UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

IN THE MATTER OF:	)	ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT FOR REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
Riverside Industrial Park Superfund Site, Newark, Essex County, New Jersey	)	
PPG Industries, Inc.,	)	U.S. EPA REGION II CERCLA DOCKET No. 02-2014-2011
Respondent	)	Proceeding Under Sections 104, 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9604, 9607, and 9622.

I. JURISDICTION AND GENERAL PROVISIONS 3
II. PARTIES BOUND.....3
III. STATEMENT OF PURPOSE.....4
IV. DEFINITIONS.....4
V. FINDINGS OF FACT 6
VI. CONCLUSIONS OF LAW AND DETERMINATIONS.....8
VII. SETTLEMENT AGREEMENT AND ORDER 9
VIII. DESIGNATION OF CONTRACTORS AND PROJECT COORDINATORS.....9
IX. WORK TO BE PERFORMED.....11
X. APPROVAL OF PLANS AND OTHER SUBMISSIONS.....14
XI. QUALITY ASSURANCE, SAMPLING, AND ACCESS TO INFORMATION....16
XII. SITE ACCESS AND INSTITUTIONAL CONTROLS.....17
XIII. COMPLIANCE WITH OTHER LAWS.....18
XIV. RETENTION OF RECORDS.....18
XV. DISPUTE RESOLUTION.....19
XVI. STIPULATED PENALTIES.....20
XVII. FORCE MAJEURE.....22
XVIII. PAYMENT OF RESPONSE COSTS.....22
XIX. COVENANT NOT TO SUE BY EPA.....24
XX. RESERVATIONS OF RIGHTS BY EPA.....25
XXI. COVENANT NOT TO SUE BY RESPONDENT.....26
XXII. OTHER CLAIMS.....26
XXIII. CONTRIBUTION.....27
XXIV. INDEMNIFICATION.....27
XXV. INSURANCE.....28
XXVI. FINANCIAL ASSURANCE.....28
XXVII. INTEGRATION/APPENDICES.....30
XXVIII. ADMINISTRATIVE RECORDS.....30
XXIX. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION.....30
XXX. NOTICE OF COMPLETION OF WORK.....31

APPENDIX A: STATEMENT OF WORK
APPENDIX B: SITE MAP

ED_005342A_00002977-00002

I. JURISDICTION AND GENERAL PROVISIONS

1. This Administrative Settlement Agreement and Order on Consent for Remedial Investigation and Feasibility Study ("Settlement Agreement") is entered into voluntarily by the United States Environmental Protection Agency ("EPA") and PPG Industries, Inc. ("PPG" or "Respondent"). The Settlement Agreement provides for the preparation and performance of a remedial investigation and feasibility study ("RI/FS") at the Riverside Industrial Park Superfund Site ("Site"), located in Newark, Essex County, New Jersey, and the reimbursement of Future Response Costs incurred by EPA in connection with the RI/FS.

2. This Settlement Agreement is issued under the authority vested in the President of the United States by Sections 104, 107, and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended ("CERCLA"), 42 U.S.C. §§ 9604, 9607, and 9622. This authority was delegated to the Administrator of EPA on January 23, 1987, by Executive Order 12580, 52 Fed. Reg. 2926 (Jan. 29, 1987), and further delegated to Regional Administrators on May 11, 1994, by EPA Delegation Nos. 14-14-A, 14-14-C and 14-14-D. This authority was further redelegated by the Regional Administrator of EPA Region 2 to the Director of the Emergency and Remedial Response Division on November 23, 2004.

3. In accordance with Sections 104(b)(2) and 122(j)(1) of CERCLA, 42 U.S.C. §§9604(b)(2) and 9622(j)(1), EPA notified the U.S. Department of the Interior, the National Oceanic and Atmospheric Administration, and the New Jersey Department of Environmental Protection ("NJDEP") on September 17, 2013 of negotiations with potentially responsible parties regarding the release and threat of release of hazardous substances that may have resulted in injury to the natural resources under Federal and/or State trusteeship.

4. 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 Sections V and VI of 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.

II. PARTIES BOUND

5. 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 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.

6. 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.

7. The undersigned representative of Respondent certifies that he or she is fully authorized to enter into the terms and conditions of this Settlement Agreement and to execute and legally bind Respondent to this Settlement Agreement.

III. STATEMENT OF PURPOSE

8. In entering into this Settlement Agreement, the objectives of EPA and Respondent are: (a) to determine the nature and extent of contamination and any threat to the public health, welfare, or the environment caused by the release of hazardous substances, pollutants or contaminants at or from the Site, by conducting a Remedial Investigation as more fully set forth in the Statement of Work ("SOW") attached as Appendix A to this Settlement Agreement; (b) to identify and evaluate remedial alternatives to prevent, mitigate or otherwise respond to or remedy any release or threatened release of hazardous substances, pollutants, or contaminants at or from the Site, by conducting a Feasibility Study as more specifically set forth in the SOW in Appendix A to this Settlement Agreement; and (c) to recover Future Response Costs to be incurred by EPA with respect to this Settlement Agreement.

9. The Work conducted under this Settlement Agreement is subject to approval by EPA and shall provide all appropriate and necessary information to assess Site conditions and evaluate alternatives to the extent necessary to select a remedy that will be consistent with CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300 ("NCP"). Respondent shall conduct all Work under this Settlement Agreement in compliance with CERCLA, the NCP, and all applicable EPA guidances, policies, and procedures.

IV. 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 in such regulations. Whenever terms listed below are used in this Settlement Agreement or in the appendices attached hereto and incorporated hereunder, 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, the 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 XXX.

d. "EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

e. "Engineering Controls" shall mean constructed containment barriers or systems that control one or more of the following: downward migration, infiltration or seepage or surface runoff or rain, or natural leaching migration of contaminants through the subsurface over time. Examples include caps, engineered bottom barriers, immobilization processes, and vertical barriers.

f. "Future Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the EPA incurs after the Effective Date in reviewing or developing plans, reports, or other items pursuant to this Settlement Agreement, verifying the Work, overseeing, or enforcing this Settlement Agreement, including but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, Agency for Toxic Substances and Disease Registry ("ATSDR") costs, the costs incurred pursuant to Paragraph 54 (costs and attorneys fees and any monies paid to secure access, including the amount of just compensation), Paragraph 40 (Emergency Response), and Paragraph 84 (Work Takeover).

g. "Institutional controls" shall mean non-engineered instruments, such as administrative and/or legal controls, that help to minimize the potential for human exposure to contamination and/or protect the integrity of a remedy by limiting land and/or resource use. Examples of institutional controls include easements and covenants, zoning restrictions, special building permit requirements, and well drilling prohibitions.

h. "Hazardous substance" shall have the meaning provided in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

i. "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, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year.

j. "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

k. "Paragraph" shall mean a portion of this Settlement Agreement identified by an Arabic numeral.

l. "Party" or "Parties" shall mean EPA and/or Respondent.

m. "RCRA" shall mean the Resource Conservation and Recovery Act, also known as the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901 *et. seq.*

n. "Respondent" shall mean PPG Industries, Inc.

o. "Section" shall mean a portion of this Settlement Agreement identified by a

Roman numeral.

p. "Settlement Agreement" shall mean this Administrative Settlement Agreement and Order on Consent, the SOW, all appendices attached hereto (listed in Section XXVII) and all documents incorporated by reference into this document including without limitation EPA-approved submissions. EPA-approved submissions (other than progress reports) are incorporated into and become part of the Settlement Agreement upon approval by EPA. In the event of conflict between this Settlement Agreement and any appendix or other incorporated documents, this Settlement Agreement shall control.

q. "Site" shall mean the Riverside Industrial Park Superfund Site, more specifically the properties designated as Lots 1, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, and 70 in Block 614 on the tax map of the City of Newark, New Jersey. A general depiction of the Site is shown on Appendix B.

r. "Statement of Work" or "SOW" shall mean the Statement of Work as set forth in Appendix A to this Settlement Agreement. The Statement of Work is incorporated into this Settlement Agreement and is an enforceable part of this Settlement Agreement as are any modifications made thereto in accordance with this Settlement Agreement.

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

t. "Work" shall mean all activities Respondent is required to perform under this Settlement Agreement, except those required by Section XIV (Retention of Records).

V. FINDINGS OF FACT

11. The Site includes both current and former manufacturing facilities, some of which are vacant, at 29 Riverside Avenue in Newark, New Jersey. The Site is bordered by Riverside Avenue, McCarter Highway and Conrail railroad tracks to the west, the Passaic River to the east, additional industry and Riverside Avenue to the north, and additional industry to the south. The approximately seven-acre Site is located in a mixed residential and commercial/heavy industrial area.

12. From approximately 1902 to 1971, the Site was used for paint, varnish, linseed oil and resin manufacturing by Patton Paint Company, which merged into the Paint and Varnish Division of Pittsburgh Plate Glass Company in 1920. Pittsburgh Plate Glass Company changed its name to PPG Industries, Inc. (Respondent) in 1968. PPG conveyed its interest in the Site in August 1971 and has neither owned nor operated the Site since that time.

13. The Site originally consisted of one Lot (originally designated as Block 614, Lot 1), but in the 1980's it was subdivided into the 15 Lots that exist today. From the

1970's to the present, the Site has been used by a variety of businesses from industrial, manufacturing, chemical packaging to chemical and cosmetics manufacturing. Although the Site is currently an active industrial park, several portions of the Site are vacant and owned by the City of Newark through foreclosures (specifically, Block 614, Lots 58, 61, 63, 64, and 68).

14. At various times prior to 1971, materials containing some or all of the following may have been used in the manufacture of paint and/or varnish at the Site: alkyd resins, phenolic resins, toluene, xylene, ethylbenzene, methyl ethyl ketone, lead, white lead, and zinc. Respondent also utilized certain solvents at the Site. Benzol (benzene), acetone, naptha, ethyl acetate, naphthalene, diethyl phthalate, dibutyl phthalate and/or butyl acetate may also have been used for the manufacturing processes employed by Respondent at the Site.

15. An explosion/fire occurred at the Site in 1969, which EPA contends may have resulted in a release of hazardous substances.

16. In October 2009, EPA and New Jersey Department of Environmental Protection (NJDEP) responded to a reported oil spill into the Passaic River from a pipe at the Site. EPA traced the source to two basement tanks in a vacant building located on Lot 64 that had been recently connected to a storm sewer by a hose. Analysis of the contents of the tanks revealed the presence of several hazardous substances including barium, mercury and dimethylphenol. EPA initiated an emergency removal action to stop the discharge and secure the source.

17. Further EPA investigation of Lots 63 and 64 led to the discovery of ten 12,000-15,000 gallon underground storage tanks (USTs) adjacent to a vacant building, numerous 3,000-10,000 gallon aboveground storage tanks (ASTs), an underlain concrete basement/impoundment, a number of 55-gallon drums, and pigment hoppers and other smaller containers in both that building and an adjacent vacant building. EPA Removal Action activities included: removal of liquids from the basement of buildings; investigation of the USTs with removal of two of them; investigation and disposal of the ASTs, drums and smaller containers; and soil, groundwater and waste sampling.

18. In 2010 and 2011, EPA sampling of soil and groundwater found hazardous substances at multiple locations within the Site including, metals, semi-volatile organic compounds (SVOCs), volatile organic compounds (VOCs), PCBs, and Tentatively Identified Compounds (TICs). Analysis of the wastes found in the tanks, drums, and in the vacant buildings also found hazardous substances including, metals, VOCs, SVOCs, and TICs, some, but not all, of which may be consistent with raw materials and/or finished products historically used in the varnish, paint and/or applied coatings industries.

19. At various times commencing in the mid-1980's, multiple environmental investigations have been performed by certain subsequent owners and operators of the various Lots that make up the Site. Several Lots were the subject of NJDEP investigation and/or remediation. Areas of environmental concern identified during these investigations included spills, tanks, drums, and contaminated soil and groundwater. Metals, VOCs, SVOCs and PCBs

were also identified during these investigations.

20. Certain chemicals identified in the paragraphs above included phenol, toluene, xylene, ethylbenzene, methyl ethyl ketone, chlorobenzene, acetone, lead, methyl acetate, methylene chloride, trichlorobenzene, alpha-BHC, and zinc, which are listed hazardous substances under CERCLA.

21. The Riverside Industrial Park Superfund Site was listed on the National Priorities List ("NPL") pursuant to CERCLA Section 105, 42 U.S.C. § 9605, on May 24, 2013.

22. By letter, dated April 18, 2013, EPA notified Respondent, as well as ten additional parties currently owning and/or operating at one or more of the Lots comprising the Site, that EPA considered the letter recipients to be potentially liable under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), for conditions at the Site.

23. By letter dated May 22, 2013, EPA requested each of the April 18, 2013, notice letter recipients, as well as seven additional potentially responsible parties under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), to submit a written good faith offer of their willingness to fully fund or perform the RI/FS. PPG is the only recipient of the May 22, 2013 letter that agreed to fund or perform the RI/FS. None of the other recipients of that letter have agreed to perform the RI/FS.

VI. CONCLUSIONS OF LAW AND DETERMINATIONS

24. Based on the Findings of Fact set forth above, EPA has determined that:

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

b. The contamination found at the Site, as identified in the Findings of Fact, above, included "hazardous substances" as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

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

d. Respondent is a potentially responsible party under Sections 104, 107 and 122, 42 U.S.C. §§ 9604, 9607 and 9622.

e. The conditions described in the Findings of Fact, above, constitute an actual or threatened "release" of a hazardous substance from a facility as defined in Section 101(22) of CERCLA, 42 U.S.C.§ 9601(22).

f. The RI/FS required by this Settlement Agreement is necessary to protect

the public health, welfare, or the environment and , if carried out in compliance with the terms of this Settlement Agreement, will be consistent with the NCP, as provided in Section 300.700(c)(ii) of the NCP.

25. The actions required by this Settlement Agreement are necessary to protect the public health or welfare or the environment, are in the public interest, are consistent with CERCLA and the NCP, 42 U.S.C. §§9604(a)(1), 9622(a), and will expedite effective remedial action and minimize litigation, 42 U.S.C. § 9622(a).

26. EPA has determined that Respondent is qualified to conduct the RI/FS within the meaning of Section 104(a) of CERCLA, 42 U.S.C. § 9604(a), and will carry out the Work properly and promptly, in accordance with Sections 104(a) and 122(a) of CERCLA, 42 U.S.C. §§ 9604(a) and 9622(a), if Respondent complies with the terms of the Settlement Agreement.

VII. SETTLEMENT AGREEMENT AND ORDER

27. Based upon the foregoing Findings of Fact and Conclusions of Law and Determinations, it is hereby ordered and agreed that Respondent shall comply with all provisions of this Settlement Agreement, including, but not limited to, all appendices to this Settlement Agreement and all documents incorporated by reference into this Settlement Agreement.

VIII. DESIGNATION OF CONTRACTORS AND PROJECT COORDINATORS

28. Selection of Contractors, Personnel. All Work performed under this Settlement Agreement shall be under the direction and supervision of qualified personnel. Within 15 days of the Effective Date of this Settlement Agreement, Respondent shall notify EPA in writing of the names, titles, and qualifications of the personnel, including contractors, subcontractors, consultants and laboratories, if any, to be used in carrying out the Site Characterization Summary Report (SCSR). Within 21 days of the submittal of the SCSR, and before the remainder of the Work outlined below begins, Respondent shall notify EPA in writing of the names, titles, and qualifications of the personnel (including contractors, subcontractors, consultants and laboratories), to the extent that they have been identified, to be used in carrying out such Work. Respondent shall notify EPA of the names, titles, and qualifications of the remaining personnel used in carrying out the Work as they are identified but not later than submission of the RI/FS Work Plan as provided in Section III of the SOW. With respect to any proposed contractor, Respondent shall demonstrate that the proposed contractor has a quality system which complies with ANSI/ASQC E4-2004, "Quality Systems for Environmental Data and Technology Programs: Requirements with Guidance for Use," (American National Standard, 2004). Respondent shall provide EPA with a copy of the proposed contractor's Quality Management Plan ("QMP"). Respondent shall prepare the QMP in accordance with the "EPA Requirements for Quality Management Plans" (reissued May 2006) or equivalent documentation as determined by EPA. The qualifications of the persons undertaking the Work for Respondent shall be subject to EPA's review, for verification that such persons meet minimum technical background and experience requirements. This Settlement Agreement is contingent on Respondent's demonstration to EPA's satisfaction that Respondent is qualified to perform properly and promptly the actions set forth in this Settlement Agreement. If EPA disapproves in

writing of any person's technical qualifications, Respondent shall notify EPA of the identity and qualifications of the replacement within 14 days of the written notice. If EPA subsequently disapproves of the replacement, EPA reserves the right to terminate this Settlement Agreement and to conduct a complete RI/FS, and to seek reimbursement for costs and penalties from Respondent. During the course of the RI/FS, Respondent shall notify EPA in writing of any changes or additions in the personnel used to carry out such Work, providing their names, titles, and qualifications. EPA shall have the same right to disapprove changes and additions to personnel as it has hereunder regarding the initial notification.

29. Within 7 days after the Effective Date, Respondent shall designate a Project Coordinator who shall be responsible for administration of all actions by Respondent required by this Settlement Agreement and shall submit to EPA the designated Project Coordinator's name, address, telephone number, and qualifications. To the greatest extent possible, the Project Coordinator shall be present on Site or readily available during Site Work. EPA retains the right to disapprove of the designated Project Coordinator. If EPA disapproves of the designated Project Coordinator, Respondent shall retain a different Project Coordinator and shall notify EPA of that person's name, address, telephone number and qualifications within 10 days following EPA's disapproval. Respondent shall have the right to change its Project Coordinator, subject to EPA's right to disapprove. Respondent shall notify EPA 7 days before such a change is made. The initial notification may be made orally, but shall be promptly followed by a written notification. Receipt by Respondent's Project Coordinator of any notice or communication from EPA relating to this Settlement Agreement shall constitute receipt by Respondent.

30. EPA has designated the following individual as its Project Coordinator with respect to the Work:

Elizabeth Butler
U. S. Environmental Protection Agency, Region 2
Emergency and Remedial Response Division
290 Broadway, 19th Floor
New York, NY 10007
212-637-4396
butler.elizeth@epa.gov

31. EPA will notify Respondent of any change of EPA's designated Project Coordinator. Except as otherwise provided in this Settlement Agreement, Respondent shall direct all submissions to the EPA Project Coordinator.

32. 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 any Work required by this Settlement Agreement, and to take any necessary response action when s/he determines that conditions at the Site may present an immediate endangerment to public health or welfare or the environment. The 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.

33. EPA shall arrange for a qualified person(s) to assist in its oversight and review of the conduct of the RI/FS, as required by Section 104(a) of CERCLA, 42 U.S.C. Section 9604(a). Such person shall have the authority to observe Work and make inquiries in the absence of EPA, but not to modify the RI/FS Work Plan.

IX. WORK TO BE PERFORMED

34. Activities and Deliverables. The purpose of the remedial investigation/feasibility study (RI/FS) is to investigate the nature and extent of contamination at the Site, and to develop and evaluate potential remedial alternatives. The RI/FS shall focus on the Site and any potential exposure pathways. The RI and FS are interactive and may be conducted concurrently so that the data collected in the RI influences the development of remedial alternatives in the FS, which in turn affects the data needs and the scope of treatability studies, if needed.

a. Respondent shall conduct activities and submit plans, reports or other deliverables as provided by the attached SOW, which is incorporated by reference, for the development of the RI/FS. All such Work shall be conducted in accordance with the provisions of this Settlement Agreement, the SOW, CERCLA, the NCP and EPA guidance, including, but not limited to, the "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (OSWER Directive # 9355.3-01, October 1988 or subsequently issued guidance), "Guidance for Data Usability in Risk Assessment" (OSWER Directive #9285.7-05, October 1990 or subsequently issued guidance), and guidance referenced therein, as may be amended or modified by EPA. Respondent shall submit to EPA 1 hard copy and 2 electronic copies of all plans, reports and other deliverables Respondent is required to submit pursuant to provisions of this Settlement Agreement. All electronic copies shall be in a copy able and searchable format.

b. Respondent shall perform the Work in accordance with the schedules, standards, specifications, and other requirements of the RI/FS Work Plan, a deliverable of the SOW, as initially approved by EPA, and as it may be amended or modified by EPA prior to completion of the RI/FS and shall comply with all other requirements of this Settlement Agreement.

c. Respondent shall submit additional hard copies of large, odd-sized, or hard to reproduce files, figures, documents or other deliverables that Respondent is required to submit. The SOW is incorporated into and an enforceable part of this Settlement Agreement.

35. Community Involvement Plan. EPA will prepare a community involvement plan, in accordance with EPA guidance and the NCP. As requested by EPA, Respondent shall provide information supporting EPA's community involvement plan and shall participate in the preparation of such information for dissemination to the public and in public meetings which may be held or sponsored by EPA to explain activities at or concerning the Site.

36. Modification of the RI/FS Work Plan.

a. If at any time during the RI/FS process, Respondent identifies a need for additional data, Respondent shall submit a memorandum documenting the need for additional

data to the EPA Project Coordinator within15 days of identification.

b. In the event of an unanticipated or changed circumstance at the Site, Respondent shall notify the EPA Project Coordinator by telephone within 24 hours of discovery of the unanticipated or changed circumstances. In the event that EPA determines that the immediate threat or the unanticipated or changed circumstances warrant changes in the RI/FS Work Plan, EPA will modify or amend the RI/FS Work Plan in writing accordingly. Respondent shall perform the RI/FS Work Plan as modified or amended.

c. EPA may determine that in addition to tasks defined in the initially approved RI/FS Work Plan, other additional Work may be necessary to accomplish the objectives of the RI/FS. Respondent agrees to perform these response actions in addition to those required by the initially approved RI/FS Work Plan, including any approved modifications, if such actions are necessary for a complete RI/FS.

d. Respondent shall confirm its willingness to perform the additional Work in writing to EPA within 7 days of receipt of the EPA request. If Respondent objects to any modification determined by EPA to be necessary pursuant to this Paragraph, Respondent may seek dispute resolution pursuant to Section XV (Dispute Resolution). The RI/FS Work Plan shall be modified in accordance with the final resolution of the dispute.

e. Respondent shall complete the additional Work according to the standards, specifications, and schedule set forth or approved by EPA in a written modification to the RI/FS Work Plan or written RI/FS Work Plan supplement. EPA reserves the right to conduct the Work itself at any point, to seek reimbursement from Respondent, and/or to seek any other appropriate relief.

f. Nothing in this Paragraph shall be construed to limit EPA's authority to require performance of further response actions in the Site.

37. Off-Site Shipment of Waste Material. Respondent shall, prior to any off-site shipment of Waste Material from the Site to an out-of-state waste management facility, provide written notification of such shipment of Waste Material to the appropriate state environmental official in the receiving facility's state and to EPA's Designated Project Coordinator. However, this notification requirement shall not apply to any off-site shipments when the total volume of all such shipments will not exceed 10 cubic yards.

a. Respondent shall include in the written notification the following information: (1) the name and location of the facility to which the Waste Material is to be shipped: (2) the type and quantity of the Waste Material to be shipped; (3) the expected schedule for the shipment of the Waste Material; and (4) the method of transportation. Respondent shall notify the state in which the planned receiving facility is located of major changes in the shipment plan, such as a decision to ship the Waste Material to another facility within the same state, or to a facility in another state.

b. The identity of the receiving facility and state will be determined by Respondent following the award of the contract for the RI/FS. Respondent shall provide the information required by Subparagraphs 37.a and 37.c as soon as practicable after the award of the contract and before the Waste Material is actually shipped.

c. Before shipping any hazardous substances, pollutants, or contaminants from the Site to an off-site location, Respondent shall obtain EPA's certification that the proposed receiving facility is operating in compliance with the requirements of CERCLA Section 121(d)(3), 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440. Respondent shall only send hazardous substances, pollutants, or contaminants from the Site to an off-site facility that complies with the requirements of the statutory provision and regulation cited in the preceding sentence.

38. Meetings. Respondent shall make presentations at, and participate in, meetings at the request of EPA during the initiation, conduct, and completion of the RI/FS. In addition to discussion of the technical aspects of the RI/FS, topics will include anticipated problems or new issues. Meetings will be scheduled at EPA's discretion.

39. Progress Reports. In addition to the plans, reports and other deliverables set forth in this Settlement Agreement, Respondent shall provide to EPA monthly progress reports by the 15th day of the following month. At a minimum, with respect to the preceding month, these progress reports shall (1) describe the actions which have been taken to comply with this Settlement Agreement during that month, (2) include all results of sampling and tests and all other data received by Respondent, (3) describe Work planned for the next two months with schedules relating such Work to the overall project schedule for RI/FS completion, and (4) describe all problems encountered and any anticipated problems, any actual or anticipated delays, and solutions developed and implemented to address any actual or anticipated problems or delays. These shall be submitted until termination of this Settlement Agreement, unless otherwise directed in writing by the EPA Project Coordinator.

40. Emergency Response and Notification of Releases.

a. In the event of any action or occurrence during performance of the Work which causes or threatens a release of Waste Material from or in 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 endangerment caused or threatened by the release. Respondent shall take these actions in accordance with all applicable provisions of this Settlement Agreement, including, but not limited to, the Health and Safety Plan, in order to prevent, abate or minimize such release or endangerment caused or threatened by the release. Respondent shall also immediately notify the EPA Project Coordinator (or, in the event of her unavailability, Respondent shall immediately notify the Chief of the Response and Prevention Branch of the Emergency and Remedial Response Division of EPA, Region 2, at (732) 321-6656) of the incident or Site conditions. 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 XVIII (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 EPA Project Coordinator (or, in the event of her unavailability, Respondent shall immediately notify the Chief of the Response and Prevention Branch of the Emergency and Remedial Response Division of EPA, Region 2, at (732) 321-6656) and 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.

X. APPROVAL OF PLANS AND OTHER SUBMISSIONS

41. After review of any plan, report or other item that is required to be submitted for approval pursuant to this Settlement Agreement, EPA shall, in a notice to Respondent: (a) approve, in whole or in part, the submission; (b) approve the submission upon specified conditions; (c) modify the submission to cure the deficiencies; (d) disapprove, in whole or in part, the submission, directing that Respondent modify the submission; or (e) any combination of the above. However, EPA shall not modify a submission without first providing Respondent at least one notice of deficiency and an opportunity to cure within 21 days or as specified in the RI/FS Work Plan, except where to do so would cause serious disruption to the Work or where previous submission(s) have been disapproved because of material defects.

42. In the event of approval, approval upon conditions, or modification by EPA, pursuant to Subparagraphs 41(a), (b), (c) or (e), Respondent shall proceed to take any action required by the plan, report, or other deliverable, as approved or modified by EPA subject only to its right to invoke the dispute resolution procedures set forth in Section XV (Dispute Resolution) with respect to the modifications or conditions made by EPA. Following EPA approval or modification of a submission or portion thereof, Respondent shall not thereafter alter or amend such submission or portion thereof unless directed by EPA. In the event that EPA modifies the submission to cure the deficiencies pursuant to Subparagraph 41(c) and the submission had a material defect, EPA retains the right to seek stipulated penalties, as provided in Section XVI (Stipulated Penalties).

43. Resubmission.

a. Upon receipt of a notice of disapproval, Respondent shall, within 21 days or such longer time as specified by EPA, correct the deficiencies and resubmit the plan, report, or other deliverable for approval. Any stipulated penalties applicable to the submission, as provided in Section XVI (Stipulated Penalties), shall accrue during the 21 day period or otherwise specified period but shall not be payable unless the resubmission is disapproved or modified due to a material defect as provided in Paragraphs 44 and 45.

b. Notwithstanding the receipt of a notice of disapproval, Respondent shall proceed to take any action required by any non-deficient portion of the submission, unless otherwise

directed by EPA. Implementation of any non-deficient portion of a submission shall not relieve Respondent of any liability for stipulated penalties under Section XVI (Stipulated Penalties).

c. Respondent shall not proceed further with any subsequent activities or tasks until receiving EPA approval, approval on condition or modification of the following deliverables: RI/FS Work Plan, Draft RI Report, Treatability Testing Work Plan (if necessary), Baseline Human Health Risk Assessment, Baseline Ecological Risk Assessment (if necessary), and Draft FS Report. While awaiting EPA approval, approval on condition or modification of these deliverables, Respondent shall proceed with all other tasks and activities which may be conducted independently of these deliverables, in accordance with the schedule set forth under this Settlement Agreement.

d. For all remaining deliverables not listed above in subparagraph 43.c., Respondent shall proceed will all subsequent tasks, activities and deliverables without awaiting EPA approval on the submitted deliverable. EPA reserves the right to stop Respondent from proceeding further, either temporarily or permanently, on any task, activity or deliverable at any point during the RI/FS.

44. If EPA disapproves a resubmitted plan, report or other deliverable, or portion thereof, EPA may again direct Respondent to correct the deficiencies. EPA shall also retain the right to modify or develop the plan, report, or other deliverable. Respondent shall implement any such plan, report, or deliverable as corrected, modified, or developed by EPA, subject only to Respondent's right to invoke the procedures set forth in Section XV (Dispute Resolution).

45. If upon resubmission, a plan, report, or other deliverable is disapproved or modified by EPA due to a material defect, Respondent shall be deemed to have failed to submit such plan, report, or other deliverable timely and adequately unless Respondent invokes the dispute resolution procedures in accordance with Section XV (Dispute Resolution) and EPA's action is revoked or substantially modified pursuant to a Dispute Resolution decision issued by EPA or superseded by an agreement reached pursuant to that Section. The provisions of Section XV (Dispute Resolution) and Section XVI (Stipulated Penalties) shall govern the implementation of the Work and accrual and payment of any stipulated penalties during Dispute Resolution. If EPA's disapproval or modification is not otherwise revoked, substantially modified or superseded as a result of a decision or agreement reached pursuant to the Dispute Resolution process set forth in Section XV, stipulated penalties shall accrue for such violation from the date on which the initial submission was originally required, as provided in Section XVI.

46. In the event that EPA takes over some of the tasks, but not the preparation of the RI Report or the FS Report, Respondent shall incorporate and integrate information supplied by EPA into the final reports.

47. All plans, reports, and other deliverables submitted to EPA under this Settlement Agreement shall, upon approval or modification by EPA, be incorporated into and enforceable under this Settlement Agreement. In the event EPA approves or modifies a portion of a plan, report, or other deliverable submitted to EPA under this Settlement Agreement, the approved or

modified portion shall be incorporated into and enforceable under this Settlement Agreement.

48. Neither failure of EPA to expressly approve or disapprove of Respondent's submissions within a specified time period, nor the absence of comments, shall be construed as approval by EPA. Whether or not EPA gives express approval for Respondent's deliverables, Respondent is responsible for preparing deliverables acceptable to EPA.

XI. QUALITY ASSURANCE, SAMPLING, AND ACCESS TO INFORMATION

49. Quality Assurance. Respondent shall assure that Work performed, samples taken and analyses conducted conform to the requirements of the SOW, the QAPP and guidances identified therein. Respondent will assure that field personnel used by Respondent are properly trained in the use of field equipment and in chain of custody procedures. Respondent shall only use laboratories which have a documented quality system that complies with "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B-01/002, March 2001) or equivalent documentation as determined by EPA.

50. Sampling.

a. All results of sampling, tests, modeling or other data (including raw data, as required) generated by Respondent, or on Respondent's behalf, during the period that this Settlement Agreement is effective, shall be submitted to EPA in the next monthly progress report as described in Paragraph 39 of this Settlement Agreement. EPA will make available to Respondent validated data generated by EPA unless it is exempt from disclosure by any federal or state law or regulation. Data will be submitted in a useable format consistent with the Region 2 Electronic Data Deliverable (EDD) format (information available at www.epa.gov/region02/superfund/medd.htm).

b. Respondent shall verbally notify EPA at least 14 days prior to conducting significant field events as described in the SOW or RI/FS Work Plan. At EPA's verbal or written request, or the request of EPA's oversight assistant, Respondent shall allow split or duplicate samples to be taken by EPA (and its authorized representatives) of any samples collected in implementing this Settlement Agreement. All split samples of Respondent shall be analyzed by the methods identified in the QAPP.

51. Access to Information.

a. Respondent shall provide to EPA, upon request, copies of all documents and information within their possession or control or that of their 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, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

b. Respondent may assert business confidentiality claims covering part or all of the documents or information submitted to EPA 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). Documents or information 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 documents or information when it is submitted to EPA, or if EPA has notified Respondent that the documents or information 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 documents or information without further notice to Respondent. Respondent shall segregate and clearly identify all documents or information submitted under this Settlement Agreement for which Respondent asserts business confidentiality claims.

c. Respondent may assert that certain documents, records and other information 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 documents, it shall provide EPA with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the contents of the document, record, or information; and 6) the privilege asserted by Respondent. However, no documents, reports or other information created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

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

52. In entering into this Settlement Agreement, Respondent waives any objections to any data gathered, generated, or evaluated by EPA, the State or Respondent in the performance or oversight of the Work that has been verified according to the quality assurance/quality control ("QA/QC") procedures required by the Settlement Agreement or any EPA-approved RI/FS Work Plans. If Respondent objects to any other data relating to the RI/FS, Respondent shall submit to EPA a report that specifically identifies and explains its objections, describes the acceptable uses of the data, if any, and identifies any limitations to the use of the data. The report must be submitted to EPA within 15 days of the monthly progress report containing the data.

XII. SITE ACCESS AND INSTITUTIONAL CONTROLS

53. If the Site, or any other property where access is needed to implement this Settlement Agreement, is owned or controlled by Respondent, Respondent shall, commencing on the Effective Date, provide EPA and its representatives, including contractors, with access at all reasonable times to the Site, or such other property, for the purpose of conducting any activity related to this Settlement Agreement.

54. Where any action under this Settlement Agreement is to be performed in areas owned by or in possession of someone other than Respondent, Respondent shall use its best efforts to obtain all necessary access agreements within 90 days after the Effective Date. Respondent shall immediately notify EPA if after using its best efforts it is unable to obtain such agreements. For purposes of this Paragraph, "best efforts" includes the payment of reasonable sums of money in consideration of access. Respondent shall describe in writing its efforts to obtain access. If Respondent cannot obtain access agreements, EPA may obtain access for Respondent or assist Respondent in gaining access, to the extent necessary to effectuate the response actions described herein, using such means as EPA deems appropriate, including but not limited to consensual access agreements or judicial action. Respondent shall perform all activities required by this Settlement Agreement not requiring access to the Site, and shall reimburse EPA for all costs and attorney's fees incurred by the United States in obtaining such access, in accordance with the procedures in Section XVIII (Payment of Response Costs).

55. Notwithstanding any provision of this Settlement Agreement, EPA retains all of its access authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

XIII. COMPLIANCE WITH OTHER LAWS

56. Respondent shall comply with all applicable local, state and federal laws and regulations when performing the RI/FS. No local, state, or federal permit shall be required for any portion of any action conducted entirely on-site, including studies, if the action is selected and carried out in compliance with Section 121 of CERCLA, 42 U.S.C. § 9621. Where any portion of the Work is to be conducted off-site and requires a federal or state permit or approval, Respondent shall submit timely and complete applications and take all other actions necessary to obtain and to comply with all such permits or approvals. This Settlement Agreement is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

XIV. RETENTION OF RECORDS

57. 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 XXXI (Notice of Completion of Work), Respondent shall preserve and retain all non-identical copies of documents, records, and other information (including documents, records, or other information in electronic form) 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, regardless of any corporate retention policy to the contrary. Until 10 years after Respondent's receipt of EPA's notification pursuant to Section XXXI (Notice of Completion of Work), Respondent shall also instruct their contractors and agents to preserve all documents, records, and other information of whatever kind, nature or description relating to performance of the Work.

58. At the conclusion of this document retention period, Respondent shall notify EPA at least 90 days prior to the destruction of any such documents, records or other information, and, upon request by EPA, Respondent shall deliver any such documents, records, or other

information to EPA. Respondent may assert that certain documents, records, and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Respondent asserts such a privilege, it shall provide EPA with the following: 1) the title of the document, record, or other information; 2) the date of the document, record, or other information; 3) the name and title of the author of the document, record, or other information; 4) the name and title of each addressee and recipient; 5) a description of the subject of the document, record, or other information; and 6) the privilege asserted by Respondent. However, no documents, records or other information created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

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

XV. DISPUTE RESOLUTION

60. 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.

61. If Respondent objects to any EPA action taken pursuant to this Settlement Agreement, including billings for Future Response Costs, it shall notify EPA in writing of its objection(s) within 20 days of such action, unless the objection(s) has/have been resolved informally. EPA and Respondent shall have 20 days from EPA's receipt of Respondent's written objection(s) to resolve the dispute (the "Negotiation Period"). The Negotiation Period may be extended at the sole discretion of EPA. Such extension may be granted verbally but must be confirmed in writing.

62. 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, the Director of the Emergency and Remedial Response Division, EPA Region 2, will issue a written decision. EPA's decision shall be incorporated into and become an enforceable part of this Settlement Agreement. Respondent's obligations under this Settlement Agreement shall not be tolled by submission of any objection for dispute resolution under this Section. 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, and regardless of whether Respondent agrees with the decision.

XVI. STIPULATED PENALTIES

63. Respondent shall be liable to EPA for stipulated penalties in the amounts set forth in Paragraphs 64 and 65 for failure to comply with any of the requirements of this Settlement Agreement specified below unless excused under Section XVII (Force Majeure). "Compliance" by Respondent shall include completion of the Work under this Settlement Agreement or any activities contemplated under any RI/FS Work Plan or other plan approved under this Settlement Agreement identified below, in accordance with all applicable requirements of law, this Settlement Agreement, the SOW, and any plans or other documents approved by EPA pursuant to this Settlement Agreement and within the specified time schedules established by and approved under this Settlement Agreement.

64. For all violations of this Settlement Agreement, except as provided in Paragraph 65 below, stipulated penalties shall accrue as follows:

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

65. For the monthly progress reports required pursuant to Paragraph 39 above, stipulated penalties shall accrue in the amount of:

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

66. In the event that EPA assumes performance of a portion or all of the Work pursuant to Paragraph 84 of Section XX (Reservation of Rights by EPA), Respondent shall be liable for a stipulated penalty in the amount of $500,000.

67. 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: (1) with respect to a deficient submission under Section X (EPA Approval of Plans and Other Submissions), 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 (2) with respect to

a decision by the EPA Management Official designated in Paragraph 62 of Section XV (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. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Settlement Agreement.

68. 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 same and describe the noncompliance. EPA may send Respondent a written demand for the payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether EPA has notified Respondent of a violation.

69. All penalties accruing under this Section shall be due and payable to EPA within 30 days of Respondent's receipt from EPA of a demand for payment of the penalties, unless Respondent invokes the dispute resolution procedures in accordance with Section XV (Dispute Resolution). All payments to EPA under this Section shall be paid in accordance with the procedures set forth in Paragraph 77, and shall indicate that the payment is for stipulated penalties. At the time of payment, Respondent shall send notice that payment has been made to the EPA Project Coordinator and Cincinnati Finance Center in accordance with Paragraph 77(b).

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

71. Penalties shall continue to accrue as provided in Paragraph 67 during any dispute resolution period, but need not be paid until 15 days after the dispute is resolved by agreement or by receipt of EPA's decision.

72. If Respondent fails to pay stipulated penalties when due, EPA may institute proceedings to collect the penalties, as well as Interest. Respondent shall pay Interest on the unpaid balance, which shall begin to accrue on the date of demand made pursuant to Paragraph 69.

73. 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 Section 122(l) of CERCLA, 42 U.S.C. § 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 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 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), Paragraph 84. 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.

XVII. FORCE MAJEURE

74. Respondent agrees to perform all requirements of this Settlement Agreement within the time limits established under this Settlement Agreement, unless the performance is delayed by a force majeure. For purposes of this Settlement Agreement, force majeure 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 its contractors and subcontractors, which delays or prevents performance of any obligation under this Settlement Agreement despite Respondent's best efforts to fulfill the obligation. Force majeure does not include financial inability to complete the Work or increased cost of performance.

75. If any event occurs or has occurred that may delay the performance of any obligation under this Settlement Agreement, whether or not caused by a force majeure event, Respondent shall notify EPA orally within 48 hours of when Respondent first knew that the event might cause a delay. Within 7 days thereafter, Respondent shall provide to EPA in writing 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 event if it intends to assert such a claim; and a statement as to whether, in the opinion of Respondent, such event may cause or contribute to an endangerment to public health, welfare or the environment. Failure to comply with the above requirements shall preclude Respondent from asserting any claim of force majeure for that event for the period of time of such failure to comply and for any additional delay caused by such failure.

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

XVIII. PAYMENT OF RESPONSE COSTS

77. Payment of Response Costs.

a. Respondent shall make all payments to EPA that are required by the Settlement Agreement by Electronic funds Transfer ("EFT") at the Federal Reserve Bank of New York, New York. To make payment via EFT, Respondent shall provide the following information to its bank:

- Amount of payment:
- EFT to be directed to: **Federal Reserve Bank of New York**

- ABA Routing Number: **021030004**
- Federal Reserve Bank of New York account number: **68010727**
- SWIFT address: **FRNYUS33**
- Address: **Federal Reserve Bank of New York**
  33 Liberty Street
  New York, NY 10045
- Field Tag 4200 of the Fed wire message to read: **D 68010727, Environmental Protection Agency**
- Name of Remitter: **PPG Industries, Inc.**
- Settlement Agreement Index Number: **02-2014-2011**
- Site name: **Riverside Industrial Park Superfund Site**
- Site/spill identifier: **02PC**

b. Along with this information, Respondent shall instruct its bank to remit payment in the required amount via EFT to EPA's account with the Federal Reserve Bank of New York. To ensure that Respondent's payments are properly recorded, Respondent shall send a letter to EPA within one week of the EFT, which references the date of the EFT, the payment amount, the name of the Site, the Index Number of this Settlement Agreement, and Respondent's name and address. Such letter shall be sent to the EPA Project Coordinator as listed in Paragraph 30 above and to the EPA Financial Management Center at:

U.S. Environmental Protection Agency
26 W. Martin Luther King Drive
Attention: FINANCE
MS: NWD
Cincinnati, OH 45268

c. All amounts to be paid by Respondent pursuant to Subparagraph 77.a shall be deposited in the Riverside Industrial Park 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.

78. Payments of Future Response Costs.

a. Respondent shall pay EPA all Future Response Costs not inconsistent with the NCP. On a periodic basis, EPA will send Respondent a bill requiring payment that includes a Superfund Cost Recovery Package Imaging and On-Line System (SCORPIOS) Report detailing direct and indirect costs incurred by EPA and its contractors. Respondent shall make all payments within 30 days of receipt of each bill requiring payment; except as otherwise provided in Paragraph 80 of this Settlement Agreement, by remitting payment of the bill via EFT to EPA in accordance with the payment procedures set forth in Paragraph 77, above.

b. The total amount to be paid by Respondent pursuant to Subparagraph 78.a. shall be deposited in the Riverside Industrial Park Site Superfund 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.

79. If Respondent does not pay Future Response Costs within 30 days of Respondent's receipt of a bill, Respondent shall pay Interest on the unpaid balance of Future Response Costs. The Interest on unpaid Future Response Costs shall begin to accrue on the date of the bill and shall continue to accrue until the date of payment. If EPA receives a partial payment, Interest shall accrue on any unpaid balance. 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 payments under this Section, including but not limited to, payments of stipulated penalties pursuant to Section XVI. Respondent shall make all payments required by this Paragraph in the manner described in Paragraph 77.

80. Respondent may contest payment of any Future Response Costs under Paragraph 78 if it determines that EPA has made a mathematical error or if it believes EPA incurred excess costs as a direct result of an EPA action that was inconsistent with the NCP. Such objection shall be made in writing within 30 days of receipt of the bill and must be sent to the EPA Project Coordinator. Any such objection shall specifically identify the contested Future Response Costs and the basis for objection. In the event of an objection, Respondent shall within the 30 day period pay all uncontested Future Response Costs to EPA in the manner described in Paragraph 77. Simultaneously, Respondent shall establish an interest-bearing escrow account in a federally-insured bank duly chartered in the State of New Jersey and remit to that escrow account funds equivalent to the amount of the contested Future Response Costs. Respondent shall send to the EPA Project Coordinator a copy of the transmittal letter and check paying the uncontested Future Response Costs, and a copy of the correspondence that establishes and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. Simultaneously with establishment of the escrow account, Respondent shall initiate the Dispute Resolution procedures in Section XV (Dispute Resolution). If EPA prevails in the dispute, within 5 days of the resolution of the dispute, Respondent shall pay the sums due (with accrued interest) to EPA in the manner described in Paragraph 77. If Respondent prevails concerning any aspect of the contested costs, Respondent shall pay that portion of the costs (plus associated accrued interest) for which it did not prevail to EPA in the manner described in Paragraph 77. Respondent shall be disbursed any balance of the escrow account. The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XV (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding Respondent's obligation to reimburse EPA for its Future Response Costs.

XIX. COVENANT NOT TO SUE BY EPA

81. In consideration of the actions that will be performed and the payments that will be made by Respondent 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 for

recovery of Future Response Costs. This covenant not to sue shall take effect on the Effective Date and is conditioned upon the complete and satisfactory performance by Respondent of all obligations under this Settlement Agreement, including, but not limited to, payment of Future Response Costs pursuant to Section XVIII. This covenant not to sue extends only to Respondent and does not extend to any other person.

XX. RESERVATIONS OF RIGHTS BY EPA

82. Except as specifically provided in this Settlement Agreement, nothing herein shall limit the power and authority of EPA or the United States to take, direct, or order 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 herein 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.

83. The covenant not to sue set forth in Section XIX above does not pertain to any matters other than those expressly identified therein. EPA reserves and this Settlement Agreement are 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;

d. criminal liability;

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

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

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

84. 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 which may cause an endangerment to human health or the environment, EPA may assume the performance of all or

any portion of the Work as EPA determines necessary. Respondent may invoke the procedures set forth in Section XV (Dispute Resolution) to dispute EPA's determination that takeover of the Work is warranted under this Paragraph. Costs incurred by EPA in performing the Work pursuant to this Paragraph shall be considered Future Response Costs that Respondent shall pay pursuant to Section XVIII (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. COVENANT NOT TO SUE BY RESPONDENT

85. 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, 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 the Work or arising out of the response actions for which the Future Response Costs have or will be incurred, including any claim under the United States Constitution, the New Jersey State 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.

86. Nothing in this 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).

XXII. OTHER CLAIMS

87. 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.

88. Except as expressly provided in Section XIX (Covenant Not to 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.

89. 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. CONTRIBUTION

90. a. The Parties agree that this Settlement Agreement constitutes an administrative settlement for purposes of Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), and that Respondent 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, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), 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.

b. The Parties agree that this Settlement Agreement constitutes an administrative settlement for purposes of Sections 113(f)(3)(b) of CERCLA, 42 U.S.C. § 9613(f)(3)(B), pursuant to which Respondent has, as of the Effective Date, resolved its liability to the United States for the Work and Future Response Costs.

c. Except as provided in Section XXI (Covenant Not to Sue by Respondent of this Settlement Agreement, nothing in this Settlement Agreement precludes the United States or Respondent from asserting any claims, causes of action, or demands for indemnification, contribution, or cost recovery against any person not parties to this Settlement Agreement. Nothing in this Settlement Agreement diminishes the right of the United States, pursuant to Sections 113(f)(2) and (3) of CERCLA, 42 U.S.C. § 9613(f)(2) and (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).

XXIV. INDEMNIFICATION

91. 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 attorneys fees and other expenses of litigation and settlement, arising from or on account of claims made against the United States based on negligent or other wrongful acts or omissions of 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.

92. 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.

93. 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 Respondent and any person for performance of Work on or relating to the Site. 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 Respondent and any person for performance of Work on or relating to the Site.

XXV. INSURANCE

94. At least 15 days prior to commencing any On-Site Work under this Settlement Agreement, Respondent shall secure, and shall maintain for the duration of this Settlement Agreement, comprehensive general liability insurance and automobile insurance with limits of $3 million dollars, combined single limit, naming the EPA as an additional insured. Within the same period, Respondent shall provide EPA with certificates of such insurance and a copy of each insurance policy. Respondent shall submit such certificates and copies of policies 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. If Respondent demonstrates by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering some or all of the same risks but in an equal or lesser amount, then Respondent need provide only that portion of the insurance described above which is not maintained by such contractor or subcontractor.

XXVI. FINANCIAL ASSURANCE

95. Within 30 days of the Effective Date, Respondent shall establish and maintain financial security for the benefit of EPA in the amount of $750,000.00 in one or more of the following forms, in order to secure the full and final completion of Work by Respondent:

a. a surety bond unconditionally guaranteeing payment and/or performance of the Work;

b. one or more irrevocable letters of credit, payable to or at the direction of EPA, issued by financial institution(s) acceptable in all respects to EPA equaling the total estimated cost of the Work;

c. a trust fund administered by a trustee acceptable in all respects to EPA;

d. a policy of insurance issued by an insurance carrier acceptable in all respects to EPA, which ensures the payment and/or performance of the Work;

e. a corporate guarantee to perform the Work provided by one or more parent corporations or subsidiaries of Respondent, or by one or more unrelated corporations that have a substantial business relationship with Respondent; including a demonstration that any such company satisfies the financial test requirements of 40 C.F.R. Part 264.143(f); and/or

f. a corporate guarantee to perform the Work by Respondent, including a demonstration that any such Respondent satisfies the requirements of 40 C.F.R. Part 264.143(f).

96. Any and all financial assurance instruments provided pursuant to this Section shall be in form and substance satisfactory to EPA, determined in EPA's sole discretion. In the event that EPA determines at any time that the financial assurances provided pursuant to this Section (including without limitation, the instrument(s) evidencing such assurances) are inadequate, Respondent shall, within 30 days of receipt of notice of EPA's determination, obtain and present to EPA for approval one of the other forms of financial assurance listed in Paragraph 95, above. In addition, if at any time EPA notifies Respondent that the anticipated cost of completing the Work has increased, then, within 30 days of such notification, Respondent shall obtain and present to EPA for approval a revised form of financial assurance (otherwise acceptable under this Section) that reflects such cost increase. Respondent's inability to demonstrate financial ability to complete the Work shall in no way excuse performance of any activities required under this Settlement Agreement.

97. If Respondent seeks to ensure completion of the Work through a guarantee pursuant to Subparagraph 95.e. or 95.f. of this Settlement Agreement, Respondent shall (i) demonstrate to EPA's satisfaction that the guarantor satisfies the requirements of 40 C.F.R. Part 264.143(f); and (ii) resubmit sworn statements conveying the information required by 40 C.F.R. Part 264.143(f) annually, on the anniversary of the Effective Date, to EPA. For the purposes of this Settlement Agreement, wherever 40 C.F.R. Part 264.143(f) references "sum of current closure and post-closure costs estimates and the current plugging and abandonment costs estimates," the current cost estimate of $750,000.00 for the Work at the Site shall be used in relevant financial test calculations.

98. If, after the Effective Date, Respondent can show that the estimated cost to complete the remaining Work has diminished below the amount set forth in Paragraph 95 of this Section, Respondent may, on any anniversary date of the Effective Date, or at any other time agreed to by the Parties, reduce the amount of the financial security provided under this Section to the estimated cost of the remaining Work to be performed. Respondent shall submit a proposal for such reduction to EPA, in accordance with the requirements of this Section, and may reduce the amount of the security after receiving written approval from EPA. In the event of a dispute, Respondent may seek dispute resolution pursuant to Section XV (Dispute Resolution). Respondent may reduce the amount of security in accordance with EPA's written decision resolving the dispute.

99. Respondent may change the form of financial assurance provided under this Section at any time, upon notice to and prior written approval by EPA, provided that EPA determines that the new form of assurance meets the requirements of this Section. In the event of a dispute, Respondent may change the form of the financial assurance only in accordance with the written

decision resolving the dispute.

XXVII. INTEGRATION/APPENDICES

100. This Settlement Agreement and its appendices and any deliverables, technical memoranda, specifications, schedules, documents, plans, reports (other than progress reports), etc. that will be developed pursuant to this Settlement Agreement and become incorporated into and enforceable under this Settlement Agreement 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. The following appendices are attached to and incorporated into this Settlement Agreement:

"Appendix A" is the SOW.

"Appendix B" is the map of the Site.

XXVIII. ADMINISTRATIVE RECORD

101. EPA will determine the contents of the administrative record file for selection of the remedial action. Respondent shall submit to EPA documents developed during the course of the RI/FS upon which selection of the response action may be based. Upon request of EPA, Respondent shall provide copies of plans, task memoranda for further action, quality assurance memoranda and audits, raw data, field notes, laboratory analytical reports and other reports. Upon request of EPA, Respondent shall additionally submit any previous studies conducted under state, local or other federal authorities relating to selection of the response action, and all communications between Respondent and state, local or other federal authorities concerning selection of the response action. At EPA's discretion, Respondent shall establish a community information repository at or near the Site, to house one copy of the administrative record.

XXIX. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION

102. This Settlement Agreement shall be effective on the date that the Respondent receives a copy of this Settlement Agreement after it has been signed by the Director of the Emergency and Remedial Response Division of EPA Region 2, or his delegate. All times for performance of actions or activities required herein will be calculated from said Effective Date.

103. This Settlement Agreement may be amended by mutual agreement of EPA and Respondent. Amendments shall be in writing and shall be effective when signed by EPA. The EPA Project Coordinator does not have the authority to sign amendments to the Settlement Agreement.

104. 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.

XXX. NOTICE OF COMPLETION OF WORK

105. When EPA determines 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 but not limited to payment of Future Response Costs or 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 RI/FS Work Plan if appropriate in order to correct such deficiencies, in accordance with Paragraph 36 (Modification of the Work Plan). Failure by Respondent to implement the approved modified RI/FS Work Plan shall be a violation of this Settlement Agreement.

Re: Riverside Industrial Park Superfund Site, Newark, New Jersey

Administrative Settlement Agreement and Order on Consent for Remedial Investigation and Feasibility Study, Index No. CERCLA-02-2014-2011

FOR: THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

for John E. LaPadula DATE: May 9, 2014

Walter Mugdan
Director
Emergency and Remedial Response Division
U.S. Environmental Protection Agency
Region 2

Re: Riverside Industrial Park Superfund Site, Newark, New Jersey

Administrative Settlement Agreement and Order on Consent for Remedial Investigation and Feasibility Study, Index No. CERCLA-02-2014-2011

FOR: PPG INDUSTRIES, INC. Jane A. Valenta
Signature

April 17, 2014
Date

Jane Valenta
Printed name

Vice President, EHS
Title

APPENDIX A

STATEMENT OF WORK FOR
REMEDIAL INVESTIGATION AND FOCUSED FEASIBILITY STUDY
RIVERSIDE INDUSTRIAL PARK SUPERFUND SITE
Newark, Essex County, New Jersey

I. INTRODUCTION

A. The purpose of the remedial investigation/feasibility study (RI/FS) is to investigate the nature and extent of contamination at the Riverside Industrial Park Superfund Site (Site), and develop and evaluate potential remedial alternatives. The RI/FS shall focus on the Site and any potential exposure pathways. The RI and FS are interactive and may be conducted concurrently so that the data collected in the RI influences the development of remedial alternatives in the FS, which in turn affects the data needs and the scope of treatability studies, if needed.

B. The RI/FS shall be conducted in a manner that minimizes environmental impacts in accordance with EPA Region 2 Clean and Green Policy (available at www.epa.gov/region02/superfund/green_remediation/policy.html) to the extent consistent with the National Contingency Plan (NCP), 40 CFR Part 300. The Respondent shall follow Guidance on Systematic Planning using the Data Quality Objectives Process (QA/G-4) EPA/240/B-06/001 February 2006, in planning and conducting the RI/FS.

C. The Respondent shall conduct the RI/FS and shall produce draft RI and FS reports that are in accordance with this Statement of Work (SOW), the "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" (U.S. EPA, Office of Emergency and Remedial Response, October 1988), and any other guidance that EPA uses in conducting a RI/FS, as well as any additional requirements in the Administrative Settlement Agreement and Order on Consent (Agreement). The RI/FS Guidance describes the report format and the required report content. The Respondent shall furnish all necessary personnel, materials, and services needed for, or incidental to, the performance of the RI/FS, except as otherwise specified in the Agreement.

D. At the completion of the RI/FS, EPA will be responsible for the selection of the remedy for the Site and will document the remedy selection in a Record of Decision (ROD). The remedial action alternative selected by EPA will meet the cleanup standards specified in CERCLA Section 121. That is, the selected remedial action will be protective of human health and the environment, will be in compliance with, or include a waiver of, applicable or relevant and appropriate requirements of other laws (ARARs), will be cost-effective, will utilize permanent solutions and alternative treatment technologies or resource recovery technologies, to the maximum extent practicable, and will address the statutory preference for treatment as a

ED_005342A_00002977-00034

principal element. The final RI/FS report, as adopted by EPA, and the baseline risk assessment will, with the administrative record, form the basis for the selection of the remedy for the Site and will provide the information necessary to support the development of the ROD.

E. As specified in CERCLA Section 104(a) (1), EPA will provide oversight of the Respondent's activities throughout the RI/FS. The Respondent shall support EPA's initiation and conduct of activities related to the implementation of oversight activities.

F. The Respondent shall provide a monthly progress report in electronic format and participate in meetings with EPA at major milestones in the RI/FS process, as described herein at Section II (Task 1 - Site Characterization Summary Report); Section V (Task 4.D - Site Characterization Summary Report Addendum); Section X (Task 9.B - Development and Screening of Remedial Alternatives Technical Memorandum); and Section XI (Task 10.A - Feasibility Study Report), until completion of the Work required pursuant to this Agreement. The monthly progress reports shall be submitted to EPA by the 15th day of the following month, or such other time as specified in writing by the EPA. At a minimum, with respect to the preceding month, these progress reports shall (1) describe the actions which have been taken to comply with this Agreement during that month, (2) include all results of sampling and tests and all other data received by Respondent during that month, (3) describe Work planned for the next two months with schedules relating such Work to the overall project schedule for RI/FS completion, and (4) describe all problems encountered and any anticipated problems, any actual or anticipated delays, and solutions developed and implemented to address any actual or anticipated problems or delays.

II. TASK 1 - SITE CHARACTERIZATION SUMMARY REPORT

A. Within sixty (60) days after (i) the Effective Date of the Agreement, or (ii) EPA provides all existing Site data to Respondent as further described in Section II.B below, whichever occurs later, or such longer time as specified or agreed to by EPA, the Respondent shall submit to EPA a Site Characterization Summary Report (SCSR). The overall objective of site characterization is to describe areas of the Site that may pose a threat to human health or the environment. This is accomplished by determining the Site's physical conditions, including physiography, geology, hydrology, and hydrogeology. Potential surface and subsurface pathways of migration and locations of contaminant sources will be defined. The Respondent shall identify and characterize the nature, extent, and volume of the sources of contamination, including their physical and chemical constituents as well as their concentrations at incremental locations relative to background concentrations in the affected media. Potential contaminant degradation processes will be evaluated. Using this information, contaminant fate and transport is estimated. The data will be discussed and will be summarized in graphical and tabular form. Relevant physical information (e.g., the presence of free phase material) and information regarding the fate and transport of chemical constituents will be summarized.

B. For the SCSR, all available existing data for the Site will be thoroughly compiled, reviewed, and summarized by the Respondent. This data includes, but is not limited to, the results of previous investigations of the Site as a whole and the individual blocks and lots, historical information about the Site, and aerial photographs. The SCSR will include a preliminary Conceptual Site Model (CSM) and will identify any additional data necessary to complete the RI/FS. A narrative summary and compiled spreadsheets, maps, graphs and figures, including but not limited to, an electronic database of all sampling data with coordinates and sampling dates, shall be included. The CSM will consider the Removal Actions and Remedial Measures, if any, completed to date within each Lot at the Site.

C. Within thirty (30) days after the Respondent's submittal of the SCSR, or such longer time as specified in writing by EPA, the Respondent shall, if requested, make a presentation to EPA and the State on the findings of the SCSR. In accordance with Section XI (EPA Approval of Plans and Other Submissions) of the Agreement, EPA may then elect to provide comments on the SCSR, in which case the Respondent shall amend and submit to EPA a revised SCSR that is responsive to EPA's written comments, within twenty-one (21) days after receipt of EPA's comments. When approved by EPA, the SCSR shall be incorporated into the Remedial Investigations (RI) Report.

III. TASK 2 - RI/FS WORK PLAN

A. RI/FS Work Plan and Schedule. Within sixty (60) days after EPA's written authorization to proceed based on the SCSR, the Respondent shall submit to EPA a detailed Work Plan for the completion of the RI/FS. The SCSR will be used for planning the RI/FS Work Plan. The RI/FS Work Plan shall include, among other things, a detailed schedule for RI/FS activities at the Site. The schedule shall provide for the completion of the RI/FS within twenty-four (24) months after EPA approval of the RI/FS Work Plan, or as otherwise modified by EPA. EPA will either approve the RI/FS Work Plan pursuant to Section X (EPA Approval of Plans and Other Submissions) of the Agreement, or will provide written comments on it. The RI/FS Work Plan shall supplement existing data and shall satisfy the following general requirements:

1. Define Sources of Contamination

The Respondent shall delineate each source of contamination in each media. For each such location, the areal extent and depth of contamination shall be determined by sampling at incremental depths on a sampling grid or by other sampling means, as defined in the RI/FS Work Plan. The physical characteristics and chemical constituents and their concentrations will be determined for all known and discovered sources of contamination. The Respondent shall conduct sufficient sampling to define the boundaries of the contaminant sources to the level established in the Quality Assurance/Quality Control Project Plan (QAPP) and Data Quality Objectives (DQOs).

Defining the source of contamination will include analyzing the potential for contaminant release (e.g., long term leaching from soil), contaminant mobility and persistence, and characteristics important for evaluating remedial actions, including information to assess treatment technologies as well as impacts from other neighboring sites and the urban background site conditions.

2. Describe the Nature and Extent of Contamination

The Respondent shall gather information to characterize the nature and extent of contamination during the Field Investigation. To characterize the nature and extent of contamination, the Respondent shall utilize the information on the Site's physical and biological characteristics and sources of contamination to give a preliminary estimate of the contaminants that may have migrated, to what extent they may have migrated, and their potential to migrate further. The Respondent shall then implement a monitoring program and any other study program identified in the RI/FS Work Plan (which includes the QAPP) such that by using analytical techniques sufficient to detect and quantify the concentration of contaminants in all media, the amount of contaminant degradation occurring and the migration of contaminants through the various media at the Site can be determined. In addition, the Respondent shall gather data for calculations of contaminant fate and transport. This process is continued until the area and depth of contamination are known to the level of contamination established in the QAPP and DQOs. The information on the nature, extent and migration potential of contamination will be used to determine the level of risk presented by the Site. The Respondent shall use this information to help to determine aspects of the appropriate remedial action alternatives to be evaluated.

3. Evaluate Site Characteristics

The Respondent shall collect, analyze, and evaluate the data to describe: (1) physical and biological characteristics at the Site, (2) contaminant source characteristics, (3) nature and extent of contamination (4) contaminant fate and transport and (5) develop site-specific human health and ecological risk assessments. Results of the Site's physical characteristics, source characteristics, and extent and mobility of contamination analyses are utilized in the analysis of contaminant fate and transport. The evaluation will include the actual and potential magnitude of releases from the sources, and horizontal and vertical spread of contamination as well as mobility and persistence of contaminants. Where modeling is appropriate, such models shall be identified to EPA in a technical memorandum prior to their use. EPA may provide written comments on any submitted memorandum, in which case the Respondent shall amend and submit to EPA a revised memorandum that is responsive to EPA's written

comments within twenty-one (21) days after receipt of EPA's written comments in accordance with Section X (EPA Approval of Plans and Other Submissions) of the Agreement. All data and programming, including any proprietary programs, shall be made available to EPA together with a sensitivity analysis. Models proposed to be used with respect to the Site shall be subject to EPA's approval. Analysis of data collected for characterization of the Site will meet the DQOs developed in the QAPP (or as revised during the RI).

4. Data Management Procedures

The Respondent shall consistently document the quality and validity of field and laboratory data compiled during the RI.

a. Document Field Activities

Information gathered during characterization of the Site will be consistently documented and adequately recorded by the Respondent in field logs and laboratory reports. The method(s) of documentation must be specified in the Work Plan and QAPP. Field logs or dedicated field log-books must be utilized to document observations, measurements, and significant events that have occurred during field activities. Laboratory reports must document sample custody, analytical responsibility, analytical results, adherence to prescribed protocols, nonconformity events, corrective measures, and/or data deficiencies.

b. Maintain Sample Management and Tracking

The Respondent shall maintain field reports, sample shipment records, analytical results, and QA/QC reports to ensure that only validated analytical data are reported and utilized in the risk assessment and evaluation of remedial alternatives. Analytical results developed under the Work Plan must be accompanied by, or cross-referenced to, a corresponding QA/QC report when included in the SCSR for the Site. In addition, the Respondent shall safeguard chain of custody forms and other project records to prevent loss, damage, or alteration of project documentation.

The RI/FS Work Plan shall include the following:

1. A QAPP, which shall be prepared consistent with the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP), Parts 1, 2 and 3, EPA-505-B-04900A, B and C, March 2005 or newer, and other guidance documents referenced in the aforementioned guidance documents. The UFP documents may be found at: www.epa.gov/fedfac/documents/intergov_qual_task_force.htm. In addition, the guidance and procedures located in the EPA Region 2 DESA/HWSB web site: www.epa.gov/region02/qa/documents.htm, as well as other OSWER directives and EPA Region 2 policies should be followed, as appropriate.

   a. All sampling and analyses performed pursuant to this Agreement shall conform to EPA policy and guidance regarding sampling, quality assurance, quality control, data validation, and chain of custody procedures. Respondent shall include a description of how sampling data will be submitted in a manner that is consistent with the Region 2 Electronic Data Deliverable (EDD) format (information available at www.epa.gov/region02/superfund/medd.htm). Respondent shall incorporate these procedures into the QAPP in accordance with the Uniform Federal Policy for Implementing Quality Systems (UFP-QS), EPA-505-F-03-001, March 2005; the UFP-QAPP; and other guidance documents referenced in the aforementioned guidance documents. Subsequent amendments to the above, upon notification by EPA to Respondent of such amendments, shall apply only to procedures conducted after such notification.

   b. The QAPP shall provide for collection of data sufficient to delineate siterelated contamination in potentially affected media, to the extent necessary to select an appropriate remedy; to evaluate cross-media contaminant transport (e.g., ground water to surface water or soil to surface water) as necessary to support the assessment of risks associated with potential or actual exposures to site-related contamination under current and reasonably likely future conditions; and to evaluate remedial alternatives that address site-related contamination (for example, sufficient engineering data for the projection of contaminant fate and transport and development and screening of remedial action alternatives, including information to assess treatment technologies).

   c. The QAPP shall specifically include the following items:

i. An explanation of the way(s) the sampling, analysis, testing, and monitoring will produce data for the RI/FS;

ii. A detailed description of the sampling, analysis, and testing to be performed, including sampling methods, analytical and testing methods, sampling locations and frequency of sampling;

iii. A description of how sampling data and a Site base map will be submitted in a manner that is consistent with the Region 2 EDD format;

iv. A map depicting sampling locations (to the extent that these can be defined when the QAPP is prepared); and

v. A schedule for performance of the specific tasks in subparagraphs c.i – iii of this Section.

d. In the event that additional sampling locations, testing, and analyses are required or other alterations of the QAPP are required, the Respondent shall submit to EPA a memorandum documenting the need for additional data to the EPA Project Coordinator within thirty (30) days of identification. EPA in its discretion will determine whether the additional data will be collected by Respondent and whether it will be incorporated into plans, reports and other deliverables.

e. To provide quality assurance and maintain quality control with respect to all samples to be collected, the Respondent shall ensure the following:

i. Quality assurance and chain-of-custody procedures shall be performed in accordance with standard EPA protocol and guidance, including the guidance provided in the EPA Region 2 Quality Assurance Homepage, and the guidelines set forth in the Agreement.

ii. Once laboratories have been chosen, each laboratory's quality assurance plan (LQAP) shall be submitted for review by EPA. In addition, the laboratory shall submit to EPA current copies (within the past six months) of laboratory certification provided from either a State or Federal Agency which conducts certification. The certification shall be applicable to the matrixes and analyses that

are to be conducted. If the laboratory does not participate in the Contract Laboratory Program (CLP), it must submit to EPA the results of performance evaluation (PE) samples for the constituents of concern from within the past six months or it must complete PEs for the matrixes and analyses to be conducted and the results must be submitted with the LQAP.

iii. The laboratories utilized for analyses of samples must perform all analyses according to approved EPA methods.

iv. Unless indicated otherwise in the approved QAPP, upon receipt from the laboratory, all data shall be validated.

v. Submission of the validation package (checklist, report and Form I's containing the final data) to EPA, prepared in accordance with the provisions of Subparagraph vi below as part of the RI Report submittal.

vi. Assurance that all analytical data that are validated as required by the QAPP are validated according to the latest version of EPA Region 2 data validation Standard Operating Procedures. Region 2 Standard Operating Procedures are available at: www.epa.gov/region02/qa/documents.htm.

vii. Unless indicated otherwise in the QAPP, the Respondent shall require deliverables equivalent to CLP data packages from the laboratory for analytical data. Upon EPA's request, the Respondent shall submit to EPA the full documentation (including raw data) for this analytical data. EPA reserves the right to perform an independent data validation, data validation check, or qualification check on generated data.

viii. The Respondent shall insert a provision in their contract(s) with the laboratory utilized for analyses of samples that requires granting access to EPA personnel and authorized representatives of the EPA for the purpose of ensuring the accuracy of laboratory results related to the Site.

2. A Health and Safety Plan (HSP), which shall conform to 29 CFR §1910.120, "OSHA Hazardous Waste Operations Standards," and the EPA guidance

document, "Standard Operating Safety Guidelines" (OSWER, 1988). EPA does not "approve" the HSP.

3. A Cultural Resources Survey Work Plan to address the requirements of the National Historic Preservation Act (see CERCLA Compliance with Other Laws Manual: Part II: Clean Air Act and Other Environmental Statutes and State Requirements, OSWER Directive 9234.1-02, August 1989, available at www.epa.gov/superfund/policy/remedy/pdfs/540g-89009-s.pdf).

4. A Reuse Assessment Plan, which is in accordance with EPA guidance including, but not limited to, "Reuse Assessment: A Tool to Implement the Superfund Land Use Directive," OSWER Directive 9355.7-06P, June 4, 2001, or subsequently issued guidance. The Reuse Assessment Plan shall take into account the current uses of the Site and provide sufficient information to develop realistic assumptions of the reasonably anticipated future uses for the Site.

B. Within twenty-one (21) days after receiving written comments from EPA on the RI/FS Work Plan, the Respondent shall prepare a revised RI/FS Work Plan that is responsive to EPA's written comments. The Respondent shall submit the revised RI/FS Work Plan to EPA for approval pursuant to Section X (EPA Approval of Plans and Other Submissions) of the Agreement, unless the Respondent is directed otherwise by EPA in writing.

C. Following approval or modification of the RI/FS Work Plan_in accordance with the Agreement, the RI/FS Work Plan shall be deemed to be incorporated into the Agreement by reference.

IV. TASK 3 - COMMUNITY RELATIONS

To the extent requested by EPA, the Respondent agrees to provide information relating to the work required hereunder for EPA's use in developing and implementing a Community Involvement Plan as necessary and in accordance with EPA guidance and the NCP. As requested by EPA, the Respondent agrees to participate in the preparation of appropriate information disseminated to the public, and participate in public meetings, which may be held or sponsored by EPA, to explain activities at or concerning the Site.

V. TASK 4 – IMPLEMENTATION OF RI/FS WORK PLAN

A. Following EPA's written approval or modification of the RI/FS Work Plan, pursuant to Section XI of the Agreement the Respondent shall implement the provisions of the RI/FS Work Plan. The Respondent shall notify EPA at least fourteen (14) days in advance of the field

work regarding the planned dates for field activities, including ecological field surveys, geophysical surveys, excavation, installation of wells, initiating sampling, installation and calibration of equipment, pump tests, and initiation of analysis and other field investigation activities.

B. The Respondent shall provide EPA with validated analytical data within sixty (60) days after each sampling activity. Additionally, if requested by EPA, Respondent shall make all data available to EPA upon receipt from the lab (prior to validation). All data submitted to EPA shall be compiled in a database format or spreadsheet acceptable to EPA and shall show the location, medium and results for each sample.

C. Within seven (7) days after completion of field activities, the Respondent shall so advise EPA in writing.

D. Within sixty (60) days after submission to EPA of the final set of validated data, the Respondent shall submit to EPA a SCSR Addendum. The SCSR Addendum shall include, but not be limited to, an updated CSM and any updated conceptual site model memoranda, as necessary, proposed in accordance with Section III.3 of the SOW. Within thirty (30) days after the Respondent's submittal of the SCSR Addendum, or such longer time as specified in writing by EPA, the Respondent shall make a presentation to EPA and the State on the findings of the SCSR Addendum. EPA may then elect to provide comments on the SCSR Addendum, in which case the Respondent shall amend and submit to EPA a revised SCSR Addendum that is responsive to EPA's written comments, within twenty-one (21) days after receipt of EPA's comments. When approved by EPA, the SCSR Addendum shall be incorporated into the RI Report.

VI. TASK 5 - IDENTIFICATION OF CANDIDATE TECHNOLOGIES, AS NECESSARY

An Identification of Candidate Technologies Memorandum shall be submitted by the Respondent within forty-five (45) days after the Respondent's submission to EPA of the last set of final validated analytical data. The candidate technologies identified shall include innovative treatment technologies (as defined in the RI/FS Guidance), where appropriate. The listing of candidate technologies will cover the range of technologies required for the alternative analysis. The Respondent shall conduct a literature survey to gather information on performance, relative costs, applicability, removal efficiencies, operation and maintenance requirements, and implementability of candidate technologies. As the Respondent deems appropriate, the Respondent may recommend performance of treatability testing. In accordance with Section X (EPA Approval of Plans and Other Submissions) of the Agreement, EPA may provide written

comments on the submitted memorandum, in which case the Respondent shall amend and submit to EPA a revised memorandum which is responsive to EPA's written comments within twenty-one (21) days after receipt of EPA's written comments.

If EPA determines that practical candidate technologies have not been sufficiently demonstrated, or cannot be adequately evaluated on the basis of available information, EPA may require that treatability testing be conducted as described in Section VII below.

VII. TASK 6 - TREATABILITY STUDIES, AS NECESSARY

Treatability testing will be performed by the Respondent, as necessary, to assist in the detailed analysis of alternatives. Once a decision has been made to perform treatability studies, the following activities will be performed by the Respondent.

A. Evaluate Treatability Studies. The Respondent and EPA will decide on the type of treatability testing to use (e.g., bench versus pilot). Because of the time required to design, fabricate, and install pilot scale equipment as well as perform testing for various operating conditions, the decision to perform pilot testing should be made as early in the process as possible to minimize potential delays of the FS.

B. Treatability Testing Work Plan. Within sixty (60) days after EPA's written determination that treatability testing is necessary and the decision on the type of treatability testing to be used is made, the Respondent shall submit a Treatability Testing Work Plan, including a field sampling and analysis plan and a schedule. EPA will either approve of the Treatability Testing Work Plan pursuant to Section X (EPA Approval of Plans and Other Submissions) of the Agreement, or will provide written comments on the plan. Within twenty-one (21) days after receiving EPA's written comments on the Treatability Testing Work Plan, the Respondent shall prepare a revised plan that is responsive to the directions in EPA's written comments. The Respondent shall submit the revised Treatability Testing Work Plan to EPA for approval pursuant to Section X (EPA Approval of Plans and Other Submissions) of the Agreement, unless the Respondent is directed otherwise by EPA in writing. Upon its approval by EPA, the Treatability Testing Work Plan and schedule shall be deemed incorporated into the Agreement by reference.

The Treatability Testing Work Plan shall describe the Site history and conditions, remedial technology(ies) to be tested, test objectives, experimental procedures, treatability conditions to be tested, measurements of performance, analytical methods, data management and analysis, health and safety, and residual waste management. The DQOs for treatability testing should be documented as well. If pilot scale treatability testing is to be performed, the pilot-scale Work Plan will describe pilot plant installation and start-up, pilot plant operation and maintenance procedures, operating conditions to be tested, a sampling plan to determine pilot plant performance, and a detailed HSP, if necessary.

C. Treatability Testing QAPP. If the original QAPP is not adequate for defining the activities to be performed during the treatability test, a separate Treatability Testing QAPP, or amendment to the original QAPP for the Site, will be prepared by the Respondent for EPA review and approval, and will be submitted at the same time as the Treatability Testing Work Plan.

EPA will either approve of the revised QAPP pursuant to Section X (EPA Approval of Plans and Other Submissions) of the Agreement, or will provide written comments on the QAPP. Within twenty-one (21) days after receiving EPA's written comments on the Treatability Testing QAPP, the Respondent shall prepare a revised QAPP that is responsive to the directions in EPA's written comments. The Respondent shall submit the revised Treatability Testing QAPP to EPA for approval pursuant to Section X (EPA Approval of Plans and Other Submissions) of the Agreement, unless the Respondent is directed otherwise by EPA in writing.

D. Treatability Testing HSP. If the original HSP is not adequate for defining the activities to be performed during the treatment tests, a separate or amended HSP will be developed by the Respondent and submitted for EPA review and comment. Section III (Task 2 – RI/FS Work Plan) provides additional information on the requirements of the HDP. EPA does not "approve" the Treatability Testing HSP.

E. Treatability Testing Evaluation Report. Within forty-five (45) days after completion of any treatability testing, the Respondent shall submit a Treatability Testing Evaluation Report to EPA. In accordance with Section X of the Agreement, EPA may provide written comments on the report, in which case the Respondent shall amend and submit to EPA a revised Treatability Testing Evaluation Report that is responsive to the directions in EPA's written comments, within twenty-one (21) days after receiving EPA's written comments.

The Treatability Testing Evaluation Report shall analyze and interpret the treatability testing results. Depending on the sequences of activities, this report may be a part of the RI/FS Report or a separate deliverable. The report will evaluate each technology's effectiveness, implementability, cost and actual results as compared with predicted results. The report will also evaluate full scale application of the technology, including a sensitivity analysis identifying the key parameters affecting full-scale operation.

VIII. TASK 7 - BASELINE RISK ASSESSMENT

The Respondent shall prepare a Baseline Risk Assessment for the Site which shall be incorporated by the Respondent into the RI. The Baseline Risk Assessment will take into consideration the Removal Actions and Remedial Measures completed to date. The Respondent shall provide EPA with the following deliverables:

A. Baseline Human Health Risk Assessment (BHHRA)

1. Actual and potential cancer risks and non-cancer hazards to human health shall be identified and characterized in accordance with CERCLA, the NCP, and EPA guidance documents including, but not limited to, the RI/FS Guidance, "Land Use in the CERCLA Remedy Selection Process" (OSWER Directive No. 9355.7-04) and the definitions and provisions of "Risk Assessment Guidance for Superfund (RAGS)," Volume 1, "Human Health Evaluation Manual," (December 1989) (EPA/540/1-89/002) including RAGS Parts B, D, E and F. Other EPA guidance documents to be used in the development of risk assessments are identified in Attachment 1 to this SOW.

2. Pathway Analysis Report (PAR)

The Respondent shall prepare and submit a PAR within sixty (60) days after the Respondent's submission to EPA of the last set of validated data. The PAR shall be developed in accordance with OSWER Directive 9285.7-01D dated January 1998 (or more recent version), entitled, "Risk Assessment Guidelines for Superfund Part D," and other appropriate guidance in Attachment 1 and updated thereto. The PAR shall contain the information necessary for a reviewer to understand how the risks at the Site will be assessed. The PAR will describe the risk assessment process and how the risk assessment will be prepared. The PAR shall describe the exposure scenarios and assumptions for the BHHRA, taking into account the present and reasonably anticipated future land use of the Site. The PAR should include appropriate text describing the CSM and exposure routes of concern for the Site. The PAR shall include completed RAGS Part D Tables 1 through 6 as described below. EPA may provide written comments on the PAR, in which case the Respondent shall amend and submit to EPA a revised PAR that is responsive to the directions in all of EPA's written comments within twenty-one (21) days after receipt of EPA's written comments. The PAR must be reviewed and approved by EPA prior to the submission of the draft BHHRA. The following information shall be included in the PAR:

a. Table 1 – Selection of Exposure Pathways. This table shall describe the pathways that will be evaluated in the BHHRA, the rationale for their selection, and a description of those pathways that will not be evaluated. The Exposure Pathways shall be presented in completed RAGS Part D Table 1 format.

b. Chemicals of Potential Concern (COPCs). The PAR shall contain all the information necessary for a reviewer to understand how the risks at the Site will be evaluated.

i. Based on the validated analytical data the Respondent shall list the hazardous substances present in all sampled media (e.g., groundwater, soils, sediment, etc.) and the COPCs as described in RAGS Part A.

ii. Table 2 - Selection of COPCs. COPCs and associated concentrations in sample media for the PAR shall be determined utilizing all currently available media-specific validated analytical data generated during the RI/FS. The selection of COPCs shall follow RAGS Part A and before hazardous substances are eliminated as COPCs they shall be evaluated against the residential screening levels in accordance with the "Regional Screening Levels for Chemical Contaminants at Superfund Sites" screening level/preliminary remediation goal website: (www.epa.gov/reg3hwmd/risk/human/rbconcentration_table/index.htm). The COPCs shall be presented in completed RAGS Part D Table 2 format.

c. Table 3 - Media Specific Exposure Point Concentrations. Using the COPCs selected in Table 2, this Table shall summarize the Exposure Point Concentrations for all COPCs for the various media. The calculation of the Exposure Point Concentration shall follow the Supplemental Guidance to RAGS: Calculating the Concentration Term (1992), using EPA's ProUCL 4.0 (2007 or most recent version) Software, which evaluates the distribution of the data using Shapiro-Wilk's and Lilliefor's tests, in accordance with 2003 ProUCL's User's Guide. In those cases where the 95% Upper Confidence Limit exceeds the maximum, the maximum concentration shall be used as the Exposure Point Concentration. In the event that dioxin congeners are to be evaluated in the BHHRA, EPA will provide specific software for the analysis of dioxin congeners.

d. Table 4 – Daily Intake Calculations. This section of the PAR shall describe the exposure pathway parameters with appropriate references to EPA's 1991 Standard Default Assumptions and updated guidance developed by EPA. The values used for Daily Intake Calculations shall be presented in completed RAGS Part D Table 4 format.

e. Tables 5 and 6 - Toxicological Information. This section of the PAR shall provide the toxicological data (e.g., Cancer Slope Factors, Reference Doses, Reference Concentrations, Weight of Evidence Classifications for Carcinogens (based on the 1986 and 2005 Guidelines for

Carcinogenicity), and adjusted dermal toxicological factors where appropriate) for the COPCs. The toxicological data shall be presented in completed RAGS Part D Tables 5 and 6. The sources of toxicity data identified in OSWER Directive 9285.7-53 in order of priority are:

- Tier 1 – Integrated Risk Information System (IRIS) database (EPA, current version).
- Tier 2 – Provision Peer Reviewed Toxicity Values (PPRTV) – The Office of Research and Development/National Center for Environmental Assessment/Superfund Health Risk Technical Support Center develops PPRTVs on a chemical specific basis when requested by EPA's Superfund program. Provisional values will either be obtained from the "Regional Screening Levels for Chemical Contaminants at Superfund Sites" or from Region 2.
- Tier 3 – Other Toxicity Values – Tier 3 includes additional EPA and non-EPA sources of toxicity information. Priority will be given to those sources of information that are the most current, the basis for which is transparent and publicly available and which have been peer reviewed. Tier 3 values include toxicity values obtained from CalEPA, Agency for Toxic Substances and Disease Registry's Minimum Risk Levels and toxicity values obtained from the HEAST (EPA 1997 b).

To facilitate a timely completion of the PAR, the Respondent shall submit a list of chemicals for which IRIS values are not available to EPA as soon as identified, thus allowing EPA to facilitate obtaining this information from EPA's National Center for Environmental Assessment. The PAR will clearly identify in the text toxicity issues such as chemicals with a Mutagenic Mode of Action, Toxicity Equivalency Factors, relative potency factors, and chemical speciation where appropriate (i.e., chromium +6, +3, etc.).

In the event that a probabilistic analysis of risk is anticipated, a workplan for this type of analysis will need to be submitted to EPA for approval consistent with RAGS Part III.

3. Baseline Human Health Risk Assessment Reporting

Within sixty (60) days after EPA's approval of the PAR, the Respondent shall submit to EPA a Draft BHHRA for inclusion in the RI. The submittal shall include completed RAGS Part D Tables 7 through 10 summarizing the calculated

cancer risks and non-cancer hazards and appropriate text in the risk characterization with a discussion of uncertainties and critical assumptions (e.g., background concentrations and conditions). The Respondent shall perform the BHHRA in accordance with the approach and parameters described in the PAR, as described above. Text and tables from these reports previously reviewed by EPA shall be included in the appropriate sections of the BHHRA.

In accordance with Section XI of the Agreement, EPA may provide written comments on the draft BHHRA, in which case the Respondent shall amend and submit to EPA a revised report that is responsive to EPA's written comments, within twenty-one (21) days after receiving EPA's written comments. Upon approval by EPA, the revised BHHRA shall be incorporated into the RI Report.

B. Baseline Ecological Risk Assessment

1. Within sixty (60) days after the Respondent's submission to EPA of the last set of final validated analytical data, the Respondent shall submit a Screening Level Ecological Risk Assessment (SLERA) in accordance with current Superfund ecological risk assessment guidance (Ecological Risk Assessment Guidance for Superfund, Process for Designing and Conducting Ecological Risk Assessments [ERAGS], USEPA, 1997 [EPA/540-R-97-006], OSWER Directive 9285.7-25, June 1997). The SLERA shall include a comparison of the maximum contaminant concentrations in each media of concern to appropriate conservative ecotoxicity screening values, and should use conservative exposure estimates. EPA will review the SLERA and determine whether a full Baseline Ecological Risk Assessment is required. In accordance with Section X of the Agreement, EPA may provide written comments on the SLERA, in which case the Respondent shall amend and submit to EPA a revised SLERA that is responsive to EPA's written comments, within twenty-one (21) days after receiving EPA's written comments.

2. If EPA determines that a full Baseline Ecological Risk Assessment (BERA) is required, and so notifies the Respondent in writing, the Respondent shall, within thirty (30) days thereafter, submit a Scope of Work outlining the steps and data necessary to perform the BERA, including any amendments to the RI/FS Work Plan required to collect additional relevant data. If EPA provides written comments on the BERA Scope of Work, the Respondent shall amend and submit to EPA a revised BERA Scope of Work that is responsive to EPA's written comments within twenty-one (21) days after receipt of EPA's written comments. The BERA Scope of Work shall identify any RI/FS Work Plan amendments or

addenda, including establishment of a schedule for review and approval of additional field work, subject to EPA approval pursuant to Section X (EPA Approval of Plans and Other Submissions) of the Agreement.

3. The Respondent shall notify EPA in writing within seven (7) days after completion of all field activities associated with the BERA, as identified in the BERA Scope of Work and performed under the approved RI/FS Work Plan addenda. Within sixty (60) days after submission to EPA of the final set of BERA-related validated data, the Respondent shall submit a draft BERA Report to EPA for inclusion in the RI Report. Actual and potential ecological risks shall be identified and characterized in accordance with CERCLA, the NCP, and EPA guidance documents including, but not limited to, ERAGS (or most recent guidance). The Respondent shall evaluate and assess the risk to the environment posed by Site contaminants. As part of this subtask, the Respondent shall perform the following activities:

   a. Draft BERA Report. The Respondent shall prepare a draft BERA Report that addresses the following:

      i. Hazard Identification (sources). The Respondent shall review available information on the hazardous substances present at the Site and identify the major contaminants of concern.

      ii Dose-Response Assessment. The Respondent shall identify and select contaminants of concern based on their intrinsic toxicological properties.

      iii. Characterization of Site and Potential Receptors. The Respondent shall identify and characterize Site environmental exposure pathways.

      iv Select Chemicals, Indicator Species, and End Points. In preparing the assessment, the Respondent shall select representative chemicals, indicator species (species which are especially sensitive to environmental contaminants), and end points on which to concentrate.

v. Exposure Assessment. The exposure assessment shall identify the magnitude of actual or potential environmental exposures, the frequency and duration of these exposures, and the routes by which receptors are exposed. The exposure assessment shall include an evaluation of the likelihood of such exposures occurring and shall provide the basis for the development of acceptable exposure levels. In developing the exposure assessment, the Respondent shall develop reasonable maximum estimates of exposure for both current land use conditions and potential land use conditions at the Site.

vi. Toxicity Assessment/Ecological Effects Assessment. The toxicity and ecological effects assessment shall address the types of adverse environmental effects associated with chemical exposures, the relationships between magnitude of exposures and adverse effects, and the related uncertainties for contaminant toxicity.

vii. Risk Characterization. During risk characterization, chemicalspecific toxicity information, combined with quantitative and qualitative information from the exposure assessment, shall be compared to measured levels of contaminant exposure levels and/or the levels predicted through environmental fate and transport modeling. These comparisons shall determine whether concentrations of contaminants at or released from the Site are affecting or could potentially affect the environment.

viii. Identification of Limitations/ Uncertainties. The Respondent shall identify critical assumptions (e.g., background concentrations and conditions) and uncertainties in the report.

ix. Conceptual Site Model. Based on contaminant identification, exposure assessment, toxicity assessment, and risk characterization, the Respondent shall revise the Preliminary CSM discussed in Section II.B of this SOW, as appropriate.

b. Final BERA Report. Within twenty-one (21) days after receiving EPA's written comments on the draft BERA Report, the Respondent shall amend and submit to EPA a final BERA Report that is responsive to EPA's written comments. Upon approval by EPA, the final BERA shall be incorporated into the RI Report.

IX. TASK 8 - REMEDIAL INVESTIGATION REPORT

The Respondent shall prepare a RI Report that accurately establishes the Site characteristics such as the contaminated media, the potential for the contamination to migrate further, the degree to which contaminant degradation is occurring, and the physical boundaries of the contamination. This report shall summarize results of field activities to characterize the Site, sources of contamination, and the fate and transport of contaminants. Pursuant to this objective, the Respondent shall obtain only the minimum essential amount of detailed data necessary to determine the key contaminants movement and extent of contamination. The key contaminants are selected based on persistence and mobility in the environment and the degree of hazard. The Respondent shall use existing standards and guidelines such as drinking water standards, water quality criteria, and other criteria accepted by EPA as appropriate for the situation, which will be used to evaluate effects on human and ecological receptors that may be exposed to the key contaminants above appropriate standards or guidelines. The RI Report will incorporate information presented in the approved SCSR (and addendum if applicable), the BHHRA Report and, if required, the BERA Report.

The RI Report shall be written in accordance with the "Guidance for Conducting Remedial Investigations/Feasibility Studies under CERCLA," OSWER Directive 9355.3-01, October 1988, Interim Final (or latest revision) and "Guidance for Data Usability in Risk Assessment," (EPA/540/G-90/008), September 1990 (or latest revision).

The Respondent shall refer to the RI/FS Guidance for an outline of the report format and contents. Following written comment by EPA, the Respondent shall prepare a final RI Report which incorporates EPA's written comments, pursuant to Section X (EPA Approval of Plans and Other Submissions) of the Agreement.

A. Draft Remedial Investigation Report

Within ninety (90) days after the Respondent's submission of the final BERA or submission of the revised BHHRA, whichever is later, the Respondent shall submit a draft RI Report.

B. Final Remedial Investigation Report

Within sixty (60) days after receiving EPA's written comments on the Draft RI Report, the Respondent shall amend and submit to EPA a final RI Report that is responsive to EPA's written comments.

X. TASK 9 – FEASIBILITY STUDY - DEVELOPMENT AND SCREENING OF REMEDIAL ALTERNATIVES

Concurrent with the RI Site characterization described in Sections III and V, the Respondent shall begin to develop and evaluate remedial action objectives that, at a minimum, ensure protection of human health and the environment. The development and screening of remedial alternatives shall identify and develop an appropriate range of remedial action objectives. This range of alternatives should include options in which treatment is used to reduce the toxicity, mobility, or volume of wastes, including, at a minimum, the principal threats posed by the Site, but that vary in the types of treatment, the amount treated, and the manner in which long-term residuals or untreated wastes are managed; options involving containment with little or no treatment; options involving both treatment and containment; and a No-Action alternative. The following activities will be performed as a function of the development and screening of remedial alternatives.

A. Development and Screening of Remedial Alternatives

1. Develop Remedial Action Objectives

The Respondent shall develop remedial action objectives, which are mediumspecific goals for protecting human health or the environment that specify the COPCs, exposure route(s) and receptor(s) and Preliminary Remediation Goals.

2. Develop General Response Actions

The Respondent shall develop general response actions for each medium of interest defining containment, treatment, excavation, pumping, monitored natural recovery or other actions, singly or in combination to satisfy the remedial action objectives.

3. Identify Areas or Volumes of Media

The Respondent shall identify areas or volumes of media to which general response actions may apply, taking into account requirements for protectiveness as identified in the remedial action objectives. The chemical and physical characterization of the Site will also be taken into account.

4. Assemble and Document Alternatives

The Respondent shall assemble selected representative technologies into alternatives for each affected medium.

Together, all of the alternatives will represent a range of treatment and containment combinations that will address the Site as a whole. A summary of the assembled alternatives and their related action-specific ARARs will be prepared by the Respondent for inclusion in the Development and Screening of Remedial Alternatives Technical Memorandum.

The reasons for eliminating alternatives during the preliminary screening process must be specified.

5. Refine Alternatives

The Respondent shall refine the remedial alternatives to identify contaminant volume addressed by the proposed process and sizing of critical unit operations, as necessary. Sufficient information will be collected for an adequate comparison of alternatives. Preliminary Remediation Goals (or Regional Screening Levels) for each chemical in each medium will also be modified as necessary to incorporate any new risk assessment information presented in the baseline risk assessment report. Additionally, action-specific ARARs will be updated as the remedial alternatives are refined.

6. Conduct and Document Screening Evaluation of Each Alternative

The Respondent may perform a final screening process based on short and long term aspects of effectiveness, implementability, and relative cost. Generally, this screening process is only necessary when there are many feasible alternatives available for detailed analysis. If necessary, the screening of alternatives will be conducted to assure that only the alternatives with the most favorable composite evaluation of all factors are retained for further analysis. As appropriate, the screening will preserve the range of treatment and containment alternatives that was initially developed. The range of remaining alternatives will include options that use treatment technologies and permanent solutions to the maximum extent practicable.

B. Development and Screening of Alternatives Deliverables. Within forty-five (45) days after EPA's approval of the Baseline Risk Assessment (the latter of the BHHRA or BERA), or within forty-five (45) days after EPA's approval of the Respondent's Treatability Testing Evaluation Report (if treatability studies are undertaken), whichever is later, the Respondent shall submit a Development and Screening of Remedial Alternatives Technical Memorandum summarizing the work performed in, and the results of, each task in Section X.A above, including an alternatives array summary. The Memorandum shall also summarize the reasoning employed in screening, arraying alternatives that remain after screening, and identifying

the action-specific ARARs for the alternatives that remain after screening. The Memorandum shall also provide an explanation for choosing any institutional or engineering controls as part of any remedial alternative, and the level of effort that will be required to secure, maintain, and enforce the control. Within twenty-one (21) days after submission of the Memorandum, the Respondent shall, if requested by EPA, make a presentation to EPA identifying the remedial action objectives and summarizing the development and preliminary screening of remedial alternatives. EPA may provide written comments on the submitted Memorandum, in which case the Respondent shall amend and submit to EPA a revised Memorandum that is responsive to EPA's written comments within twenty-one (21) days after receipt of EPA's written comments in accordance with Section X (EPA Approval of Plans and Other Submissions) of the Agreement. If required by EPA's written comments, the remaining alternatives will be modified by the Respondent to assure that a complete and appropriate range of viable alternatives are identified and considered in the detailed analysis. When approved by EPA, the Memorandum shall be incorporated in the Feasibility Study (FS) Report. This deliverable will document the methods, rationale, and results of the alternatives screening process.

C. Detailed Analysis of Remedial Alternatives. The detailed analysis will be conducted by the Respondent to provide EPA with the information needed to allow for the selection of a remedy for the Site.

1. Detailed Analysis of Alternatives

The Respondent shall conduct a detailed analysis of alternatives which will consist of an analysis of each option against a set of nine evaluation criteria and a comparative analysis of all options using the same evaluation criteria as a basis for comparison.

2. Apply Nine Criteria and Document Analysis

The Respondent shall apply nine evaluation criteria to the assembled remedial alternatives to ensure that the selected remedial alternative will be protective of human health and the environment; will be in compliance with, or include a waiver of, ARARs; will be cost-effective; will utilize permanent solutions and alternative treatment technologies, or resource recovery technologies, to the maximum extent practicable; and will address the statutory preference for treatment as a principal element. The evaluation criteria are: (1) overall protection of human health and the environment; (2) compliance with ARARs; (3) long-term effectiveness and permanence; (4) reduction of toxicity, mobility, or volume; (5) short-term effectiveness; (6) implementability; (7) cost; (8) State (or support agency) acceptance; and (9) community acceptance.

For each alternative, the Respondent shall provide: (1) a description of the alternative that outlines the remedial strategy involved and identifies the key ARARs associated with each alternative, and (2) a discussion of the individual criterion assessment. If the Respondent does not have direct input on criteria (8) State (or support agency) acceptance and (9) community acceptance, these criteria will be addressed by EPA.

3. Compare Alternatives against Each Other and Document the Comparison of Alternatives

The Respondent shall perform a comparative analysis between the remedial alternatives. That is, each alternative will be compared against the others using the nine evaluation criteria as a basis of comparison. Identification and selection of the preferred alternative are reserved by EPA. The Respondent shall incorporate the results of the comparative analysis in the FS Report.

XI. TASK 10 – FEASIBILITY STUDY REPORT

A. The Respondent shall prepare a FS Report consisting of a detailed analysis of the remedial alternatives, in accordance with the NCP as well as the most recent guidance. Within sixty (60) days after EPA's approval of the Final Remedial Investigation Report, pursuant to Section IX of the Agreement, or EPA's approval of the Development and Screening of Remedial Alternatives Technical Memorandum, pursuant to Section X of the Agreement, whichever is later, the Respondent shall submit to EPA a draft FS Report which reflects the findings in the approved Baseline Risk Assessment. The Respondent shall refer to the RI/FS Work Plan and the RI/FS Guidance and this SOW for report content and format. Within fourteen (14) days after submission of the draft FS Report, the Respondent shall, if requested by EPA, make a presentation to EPA and the State at which the Respondent shall summarize the findings of the draft FS Report and discuss EPA's preliminary comments and concerns, if any, associated with the draft FS Report. EPA will either approve of the submittal pursuant to Section X (EPA Approval of Plans and Other Submissions) of the Agreement, or will provide written comments on the draft FS Report. Within twenty-one (21) days after receiving EPA's written comments on the draft FS Report, the Respondent will submit a revised FS Report that is responsive to EPA's written comments to EPA for approval pursuant to Section X (EPA Approval of Plans and Other Submissions) of the Agreement, unless the Respondent is directed otherwise by EPA in writing.

B. The FS report shall include the following:

1. A summary of Feasibility Study objectives;

2. A summary of remedial action objectives;

3. An articulation of general response actions;

4. An identification and screening of remedial technologies;

5. Descriptions of remedial alternatives;

6. A detailed analysis of remedial alternatives; and

7. A summary and conclusion.

The Respondent's technical feasibility considerations shall include the careful study of any problems that may prevent a remedial alternative from mitigating Site problems. Therefore, the Site characteristics from the RI must be kept in mind as the technical feasibility of the alternative is studied. Specific items to be addressed are reliability (operation over time), safety, operation and maintenance, ease with which the alternative can be implemented, and time needed for implementation.

ATTACHMENT A

REFERENCES FOR CITATION

The following list, although not comprehensive, comprises many of the regulations and guidance documents that apply to the RI/FS process:

The National Hazardous Substance and Oil Pollution Contingency Plan, 40 CFR 300 *et seq*.

"Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA," U.S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive No. 9355.3-01.

"Interim Guidance on Potentially Responsible Party Participation in Remedial Investigation and Feasibility Studies," U.S. EPA, Office of Waste Programs Enforcement, Appendix A to OSWER Directive No. 9355.3-01.

"Guidance on Oversight of Potentially Responsible Party Remedial Investigations and Feasibility Studies," U.S. EPA, Office of Waste Programs Enforcement, OSWER Directive No. 9835.3.

"A Compendium of Superfund Field Operations Methods," Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.

"EPA NEIC Policies and Procedures Manual," May 1978, revised November 1984, EPA-330/978-001-R.

"Data Quality Objectives for Remedial Response Activities," U.S. EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA/540/G-87/003, March 1987, OSWER Directive No. 9335.0-7B.

"Guidelines and Specifications for Preparing Quality Assurance Project Plans," U.S. EPA, Office of Research and Development, Cincinnati, OH, QAMS-004/80, December 29, 1980.

"EPA Requirements for QAPPs for Environmental Data Operations," U.S. EPA, Office of Emergency and Remedial Response, QA/R-5, October 1998.

"Interim Guidelines and Specifications for Quality Assurance Project Plans," U.S. EPA, Office of Emergency and Remedial Response, QAMS-005/80, December 1980.

ED_005342A_00002977-00058

"Users Guide to the EPA Contract Laboratory," U.S. EPA, Sample Management Office, August 1982.

"CERCLA Compliance with Other Laws Manual," Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (draft), OSWER Directive No. 9234.1-01 and -02.

"Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites," U.S. EPA, Office of Emergency and Remedial Response, (draft), OSWER Directive No. 9283.1-2.

"Draft Guidance on Superfund Decision Documents," U.S. EPA, Office of Emergency and Remedial Response, March 1988, OSWER Directive No. 9355.-02.

"Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual" (Part A), EPA/540/1-89/002.

"Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual" (Part B), EPA/540/R-92/003.

"Risk Assessment Guidance for Superfund - Volume II Environmental Evaluation Manual," March 1989, EPA/540/1-89/001.

"Guidance for Data Useability in Risk Assessment," October 1990, EPA/540/G-90/008.

"Performance of Risk Assessments in Remedial Investigation/ Feasibility Studies (RI/FSs) Conducted by Potentially Responsible Parties (PRPs)," August 28, 1990, OSWER Directive No. 9835.15.

"Risk Evaluation of Remedial Alternatives" (Part C), December 1991, OSWER Directive No. 9285.7-01C.

"Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions," April 22, 1991, OSWER Directive No. 9355.0-30.

"Supplemental Guidance to RAGS: Calculating the Concentration Term," May 1992, OSWER Directive No. 9285.7-081.

"Health and Safety Requirements Employed in Field Activities," U.S. EPA, Office of Emergency and Remedial Response, July 12, 1981, EPA Order No. 1440.2.

ED_005342A_00002977-00059

OSHA Regulations in 29 CFR 1910.120 (Federal Register 45654, December 19, 1986).

"Interim Guidance on Administrative Records for Selection of CERCLA Response Actions," U.S. EPA, Office of Waste Programs Enforcement, March 1, 1989, OSWER Directive No. 9833.3A.

"Community Relations in Superfund: A Handbook," U.S. EPA, Office of Emergency and Remedial Response, June 1988, OSWER Directive No. 9230.03B.

"Community Relations During Enforcement Activities And Development of the Administrative Record," U.S. EPA, Office of Programs Enforcement, November 1988, OSWER Directive No. 9836.0-1a.

"Considering Reasonably Anticipated Future Land Use and Reducing Barriers to Re-use at EPALead Superfund Remedial Sites," U.S. EPA, Office of Superfund Remediation and Technology Innovation, March 17, 2010, OSWER Directive No. 9355.7-19.

"Reuse Assessment: A Tool to Implement the Superfund Land Use Directive," June 4, 2001, OSWER Directive No. 9355.7-06P. Available at: www.cluin.org/download/toolkit/thirdednew/reuseassesstool.pdf

"Interim Guidance on Implementing the Superfund Administrative Reform on PRP Oversight," U.S. EPA, Office of Emergency and Remedial Response, May 17, 2000, OSWER Directive No. 9200.0-32P. Available at: www.epa.gov/superfund/programs/reforms/final01.pdf

EPA Region 2 Clean and Green Policy. Available at: www.epa.gov/region02/superfund/green_remediation/policy.html

National Historic Preservation Act, 16 U.S.C. § 470 et seq.

HUMAN HEALTH RISK ASSESSMENT GUIDANCE DOCUMENTS

Superfund Risk Assessment Guidance

USEPA, 1989. Risk Assessment Guidance for Superfund (RAGS); Volume I, Human Health Evaluation Manual (Part A), OERR, EPA/540/1-89/002. Available at: www.epa.gov/oswer/riskassessment/ragsa/index.htm

USEPA, 1990. Risk Assessment Guidance for Superfund (RAGS); Volume I, Human Health Evaluation Manual (Part B, Development of Risk-Based Preliminary Remediation Goals),

OERR, EPA/540/R-92/003. Available at: www.epa.gov/oswer/riskassessment/ragsb/index.htm

USEPA, 1991. Risk Assessment Guidance for Superfund (RAGS); Volume I, Human Health Evaluation Manual (Part C, Risk Evaluation of Remedial Alternatives), OSWER Directive No. 9285.7-01C, December 1991. Available at: www.epa.gov/oswer/riskassessment/ragsc/index.htm

USEPA, 1996. Revised Policy on Performance of Risk Assessments During Remedial Investigation/Feasibility Studies (RI/FS) Conducted by Potentially Responsible Parties, OSWER Directive No. 9340.1-02 mistakenly numbered 9835.15c.

USEPA, 1999. Risk Assessment Guidance for Superfund (RAGS); Volume I, Human Health Evaluation Manual, Supplement to Part A: Community Involvement in Superfund Risk Assessments. OSWER 9285.7-01E-P, EPA540-R-98-042, PB99-963303, March 1999. Available at: www.epa.gov/oswer/riskassessment/ragsa/ci-ra.htm

USEPA, 2001. Risk Assessment Guidance for Superfund (RAGS); Volume I, Human Health Evaluation Manual (Part D, Standardized Planning, Reporting and Review of Superfund Risk Assessments), OERR, Publication No. 9285.7-47. Available at: www.epa.gov/oswer/riskassessments/ragsd/index.htm

Exposure Factors

USEPA, 1991. RAGS Volume I: Human Health Evaluation Manual Supplemental Guidance, Standard Default Exposure Factors, OSWER Directive No. 9285.6-03, March 25, 1991.

USEPA, 1992. Supplemental Guidance to RAGS: Calculating the Concentration Term, OSWER 9285.7-081, May 1992.

USEPA, 2011. Exposure Factors Handbook: 2011 Edition, National Center for Environmental Assessment, EPA/600/R-09/052F. Available at: www.epa.gov/ncea/

Dermal Exposure

USEPA, 1992. Dermal Exposure Assessment: Principles and Applications, OSWER, EPA/600/8-91/011B, January 1992. Available at: www.epa.gov/ncea/

USEPA, 2004. Risk Assessment Guidance for Superfund (RAGS); Volume I, Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim Guidance, OSWER 9285.7-02EP. Available at:

www.epa.gov/oswer/riskassessment/ragse/index.htm

Toxicity and Chemical Specific Guidance

USEPA, current version. Integrated Risk Information System (IRIS); On-line Service. Available at: www.epa.gov/iris/

USEPA, 1993. Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons. EPA/600/R-93/C89. July 1993.

USEPA, 1996. PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures. EPA/600/P-96/001F. Available at: www.epa.gov/ncea/

USEPA. 1997. Health Effects Assessment Summary Tables (HEAST), FY'97 Update. U. S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA/540-F-97-036. July 1997.

"Regional Screening Levels for Chemical Contaminants at Superfund Sites" screening level/preliminary remediation goal website. Available at: www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm

Risk Characterization Guidance

USEPA, 1995. Memorandum from Carole Browner on Risk Characterization dated February 22, 1995. Available at: www.epa.gov/ordntrnt/ORD/spc/2riskchr.html

USEPA, 1995. EPA Risk Characterization Program. Memo from Administrator Carol Browner dated March 21, 1995. Available at: www.epa.gov/ordntrnt/ORD/spc/2riskchr.html

Risk Assessment Guidelines and Policies

USEPA, 1986. Risk Assessment Guidelines for Mutagenicity Risk Assessment. 51 Federal Register 34006, September 24, 1986.

USEPA, 1986. Risk Assessment Guidelines for Chemical Mixtures. 51 Federal Register 34014, September 24, 1986.

USEPA, 1992. Risk Assessment Guidelines for Exposure Assessment. Federal Register. Available at: www.epa.gov/nceawww1/exposure.htm

ED_005342A_00002977-00062

USEPA, 1995. Neurotoxicity Cancer Guidelines. Federal Register. 60 FR 52-32-52056, October 4, 1995.

USEPA, 2005. Guidelines for Carcinogen Risk Assessment. EPA/630/P-03/001F. Available at: www.epa.gov/cancerguidelines/

USEPA, 1996. Guidelines for Reproductive Toxicity Risk Assessment. EPA/630/R-96/009, September 1996. Available at: www.epa.gov/ORD/WebPubs/repro/

Data Useability and Quality

USEPA, 1992. Final Guidance for Data Useability in Risk Assessment (Part A), OSWER Directive No. 9285.7-09A, April 1992. Available at: www.epa.gov/oswer/riskassessment/datause/parta.htm

USEPA, 1992. Guidance for Data Useability in Risk Assessment (Part B), OSWER Directive No. 9285.7-09B, May 1992. Available at: www.epa.gov/oswer/riskassessment/datause/partb.htm

USEPA, 1993. Data Quality Objectives Process for Superfund, Interim Final Guidance. OSWER Publication 93559-01, EPA 540-R-93-071.

Air

USEPA, 1989. Air/Superfund national Technical Guidance Study Services, Volumes I-IV, EPA 450/1-89/001, 002, 003, 004, July 1989.

Soil

USEPA, 1993. Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. OSWER Directive No. 9355.4-12.

USEPA, 2003. Recommendations of the Technical Review Workgroup for Lead for an Approach to Assessing Risks Associated with Adult Exposures to Lead in Soils. Available at: www.epa.gov/superfund/health/contaminants/lead/products/adultpb.pdf

USEPA, 1996. Soil Screening Guidance, Fact Sheet. EPA 540/F-95/041. Available at: www.epa.gov/superfund/health/conmedia/soil/index.htm#fact

USEPA, 1996. Soil Screening Guidance: User's Guide. EPA 540/R-96/018, July 1996.

Available at: www.epa.gov/superfund/health/conmedia/soil/index.htm#fact

USEPA, 1996. Final Soil Screening Guidance, and Associated Appendices. May 17, 1996. Soil Screening Guidance User's Guide, EPA 540/R-96/018. Available at: www.epa.gov/superfund/health/conmedia/soil/index.htm#fact

USEPA, 1996. Soil Screening Guidance: Technical Background Document (TBD). EPA Document Number: EPA/540/R-95/128, July 1996. Available at: www.epa.gov/superfund/health/conmedia/soil/introtbd.htm

Lead

USEPA, 1994. Technical Support Document for the Integrated Exposure Uptake Biokinetic Model for Lead in Children (December 1994) [NTIS #PB94-963505, OSWER #9285.7-22]. Software available at: www.epa.gov/superfund/programs/lead/prods.html

USEPA, 1994. Validation Strategy for The Integrated Exposure Uptake Biokinetic Model for Lead in Children (December 1994). Available at: www.epa.gov/superfund/health/contaminants/lead/producrts/valstrat.pdf

USEPA, 1994. Guidance Manual for the Integrated Exposure Uptake Biokinetic Model for Lead in Children (February 1994) [NTIS #PB93-963510, OSWER #9285.7-15-1]. Available at: www.epa.gov/superfund/health/contaminants/lead/products/toc.pdf

USEPA, 1998. Proposed TSCA §403 Soil Lead Hazard and OSWER's Lead-in-Soils Policy. EPA 540-F-98-061, OSWER 9200.4-29, PB 99-963211. Memorandum from Lynn Goldman and Tim Fields to Regional Administrators. Available at: www.epa.gov/superfund/programs/lead/prods.htm

USEPA, 1998. Clarification to the 1994 Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. OSWER Directive #9200.4-27P, EPA/540/F-98/030, PB98-963244, OSWER Directive # 9200.4-27P. Memorandum from: Tim Fields to Regional Administrators. Available at: www.epa.gov/superfund/lead/products/oswer98.pdf

Risk Management

USEPA, 1992. National Oil and Hazardous Substances Pollution Contingency Plan (NCP). OERR, OSWER Publication 9200.2-14, January 1992. USEPA, 1993. Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions, OSWER Directive 9355.0-30.

ED_005342A_00002977-00064

USEPA, 1993. Guidance for Conducting Non-Time Critical Removal Actions Under CERCLA. OSWER 540-R-93-057, August 1993.

USEPA, 1996. Revised policy on performance of risk assessments during RI/FS conducted by Potentially Responsible Parties. OSWER Directive No. 9340.1-02.

Monte Carlo Analysis

USEPA, 1997. Policy For Use Of Probabilistic Analysis In Risk Assessment at the U.S. Environmental Protection Agency. Guiding Principles for Monte Carlo Analysis (EPA Document No. EPA/630/R-97/001, March 1997). Available at: www.epa.gov/ORD/spc/probpol.html

USEPA, 1997. Guiding Principles for Monte Carlo Analysis. EPA/630/R-97/001, March 1997. Available at: www.epa.gov/ncea/monteabs.html

Children's Health Issues

USEPA, 1995. New Policy on Evaluating Health Risks to Children. From Administrator Carol Browner to: Assistant Administrators, General Counsel, Inspector General, Associate Administrators and Regional Administrators. October 20, 1995. Available at: www.epa.gov/ORD/spc/memo1020.html

USEPA, 1995. Policy on Evaluating Health Risks to Children. Available at: www.epa.gov/ORD/spc/memohlth.html

Additional Guidance

USEPA, 1997. Special Report on Environmental Endocrine Disruption: An Effects Assessment and Analysis. EPA/630/R-96/012. February 1997 Available at: www.epa.gov/ORD/WebPubs/endocrine

USEPA, 1997. Cumulative Risk Assessment Guidance-Phase I Planning and Scoping. Memorandum to: Assistant Administrators, General Counsel, Inspector General, Associate Administrators, Regional Administrators and Staff Office Directors, dated July 3, 1997. Available at: www.epa.gov/ORD/spc/cumulrsk.html

USEPA, 1997. Guidance on Cumulative Risk Assessment. Part 1. Planning and Scoping. U.S. Environmental Protection Agency, Science Policy Council, July 3, 1997. Available at:

ED_005342A_00002977-00065

www.epa.gov/ORD/spc/cumrisk2.html

Unified Federal Policy for Quality Assurance Plans available at: http://www.epa.gov/fedfac/pdf/ufp_qapp_v1_0305.pdf and the Region 2 specific guidance on QAPPS available at: http://www.epa.gov/region2/qa/documents.htm

The background guidance document available at: http://www.epa.gov/oswer/riskassessment/pdf/background.pdf

The 2010 memo on land use guidance and future land use available at: http://www.epa.gov/superfund/programs/recycle/pdf/reusedirective.pdf

The OSWER Directive on selecting toxicity values available at: http://www.epa.gov/oswer/riskassessment/pdf/hhmemo.pdf

Superfund risk assessment available at: http://www.epa.gov/oswer/riskassessment/risk_superfund.htm and risk in general available at: www.epa.gov/risk

The 1997 Exposure Factors Handbook available at: http://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=12464. Note: the factors from EFH 2011 should not be used without consulting EPA's risk assessor.

RAGS F for inhalation available at: http://www.epa.gov/oswer/riskassessment/ragsf/

Toxicity Values or PPRTVs available at: http://hhpprtv.ornl.gov/

ADAF guidance available at: http://www.epa.gov/oswer/riskassessment/sghandbook/chemicals.htm

EPA Ecological Risk Page
http://www.epa.gov/risk/ecological-risk.htm

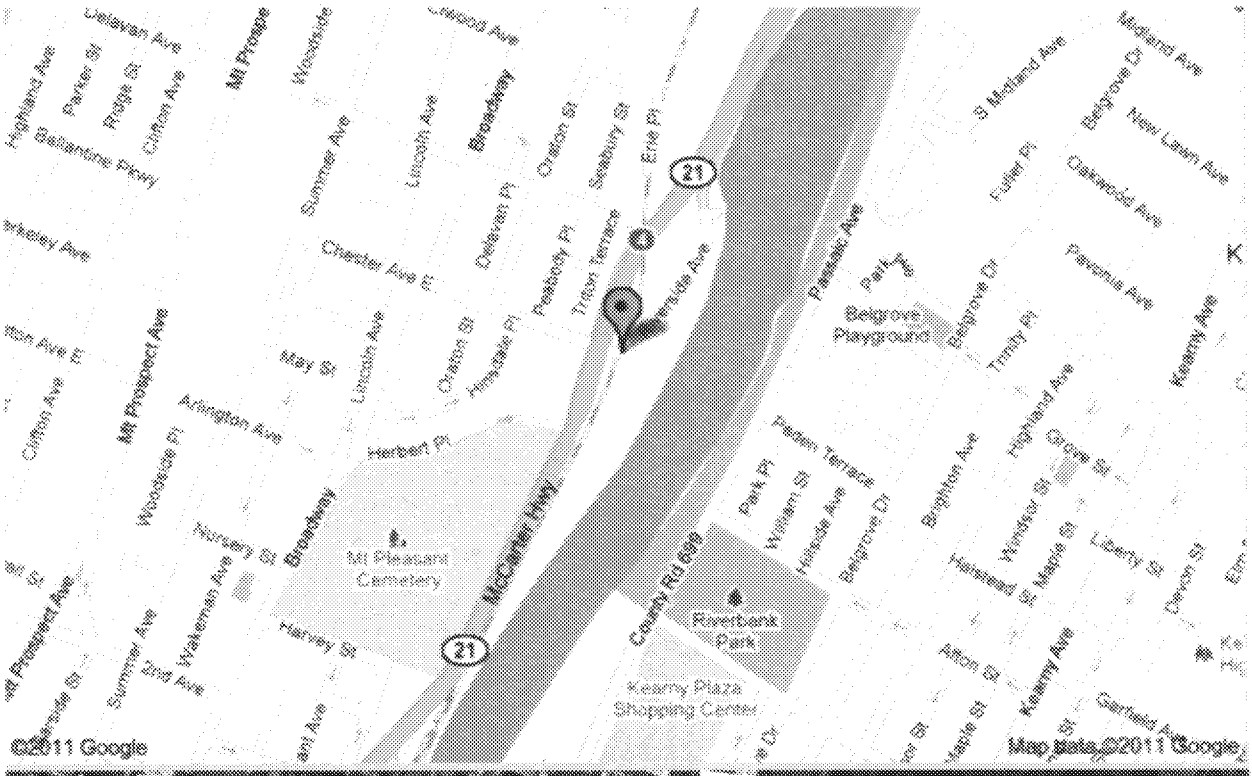
Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments - Interim Final
http://www.epa.gov/oswer/riskassessment/ecorisk/ecorisk.htm

Chemical Specific Documents of Interest

Chemical specific documents for mercury, lead, and perchlorate are available at:

www.epa.gov/nceawww1/healthri.html

EPA homepage for human health risk assessment documents:
www.epa.gov/superfund/health/human_health.htm

ED_005342A_00002977-00067

APPENDIX B: SITE MAP