

**Triangle Park, University of Portland
Portland, OR**

ATTACHMENT 1

**STATEMENT OF WORK
FOR THE
AGREEMENT AND ADMINISTRATIVE ORDER ON CONSENT
FOR BONA FIDE PROSPECTIVE PURCHASER, UNIVERSITY OF
PORTLAND, FOR THE TRIANGLE PARK PROPERTY
WITHIN THE PORTLAND HARBOR SUPERFUND SITE**

UPLAND REMOVAL ACTION AND SOURCE CONTROL

April 2009

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GLOSSARY

ARAR	Applicable or Relevant and Appropriate Requirement
CDF	Confined Disposal Facility
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
COC	contaminant of concern
CQA	Construction Quality Assurance
CQAP	Construction Quality Assurance Plan
CSM	Conceptual Site Model
CWA	Clean Water Act
DEQ	State of Oregon Department of Environmental Quality
DQO	Data Quality Objective
EE/CA	Engineering Evaluation/Cost Analysis
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FSP	Field Sampling Plan
HASP	Health and Safety Plan
IC	Institutional control
ICIP	Institutional Control Implementation Plan
NCP	National Contingency Plan
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RAO	Removal Action Objective
SAP	Sampling and Analysis Plan
SOW	Statement of Work

1.0 INTRODUCTION

1.1 GENERAL

This Statement of Work (SOW) outlines the removal response actions to be performed at the Triangle Park Site (“Removal Action”). This SOW is attached to and incorporated into the Agreement and Administrative Order on Consent for Removal Action by a Bona Fide Prospective Purchaser (“Agreement”) at the Triangle Park Site (hereafter referred to as “the Site”) between the U.S. Environmental Protection Agency (“EPA”) and the University of Portland (“the University”). Technical work described in the SOW is intended to complement, add to, and be consistent with the Agreement and is not intended to change the meaning of any defined term in the Agreement. This SOW is also consistent with both the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and the National Contingency Plan (NCP). Any discrepancies between the Agreement and SOW are unintended and, whenever necessary, the Agreement will control in any interpretive disputes.

The regulatory framework for the Work to be completed under this SOW includes: (1) an uplands EE/CA and Action Memorandum process, including risk assessments; (2) control of upland sources of contamination to the Willamette River; and (3) in-water early actions. All work will be consistent with the long-term removal action(s) at the Portland Harbor Superfund Site. The SOW is organized as follows:

- Section 1.0 Introduction.** Provides the general introduction, purpose, scope, Site description, and organization of the project.
- Section 2.0 Removal Action Objectives.** Provides the initial removal objectives for Removal Actions.
- Section 3.0 Upland Site Removal Actions.** Describes the specific tasks that the University will perform to design, evaluate, and remove sources of contamination to the Willamette River and otherwise address contamination at the Site. Provides the Milestone schedule for submitting deliverables required under this SOW.
- Section 4.0 Electronic Data Submittal.** Describes the requirements for submittal of data to EPA and the Oregon Department of Environmental Quality (DEQ) in electronic format.
- Section 5.0 References.** Provides the references cited to support the SOW.

1.2 PURPOSE AND SCOPE

1.2.1 Purpose of SOW

The primary purposes of this SOW are: (1) to implement the Agreement; (2) set forth the requirements for investigation and characterization of the nature and extent of contamination at the Site; (3) develop and evaluate potential removal alternatives; (4) implement interim response

actions, if necessary to control upland sources to the Willamette River that pose risk to human health and the environment; and (5) expedite the characterization, EE/CA, cleanup alternatives analysis, and performance of cleanup at the Site.

1.2.2. Scope of Removal Action

The University will furnish all necessary personnel, materials, and services needed for, or incidental to, characterizing and controlling upland sources of contaminants to the Willamette River. The Removal Action shall be conducted in accordance with Section 3.0 of this SOW and be completed in accordance with Table 3.1 of this SOW.

1.3. SUMMARY OF WORK TO BE COMPLETED

The University will coordinate monthly meetings and/or teleconferences with EPA, DEQ, the Tribes, and the Natural Resource Trustees to discuss the status of work described in this SOW. Monthly meetings may be cancelled or postponed upon agreement between EPA and the University. The University will coordinate quarterly meetings with EPA and DEQ and/or updates will be provided regarding source control efforts. DEQ, the Tribes and the Trustees will submit their comments to EPA; EPA will incorporate the comments into one document and provide the comments to the University. The University is to address all comments provided by EPA. The Removal Action for upland cleanup to be completed under this SOW shall include preparation, delivery, and implementation of the following:

1. Removal Action Area Characterization Report;
2. Engineering Evaluation/Cost Analysis (EE/CA) Planning Meeting and Technical Memorandum;
3. Engineering Evaluation/Cost Analysis (EE/CA) Report;
4. Removal Action Design Documents (draft 30% design, and final);
5. Implementation of Removal Action;
6. Removal Action Completion and Institutional Control Implementation Report (draft and final);
7. Long-Term Monitoring and Reporting Plan (if appropriate); and
8. Community Involvement Activities.

1.4. SITE DESCRIPTION

1.4.1. Location

The Site is located within the Portland Harbor Superfund Site adjacent to and northeast of the Willamette River between river miles 7 and 8. The Site address is 5828 North Van Houten Place, Portland, Oregon. The Site is bounded on the southwest by the Willamette River, on the northwest by the McCormick & Baxter Site, on the northeast by a significant slope and residential properties, and on the southeast by the existing University of Portland campus. The Site location map is presented on Figure 1.1.

1.4.2. Property Ownership

The University of Portland completed the purchase of the Site from Triangle Park, L.L.C., who previously purchased the property in May 1997. The Site is approximately 35 acres in size and

has approximately 2,250 linear feet of river frontage. The Site consists of tax lots 100, 200, and 8900, Lot 1-9, Block 36T, in Section 18, Township 1 North, Range 1 East of the Willamette Meridian in Portland, Multnomah County, Oregon. The Union Pacific Railroad holds a right-of-way for railroad tracks that bisect the Site northwest to southeast. Chevron holds an easement for an underground petroleum fuel line that runs along the southeast property boundary.

1.4.3. Land Use

The Site is located in the industrial area of Portland Harbor. Zoning of this parcel has been changed from industrial at the request of the University to accommodate the University's use of the Site. The designated beneficial uses of the main stem Willamette River (mouth to Willamette Falls, including Multnomah Channel) are public water supply¹, private domestic water supply¹, industrial water supply, irrigation, livestock watering, fish and aquatic life², wildlife and hunting, fishing, boating, water contact recreation, aesthetic quality, hydro power, and commercial navigation and transportation.

1.4.4. Current and Historical Activities

The Site has primarily been idle over the past 9 years other than to perform site-wide environmental studies. Since the early 1900's, there has been a very lengthy history of diverse industrial operations at the Site. Historic site operations have included:

- Lumber manufacture and storage
- Concrete batching operations
- Wood work manufacture
- Asphalt storage facilities
- Prefabricated or portable house manufacture
- Scrap metal storage
- Wooden barrel manufacture
- Marine operations
- Electrical power generation
- Construction equipment storage
- Petroleum fuel storage and distribution
- Marine and dredging equipment storage
- Chemical and soap manufacture
- Railway and logging equipment storage
- Shipbuilding
- Environmental emergency response
- Ironworks
- Regulated hazardous waste storage
- Drydock operations
- Explosives storage
- Painting and sandblasting operations
- Used (salvaged) AST and UST tank storage
- General warehousing

¹ With adequate pretreatment and natural quality that meets drinking water standards.

² See also Figures 340A and 340B in OAR 340-041-0340 for fish use designations.

PCB transformer cleaning and storage
Tug and barge operations

1.5. PROJECT ORGANIZATION

The SOW will be implemented by the University under the administrative oversight of the EPA, in consultation with DEQ, Tribal Governments, and Trustees.



Figure 1.1. Triangle Park property site location map.

2.0 REMOVAL ACTION OBJECTIVES

Upland Removal Action objectives shall include, at a minimum:

1. Control or eliminate ongoing sources of contamination, or other Site contaminants of concern, to the ground water and to the surface water and sediment of the Willamette River.
2. Reduce or eliminate human and ecological exposure to any Site-related contaminated media that may lead to potential current or future unacceptable risk.
3. Reduce contaminant flux from uplands and riverbank so that recontamination of any river sediment or riverbank caps put in place does not occur.
4. Attain water quality standards in the Willamette River.
5. Otherwise attain ARARs to the extent practicable given the exigencies of the situation.

2.1. Storm Water Removal Action Objectives

The initial Removal Action objectives for storm water control at the Site are as follows:

1. Prevent releases of impacted storm³ water (i.e., storm water and soils) from the Site to the Willamette River that present an unacceptable risk to river receptors.
2. Control or mitigate sources of contaminants to the Site storm water collection system.
3. Remediate in-line sediments necessary to reduce overall Site contamination to the Willamette River.

2.2. Ground Water Removal Action Objectives

The initial Removal Action objectives for ground water at the Site are as follows:

1. Prevent releases of impacted ground water³ to the Willamette River that present an unacceptable risk to river receptors.
2. Contain impacted ground water to prevent migration to non-impacted areas.
3. Collect and treat, remediate or contain impacted ground water to reduce overall Site contamination to the Willamette River.
4. Reduce concentrations of contamination in ground water to levels that protect or restore all current or future beneficial uses.

³ The Portland Harbor contaminants of interest include metals (e.g., arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc), semivolatile organic compounds (SVOCs), phthalates, chlorinated pesticides (e.g., DDT, DDE and DDD), chlorinated herbicides, polychlorinated dibenzo-p-dioxins and furans (PCDDs and PCDFs), total petroleum hydrocarbons (TPH), polynuclear aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs).

Impacted storm water or groundwater means storm water or groundwater which contains contaminants of interest for Portland Harbor in excess of the screening level values provided in Table 3.1 of the Portland Harbor Joint Source Control Strategy.

2.3. Soil Removal Action Objectives

The initial Removal Action objectives for soils at the Site are as follows:

1. Prevent releases of impacted soils to ground water that present risks to current or future beneficial uses of the ground water.
2. Prevent releases of impacted soils to the Willamette River that present an unacceptable risk to river receptors.
3. Contain impacted soils to prevent migration to non-impacted areas.
4. Collect and treat, remediate or contain impacted soils to reduce overall Site contamination to the Willamette River.
5. Reduce contaminant concentrations in soils to levels that are protective of all reasonable anticipated future users of the Site.
6. Reduce contaminant concentrations in on-Site beach sediments and on-Site beach seeps to levels that are protective of human health from incidental ingestion of and dermal absorption of contaminants in on-Site beach seeps and sediments.

3.0 UPLAND SITE REMOVAL ACTIONS

3.1. WORK TO BE PERFORMED BY THE UNIVERSITY

Deliverables specified in this Section of the SOW shall be consistent with “EPA’s Guidance on Conducting Non-Time-Critical Removal Actions under CERCLA” (EPA/540/R-93/057, OSWER 9360.0-32). Work to be completed under this SOW shall also include activities necessary to achieve the criteria and performance standards contained in this SOW, work plan, report, or other deliverable approved under the Agreement and this SOW. Work to be completed under this SOW shall, to the extent practicable, be consistent with the Portland Harbor Superfund Site RI/FS, and contribute to the efficient performance of the long-term remediation.

General Tasks

The procedures the University plans to implement when conducting all field activities will be detailed in the Sampling and Analysis Plan (SAP) for the specific field activity. The initial SAP and Health and Safety Plan (HASP) were provided to EPA as stand alone documents. The SAP for any field activity ensures that sample collection and analytical activities are conducted in accordance with technically acceptable protocols and that data meet data quality objectives (DQOs). The SAP provides a mechanism for planning field activities and consists of a Field Sampling Plan (FSP) and a Quality Assurance Project Plan (QAPP). The SAP and associated documents shall be modified and/or amended by the University for new tasks as appropriate and such modifications shall be submitted to EPA for approval.

The University has also prepared a HASP that is designed to protect personnel from physical, chemical and other hazards posed by field sampling efforts.

Upon request by EPA, the University shall also submit copies of previous studies or sampling efforts conducted independently or under local, state, or other federal authorities or agreements that are determined by EPA to relate to remedy selection under this Agreement.

Additionally, the University shall continue to conduct upland source control actions related to the Triangle Park Site to address sources that are threatening to be released to the Willamette River. These actions may include source identification, source prioritization, documentation and tracking of source control plans and completed source control actions, evaluating and documenting effectiveness of source control measures, and providing input to EPA’s decision as to effectiveness of source control in order to implement the Removal Action. The goal is for significant upland sources to be controlled to the greatest extent practicable before or during Removal Action implementation such that significant post Removal Action recontamination is not predicted.

The University shall complete the following specific tasks:

Task 1A - Removal Action Investigation Report

The University has submitted a Removal Action Area Investigation Report dated May 2008 which included information from sampling completed under the initial SOW and previous field sampling events, including validated analytical results.

The Removal Action Investigation Report included, the following sections:

- Introduction/Purpose;
- Summary of the field sampling effort that included field effort dates, a summary of the sample collection effort, field sample observations, and a summary of sample and station locations – including sample depths, station locations (latitudes/longitudes and state plane coordinates), maps and figures, and isopleths if directed by EPA;
- Deviations from the FSP;
- Summary of sample handling and shipment;
- Summary of all data, including a data validation report. Data from this effort was provided electronically in a format consistent with other data already acquired under the harbor-wide study; and
- Description of the nature and extent of contamination in the Triangle Park Removal Action Area, to the extent known, including a summary of existing data establishing current conditions with a comparison to the initial PRGs and ARARs. Existing data was plotted on site maps, with isopleths. Locations with groundwater, soil, or storm water concentrations above PRGs and ARARs was indicated on these maps.

Task 1B - Addendum to Removal Action Investigation Report

The University shall conduct additional site characterization work as necessary and document the results of such characterization work as addendum(s) to the Removal Action Investigation Report. Additional site characterization studies shall be approved in advance by EPA via submittal by the University's Addendums to the project SAP and associated documents. As part of this task the University will meet the objectives as described in Task 1A, and perform the following subtasks:

- Submit to the EPA for review and approval, an addendum to the SAP for the Site Characterization;
- Implement the SAP;
- The University shall submit the data validation report to EPA within 90 days of the completion of field work. This information is necessary for EPA to perform an independent review of the validated data.
- Prepare the Addendum of the Removal Action Investigation Report 120 days of the completion of field work, to incorporate the data obtained in the field.

Task 2 – Engineering Evaluation/Cost Analysis (EE/CA) Planning Meeting and Technical Memorandum

The University will hold a meeting with EPA to plan the EE/CA with the intent of keeping the EE/CA as focused as possible, based on the recent and historical data collected for the property. Prior to that meeting, a detailed outline of the EE/CA will be prepared and submitted to EPA, including a listing of technologies and alternatives that will be evaluated in the EE/CA, so that the parties can be prepared. A technical memorandum summarizing the outcomes of the meeting will be prepared and submitted to EPA prior to commencing the EE/CA Report. The memorandum shall discuss the proposed boundaries of the Removal Action. All available data must be considered for the development of an appropriate boundary for the Removal Action. The technical memorandum shall provide a rationale for the proposed boundary, including the selection of ARARs and PRGs that are used to help define the boundary. Data interpretation will be consistent with the spatial analysis approaches agreed upon by EPA for the overall Portland Harbor Site

Task 3 – Engineering Evaluation/Cost Analysis (EE/CA) Report

Based on data obtained in the previous sampling efforts and work to be performed under this SOW, and in consideration of EPA's guidance for removal actions, the University will prepare a technical briefing for EPA, DEQ, the Tribes, and the Trustees on the proposed removal alternatives that will be presented by the University in the EE/CA.

After the technical briefing, the University, in consideration of comments received at the technical briefing, will submit the EE/CA. Upon preliminary approval of the EE/CA by EPA, the EE/CA will be released for a formal public comment period. The EE/CA will contain the following sections:

- Executive Summary;
 - Introduction;
 - Removal Action Area Characterization;
 - The result of the analysis regarding the post Removal Action recontamination potential of the Triangle Park Removal Action Area by upland sources of contamination, including whether source control actions will be sufficient or if additional actions may be required to control potential sources of significant recontamination;
 - Procedures for addressing and protecting cultural resources in the Removal Action Area;
 - Identification of Removal Action Objectives and PRGs/ARARs;
 - Identification and Analysis of Removal Action Technologies;
 - Identification and Analysis of Removal Action Alternatives, including the identification and analysis of disposal facility options and incorporating the costs of any Removal Action constraints imposed by current or planned University or tenant and associated facility operations;
- Comparative Analysis of Removal Action Alternatives; including consideration of institutional controls that may be anticipated to be necessary for each alternative;

- Describe institutional controls (ICs) that will be designed to prevent exposure to contamination at the Site where contaminant levels do not allow for unlimited use and unrestricted exposure.
- Include analysis and recommendations on ICs needed to ensure the long-term effectiveness of the alternatives, including the objectives and goals for each institutional control; descriptions of the portions of the Site where each IC would apply; descriptions of how such controls would be implemented, monitored, and enforced, and by whom and under what enforcement mechanism; a timeframe for how long the ICs must remain in place; and under what circumstances such controls could be removed or terminated.
- Describe the four categories of ICs (governmental, proprietary, enforcement, informational) identified in EPA guidance and consider site-specific ICs that could be implemented under each category as well as the “layering” of ICs to enhance the protectiveness of the remedy.
- Specifically address any necessary easements or other proprietary controls, including how prospective changes in storm water and/or wastewater/sewer conveyances, utility easements and such other contingencies could impact areas subject to ICs.
- Itemize projected components for each alternative.

See “Institutional Controls” OSWER 9355.0-74FS-P, EPA 540-F-00-005, September 2000; “Strategy to Ensure Institutional Control Implementation at Superfund Sites” OSWER 9355.0-106, September 2004; “Institutional Controls” OSWER 9255.0-98, February 2005

- Recommended Removal Action Alternative, including the selection of any needed disposal facility;
- An assessment of the residual risk anticipated after Removal Action implementation; and
- Schedule for recommended Removal Action.

A public comment period of at least thirty (30) days is required for the EE/CA and its supporting documentation. The University shall assist EPA, as requested, before and during the comment period with its community relations activities concerning the EE/CA. The University shall also assist EPA in compiling the Administrative Record before and during the public comment period. If, based on public comments received, EPA determines additional data or analyses are required to complete the EE/CA, the University shall collect such data, or perform such analyses, as determined necessary by EPA.

Task 4 – Project Design Documents

After EPA has selected a removal action for the Removal Action Area and set forth its determination and selected action in a Triangle Park Removal Action Memorandum, the University shall prepare project design documents, including construction plans and specifications, to implement the Removal Action and shall demonstrate that the Removal Action design shall meet all objectives of any Action Memorandum or other EPA decision document. The University shall meet regularly with EPA prior to and during development of design

documents and provide EPA, for review and approval, the key technical documents that support the removal design (see below). The project design documents shall be signed and stamped by a professional engineer, as appropriate. Design documents, including plans and specifications, shall be submitted in accordance with the schedule set forth in Table 3.1 of this SOW.

The University shall submit the following level of design:

- Draft design when the design effort is 30 percent complete; and
- Final design incorporating EPA comments.

The final design shall fully address all EPA comments made on the draft design.

Task 4a - Conceptual (30 percent) Design

The conceptual (30 percent) design shall include an overall explanation of the following as appropriate:

- Annotated outline of prefinal design analysis report;
- Annotated outline of plan drawings; and
- Annotated outline of specifications.

Task 4b – Draft Design

The draft design will be completed to a level of detail necessary for the University to construct the project using either a design/build approach or design/bid/build approach. Under a design/build approach, a 30 to 50% design level may be appropriate for most aspects of the project.

Draft Design Analysis Report

The Draft Design Analysis Report shall provide the design criteria and the basis of design for the Removal Action. Examples of the types of information to be included where necessary are described below:

- Technical parameters and supporting calculations upon which the design will be based, including but not limited to design requirements for each removal action technology to be employed (e.g., excavation, capping);
- If the selected alternative includes capping:
 - appropriate physical and chemical characteristics of materials to be used for capping and method for identifying and testing clean source material, including acceptance criteria for such material;
 - the conceptual design will show capping areas and conceptual slope and cap designs;
 - determinations regarding erosion potential for capped areas; and
 - cap placement techniques.
- If the selected alternative includes excavation:
 - identification of requirements for the contractor regarding the handling, transport (including haul routes) and disposal of excavated materials including identification of any best management practices, monitoring, and/or analyses necessary to protect personnel from potential chemical hazards posed by this Removal Action (such activities may be further described in the contractor's HASP);
 - design excavation depths and overcut allowances, excavated material volumes, and excavation techniques;
 - identification of potential location(s) for disposal of excavated soils;
 - if the proposed disposal technology is an off-Site upland landfill, the design documents will include descriptions of stockpiling, dewatering, and overland transport; and
 - if the proposed disposal technology is an on-Site near shore Confined Disposal Facility (CDF), the design documents will include fill closure approach, hydrogeologic and contaminant transport evaluation for the fill, static and seismic stability analyses, filling approach, consolidation analysis, and screening of other potential sources of material for the CDF.
 - Proposed disposal technology (on-Site or off-Site) conceptual design including general disposal location, handling methods and transport approaches

- Descriptions of the analyses conducted to select the design approach, including a summary and detailed justification of design assumptions and verification that design will meet performance standards;
- Evaluation of the potential for imbedded debris (e.g., buried cables or concrete material) in the soils to affect remedy implementation or achievement of performance standards;
- Access and easement requirements, and permit requirements or substantive requirements of permits;
- Plan for reducing negative effects on the environment and community during the construction phase(s);
- An outline of the long-term monitoring and reporting plan;
- If the selected remedy includes institutional controls, submit a draft Institutional Control Implementation Plan (ICIP). The ICIP must:
 - Describe institutional controls (ICs) that will be designed to prevent exposure to contamination at the Site where contaminant levels do not allow for unlimited use and unrestricted exposure.
 - Include analysis and recommendations on ICs needed to ensure the long-term effectiveness of the Removal Action, including the objectives and goals for each institutional control; descriptions of the portions of the Site where each IC applies; descriptions of how such controls would be implemented, monitored, and enforced, and by whom and under what enforcement mechanism; a timeframe for how long the ICs must remain in place; and under what circumstances such controls could be removed or terminated.
 - Describe the four categories of ICs (governmental, proprietary, enforcement, informational) identified in EPA guidance and shall consider site-specific ICs that could be implemented under each category as well as the “layering” of ICs to enhance the protectiveness of the remedy.
 - Specifically address any necessary easements or other proprietary controls, including how prospective changes in storm water and/or wastewater/sewer conveyances, utility easements and such other contingencies could impact areas subject to ICs.
 - Itemize projected components for the Removal Action Completion and Institutional Control Implementation Report (see Task 9) with a projected schedule.

See “Institutional Controls” OSWER 9355.0-74FS-P, EPA 540-F-00-005, September 2000; “Strategy to Ensure Institutional Control Implementation at Superfund Sites” OSWER 9355.0-106, September 2004; “Institutional Controls” OSWER 9255.0-98, February 2005
- If appropriate, conduct an update of the analysis regarding post Removal Action recontamination of the Triangle Park Removal Action Area by upland sources of contamination, including what source control actions have occurred since the EE/CA analysis, whether additional actions and/or schedule delays may be necessary to control potential sources of significant recontamination.

Draft Construction Documents and Schedule

Draft construction documents and schedule shall include:

- Construction plans/drawings/sketches and required specifications;
- Proposed locations of processes/construction activity or specific requirements for such locations; and
- Schedule for construction and implementation of the Removal Action that identifies major milestones.

Draft Design Plans

Draft design plans shall include:

- **Draft Construction Quality Assurance Plan** (see Section 3.2 of this SOW), which shall detail the remediation verification method and approach to quality assurance during construction activities in the project area, including compliance with ARARs. The Plan will describe the methods used to measure compliance with measurement quality objectives (such as performance and method requirements), including target excavation depths, if appropriate. The Plan will include, as an attachment, a Draft Removal Action Sampling and Analysis Plan (see Section 3.2 of this SOW), which shall include a field sampling plan and a Quality Assurance Project Plan (QAPP). If the selected alternative includes capping, performance monitoring will be performed to confirm that excavated material is properly staged, dewatered, and transported to a suitable disposal site and that field construction activities are properly sequenced.
- **Draft Water Quality Monitoring Plan** and its associated QAPP and HASP (see Section 3.2 of this SOW), which shall detail groundwater and storm water quality monitoring, as appropriate, to confirm that ARARs/PRGs are met during any removal action. The plan shall describe the specific water quality monitoring requirements, including:
 - a schedule;
 - sampling locations;
 - sampling intervals;
 - sampling equipment and parameters; analytical methods and detection limits;
 - key contacts;
 - reporting requirements (including daily report);
 - daily contacts for notifications of any exceedances;
 - result summaries; and
 - draft and final Water Quality Monitoring reports.

A QAPP and a HASP specific to water quality monitoring shall be included in this deliverable.

Task 4c - Final Design

The final Design submittal shall incorporate EPA's comments on the Draft Design submittal and will include the following:

- Final Design Analysis Report;
- Final construction documents and schedule;
- Final Design Plans;
- Operation, Maintenance, and Monitoring Plan;
- Final cost estimate for the Removal Action and estimated cost for long-term monitoring; and
- Final schedule.

The level of design will be determined on the University's needs to construct the project.

Task 5 – Removal Action Work Plan that outlines the implementation of the selected Removal Action alternative, including how construction activities are to be implemented by the University and coordinated with EPA. The Work Plan shall include, at a minimum, the following elements that are consistent with and implements the approved final design:

- Removal action project plan describing the sequence of activities;
- A description of how the Removal Action implements the final design;
- Schedule of activities for completion of the Removal Action, including inspections, meetings, and documents referenced in this task;
- Removal Action HASP that is designed to protect personnel from physical, chemical and other potential hazards posed by this Removal Action;
- Construction quality assurance plan (CQAP) and statement of qualifications (for the construction contractor). The CQAP will describe in detail the methods for direct measurements to be made during construction to ensure RAOs and performance standards will be met;
- Removal Action environmental protection plan;
- Procedures for processing design changes and securing EPA review and approval of such changes to ensure changes are consistent with the objectives of this Removal Action;
- Procedures for coordinating with EPA regarding compliance with EPA's Off-Site Rule, as applicable;

The HASP shall follow EPA and all OSHA requirements as outlined in 29 CFR 1910 and 1926. The University may utilize existing HASP project documents or other company/contractor HASPs provided that the University demonstrates the HASP has been modified, as necessary, or otherwise sufficiently addresses the activities covered by this SOW. Draft and Final versions of the Removal Action Work Plan shall be submitted to EPA for review and approval in accordance with the schedule set forth in Table 3.1 of this SOW.

Task 6 – Implementation of Removal Action

As described in Table 3.1, the University shall provide notification to EPA thirty (30) days prior to initiation of fieldwork to allow EPA to coordinate field oversight activities.

The University shall complete the Removal Action in accordance with the approved Final Design documents and Removal Action Work Plan. The following activities shall be completed in constructing the Removal Action:

- EPA and the University shall participate in a preconstruction meeting to:
 - Review methods for documenting and reporting data, and compliance with specifications and plans including methods for processing design changes and securing EPA review and approval of such changes, as necessary;
 - Review methods for distributing and storing documents and reports;
 - Review work area security and safety protocols, as appropriate;
 - Demonstrate that construction management is in place, and discuss any appropriate modifications of the CQAP to ensure that project specific considerations are addressed;
 - Discuss methods for direct measurement, including confirmation sampling of construction work to be sued to ensure performance standards are met;
 - If requested, conduct a Removal Action Area tour in the project area to verify that the design criteria, plans, and specifications are understood and to review material and equipment storage locations, as appropriate;
 - If appropriate, conduct an update of the analysis regarding post Removal Action recontamination of the Triangle Park Removal Action Area by upland sources of contamination, including what source control actions have occurred since the EE/CA analysis, whether additional actions and/or schedule delays may be necessary to control potential sources of significant recontamination.
- The University shall transmit (electronically) draft key points and action items of the preconstruction meeting to all parties within seven (7) days of the meeting. The University shall submit final key points and action items of the preconstruction meeting to all parties within fourteen (14) days of the meeting.
- Within seven (7) days after the University makes a preliminary determination that construction is complete, the University shall orally notify EPA for the purposes of scheduling a final inspection and/or meeting. Within fourteen (14) days after the final inspection and/or meeting, the University shall send a letter to EPA stating that construction is complete and responding to any outstanding issues that were raised by EPA during the final inspection/meeting.

Task 7 – Removal Action Completion and Institutional Control Implementation Report

Within ninety (90) days after completion of the construction phase of the Removal Action, the University shall submit for EPA review and approval a Removal Action Completion and Institutional Control Implementation Report. This report shall contain a description of the Work described in the Removal Action Work Plan and the Work that was actually performed. In the report, a registered professional engineer and the University shall state that the Removal Action has been constructed in accordance with the design and specifications. The report shall provide as-built drawings, signed and stamped by a professional engineer, showing the area and depth of the location remediated, as appropriate.

The final report shall include a good faith estimate of total costs or a statement of actual costs incurred in complying with the Agreement, a listing of quantities and types of material removed off-Site or handled on-Site, a listing of the ultimate destination(s) of those materials, a presentation of the analytical results of all sampling and analyses performed (including a map showing the locations of any confirmatory samples), and accompanying appendices containing all relevant documentation generated during the Removal Action (e.g., manifests, invoices, bills, contracts, and permits). All analytical data collected under this Agreement shall be provided electronically to EPA. The final Water Quality Monitoring Report may be submitted as an appendix to the Removal Action Completion and Institutional Control Implementation Report.

When submitting the final Removal Action Completion and Institutional Control Implementation Report to EPA, the University shall identify the Work that has been fully performed in accordance with this Agreement, and shall identify all continuing obligations, including post-removal site controls and monitoring, required by the Agreement. The University shall also identify a timeline for continuing obligations with “in perpetuity” identified for all obligations for which a timeline cannot reasonably be fixed.

If the remedy included institutional controls, the Removal Action Completion and Institutional Control Implementation Report shall also contain a description of the ICIP implementation to date, with copies of all implementing documentation, and a schedule for completion of all outstanding ICIP tasks. The Removal Action Completion and Institutional Control Implementation Report must document complete implementation of the ICIP, including copies of all relevant paperwork (e.g., easements, filings with Recorders Offices).

The final Removal Action Completion and Institutional Control Implementation Report shall also include the following certification signed by a person who supervised or directed the preparation of that report:

“Under penalty of perjury under the laws of the United States, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”

Task 8 – Long-Term Monitoring and Reporting Plan

If identified as a component of the selected alternative, the University shall prepare a Long-Term Monitoring and Reporting Plan for the Triangle Park Removal Action Area. The Long-Term Monitoring and Reporting Plan shall include inspections and analyses to monitor the Removal Action implemented at the Triangle Park Removal Action Area.

If required, the Long-Term Monitoring and Reporting Plan shall describe monitoring objectives, an overview of the monitoring approach, design of the monitoring program (e.g., sampling strategy, station locations and replication, field sampling methods, laboratory methods), data analysis and interpretation, reporting requirements, and a schedule. The Plan shall include, as appropriate, visual inspection, physiography, hydrology, geology, chemical monitoring, and soil,

groundwater or storm water samples (as appropriate) in capped areas and non-capped areas (including excavated areas) to monitor for recontamination. Data from long-term monitoring shall be assembled into reports and submitted to EPA in accordance with the schedule set forth in the Long-Term Monitoring and Reporting Plan. Based on long-term monitoring results, EPA shall determine if future response actions are needed to achieve the cleanup objectives.

For each final long-term monitoring report submitted to EPA pursuant to the Long-Term Monitoring and Reporting Plan, the report shall include the following certification signed by a person who supervised or directed the preparation of that report:

“Under penalty of perjury under the laws of the United States, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”

Task 9 – Community Involvement Activities

If requested by EPA, the University shall provide information supporting EPA’s community involvement programs related to the Work performed pursuant to this Agreement, and shall participate in public meetings which may be held or sponsored by EPA to explain activities at the Removal Action Area or concerning Work performed pursuant to this Agreement.

3.2. CONTENT OF SUPPORTING PLANS

3.2.1. Sampling and Analysis Plan

The University shall develop a project-specific Sampling and Analysis Plan (SAP), comprised of a Field Sampling Plan (FSP) and project-specific Quality Assurance Project Plan (QAPP) for sample analysis and data handling for any samples collected at the early action area. The SAP shall be based upon the Agreement, SOW, and EPA guidance. The SAP will be prepared in accordance with “Methods for Collection, Storage and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual” (EPA/823/B-01-002, October 2001) or the most current version or updated guidance. The content of the SAP shall include the type of information described in EPA’s Guidance for Conducting Removal Investigations and Feasibility Studies under CERCLA (EPA/540/G-89-004).

The FSP will define in detail the sampling and data-gathering methods that will be used on the project. It will include sampling objectives, a detailed description of sampling activities, sample locations, sample analysis, sampling equipment and procedures, sampling schedule, station positioning, and sample handling (e.g., sample containers and labels, sample preservation).

The QAPP will describe the quality assurance and quality control protocols necessary to achieve required data quality objectives. The University shall follow, as appropriate, “Quality Assurance/Quality Control Guidance for Removal Activities: Sampling QA/QC Plan and Data Validation Procedures” (OSWER Directive No. 9360.4-01, April 1990), or the most current version, as guidance for QA/QC and sampling. The University shall only use laboratories that

have a documented Quality System that complies with “Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs” (ANSI/ASQC E-4 1994, American National Standard, February 4, 2004). The QAPP will be prepared for each sample collection activity in accordance with: (1) “EPA Requirements for Quality Assurance Project Plans (QA/R-5)” (EPA/240/B-01/003, March 2001); (2) “Guidance on Quality Assurance Project Plans (QA/G-5)” (EPA/240/R-02/009, December 2002); “Guidance on Environmental Data Verification and Validation (QA/G-8)” (EPA/240/R-02/004, November 2002); and (3) the EPA Functional Guidelines for Data Review. The QAPP will address sampling procedures, sample custody, analytical procedures, and data reduction, validation, reporting, and personnel qualifications. The laboratory performing the work must have and follow an approved Quality Assurance (QA) program, which complies with “EPA Requirements for Quality Management Plans (QA/R-2)” (EPA/240/B-01-002, March 2001 reissued May 2006) or equivalent documentation as determined by EPA. If a laboratory not in the EPA Contract Laboratory Program (CLP) is selected, the QAPP shall be consistent with the requirements of the CLP for laboratories proposed outside the CLP. The University will provide assurances that EPA has access to laboratory personnel, equipment and records for sample collection, transportation, and analysis.

All sampling and analyses performed pursuant to this Agreement shall conform to EPA direction, approval, and guidance regarding sampling, quality assurance/quality control (QA/QC), data validation, and chain-of-custody procedures. The University shall ensure that the laboratory used to perform the analyses participates in a QA/QC program that complies with the appropriate EPA guidance.

Upon request by EPA, the University shall have such a laboratory analyze samples submitted by EPA for quality-assurance monitoring. The University agrees that EPA personnel may audit any laboratory that performs analytical work under this Settlement Agreement. Prior to awarding any work to an analytical laboratory, the University will inform the laboratory that an audit may be performed, and that the laboratory agrees to coordinate with EPA prior to performing analyses. The University shall provide to EPA the quality assurance/quality control procedures followed by all sampling teams and laboratories performing data collection and/or analysis.

The University shall provide to EPA the quality assurance/quality control procedures followed by all sampling teams and laboratories performing data collection and/or analysis. Upon request by EPA, the University shall allow EPA or its authorized representatives to take split and/or duplicate samples. The University shall notify EPA not less than fourteen (14) days in advance of any sample collection activity, unless shorter notice is agreed to by EPA. EPA shall have the right to take any additional samples that EPA deems necessary. Upon request, EPA shall allow the University to take split or duplicate samples of any samples it takes as part of its oversight of University’s implementation of the Work.

All analytical data collected under this Settlement Agreement shall be provided electronically to EPA.

3.2.2. Health and Safety Plan(s)

The Health and Safety Plan(s) ensure protection of the public health and safety during performance of on-site Work under this Agreement. This plan shall be prepared in accordance with EPA's Standard Operating Safety Guide (PUB 9285.1-03, PB 92-963414, June 1992). Dive operations will be addressed in all appropriate HASPs, if diving is planned. Dive Plans will also be sent to EPA for review and comment at least two weeks prior to diving work. In addition, the plan shall comply with all currently applicable Occupational Safety and Health Administration ("OSHA") regulations found at 29 CFR. Part 1910. The University shall incorporate all changes to the plan recommended by EPA and shall implement the plan during the duration of the Removal Action.

3.2.3. Construction Quality Assurance Plan

The Construction Quality Assurance Plan (CQAP) describe the project-specific components of the performance methods and quality assurance program to ensure that the completed project meets or exceeds all design criteria, plans, and specifications. The draft Plan shall be submitted with the Preliminary design and the Final Plan shall be submitted with the Final Design. The Final Plan shall be submitted prior to the start of construction in accordance with the approved construction schedule. The Plan shall provide requirements for the following elements:

- Responsibilities and authorities of all organization and key personnel involved in the Removal Action construction, including EPA and other agencies.
- Qualifications of the Construction Quality Assurance (CQA) Officer. Establish the minimum training and experience of the CQA Officer and supporting inspection personnel.
- Inspection and verification activities. Establish the observations and tests that will be required to monitor the construction and/or installation of the components of the Removal Action. The plan shall include the scope and frequency of each type of inspection to be conducted. Inspections shall be required to verify compliance with environmental requirements and ensure compliance with all health and safety procedures.
- Performance standards and methods. Describe all performance standards and methods necessary to ensure implementation of the removal construction. Performance monitoring requirements shall be stated to demonstrate that best management practices have been implemented for excavating operations, transportation of excavated material, and proper cap placement techniques.
- Sampling activities. Establish requirements for quality assurance sampling activities, including the sampling protocols, sample size, sample locations, frequency of testing, acceptance and rejection data sheets, and plans for correcting problems as addressed in the project specifications.
- Documentation. Establish the reporting requirements for construction quality assurance activities. This shall include such items as daily and weekly summary reports, inspection data sheets, problem identification and corrective measures reports, design acceptance reports, and final documentation. A description of the provisions for final storage of all records consistent with the requirements of the Settlement Agreement shall be included.

3.3 Interim Measures

The University may elect to perform interim measures, with prior approval of EPA, at any point in the process. These measures could be related to on-going operation and maintenance of the property; related to staged Site redevelopment, or be implemented to address an environmental issue that should not be delayed until the EE/CA decision process is completed. Examples of interim measures could include:

- Fencing, lighting or securing the property;
- Demolition of old structures;
- Re-engineering the storm water system;
- Regrading and/or filling portions of the Site;
- Removal of deleterious or hazardous materials from the Site; and
- Small removal actions related to Site cleanup.

These actions are considered part of the CERCLA cleanup process covered by this SOW and the Order. As such all activities must be coordinated with EPA including submittal of work plans or equivalent to EPA for approval prior to proceeding. Any work completed as an interim measure will not be considered a final action until such time as the CERCLA cleanup is complete. The University in conducting such interim measures needs to be aware that such measures may or may not be compatible with the final cleanup measures and therefore may need to be repeated or removed by the final cleanup actions.

3.4 SUMMARY OF MAJOR DELIVERABLES/SCHEDULE

The schedule for submission to EPA of deliverables described in this section of the SOW is presented in Table 3.1. Changes to the schedule for submission of deliverables can be revised with EPA consultation and prior approval.

TABLE 3.1 – Schedule of Upland Removal Project Deliverables		
TASK	DELIVERABLE	DUE DATE
Removal Action Investigation Report	Task 1A - Final Removal Action Investigation Report	Completed
Addendum to Characterization Report (including Work Plan and subsequent validated data)	Task 1B - Addendum to Final Removal Action Investigation Report	Work Plan addendum will be submitted within 30 days signing of the First Amendment to the Agreement, validated data will be submitted within 90 of completion of field work and draft Addendum report within 120 days of completion of field work
Engineering Evaluation/Cost Analysis (EE/CA) Report	Task 2 -Technical Briefing on Proposed Removal Alternatives	Within 30 days after approval of the Addendum to the Final Removal Action Area Characterization Report by EPA.
	And Technical Memorandum	Within 15 days after the Technical Briefing on Proposed Removal Alternatives
	Task 3 - Preliminary Draft EE/CA Report	Within 60 days of EPA approval of the Technical Memorandum on Proposed Removal Alternatives
	Final Draft EE/CA Report (for Public Review)	After receipt of and in accordance with the direction in the EPA approval of the Preliminary Draft EE/CA Report
	Final EE/CA	After public comment, and in accordance with the direction of EPA.
Removal Action Design Documents	Task 4a - Conceptual (30 percent) Design	Within 60 days of EPA signature of the Action Memorandum.
	Task 4b – Draft Design Analysis Report	Within 60 days of receipt of EPA approval of Conceptual (30 percent) Design
	Task 4c - Final Design	Within 60 days of receipt of EPA approval of the Draft Design Analysis Report
Removal Action Work Plan	Task 5 - Removal Action Work Plan	Within 30 days of receipt of EPA approval of the Final Design

TABLE 3.1 – Schedule of Upland Removal Project Deliverables		
TASK	DELIVERABLE	DUE DATE
Implementation of Removal Action	Task 7 - Notification of Removal Action Start	Provide notification to EPA 30 days prior to initiation of Removal Action field work to allow EPA to coordinate field oversight activities
	Removal Action Start	30 days after Notification of Removal Action
Removal Action Completion and Institutional Control Implementation Report	Task 7 - Removal Action Completion and Institutional Control Implementation Report	Within 60 days after completion of Removal Action (construction phase)
Long-Term Monitoring and Reporting Plan (if appropriate)	Task 8 - Draft Long-Term Monitoring and Reporting Plan	Within 60 days after EPA approval of the Final Design.
	Final Long-Term Monitoring and Reporting Plan	Within 60 days after completion of the Removal Action and receipt of EPA approval
	Monitoring Data Reports	Schedule to be proposed by the University in the Long-Term Monitoring and Reporting Plan and subject to approval by EPA

ELECTRONIC DATA SUBMITTAL

UP will submit results of field measurements and laboratory analyses of samples to be compiled and used in the Characterization Report in electronic form. This data will also be provided to EPA in a format usable to EPA and EPA’s consultants for the purpose of assessing data relationships and data gaps at the Site.

UP will provide results of field measurements, laboratory analyses of samples, and other data relevant to accomplishing the tasks in this SOW, such as CAD files of base maps and other graphic presentations of data, in a usable format to facilitate EPA review of data submittals. Historic information already stored in an electronic format will be provided to EPA and/or its contractor(s) upon request. A brief description of newly acquired data will be included in each monthly report. Newly acquired data will be transmitted within one month of its acquisition (or validation, if needed) unless a longer holding time is agreed upon.

All documents required to be submitted by this SOW shall be provided in its original format and in web-posting ready format (PDF), as directed by EPA. The maximum size document that may be electronically mailed (email) to EPA is 25 MBs per email. Packages larger than 25 MBs should be sent on CD to retain file linkages. The UP shall follow the following procedures for providing web-posting ready format documents unless otherwise directed by EPA:

1. Bookmark documents longer than 10 pages for easier navigation (e.g., chapters).
2. Ensure that file/document properties/initial view is for “bookmarks panel and page” if there are bookmarks.

3. For document composed of multiple files, link together with a starter file that is less than 2 MB, i.e., the document's executive summary. The executive summary should have a bookmarks panel with bookmark links to the other files (as an example, look at the Portland Harbor website, T4 EE/CA). Ensure that all files are saved to the same folder, rather than multiple folders so that the linkage is retained during web posting.
4. Bookmarks to other files should indicate the name of that file (and size of that file, if over 1 MB).
5. "Tag" the document for accessibility if this was not done by the source application (advanced/accessibility/tag) for section 508 compliance.
6. Enter document properties: 1) title, author, 2) subject, and 3) keywords.
7. "Add links" (advanced/links/create links from URLs in document) to the document so that they can be used to go to the website directly from the document. Links need to start with "http:", etc. to be usable.

4.0 REFERENCES

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

The National Oil and Hazardous Substance Pollution Contingency Plan (NCP), 40 CFR Part 300 et seq.

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

“Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA,” U.S. EPA, Office of Emergency and Removal Response, August 1993, OSWER Directive No. 9360.0-32.

“Land Use in the CERCLA Remedy Selection Process,” U.S. EPA, Office of Solid Waste and Emergency Response, May 1995, OSWER Directive No. 9355.7-04.

“Reuse Assessments: A Tool to Implement the Superfund Land Use Directive,” U.S. EPA/OERR, OSWER Directive No. 9355.7-06P, June 2001.

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

“Guidance on Oversight of Potentially Responsible Party Removal Investigations and Feasibility Studies,” Volumes I and II, U.S. EPA, Office of Waste Programs Enforcement, July 1991, OSWER Directive No. 9835.1(c) and .1(d).

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

“RCRA Facility Investigation Guidance,” U.S. EPA, May 1989, EPA Doc. No. EPA 530/SW-89-031.

“RCRA Corrective Action Plan,” U.S. EPA Office of Solid Waste, May 1994, OSWER Directive No. 9902.3-2a.

“Handbook of Groundwater Protection and Cleanup Policies for RCRA Corrective Action,” U.S. EPA, April 2004, EPA Doc. No. EPA/530/R-01/015.

“RCRA Public Participation Manual,” U.S. EPA, Sept. 1996, No. 530-R-96-007.

- “Guidance for the Data Quality Objectives Process EPA QA/G-4,” U.S. EPA, Office of Environmental Information, EPA/600/R-96/055, August 2000.
- “Guidance for the Preparation of Standard Operating Procedures QA-G-6. U.S. EPA Office of Environmental Information, EPA/240/B-01/004, March 2001.
- “EPA Requirements for Quality Assurance Project Plans,” USEPA. EPA QA/R5, March 2001.
- “EPA Requirements for Quality Management Plans,” U.S. EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA QA/R-2, EPA/240/B-01/002, March 2001 (revised May 2006).
- “EPA Guidance on Quality Assurance Project Plans,” QA/G-5, U.S. EPA, Office of Emergency and Removal Response and Office of Waste Programs Enforcement, EPA/600/R-98/018, February 1998.
- “Users Guide to the EPA Contract Laboratory Program: U.S. EPA, Sample Management Office,” January 1991, OSWER Directive No. 9240.0-01D.
- “Interim Guidance on Compliance with Applicable or Relevant and Appropriate Requirements,” U.S. EPA, Office of Emergency and Removal Response, July 9, 1987, OSWER Directive No. 9234.0-05.
- “CERCLA Compliance with Other Laws Manual,” Two Volumes, U.S. EPA, Office of Emergency and Removal Response, August 1988 (draft), OSWER Directive No. 9234.1-01 and -02.
- “Presumptive Remedies: Policy and Procedures,” U.S. EPA, Office of Emergency and Solid Waste and Emergency Response, Sept. 1993, OSWER Directive No. 9355.0-47FS.
- “Presumptive Response Strategy and Ex-Situ Treatment Technologies for Contaminated Groundwater at CERCLA Sites,” U.S. EPA, Office of Emergency and Removal Response, Oct. 1996, OSWER Directive No. 9283.1-12.
- “Draft Guidance on Preparing Superfund Decision Documents,” U.S. EPA, Office of Emergency and Removal Response, March 1988, OSWER Directive No. 9355.3-02.
- “Risk Assessment Guidance for Superfund--Volume I, Human Health Evaluation Manual (Part A),” December 1989, EPA/540/1-89/002.
- “Risk Assessment Guidance for Superfund--Volume II Environmental Evaluation Manual,” March 1989, EPA/540/1-89/001.
- “Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments,” U.S. EPA, OSWER Directive No. 9285.7-25, June 1998, EPA/540-R-97-006.

- “Guidance for Data Usability in Risk Assessment,” October 1990, EPA/540/G-90/008.
- “Performance of Risk Assessments in Removal Investigation/ Feasibility Studies (RI/FSs) Conducted by Potentially Responsible Parties (PRPs),” August 28, 1990, OSWER Directive No. 9835.15.
- “Supplemental Guidance on Performing Risk Assessments in Removal Investigation/Feasibility Studies (RI/FSs) Conducted by Potentially Responsible Parties (PRPs),” July 1991, OSWER Directive No. 9835.15(a).
- “Supplemental Risk Assessment Guidance for Superfund,” Region 10 U.S. EPA, Health and Environmental Assessment Section, August 1991.
- “Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions,” April 22, 1991, OSWER Directive No. 9355.0-30.
- “Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites, U.S.EPA, OSWER 9285.7-41, September 2002.
- “Role of Background in the CERCLA Cleanup Program,” U.S. EPA, OSWER Directive No. 9230.0-97, April 2002.
- “Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites,” U.S. EPA, OSWER Directive 9355.4-24, March 2003.
- “Health and Safety Requirements of Employees Employed in Field Activities,” U.S. EPA, Office of Emergency and Removal Response, July 12, 1981, EPA Order No. 1440.2.
- OSHA Regulations in 29 CFR 1910.120 (Federal Register 45654, December 19, 1986).
- “Interim guidance on Administrative Records for Selection of CERCLA Response Actions,” U.S. EPA, Office of Waste Programs Enforcement, March 1, 1989, OSWER Directive No. 9833.3A.
- “Community Relations in Superfund: A Handbook,” U.S. EPA, Office of Emergency and Removal Response, January 1992, OSWER Directive No. 9320.0-03C.
- “Community Relations During Enforcement Activities and Development of the Administrative Record,” U.S. EPA, Office of Waste Programs Enforcement, November 1988, OSWER Directive No. 9836.0-1A.
- “Coordination between RCRA Corrective Action and Closure and CERCLA Site Activities,” Office of Enforcement and Compliance Assurance, U.S. EPA, September 24, 1996.
- “Superfund Reforms: Updating Remedy Decisions,” U.S. EPA, OSWER 9200.0-22, September 27, 1996.

“Institutional Controls: A Guide to Implementing, Monitoring, and Enforcing Institutional Controls at Superfund, Brownfields, Federal Facility, UST and RCRA Corrective Action Cleanups,” [Draft] U.S. EPA OSWER, March 2003.

“Fingerprint Analysis of Contaminant Data: A Forensic Tool for Evaluating Environmental Contamination,” EPA 600-5-04-054, May 2004.

“Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers,” EPA 542-S-02-001, May 2002.

“Proceedings of the Ground-Water/Surface-Water Interactions Workshop,” Parts 1, 2, and 3, EPA/542/R-00/007, July 2000.

“Phytoremediation of Contaminated Soil and Ground Water at Hazardous Waste Sites,” EPA/540/S-01/500, February 2000.

“Portland Harbor Joint Source Control Strategy,” Oregon Department of Environmental Quality (ODEQ) and U.S. Environmental Protection Agency (USEPA). December 2005.