REMEDIAL DESIGN/REMEDIAL ACTION

STATEMENT OF WORK

OPERABLE UNIT 3, 4 and 6

MATTIACE PETROCHEMICAL CO., INC. SUPERFUND SITE

Glen Cove, Nassau County, State of New York

EPA Region 2

June 6, 2017

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1. INTRODUCTION

1.1 **Purpose of the SOW**. This Statement of Work (SOW) sets forth the procedures and requirements for implementing the Work.

1.2 **Structure of the SOW**. Section 2 (Community Involvement) sets forth EPA's and Settling Defendants' (SDs') responsibilities for community involvement. Section 3 (Remedial Design) sets forth the process for developing the RD, which includes the submission of specified primary deliverables. Section 4 (Remedial Action) sets forth requirements regarding the completion of the RA, including primary deliverables related to completion of the RA. Section 5 (Reporting) sets forth SDs' reporting obligations. Section 6 (Deliverables) describes the content of the supporting deliverables and the general requirements regarding SDs' submission of, and EPA's review of, approval of, comment on, and/or modification of, the deliverables. Section 7 (Schedules) sets forth the schedule for submitting the primary deliverables, specifies the supporting deliverables that must accompany each primary deliverable, and sets forth the schedule of milestones regarding the completion of the RA. Section 8 (State Participation) addresses State participation, and Section 9 (References) provides a list of references, including URLs.

1.3 The Scope of the Remedy includes the actions described in the ROD Amendment, including:

- Discontinuance of the operation of the existing groundwater pump and treat system;

- Bioventing the residual source of contamination to groundwater, which consists of both free- phase light non-aqueous phase liquid (LNAPL) and LNAPL in the smear zone (near the water table) on the Site Property (former Mattiace facility) and extending west-northwest onto a portion of the Nassau County Garvies Point Preserve property (Preserve). This remedy component will require the installation of new horizontal bioventing wells that would be connected to an existing or modified vapor treatment system, as appropriate;

- *In-situ* thermal treatment of contaminated soil and groundwater in "hot spot" areas of known elevated soil and groundwater contamination on the Site Property;

- Enhanced reductive bioremediation, whereby enhancements will be injected into vertical injection wells, in areas of the Site Property where thermal treatment does not address contamination and in portion of the Preserve areas where elevated concentrations of volatile organic compounds (VOCs) attributable to the Site Property have been detected in groundwater;

- Installation of a partial vertical containment barrier (e.g. slurry wall and/or sheet pile wall) along the Site Property line, with the exception of the area north and west, where the depth to the underlying clay layer deepens and where non-aqueous phase liquid (NAPL) is present;

- Hydraulic control, via phytoremediation, to address the potential increase in water levels on the southern portion of the Site Property behind the partial vertical containment barrier;

- Performance monitoring of groundwater to evaluate the effects of active remedial components on natural attenuation processes, to determine if contaminant migration is controlled, to monitor changes in the VOC contaminants over time, and to ensure the remedial action objectives (RAOs) are achieved;

- Implementation of institutional controls (ICs) until such time that RAOs are attained. The ICs will: prevent inappropriate withdrawals of groundwater; require evaluation of the need for vapor barriers and vapor intrusion systems (if any) to be installed by future owners/operators of any future buildings that may be constructed on the Site Property; and prevent activities or uses of the Site Property that might interfere with any of the treatment systems (including the barrier wall) that are in place at the Site; and

- Development of a restoration plan for the portion of the Preserve affected by the implementation of the ROD remedy.

1.4 The terms used in this SOW that are defined in CERCLA, in regulations promulgated under CERCLA, or in the Consent Decree (CD), have the meanings assigned to them in CERCLA, in such regulations, or in the CD, except that the term "Paragraph" or "¶" means a paragraph of the SOW, unless otherwise stated.

2. COMMUNITY INVOLVEMENT

2.1 Community Involvement Responsibilities

(a) EPA has the lead responsibility for developing and implementing community involvement activities at the Site. Previously, EPA developed a Community Involvement Plan (CIP) for the Site. Pursuant to 40 C.F.R. § 300.435(c), EPA shall review the existing CIP and determine whether it should be revised to describe further public involvement activities during the Work that are not already addressed or provided for in the existing CIP.

(b) If requested by EPA, SDs shall support EPA's community involvement activities. EPA may describe in its CIP SDs' responsibilities for community involvement activities. All community involvement activities conducted by SDs at EPA's request are subject to EPA's oversight.

3. REMEDIAL DESIGN

3.1 **RD Work Plan**. SDs shall submit a Remedial Design (RD) Work Plan (RDWP) for EPA approval. The RDWP must include:

(a) Plans for implementing all RD activities identified in this SOW, in the RDWP, or required by EPA to be conducted to develop the RD;

(b) A description of the overall management strategy for performing the RD of the four major RA Components (In-Situ Thermal Treatment, Bioventing, In-situ Enhanced Reductive Bioremediation, and Partial Vertical Containment Barrier/Phytoremediation), including a proposal for phasing of design and construction for each of these four major RA Components, if applicable;

(c) A description of the proposed general approach to contracting, construction, operation, maintenance, and monitoring of the Remedial Action (RA) as necessary to implement the Work;

(d) A description of the responsibility and authority of all organizations and key personnel involved with the development of the RD;

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

(f) Description of the pre-design investigations for the Vertical Barrier Wall Alignment and the Horizontal Bioventing Well Alignment;

(g) Description of the treatability study to determine the initial amendments to be injected under the In-situ Enhanced Reductive Bioremediation (ERB) RA;

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

(i) All supporting deliverables required to accompany the RDWP as specified in the RD Schedule set forth in ¶ 7.2 ("RD Schedule").

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

3.3 **Pre-Design Investigation**. Two Pre-Design Investigations (PDI)s are to be performed to address data gaps. The first is the Vertical Barrier Wall Alignment PDI, which is to determine the depth of the underlying clay unit that the barrier will be keyed into during construction. The second is the Horizontal Bioventing Well Alignment PDI, which is to determine the surface elevation of the LNAPL Plume along the proposed horizontal well alignments.

(a) Following the PDI, SDs shall submit a PDI Evaluation Report to EPA for informational purposes. This report must include:

(1) Summary of the investigations performed;

(2) Summary of investigation results;

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

(4) Data validation reports and laboratory data reports;

(5) Narrative interpretation of data and results; and

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

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

3.4 Treatability Study

(a) SDs shall perform a Treatability Study (TS) for the purpose of determining the amendments to be used during the initial round of in-situ injections for the ERB.

(b) SDs shall submit a TS Work Plan (TSWP) for EPA approval. SDs shall prepare the TSWP in accordance with EPA's *Guide for Conducting Treatability Studies under CERCLA, Final* (Oct. 1992), as supplemented for RD by the *Remedial Design/Remedial Action Handbook*, EPA 540/R-95/059 (June 1995).

(c) Following completion of the TS, SDs shall submit for EPA comment a TS Evaluation Report as an appendix to the Design Criteria Report for the In-Situ ERB RA.

(d) EPA may require SDs to supplement the TS Evaluation Report and/or to perform additional treatability studies.

3.5 RD Design Documents

The RD Design Documents will consist of up to four design packages. The RD design package for each of the four major RA Components may be submitted individually or combined as determine by the SD. RD design package(s) will be consistent of the following deliverables:

(a) **Design Criteria Report.** SDs shall submit the design criteria for all of the RA Components covered by a specific design package, as described in the *Remedial Design/Remedial Action Handbook*, EPA 540/R-95/059 (June 1995)

(b) **Preliminary (30%) RD**. SDs shall submit a Preliminary (30%) RD for each of the RA Components covered by the specific design package for EPA's comment. The Preliminary RD must include:

(1) Preliminary drawings and specifications;

(2) Descriptions of permit requirements, if applicable;

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

(4) A description of monitoring and control measures to protect human health and the environment during the RA;

(5) Any proposed revisions to the RA Schedule that is set forth in ¶ 7.3 (RA Schedule); and

(6) All supporting deliverables required to accompany the Preliminary RD as specified in the RD Schedule.

(c) **Pre-Final (95%) RD**. SDs shall submit the Pre-final (95%) RD for each of the RA Components covered by a specific design package for EPA's comment. The Pre-final RD must be a continuation and expansion of the previous design submittal and must address EPA's comments regarding the Preliminary RD. The Pre-final RD will serve as the approved Final (100%) RD if EPA approves the Pre-final RD without comments. The Pre-final RD must include:

(1) A complete set of construction drawings (as applicable) and specifications that are: (1) certified by a registered professional engineer; (2) suitable for procurement; and (3) follow a standard construction specifications format;

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

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

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

(5) Supporting deliverables as specified in the RD Schedule.

(d) **Final (100%) RD**. SDs shall submit the Final (100%) RD for each of the RA Components covered by a specific design package for EPA approval. The Final RD must address EPA's comments on the Pre-final RD and must include final versions of all Pre-final deliverables.

4. REMEDIAL ACTION

4.1 **RA Work Plan**. SDs shall submit a RA Work Plan (RAWP) for each of the four major RA Components to EPA for approval. At the SD's discretion, the RAWP for different RA Components may be combined into a single RAWP. A total of one to four RAWPs will be submitted depending on whether and how RA Components are combined in the RAWP(s). The RAWP will include:

(a) A proposed RA Construction Schedule in a standard format; and

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

4.2 Independent Quality Assurance Team. SDs shall notify EPA of SDs' designated Independent Quality Assurance Team (IQAT). The IQAT will be independent of the Supervising Contractor. SDs may hire a third party for this purpose. SDs' notice must include the names, titles, contact information, and qualifications of the members of the IQAT. The IQAT will have the responsibility to determine whether Work is of expected quality and conforms to applicable plans and specifications. The IQAT will have the responsibilities as described in ¶ 2.1.3 of the *Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties*, EPA/540/G-90/001 (Apr. 1990).

4.3 Meetings and Inspections

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

(b) **Periodic Meetings**. During the construction portion of each of the four major RA Components (RA Construction), SDs shall meet at least monthly with EPA, and others determined by EPA, to discuss construction issues. SDs shall distribute an agenda and list of attendees to all Parties prior to each meeting. SDs shall prepare a summary of action items agreed to at each meetings and shall distribute it to all Parties.

(c) **Inspections**

(1) EPA shall conduct periodic inspections of the Work. At EPA's request, the Supervising Contractor or other designee shall accompany EPA during inspections.

(2) Upon notification by EPA of any deficiencies in the RA Construction, SDs shall take all necessary steps to correct the deficiencies and/or bring the RA Construction into compliance with the approved Final RD, any approved design changes, and/or the approved RAWP. If SDs fail to correct the deficiencies and/or bring the RA Construction into compliance within the period set forth by EPA in its notice of deficiencies, notwithstanding SDs "best efforts" to comply with that schedule, SDs shall be out of compliance unless excused under Section XVIII Force Majeure of the CD.

4.4 Emergency Response and Reporting

(a) **Emergency Response and Reporting**. If any event occurs during performance of the Work that causes or threatens to cause a release of Waste Material on, at, or

from the Site and that either constitutes an emergency situation or that may present an immediate threat to public health or welfare or the environment, SDs shall: (1) immediately take all appropriate action to prevent, abate, or minimize such release or threat of release; (2) immediately notify the authorized EPA officer (as specified in ¶ 4.4(c)) orally; and (3) take such actions in consultation with the authorized EPA officer and in accordance with all applicable provisions of the Health and Safety Plan, the Emergency Response Plan, and any other deliverable approved by EPA under the SOW.

(b) **Release Reporting**. Upon the occurrence of any event during performance of the Work that SDs are required to report pursuant to Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community Right-to-know Act (EPCRA), 42 U.S.C. § 11004, SDs shall immediately notify the authorized EPA officer orally.

(c) The "authorized EPA officer" for purposes of immediate oral notifications and consultations under ¶ 4.4(a) and ¶ 4.4(b) is the EPA Project Coordinator, the EPA Alternate Project Coordinator (if the EPA Project Coordinator is unavailable), or the EPA [Emergency Response Unit], Region 2 (if neither EPA Project Coordinator is available).

(d) For any event covered by ¶ 4.4(a) and ¶ 4.4(b), SDs shall: (1) within [14] days after the onset of such event, submit a report to EPA describing the actions or events that occurred and the measures taken, and to be taken, in response thereto; and (2) within 30 days after the conclusion of such event, submit a report to EPA describing all actions taken in response to such event.

(e) The reporting requirements under ¶ 4.4 are in addition to the reporting required by CERCLA § 103 or EPCRA § 304.

4.5 Off-Site Shipments

(a) SDs may ship hazardous substances, pollutants, and contaminants from the Site to an off-Site facility only if they comply with Section 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440. SDs will be deemed to be in compliance with CERCLA § 121(d)(3) and 40 C.F.R. § 300.440 regarding a shipment if SDs obtain a prior determination from EPA that the proposed receiving facility for such shipment is acceptable under the criteria of 40 C.F.R. § 300.440(b). SDs may ship Investigation Derived Waste (IDW) from the Site to an off-Site facility only if they comply with EPA's *Guide to Management of Investigation Derived Waste*, OSWER 9345.3-03FS (Jan. 1992).

(b) SDs may ship Waste Material from the Site to an out-of-state waste management facility only if, prior to any shipment, they provide notice to the appropriate state environmental official in the receiving facility's state and to the EPA Project Coordinator. This notice requirement will not apply to any off-Site shipments when the total quantity of all such shipments does not exceed 10 cubic yards. The

notice must include the following information, if available: (1) the name and location of the receiving facility; (2) the type and quantity of Waste Material to be shipped; (3) the schedule for the shipment; and (4) the method of transportation. SDs also shall notify the state environmental official referenced above and the EPA Project Coordinator of any major changes in the shipment plan, such as a decision to ship the Waste Material to a different out-of-state facility. SDs shall provide the notice after the award of the contract for RA construction and before the Waste Material is shipped.

4.6 RA Construction Completion

(a) For purposes of this ¶ 4.6, "RA Construction" comprises each of the four major RA Components (*In-situ* Thermal, Bioventing, *In-situ* ERB, and Vertical Barrier Wall/ Phytoremediation) that involve the construction and operation of a process to achieve Performance Standards, the construction of each RA Component, and the performance of all activities necessary for the process to function properly and as designed.

(b) **Inspection of Constructed Remedy**. SDs shall schedule an inspection to review the construction and operation of each of the RA Components and to review whether they are functioning properly and as designed. The inspection must be attended by SDs and EPA and/or their representatives. A re-inspection must be conducted if requested by EPA.

(c) **Shakedown Period**. There shall be a shakedown period of up to one year for EPA to review whether an RA Component is functioning properly and performing as designed. SDs shall provide operational data in the Monthly Progress Reports to show how each operating RA Component is functioning.

(d) **RA Report**. Following the shakedown period for a RA Component, SDs shall submit a "RA Report" covering the RA Component. A RA Report may cover one or more RA Components at the SD's discretion and will request EPA's determination that RA Construction has been completed for those RA Components covered by the RA Report. The RA Report must: (1) include statements by a registered professional engineer and by SDs' Project Coordinator that construction of the RA component is complete and that the process is functioning properly and as designed; (2) include a demonstration, and supporting documentation, that construction of the RA component is complete and that the process is functioning properly and as designed; (3) include as-built drawings signed and stamped by a registered professional engineer; (4) be prepared in accordance with Chapter 2 (Remedial Action Completion) of EPA's *Close Out Procedures for NPL Sites* guidance (May 2011); and (5) be certified in accordance with ¶ 6.5 (Certification).

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

Construction. EPA's notice may include a schedule for completion of such activities or may require SDs to submit a proposed schedule for EPA approval. SDs shall exercise "best efforts" to perform all activities described in the EPA notice in accordance with the approved schedule. If SD's fail to meet such schedule, SDs shall be out of compliance unless excused under Section XVIII Force Majeure of the CD.

(f) If EPA determines, based on the initial or any subsequent RA Component's RA Report, that a RA Component's RA Construction is complete, EPA shall so notify SDs.

4.7 Certification of RA Completion

(a) **Monitoring Report**. Following the achievement by an RA Component of its Performance Standards, SDs shall submit a Monitoring Report to EPA requesting EPA's Certification of RA Completion for that RA Component. The report must: (1) include certifications by a registered professional engineer and by SD's Project Coordinator that the RA is complete; (2) be prepared in accordance with Chapter 2 (Remedial Action Completion) of EPA's *Close Out Procedures for NPL Sites* guidance (May 2011); (3) contain monitoring data to demonstrate that Performance Standards have been achieved; and (4) be certified in accordance with ¶ 6.5 (Certification).

(b) If EPA concludes that the RA for an RA Component is not Complete, EPA shall so notify SDs. EPA's notice must include a description of any deficiencies.

(c) If EPA concludes, based on the initial or any subsequent RA Monitoring Report requesting Certification of RA Completion for an RA component, that the RA is Complete for that RA Component, EPA shall so certify to SDs. These four certifications will constitute the Certification of RA Completion for purposes of the CD, including Section [**XVI**] of the CD (Covenants by Plaintiff[s]). These Certifications of RA Completion will not affect SDs' remaining obligations under the CD.

4.8 Certification of Work Completion

(a) **Work Completion Inspection**. SDs shall schedule an inspection for the purpose of obtaining EPA's Certification of Work Completion. The inspection must be attended by SDs and EPA and/or their representatives.

(b) **Work Completion Report**. Following the inspection, SDs shall submit a report to EPA requesting EPA's Certification of Work Completion. The report must: (1) include certifications by a registered professional engineer and by SDs' Project Coordinator that the Work, including all groundwater monitoring activities associated with post RA Completion of the groundwater, is complete; and (2) be certified in accordance with ¶ 6.5 (Certification). The Work Completion Report is intended to document via the additional groundwater monitoring after RA Completion that RAOs have been achieved.

(c) If EPA concludes that the Work is not complete, EPA shall so notify SDs. EPA's notice must include a description of the activities that SDs must perform to complete the Work.

(d) If EPA concludes, based on the initial or any subsequent report requesting Certification of Work Completion, that the Work is complete, EPA shall so certify in writing to SDs. Issuance of the Certification of Work Completion does not affect the following continuing obligations: (1) activities under the Periodic Review Support Plan; (2) obligations under Sections [**VIII**] (Property Requirements), [**XX**] (Retention of Records), and [**XIX**] (Access to Information) of the CD; (3) Institutional Controls obligations as provided in the ICIAP; and (4) reimbursement of EPA's Future Response Costs under Section [**X**] (Payments for Response Costs) of the CD.

5. REPORTING

5.1 Progress Reports. Commencing with the month following lodging of the CD and until EPA approves the RA Construction Completion, SDs shall submit progress reports to EPA on a monthly basis. The reports must cover all activities that took place during the prior reporting period, including:

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

(b) A summary of all results of sampling, tests, and all other data received or generated by SDs;

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

(d) A description of all activities relating to RA Construction that are scheduled for the next six weeks;

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

(f) A description of any modifications to the work plans or other schedules that SDs have proposed or that have been approved by EPA.

5.2 Notice of Progress Report Schedule Changes. If the schedule for any activity described in the Progress Reports, including activities required to be described under ¶ 5.1(d), changes, SDs shall notify EPA of such change at least 7 days before (or if the schedule change occurs less than 7 days before the event was to occur, then within a reasonable time of determining a change in schedule is required) performance of the activity, provided EPA has indicated it is a critical activity and EPA plans to potentially observe the activity.

6. DELIVERABLES

6.1 **Applicability**. SDs shall submit deliverables for EPA approval or for EPA comment as specified in the SOW. If neither is specified, the deliverable does not require EPA's approval or comment. Paragraphs 6.2 (In Writing) through 6.4 (Technical Specifications) apply to all deliverables. Paragraph 6.5 (Certification) applies to any deliverable that is required to be certified. Paragraph 6.6 (Approval of Deliverables) applies to any deliverable that is required to be submitted for EPA approval.

6.2 **In Writing**. As provided in [**¶ 104**] of the CD, all deliverables under this SOW must be in writing unless otherwise specified.

6.3 All deliverables must be submitted by the deadlines in the RD Schedule or RA Schedule, as applicable unless a schedule change is approved by EPA. SDs shall submit all deliverables to EPA in electronic form. If any deliverable includes maps, drawings, or other exhibits that are larger than 11" by 17", SDs shall also provide EPA with paper copies of such exhibits upon request.

6.4 **Technical Specifications**

(a) Sampling and monitoring data should be submitted in standard EPA Region 2 Electronic Data Deliverable (EDD) format.

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

(c) Each file must include an attribute name for each site unit or sub-unit submitted. Consult http://www.epa.gov/geospatial/policies.html for any further available guidance on attribute identification and naming.

(d) Spatial data submitted by SDs does not, and is not intended to, define the boundaries of the Site.

6.5 **Certification**. All deliverables that require compliance with this ¶ 6.5 must be signed by the SDs' Project Coordinator, or other responsible official of SDs, and must contain the following statement:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

6.6 Approval of Deliverables

(a) **Initial Submissions**

(1) After review of any deliverable that is required to be submitted for EPA approval under the CD or the SOW, EPA shall: (i) approve, in whole or in part, the submission; (ii) approve the submission upon specified conditions; (iii) disapprove, in whole or in part, the submission; or (iv) any combination of the foregoing.

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

(b) **Resubmissions**. Upon receipt of a notice of disapproval under ¶ 6.6(a) (Initial Submissions), or if required by a notice of approval upon specified conditions under ¶ 6.6(a), SDs shall, within 60 days or such longer time as specified by EPA in such notice, correct the deficiencies and resubmit the deliverable for approval. After review of the resubmitted deliverable, EPA may: (1) approve, in whole or in part, the resubmission; (2) approve the resubmission upon specified conditions; (3) modify the resubmission; (4) disapprove, in whole or in part, the resubmission, requiring SDs to correct the deficiencies; or (5) any combination of the foregoing.

(c) **Implementation**. Upon approval, approval upon conditions, or modification by EPA under ¶ 6.6(a) (Initial Submissions) or ¶ 6.6(b) (Resubmissions), of any deliverable, or any portion thereof: (1) such deliverable, or portion thereof, will be incorporated into and enforceable under the CD; and (2) SDs shall take any action required by such deliverable, or portion thereof. The implementation of any non-deficient portion of a deliverable submitted or resubmitted under ¶ 6.6(a) or ¶ 6.6(b) does not relieve SDs of any liability for stipulated penalties under Section [**XV**] (Stipulated Penalties) of the CD.

6.7 **Supporting Deliverables**. SDs shall submit each of the following supporting deliverables for EPA approval, except as specifically provided. The deliverables must be submitted, for the first time, by the deadlines in the RD Schedule or the RA Schedule, or any other EPA-approved schedule, as applicable. SDs shall develop the deliverables in accordance with all applicable regulations, guidance, and policies (see Section 9 (References)). SDs shall update each of these supporting deliverables as necessary or appropriate during the course of the Work, and/or as requested by EPA.

(a) **Health and Safety Plan**. The Health and Safety Plan (HASP) describes all activities to be performed to protect on site personnel and area residents from physical, chemical, and all other hazards posed by the Work. SDs shall revise the HASP in accordance with EPA's Emergency Responder Health and Safety and Occupational Safety and Health Administration (OSHA) requirements under 29 C.F.R. §§ 1910 and 1926. The HASP should cover RD activities and should be, as appropriate, updated to cover activities during the RA and updated to cover activities after RA completion. EPA does not approve the HASP, but will review it to ensure that all necessary elements are included and that the plan provides for the protection of human health and the environment.

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

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

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

(3) Notification activities in accordance with ¶ 4.4(b) (Release Reporting) in the event of a release of hazardous substances requiring reporting under Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community Right-to-know Act (EPCRA), 42 U.S.C. § 11004; and

(4) A description of all necessary actions to ensure compliance with Paragraph [**11**] (Emergencies and Releases) of the CD in the event of an occurrence during the performance of the Work that causes or threatens a release of Waste Material from the Site that constitutes an emergency or may present an immediate threat to public health or welfare or the environment.

(c) **Field Sampling Plan**. Field Sampling Plans (FSPs) which supplement the QAPP and addresses all sample collection activities associated with specific additional assessment events during implementation of the RD/RA, will be prepared on an

as needed basis. FSPs must be written so that a field sampling team unfamiliar with the project would be able to gather the samples and field information required. SDs shall develop the FSP in accordance with *Guidance for Conducting Remedial Investigations and Feasibility Studies*, EPA/540/G 89/004 (Oct. 1988).

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

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

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

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

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

(5) For SDs to provide EPA with notice in accordance with the reporting requirements of the SOW prior to any sample collection activity;

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

(7) For EPA to take any additional samples that it deems necessary;

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

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

(e) **Site Wide Monitoring Plan**. The purpose of the Site Wide Monitoring Plan (SWMP) is to obtain information, through short- and long- term monitoring, about the movement of and changes in contamination throughout the Site, before and during implementation of the RA; to obtain information regarding contamination levels to determine whether PS are achieved; and to obtain information to determine whether to perform additional actions, including further Site monitoring. The SWMP must include:

(1) Description of the environmental media, as appropriate to be monitored;

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

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

(4) Description of verification sampling procedures;

(5) Description of deliverables that will be generated in connection with monitoring, including sampling schedules, laboratory records, and monitoring reports to EPA and State agencies which will include a Certification that no drinking water wells have been installed on the Site Property thereby ensuring there are no inappropriate withdrawals of groundwater; description of an evaluation of the need for vapor barriers and vapor intrusion systems for any future buildings that may be constructed on the Site Property; and certification that no activities or uses of the Site Property are inconsistent with the response action at the Site; and

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

(f) **Construction Quality Assurance/Quality Control Plan (CQA/QCP)**. The purpose of the Construction Quality Assurance Plan (CQAP) is to describe planned and systemic activities that provide confidence that each RA Component's construction will satisfy all plans, specifications, and related requirements, including quality objectives. The purpose of the Construction Quality Control Plan (CQCP) is to describe the activities to verify that each RA Component's construction has satisfied all plans, specifications, and related requirements, including quality objectives. The CQA/QCP will be revised if

necessary to address requirements for RA Components as each RA Components RD is completed. The CQA/QCP must:

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

(2) Reference the Construction Specifications (CS) and/or Performance Standards (PS), as appropriate, required to be met to achieve Completion of the construction of each RA Component;

(3) Describe the activities to be performed: (i) to provide confidence that CS and/or PS will be met; and (ii) to determine whether CS have been met;

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

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

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

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

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

(g) **O&M Plan**. The O&M Plan for each RA Component describes the requirements for inspecting, operating, and maintaining that RA Component. SDs shall develop the O&M Plans in accordance with *Operation and Maintenance in the Superfund Program*, OSWER 9200.1 37FS, EPA/540/F-01/004 (May 2001). Each O&M Plan must include the following additional requirements for its respective RA Component:

(1) Description of Performance Standards (PS) required to be met to implement that O&M Plan's RA Component of the ROD;

(2) Description of activities to be performed: (i) to provide confidence that PS for that RA Component will be met; and (ii) to determine whether PS for that RA Component have been met;

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

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

(5) Description of potential corrective action to be implemented in the event that a RA Component's PS are not achieved; and a schedule for implementing these corrective actions; and

(h) **O&M Manual**. An O&M Manual for the Bioventing RA component, as well as for the Enhanced Reductive B ioremediation and Hydraulic Control components of the remedy will be compiled which will serve as a guide to the purpose and function of the equipment and systems that make up the remedy. SDs shall develop the O&M Manual in accordance with *Operation and Maintenance in the Superfund Program*, OSWER 9200.1 37FS, EPA/540/F-01/004 (May 2001).

(i) **Institutional Controls Implementation and Assurance Plan**. The Institutional Controls Implementation and Assurance Plan (ICIAP) describes plans to implement, maintain, and enforce the Institutional Controls (ICs) at the Site Property. SDs shall develop the ICIAP in accordance with *Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites*, OSWER 9355.0-89, EPA/540/R-09/001 (Dec. 2012), and *Institutional Controls: A Guide to Preparing Institutional Controls Implementation and Assurance Plans at Contaminated Sites*, OSWER 9200.0-77, EPA/540/R-09/02 (Dec. 2012). The ICIAP must include the following additional requirements:

(1) Locations of recorded real property interests (e.g., easements, liens) and resource interests in the Site Property that may affect ICs (e.g., surface, mineral, and water rights) including accurate mapping and geographic information system (GIS) coordinates of such interests; and

(2) Legal descriptions and survey maps that are prepared according to current American Land Title Association (ALTA) Survey guidelines and certified by a licensed surveyor.

7. SCHEDULES

7.1 Applicability and Revisions. All deliverables and tasks required under this SOW must be submitted or completed by the deadlines or within the time durations listed in the RD and RA Schedules set forth below. SDs may submit proposed revised RD Schedules or RA Schedules for EPA approval. Upon EPA's approval, the revised RD and/or RA

Schedules supersede the RD and RA Schedules set forth below, and any previously-approved RD and/or RA Schedules.

7.2 RD Schedule

	Description of Deliverable, Task	**Included Supporting Deliverable**	**¶ Ref.**	**Deadline**
1	RDWP	HASP, ERP, FSP, QAPP, SWMP	3.1	90 days after EPA's Authorization to Proceed regarding Supervising Contractor under CD ¶ [**9.c**]
2	RA Component's Design Criteria Report		3.5(a)	Per the schedule in the RDWP
3	RA Component's PDIWP		**Error! Reference source not found.**	Per the schedule in the RDWP
4	RA Component's TSWP		3.4(b)	Per the schedule in the RDWP
5	RA Component's Preliminary (30%) RD		3.5(b)	The later of 90 days after receipt of EPA comments on a RA Component's Design Criteria Report or 60 days after submittal of an RA Component's PDI Report or TS Report
6	RA Component's Pre-final (90/95%) RD	CQA/QCP, O&M Plan, ICIAP	3.5(c)	120 days after receipt of EPA comments on Preliminary or Intermediate RD
7	RA Component's Final (100%) RD	Same as above	3.5(c)(5)	30 days after receipt of EPA comments on Pre-final RD

7.3 RA Schedule

	Description of Deliverable / Task	Included Documents	¶ Ref.	Deadline
1	RAWP for an RA Component		4.1	90 days after EPA Approval of RA Component's 100% RD
2	Pre-Construction Conference	O&M Manual	4.3(a)	Per the RA Component's RAWP
3	Start of Construction			Per the RA Component's RAWP
4	Completion of Construction			
5	Pre-final Inspection		4.6(b)	30 days after completion of RA Component's construction
6	RA Component's Construction Report		4.6(d)	45 days after completion of RA Component's Shakedown Period in RA Component's per RA Component's RAWP
7	RA Component Monitoring Report		4.7(a)	
8	Work Completion Report		4.8(b)	

8. STATE PARTICIPATION

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

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

(a) Any EPA approval or disapproval under ¶ 6.6 (Approval of Deliverables) of any deliverables that are required to be submitted for EPA approval; and

(b) Any approval or disapproval of the Construction Phase under ¶ 4.6 (RA Construction Completion), any disapproval of, or Certification of RA Completion under ¶ 4.7 (Certification of RA Completion), and any disapproval of, or Certification of Work Completion under ¶ 4.8 (Certification of Work Completion).

9. REFERENCES

9.1 The following regulations and guidance documents, among others, apply to the Work. Any item for which a specific URL is not provided below is available on one of the two EPA Web pages listed in ¶ 9.2:

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

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

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

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

(e) Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties, OSWER 9355.5-01, EPA/540/G-90/001 (Apr.1990).

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

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

(h) Permits and Permit Equivalency Processes for CERCLA On-Site Response Actions, OSWER 9355.7-03 (Feb. 1992).

(i) Guidance for Conducting Treatability Studies under CERCLA, OSWER 9380.3-10, EPA/540/R-92/071A (Nov. 1992).

(j) National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, 40 C.F.R. Part 300 (Oct. 1994).

(k) Guidance for Scoping the Remedial Design, OSWER 9355.0-43, EPA/540/R-95/025 (Mar. 1995).

(l) Remedial Design/Remedial Action Handbook, OSWER 9355.0-04B, EPA/540/R-95/059 (June 1995).

(m) EPA Guidance for Data Quality Assessment, Practical Methods for Data Analysis, QA/G-9, EPA/600/R-96/084 (July 2000).

(n) Operation and Maintenance in the Superfund Program, OSWER 9200.1-37FS, EPA/540/F-01/004 (May 2001).

(o) Comprehensive Five-year Review Guidance, OSWER 9355.7-03B-P, 540-R-01-007 (June 2001).

(p) Guidance for Quality Assurance Project Plans, QA/G-5, EPA/240/R-02/009 (Dec. 2002).

(q) Institutional Controls: Third Party Beneficiary Rights in Proprietary Controls (Apr. 2004).

(r) Quality Systems for Environmental Data and Technology Programs -- Requirements with Guidance for Use, ANSI/ASQ E4-2004 (2004).

(s) Uniform Federal Policy for Quality Assurance Project Plans, Parts 1-3, EPA/505/B-04/900A though 900C (Mar. 2005).

(t) Superfund Community Involvement Handbook, EPA/540/K-05/003 (Apr. 2005).

(u) EPA Guidance on Systematic Planning Using the Data Quality Objectives Process, QA/G-4, EPA/240/B-06/001 (Feb. 2006).

(v) EPA Requirements for Quality Assurance Project Plans, QA/R-5, EPA/240/B-01/003 (Mar. 2001, reissued May 2006).

(w) EPA Requirements for Quality Management Plans, QA/R-2, EPA/240/B-01/002 (Mar. 2001, reissued May 2006).

(x) USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, ILM05.4 (Dec. 2006).

(y) USEPA Contract Laboratory Program Statement of Work for Organic Analysis, SOM01.2 (amended Apr. 2007).

(z) EPA National Geospatial Data Policy, CIO Policy Transmittal 05-002 (Aug. 2008), available at http://www.epa.gov/geospatial/policies.html and http://www.epa.gov/geospatial/docs/National_Geospatial_Data_Policy.pdf.

(aa) Summary of Key Existing EPA CERCLA Policies for Groundwater Restoration, OSWER 9283.1-33 (June 2009).

(bb) Principles for Greener Cleanups (Aug. 2009), available at http://www.epa.gov/oswer/greenercleanups/.

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

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

(ee) Groundwater Road Map: Recommended Process for Restoring Contaminated Groundwater at Superfund Sites, OSWER 9283.1-34 (July 2011).

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

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

(hh) Updated Superfund Response and Settlement Approach for Sites Using the Superfund Alternative Approach , OSWER 9200.2-125 (Sep. 2012)

(ii) Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites, OSWER 9355.0-89, EPA/540/R-09/001 (Dec. 2012).

(jj) Institutional Controls: A Guide to Preparing Institutional Controls Implementation and Assurance Plans at Contaminated Sites, OSWER 9200.0-77, EPA/540/R-09/02 (Dec. 2012).

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

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

(mm) Guidance for Evaluating Completion of Groundwater Restoration Remedial Actions, OSWER 9355.0-129 (Nov. 2013).

(nn) Groundwater Remedy Completion Strategy: Moving Forward with the End in Mind, OSWER 9200.2-144 (May 2014).

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

Laws, Policy, and Guidance http://www.epa.gov/superfund/policy/index.htm

Test Methods Collections http://www.epa.gov/fem/methcollectns.htm

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