UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 10

IN THE MATTER OF: Lower Duwamish Waterway Seattle, WA Port of Seattle, City of Seattle, King County, The Boeing Company Respondents Proceeding Under Sections 104, 122(a) and 122(d)(3) of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9604, 9622(a) and 122(d)(3)	U.S. EPA Region 10 CERCLA Docket No. 10-2001-0055 FOURTH AMENDMENT

Introduction

In December 2000, the City of Seattle, King County, the Port of Seattle, and the Boeing Company ("Respondents") entered into an *Administrative Order on Consent for Remedial Investigation/Feasibility Study*, U.S. EPA, Region 10 Docket No. CERCLA 10-2001-0055, Ecology Docket No 00TCPNR-1895 (12/20/2000) (the "RI/FS AOC") with the United States Environmental Protection Agency ("EPA") and the Washington State Department of Ecology ("Ecology"). Respondents performed a remedial investigation and feasibility study for the Lower Duwamish Waterway Superfund Site ("Site" or "LDW") under the oversight of EPA and Ecology pursuant to the RI/FS AOC. The RI/FS AOC has been amended thrice to provide for the performance of additional studies related to the Site. The First Amendment, effective March 19, 2013, provides for the performance of the Fisher Study for the LDW. The Second Amendment, effective July 17, 2014, provides for the performance of the Enhanced Natural Recovery (ENR)/Activated Carbon (AC) pilot study. The Third Amendment, effective April 27, 2016, provides for the performance of pre-remedial design studies. Respondents continue to perform these studies pursuant to the terms of the RI/FS AOC.

The EPA issued a record of decision for the Site on November 21, 2014 (the "Lower Duwamish Waterway ROD"). The Lower Duwamish Waterway ROD selected remedial actions for the in-waterway portion of the Site.

Source control is an integral part of the strategy for addressing contamination throughout the Site. An objective of the source control is to find and sufficiently control sources before commencing in-waterway remediation. Ecology is the lead agency for implementing source control actions and uses its existing regulatory authorities to control sources. For purposes of assessing adequacy of source control in the immediate source area to the LDW, Ecology has divided the LDW into three reaches: upper, middle, and lower. Consistent with Sections 4.2 and 13.2.7 of the LDW ROD, EPA intends to commence remedial action for the LDW Site or a segment thereof after a source control determination for the LDW Site or segment thereof is made.

The objectives of this Fourth Amendment are to: 1) design the remedy for river mile 3.0 to river mile 5 of Lower Duwamish Waterway Site (the "LDW Upper Reach"), consistent with the Lower Duwamish Waterway ROD and CERCLA; 2) incorporate and supersede the work being carried out under the Third Amendment to this AOC in support of the development of seafood consumption institutional controls for the Site; and (3) provide for timely periodic monitoring of selected site conditions, as necessary. The attached Scope of Work (SOW) provides an overview of the work to be performed, a list of deliverables, and a schedule for these deliverables.

Fourth Amendment

EPA, Ecology, and Respondents agree to amend the RI/FS AOC as follows:

1. The work performed pursuant to this Fourth Amendment shall comply with CERCLA and its implementing regulations, the National Contingency Plan, 40 C.F.R. Part 300 and shall be subject to the review and approval of EPA. With the exceptions of the authority to review (except as a support agency) and approve work, resolve disputes (excluding Ecology's ability to resolve disputes related to its cost recovery), or enforce work performed under this Fourth Amendment and any subsequent amendment to the RI/FS AOC, Ecology shall retain all rights and obligations it has under the RI/FS AOC, including those rights of access and cost recovery conferred to it by Sections XIV and XXII of the RI/FS AOC. EPA will provide Ecology with an opportunity to review and comment on any submittal requiring EPA approval before EPA approves, modifies or disapproves the submittal. However, a failure by EPA to allow such an opportunity to Ecology shall not be a basis for Respondents to dispute an EPA decision to approve, modify or disapprove a submittal.

2. EPA and Respondents may by written agreement modify the work provided for by this Fourth Amendment.

3. For the purposes of this Fourth Amendment, Paragraph 3 of Section X (Modification of the Work Plan) of the RI/FS AOC shall be deleted and replaced by the following:

   EPA may identify gaps in the work required under the Fourth Amendment that prevent the accomplishment of the objectives of the Fourth Amendment as defined above. In that event, EPA may request in

writing that LDWG perform additional work under this Fourth Amendment, as necessary for the accomplishment of these objectives. Respondents shall confirm their willingness to perform such additional work, in writing, to EPA within twenty-one (21) days of receipt of the EPA request, or Respondents shall invoke dispute resolution. Subject to EPA resolution of any dispute, Respondents shall implement the additional work requested by EPA. The additional work shall be completed according to the standards, specifications, and schedule set forth or approved by EPA in a written modification to a plan or written work plan supplement. EPA reserves the right to conduct the work at any point, to seek reimbursement from Respondents, and/or seek any other appropriate relief. If EPA determines that conditions at the Site are creating or have the potential to create a danger to human health or welfare on-site or in the surrounding area or to the environment, EPA may order Respondent to stop further implementation of this Order for such period of time in the judgement of EPA is needed to abate the danger.

4. The amounts paid by Respondents to the EPA Hazardous Superfund pursuant to the requirements of Section XXII (Payment of EPA Oversight Costs) of the RI/FS AOC shall be deposited by EPA into the Lower Duwamish Waterway Superfund Site Special Account pursuant to Section XXI (Reservations of Rights and Reimbursement of Costs) of the RI/FS AOC to be retained and used to conduct or finance response actions at or in connection with the Site. In addition, EPA has several other site-specific accounts related to the Site within the EPA Hazardous Superfund. Funds held in such site specific accounts may be transferred to the Lower Duwamish Waterway Superfund Site Special Account if EPA determines that the funds are no longer needed to finance or otherwise support the implementation of response actions related to response action for which such site specific account was created. After completion of response actions at or in connection with the Site, any funds remaining in the Lower Duwamish Waterway Site Specific Account may be transferred by EPA to the EPA Hazardous Substance Superfund.

5. Remove and replace Paragraph 1 of Section XV with the following:

   All deliverables under this AOC shall be submitted in writing unless otherwise specified. All deliverables must be submitted by deadlines in the SOW attached to this Amendment or as otherwise approved by EPA. Unless otherwise requested by the EPA Project Coordinator, Respondents shall submit all deliverables to EPA in electronic form (native format and web-ready pdf) with a single hard copy of the first draft and the final version of all documents subject to EPA comment.

Technical specifications for sampling and monitoring data and spatial data are addressed in the SOW attached to this Amendment. If any deliverable includes maps, drawings, or other exhibits that are in color or larger than 8.5" by 11", Respondents shall also provide EPA with paper copies of such exhibits.

6. The list of deliverables identified in Paragraph 4 of Section XIX (Delay in Performance, EPA Stipulated Penalties, Enforcement) of the RI/FS AOC is amended to delete deliverables (3) through (6) and to include the original and revised Remedial Design Work Plan, and originals of the Preliminary Remedial Design, the Intermediate Remedial Design, the Pre-Final Remedial Design, and the Final Remedial Design.

7. The basis for violations identified in Paragraph 5 of Section XIX (Delay in Performance, EPA Stipulated Penalties, Enforcement) is amended to delete deliverables (1) through (9) and to include the original and final deliverables requiring EPA approval identified in the attached SOW except for a monthly progress report and those deliverables identified in Paragraph 6 above.

8. Respondents shall, subject to and conditioned upon the prior approval of EPA, implement the activities required by the attached SOW, which is incorporated into and enforceable under the terms of the RI/FS AOC as amended by this Fourth Amendment.

9. All work required by the Task 11 of the Third Amendment to the RI/FS AOC shall be incorporated into and superseded by this Fourth Amendment to the RI/FS AOC.

It is so ORDERED AND AGREED this ninth day of July, 2018.

BY: _____ DATE: 7/9/18
Shawn Blocker
Unit Manager Office of Environmental Cleanup
Region 10
United States Environmental Protection Agency

By: Rebecca S. Lawson for DATE: 7/3/2018
James J. Pendowski
Program Manager
Toxics Cleanup Program
Washington Department of Ecology

EFFECTIVE DATE: July 9, 2018
Agreed this 15 day of June, 2018
For Respondent Port of Seattle

By: _____
Name Stephen Metruck
Title Executive Director

Effective July 1, 2018

Agreed this ___ day of _____, 2018
For Respondent City of Seattle

By: _____
Name
Title

Agreed this 24 day of May, 2018
For Respondent King County

By: Dow Constantine
Name
Title

Agreed this 22 day of May, 2018
For Respondent The Boeing Company

By: S L Shestag
Name Steven L Shestag
Title Director, EHS Environment

Attachment to Fourth Amendment of the *Administrative Order on Consent for Remedial Investigation/Feasibility Study*, U.S. EPA, Region 10 Docket No. CERCLA 10-2001-0055, Ecology Docket No 00TCPNR-1895 (12/20/2000)

REMEDIAL DESIGN

STATEMENT OF WORK

LDW UPPER REACH

LOWER DUWAMISH WATERWAY SUPERFUND SITE

Seattle, King County, State of Washington

EPA Region 10

May 2018

TABLE OF CONTENTS

1. INTRODUCTION AND BACKGROUND

1.1 Introduction. This Statement of Work (SOW) sets forth the procedures and requirements for implementing Amendment #4 (also referred to as AOC4 or the Fourth Amendment) of the Administrative Order on Consent for Remedial Investigation (RI)/Feasibility Study (FS) of the Lower Duwamish Waterway Superfund Site (Site or LDW) (U.S. EPA Region 10 Docket No. CERCLA 10-2001-0055, Ecology Docket N. 00TCPNR-1895, RI/FS AOC). Amendment #4 work includes remedial design for the upper reach of the Site, as defined in Section 3.2 below, and other tasks enumerated in this SOW, in accordance with the Record of Decision for the Site signed November 21, 2014 (ROD).

1.2 Structure of the SOW.

- Section 2 (Continued Development and Implementation of Seafood Consumption Institutional Controls (ICs)) sets forth the process for continuing to develop, pilot and/or implement outreach for appropriate and effective institutional controls related to seafood consumption.
- Section 3 (Remedial Design) sets forth the process for developing the Remedial Design (RD), which includes the submission of specified primary deliverables.
- Section 4 (Periodic Monitoring of Selected Site Conditions) sets forth elements of site monitoring to be performed by the year 2023 to generate tissue data relevant to human health risk and to assess polychlorinated biphenyls (PCB) trends in surface water quality. Respondents shall perform this work under AOC4 unless it is performed pursuant to another administrative order or Consent Decree.
- Section 5 (Deliverables) describes the content of supporting deliverables and the general requirements regarding Respondents' submission of, and EPA's review of, approval of, comment on, and/or modification of, the deliverables.
- Section 6 (Schedule) 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 RD.
- Section 7 (References) provides a list of references, including URLs.

1.3 The terms used in this SOW that are defined in CERCLA, in regulations promulgated under CERCLA, or in the RI/FS AOC, have the meanings assigned to them in CERCLA, in such regulations, or in the RI/FS AOC, except that the term "Paragraph" or "¶" means a paragraph of the SOW, and the term "Section" means a section of the SOW, unless otherwise stated.

2. CONTINUED DEVELOPMENT AND IMPLEMENTATION OF SEAFOOD CONSUMPTION ICs

2.1 This section incorporates and supersedes RI/FS AOC amendment #3 Task 11 (Support for Development of Seafood Consumption Institutional Controls). Respondents are responsible for costs incurred by EPA related to work performed under this section through the date of EPA approval of the upper reach Final (100 percent) Remedial Design, unless otherwise agreed to by EPA and Respondents. Respondents shall provide, fund, or participate in the following: (1) a planning group responsible for development and implementation of a plan for institutional controls; (2) incentives for participation on the planning group by community members who have relevant knowledge or experience, subject to public agencies' legal authority to provide such incentives; (3) technical materials to support the institutional controls; (4) pilot testing of potential institutional control tools, such as outreach campaigns developed using community based social marketing principles; (5) assessment of the pilot test and revisions to the plan, and (6) assessment of the plan's success and recommendations for future ICs on the LDW.

2.2 Respondents shall provide support for planning and managing the meetings of the Healthy Fish Consumption Consortium.

2.3 Respondents shall fund a cooperative agreement between EPA and Public Health Seattle & King County. The tasks under the Cooperative Agreement include: establishing a community based participatory process and producing a Duwamish Seafood Consumption IC Plan; providing on-going direct health promotion and outreach to implement the Duwamish Seafood Consumption ICs; building capacity of community partners that serve the affected communities to design, pilot test and implement community focused IC tools; monitoring and evaluating the IC program effectiveness, as well as provide regular Progress Reports; and developing recommendations for adaptively managing the program and ensuring continued community capacity building.

3. REMEDIAL DESIGN

3.1 The remedial design is generally defined as those activities to be undertaken to develop final construction plans and specifications, general provisions, special requirements, and all other technical documentation necessary to solicit bids for construction of the remedial action. The remedial design also includes identification of the required documentation to be provided by the construction contractor, subject to approval by EPA during the construction phase, and annotated outlines, conceptual plans, or initial drafts of certain documents to be finalized after construction.

3.2 Respondents shall design the selected remedy in the LDW ROD as it applies in the LDW Upper Reach. The LDW Upper Reach (LDW-UR) is defined as River Mile 3.0 to River Mile 5.

3.3 Plans and specifications shall be submitted in accordance with the schedule set forth in Section 5 of this SOW. Subject to inclusion in the RD Work Plan and approval by the EPA, Respondents may submit more than one set of design submittals reflecting different components of the remedial action. Remedial design work, including plans and specifications, shall be developed in accordance with the EPA's Superfund Remedial Design and Remedial Action Guidance (OSWER Directive No. 9355.0-4A) and shall demonstrate that the remedial action shall meet all requirements of the ROD. The Respondents shall meet regularly with the EPA to discuss design issues.

3.4 Respondents shall use EPA guidance documents as the basis for development of work plans, quality assurance project plans, sampling plans, water quality monitoring plans, and other documents. The remedial design and supporting deliverables shall be consistent with current technical guidance, including but not limited to Contaminated Sediment Remediation Guidance for Hazardous Waste Sites, 2005; Guidance for In Situ Subaqueous Capping of Contaminated Sediments, 2012; Contaminated Sediments Remediation: Remedy Selection for Contaminated Sediments, 2014, and shall meet professional engineering standards for sediment remediation sites.

3.5 Remedial Design will progress from the preliminary design phase (30%) through 60%, 90%, and final (100%), with deliverables as identified below and in the RDWP. As information is developed during the phases of design, Respondents shall be prepared to present information and receive input through the Community Involvement process, which includes the Roundtable and other public fora.

4. PERIODIC MONITORING OF SELECTED SITE CONDITIONS

4.1 Respondents shall repeat elements of the Pre-Design Studies work plan developed under RI/FS AOC Amendment #3 for the Site as a whole (1) to assess fish and crab tissue concentrations for Remedial Action Objective 1 risk drivers as conditions in the waterway continue to change due to remediation activities and ongoing source control; and (2) to assess PCB trends in near-bottom surface water using passive samplers. Respondents shall perform this monitoring no less than five years from the baseline monitoring performed under AOC3 unless it is performed pursuant to another administrative order or Consent Decree.

4.2 For work to be done under this section, Quality Assurance Project Plan (QAPP) addendums and a data report that includes data evaluation (see supporting documents) shall be submitted per the Schedule of Deliverables in Section 5.

5. DELIVERABLES

5.1 Applicability. Respondents shall submit deliverables for EPA comment or approval or comment as specified in the Section 5. Copies of deliverables shall be provided, as directed by EPA, to Ecology, the Muckleshoot Tribe, and the Suquamish Tribe to ensure a reasonable opportunity for review and comment. As requested by EPA, Respondents shall provide additional hard copies for use in Community Involvement, including the LDW Roundtable.

5.2 Technical Specifications

(a) LDWG shall submit electronic data in accordance with the Region 10 Data Management Plan (May 2014) and associated guidance and templates. Respondents shall submit sampling and monitoring data in Region 10 Electronic Data Deliverable (EDD) format. Respondents shall upload the data into EPA's SCRIBE and into Ecology's EIM database. Respondents shall provide EPA with a copy of the files created to load data into the EPA database.

(b) Spatial data, including spatially-referenced data and geospatial data, shall be submitted following the procedures in the "U.S. EPA Region 10 Geographic Information Systems (GIS) for External Entities"; and (2) as unprojected geographic coordinates in decimal degree format using North American Datum f1983 (NAD83) or World Geodetic System 1984 (WGS84) as the datum. If applicable, submissions should include the collection method(s). The GIS data must be submitted to EPA on discus at the same time as the final reports are submitted. If requested by EPA, LDWG shall provide GIS data used in sampling plans, QAPPs, reports, or other submittals where GIS and mapping programs were used to generate maps, diagrams, and other visual aids. 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 https://www.epa.gov/geospatial/geospatial-policies-and-standards for any further available guidance on attribute identification and naming.

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

5.3 Remedial Design Work Plan. Respondents shall submit a Remedial Design (RD) Work Plan (RDWP) for EPA approval. The RDWP shall include a proposed plan and schedule for implementing all RD activities for the LDW Upper Reach and

identification and development of all RD supporting documents. The RDWP must include:

(a) A description of the overall management strategy for performing the RD.

(b) A description of the proposed general approach to contracting, construction, operation, maintenance, and monitoring in the LDW Upper Reach;

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

(d) A discussion of additional challenges, data needs, investigations or retesting necessary to initiate or complete the remedial design (e.g., how to characterize and remediate areas with structural or access restrictions);

(e) A Pre-Design Investigations (PDI) Work Plan, as specified in Section 4.4.

(f) Descriptions of any applicable permitting requirements and other regulatory requirements (including but not limited to Applicable or Relevant and Appropriate Requirements (ARARs) identified in the ROD);

(g) Description of plans for obtaining access in connection with RD and RA, such as property acquisition, property leases, and/or easements, and for developing institutional controls in accordance with the ROD;

(h) Proposed approach to reporting data from Pre-Design Investigation (PDI);

(i) Discussion of existing data (e.g., upstream suspended solids data, source control storm drain solids data, flow and other hydrodynamic data, pre-design data, and EAA monitoring data) and data to be collected as part of design or following construction that will assist in anticipating the quality of surface sediments over time. This discussion shall include a conceptual site model (CSM) that considers suspended and bedded sediments, including dredge residuals, and how they move during and after construction, to aid in interpreting monitoring outcomes in the Upper Reach; and

(j) A comprehensive listing and brief description of elements of remedial design to be addressed or supporting deliverables to be submitted as part of remedial design, including but not limited to those listed below or described in ¶ 4.9 (Components of Supporting Deliverables).

(1) QAPPs and health and safety plan [HSP].

(2) Remedial action basis of design report, including.

(i) Narrative basis of design of dredge, cap, ENR, and MNR>SCO elements, including supporting technical evaluations.

(ii) Permitting and site access.

(iii) Construction sequence, scheduling and cost estimate.

(iv) Anticipated long-term monitoring and maintenance approaches, including any expected measures for climate change adaptation.

(v) Evaluation of institutional controls requirements for caps

(vi) Archaeological monitoring and discovery.

(vii) Transportation and disposal approaches.

(viii) Scheduling and coordination of work under this SOW with other in-water work or navigation or development projects on the bank and intertidal or subtidal areas, if they may substantively affect remedial design or construction in the LDW Upper Reach.

(ix) Green and sustainable remediation evaluation and implementation approach.

(x) Approach to implementation and assurance of institutional controls.

(xi) Geotechnical basis of design.

(xii) Sediment excavation prism verification.

(3) Water quality monitoring plan.

(4) Biological assessment.

(5) Construction quality assurance plan.

5.4 Pre-Design Investigation. The purpose of the PDI is to address data needs for completion of design, by conducting field investigations.

(a) **PDI Work Plan.** Respondents shall submit a PDI Work Plan (PDIWP) per Section 4.4.b, for EPA approval. The PDIWP must include:

(1) An evaluation and summary of existing data and description of data gaps;

(2) A strategy for timely characterization, testing or data gathering to support delineation of areas where each remedial technology applies and engineering design, a discussion of the timing and type of data collection needed to document ARARs compliance, and a plan for natural recovery monitoring where required;

(3) A conceptual sampling plan including proposals and clearly stated rationales for any proposed tiering analyses or phasing of work to refine recovery categories, apply remedial technologies, including natural recovery, and design the remedy. The sampling plan shall identify media to be sampled, general location type and purpose, field sampling and lab analyses, bathymetric, hydrogeologic, and geotechnical studies, and an estimated number and spatial density of samples; and

(4) A schedule for implementing the PDI work.

(b) **PDI Quality Assurance Project Plan**. A QAPP addresses sample collection, analysis and data handling. The QAPP must include a field sampling plan and an explanation of Respondents' data quality objectives, quality assurance, quality control, and chain of custody procedures for all treatability, design, compliance, and monitoring samples. The QAPP shall address disposal of Investigation Derived Waste. Respondents shall submit a QAPP for each field sampling effort and shall develop the QAPP in accordance with *EPA Requirements for Quality Assurance Project Plans*, QA/R-5, EPA/240/B-01/003 (Mar. 2001, reissued May 2006); *Guidance for Quality Assurance Project Plans*, QA/G-5, EPA/240/R 02/009 (Dec. 2002); and *Uniform Federal Policy for Quality Assurance Project Plans*, Parts 1-3, EPA/505/B-04/900A though 900C (Mar. 2005).

(1) To ensure that Respondents' Labs perform all analyses using EPA-accepted methods (i.e., the methods documented in EPA Contract Laboratory Program (CLP) SOW for Inorganic Superfund Methods (ISM02.4, October, 2016); EPA CLP SOW for Organics Superfund Methods (SOM02.4, October, 2016); EPA CLP SOW for High Resolution Superfund Methods (HRSM01.2, October, 2014), or as updated; other methods acceptable to EPA;

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

(3) To ensure that Respondents validate data in accordance with EPA-accepted data validation guidelines: National Functional Guidelines for Inorganic Superfund Methods Data Review (EPA-540-R-2017-001, January, 2017); National Functional Guidelines for Organic Superfund Methods Data Review (EPA-540-R-2017-002, January, 2017) National Functional Guidelines for High Resolution Superfund Methods Data Review (EPA-542-B-16-001, April, 2016) or as updated.

(c) **PDI Health and Safety Plan(s)**. A Health and Safety Plan (HASP) describes all activities to be performed to protect on site personnel and others transiting the area or living or working nearby from physical, chemical, and all other hazards posed by the Work. Respondents shall develop HASPs 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. 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.

(d) **PDI Data.** Respondents shall submit data in accordance with the Schedule of Deliverables.

(e) **PDI Data Evaluation Report**. This report shall include:

(1) Summary of the investigations performed;

(2) Summary of investigation results;

(3) Narrative interpretation of data and results, with supporting figures and tables, including updated graphics (similar to ROD Figure 18 or more detailed) of where specific remedial technologies and details of how the decision trees in the ROD (Figure 19 and corrected Figure 20) were applied;

(4) Results of statistical and modeling analyses, as applicable;

(5) Photographs documenting the work conducted; and

(6) Conclusions and recommendations for RD, including design parameters and criteria, and identification of any remaining data gaps needed to support the design.

5.5 Should additional data be needed to support the design, a QAPP addendum shall be submitted 30 days after submittal of the draft PDI Data Evaluation Report.

5.6 **Preliminary (30%) RD**. Respondents shall submit a Preliminary (30%) RD for EPA's comment. The Preliminary RD must include the following elements and deliverables:

(a) A basis of design report providing descriptions of the analyses conducted to select the design approach, including a summary and detailed justification of design assumptions, restrictions and objectives to be used in design of the selected remedy; Essential supporting calculations shall be included (at least one sample calculation presented for each significant or unique design calculation, such as cap thickness or propeller wash modeling)

(b) Preliminary plans and drawings, and a list of all drawings to be included in the intermediate, pre-final and final design;

(c) An outline of required specifications;

(d) Identification of candidate transloading location(s), transport methods, and permitted upland off-site landfill facility, and import material sources

(e) A schedule, contracting strategy, contractor requirements, any needed controls and monitoring to comply with ARARs and minimize impacts (in accordance with Section 13.2.5 and Section 13.2.8 of the ROD), and plans to manage potential conflicts with other in-water work, treaty-protected uses, navigation, recreation and commerce, and upland developments and land use changes that may affect remedial design and construction in the Upper Reach;

(f) Access and easement requirements.

(g) Descriptions of how compliance with ARARs will be achieved and documented, specifying documentation requirements associated with ARARs identified in Table 26 (such as a Biological Assessment, Compensatory Mitigation Plan if needed, Archaeological Discovery plan);

(h) An outline and description of Long Term Maintenance, and Monitoring Plan (LTMMP) elements for the Upper Reach;

(i) An outline of an Institutional Controls Implementation and Assurance Plan (ICIAP), including an evaluation of the most appropriate institutional, proprietary controls and location-specific use restrictions needed to ensure long-term effectiveness, consistent with ROD Section 13.2.4 (This ICIAP is distinct from plans developed under Section 2 of this SOW).

5.7 **Intermediate (60%) RD**. Respondents shall submit the Intermediate (60%) RD for EPA's comment. The Intermediate RD must: (a) be a continuation and expansion of the Preliminary RD; (b) address EPA's comments regarding the Preliminary RD; and (c) include the elements and deliverables required for the Preliminary (30%) RD at a 60% level of completion.

5.8 **Pre-Final (90%) RD**. Respondents shall submit the Pre-final (90%) RD for EPA's comment. The Pre-final RD must be a continuation and expansion of the previous design submittal and must address EPA's comments regarding the Intermediate RD. The Pre-final RD will serve as the approved Final (100%) RD if EPA approves the Pre-final RD without comments. The Pre-final RD must include:

(a) A complete set of construction drawings and specifications that are: (1) certified by a registered Professional Engineer; (2) suitable for procurement; and (3) follow the Construction Specifications Institute's MasterFormat (or equivalent) and meet other relevant standards for design of sediment cleanup;

(b) A survey and engineering drawings showing existing features in the LDW Upper Reach, such as property boundaries, easements, bathymetry, structures to be protected or removed, and other relevant conditions;

(c) A specification for all necessary construction documentation, including but not limited to photographs and videos, bathymetric surveys, and GPS coordinates); and

(d) Those elements listed for the Preliminary Design, as well as the following (unless previously approved by the EPA):

(e) Draft Construction Quality Assurance Plan (CQAP).

(f) Draft Water Quality Monitoring Plan.

(g) Draft QAPP/HSP for remedial action construction and monitoring activities.

(h) Draft Permitting and Site Access Plan.

(i) Outline of ICIAP, including specific IC elements for each affected area.

(j) Required elements of a vessel management plan (to be finalized by contractor)

(k) Annotated outline and conceptual description of LTMMP elements specific to the Upper Reach, discussing how the elements and schedule fit into a likely LTMMP approach for the LDW site as a whole.

(l) Habitat Area Identification. For the purpose of complying with Endangered Species Act and Section 404 of the Clean Water Act (CWA) (see Table 26 of the ROD), Respondents shall identify habitat areas and proposed elevations and substrate materials for caps, ENR, or placement of backfill materials in any identified habitat areas and shall identify any areas where loss of aquatic habitat is unavoidable.

(m) Draft Biological Assessment.

(n) Draft CWA 404 and Section 10 Rivers and Harbors Act of 1899 memorandum

(o) Engineer's Capital and Operation and Maintenance Cost Estimate.

(p) Engineer's Construction Project Schedule.

(q) Community Outreach and Communications Plan

(r) Any additional plans identified in the Remedial Design Work Plan.

5.9 Final (100%) RD. Respondents shall submit the Final (100%) RD for EPA approval. The Final RD must address EPA's comments on the Pre-final RD and must include final versions of all Pre-final RD elements and deliverables. The ICIAP and LTMMP will remain as annotated outlines in the Final RD.

5.10 Components of Remedial Design Reports. Respondents shall submit each of the following supporting deliverables for EPA approval with each Remedial Design submittal, except as specified in Sections 5.6, 5.7, and 5.8 above. Respondents shall develop the deliverables in accordance with all applicable regulations, guidance, and policies (see Section 7 (References)). Respondents shall update and refine supporting deliverables related to design in accordance with the degree of design completion (30/60/90/100%) or as directed by EPA.

(a) **LDW Upper Reach Water Quality Monitoring Plan**. The purpose of the LDW Upper Reach Water Quality Monitoring Plan (WQMP) is to obtain information during construction to identify water quality impacts that may be caused by remedy construction; The WQMP must include:

(1) 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;

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

(3) Description of the communications and response protocols to respond to detected exceedances of water quality parameters as defined in the EPA 401 memo;

(4) Description of deliverables that will be generated in connection with monitoring, including sampling schedules, laboratory records, monitoring reports, data reports and data evaluation reports to EPA; and

(5) Description of additional monitoring and data collection actions (such as increases in frequency of monitoring, and/or installation of additional monitoring devices in the affected areas) that would be triggered in the event that monitoring results indicate higher than expected concentrations of TSS or the contaminants of concern in surface water.

(b) **Construction Quality Assurance Plan**. The purpose of the CQAP is to describe planned and systemic activities that provide confidence that the RA construction will satisfy all plans, specifications, and related requirements, including quality objectives. In addition, the purpose is to describe the activities to verify that RA construction has satisfied all plans, specifications, and related requirements, including quality objectives. The CQAP must:

(1) Identify, and describe the responsibilities of, the organizations and personnel implementing the CQAP;

(2) Describe the requirements to be met to achieve completion of the LDW Upper Reach RA;

(3) Describe the key performance standards and quality control elements required of the Contractor in the technical specifications;

(4) Describe verification activities, such as inspections, sampling, testing, monitoring, and production controls, under the CQAP

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

(6) Describe procedures for documenting all CQAP activities; and

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

(c) **Emergency Response Plan**. Specifications for an Emergency Response Plan (ERP) shall be submitted as part of the 30/60/90 and 100% design submittal to address requirements for clear procedures in the event of an accident or emergency during remedial construction (for example, vessel or equipment damage, failure or power outages, unauthorized discharges to water, water impoundment failure, bank slope failure, etc.). The ERP may be updated in future as part of the remedial action work plan (RAWP). Specifications for the ERP shall address:

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

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

(3) Spill Prevention, Control, and Countermeasures (SPCC) Plan (if applicable), consistent with the regulations under 40 C.F.R. Part 112, describing measures to prevent, and contingency plans for, spills and discharges;

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

(5) A description of all necessary actions 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.

(d) **Community Outreach and Communications Plan (COCP).** The COCP shall describe actions being taken to minimize the potential impacts including safety issues of remedy implementation on the community (e.g. residents, businesses, fishers, commuters, waterway users) and a plan for communicating with and responding to the community. Safety and other community concerns about construction will also be discussed with the Round Table during RD.

(e) **Archeological Discovery Plan.** For the purpose of complying with historical and archaeological preservation requirements, Respondents shall document any districts, sites, buildings, structures or objects included or eligible for inclusion in the National Register of Historic Places potentially impacted by remedy implementation and shall include specifications for an archaeological discovery plan to ensure protection of Native American artifacts and cultural or archaeological resources.

(f) **Biological Assessment**. With the 90% RD, Respondents shall submit a biological assessment for EPA review and use in consultation related to the Endangered Species Act.

(g) **Compensatory Mitigation Plan**. If necessary to comply with Clean Water Act Section 404 requirements, Respondents shall submit a plan for compensatory mitigation.

(h) **Section 408 Compliance Documentation**. Respondents shall include documentation necessary to evaluate compliance with 33 U.S.C. Section 403 and Section 408.

6. SCHEDULE

6.1 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 Schedule of Deliverables set forth below. Deliverables not identified below shall be due in accordance existing requirements (progress reports), an EPA approved schedule proposed by Respondents or as directed by EPA. Respondents may propose changes to the Schedule of Deliverable for EPA approval. Upon EPA's approval, the revised schedule supersedes the schedule set forth below and previously-approved schedules.

6.2 General. Unless otherwise approved by EPA, submittal revisions following initial EPA comments shall be due 30 days from receipt of the comments. Subsequent revisions shall be due 14 days or as directed in EPA comments on the prior revision.

Schedule of Deliverables – Fourth Amendment of RI/FS AOC

Item	Deliverable, Task	SOW or (AOC) reference	Deadline
1	Notification of contractor/sub-contractor selection	(RI/FS AOC VIII, 1)	150 days from Amendment #4 effective date
2	RDWP	5.3	120 days from Issuance of Notice to Proceed to Contractor
3	PDIWP	5.4a	same as #2 above
4	PDI QAPP/HSP	5.4b/c	60 days after receipt of EPA comments on the revised draft PDIWP
5	Completion of PDI field work	5.4a	In accordance with the schedule in the approved PDIWP, unless otherwise approved by EPA.
6	PDI Data	5.4d	For each round of data collection, 10 days after Respondents' receipt of validated PDI sampling data.
7	PDI Data Evaluation Report – Phase I	5.4e	60 days after Respondents' submittal of PDI data for first phase of data collection to EPA.
8	PDI Data Evaluation Report – Phase II	5.4e	45 days after Respondents' submittal of PDI data for second phase of data collection to EPA.
9	Preliminary (30%) RD submittal	5.6	45 days from EPA approval of PDI Data Evaluation Report - Phase II.
10	Intermediate (60%) RD Submittal	5.7	120 days after EPA comments on Preliminary RD.
11	Pre-final (90%) RD Submittal	5.8	90 days after EPA comments on Intermediate RD.
12	Final (100%) RD	5.9	60 days after EPA comments on Pre-final RD.
13	Periodic Monitoring QAPP Addendum	4.2	4 years from Amendment #4 effective date
14	Periodic Monitoring Data / Evaluation Report	4.2	5 years from Amendment #4 effective date

7. REFERENCES

7.1 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 ¶ 7.2:

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

(d) 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).

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

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

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

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

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

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

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

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

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

(n) Quality management systems for environmental information and technology programs -- Requirements with guidance for use, ASQ/ANSI E4:2014 (American Society for Quality, February 2014).

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

(p) USEPA Office of Solid Waste and Emergency Response. Geospatial Superfund Site Data Definition and Recommended Practices Memo. OLEM Directive 9200.2-191. (November 29, 2017)

(q) Principles for Greener Cleanups (Aug. 2009), https://www.epa.gov/greenercleanups/epa-principles-greener-cleanups.

(r) Contaminated Sediment Remediation Guidance for Hazardous Waste Sites, EPA-540-R-05-012 Office of Solid Waste and Emergency Response OSWER 9355.0-85 December 2005

(s) Guidance for In Situ Subaqueous Capping of Contaminated Sediments, USACE 2012

(t) Contaminated Sediments Remediation: Remedy Selection for Contaminated Sediments, ITRC 2014

(u) USEPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods (Multi-Media, Multi-Concentration), ISM02.4 (October 2016).

(v) USEPA Contract Laboratory Program Statement of Work for Organic Superfund Methods (Multi-Media, Multi-Concentration), ISM02.4 (October 2016).

(w) EPA CLP SOW for High Resolution Superfund Methods (HRSM01.2, October, 2014)

(x) National Functional Guidelines for Inorganic Superfund Methods Data Review (EPA-540-R-2017-001, January, 2017)

(y) National Functional Guidelines for Organic Superfund Methods Data Review (EPA-540-R-2017-002, January, 2017)

(z) National Functional Guidelines for High Resolution Superfund Methods Data Review (EPA-542-B-16-001, April, 2016)

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

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

(cc) 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).

(dd) 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).

(ee) Guidance for Management of Superfund Remedies in Post Construction, OLEM 9200.3-105 (Feb. 2017), https://www.epa.gov/superfund/superfund-post-construction-completion.

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

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

Laws, Policy, and Guidance https://www.epa.gov/superfund/superfund-policy-guidance-and-laws

Test Methods Collections https://www.epa.gov/measurements/collection-methods

For any regulation or guidance referenced in the RI/FS AOC or Amendment #4 the reference will be read to include any subsequent modification, amendment, or replacement of such regulation or guidance.