of the project in 2014, approximately 2 to 6 feet of cover has been placed on top of the Gypstack. This has significantly reduced the amount of infiltration to the Gypstack due to direct precipitation.

The Trust, MDNR, and EPA need to better understand the capital cost and long term monitoring cost of the leachate management system. In 2010, prior to construction of the leachate collection system, the Trust provided an estimate based on certain assumptions to construct an engineered wetland to manage the leachate water. The engineered wetland option may need to be reevaluated based on the recent monitoring data to determine if it is the most feasible remedy. The critical component for the selection of a final remedy is based on the sustainable flow from the leachate collection system. Currently the leachate collection system captures 50-60 gpm. The water from the leachate collection system is returned into the catch basin on the top of the Gypstack and possibly flows back into the collection system. Some

noticeable but yet inconclusive reduction in the recovery of the leachate has been noticed since the placement of impacted soil on top of the Gypstack by the EPA.

The purpose of this work plan is to verify if the leachate discharged to the catch basin recirculates back into the leachate collection system and if so what proportion of the recirculated leachate is returned, and estimate the bed flow through the former Short Creek channel. A two phased dye trace tests is proposed due the complexity of the hydrogeology surrounding the Gypstack. The first dye trace test will be conducted to determine the residence time and flow path of the leachate discharged to the catch basin and migrating along the former Short Creek channel. One dye will be discharged to the catch basin at the manhole MH1W discharge to evaluate resident time and flow of the leachate. A second dye will be injected on the east extent of the Gypstack within the former Short Creek channel to evaluate bed flow beneath the Gypstack. The phase 1 dye test will be based on less frequent sampling events. A second dye test will be designed based on the data collected from the first to estimate quantity of leachate being recirculated. More frequent data collection will likely be proposed to quantify the flow of leachate between the catch basin and point where it emanates from the Gypstack in the second test. This Work Plan will focus on the first dye trace test to estimate the residence time and flow path of the leachate discharged to the catch basin.

Scope of Work

The following sections of this Work Plan present the approach and outline procedures for field personnel to follow during the preparation and execution of dye trace test. The following tasks will be performed to collect the necessary phase 1 dye test data.

- Installation of temporary monitoring points
- Installation of injection well
- Background sampling for florescence dyes selection
- Conduct dye trace test
- Post-Injection monitoring following dye injection
- Long Term Leachate Treatability Alternatives Evaluation
- Leachate Treatability Alternative Report

Field procedures for conducting the Phase 1 Dye Trace Test are provided in **Attachment A**. The procedure for the installation and retrieval of the dye-tracer receptors are provided in **Attachment B**.

Installation of temporary monitoring points (TMPs)

Prior to dye injection, it is necessary to install TMPs downgradient from where the discharge of the dye is most likely to occur. Five TMPs are recommended to provide monitoring points for the dye test. The proposed TMPs will be installed between the west toe of the Gypstack and manhole MH1W interceptor trench for evaluating the potential flow pathways of the leachate. Four of the TMPs will be completed to a total depth of approximately 10 feet bgs and one TMP is proposed near MH1W will be completed to a total depth of 15 feet bgs or bedrock refusal, whichever occurs first. The TMPs will be constructed to screen across the saturated portion of the formation to detect the introduced dye in the leachate. Prior to installation a utility locate will be performed. This process will include utilizing the Missouri One Call System (MOCS) and procedures outlined in HS308 (**Attachment A**). The TMPs will be surveyed to provide horizontal coordinates and elevations in reference to mean sea level (msl). The locations of the proposed TMPs are illustrated on **Figures 1 and 2**.

Due to limited access, the soil borings located on the west extent of the Gypstack will be advanced using a track mounted 6600 Geoprobe™ rig or equivalent. The boreholes for the monitoring wells will be drilled with sufficient diameter to install the TMPs. The TMPs will be constructed of 2-inch ID Schedule 40 PVC casing and 5 feet of 0.010-inch machine slot PVC screen and PVC casing in the wells 10 feet total depth or less and 10 feet of 0.010-inch machine slot PVC screen and PVC casing in the well 15 feet total depth. The filter pack will consist of #20-40 filter sand that will extend from the total depth of the boring to 2 feet above the top of the screen interval. A 5-foot bentonite grout or bentonite chip seal will be placed above the filter sand and extend to the ground surface. The grout will be allowed to cure for a minimum of 24 hours prior to well development. The top of each monitoring well will be fitted with a locking water-tight J-plug. No surface completions are required.

Recovered soil samples will be measured for recovery and a detailed description of the soil will be recorded on the CB&I boring log following procedures outlined in **Attachment A**.

Installation of injection well

An injection well will be installed on the east extent of the Gypstack, hydraulically upgradient side, within the former Short Creek channel that lies beneath the Gypstack for the injection of a tracer dye. The total depth and location of the injection well will be based on soil boring data collected in 2009. The boreholes for the injection wells will be drilled with sufficient diameter to install the well materials. The injection well will be constructed 6 feet of 2-inch ID Schedule 40 PVC casing and 10 feet of 0.020-inch machine slot PVC screen. The filter pack will consist of #10-20 filter sand that will extend from the total depth of the boring to 2 feet above the top of the screen interval. A bentonite grout or bentonite chip seal will be placed above the filter sand and extend to the ground surface. The grout will be allowed to cure for a minimum of 24 hours prior to well development. The top of each monitoring well will be fitted with a locking water-tight J-plug. No surface completions are required.

Recovered soil samples will be measured for recovery and a detailed description of the soil will be recorded on the CB&I boring log following procedures outlined in **Attachment A**.

Background sampling for fluorescence dyes selection

It is necessary to select a dye that is appropriate for the composition and chemistry of the water and the system being tested. The fluorescent dyes used in dye tracing are not naturally occurring, but many occur as ingredients in common household and industrial products. Therefore, there is a possible anthropogenic background level that varies from location to location. A critical element of the dye trace is to determine the range of background concentrations in groundwater at each of the monitoring locations prior to dye injection. Background concentrations dictate the specific dye and concentration (mass) used in each study.

Pre injection sampling will be conducted at each of the five TMPs, manholes MH1H and MH1W, and the six surface water sample locations (Short Creek SC-1 through SC-5, and Cave Spring CS-1) prior to performing dye test (**Figure 1**). Dye monitoring will entail the use of activated charcoal receptors and collection of water samples. Grab water samples reflect the actual dissolved dye concentration in the water at the time of sample collection. Charcoal receptors will be deployed and left in the well for specific periods of time to ensure capture of the arrival of the dye. The dye concentration increases as a function of the receptor residence time (i.e., increased sorption time). To distinguish a positive dye detection following the injection event, results are compared to background results with the equivalent residence times. Accordingly, the charcoal receptor background residence times must match the residence times in the post-injection monitoring schedule. For this study, the background dye residence times are 7 days, 14 days, and 28 days prior to injection.

All five TMPs, manholes MH1H and MH1W, and the six surface water sample locations (Short Creek SC-1 through SC-5, and Cave Spring CS-1) will be sampled for dye as described below.

- Three activated charcoal dye receptors and paired vials will be deployed in all sample locations approximately 28 days prior to injection.
- A charcoal receptor and water sample vial will be retrieved/harvested from each location 7 days after deployment, 14 days after deployment, with the final receptor/vial retrieved at 28 days after deployment.
- The charcoal receptors and water samples will be submitted for laboratory analysis of fix dyes, reflecting those used in prior dye tracing to date as well as potential candidates for use in this pilot study (fluorescein, Eosine, Red 3, rhodamine WT, Red 28, and sulforhodamine B).

It is only necessary to have a single water background sample result from each location. The three water samples collected from each location will be held at the lab and only the one accompanying the highest charcoal elutant result will be selected for analysis.

The results of the background characterization will be used to select the dye and the mass to be injected to overcome background concentrations, if any. The locations of the proposed samples points are illustrated in **Figure 1**.

Conduct dye trace test

The fluorescent tracer dyes will be selected based on the results of the background sampling. In order to improve the ability to distinguish the two dyes, in post-injection samples, the two dyes selected will have markedly distinct fluorescence wavelengths in both eluted samples from the charcoal receptors and water samples (peak wavelengths differ slightly between water and charcoal). It is anticipated that fluorescent tracer dyes will be used for this phase of the dye trace test. The dyes Eosine or Red 3 will be evaluated for the phase 2 dye test.

While the concentrations of several fluorescent dyes will be measured in background sampling, it is likely that fluorescein dye and either Eosine or Red 3 will be used due to the difference in fluorescence wavelengths. Fluorescein dye has the highest fluorescent intensity and is most stable in the conditions applied. This dye has peak wavelengths of 515 nanometers (nm) and 510 nm in charcoal receptor elutant and water, respectively. In contrast, Eosine dye has peak wavelengths of 541 and 536 nm in charcoal and water, respectively, while Red 3 has peak wavelengths of 550 and 546 nm, respectively.

The mass of dye to be injected will depend on the concentrations observed in the background characterization. It is anticipated that up to 15 pounds of 75 percent fluorescein dye will be injected for the tests.

In dye tracing, it is typical to inject potable water after introduction of the dyes to mobilize the dye from the well. However, the continuous flow of leachate discharging from manhole MH1W will be used to mobilize the dye. The dyes will be injected by gravity feeding the dye volume (dye mixed in 15 gallons of potable water) directly into the catch basin at the manhole MH1W discharge location. Dye receptors and water vials for the first post-injection monitoring program will be deployed in the five monitoring wells, manholes MH1H and MH1W, and the six monthly surface water sample locations (Short Creek SC-1 through SC-5, and Cave Spring CS-1) concurrent with or immediately prior to the injections.

Post-Injection monitoring following dye injection

Post-injection monitoring includes fluorescent dye monitoring and will be conducted following the dye injections in order to document the appearance of and approximate breakthrough times for the injected dyes. Samples will be collected from the five TMPs, manholes MH1H and MH1W, six monthly surface

water sample locations (Short Creek SC-1 through SC-5, and Cave Spring CS-1), and the dye injection location in the catch basin. The locations of the proposed samples points are illustrated in **Figure 1**.

Actual groundwater velocities in the Gypstack are unknown. The high potential for preferential flow paths, the existence of the buried creek channel, and possibility of buried seeps/springs further complicate the hydraulics of the groundwater flow within the Gypstack exist. For this reason, four short duration dye monitoring events are planned at 1 week intervals for a period of 1 months following injection (four sampling events). After 1 month, the sampling interval changes to every other week for four weeks (two sampling events). After 2 months, the sampling interval changes to once a month for four weeks (one sampling events). The sampling program may be extended if dye has not been detected at the end of the 3 month sampling schedule. For the initial sampling event, charcoal receptors and vials will be deployed prior to the dye injection. After this point, the dye receptor/vial packages will be deployed following sample collection for the next scheduled sampling event such that the receptors will be in residence in the well for a minimum of 7 days. All dye receptors will be placed at the midpoint of the screened interval or the midpoint of any identified features governing flow (fractures, voids).

The dye receptors will be harvested prior to the collection of the groundwater sample. This will reduce the likelihood of obtaining a biased dye result due to induced flow associated with the purging of the well. The sample pump intake will be set to the same depths for collection of the dye receptors. Note that this will require removal of the dye receptor sting (supported downhole by heavy gage monofilament line) during the low flow sampling of that well. The string will be replaced immediately after completion of the sampling of the well.

Dye elutant and water samples will be analyzed using a spectrofluorophotometer, and reporting of the concentrations of the two dyes injected. All charcoal samples from each location will be analyzed until a positive detection is observed. A positive detection is defined by an order of magnitude increase over the background concentration documented at each monitoring location, or two sequential lower level increases over background. Experience has shown that due to the cumulative nature of charcoal receptors, elutant sample concentrations are generally one or more orders of magnitude higher than observed in water and are conservative such that detection in a charcoal sample will almost guarantee detection in the corresponding water sample. Consequently, all water samples will be archived at the laboratory and only analyzed upon positive dye detection in the associated charcoal receptor sample. Once dye has been detected in a well, sampling for the dye will be discontinued.

Grab samples will be collected from the injection location over time to document the dye concentration decline, which describes the rate of dispersion or transport from the injection point. Injection point dye samples will be collected using dedicated disposable bailers as water samples only and will be analyzed only for the dyes injected. Injection well dye samples are proposed to be collected immediately after injection and at the same time intervals as the scheduled post-injection monitoring program.

The schedule for background/baseline and post-injection performance monitoring is summarized in the table below.

		Dye Monitoring					
Sampling Event		Manholes	Monitoring Wells	Surface Water Locations	Injection Point	Residence Time	Time since Injection
Background	BG-1	2	5	6	-	7	-4 weeks
	BG-2	2	5	6	-	14	-2 weeks
	BG-3	2	5	6	-	28	-1 week
Performance	PI-1	-	-		-	-	0
	PI-2	2	5	6	1	7	1 week
	PI-3	2	5	6	1	14	2 weeks
	PI-4	2	5	6	1	21	3 weeks
	PI-5	2	5	6	1	28	1 month
	PI-6	2	5	6	1	42	
	PI-7	2	5	6	1	56	2 months
	PI-8	2	5	6	1	84	3 months

Report of Findings

The results of the dye trace test activities will be summarized in a brief letter report. The report will include a summary of the sampling activities, description of the site conditions, results of the dye test laboratory analyses, and design of the Phase 2 dye trace test. Drawings will be prepared to illustrate the sample locations. The laboratory analytical data will be summarized in a table. The field notes, sample collection logs, chain-of-custody, and laboratory reports will be provided as appendices.

Data collected from this dye trace test will be used to evaluate and, if determined feasible, design a second dye trace test in an attempt to quantify the volume of leachate that is recirculated following discharge to the catch basin.

Following the completion of the dye test, long term leachate treatability alternatives will be evaluated to manage leachate emanating from the Gypstack. The evaluation will revisit methods for leachate reduction, leachate treatment, and/or a combination of both based on existing site conditions. Data obtained from the dye test and performance monitoring of the leachate collections system will be used in the evaluation.

Findings of the evaluation of long term leachate treatability alternatives will be presented in a report. The report will identify each remedial alternative, describe the alternative design and application, and probability for success. The most cost effective remedial alternative or a combination of alternatives will be identified in the report.

Schedule

The proposed field activities will be scheduled to start 2 weeks following approval of this work plan. The sequence of events and estimated schedule are as follows:

<u>ACTIVITY</u>	<u>DAYS TO COMPLETE</u>	<u>SUBMITTALS TO EPA</u>
Technical Discussion	1 day	
Installation of Monitoring Wells	14 days from NTP	Installation of wells begins upon Notice to Proceed (NTP) from EPA
Background Sampling	30 days	
Dye Injection	1 days	
Monitoring	90 days	Within 30 days after Phase 1 monitoring is complete, submit Phase 1 Report
Submittal of Phase 1 Dye Test Report	30 ¹ days	
Start Phase 2 Dye Trace Test	30 days	
Dye Injection	14 days from NTP	Within 45 days after Phase 2 monitoring is complete, submit Phase 2 Report
Monitoring	180 days	
Submittal of Phase 2 Dye Test Report	45 ¹ days	
Evaluation of Leachate Treatability Alternatives	90 days	Within 90 days after Phase 2 monitoring is complete, submit Evaluation Report
Submittal of Leachate Treatability Evaluation Report	90 ¹ days	

Note: ¹the duration is dependent on EPA review and approval

The schedule is dependent of resident time of the dye migrating through the Gypstack. Potential issues which may affect the schedule could include, but are not limited to, the following:

- Inclement weather which may delay field activities.
- Subcontractor availability.
- Additional dye monitoring past the recommended 90 days.

These issues, as well as others that may arise, and their impact on the schedule will be continuously evaluated. Impacts to the schedule will be communicated to CELS. Changes in this schedule will be subject to the approval of the EPA Project Coordinator.

Attachment A
Field Procedures

FIELD PROCEDURES

All field activities will be conducted in accordance with the Missouri Well Construction Rules dated November 2005. Field procedures not specifically outlined in the proceeding sections will be conducted in general accordance with SOPs provided in **Attachment B**.

1. Utility Locate

Underground utilities will be identified prior to initiating intrusive activities. This process will include utilizing the Missouri One Call System (MOCS) and procedures outlined in HS308. MOCS will be notified of the proposed field investigation no later than 2 working days and no earlier than 10 working days prior to initiating intrusive activities. A MOCS request form will be filled out prior to contacting MOCS to provide the required locate request information. MOCS will be contacted at 1-800-DIG-RITE (344-7483) and the relevant information relayed. The MOCS operator will provide a reference Ticket Serial Number which will be documented in the field log book.

HS308 requires that the first 5 feet of each proposed boring location be sampled using hand sampling methods. Therefore, a hand auger will be used to bore from 0 to 5 feet below ground surface (bgs) at each boring location.

2. Water Level Measurements

Groundwater level will be measured in each well within the monitoring network during each events, where applicable. Static water level should be measured prior to removal of the resident dye receptor assembly at each location. It is critical that only the tip of the water level indicator probe be introduced into the water column to minimize disturbance of the water as well as to limit exposure of the probe and cable to dyes in solution. To the extent possible, the depth tape/cable should be centralized in the well so as to minimize contact with the well casing above the water table, since dye may be present in condensation that forms along the walls of the riser casing. In all cases, the probe and that length of the cable inserted into the well should be thoroughly decontaminated before use and between wells to insure cross-contamination of dyes does not occur. A Clorox rinse and wipe is mandatory in order to oxidize any residual traces of dye from the equipment. All water levels and any visible indications of the presence of trace dyes in the well (based upon examination of the 50-milliliter (mL) vial that accompanies the dye receptors) should be recorded on the field logbook. The time of the measurements should also be recorded.

All groundwater levels will be measured to the surveyed reference mark on the top of the well casing. The reference mark will be surveyed to within 0.01 foot relative to mean sea level (MSL). If no reference mark is present, the water level will be measured to the top of the casing on the north side of the well and the measurement location marked with a permanent marker on the outside of the casing. The ground surface will also be surveyed to within 0.01 foot relative to msl.

3. Groundwater Sampling

This section describes key considerations regarding the handling, deployment, and retrieval of the dye receptors used in monitoring. The procedure for the installation and retrieval of the dye-tracer receptors are provided in **Attachment B**.

Dye concentrations are measured at ppt levels and considerable care must be employed to ensure there is no potential for cross-contamination during handling of new or retrieved receptors or any other materials in contact with the groundwater or samples (including disposable gloves). Receptors (and sample vials) should remain sealed in a polyethylene bag inside a cooler or other watertight container under chain-of-custody procedures for transportation to the site. The detectors should be inspected for signs of damage prior to deployment. Disposable nitrile gloves must be worn when handling the receptors in order to avoid transferring dyes from clothing and other items. Fresh gloves should be used in the placement of each receptor.

The receptors will be deployed at the monitoring locations to represent the active flow component. In each well, the receptors should be positioned in the center of the well screened interval. In springs, the receptors must be placed within the orifice of the spring where groundwater initially emerges. Surface water samples should be placed in the active flow within the stream channel in a location secure from floating debris. In general, for both surface water and spring monitoring stations, care should be taken to place the receptors out of direct sunlight, since several of the dyes are subject to photo-degradation. Receptors will be positioned in the monitoring location using a weighted marble pack, tethered by minimally 20 pound-test, non-flourescent, monofilament fishing line.

When retrieving the receptor, the condition of the stream or resurgence point (e.g., spring, seep) will be carefully examined for the presence of visible dye or evidence of tampering or other disturbance to the receptor. This information as well as an estimate of the stream or spring flow at the time of receptor retrieval should be documented in the field logbook.

The receptor should be retrieved from each location by the monofilament tether. Where wading is necessary to access a spring or surface water monitoring location, the location should be approached from downstream. In order to retrieve receptors from a number of locations along a reach of a specific stream, the locations should be approached within the stream moving upstream (downstream-most samples retrieved first). A fresh set of disposable gloves should be used at each monitoring location and for each receptor (including duplicates). The surface water or spring receptor should be rinsed lightly in the water from which it was retrieved in order to clean off any accumulated sediment.

Upon retrieval, the receptor and vial will be placed in a new, labeled, sealable polyethylene bag. Each receptor bag will be labeled with a permanent marker to record the project name, sample identification number, date and time of retrieval and initials of the sampling technician. The receptors will then be immediately placed in a cooler or other (non-refrigerated) container to limit exposure to sunlight. Each receptor will be labeled with a unique sample identification number that reflects the location and date of retrieval (e.g., LOCATION-MM-DD-YY).

Duplicate receptors will be utilized in 10 percent of the monitoring locations during each event as a field QA/QC measure. In each case, a duplicate receptor will be deployed in the monitoring location. The

duplicate locations should be varied from event to event and may be biased towards locations where additional verification is required. Trip blank receptors will be used to document that contamination is not introduced as an artifact of sampling, handling or shipment.

4. Monitoring Well Installation

Five monitoring wells will be installed using the HSA drilling technique. Due to limited access, the soil borings located on the west extent of the Gypstack will be advanced using a track mounted 6600 Geoprobe™ rig or equivalent.

The boreholes for the monitoring wells will be drilled with a minimum 8-inch outer diameter (OD) drill casing and constructed of 2-inch ID Schedule 40 PVC casing and 10 feet of 0.010-inch machine slot PVC screen and PVC casing. Each monitoring well will be drilled to 15 feet bgs. The filter pack will consist of #20-40 filter sand that will extend from the total depth of the boring to 2 feet above the top of the screen interval. A 5-foot bentonite grout or bentonite chip seal will be placed above the filter sand and extend to the ground surface. The grout will be allowed to cure for a minimum of 24 hours prior to well development. The top of each monitoring well will be fitted with a locking water-tight J-plug. No surface completions are required.

Recovered soil samples will be measured for recovery and a detailed description of the soil will be recorded on the CB&I boring log.

5. Well Development

The groundwater monitoring wells will be developed to improve communication between the well and the adjacent saturated zone. Well development will consist of surging, bailing, and pumping (if applicable) to remove fine sediment using a surge block and bailer. Groundwater may also be pumped to facilitate well development.

Development will be considered complete when development water and well screen is free of sediment, at least five well volumes have been removed from the well, and field parameters have stabilized.

Descriptions of the development technique and the physical characteristics of the water (clarity, color, turbidity, and odor) will be recorded by the field geologist.

6. Survey

The newly installed monitoring wells will be surveyed to provide horizontal coordinates and elevations in reference to mean sea level (msl). The elevation, northing and easting of each location will be surveyed by a Missouri registered land surveyor. Coordinates will be provided in Missouri State Plane Western Zone coordinates based on NAD 83 and elevation shall be based on North American Vertical Datum (NAVD) 1929. A licensed land surveyor will survey the horizontal coordinates to within 0.1 foot and the top of casing to within 0.01 foot accuracy. The top of manhole MH1W will also be surveyed to provide a reference point between the historic and new survey data. Access to the site will be coordinated through CB&I.

7. Decontamination and Waste Management

All equipment with the potential to come in contact with impacted media will be decontaminated between locations and at the start and end of the job. Investigation-derived waste will be temporarily containerized and disposed on top of the Gypstack. Liquid IDW will be discharged to the catch basin. Soil cuttings will be spread on top of the Gypstack.

Decontamination of equipment and materials used in conducting dye traces is extremely important, since dyes are detectable and reported in the part-per-trillion (as low as 0.01 ppb) level and even non-visible levels are easily transferred from location to location. It is imperative that all materials and equipment be carefully decontaminated prior to use and between sample locations to prevent cross-contamination. In addition to standard decontamination steps, all downhole components (such as water level indicators or other) should also include a Clorox rinse in the decontamination process to oxidize trace levels of residual dyes.

8. Abandonment of Borings

The proposed monitoring wells will be abandoned following the dye tracing test in accordance with Missouri Well Construction Rules 10 CSR 23-6.050. Attempts will be made to pull the well casing and screen from the borehole. The boring will be abandoned from the bottom upward, using a mechanically-mixed bentonite-cement-water mixture (grout) pumped under pressure to the bottom of the hole through a tremie pipe. The tremie pipe will be slowly withdrawn in tandem with the rising level of grout in each hole, and in a manner such that the tremie pipe is never above the grout surface. Boreholes 20 feet in total depth or less are exempt from the Missouri reporting requirement.

- 1.1.1.1.1
- 1.1.1.1.2
- 1.1.1.1.3
- 1.1.1.1.4
- 1.1.1.1.5
- 1.1.1.1.6
- 1.1.1.1.7
- 1.1.1.1.8
- 1.1.1.1.9
- 1.1.1.1.10

Attachment B Dye Test Sampling Procedures

1.1.1.1.1

1.1.1.1.2

1.1.1.1.3

1.1.1.1.4

1.1.1.1.5

1.1.1.1.6

1.1.1.1.7

1.1.1.1.8

Directions for the Installation and Retrieval of Dye-Tracer Receptors

Section 1.0 Monitoring Wells

Necessary Supplies:

- Twenty- or 30-pound test monofilament fishing line
- Receptor
- Grab sample vial and groundwater sample vial (if needed)
- Cable ties
- Weights
- Scissors (not a knife)
- Sample bag
- Nitrile or latex gloves.

Installation:

1. Determine the depth of the well, screened interval, and interval of estimated maximum groundwater flow (cavity zone, sand layer, interval) where the receptor will be suspended. If an interval of maximum groundwater flow cannot be determined, the receptor should be suspended in the screened interval a minimum of two feet above the bottom of the well.
2. Use new gloves at each location and double glove.
3. Measure out sufficient monofilament fishing line to suspend the receptor at the desired depth.
4. Tie two loops in one end of the monofilament fishing line and attach a weight (marble pack, stainless-steel nut, stainless-steel fishing weights, etc.) at the bottom loop with a cable tie.
5. Attach the dye receptor and/or groundwater sample vial (if needed) to other loop with a cable tie to each. The cable tie on the receptor should not be pulled tight as it will have to cut in order to exchange ties.
6. Lower the weight and dye receptor down in the well making sure that all the measured monofilament line is used (very important).
7. Secure the top of the monofilament fishing line to ensure it does not fall into the well.
8. Secure the well.

Removal:

1. Use new gloves at each location and double glove.
2. Fill out the necessary identification information (job name, receptor area, date, time, and personnel retrieving the sample) on the sample bag with a black permanent-ink marker such as a "sharpie," otherwise the ink will smear and the laboratory may not be able to identify the sample. Only use a black permanent- ink marker, no other colors.
3. Retrieve the existing receptor and/or water sample vial from the well by wrapping the monofilament fishing line around a gloved hand or so object (piece of wood, pipe, etc.) that is dedicated to well. Use care to insure the monofilament fishing line does not touch the ground or clothing for it may have high levels of dye on it and possible cause cross-contamination of dyes with other wells.
4. If a water sample vial as been installed on the receptor line, remove the screw cap from the grab vial and fill the vial. Replace the cap on the vial and place it in an unused sample bag.
5. Cut the cable tie connecting the dye receptor to the monofilament fishing line and place the dye receptor in the unused sample bag.

6. Place the sample bag in a cooler. Keep exposure to sunlight to a minimum while storing.
7. Remove outer gloves and fill in the chain of custody.
8. Put on new outer gloves.
9. Remove a new dye receptor from its bag and attach it to other loop in the fishing line with a cable tie. The cable tie should not be pulled tight as it will have to cut it in order to exchange ties.
10. Lower the weight and dye receptor down in the well making sure that all the measured monofilament line is used (very important).
11. Secure the top of the monofilament fishing line to ensure it in does not fall into the well.
12. Secure the well.

Section 2.0 Streams, Springs, or Surface Water

Necessary Supplies:

- Stream receptor
- Gumshoe or heavy rock
- Black nylon twine
- Scissors (not a knife)
- Nitrile or latex gloves
- Maps.

Installation:

1. Determine where receptor is to be placed.
2. Use new gloves at each location and double glove.
3. Attach black nylon twine to a gumdrop (deep water) or flat rock (shallow water).
4. Remove a new receptor from its bag and attach it to the weight with the paper clip on the stream receptor.
5. Place the weight and receptor into the water where it will receive the most optimal flow. (In extremely small bodies of water the channel may have to be manipulated to ensure proper flow over the receptor.)
6. Attach the other end of the twine, leaving some slack in the line; to a stable object (a tree, post, etc.).
7. Mark the object that the receptor is tied to with flagging tape so that it can be found easier when the receptor is retrieved. Put the location name and/or number on the ends of the tape.
8. Also attach a key tag to the object that the receptor is tied to. Put the receptor name and/or number on the key tag, this serves as a double check to the flagging tape in case the flagging tape falls off or is removed.
9. Mark the receptor location on a map of the area as accurately as possible. If no map is available draw a sketch map of the receptor area, so the receptor can be found when the receptor is retrieved.

Removal:

1. Fill out the necessary identification information (job name, receptor area, date, time, and personnel retrieving the sample) on the sample bag with a black permanent-ink marker such as a "sharpie," otherwise the ink will smear and the laboratory may not be able to identify the sample. Only use a black permanent-ink marker, no other colors.
2. Use new gloves at each location and double glove.
3. Enter receptor location from a down gradient direction.
4. Check for any tampering of receptor itself and in the surrounding area. Note any evidence of tampering on the chain-of-custody.
5. Remove the new stream receptor and/or grab vial from the sample bag and set them on a clean surface.
6. If applicable, remove the screw cap from the grab vial and fill the grab vial. Replace the cap on the grab vial and place it in the sample bag.
7. Using the nylon line, pull in the stream receptor. Remove the stream receptor and paper clip connecting the receptor to the line. Remove the paper clip from the stream receptor to prevent puncturing the sample bag. Place the used receptor in the sample bag, seal it, and place it in the cooler.
8. Remove and replace outer gloves.
9. Attach a new stream receptor to the weigh, and reposition in the water.
10. Fill out chain-of-custody form.

Appendix B

Gypstack Property, Legal Description and Map

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BOOK: 1859

PAGE: 755-757

04-09878

STATE OF MISSOURI
COUNTY OF JASPER
RECORDER'S CERTIFICATION



Anna Grove

RECORDER OF DEEDS

QUIT CLAIM DEED
(Corporation)

This Deed, made and entered into on April 30, 2004 by and between Grantor: FARMLAND INDUSTRIES, INC., a corporation organized and existing under the laws of the State of Kansas with its principal office in the City of Kansas City, State of Missouri whose address is 3315 N. Oak Trafficway, P.O. Box 2305, Kansas City, Missouri 64116, and Grantee(s): SELS ADMINISTRATIVE SERVICES, L.L.C., as trustee of FI MISSOURI REMEDIATION TRUST with a mailing address of c/o Shaw Environmental Liability Solutions L.L.C., 4005 Port Chicago Hwy, Concord, CA 94520, Attn: David C. McMurtry, President.

Witnesseth, that the Grantor, for and in consideration of the sum of One Dollar (\$1.00) and other valuable consideration paid by the Grantee(s), the receipt of which is hereby acknowledged, does by these presents Remise, Release and Forever Quit Claim unto the Grantee(s), the following described Real Estate, situated in the County of Jasper and State of Missouri, to-wit:

See Exhibit A, on page 3 hereof, attached hereto and incorporated herein by reference.

Subject to Building lines, easements, restrictions and conditions of record, if any, and to any zoning law or ordinance affecting the herein described property.

To Have and To Hold the same, together with all rights and appurtenances to the same belonging, unto the Grantee(s), and to the heirs and assigns of such Grantee(s) forever. So that neither the Grantor, nor its successors, nor any other person or persons for it or in its name or behalf, shall or will hereafter claim or demand any right or title to the aforesaid premises, or any part thereof, but they and every one of them shall, by these presents, be excluded and forever barred.

In Witness Whereof, the Grantor(s) has or have executed these presents the day and year first above written.

Robert B. Terry kws
Name: Robert B. Terry
President & CEO

REPRODUCED FROM THE MISSOURI ARCHIVES

EXHIBIT A

Legal Description

All of a tract of land described as being a part of Fractional Section 2, Township 27 North, Range 34 West in Jasper County, Missouri and being more particularly described as follows:

Commencing at an iron pin found at the Northeast corner of Lot 1 of the Northeast Quarter of Section 2, Township 27 North, Range 34 West in Jasper County, Missouri; thence South 00°57'38" West, a distance of 673.90 feet to a point on the South rights of way lines of the Missouri, Kansas and Texas and the Burlington Northern Railroads, said point being the Point of Beginning thence South 00°57'38" West a distance of 651.49 feet to an iron pin found at the Northeast corner of the Southeast Quarter, thence South 00°57'31" West, a distance of 1324.76 feet to a iron pin found at the Southeast corner of the Northwest Quarter of the Southeast Quarter of Said Section 2; thence North 89°22'14" West, a distance of 2650.89 feet to an iron pin set at the Southwest corner of the Northwest Quarter of the Southeast Quarter of Section 2; thence North 88°48'10" West a distance of 1312.44 feet to a found bolt; thence South 00°55'10" West, a distance of 284.93 feet to a found Iron pin; thence North 89°10'36" West, a distance of 870.78 feet to an iron pin found on the West line of Section 2; thence North 00°57'23" West, a distance of 282.73 feet to a found concrete monument at the Southwest corner of the North one-half of Lot 2 of the Southwest Quarter of Section 2; thence North 00°57'23" West, a distance of 509.55 feet to a point on the South rights of way lines of the Missouri, Kansas and Texas and the Burlington Northern Railroads; thence along the South rights of way lines the following calls:

Thence North 60°04'21" East, a distance of 27.46 feet; Thence 418.13 feet along a curve to the right having a radius of 3030.63 feet a Delta angle of 7°54'18" on a bearing on North 64°17'04" East; Thence North 68°08'37" East, a distance of 971.85 feet; Thence 416.19 feet along a curve to the right having a radius of 2847.08 feet a Delta angle of 8°22'32" on a bearing on North 72°10'49" East; Thence North 76°48'58" East, a distance of 2738.26 feet; Thence South 13°11'02" East, a distance of 30.00 feet; Thence North 76°48'58" East, a distance of 527.35 feet to a point of beginning.

Subject to any Rights of way, Easement, or Restrictions of record or of fact.

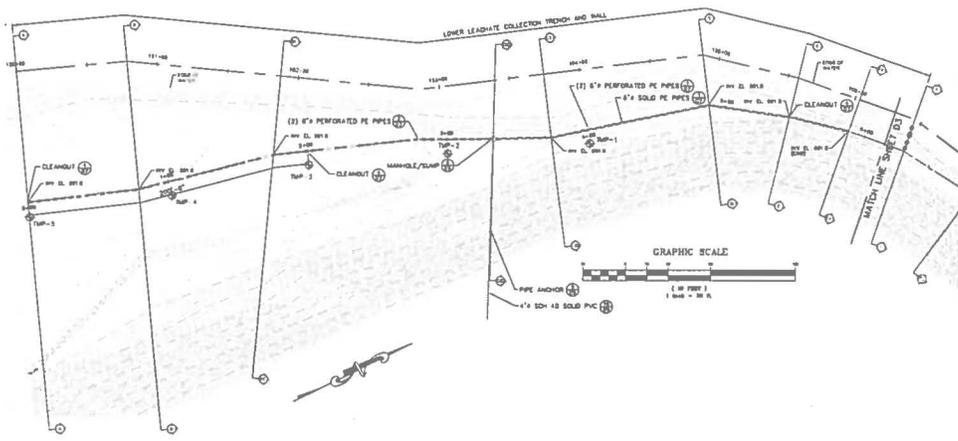
*Bryan Cave LLP
One Metropolitan Square Ste 3600
Saint Louis MO. 63102-2750*

*17.25
12.75
30 CK*

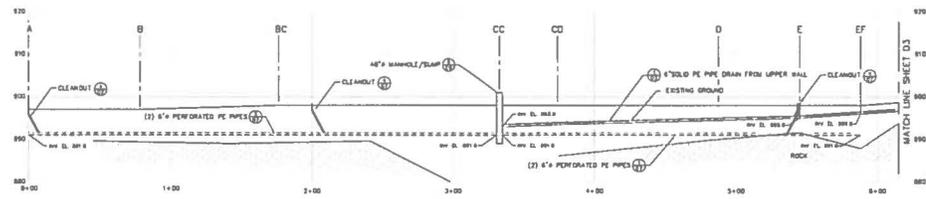
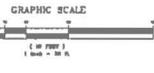
See S.A.S. Env.

In accordance with the provisions of the Missouri Revised Statutes, the Missouri Department of Natural Resources, in providing this information, does not warrant or represent that the information is accurate, complete, or current, and that the user should not rely on it for any purpose other than that for which it is provided.

HORIZONTAL SCALE 1"=30'
VERTICAL SCALE 1"=10'



- LEGEND**
- 6" PERFORATED PE PIPE
 - 6" SOLID PE PIPE
 - 4" SOLID PVC PIPE
 - MANHOLE/TELEMANHOLE
 - CLEANOUT
 - PIPE ANCHOR
- NOTE**
- 1. SEE SHEET 137737-01 FOR WELL LOCATION



PROFILE ALONG COLLECTION SYSTEM STA. 0+00 TO 6+15

FIGURE 2

REV. NO.	DATE	DESCRIPTION
0	12/9/11	FOR CONSTRUCTION



11206 Thompson Ave
Levittown, Kansas 66215
(913) 451-1224

**MISSOURI REMEDIATION TRUST
JOPLIN, MISSOURI**

**PROPOSED MONITORING WELL LOCATION MAP
LEACHATE COLLECTION SYSTEM
PLAN AND PROFILE**

PROJ. NO.	137737	DATE	DECEMBER 2011
DRAWN BY	CSJ	CHECKED BY	CSJ
APPROVED BY	MLT	DRAWING NO.	137737-03
			3 OF 18 SHEETS

File: D:\Users\jblake - GSD Tech\General\Proj_403\work-108737\108737_811.dwg, Layer: 4, 7, 2015, User: jblake, Date: 6/3/15, 2:38pm

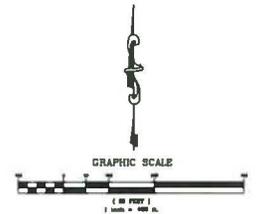


SAMPLE LOCATIONS

1. Former Pond Dam (background - SC-1)
2. Gypstack (upgradient - SC-2)
3. Gypstack (midpoint - SC-3)
4. Gypstack (downgradient - SC-4)
5. Cave Spring (CS-1)
6. Rail Road Compliance Point (offsite compliance point - SC-5)
7. Manhole MH1N (leachate - MW-1N)
8. Manhole MH1W (leachate - MW-1W)

LEGEND

- Sample Location



11208 Thompson Ave
Lenexa, Kansas 66219
(913) 451-1224

FI MISSOURI REMEDIATION TRUST
FORMER FARMLAND INDUSTRIES

**DYE TRACE TEST
SAMPLE LOCATION MAP**

JOPLIN, MISSOURI

REV. NO.	0	DRAWING DATE	6/3/15
DESIGNED BY:	ACAD FILE		
DRAWN BY:	TLR	PROJECT NO.	108732
CLIENT:	FI Missouri Remediation Trust		
LOCATION:	Joplin, Missouri		

FIGURE: 1

Appendix C

Respondent's Trust Agreement, April 30, 2004

FI MISSOURI

REMEDATION TRUST AGREEMENT

This FI Missouri Remediation Trust Agreement ("Trust Agreement") is made and entered into as of this 30th day of April, 2004 (the "Effective Date"), by and among Farmland Industries, Inc. ("FII") and FI Liquidating Trust ("FILT") and, together with FIL, the "Grantors"), and SELS Administrative Services, L.L.C., a Missouri limited liability company (the "Trustee").

RECITALS

WHEREAS, Grantors are subject to the administration of the United States Bankruptcy Court, Western District of Missouri (the "Bankruptcy Court"), in proceedings under Chapter 11 of the Bankruptcy Code in Case Nos. 02-50557, 02-50561, 02-50562, 02-50564, and 02-50565;

WHEREAS, FII is subject to Order No. MO-0053627 of the Missouri Department of Natural Resources (hereinafter "MDNR" or the "Department") dated January 14, 2003 and a consent order of MDNR dated June 13, 2002, under which FII has agreed, among other things, to undertake certain remedial measures in connection with the Trust Sites (the "Remediation Plan");

WHEREAS, pursuant to Section 5.1(d) of the Debtors' Second Amended Joint Plan of Reorganization, as modified (the "Plan of Reorganization"), filed October 31, 2003 and as approved by the Bankruptcy Court on December 19, 2003, Grantors are required to transfer to the Trust the properties listed on Schedule A and \$5,509,808 in cash as of the Effective Date for the benefit of the Beneficiaries to continue the maintenance, remediation, monitoring and/or disposition of each Trust Site; and

WHEREAS, Grantors, acting through their duly authorized officer or management official, have selected SELS Administrative Services, L.L.C. to act as Trustee under this Trust Agreement, and SELS Administrative Services, L.L.C. is willing to act as Trustee.

NOW, THEREFORE, the Grantors and the Trustee agree as follows:

ARTICLE I

DEFINITIONS

1.1 **Capitalized Terms.** As used in this Trust Agreement, the following terms shall have the meanings set forth below:

"Administrative Expenses" means all administrative expenses incurred by the Trust or the Trustee on behalf of the Trust in connection with the administration of this Trust, including taxes of any kind that may be assessed or levied against or in respect of the Trust and all brokerage commissions incurred by the Trust, fees for legal services rendered to the Trustee, the compensation of the Trustee and all other proper charges and

disbursements of the Trustee; provided, however, that in no event shall fees and expenses associated with Environmental Actions be considered Administrative Expenses.

"Administrative Funds" means the amounts contributed to Trust pursuant to Section 4.2(b) plus any and all investment earnings and other proceeds and profits on such funds minus the aggregate payments for Administrative Expenses on and after the second anniversary of the Effective Date.

"Bankruptcy Court" means the United States Bankruptcy Court, Western District of Missouri.

"Beneficiaries" means the Primary Beneficiary and the Residual Beneficiary.

"Commissioner" means the Commissioner of the Missouri Department of Natural Resources.

"CERCLA" means the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601 et seq.

"Department" means the federal and/or state agency that has regulatory oversight of compliance and remediation for the Site(s) identified on Attachment A to this Trust Agreement.

"Effective Date" has the meaning given to it in the Preamble.

"Environmental Actions" has the meaning given to it in Section 5.1 of this Trust Agreement.

"Environmental Laws" means the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9601 et seq.; the Resource Conservation and Recovery Act of 1976, 42 U.S.C. §§ 6901 et seq.; the Toxic Substances Control Act, 15 U.S.C. §§ 2601 et seq.; the Hazardous Materials Transportation Act, 49 U.S.C. §§ 1801 et seq.; the Federal Water Pollution Control Act, 33 U.S.C. §§ 1251 et seq.; Atomic Energy Act of 1954, 42 U.S.C.A. §§ 2011 et seq.; and all other state and local environmental and land use laws, regulations, statutes and standards as said laws have been supplemented or amended from time to time, the regulations now or hereafter promulgated pursuant to said laws and any other federal, state, county or local law, statute, rule, standard, guideline, policy, regulation or ordinance currently in effect or subsequently enacted, promulgated or adopted that regulates or proscribes the use, storage, disposal, presence, cleanup, transportation or release or threatened release into the environment of hazardous materials, and includes voluntary cleanup and similar programs.

"FII" has the meaning given to it in the Recitals of this Trust Agreement.

"FILT" has the meaning given to it in the Recitals of this Trust Agreement.

"Five Year Anniversary" has the meaning given to it in Section 13.4.

"Grantors" mean FII and FILT, who enter into this Trust Agreement and any successors and assigns of Grantors.

"Indemnity Agreement" has the meaning given to it in Section 11.5 of this Trust Agreement.

"Initial Trust Fund Amount" has the meaning give to it in Article II of this Trust Agreement.

"IRS" means the Internal Revenue Service.

"No Further Action Letter" has the meaning given to it in Section 6.3 of this Trust Agreement.

"Other Professionals" has the meaning given to it in Section 10.2 of this Trust Agreement.

"Permission Letter" has the meaning given to it in Section 6.3 of this Trust Agreement

"Plan of Reorganization" has the meaning given to it in the Recitals of this Trust Agreement.

"Primary Beneficiary" means the Missouri Department of Natural Resources.

"Professional Services Agreement" has the meaning given to it in Section 11.4 of this Trust Agreement.

"Remediation Funds" means the amounts contributed to Trust pursuant to Section 4.2(a) plus any and all investment earnings and other proceeds and profits on such funds minus the aggregate payments for remediation pursuant to Section 5.1.

"Remediation Plan" has the meaning given to it in the Recitals of this Trust Agreement.

"Residual Beneficiary" means FILT.

"Termination Date" means the date set forth in Section 13.4 of this Trust Agreement.

"Trust" means the FI Missouri Remediation Trust (which is one of the trusts referred to under the Plan of Reorganization as the "Transferred Asset Trust"), as governed by this Trust Agreement.

"Trustee" means that Person who has the authority to act as a trustee pursuant to this Trust Agreement and who may transact the business and affairs of the Trust. The initial Trustee shall be SELS Administrative Services, L.L.C., a Missouri limited liability company.

"Trust Estate" means, at any time, all assets of the Trust at such time.

"Trust Fund" means the cash and investment assets held by the Trust, which initially shall be \$5,509,808.

"Trust Site" means the real property held by the Trust, which initially shall be the real property identified on Schedule A attached to this Trust Agreement.

1.2 **Incorporation of Certain Definitions.** Capitalized terms used herein without definition shall have the meaning ascribed to them in the Plan of Reorganization.

ARTICLE II

DECLARATION OF TRUST

The Grantors and the Trustee hereby establish a Trust for the benefit of the Beneficiaries. The Trust Estate is established initially consisting of \$5,509,808 (the "Initial Trust Fund Amount") and the Trust Site(s) identified on Schedule A to the Trust Agreement and shall also include any other property subsequently transferred to the Trust, including all investment earnings and other proceeds or profits of any asset held by the Trust, less any payments or distributions made by the Trustee pursuant to this Trust Agreement. The Grantors and the Trustee intend that no third party shall have access to the Trust Estate except as herein provided.

ARTICLE III

NAME AND PURPOSE OF TRUST

3.1 **Name and Principal Executive Office.** The Trust shall be known as the "FI Missouri Remediation Trust". The principal office of the Trust is SELS Administrative Services, L.L.C., as trustee, c/o Shaw Environmental Liability Solutions L.L.C., 4005 Port Chicago Hwy, Concord, CA 94520, Attn: David C. McMurtry.

3.2 **Trust Purpose.** The Trust has the following exclusive purposes and functions: (a) to receive, hold and maintain custody of the Trust Fund from the Grantors for the benefit of the Primary Beneficiary and, to the extent described in Section 5.3, the Residual Beneficiary, (b) to receive, hold and maintain custody of the Trust Sites; and (c) to maintain, remediate and monitor the Trust Sites in accordance with the Remediation Plan and any Environmental Laws prior to any sale of such properties, with no objective or authority to engage in any trade or business.

3.3 **Acceptance of Trust.** Grantors hereby appoint SELS Administrative Services, L.L.C. as Trustee. Subject to the conditions set forth in Article XI, SELS Administrative Services, L.L.C. is willing and hereby accepts the appointment to serve as, and the powers of, the Trustee of the Trust pursuant to this Trust Agreement and the Plan of Reorganization and agrees to observe and perform all duties, obligations and requirements specifically imposed on the Trustee by this Trust Agreement, including, without limitation, to accept and hold and administer the Trust Estate and to accept the fiduciary trust obligations established hereunder, and otherwise to carry out and perform, punctually, such duties, obligations and requirements (and only such duties, obligations and requirements) as set are forth in this Trust Agreement.

3.4 **Liability of the Trustee.** The Trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantors, any payments necessary to discharge any liabilities of the Grantors established by the Department. Except as expressly provided in this Trust Agreement, any Person, when acting as Trustee, shall not be personally liable to any Person other than the Trust or the Beneficiary thereof for any act, omission or obligation of the Trust.

3.5 **Authority of EPA and State and Local Agencies.** Nothing in this Trust Agreement shall derogate from the Department's authority to have access to and take response action or require third parties to take response action with regard to the Trust Sites.

3.6 **Tax Treatment.** The Trust is established pursuant to Section 5.1(d) of the Plan of Reorganization and approved by the Bankruptcy Court for the sole purpose of resolving claims asserting environmental liability with respect to the Trust Sites. The Bankruptcy Court shall retain continuing jurisdiction over the Trust. Having satisfied all requirements for the establishment thereof, all parties intend the Trust to be classified as a qualified settlement fund in accordance with Treasury Regulation § 1.468B which shall be treated as a United States person and subject to tax on its modified gross income for United States federal income tax purposes.

ARTICLE IV

CONTRIBUTIONS TO THE TRUST

4.1 **Trust Sites.** FII hereby transfers, assigns and conveys all right, title and interest in the Trust Sites to the Trust.

4.2 **Trust Fund.** (a) FII hereby contributes to the Trust cash in an amount equal to \$5,509,808.

(b) On the second anniversary of the Effective Date, FILT shall contribute to the Trust cash or cash equivalents in an amount it reasonably believes, after consultation with the Trustee and the Beneficiaries, to be adequate to pay for the Administrative Expenses until the Trust is terminated in accordance with Section 13.4.

4.3 **Rights, Powers, Privileges.** Upon completing the contributions to the Trust described in Section 4.1 and Section 4.2(a) above, the Trust shall have all rights, powers, privileges, obligations and liabilities relating to the Trust Sites and the Trust Fund and Grantors and any affiliate(s) shall have no further rights, powers, privileges, obligations, or liabilities of any kind with regard to the Trust Sites or the Trust Fund, including any beneficial interest in the income or corpus of the Trust, nor will the Grantors have any involvement or control over the activities of the Trust.

4.4 **Liability of the Grantors.** Upon completing the contributions to the Trust described in Section 4.1 and Section 4.2(a) above, FII shall have no further obligation to the Trust. FILT's sole obligation to the Trust shall be the contributions described in Section 4.2(b) above and, upon completing such contributions, FILT shall have no further obligation to the Trust. The Trust shall indemnify and hold harmless the Grantors and any of their alleged

successors and/or assigns with respect to the Remediation Plan or otherwise related to environmental liabilities associated with the Trust Sites.

ARTICLE V

DISTRIBUTIONS FROM THE TRUST

5.1 **Payments for Remediation.** The Trustee shall make payments from the Remediation Funds for the sole purpose of implementing the actions required by the Department pursuant to the Remediation Plan for remediation and monitoring of the Trust Site(s) ("Environmental Actions"). In no event shall Remediation Funds be used for any other purpose.

5.2 **Payments for Administration.** Beginning on the second anniversary of the Effective Date, the Trustee shall make payments from the Administrative Funds for the sole purpose of paying Administrative Expenses. In no event shall Administrative Funds be used for any other purpose or shall any other funds be used for Administrative Expenses.

5.3 **Payments to Residual Beneficiary.** If, at any time, the Trust Fund exceeds the Remediation Funds plus the Administrative Funds, then the Trustee shall pay to the Residual Beneficiary such excess amount. Within thirty (30) days after the sale or disposition of the last Trust Site, the Trustee shall pay to the Residual Beneficiary the net proceeds from such sale or disposition (if any), along with any residual amount of the Trust Estate. If a payment to the Residual Beneficiary is made, it is expressly understood that such monies shall no longer constitute part of the Trust Estate.

5.4 **Application of Trust Fund.** The Trustee shall apply the Trust Fund as provided in Section 5.1, Section 5.2 and Section 5.3 until the Trust is terminated in accordance with Section 13.4 or until the Trust Fund is exhausted and all Trust Sites have been sold or otherwise disposed of.

ARTICLE VI

TRUST ADMINISTRATION

6.1 **General Powers of the Trustee.** Subject to the limitations set forth in this Trust Agreement, the Trustee shall have the powers to take any and all actions as in the judgment of the Trustee are necessary or convenient to effectuate the purposes of the Trust, including, without limitation, each power expressly granted in this Article 6 and in Article 7, and any power incidental thereto.

6.2 **Maintenance of Trust Sites.** The Trustee shall maintain the Trust Sites by:

(a) authorizing free and unimpeded access to the Trust Sites to the United States and the applicable State(s) and their representatives, including EPA, and its representatives, contractors, agents, and all other persons performing response actions under EPA's oversight for the purpose of conducting investigations or studies and performing or monitoring performance of response actions related to the Trust Sites;

- (b) employing reasonable efforts to insure the Trust Sites against loss due to casualty or third party liability;
- (c) employing reasonable efforts to lease or sell the Trust Sites in accordance with Section 5.2; and
- (d) complying with all relevant provisions of the Plan of Reorganization.

6.3 **Lease, Sale or Other Disposition of Trust Site.** The Trustee may lease, sell or otherwise dispose of any Trust Sites at any time; provided, however, that no lease, sale or other disposition of a Trust Site shall be consummated without: (a) the issuance of a No Further Action letter or equivalent acknowledgement in writing from the Department evidencing the Department's agreement that the remediation of such Trust Site is complete (a "No Further Action Letter"), (b) the issuance of a letter from the Department evidencing the Department's agreement that such Trust Site may be leased, sold or otherwise disposed of (a "Permission Letter") or, in the case of a sale or other disposition; (c) the buyer unconditionally agrees to assume all of the environmental liabilities associated with such Trust Site. Upon the receipt of a No Further Action Letter, the Trustee shall use good faith efforts to sell or otherwise dispose of the Trust Site to which such No Further Action Letter relates.

6.4 **Investment of Trust Fund.** The Trustee shall invest and reinvest the principal and income of the Trust Fund and keep the Trust Fund invested as a single fund, without distinction between principal and income, in accordance with generally accepted investment policies and guidelines, subject to the provisions of this Section 6.4. In investing, reinvesting, exchanging, selling and managing the Trust Fund, the Trustee shall discharge its duties with respect to the Trust Fund solely in the interest of the Beneficiaries and with the care, skill, prudence and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims. Specifically:

- (a) Securities or other obligations of the Grantors, or any other owner or operator of the facilities or any of their affiliates, as defined in the Investment Company Act of 1940, as amended, 15 U.S.C. 80a-2(a), shall not be acquired or held;
- (b) The Trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon;
- (c) The Trustee is authorized to purchase shares in any investment company registered under the Investment Company Act of 1940, 15 U.S.C. 80a-1 *et seq.*, including those which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote such shares in its discretion; and
- (d) The Trustee is authorized to register any securities held in the Trust Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book-entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depository even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depository with other securities

deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the Federal Government of the United States or any agency or instrumentality thereof, with a Federal Reserve bank, but the books and records of the Trustee shall at all times show that all securities are part of the Trust Fund.

Nothing in this Section 6.4 shall be construed as authorizing the Trustee to cause the Trust to carry on any business or to divide the gains therefrom (see Section 6.6 below), including, without limitation, the business of an investment company, or a company "controlled" by an "investment company," required to register as such under the Investment Company Act of 1940, as amended. The sole purpose of this Section 6.4 is to authorize the investment of the Trust Fund or any portions thereof as may be reasonably prudent pending use of the proceeds for the purposes of the Trust.

The Trustee shall not incur any liability for following any written direction or order to act (or to refrain to act) from any Beneficiary so long as such written direction or order is not inconsistent with the Trust Agreement. The Trustee may, but is not obligated to, seek direction from the Bankruptcy Court with respect to any issue related to this Trust Agreement, and shall have no liability for following any direction or order of the Bankruptcy Court.

6.5 **Commingling.** The Trustee is expressly prohibited from holding any or all of the Remediation Funds and the Administrative Funds in a common, commingled or collective trust fund and from holding any or all of the Trust Fund in a common, commingled or collective trust fund with the assets of any other entity.

6.6 **Limitation on Trustee.** Trustee shall not enter into or engage in any business, including, without limitation, the purchase or lease of any asset or property, on behalf of the Trust, except as and to the extent the same is deemed by the Trustee to be necessary or proper for the conservation or protection of the Trust Estate, or the fulfillment of its purposes under Section 3.2.

ARTICLE VII

EXPRESS POWERS OF TRUSTEE

Without in any way limiting the powers and discretion's conferred upon the Trustee by the other provisions of this Trust Agreement or by law and subject to the other limitations contained herein, the Trustee is expressly authorized and empowered:

(i) To lease any property held by it. No person dealing with the Trustee shall be bound to see to the application of the lease payments or to inquire into the validity or expedience of any such lease arrangement;

(ii) To sell, exchange, convey, transfer or otherwise dispose of any property held by it, by public or private sale. No person dealing with the Trustee shall be bound to see to the application of the purchase money or to inquire into the validity or expedience of any such sale or other disposition;

(iii) To make, execute, acknowledge and deliver any and all documents of lease or transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted, including entering into a contract with an entity that will perform the work pursuant to the understandings with the Department;

(iv) To compromise, negotiate, or otherwise adjust, at any time, all claims either in favor of the Trust or filed against the Trust; and

(v) To represent the Trust with regard to any matter concerning the Trust or its purpose before any federal, state or local agency or authority which has authority or attempts to exercise authority over any matter which concerns the Trust.

ARTICLE VIII

TAXES AND EXPENSES

All Administrative Expenses shall be paid by FILT until the second anniversary of the Effective Date. Beginning on the second anniversary of the Effective Date, such Administrative Expenses shall be paid by the Trust from the Administrative Funds. Subject to definitive guidance from the IRS or a court of competent jurisdiction to the contrary (including the issuance of applicable Treasury Regulations, the receipt by the Trustee of a private letter ruling if the Trustee so requests one, or the receipt of an adverse determination by the IRS upon audit if not contested by the Trustee), the Trustee shall make timely filings of annual federal income tax returns reflecting the items of income, gain or loss, deductions or credits of the Trust as a qualified settlement fund pursuant to Treasury Regulation § 1.468B-2. Consistent with its status as a qualified settlement fund, the Grantors shall not be, and the Trust shall be, responsible for the payment of any federal income tax liability related to the operation of the Trust.

ARTICLE IX

ANNUAL VALUATION

The Trustee shall, annually, at least thirty (30) calendar days prior to the anniversary date of establishment of the Trust, cause to be prepared and furnished to the Grantors and to each Beneficiary a statement confirming the value of the Trust and the continuation of the Trust for the next twelve (12)-month period. Any securities in the Trust Fund shall be valued at market value as of no more than sixty (60) calendar days prior to the anniversary date of establishment of the Trust. The failure of either Beneficiary to object in writing to the Trustee within ninety (90) calendar days after the statement has been furnished to the Beneficiaries shall constitute a conclusively binding assent by the Beneficiaries, barring each Beneficiary from asserting any claim or liability against the Trustee with respect to matters disclosed in the statement.

ARTICLE X

EXPERTS AND ADVICE OF COUNSEL

10.1 Accountants. The Trustee may employ an independent certified public accounting firm to perform auditing and accounting services for the Trust (the "Accountants").

Such services may include, without limitation, (a) the preparation of reports; (b) the auditing of invoices; (c) the provision of advice to the Trustee as to the payment of the audited invoices and claims; and (d) the preparation of tax returns, if any.

10.2 **Retention and Removal of Other Professional.** To the extent reasonably necessary to assist it in carrying out its duties under this Trust, the Trustee may employ attorneys, accountants, custodians, engineers, surveyors, contractors, clerks, investment counsel and other counselors and advisors (together, "Other Professionals"). The payment of Other Professionals shall be made by FILT, by the Trustee and reimbursed by FILT or the Trust or by the Trust, all in accordance with the Professional Services Agreement. The Trustee shall not be liable for anything done, suffered or omitted in good faith by it in accordance with the advice or opinion of any such Other Professional selected by it in good faith.

ARTICLE XI

CONDITIONS OF TRUSTEE'S OBLIGATIONS.

The Trustee accepts the Trust imposed upon each of them, but only upon and subject to the following express terms and conditions:

11.1 **Limitation of Liability.** In no event shall Trustee be individually or personally liable pursuant to this Trust Agreement, including as the result of any insufficiency of funds, except for its gross negligence or willful acts or omissions in relation to its duties hereunder.

11.2 **Reliance on Documentation.** Trustee shall be protected, and incur no liability to anyone, in acting in accordance with the provisions of this Trust Agreement upon any notice, requisition, request, consent, certificate, order, affidavit, letter, telegram or other paper or document reasonably believed by it to be genuine and to have been signed or sent by the proper person or persons.

11.3 **Right to Demand Documentation.** Notwithstanding anything else in this Trust Agreement, in the administration of the Trust, the Trustee shall have the right, but shall not be required, to demand before the disbursement of any cash or in respect of any action whatsoever within the purview of this Trust, any showings, certificates, opinions, appraisals, or other information, or action or evidence thereof, in addition to that required by the terms hereof which the Trustee reasonably believes to be necessary or desirable.

11.4 **Compensation of Trustee.** The Trustee shall be compensated by the Grantors for its services hereunder in accordance with an agreement to be negotiated with the Trustee, which agreement shall be appended to and incorporated within this Trust Agreement as **Exhibit 11.4** (the "Professional Services Agreement").

11.5 **Limitation on Financial Liability.** No provision of this Trust Agreement shall require the Trustee to expend or risk its own individual funds or otherwise incur any financial liability in the performance of any of its duties as Trustee hereunder, or in the exercise of any of its rights or powers, if it shall have reasonable grounds for believing that repayment of such funds or adequate indemnity against such risk or liability is not reasonably assured to it nor to

take any action pursuant to this Trust Agreement, which in the reasonable judgment of the Trustee may conflict with any rule of law or with the terms of the Plan. The Trust shall indemnify and hold harmless the Trustee in accordance with an agreement to be negotiated with the Trustee, which agreement shall be appended to and incorporated within this Trust Agreement as Exhibit 11.5 (the "Indemnity Agreement"). Without limiting the generality of the foregoing, with respect to activities undertaken in their capacities as such, the Trustee and any person employed by it under Section 10.2 hereof: (a) shall be entitled to the protections of 42 U.S.C. 9607(n), including 9607(n)(1) (CERCLA sections 107(n) and 107(n)(1)), and all equivalent and similar provisions of state and local law; and (b) shall not be considered or deemed to be the owner or operator of any Trust Site or otherwise liable under the provisions of 42 U.S.C. 9607(a) (CERCLA 107(a)), or any equivalent or similar provisions of state or local law with respect to any Trust Site.

ARTICLE XII

SUCCESSOR TRUSTEE.

12.1 Resignation of Trustee. The Trustee may resign at any time, but only with the prior written consent of the Primary Beneficiary, which consent shall not be unreasonably denied, delayed or withheld, following notice from the Trustee received one hundred twenty (120) days prior to the proposed date of resignation; provided, however, that Trustee may resign without the written consent of the Primary Beneficiary following notice from the Trustee received ten (10) days prior to the proposed date of resignation upon the exhaustion of the Trust Fund or the non-payment of the Trustee's fees or uncontested expenses which non-payment is not cured by the proposed date of resignation.

12.2 Appointment of Successor Trustee. The Primary Beneficiary may remove and replace the Trustee for cause, but such resignation or replacement shall not be effective until the Primary Beneficiary has appointed a successor Trustee and this successor accepts the appointment. The successor Trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor Trustee's acceptance of the appointment, the Trustee shall assign, transfer and pay over to the successor Trustee the funds and properties constituting the Trust Estate. If for any reason, the Primary Beneficiary cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor Trustee or for instructions. The successor Trustee shall specify the date on which it assumes administration of the Trust in writing sent to the Primary Beneficiary, the Residual Beneficiary, the Grantors, the Department and the present Trustee by certified mail ten (10) calendar days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this Section shall be paid as provided in Article VIII.

12.3 Transfer of Powers. Immediately upon the appointment of a successor Trustee, all rights, titles, duties, powers, and authority of the predecessor Trustee hereunder shall be vested in and undertaken by the successor Trustee without any further act. No successor Trustee shall be liable personally for any act or omission of his or her predecessor, or for any Trust act or omission which occurred prior to his or her appointment, unless such act or omission is expressly ratified by the successor Trustee after its appointment.

ARTICLE XIII

GENERAL PROVISIONS

13.1 **Notices.** All notices or other communications required or permitted hereunder, including, but not limited to, orders, requests and instructions to the Trustee, shall be in writing, and (i) delivered at, or sent by facsimile to, or sent by e-mail to, the addresses designated below, or (ii) mailed by registered or certified mail, return receipt requested, postage prepaid, addressed as designated, or to such other address or addresses as may hereafter be furnished by the Trust, the Trustee or the Beneficiary to the others.

For the Beneficiaries and Grantors, the addresses for notice are:

If to the Primary Beneficiary:

Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102
attention:

If to the Residual Beneficiary:

FI Liquidating Trust
c/o J.P. Morgan Trust Company, National Association, as trustee
P.O. Box 710181
Columbus, OH 43271-0181
attention: Jeffrey Ayres

If to Grantors:

FI Liquidating Trust
c/o J.P. Morgan Trust Company, National Association, as trustee
P.O. Box 710181
Columbus, OH 43271-0181
attention: Jeffrey Ayres

Farmland Industries, Inc.
103 W. 26th Ave.
North Kansas City, MO 64116
attention: Kelly W. Schemenauer

13.2 **Amendment of Agreement.** This Trust Agreement may only be amended or waived by an instrument in writing executed jointly by the Grantors or the Grantors' principals, successors, and assigns if Grantors have dissolved, the Trustee and the Beneficiaries or by the Trustee and the Beneficiaries if the Grantors cease to exist and no successors or assigns are named.

13.3 **Irrevocability.** Subject to the right of the parties to amend this Trust Agreement, as provided in Section 13.2, this Trust shall be irrevocable.

13.4 **Termination.** This Trust shall terminate upon the earlier to occur of (i) thirty (30) days after the sale or other transfer of all Trust Sites and the refund of the balance of the Trust Estate to the Residual Beneficiary pursuant to Section 5.3, provided that the Trustees have complied with all of the relevant provisions of the Plan of Reorganization and this Trust Agreement and (ii) the five (5) year anniversary of the Effective Date (the "Five Year Anniversary"). If part (i) above has not been satisfied on the date which is one hundred eighty (180) days prior to the Five Year Anniversary, the parties hereto agree to extend the term of the Trust until the liquidating purpose set forth in part (i) above has been satisfied.

13.5 **Choice of Law.** This Trust Agreement shall be governed by, administered under, and construed and enforced in accordance with the laws of the State of Missouri.

13.6 **Interpretation.** As used in this Trust Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings and section references used in this Trust Agreement are inserted for convenience only and neither shall affect the interpretation, construction of provisions, or the legal efficacy of this Trust Agreement.

13.7 **Severability.** Should any provision of this Trust Agreement be determined to be unenforceable, such determination shall in no way limit or affect the enforceability and operative effect of any and all other provisions of this Trust Agreement.

13.8 **Counterparts.** This Trust Agreement may be executed in any number of counterparts, each of which shall constitute an original, but such counterparts shall together constitute but one and the same instrument.

13.9 **Successors and Assigns.** The provisions of this Trust Agreement shall be binding upon and inure to the benefit of the Grantors, the Trust, the Trustee, and the Beneficiaries and their respective successors and assigns, except that neither the Grantors nor the Trust nor the Trustee may assign or otherwise transfer any of their, his or her rights or obligations under this Trust Agreement except, in the case of the Trust and the Trustee, as contemplated in this Article 13.

13.10 **No Bond Required.** Notwithstanding any state law to the contrary, the Trustee — including any successor Trustee — shall be exempt from giving any bond or other security in any jurisdiction.

IN WITNESS WHEREOF, the parties have executed this Trust Agreement on this 30th day of April, 2004.

GRANTORS:

FARMLAND INDUSTRIES, INC.

BY: _____

TITLE: _____

DATE: _____

FI LIQUIDATING TRUST

By: J.P. Morgan Trust Company, National Association, as trustee

BY: _____

TITLE: _____

DATE: _____

TRUSTEE:

SELS ADMINISTRATIVE SERVICES, L.L.C.

BY: _____

TITLE: _____

DATE: _____

IN WITNESS WHEREOF, the parties have executed this Trust Agreement on this 30th day of April, 2004.

GRANTORS:

FARMLAND INDUSTRIES, INC.

BY: _____

TITLE: _____

DATE: _____

FI LIQUIDATING TRUST

By: J.P. Morgan Trust Company, National Association, as trustee

BY: Youssef A

TITLE: Vice President

DATE: April 30, 2004

TRUSTEE:

SELS ADMINISTRATIVE SERVICES, L.L.C.

BY: _____

TITLE: _____

DATE: _____

IN WITNESS WHEREOF, the parties have executed this Trust Agreement on this 30th day of April, 2004.

GRANTORS:

FARMLAND INDUSTRIES, INC.

BY: Robert B. Terry ^{POS}

TITLE: President & CEO

DATE: April 30, 2004

FI LIQUIDATING TRUST

By: J.P. Morgan Trust Company, National Association, as trustee

BY: _____

TITLE: _____

DATE: _____

TRUSTEE:

SELS ADMINISTRATIVE SERVICES, L.L.C.

BY: _____

TITLE: _____

DATE: _____

Schedule A
Trust Sites

Program Interest Name, Site Address, Site County

Site Identification _____ Address & County _____

Missouri Trust Sites

Joplin, MO gyp stack	301 State Line Ave Joplin, MO 64801 Jasper County
N. Kansas City R&D building	103 W. 26th Ave North Kansas City, MO 64116 Clay County

Program Interest Number and Applicable Case Number

Site Identification _____ Administrative Instrument
Agency, Date, & Number _____

Missouri Trust Sites

Joplin, MO gyp stack	MDNR, 1/14/2003 MO-0053627
N. Kansas City R&D building	MDNR, 6/13/02, none

Proposed Funding approved by Bankruptcy Court

Missouri Trust Sites

Joplin, MO gyp stack	\$5,292,119
N. Kansas City R&D building	\$ 217,689
Total Missouri Trust Sites	<u>\$5,509,808</u>

Appendix D

OU 1, ROD Amendment 2013

RECORD OF DECISION AMENDMENT PLAN

**Oronogo-Duenweg Mining Belt
Superfund Site
Jasper County, Missouri**

**Mine and Mill Waste
Operable Unit 1**



Prepared by:

**U.S. Environmental Protection Agency
Region 7
11201 Renner Boulevard
Lenexa, Kansas 66219**

September 27, 2013

30285041



Superfund

IN COMPLYANCE WITH THE PROVISIONS OF THE

COMPANIES ACT, 1956 AND THE COMPANIES (MGT. & ADMIN.) ACT, 1985

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U.S. Patent & Trademark Office
Washington, D.C. 20530

U.S. Patent & Trademark Office
Washington, D.C. 20530

RECORD OF DECISION AMENDMENT DECLARATION

SITE NAME AND LOCATION

Oronogo-Duenweg Mining Belt Site, Operable Unit 1
Jasper County, Missouri

STATEMENT OF BASIS AND PURPOSE

The U.S. Environmental Protection Agency (EPA) has prepared this decision document to present the selected remedial action for mining and milling wastes at the Oronogo-Duenweg Mining Belt site (Site) located in Jasper County, Missouri. This decision was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and to the extent practicable, the National Contingency Plan (NCP). This decision is based on the Administrative Record for this Site. The Administrative Record file is located in the following information repositories:

- | | | | |
|----|--|----|--|
| 1. | Joplin Public Library
300 Main
Joplin, Missouri | 3. | U.S. Environmental Protection Agency
Region 7 Docket Room
11201 Renner Boulevard
Lenexa, Kansas |
| 2. | Webb City Public Library
101 South Liberty
Webb City, Missouri | | |

The EPA has coordinated selection of this remedial action with the Missouri Department of Natural Resources (MDNR). The state of Missouri concurs on the selected remedy.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this Record of Decision (ROD) Amendment, may present an imminent and substantial endangerment to public health, welfare or the environment.

DESCRIPTION OF THE REMEDY CHANGES

This ROD Amendment provides details concerning the changes made to the 2004 ROD for Operable Unit 1, which addressed the cleanup of mining and milling wastes, soil and selected sediments contaminated with metals from past mining activities at the Site. The cleanup action is one part of the EPA's overall efforts under Superfund to deal with environmental contamination resulting from historic lead and zinc mining, milling and smelting operations in Jasper County. The major changes to the 2004 remedy are:

- Increase in the volume of on-site wastes and the associated increase in cost
- Construction of aboveground repositories
- Elimination of the use of biosolids and deep tilling

- Increase in the sediment cleanup levels based on site-specific toxicological studies
- Inclusion of contaminated soils in the tornado expedited debris removal (EDR) area in the OU-1 remedy

STATUTORY DETERMINATIONS

The selected remedy changes continue to be protective of human health and the environment; are expected to comply with chemical-, location- and action-specific federal and state requirements that are legally applicable or relevant and appropriate to the remedial action and are cost effective. These remedy changes utilize permanent solutions to the maximum extent practicable.

Because these remedy changes will result in hazardous substances remaining on the Site above health-based levels, a review will be conducted within five years to ensure that the remedy continues to provide adequate protection of human health and the environment.

Cecilia Tapia 9/27/13
Cecilia Tapia, Director Date
Superfund Division
U.S. EPA, Region 7

Josh

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1.0 Introduction and Purpose

This document has been developed by the U.S. Environmental Protection Agency, and presents the amendment to the Record of Decision (ROD) for Operable Unit 1 (OU-1) of the Oronogo-Duenweg Mining Belt Superfund site (Site) in Jasper County, Missouri. The OU-1 ROD was signed by the EPA on September 30, 2004, to address the remediation of metals-contaminated mining and milling wastes at this Site.

In compliance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) §117(c), 42 U.S.C. § 9617, and the National Contingency Plan (NCP) 40 CFR § 300.435(c)(2)(i) and 300.825(a)(2), the EPA and MDNR (the Agencies) have determined that certain remedy revisions fundamentally, and others significantly, change the remedy selected in the 2004 ROD. The EPA is therefore issuing this ROD Amendment. In general, fundamental changes in a remedy involve a change in scope or cost to the remedy, requiring a nine criteria analysis. Significant changes involve a change to a component of a remedy that does not fundamentally alter the cleanup approach. For a ROD Amendment, the EPA is required to describe to the public the nature of the fundamental changes in a proposed plan, summarize the information that led to making the changes, afford the public the opportunity to comment on the proposed changes and revise the remedy and affirm that the revised remedy complies with the NCP and the statutory requirements of CERCLA. For significant changes to the remedy, the EPA is required to make the significant differences and supporting information available to the public through issuance of an explanation of significant differences (ESD), which the EPA has done here through public notice and issuance of a proposed ROD amendment.

The EPA has coordinated the development of this amendment with the Missouri Department of Natural Resources (MDNR). The EPA is the lead agency and the MDNR is the support agency.

This ROD Amendment and supporting documents have been made part of the Administrative Record and are available for review during normal business hours at the following locations:

- | | |
|---|---|
| 3. Joplin Public Library
300 Main
Joplin, Missouri | 3. U.S. Environmental Protection Agency
Region 7 Docket Room
11201 Renner Boulevard
Lenexa, Kansas |
| 4. Webb City Public Library
101 South Liberty
Webb City, Missouri | |

2.0 Site History and Background

The Oronogo-Duenweg Mining Belt Superfund site is located in Jasper County and portions of Newton County, Missouri. The Site is a concern because of mining wastes on the surface which constitute a significant source of heavy-metals contamination with potential for exposure to people and environmental receptors. Past mining and milling practices resulted in the contamination of surface soil, sediments, surface water and groundwater in the shallow aquifer with heavy metals, primarily lead, cadmium and zinc. The Site includes the mining wastes in and around 11 former mining areas, or designated areas (DAs), located within about 270 square miles of Jasper and Newton counties. The DAs

include Snap, Neck/Alba, Thoms, Joplin, Oronogo-Duenweg, Carl Junction, Klondike, Iron Gates, Iron Gates Extension, Belleville and Waco. A map of the DAs is shown on Figure 1 in the 2004 ROD and is attached to this ROD Amendment.

Historically, approximately 160 million short tons of crude ore were mined in the DAs of which approximately 5 percent was recovered as zinc/lead concentrates, leaving an estimated 150 million short tons of discarded mill waste on the surface. Approximately 90 percent of this material has since been removed for various commercial purposes. During the early years of mining, lead concentrates were smelted in a large number of crude log furnaces. Advances in smelter technology and increasing specialization by operators led to centralization, and by 1873 there were only 17 lead smelters in the Joplin area. By 1894, the number had decreased to three, and was down to one by the 1920s. Most zinc concentrates were shipped to smelters located outside the district in areas where fossil fuel was abundant, as the smelting of zinc required considerably more heat than lead.

The EPA listed the Site on the National Priorities List (NPL) in 1990. The NPL is a national list of Superfund sites that prioritizes cleanups in order of the most serious contamination problems and greatest threats to human health and the environment. After listing, the EPA divided the Site into four Operable Units (OUs) for cleanup activities because of the multimedia nature of contamination. The OUs include OU-1, Mining and Milling Waste; OU-2, Smelter Waste Residential Yards; OU-3, Mine Waste Residential Yards; and OU-4, Groundwater. The 2004 ROD and this proposed ROD Amendment address OU-1 and include those areas in and around the DAs where mining, milling and smelter wastes are located.

A site-wide investigation was initiated in 1991, collecting data primarily on mined materials, soils, surface water, groundwater, terrestrial and aquatic biota, land use and demography, air quality and human food sources. The results of this sampling program were presented in the Remedial Investigation Report (RI) completed in 1995, and documented significant contamination levels in soil, surface water and groundwater as well as in mining wastes themselves. Contamination levels were found in all media at levels presenting an unacceptable risk to human health and environmental receptors. A detailed discussion of the Site characteristics, nature of the contamination and risk to people and the environment are found in the Administrative Record.

A feasibility study (FS) was completed in 2003. The FS combined the information about the nature and extent of contamination in and around the DAs described in the RI with the investigations characterizing and evaluating the DAs, and developed alternatives for remedial action for the entire Site. Additional studies were conducted by the EPA, MDNR and the potentially responsible parties (PRPs) to assist in developing and supporting the remedial alternatives in the FS.

The EPA issued the OU-1 Proposed Plan for public comment in July 2004, and completed the OU-1 ROD in September 2004 after holding a public meeting and receiving and addressing public comments on the Proposed Plan. The cleanup of mining and milling wastes under the ROD is necessary to mitigate the principal threat for OU-1 which is the risk to aquatic and terrestrial ecosystems from exposure to mill wastes, soils, sediments, surface water and groundwater. The main component of the remedy includes excavating and disposing of source materials in selected on-site mine subsidence pits suitable from an engineering perspective for subaqueous disposal. This same remedial component, excavation/disposal, is essential to provide long-term protection of human health from exposure to the mine and mill wastes.

3.0 Site Remedy

The 2004 ROD specified and described the selected remedy for OU-1. The remedial action selected is presented in the following sections.

3.1 Remedial Action Objectives

The media-specific remedial action objectives (RAOs) developed in the FS to address the Site risks and specified in the ROD for the selected remedy are presented and reprinted exactly below.

Source Material RAO

The source material RAO has been designed to address the potential ecological risks associated with direct exposure to contaminants of concern (COCs) in mine and mill wastes and in the affected soils surrounding the wastes. Terrestrial vertebrates, specifically vermivores whose diet consists of earthworms and other soil-dwelling invertebrates, are identified as the receptors of concern based on information from the baseline ecological risk assessment (BERA). Ecological risks associated with source material erosion (as sediment) and seepage/runoff are addressed in other RAOs.

Exposure routes consist of ingestion of earthworms and other invertebrates in source materials and affected media that provide suitable habitat for Site vermivores with levels greater than 41 mg/kg cadmium 804 mg/kg lead; or 6,424 mg/kg zinc. Based on this exposure scenario, the source material RAO is as follows:

- Mitigate risks to terrestrial vermivores from exposure to COCs from mine, mill and smelter wastes within the Site, such that the calculated toxicity quotients or hazard indexes are less than or equal to 1.0.

Sediment RAO

Sediments of concern at the Site consist of source materials that are eroded from source areas to water bodies, namely Class P streams (as defined under Missouri's water quality standards program) and their tributaries. Sediments represent a unique category of source materials that have been transported, or may be transported in the future, to aquatic environments where they potentially affect water quality and streambed substrate, thereby posing risks to aquatic biota. The exposure pathway of concern for the sediment RAO is the movement and redistribution of source materials that could result in exposure of aquatic biota to elevated COC concentrations. The COCs for sediments are cadmium, lead and zinc. The sediment RAO for OU-1 is as follows:

- Mitigate risks to aquatic biota in Class P streams and their tributaries where COC levels exceed federal aquatic life criteria (ALC) by controlling the transport of mine, mill and smelter wastes from source areas to waters of the state.

Surface Water RAOs

Two RAOs have been developed that address two different pathways of exposure to aquatic biota. The first exposure pathway of concern is the transport of COCs to Class P streams and their tributaries resulting from seepage and runoff (dissolved and particulate metals) from source materials. The second exposure pathway involves the transport of COCs to Class P streams and their tributaries resulting from mine pit and pond discharges. The criteria for Class P streams and their tributaries are the federal ALC, as calculated based on the hardness observed in the individual surface water bodies. The RAOs for OU-1 surface water are as follows:

- Mitigate exposure of aquatic biota to COCs released and transported from mine and mill wastes where applicable or relevant and appropriate requirements (ARARs) for surface water are exceeded in Class P streams and in tributaries.
- Mitigate exposure of aquatic biota to COCs released and transported from Site mine-related pits and ponds where surface water ARARs are exceeded in Class P streams and in tributaries.

Groundwater RAO

The groundwater RAO addresses exposure of aquatic biota to COCs in Class P streams that receive discharge from flowing mine openings (e.g., mine shafts, vents, subsidence pits, etc.). The contaminant criteria are federal ALC. The COCs for OU-1 groundwater are cadmium, lead, and zinc. The RAO for OU-1 groundwater is as follows:

- Mitigate exposure of aquatic biota to COCs in releases of groundwater from flowing mine shafts of the Site where surface water ARARs are exceeded in Class P streams and in tributaries.

The groundwater RAO for this OU is limited to protecting the surface water from groundwater impacts due to flowing mine shafts. The RAO of mitigating human health risks from exposure to the contaminated shallow aquifer was addressed in OU-4, Groundwater, which provides an alternate public water supply to residents and establishes ICs to mitigate the future risks of drilling new drinking water wells in the shallow aquifer. The Missouri Well Drillers law and regulations control shallow and deep aquifer well drilling in the Jasper and Newton County areas to reduce the risk to residents that might use the contaminated shallow aquifer. The ROD for OU-4 determined that it is technically impractical for the agency to remediate the shallow aquifer to achieve compliance with chemical-specific ARARs for drinking water sources. The EPA determined that it is not technically feasible from an engineering perspective to remediate groundwater because of the widespread nature of contamination throughout the shallow aquifer, karst conditions and interconnectedness of the mine workings within the shallow aquifer. Although contaminated groundwater seeps into surface waters and contributes some COCs, the groundwater RAO for this OU addresses only specific groundwater sources where remediation is technically feasible such as the flowing mine shafts because of the technical impracticability of cleaning up the entire shallow aquifer to meet maximum contaminant levels for drinking water.

3.2 Engineered Cleanup Actions

The engineered components of the selected remedy as specified in the 2004 ROD are presented and reprinted exactly below.

Source Removal and Disposal in Subsidence Pits

In- and near-stream barren chat, vegetated chat and tailings; barren chat, vegetated chat and tailings located in the flood plains and tributaries; upland chat and tailings exceeding terrestrial and human health action levels would be excavated and placed in mine subsidence pits located in proximity to the source material. Backfilling the pits would be accomplished by simply end-dumping and/or pushing the mill wastes into the pits with excavation equipment.

To the extent possible, tailings and chat would be placed at least a meter below the seasonal low static water level in the pits. Reducing repeated wetting and drying of the wastes as a result of seasonal water level fluctuations is considered important for arresting weathering, oxidation and acid generation processes, and preventing further leaching of metals from the wastes. Relatively inert materials such as development rock or low-concentration chat would be used to fill the zones where water levels may fluctuate. Flooded pits that contain high-quality habitat for fish and wildlife and contain low concentrations of metals in the water will not be used for disposal because they do not present a risk to human health or the environment. There appears to be sufficient pit space available on the Site to warrant saving good-quality habitat.

Upland Source Materials

Upland barren chat and tailings that do not exceed action levels established to protect terrestrial and human health would be left in place because they do not pose a risk to human health and the environment. Upland vegetated chat and transition zone soils that exceed human health and terrestrial cleanup criteria would be deep tilled to reduce metal concentrations and revegetated. Biosolids would be added to provide some treatment of the metals in these sources and to improve soil structure for plant growth.

Sediment Removal

Sediments in the intermittent tributaries flowing from the source areas to the Class P streams will be removed subsequent to the cleanup of the sources draining to the tributaries. The sediments will be removed to a depth where background metals concentrations or bedrock is encountered, whichever is shallower. Sediment basins and traps will be constructed at the mouths of the tributaries to be remediated to mitigate sediment transport to the Class P streams during the cleanup actions. Remediated tributaries will be restored by lining the channels with clean gravel and stabilizing the banks with natural vegetation.

Sediment removal actions in Class P streams would be limited to delta deposit built up at tributary mouths. Generally, all the sediments in the deltas exceed screening criteria for aquatic organisms. Therefore, all the sediment delta deposits at the mouths of the tributaries exposed above the waterline at low-flow conditions will be removed. Extensive removal is not anticipated under this alternative because the estimated volume of delta deposits is small based on the Site sediment surveys conducted jointly by the EPA, MDNR and NewFields in November

1999 and April 2003. The excavated sediments would be disposed of in subsidence pits with the other source materials. Removal of the delta deposit sediments will occur at each tributary at the completion of the removal of the sediment in the individual tributary. It is anticipated that all sediments from the tributaries draining source areas to the Class P stream will require complete removal up to the source areas. Once the tributaries have been cleaned of sediments, the channels will be restored to as near-natural condition as possible. This would include replacement of clean gravel in the channels and bank stabilization.

The ROD established numeric action levels for cleanup of the tributary sediments and delta deposits of 2 ppm cadmium, 70 ppm lead and 250 ppm zinc. These concentrations were derived from the average concentration of background designated soil values. The EPA also assessed screening values for sediments in the consensus-based threshold effects criteria (TEC) for freshwater developed by MacDonald et al. (2000). The MacDonald values were recommended as numeric sediment-quality criteria because TEC values are intended to predict the absence of toxicity in sediments. Although TEC values are often used for the purpose of ecological screening to determine contaminants of potential ecological concern, they also provide a reliable basis for classifying sediments as toxic or not toxic to sediment dwelling organisms. Comparing the threshold effects concentration to the probable effects concentration give a range of 1 to 5 ppm (average of 3) for cadmium, 32 to 128 ppm (average of 80) for lead and 121 to 459 ppm (average of 290) for zinc. The average background soil concentrations for the Site fall within this range of screening values and are slightly lower than the average recommended MacDonald values.

During implementation of the remedy, the EPA will initiate the surface water quality monitoring plan to assess the effectiveness of the source removal action on reducing surface water quality to meet federal ALC. If at the second five-year review after completion of the remedy (10 years or less), conducted as required for the Site, monitoring data indicated the federal ALC has not been achieved, the EPA will assess the feasibility of conducting additional actions. These may include the removal of sediments from the Class P streams, which is currently not part of the remedial actions selected in the ROD. Additional action may be taken under an amendment to the ROD, or as part of a new operable unit. If the assessment of data indicates the need for additional source material (i.e., mine waste or soil) removal is required, those additional actions would be conducted under an amendment to the ROD. Should the data indicate that sediment removal from the Class P streams is necessary to achieve the federal ALC, those actions would be conducted under a separate OU and ROD. Should the EPA determine that an additional OU and ROD for sediments is warranted, sediment removal activities would be conducted simultaneously with sediment actions in the Spring River drainage in Kansas and Oklahoma.

Recontour, Revegetate, Soil Amendments, Stabilization

A variety of drainage and erosion-control measures will be implemented during and after excavation of the source materials to manage storm water runoff and reduce metal and sediment loadings to Class P streams and their tributaries. Excavated areas will be recontoured and revegetated following complete removal of the mill wastes to control runoff and prevent surface erosion. Deep tilling would be performed to improve soil structure and moisture retention characteristics by blending the organic matter content of different soil horizons, as well as reducing contaminant concentrations, to reduce risks to human health and terrestrial biota and improve soil function. The soils would be amended with biosolids to supplement the soil organic

matter content and facilitate revegetation, which may also provide some treatment to any residual metals not excavated during subaqueous disposal. Excavated areas will be contoured to promote proper drainage, preventing ponding of water in the excavated areas. Excavated areas will be revegetated using native, warm-season grass or other grass types dependent on the wishes of the property owner. Stream channels and banks from which source materials have been removed would be stabilized through the use of appropriate restoration techniques such as recontouring, regrading, revegetating or installing erosion barriers, stone armor or riprap. Natural vegetation such as willows or cedar revetments would be used to stabilize remediated channels instead of stone rip-rap, where practical.

Selection and Capping of Disposal Pits

Pits will be evaluated during the remedial action for their suitability as disposal sites. Pits directly connected to the surface water system, containing highly oxygenated water or exhibiting high groundwater flux will preferably be excluded from consideration as disposal sites. Pits within ½ mile of Class P streams with exceedances of ALC will also be excluded, depending on the degree of karst development or mining-related conduit flow. Pits within one mile upgradient of shallow drinking-water wells that are still in use will be excluded from consideration for disposal. Pits exhibiting low dissolved oxygen concentrations and low oxidation/reduction potential will be considered good candidates for disposal sites. The filled pits will be capped with geocomposite soil covers to nearly eliminate infiltration of oxygenated rainwater, thereby reducing the weathering of the disposed wastes. Actions such as mounding the cover systems and diverting surface flows away from the capped pits will also be taken to reduce the infiltration of oxygenated water into the disposal pits. In- and near-stream transition zone soils exceeding the action level for human health and terrestrial risk or soils from beneath excavated chat piles will be excavated and used in the construction of the soil cover systems. To prevent damage to the cover systems due to consolidation and differential settling of the mill wastes placed in the pits, adequate time (six to twelve months), will be allowed for the mill wastes to consolidate in the subsidence pits prior to attempting to install the cover systems. Any subsidence that occurs during the consolidation period will be filled in with additional mill wastes or soils to provide positive slopes and adequate drainage for the cover system. Erosion-control measures will be installed at each filled pit to control runoff prior to the cap installation during the settling period. Only low-concentration mill waste or development rock will be used to fill settled areas in the pits after subsidence of initial materials disposed of prior to the cap installation. In addition, groundwater monitoring wells will be installed around the first few pits where disposal occurs to confirm the results of the Waco pilot study concerning the short-term and long-term release of metals. The monitoring data collected from the wells will be used to further define the appropriateness of various types of pits for disposal and refine disposal criteria. Monitoring will be conducted weekly for the first two months, monthly for months three through six, quarterly for the remainder of year one, then semiannually until the first five-year review.

Shaft Plugging

Surface water and sediment RAOs will be addressed through the source material and sediment-removal options described above. Where practical, the groundwater RAO will be addressed by installing shaft plugs and diversion ditches to reduce the amount of surface water entering the mine workings. The purpose of these actions will be to reduce point and nonpoint groundwater discharge from mining-related sources to streams.

Thoms DA Open Mine Pits

The acidic overburden from the Wild Goose open pit mine in the Thoms DA will be excavated and disposed of underwater in the TH-12 pit. Other mill wastes from the Thoms DA will also be disposed of in this open pit as well. Due to the size of the pit, however, there is not enough mill waste or overburden in the Thoms DA to completely fill the Wild Goose open pit TH-12. Therefore, the EPA will assess hauling wastes from other DAs to facilitate complete filling of the pit. Water displaced by the filling of the pit will be neutralized and treated with lime in a temporary mobile treatment plant to remove the cadmium, iron, lead and zinc prior to discharging it to the nearby Center Creek tributary (CC Trib 6). An open limestone drain will be installed at the outlet of the pond to neutralize any subsequent discharges that may occur following the remedial actions if the pit is only partially filled. Lands exposed by the excavation of the reactive overburden will be deep tilled, limed and amended with biosolids or other organic matter and revegetated the same as other excavated mill waste deposits.

Filling of the Wild Goose pit, with its current low pH waters, presents a special concern for subaqueous disposal of wastes. The acidic nature of these waters could mobilize metals and result in groundwater conditions not suitable for subaqueous disposal. The acidic overburden may need to be treated to reduce acidity prior to placing it into the pit with mill wastes. Only partially filling the pit will result in open water at the surface that could serve as a continual input of oxygenated water, thereby negating anaerobic conditions to stabilize metals. If open surface water is left in the pit, it could be an attractive nuisance and could harm wildlife, particularly waterfowl. This scenario of disposal needs to be fully studied and modeled to show if it is effective prior to implementing action at the pit. Pilot studies will be required to assess the effectiveness of treatment technologies prior to full implementation of the filling action. It is likely that the treatability and pilot study results will show that the pit can be filled without significant metals release, but that the pit should be completely filled and capped.

3.3 Nonengineered Actions

The nonengineered components of the Selected Remedy as specified in the 2004 ROD are presented exactly below.

Institutional Controls

The ROD for the smelter-affected and mining-affected residential yard soils in Jasper County (OU-2/3) prescribes institutional controls (ICs) to reduce future exposure of children to unacceptable concentrations of lead in soils in new residential construction in all undeveloped contaminated areas. Those ICs were envisioned to consist of a site-wide zoning ordinance that will control new development in mine-affected areas, building codes or health ordinances that will require remediation of soils exceeding the risk-based cleanup standards in new residential construction, and deed restrictions on excavated yard soil repository sites to protect them from human disturbance. The ICs are being considered and developed through a cooperative effort between the EPA, Jasper County and the city of Joplin, Missouri. However, to date, the implementing ordinances have not been enacted. Thus, the preferred alternative for OU-1

incorporates the ICs that were required under OU-2/3 and allows the County and cities greater flexibility in adopting such ICs in light of the more permanent and reliable proposed action in this ROD (i.e., disposal and containment of the source materials).

The selected alternative for OU-1 includes a site-wide building ordinance that would be enacted by Jasper County, similar to the health ordinance prescribed in the OU-2/3 ROD. The EPA has discussed this IC with Jasper County. The County would propose a building ordinance for all undeveloped areas within the Site that requires the builders of residential homes to obtain a permit for construction. Conditions of the permit would require soil testing to determine the lead concentration of the soil in the yard area of the home. The EPA will work with the County to develop appropriate sampling procedures to ensure the reliability of the results. An occupancy permit will only be granted by the County if soil lead concentrations are below 400 ppm and cadmium concentrations are below 40 ppm. Builders will be required to properly clean up soils exceeding these levels prior to receiving the occupancy permit. The EPA will provide funding to Jasper County to establish and implement the building permit ordinance. After the completion of the OU-1 cleanup, the surficial source materials (mine and milling wastes) will be contained in the subsidence pits. Thus, the building ordinance controlling residential development will no longer be required. The selected alternative does not require but tolerates a planned termination date for the County's building ordinance if the County prefers that the ordinance only be effective for a limited term. For example, the ordinance could terminate upon completion of the remedial action.

The selected alternative prescribes disposal of mine and mill wastes in mine subsidence pits followed by capping of the wastes. Some waste areas may be contained and capped in place with soils or biosolids. All capped areas and biosolids-treated areas will require ICs to prevent disturbance of the cap, thereby protecting the wastes. These ICs will likely consist of restrictions or easements placed on the property deeds for the areas where the disposal or containment occurs. The restriction will prevent the development on and disturbance of the caps placed over the wastes. Restrictive covenants may be entered into with owners of the disposal property for protection of the disposal and capped areas.

This ROD excludes chat recycling as a component of the selected alternative. The effective and more permanent engineering control components of the selected alternative eliminate the need for legal agreements to control recycling. Reducing risks to human health and the environment from chat recycling through legal agreements with individual owners/operators is administratively infeasible because of the large size of this Site, about 5,000 acres of mine waste piles and 500 owner/operators, and the far-reaching impact of such agreements (i.e., end uses, accumulation, speculation, storage, surface water protection and final closure). Moreover, the legal agreements would duplicate ARARs under the Clean Water Act (CWA) that regulate discharge of pollutants and contaminants into surface waters. If enforcement actions are needed to control surface water pollution from mine waste piles prior to completion of the engineering components selected in this ROD, the CWA may be used on a case-by-case basis to regulate surface water pollution caused by chat recycling.

Health Education

The ROD for OU-2/3 required the implementation of a health education program in Jasper County to supplement the residential soil cleanup. The EPA has been funding the Jasper County Health Department to implement that health education program since 1996. Since human health exposure risks due to direct contact with source materials containing the metals contaminations are possible until completion of the mine and mill waste cleanup described in this ROD Amendment, the EPA will continue to fund the health education program until the cleanup of OU-1 is complete. When the cleanup action is completed for OU-1, and at the completion of additional actions anticipated under OU-2/3 (which essentially means that Superfund Site sources for human exposure have been addressed), the health education program will no longer be funded by the EPA.

Stream Monitoring

One of the primary RAOs for the selected alternative for surface water is to reduce the exposure of aquatic organisms in the Class P streams to COCs where federal aquatic life criteria (ALC) are exceeded. The EPA believes the actions taken under the preferred alternative will reduce concentrations of metals in the Class P stream to less than federal ALC based on hardness. These actions include removal of all source material with erosion potential to the streams, tributary sediments and all sediment delta deposits above the low water line at the mouths of the tributaries' draining source areas into the Class P streams. During the remedial action for OU-1, the EPA will establish a water quality monitoring program for the Class P streams to assess the effectiveness of the remedial action on reducing metals loads. The EPA will collect monitoring data which will be used during the five-year review process, and will be collected and assessed at each review until the metals concentrations are in compliance with the federal ALC. Should the goal of achieving the federal ALC fail to be achieved within two five-year review periods (10 years) after completion of the remedial action, or if water quality standards established by states or tribes for downstream receiving surface waters show no improvement within this 10-year period, the EPA will assess the feasibility and practicality of conducting additional actions at the Site to further reduce the metals concentrations in the Class P streams. Should additional actions be required, the work may be conducted under an amendment to this ROD for OU-1, or if warranted by an extensive, basis-wide action, a new operable unit for sediment removal may be established to address the Class P streams at the Site.

Operation and Maintenance

An operation and maintenance (O&M) program will be established to maintain the caps on the disposal areas and to maintain other engineering components of the preferred alternative (e.g., areas of biosolids or soil application where wastes were left in place, groundwater monitoring and revegetated areas). The State will be responsible for the O&M beginning one year after the completion of the remedial action. If the local government enforces the ICs, the State remains responsible for O&M of such local government controls.

The State's O&M responsibilities will include a monitoring program to assess the effectiveness of the ICs. The monitoring program will provide annual reports to the EPA detailing the

development in areas of concern to protect engineering components. Monitoring requirements will be assessed during the five-year review process and may be modified or reduced, as appropriate, based on data collected as part of the reviews.

4.0 Basis for Revisions to the Selected Remedy

The following subsections discuss the changes to the 2004 ROD.

4.1 On-site Volume of Mining Wastes and Open Pit Space

The EPA began the remedial design for OU-1 cleanup in 2006 and the remedial action in 2007. During the design phase, two issues became apparent that are the basis for revising the 2004 selected remedy. First, the EPA determined during design activities that a significantly larger volume of mining waste is located on-site compared to the estimate in the 2004 ROD. Second, the EPA determined that on-site open pit space is insufficient for disposal and containment of all mining wastes located at the Site. These issues form the basis for two changes to the 2004 Selected Remedy: (1) because of the large increase in on-site mining wastes volume, open pit space for disposal is insufficient and no longer available; and (2) aboveground repositories are necessary for disposal and containment of a substantial volume of mining wastes.

4.2 Disposal in Open Pits Waiting Period

The 2004 Selected Remedy included a provision to prevent damage to the cover systems of mining wastes disposed of in on-site open pits. Due to consolidation and differential settling of the wastes after disposal in the pits, adequate time was to be allowed for wastes to consolidate in the subsidence pits prior to installing cover systems. During the last five years of construction activities, the EPA has determined that wastes disposed of in open pits have not shown any signs of settlement. Thus, a change to the 2004 Selected Remedy is necessary to remove the waiting period required before capping.

4.3 Biosolids Unavailable for Use as Soil Amendments

The 2004 ROD stated that the EPA would apply biosolids to excavated areas to add organic matter to the soil to improve growing conditions. However, the EPA has determined that sources of appropriate biosolids for use as soil amendments after excavation are not available near the Site.

4.4 Sediment Action Level Studies Complete

The 2004 ROD established numeric action levels for cleanup of the tributary sediments and delta deposits of 2 ppm cadmium, 70 ppm lead and 250 ppm zinc. As part of the OU-5 remedial investigation, the EPA contracted with the U.S. Geological Survey (USGS) to conduct a site-specific risk assessment for sediments in the perennial streams on the Site. This risk assessment developed site-specific toxicity values that are significantly higher than those specified in the 2004 ROD.

Each of these issues is discussed in detail in the following section, along with the proposed change to the 2004 ROD.

5.0 Description of Remedy Changes

The following subsections discuss in detail the changes to the OU-1 remedy.

5.1 Volume and Cost

Based on the OU-1 Feasibility Study prepared by the RPs in 1995, the 2004 ROD estimated that approximately 7.1 million cubic yards of contaminated source material exists on the Site on approximately 5,000 acres of land. The cost of the OU-1 selected remedy was \$58,543,000 as calculated from detailed cost estimates in the Feasibility Study. During the remedial design activities, the EPA obtained new information and now estimates that there are approximately 14 million cubic yards of contaminated source materials on the Site covering nearly 11,000 acres. In addition, the cost of various remedial action engineering components has increased significantly from the ROD estimates. The selected remedy was estimated to cost approximately \$8 per cubic yard for source materials remediation in 2004. Due to the additional acreage of mining wastes, fewer subsidence pits and additional repositories, the EPA now estimates costs of approximately \$12 per cubic yard. Based on known volumes and acreage, this will result in an estimated cost of approximately \$168 million not including the costs incurred by the responsible parties to remediate the areas of their responsibilities under the consent decree.

5.2 Construction of Repositories

Given the larger volume of waste now known to exist at the Site, sufficient pit space for subaqueous disposal of all on-site wastes is not available. The EPA is making use of all available pit space for disposal; however, aboveground repositories are required to be constructed in some areas of the Site where pits are small or do not exist. Through the design process, the EPA is continuing to develop innovative approaches for disposal locations that can be used for future redevelopment of the mined areas consistent with local land use plans. These include construction of repositories in road right-of-ways that are later paved by municipalities and turned into city streets; filling of an abandoned wastewater treatment lagoon that will become a new sports complex; and expanding the size of a pit-filled area to incorporate surrounding land allowing for the development of a new 40-acre commercial development site. Future repository sites will be designed with redevelopment of the area as the focus. The criteria for siting new aboveground repositories will be in compliance with the criteria presented in the 2004 ROD. Flooded pits that contain high-quality habitat for fish and wildlife with low concentrations of metals in the water will not be used for disposal because they do not present a risk to human health or the environment. In addition, pits located in close proximity to water supply wells or flowing streams where the pit may be hydraulically connected to the stream will not be utilized for disposal.

Long-term operation and maintenance (O&M) of the repository caps after completion of the remedial action would be more costly than estimated in the OU-1 ROD due to the increase in the number of aboveground repositories. The EPA estimates long-term annual O&M costs would be \$100,000.

During the remediation of residential yard soils under the OU-2 and OU-3 ROD, the EPA established a repository south of Carterville and west of Prosperity on 17th Street. This location

was used for disposal of all yard soil wastes from the remedial action. In addition, the repository has remained open and is available for use by local builders and developers for disposal of contaminated soil during the development of new residential properties, provided they comply with the Jasper County and city of Joplin's remediation ordinances. The requirement for a long-term, open repository is specified in the OU-2 and OU-3 ROD and is part of the ongoing ICs under that ROD. However, this repository is nearly filled to capacity and a new location is now required for ongoing residential soil disposal.

The EPA has identified the Beville-Chemical Plant Designated Area of the Site as the location for the new residential soil disposal repository. The specific property for the repository is located west of Malang Road and north of 7th Street on the Kansas state line. This property was formerly owned and operated by Farmland Industries (FI), which filed and completed federal bankruptcy reorganization. The property contains a large pile of waste gypsum (nearly 60 acres, known as the Gypstack). The gypsum waste was generated by FI during production of phosphoric acid at the plant located adjacent to the waste pile. Prior to FI operations, mining wastes were disposed of on this property, and subsequently FI disposed of its waste gypsum on top of the mining wastes. The waste gypsum contains high levels of phosphorous and nitrogen and low levels of radon. The mining wastes contain the COCs for this Site (lead, cadmium and zinc). Leachate from the waste gypsum exacerbates the release of heavy metals from the mining wastes into the environment. As described in the RI Report, Short Creek, downgradient of the FI property, is contaminated from the release of these COCs.

The Gypstack requires remediation. MDNR has undertaken oversight of certain activities for the Gypstack in accordance with its bankruptcy settlement with FI. For example, MDNR issued a Clean Water Act, National Pollutant Discharge Elimination System (NPDES) permit for operations at the Gypstack in 2008, NPDES Permit # MO-00533627. The permit is for zero discharge and requires collection and recirculation of leachate to a small pond on top of the Gypstack. In accordance with the OU-1 ROD, the remedial action for the Gypstack must be in accordance with the engineering control components for the OU-1 selected remedial action for capping of repositories (see section 3.2 above, Engineering Controls, Selection and Capping of Pits). This will include a geocomposite engineered cap with long-term O&M.

The EPA will use the Gypstack as a repository for mining wastes due to the lack of available subsidence pit open space in the Beville-Chemical DA. In addition, the Gypstack, due to its large size, is an appropriate location for the new long-term repository for disposal of contaminated residential yard soil, which will be addressed under this OU-1 ROD Amendment in accordance with Attachment 1, the Jasper County Health Ordinance. Mining wastes and contaminated yard soils would be placed on top of the Gypstack, raising its top elevation by up to 30 feet. Surface water and storm water runoff controls would be established during operations at the repository in accordance with ARARs. Capping of the Gypstack, mining wastes and contaminated yard soils will include a geocomposite engineered cover layer, which will be completed as the top of the Gypstack reaches maximum design elevation. Final closure of the Gypstack will be in accordance with ARARs.

The 2004 ROD specified that, to prevent damage to the cover systems due to consolidation and differential settling of the wastes placed in the pits, adequate time would be allowed for the mill wastes to consolidate in the subsidence pits prior to attempting to install the cover systems. During the construction activities conducted over the last five years, the EPA has monitored the

settlement of filled pits and has determined that wastes, even in subsidence pits over 100 feet deep, have not shown any settlement after being placed. Therefore, the requirement of allowing time (six to twelve months) for the wastes to consolidate in the subsidence pits prior to installing the cover systems is no longer required.

5.3 Use of Biosolids and Deep Tilling

The 2004 ROD specified incorporating biosolids into the excavated areas to supplement the soil's organic matter content and facilitate revegetation. Biosolids were also anticipated to provide some treatment to any residual metals remaining below the cleanup levels and not excavated during cleanup action. However, the EPA has been unable to locate local sources of appropriate biosolids for use on the Site. The sources located within a reasonable distance from the Site for economical hauling are either not of sufficient volume to accomplish the purpose, or they contain excessively high concentrations of zinc that prohibit their use on the Site. Further, all biosolids sources located near the Site are not composted, and, if placed on the Site, would create an extreme odor problem that would be unacceptable to surrounding residents. Therefore, the EPA is eliminating the requirement of using biosolids on the Site for soil amendment.

During the early phases of the remedial actions at OU-1, the EPA conducted a pilot study on deep tilling to assess the effectiveness of reducing metals contamination in thin deposits of upland source areas and transition soils and the associated costs with tilling methods. Upon completion of the study, deep tilling was determined to be ineffective at adequately reducing metals concentration within a reasonably low cost. A summary of this pilot study dated August 2013 is available in the Administrative Record. The rocky nature of the soil prevented adequate mixing of the soil and increased costs beyond that of normal excavation costs. Thus, the EPA has determined that instead of deep tilling, upland vegetative chat and transition soils will be excavated and removed along with the mine waste piles.

5.4 Sediment Cleanup Levels

The 2004 ROD established numeric action levels for cleanup of the tributary sediments and delta deposits of 2 ppm cadmium, 70 ppm lead and 250 ppm zinc. These concentrations were derived from the average concentration of background-designated soil values on the Site, along with the EPA's screening values for sediments in the consensus-based threshold effects criteria (TEC) for freshwater. The EPA began conducting investigation of the site streams and sediments throughout the Tri-State Mining District, including Kansas and Oklahoma, in 2006. As part of those studies, the EPA partnered with the U.S. Geological Survey (USGS) to conduct a district-wide ecological risk assessment and to establish site-specific sediment cleanup criteria. See the Development and Evaluation of Sediment and Pore-Water Toxicity Thresholds to Support Sediment Quality Assessments in the Tri-State Mining District (TSMD), Missouri, Oklahoma, and Kansas dated August 2008 in the Administrative Record. As a result, USGS developed toxicity values at which 10 percent of the organisms living in the streams would potentially show adverse effects (T₁₀), and at which 20 percent of the organisms living in the streams would potentially show adverse effects (T₂₀). The EPA is adopting the T₂₀ toxic effect value as the cleanup criteria for sediments in the intermittent tributaries at the Site. These values are protective for 80 percent of the aquatic organisms as shown in said USGS/EPA district-wide study.

5.5 Expedited Debris Removal Area

On May 22, 2011, an EF5 tornado struck the southern portion of the city of Joplin, Missouri, destroying approximately 7,000 homes and 3,000 businesses in an area where historic mining was conducted. A large portion of the area is underlain with mining wastes, and the tornado's path intersected a portion of the Iron Gates and Iron Gates Extension designated areas. This area has been designated the expedited debris removal (EDR) area by the city of Joplin, and is shown on the attached Figure 2.

Prior to the EF5 tornado, the EPA conducted soil sampling in the EDR area during implementation of OU-2 and OU-3, Smelter Affected and Mine Waste Affected Residential Yard Cleanups. All of the earlier sampling events in the ERD area at properties not addressed by the OU-2 or OU-3 actions did not find levels of lead or cadmium that required cleanup. After the removal of destroyed homes, structures and other tornado debris, significant quantities of mining wastes and contaminated soil have been found at the surface in residential neighborhoods.

The mining wastes and contaminated soil were discovered as a result of residential soils sampling conducted under an institutional control program and county ordinance developed by Jasper County to guide future development in mine waste areas. A copy of the ordinance is attached (see Attachment 2). The ordinance was developed under the 2004 ROD for OU-1 and requires sampling properties for lead prior to development of residential structures. It also prescribes the approach required to eliminate the unacceptable exposures to mining wastes and contaminated soils. The EPA has determined that the ordinance incorporates information and procedures from the Superfund Lead-Contaminated Residential Sites Handbook (OSWER 9285.7-50 August 2003). Therefore, the EPA is now including the Jasper County ordinance as the selected remedial action for cleanup of residential yard areas in the EDR area.

As described above, the OU-2 and OU-3 ROD for this Site also addressed cleanup of smelter, mining wastes and contaminated soil in residential yards. Those selected remedial actions are complete and remain protective as described in the five-year review reports, which are available in the Administrative Record. The EPA notes that the ROD for OU-2 and OU-3 will not be affected by this OU-1 ROD Amendment.

The EPA is reiterating with this ROD Amendment that OU-1 cleanup action levels for surface mining wastes are appropriate for protection of human health at the Site. The EPA has determined that the OU-1 cleanup action levels are also appropriate in the EDR area. In addition, the EPA is establishing that residential soils cleanup actions at the EDR area will differ from the selected remedial actions for OU-1 mine and mill waste cleanup. The cleanup in the EDR will be implemented on a property-by-property basis as decisions are made to reestablish residential uses for the parcels impacted by the tornado and in accordance with the county ordinance. Contaminated soils removed from residential properties in the EDR area will be disposed of at the Gypstack in the Belleville-Chemical DA.

6.0 Summary of Proposed Remedy Changes

6.1 Costs

Due to the known increases in volume of wastes, number of aboveground repositories and excavation costs since the 2004 ROD was prepared, the costs for remediating the wastes is now estimated to be \$168 million. In addition, the costs will increase by \$20 million due to the remediation of mine wastes and associated soils in the EDR DA. Thus, the ROD Amendment estimates the total costs for EPA for OU-1 remediation to be \$188 million. Long-term O&M is estimated to be approximately \$100,000 annually.

6.2 Aboveground Repositories

The EPA has determined that due to the increase in waste volumes and acreage identified at the Site, sufficient subsidence pit space to perform subaqueous disposal is not available. Waste will be disposed of in aboveground repositories in those areas where sufficient subsidence pit space is unavailable. In addition, the EPA has determined that the six to twelve month settlement time prior to installing caps over wastes placed in subsidence pits is not required.

The EPA has determined that the existing long-term, residential-yard contaminated soil repository has reached its full capacity. This repository was established during OU-2 and OU-3 response actions. Under OU-1, this repository was to remain open for use during implementation in accordance with local governmental controls established by the city of Joplin and Jasper County's ordinances. However, due to the need for additional capacity, it will be closed and a new long-term repository will be established located at the FI property west of Malang Road and north of 7th Street on the Missouri/Kansas state boundary. The EPA has determined that the Gypstack located within the Beville-Chemical Plant DA of the Site is an appropriate location for long-term disposal of mining wastes and contaminated residential soils from the EDR area and for other areas of new residential development provided such developments are permitted in accordance with the city of Joplin and Jasper County's environmental ordinances for residential construction.

6.3 Biosolids and Deep Tilling Eliminated

The EPA has determined that appropriate biosolids are not available for use in amending soils for organic content. Additionally, pilot studies on deep tilling showed that tilling and mixing of soils to reduce metals concentrations below action levels were ineffective. The use of biosolids and deep tilling at the Site has been eliminated from the remedy. Because biosolids and deep tilling are impractical and ineffective, upland source materials will be excavated, removed and disposed of with the other mining wastes in subsidence pits or aboveground repositories and excavated areas will be recontoured, regraded and seeded.

6.4 Sediment Cleanup Action Level Established

The EPA, in conjunction with USGS, has conducted site-specific toxicity studies for sediments at the Site and is now selecting the tributary sediment cleanup values of 219 ppm lead; 2,949 ppm zinc; and 17 ppm cadmium.

6.5 EDR Area

The EPA is including the EDR area in the OU-1 selected remedial action, which includes the mining wastes located in residential areas of the site exposed after the Joplin EF5 tornado in May 2011. Cleanup of the residential yards within the EDR area will be in accordance with the methodologies established under the Jasper County ordinance.

None of these proposed changes alter or affect the RAO presented in the 2004 OU-1 ROD, or change how the remedy meets the statutory requirements discussed in the following section. See the attached Table 1 for a summary of the changes to the remedy comparing the 2004 ROD with the ROD Amendment.

7.0 Statutory Determination

Remedy changes outlined in this ROD Amendment will continue to meet the statutory requirements of CERCLA section 121, 42 U.S.C. § 9621 and the NCP. The remedy changes are protective of human health and the environment, comply with ARARs, are cost effective and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. The following sections discuss how the changes to the remedy described in this ROD Amendment meet these statutory requirements.

7.1 Protection of Human Health and the Environment

The changes will continue to protect human health and the environment by achieving the RAO through a combination of engineering measures and ICs. Existing terrestrial and aquatic risks from exposure to metals contaminated source materials will be mitigated by continued removal and disposal of the source materials in mine subsidence pits or aboveground repositories. The new selected action levels for sediment cleanup are protective of aquatic life as shown in on-site studies conducted by USGS. Future risks to human health will be reduced by source removal to include the EDR area that will be remediated at OU-1 cleanup action levels consistent with the Jasper County ordinance. Continued implementation of ICs will ensure proper construction and permitting of new residential dwellings in contaminated areas. Construction of the new residential soil repository will ensure that residential development will be consistent with these established ICs for the duration of the remedial action.

The use of biosolids and deep tilling were specified in the 2004 ROD for addressing upland vegetated chat and transition zone soil for protection of human health and the environment. Instead, these source materials will be excavated and removed to repositories within the Site. This change in the remedial action is a more protective engineering control than stabilization in place with biosolids and deep tilling because wastes will be contained in repositories with land use controls. In addition, eliminating the use of biosolids as soil amendments does not compromise the protectiveness of the remedy. Instead, the excavation, recontouring, regrading and vegetation are sufficient and more acceptable to the local community due to the extreme odor expected from uncomposted biosolids.

7.2 Compliance with ARARs

Compliance with ARARs is a requirement of the selected remedy unless waiver of an ARAR is justified. The remedy changes are expected to continue to comply with all ARARs identified in the 2004 ROD.

7.3 Long- and Short-term Effectiveness

There are no long-term, adverse, cross-media impacts expected from the remedy changes. In addition, there are no short-term threats associated with implementation of the remedy changes that cannot be readily controlled. The potential short-term risks associated with settlement of mining waste disposed of in subsidence pits prior to installing permanent repository caps no longer requires a waiting period. During remedial design/remedial action (RD/RA) implementation, the EPA has demonstrated that potential short-term risk due to settlement of the wastes is nonexistent.

7.4 Preference for Treatment as a Principal Element

The changes represent the maximum extent to which permanent solutions and treatment technologies can be utilized in a cost-effective manner for this remedial action. Disposal of the wastes in subsidence pits and aboveground repositories followed by capping is a permanent solution for addressing the wastes to the maximum extent practicable.

The EPA has not been able to verify the potential for treatment of the mining waste by deep tilling and application of biosolids during RD/RA because of the lack of available biosolids and practical difficulty with deep tilling. In addition, containment in repositories or subsidence pits of upland sources of mining wastes rather than deep tilling and biosolids meets the regulatory preference for more permanent remedies because of the land use controls associated with the capped areas.

7.5 Implementability

All of the changes are fully implementable. None of the changes detract from the implementability of the remedy. However, by eliminating biosolids and deep tilling, the remedy may be more implementable. The EPA will not use biosolids in excavated areas because of the severe odor problems, which could be extremely unacceptable to the local community. By not using deep tilling equipment, the remedy is more implementable because such equipment is prone to malfunction in the rocky, clay soils found at the Site. Instead, the EPA will continue recontouring, regrading and seeding excavated areas which are functioning well and are fully implementable.

7.6 Cost Effectiveness

The changes are cost effective, including the additional costs associated with the increase in volume and acreage of wastes, the increased number of aboveground repositories, plus the added cost for addressing contaminated residential properties in the EDR area. The cost of remediating mining wastes has increased to \$12 per cubic yard, which is only a \$4 increase from the 2004 cost estimate of \$8 even though the volume has doubled from 7 to 14 million cubic yards and the

acreage more than doubled from 5,000 to 11,000 acres. The changes provide overall effectiveness proportionate to the per-unit cost increase. The changes will continue to achieve the remedial action objectives and cost effectively reduce unacceptable risks to human health and the environment. The new estimated cost for the Site for the EPA's portion of the remedy is estimated at \$188 million, plus an estimated \$100,000 annually for O&M.

8.0 State Concurrence

The EPA has consulted with MDNR on the changes in the remedy in this ROD Amendment. MDNR agrees and concurs with the proposed changes.

9.0 Public Participation

The EPA issued the Proposed Plan for the ROD Amendment for OU-1 on August 7, 2013, and provided a 30-day review and comment period which closed on September 6, 2013. A public meeting to present the proposed plan and receive comments was held on August 15, 2013, at the Phelps Theater located in the Billingsly Student Center of Missouri Southern State University, 3950 East Newman Road, Joplin, Missouri 64801. The EPA did not receive any comments to the proposed amendment that resulted in any changes to this ROD. The significant comments received from the public are included with this ROD Amendment as Attachment 3. A copy of the transcript from the public meeting and all written comments received during the comment period can be found in the Administrative Record.

Table 1. Comparison of OU-1 ROD with changes to the remedy in Proposed ROD Amendment

REMEDIAL ACTION COMPONENT	OU-1 RECORD OF DECISION 2004, SELECTED REMEDIAL ACTIONS	OU-1 RECORD OF DECISION AMENDMENT 2013, PROPOSED CHANGES
Aboveground waste repositories	<p>Selected Remedy – use aboveground repositories only when nearby pit space unavailable; expectation is that will be rare occasion (public comment)</p> <p>Alternatives 5(a) and 5(b) in FS considered aboveground waste repositories</p>	<p>Use Alternative 5(a) criteria for design of numerous aboveground repositories</p> <p>New long-term repository location selected at the Gypstack in the Beville-Chemical DA</p>
Biosolids and deep tilling	<p>Selected Remedy – use biosolids and deep tilling for footprint of waste piles after excavation</p> <p>Upland source materials – deep tilling and biosolids are sole remedy (no excavation/no removal)</p>	<p>No biosolids and no deep tilling anywhere on the Site</p> <p>Excavation and removal now includes all upland source material areas</p>
Sediment cleanup action levels	Alternative 4 – use EPA national screening values and site background concentrations for action levels in sediments	Use new site-specific sediment cleanup action levels developed by USGS/EPA
Gypsum Waste Pile	Alternative 4 – cap in place	New repository for short- and long-term residential soils excavation (replace OU-2 repository)
Site map and DAs	Cleanup of mining wastes within the Designated Areas	Cleanup of mining wastes in DA and the EDR area as shown in the attached Fig. 1.
Cleanup of mining wastes in EDR area	Mining waste cleanup action levels – Excavate, place barriers as needed, dispose of wastes in new residential soil repository, clean fill to restore grade, issue building permit (IC)	The EDR cleanup will be in accordance with the Jasper County ordinance (attached). Identifies EDR area where this remedial action component is available within the Site

Figure 1. Map of Designated Areas

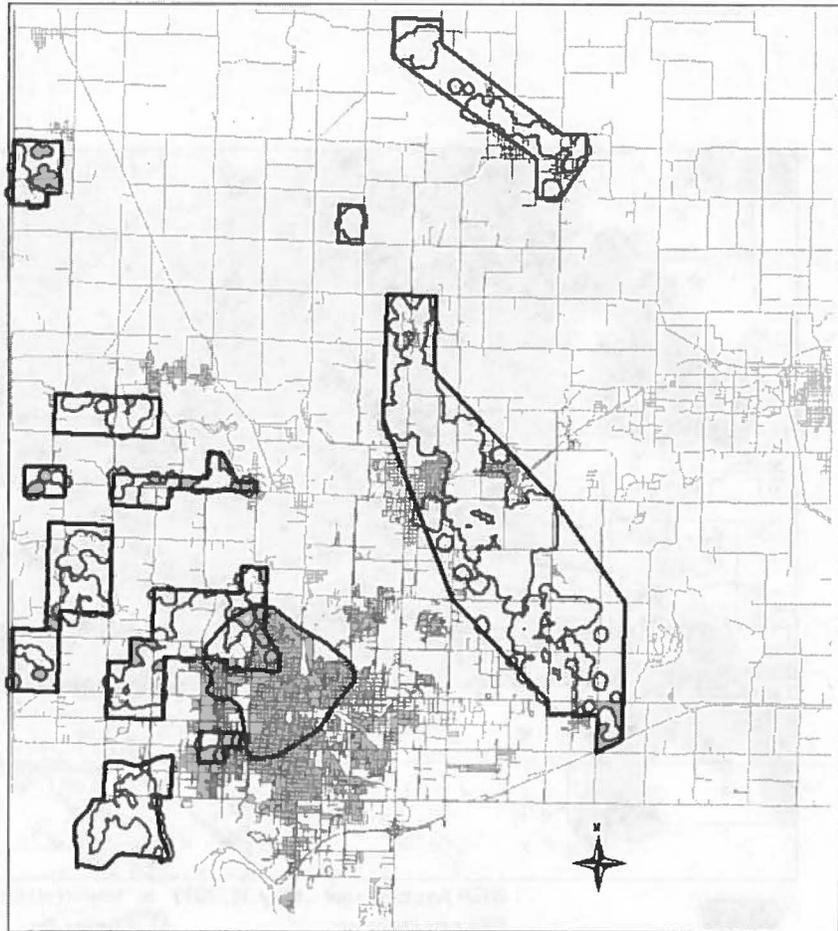
Jasper County

Mine Waste Areas and Smelter Zone

Mine Waste Designated Area

Mine Waste

Smelter Zone



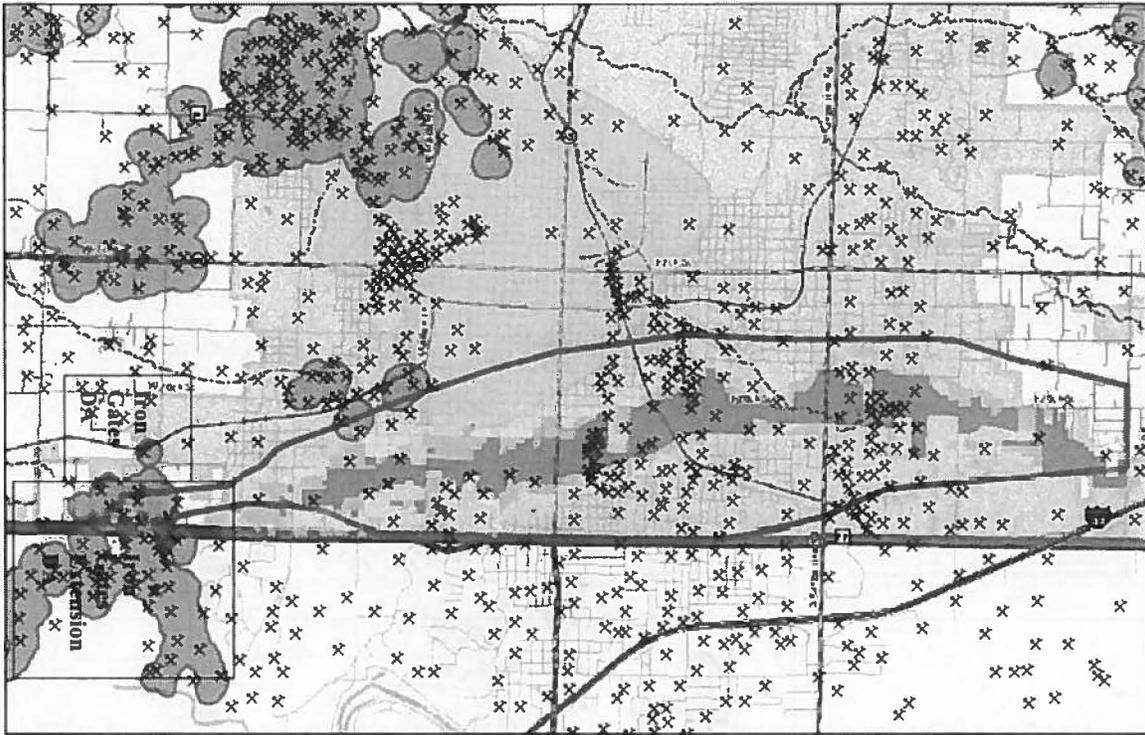
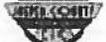


Figure 2. Location of the EDR

NGA Assessment - May 31, 2011

 CATASTROPHIC	 Inventory of Mines Occurances Prospects
 EXTENSIVE	 Tomado_Path
 MODERATE	 Mine Waste Area
 LIMITED	 Smelter

 1 inch = 0.5 miles



 41 N 21 E 1910
 Date: 5/31/2011
 Time: 11:28:08 AM
 Path: C:\0\roptoc\gis\mines_mire_waste.mxd

ATTACHMENT 1
Jasper County Health Ordinance

ENVIRONMENTAL CONTAMINATION ORDINANCE

**AN ORDINANCE ESTABLISHING PUBLIC HEALTH PROTECTION RELATED TO
LEAD, CADMIUM, TRICHLORO-ETHYLENE AND OTHER IDENTIFIED CONTAMINANTS**

SECTION 1. PURPOSE. The purpose of this ordinance is to provide for regulation of use, and mandatory testing of soil on designated properties located within the County. Certain Regulated Contaminants, as herein defined, have been identified in soil and in groundwater on both residential and commercial properties within the County. Most, if not all of these residential properties known to have been contaminated have been remediated to site-specific standards. Very few commercial properties have been remediated. New residential construction continues in areas of possible contamination. Regulated Contaminants pose a real threat to the health and well-being of individuals who are exposed to soil and water having elevated levels of the contaminants. In particular, children are at risk from long-term exposure to such Regulated Contaminants causing brain dysfunction and possible death. The County has identified certain areas where the Regulated Contaminants exceed allowable levels in residential yard soil or in groundwater. Such areas have been identified by the U.S. Environmental Protection Agency (EPA) and Missouri Department of Natural Resources (MDNR). This statute is intended to protect the general health of citizens, particularly children, from unnecessary exposure to contamination.

SECTION II. AUTHORITY. This ordinance is enacted pursuant to Section 192.300, R.S.Mo., and is not in conflict with any rules or regulations authorized by the State Department of Health & Senior Services.

SECTION III. ADOPTION OF RULES AND AMENDMENTS. The Jasper County Health Department shall promulgate rules to require testing of soil and groundwater in private wells, which can be more restrictive than state guidelines per R.S.Mo. § 192.290.

SECTION IV. APPLICABILITY. For the purposes of well testing requirements these regulations apply to all real property in the County. For soil testing requirements these regulations apply to the Superfund designated areas that generally include properties from Kansas State Line on the West to County Road 170 on the East and Newton County Line on the South to Highway M on the North. For soil testing, areas within these boundaries that are known to be non-contaminated will be exempted from the requirements of this ordinance. These areas will be designated using existing EPA and MDNR testing data and supplemented with local testing data. These areas will be reviewed annually as EPA/MDNR continue cleanup in the county. Maps depicting these potential contamination areas will be publicly available and updated annually.

Applicability of this ordinance will cease 6 months after completion by the EPA of Operable Unit 1 remediation project, which includes remediation of all lead mining and milling wastes and soil that exceed concentrations constituting a risk to residents.

SECTION V. DEFINITIONS. The following words and phrases used within this Ordinance have the following meanings:

- 5.01 Department: The County Health Department.
- 5.02 Commission: The County Commission.
- 5.03 County: Jasper, County, Missouri, a first class county.
- 5.04 The Health Officer: The Administrator of the County Health Department or an authorized representative.
- 5.05 Contaminated Soil: Soil having concentrations of Regulated Contaminants which exceed allowable levels established by the EPA, MDNR, or the State or County Department of Health.
- 5.06 Person: An individual, corporation or other legal entity.
- 5.07 Stop Order: A written order issued by the County Health Officer, or a designated representative, to stop all construction, installation, modification or occupation of any dwelling, child occupied facility or recreation area in areas of known contamination if in violation of this ordinance.
- 5.08 Required Soil Testing: Soil tests which conform to the requirements of the EPA and MDNR for the presence of Regulated Contaminants.
- 5.09 Required Water Well Testing: Water quality tests which conform to the requirements of the EPA and MDNR for water quality testing for Regulated Contaminants.
- 5.10 Regulated Contaminants: Those contaminants in the soil or water well which are regulated by federal, state or local laws and those contaminants which the EPA or MDNR finds may be hazardous to public health. Contaminants shall specifically include: Lead, Cadmium, Arsenic, Trichloroethylene ("TCE"), and any other heavy metal, organic solvent which is known to be, or suspected to be, present in County soils or water wells and which may cause harm to human health and well-being.
- 5.11 Qualified Testing Lab: Any testing facility which has been approved by the County, the EPA or MDNR as qualified to test for the Regulated Contaminants.
- 5.12 Soil Barriers: Any artificial or man-made structure, marker or indicator which has been placed in the soil for the purpose of notifying a Person of the presence of Regulated Contaminants.
- 5.13 Water Well: Any Domestic Well, High Yield Well or Multiple Family Well, as defined at 10 CSR 23-1.030, or converted Test Wells authorized under 10 CSR 23-6.020. Water Wells do not include public drinking water systems, or private lines accessing public drinking water systems which are regulated pursuant to 10 CRS 60-1.010.
- 5.14 Dwelling: either:
 - (a) A dwelling, including attached structures such as porches and stoops; or
 - (b) A dwelling unit in a structure that contains more than one separate residential dwelling unit and in which each such unit is used or occupied or intended to be used or occupied, in whole or in part, as the home or residence of one or more persons.
- 5.15 Child Occupied Facility: A building or portion thereof visited regularly by the same child who is six or fewer years of age including, but not limited to, day care centers, preschools and kindergarten classrooms. For the purposes of this subdivision, "visited regularly" means a minimum of two visits on different days within any week, provided that each visit lasts at least three hours and the combined weekly visits last at least six hours and the combined annual visits last at least sixty hours.

- 5.16 Recreational Area: Areas such as parks or ball fields where children are likely to congregate. This includes the portions of commercial or industrial properties that offer recreation areas where children are likely to congregate.

SECTION VI. PROHIBITIONS. No person shall:

- 6.01 Construct a dwelling or dwelling unit or other child occupied facility or recreational area as defined in this ordinance without first determining whether the property upon which the activity is to occur is property which has previously been identified as having soil contamination or which has been partially remediated for any Regulated Soil Contaminant.
- 6.02 Remove soil/mining waste from any contaminated mining site or chat pile for use in violation of EPA/MDNR standards for use as identified in EPA Mine Waste Fact Sheet dated February 2003 and other relevant documents.
- 6.03 Sell, assign, give or otherwise transfer real property without providing written notice to the buyer, assignee or transferee of the presence and concentration of Regulated Contaminants in the soil or groundwater if testing has occurred.
- 6.04 Sell, assign, give or otherwise transfer real property with a water well as defined herein without first conducting Required Testing for groundwater, and providing written results from a qualified testing lab to the Department and to the buyer, assignee or the transferee.
- 6.05 Falsify, tamper with, alter, purify or cause any activity to occur which will materially affect test samples nor falsify, tamper with or alter soil or water test results.
- 6.06 Knowingly withhold any information from the Department regarding soil or water test sampling or test results.
- 6.07 Inhabit a new structure before properly abating all identified soil hazards in accordance with EPA standards as identified in EPA document Superfund Lead Contaminated Residential Sites Handbook, August 2003, Directive # OSWER 9285.7-50 and summarized in Attachment A of this ordinance.

SECTION VII. PERMITS.

- 7.01 Building Permit: any person wishing to establish a dwelling, child occupied facility or recreation area on property within Jasper County shall apply to the County for a Building Permit except for property within political jurisdictions which issue building permits with the minimum requirements of all State and County requirements for the issuing of building permits. A permit will be issued when all county offices which govern property use have approved the permit application.
- 7.02 The Department shall provide to the applicant the information necessary to perform Required Testing of the soil and/or water prior to disturbance, including the contaminants for which testing is required, a detailed description of the method of acquiring and shipping soil samples, a list of approved Testing Labs, information pertaining to the possible human health hazards of Regulated Contaminants in soil or water. Additionally, requirements for remediation of contaminated soils in accordance with EPA guidelines will be provided by the County.

SECTION VIII. POWERS AND AUTHORITY OF INSPECTORS, AND INSPECTION PROVISIONS.

- 8.01 The Department reserves the right to establish and modify inspection procedures and standards for construction as necessary due to changes in Missouri statutes, rules, regulations best practices, manufacturers' recommendations and precedence.
- 8.02 The Department, Health Officer or a representative of the Health Officer shall be permitted to enter all properties for the purposes of inspection, observation, measurement, sampling and testing in accordance with the provisions of this ordinance. This shall include facilities permitted by another government entity. The Department has the right to enter property at any reasonable time if there is the suspicion of a violation of this ordinance.
- 8.03 Any person conducting, or having conducted on their behalf, any Required Testing as defined in this ordinance shall provide the test results to the Department of Health within five (5) days of receiving the test results. If the Department of Health reasonably determines that a health hazard exists, based on the provided test results, the Department shall have the right to conduct additional testing. Further, the Department shall have the responsibility as required by law to provide to the public any soil or water test results in their possession upon request.

SECTION IX. ENFORCEMENT

- 9.01 Any person found to be violating any provision of this ordinance in allowing the violation on their property shall be served by the Department with a written notice and/or Stop Order, stating the nature of the violation and providing a reasonable time limit for the satisfactory correction thereof. The offender shall, within the period of time stated in such notice, permanently cease all violation.
- 9.02 If violations of this ordinance continues the Department may require closure of any property which the Department believes may present a health hazard until such time as Required Testing may be performed to determine the presence of Regulated Contaminants. The Department may suspend or revoke any permits, including building permits, issued to any person violating this Ordinance until such time that the person complies with the Ordinance. All violations must be corrected before a permit can be issued or reinstated.
- 9.03 Any person who continues any violation beyond the time limit provided for in Section 9.01 may be charged with a class A misdemeanor and upon conviction thereof shall be fined as otherwise provided by law. Each day in which any violation continues shall be deemed a separate offense.
- 9.04 Any person violating any of the provisions of this ordinance or allowing violation(s) on their property shall be liable to the County for expenses, loss or damage incurred by reason such violation.

SECTION X. APPEALS.

- 10.01 Any person aggrieved by any decision of the County Health Officer or Department may appeal to the Appeals Board by filing a written application with the County Health

Officer within thirty (30) days after being notified of the decision which is the subject of the appeal.

- 10.02 The Appeals Board shall schedule a hearing on appeal, and shall give the person notice of the date of hearing at least ten (10) days prior to the hearing date and give the person reasonable opportunity to be heard.
- 10.03 Appeal hearings to the Appeal Board shall be conducted in accordance with the Commission's adopted rules and procedures. The Appeal Board shall consist of one County Commissioner, the Administrator, one Environmental Health Specialist, one soil scientist and one Citizen at Large. The Commissioner shall chair the board. The Administrator shall schedule the board hearings and determine the personnel makeup on the board. The decision of the Appeal Board is final unless overruled by a court of law. If the ruling of the Appeal Board is taken to court and the ruling prevails, any and all legal costs and personnel costs shall be paid by the Appellant.

SECTION XI. SEVERABILITY

- 11.01 If any article, chapter, section, clause or phrase of this regulation is, for any reason, held to be invalid by any court of competent jurisdiction, such decision shall not affect the remaining portions of this regulation.
- 11.02 No statement contained in this article shall be construed to interfere with any additional requirements that may be imposed by the Department.

ATTACHMENT 2
Jasper County Environmental Contamination Ordinance

- **Jasper County Health Ordinance Sampling Protocol/Remediation Fact Sheet**
- **Environmental Contamination Ordinance Implementation Plan**

Jasper County Health Ordinance Sampling Protocol/Remediation Fact Sheet

The following presents the approach for assessing soil contamination at new residential construction in Jasper County, MO.

Prior to Sampling

- Prior to sampling the XRF Spectrometer is standardized to manufacturer accepted standards to ensure accurate sampling.

Sample Vacant Lots Prior to Regulated Construction Activities

- Sample throughout the lot as described below to determine lead concentrations
- Number of required samples determined based on lot size. Collect at least one sample (0-1") in each quarter of yard area as defined in Diagram 1. On large lots, if visual observations indicate prior uses of property that may have influenced the lead and/or cadmium contamination levels, additional sampling should be performed to adequately characterize the site.
- Each sample shall consist of a 5 aliquot composite. Sample aliquots shall be equal spaced and collected in a "dice" pattern (see Diagram 1).
- Collect one sample at each of the following depths: 0"-1", 1"-12", and 12"-24". Testing excavation (e.g., septic system soil profile pit or construction excavation) pits may substitute for core sampling.
- If depth sampling indicates contamination, further depth sampling will be required.

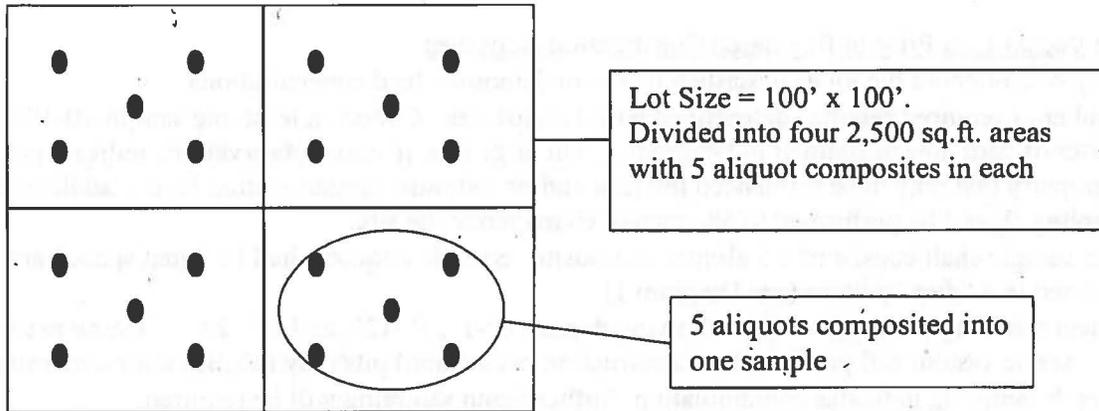
Sample Collection

- Collect approx. 4 oz. Soil from 5 distinct locations with clean implement and composite into clean container. Mix soil thoroughly. Sieve the sample through a #20 (850 micron) screen. Retain 4 oz. of soil for analysis. Depth samples will be mixed similarly before testing.
- Analyze at certified lab or with calibrated XRF.

Cleanup Requirements

- Surface soils with lead concentrations greater than 400 parts per million (ppm), and/or cadmium concentrations greater than 75 ppm must be remediated either by excavating and removing or covering with clean soil.
- Soils with lead concentrations greater than 400 ppm and less than 800 ppm, and/or cadmium concentrations greater than 75 ppm and less than 120 ppm shall be covered with a minimum of 6 inches of clean soil.
- Soils with lead concentrations greater than or equal to 800 ppm and less than 1,500 ppm, or cadmium greater than or equal to 120 ppm and less than 190 ppm shall be covered with a minimum of 12 inches of clean soil.
- Soils with lead concentrations greater than or equal to 1,500 ppm, or cadmium greater than or equal to 190 ppm shall be covered with a minimum 18 inches of soil.
- Excavated soils contaminated with lead must be disposed of in a facility approved by the County Health Department.
- Back soil or cover soil must be certified to contain less than 100 ppm lead.

Diagram 1



Environmental Contamination Ordinance Implementation Plan

The Jasper County Environmental Contamination Ordinance has two requirements that will require ongoing enforcement activities. The first is the soil contamination issue and the second is the issue of well water contamination. The soil contamination portion will impact the municipalities within the county the most and will be addressed first in this document.

Soil Contamination

- The county health department will provide all municipalities with copies of GIS maps which outline the areas of their jurisdiction that may be contaminated with mining waste or due to smelter activities. These maps will be updated as testing indicates that areas are free of contamination, at least annually.
- When individuals request building permits for new construction, either from the municipality or the county, the maps will be consulted. If it is determined that the property is in an area of concern the reviewer will request clearance from the county lead program staff prior to issuing a permit.
- Lead program staff will conduct an assessment of the property to determine the presence of contaminants within two working days of notification. If contamination levels exceed the action levels set by EPA, the county lead program personnel will contact the builder and initiate discussion regarding development of a remediation plan consistent with EPA guidance described in the fact sheet which accompanies the ordinance. If soil contamination does not exceed the EPA action level, notification will be provided to the permitting agency recommending that the permit be issued.
- If the soil conditions require a remediation plan, one will be developed by the builder which is consistent with requirements and will be approved by the health department lead program. The health department will then notify the permitting agency that the plans are approved contingent upon incorporation of the remediation into the building plan. It is anticipated that the permit will then be approved.
- If a remediation plan is required, a final inspection will be conducted by the health department lead program to assure that adequate remediation has occurred prior to occupancy of the dwelling. The permitting agency will be notified regarding the results of the final inspection. If the permitting agency requires an occupancy permit prior to habitation, it is anticipated that it will not be issued prior to receipt of a final inspection report indicating that adequate remediation has occurred. If the permitting agency does not have an occupancy permit system, the county will enforce its ordinance in restricting occupancy prior to remediation completion.

Water Contamination

- The water contamination segment of this ordinance relates only to private water wells. The MDNR already requires all new wells drilled in Jasper County to be tested for metals contamination prior to issuance of a new well certificate. MDNR and the Jasper County Health Department maintain a list of certified well testers who are qualified to conduct this task.

- This ordinance requires that all existing wells be tested for metals (Especially lead and cadmium) when property is transferred or sold. A list of certified testers is available.
- Additionally, the ordinance requires that the test results be provided to the Jasper County Health Department and to the purchaser of the property.

ATTACHMENT 3

Responsiveness Summary

The following presents the significant questions received by the U.S. Environmental Protection Agency at the public meeting held the evening of August 15, 2013. The questions have been paraphrased for conciseness. The full transcript of the meeting can be found in the Administrative Record.

Question: Considering the sizes of the pits that have been filled, and that only half of the wastes have been disposed, I assume the above ground repository EPA builds is going to be huge.

Answer: There is a tremendous amount of space still available in the Oronogo Circle and the King Jack Park pit for disposal. Numerous smaller pits and shafts still exist on-site for subaqueous disposal, some of which are two to three hundred feet deep, and will take tens of thousands of cubic yards of mining waste. The EPA is still placing as much wastes as possible underground. The ROD Amendment also calls for using the Gypstack on the west side of the site as a repository. This area is over 60 acres in size and will hold over a million cubic yards if only placed 10 feet thick across the surface of the pile. In other areas of the Site where pits are not available for disposal, the EPA will design each repository with anticipated future use in mind so the property may be developed for nonresidential use in the future.

Question: It was stated that that the disking or deep tilling process didn't work, so the new plan is to do away with that process. What process will take the place of tilling?

Answer: The EPA believed it could save excavation and disposal costs in some areas by deep tilling the soils and by mixing the contaminants with underlying clean soil to achieve action levels. Studies conducted showed this is not the case, so the EPA will now excavate and remove all wastes and soil that exceed the terrestrial action levels.

Question: The 2004 ROD specified a stream sediment action level of two part per million cadmium, seventy part per million lead, and two hundred and fifty parts per million of zinc. Now EPA is proposing to increase those levels to be seventeen per million cadmium, two hundred and nineteen per million lead, and two thousand nine hundred and forty-nine per million of zinc. If cadmium is supposed to start causing cancer at five per million, and lead is at eighty per million where we start getting a lot of health problems, are you suggesting that we will be exposed to even more, or higher levels of those toxins?

Answer: The numbers established in the 2004 ROD were derived from a variety of different studies that are done throughout the country and published in the literature. Some of the studies include coldwater species, like trout, that are extremely sensitive to metals. The EPA and USGS conducted studies using stream sediments collected from Jasper and Newton Counties in Missouri; Cherokee County, Kansas; and Ottawa County, Oklahoma. The studies were conducted by exposing aquatic organisms to the Site sediments and measuring growth, health effects and mortality. During these studies, organisms were exposed to different concentrations of metals, from very low to high concentrations, and determining the contaminant levels below which no unacceptable response could be measured. The sediment action levels presented in the ROD Amendment represent these values.

Question: Is it not correct that different organisms or different animals react differently? For example, the fish tested may not be affected, but is it possible that it will affect humans, or deer, or raccoons, or birds, and other organisms that would be exposed to those contaminants?

Answer: The EPA and the Missouri Department of Health conducted both an ecological risk assessment and human health risk assessment for the site. Those assessments determined that people swimming or recreating in Site streams were not at any significant risk. Nor were any significant risk identified for animals using the streams. Aquatic organisms are much more sensitive to the sediments and the surface water than people are, thus the proposed sediment action levels are much lower than the terrestrial action levels for soil.

The following presents comments received by EPA via mail and email during the comment period. The letters can be found in the Administrative Record.

The city of Joplin stated they support EPA for all proposed changes and specifically the continued funding of soil cleanup in the tornado devastation area.

The Environmental Task Force of Jasper and Newton Counties stated they concur with the recommendations in the Proposed ROD Amendment.

The Missouri Department of Health and Senior Services (MDHSS) stated they believe the sediment action level for cadmium should not exceed 5 parts per million (ppm) based on the Agency for Toxic Substances and Disease Registry's recommended level for protectiveness of children from soil. The EPA does not agree that 5 ppm cadmium, based on soil in residential yards, is appropriate for stream sediments for protection of children, since the sediments are submerged under water and young children would only be exposed on an infrequent recreational basis. Soil adhering to a child's hand (which is the exposure pathway to ingestion) in submerged sediments would likely be washed off upon removing them from the water. The EPA believes 17 ppm cadmium in stream sediments is protective of human health. The cadmium action level for human exposure (children in a residential setting) established in the OU 2 and 3 ROD is 75 ppm in the yard soil and 25 ppm in existing gardens. These values were based on the site-specific Human Health Risk Assessment. MDHSS was involved in reviewing and developing that risk assessment as well as the OU 2 and 3 ROD. Further, the Jasper County Health Ordinance specifies the action level for cadmium at 75 ppm in residential soils. The EPA understands that MDHSS was involved in development of the County's action level of 75 ppm, and the EPA risk assessor concurred with the value. Therefore, the sediment action level of 17 ppm cadmium is 4.4 times lower than the cadmium level agreed on for the Site by the agencies for protection of young children.

An email from an individual dated August 26, 2013, stated that the sediment action levels should not be changed and that the EPA should explain the design requirements for the mining waste repositories. The EPA believes, as explained above, that the new sediment action levels are protective of aquatic life and human health. The EPA has defined the design for repositories in the ROD issued in 2004, which includes capping and long-term O&M (see Sections 3.2 and 3.3 above in this ROD Amendment).