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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

October 10, 2003

URGENT LEGAL MATTER - PROMPT REPLY NECESSARY
CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Teck Cominco Metals, Ltd.
Care of: Karen Dunfee
200 Burrard Street, Suite 600
Vancouver, British Columbia
Canada V6C 3L9

Re: Special Notice Letter for the Upper Columbia River Site

Dear Ms. Dunfee :

Throughout the past year, EPA has requested Teck Cominco, through representatives at Teck Cominco America Inc., to agree to enter an administrative order on consent with the Environmental Protection Agency (EPA) to perform a Remedial Investigation and Feasibility Study (RI/FS) for the Upper Columbia River Site (Site) consistent with the U. S. Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). During this time, EPA has exchanged numerous letters with Teck Cominco, and met with Teck Cominco representatives on several occasions to discuss technical and legal issues regarding this Site. Throughout these meetings and correspondence, Teck Cominco has expressed an interest in performing a study at the Site and/or in supporting other parties to perform a study at the Site. We have spent many months exploring Teck Cominco's proposals, and listening to the concerns and objectives of all the various local interests. We have visited with the local counties, the state, tribes and environmental groups to discuss their concerns. EPA believes that some progress has been made.

It is now time for Teck Cominco to decide whether it is going to perform the RI/FS at the Site under an agreement with EPA consistent with CERCLA and the Superfund Alternative Sites approach. This approach allows EPA to facilitate settlements and cleanups at contaminated sites not listed on CERCLA's National Priorities List (NPL) that are equivalent to settlements and cleanups at sites listed on the NPL. Toward that end, this letter serves three basic functions. First, it contains a formal demand for reimbursement of costs that have been incurred, including interest thereon, and that are expected to be incurred, in response to the health/environmental concerns at the Site. Second, this letter notifies you that a 60-day period of formal negotiations with EPA automatically begins with this letter. Third, this letter provides general and Site-specific information to assist you in these negotiations.

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SPECIAL NOTICE AND NEGOTIATION MORATORIUM

EPA has determined that use of the Section 122(e) special notice procedures specified in CERCLA will facilitate a settlement between Teck Cominco and EPA for this Site. Therefore, under Section 122 of CERCLA, 42 U.S.C. § 9622, this letter triggers a 60-day moratorium on certain EPA response activities at the Site. During this 60-day period, you are invited to participate in formal negotiations with EPA. You are also encouraged to negotiate a settlement providing for you to conduct or finance the response activities required at the Site. The 60-day negotiation period ends on December 10, 2003. The 60-day negotiation period will be extended for an additional thirty (30) days if you provide EPA with a good faith offer to conduct or finance the Remedial Investigation/Feasibility Study ("RI/FS"). Should a 90-day moratorium take place, negotiations will conclude on January 10, 2004. If settlement is reached between Teck Cominco and EPA within the 90-day negotiation moratorium, the settlement will be embodied in a consent order for RI/FS.

If a settlement cannot be reached within the initial 60-day notice period, EPA may take appropriate action at the Site. Such action could include any of the following options: EPA may issue a Unilateral Administrative Order ("UAO") to you under CERCLA Section 106(a) to perform the RI/FS. If you refuse to comply with the UAO, EPA may pursue civil litigation against you pursuant to CERCLA Section 106(a) to compel compliance, or EPA may fund the RI/FS and any needed remedial action and pursue a CERCLA Section 107 cost recovery claim against you. Given our cooperative relationship thus far, EPA does not anticipate the need to implement these options.

STATEMENT OF WORK AND CONSENT ORDER

A copy of EPA's Statement of Work and Consent Order are enclosed. This is provided to assist you in developing a good faith offer for conducting or financing the RI/FS. In addition, EPA has already provided you with EPA Superfund Alternative Site guidance. As we have explained to you in the past, any final agreement between us would need to include the terms outlined in that guidance.

GOOD FAITH OFFER

As indicated, the 60-day negotiation moratorium triggered by this letter is extended for thirty days if you submit a good faith offer to EPA. A good faith offer to conduct or finance the RI/FS is a written proposal that demonstrates your qualifications and willingness to conduct or finance the RI/FS and includes the following elements:

• A statement of your willingness to conduct or finance the RI/FS which is consistent with EPA's Statement of Work and Consent Order and provides a sufficient basis for further negotiations;

• A paragraph-by-paragraph response to EPA's Statement of Work and Consent Order;

• Demonstration of your technical capability to carry out the RI/FS, including the identification of the firm(s) that may actually conduct the work or a description of the process you will use to select the firm(s);

• A detailed description of the work plan identifying how you intend to proceed with the work;

• A statement of your willingness to reimburse EPA for costs incurred in overseeing your implementation of the remedial action;

• A demonstration of your capability to finance the RI/FS; and

• The name, address, and phone number of the party who will represent you in negotiations.

DEMAND FOR COSTS INCURRED

As already indicated, with this letter, EPA demands that you reimburse EPA for its costs incurred to date, and encourages you to voluntarily negotiate a consent order in which you perform the RI/FS.

In accordance with CERCLA, EPA has already taken certain actions and incurred certain costs for which you are liable in response to conditions at the Site. These response actions include: the preliminary assessment and expanded site investigation of the Site. The cost to date of the response actions performed at the Site through EPA funding is approximately $1.8 million. The exact costs will be provided to you shortly. In accordance with Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), demand is hereby made for payment of the above amount plus any and all interest recoverable under Section 107, 42 U.S.C. § 9607, or under any other provisions of law.

Interest on past costs incurred will accrue from the date of this demand for payment or any earlier demand, whichever is earlier. Interest on future costs will accrue from the date of expenditure.

ADMINISTRATIVE RECORD

In accordance with Section 113(k) of CERCLA, 42 U.S.C. § 9613(k), EPA must establish an Administrative Record containing the documents that form the basis of EPA's decision on the selection of a response action for a site. The Administrative Record files, which contain the documents related to the response action selected for the Site will be available to the public for inspection and comment at the EPA Regional Office, 1200 Sixth Avenue in Seattle.

PRP RESPONSE AND EPA CONTACT PERSON

You are encouraged to contact EPA as soon as possible, but no later than November 12, 2003, to indicate your willingness to participate in future negotiations at this Site. Otherwise, you

have sixty (60) calendar days from this notice to provide EPA, in writing, with a good faith offer demonstrating your willingness to perform the RI/FS. If EPA does not receive a timely response, EPA will assume that you do not wish to negotiate a resolution of your liabilities in connection with the response, and that you have declined any involvement in performing the response activities. You may be held liable by EPA under Section 107 of CERCLA, 42 U.S.C. §9607, for the cost of the response activities EPA performs at the Site and for any damages to natural resources.

Your response to this Special Notice Letter should be sent to:

Cami Grandinetti
U.S. Environmental Protection Agency
1200 Sixth Ave (Mail Stop ECL-113)
Seattle, WA 98101
206-553-8696

The factual and legal discussions in this letter are intended solely to provide notice and information, and such discussions are not to be construed as a final EPA position on any matter set forth herein, nor as pertain to the application of the 1909 United States-Canada Boundary Waters Treaty.

By sending you the draft Statement of Work and Consent Order at this time, we hope they can be used productively to frame our discussions on October 22nd. Again, we appreciate your efforts to date and remain confident that by continuing to work together cooperatively, we can reach an acceptable agreement within this framework.

Sincerely,

David Croxton

David Croxton, Unit Manager
Office of Environmental Cleanup

cc: Fred Phillips, U.S. Department of Justice
Doug Horswill, Teck Cominco America Inc. and Teck Cominco Limited
Mark Edwards, Teck Cominco Metals Ltd.
David Godlewski, Teck Cominco America Inc.
Bruce DiLuzio, Teck Cominco America Inc.
Tom Campbell, Campbell George & Strong, LLP
Jim Pendowski, Washington State Department of Ecology
Joseph Pakootas, Colville Confederated Tribes
Alfred Peone, Spokane Tribe
Merill Ott, Eastern Washington Council of Governments

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10

IN THE MATTER OF: Upper Columbia River Site Teck Cominco Metals, Ltd. Trail, British Columbia, RESPONDENT Proceeding Under Sections 104, 122(a), and 122(d)(3) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C §§ 9604, 9622(a), 9622(d)(3).	)	U.S. EPA Docket and 122(d)(3) Number _____

ADMINISTRATIVE ORDER ON CONSENT
FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY

I. INTRODUCTION

1. This Administrative Order on Consent (AOC) is entered into voluntarily by the United States Environmental Protection Agency (EPA) and Teck Cominco Metals Ltd. (Respondent). The AOC concerns the preparation of, performance of, and reimbursement for all costs incurred by EPA in connection with a Remedial Investigation and Feasibility Study (RI/FS) for

the Upper Columbia River Site located in the state of Washington as well as past response costs.

II. JURISDICTION

2. This AOC is issued under the authority vested in the President of the United States by Sections 104, 122(a), and 122(d)(3) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9604, 9622(a), and 9622(d)(3) (CERCLA). This authority was delegated to the Administrator of EPA on January 23, 1987, by Executive Order 12580, 52 Fed. Reg. 2926 (1987), and further delegated to Regional Administrators on September 13, 1987, by EPA Delegation No. 14-14-C. This authority has been redelegated by the Regional Administrator to the Region 10 Director, Environmental Cleanup Office (ECL) , and further delegated to ECL Unit Managers.

3. The Respondent agrees to undertake all actions required by the terms and conditions of this AOC. In any action by EPA or the United States to enforce the terms of this AOC, Respondent consents to and agrees not to contest the authority or jurisdiction of the Regional Administrator to issue or enforce this AOC, and agrees not to contest the validity of this Order or its terms.

III. PARTIES BOUND

4. This AOC shall apply to and be binding upon EPA and shall be binding upon the Respondent, its agents, successors, assigns, officers, directors, and principals. Respondent is jointly and severally responsible for carrying out all actions required of it by this AOC. The signatories to this AOC certify that they are authorized to execute and legally bind the parties they represent to this AOC. No change in the ownership or corporate status of the Respondent or of the facility or Site shall alter Respondent's responsibilities under this AOC.

5. The Respondent shall provide a copy of this AOC to any subsequent owners or successors before ownership rights or stock or assets in a corporate acquisition are transferred.

Respondent shall provide a copy of this AOC to all contractors, subcontractors, laboratories, and consultants which are retained to conduct any work performed under this AOC, within fourteen (14) days after the effective date of this AOC or the date of retaining their services, whichever is later. Respondent shall condition any such contracts upon satisfactory compliance with this AOC. Notwithstanding the terms of any contract, Respondent is responsible for compliance with this AOC and for ensuring that its subsidiaries, employees, contractors, consultants, subcontractors, agents, and attorneys comply with this AOC.

IV. STATEMENT OF PURPOSE

6. In entering into this AOC, the objectives of EPA and the Respondent are: (a) to determine the nature and extent of contamination and any threat to the public health, welfare, or the environment caused by the release or threatened release of hazardous substances, pollutants, or contaminants at or from the Site or facility, by conducting an RI; (b) to determine and evaluate alternatives for remedial action (if any) to prevent, mitigate, or otherwise respond to or remedy any release or threatened release of hazardous substances, pollutants, or contaminants at or from the Site or facility, by conducting an FS; and (c) to recover response and oversight costs incurred by EPA with respect to this AOC.

7. The activities conducted under this AOC are subject to approval by EPA and shall provide all appropriate necessary information for the RI/FS, with the exception of the Baseline Risk Assessment performed by EPA, and for a Record of Decision that is consistent with CERCLA and the National Oil and Hazardous Substance Pollution Contingency Plan (NCP), 40 C.F.R. Part 300. The activities conducted under this AOC shall be conducted in compliance with all applicable EPA guidance, policies, and procedures.

V. FINDINGS OF FACT

8. The Upper Columbia River Site consists of the areal extent of contamination in the

Upper Columbia River, and all suitable areas in proximity to the contamination necessary for implementation of response action. The Upper Columbia River Site is the principal inflow to Franklin D. Roosevelt Lake (Lake Roosevelt), the reservoir behind Grand Coulee Dam and contributes about 90% of the flow from a large drainage area in Canada and the United States. Approximately 15 river miles south of the U. S.-Canada border, the river becomes characteristic of a lake/reservoir due to the Grand Coulee Dam.

9. The reservoir was developed into a major recreational and economic resource for the surrounding area attracting more than one million visitors per year. Recreational use of the area has been extensive including activities such as fishing, swimming, camping, and boating. The Upper Columbia River and surrounding area is also habitat to wildlife, plants, a varied fish community, and other aquatic species, including species listed under the Endangered Species Act (ESA).

10. The Confederated Tribes of the Colville Indian Reservation (Colville Tribes) and the Spokane Tribe of Indians (Spokane Tribe) own reservation lands along the Upper Columbia River. The Colville Tribes and the Spokane Tribe have treaty-reserved rights and resources, and/or other rights, interests, or resources in the Site. The Colville Tribes petitioned EPA in August 1999, pursuant to Section 105 of CERCLA 42 U.S.C. § 9605, to conduct an assessment of hazardous substance contamination along the Columbia River extending approximately 150 river miles from the U.S.-Canada border to the Grand Coulee Dam.

11. EPA began conducting the site assessment in October 1999. EPA selected a Site Assessment Area from approximately river mile 745 near the U.S.-Canada border to river mile 675. This area is called the Upper Columbia River Site Assessment Area (Assessment Area). In conducting the site assessment, EPA found contaminants at the Upper Columbia River Site including, but not limited to, heavy metals such as arsenic, cadmium, copper, lead, mercury and zinc. EPA did not conduct an analysis for dioxin and furan in the Assessment Area, though these contaminants remain a concern. EPA also observed the presence of slag, a by-product of the smelting furnaces, containing glassy ferrous granules and other metals, at beaches and other depositional areas at the

Assessment Area.

12. The Site has been the subject of numerous studies by various governmental entities. Sources identified in these studies include releases from mining and milling operations, fertilizer production, smelting operations, pulp and paper production, sewage treatment plants, and other industrial activities.

13. Contaminants found at the Site are known to be toxic to humans and aquatic life. Routes of human exposure to slag and contaminated sediment include direct contact with slag on the beaches of the Upper Columbia River, contact with contaminated sediment during low draw down periods, inhalation of airborne particles, dermal contact, and ingestion. There is also a concern of human exposure from ingestion of lake/river water contaminated as a result of contact with slag or contaminated sediments. Consumption of fish, aquatic resources, native plants, and agricultural crops are also potential routes of human exposure.

14. Potential environmental effects of slag discharged to the Upper Columbia River include both chemical (increased metal loads, potential bioaccumulation, toxicity problems in biota) and physical (scouring of plants and animals from river substrates, severe erosion of fish gills, smothering of habitat) components. Some benthic organisms can accumulate toxins that are attached to sediment particles that the benthic organism ingests. Toxins accumulated in benthic organisms can be transferred up the food chain to higher predators such as fish.

15. EPA completed its site assessment in March 2003. Pursuant to the Hazard Ranking System, published as a federal regulation on December 14, 1990 (55 Fed. Reg. 51532), the Site received a hazardous ranking score above 28.50, making the Site eligible for listing on EPA's National Priorities List (NPL). Currently, the Site is being considered by EPA for possible inclusion on the NPL.

16. Respondent owns and operates an integrated smelting and refining complex in Trail, British Columbia (hereinafter referred to as the "Trail Smelter") situated approximately 10 river miles north of the U. S.-Canada border. Respondent has arranged for the disposal of its hazardous

substances from the Trail Smelter into the Upper Columbia River by directly discharging up to 145,000 tonnes of slag annually prior to mid-1995. Effluent, such as slag, is discharged into the Columbia River through several outfalls at the Trail Smelter. The slag contains metals including, but not limited to, copper, lead, and zinc. The slag was carried downstream in the passing river current and settled in slower flowing quiescent areas.

17. The Trail Smelter facility also produces a variety of sulfur products and agricultural fertilizers which represent a potential source of mercury. Historically, the Trail Smelter discharged sulfur dioxide into the air increasing its discharge of sulfur dioxide from 4,700 tons a month to 10,000 tons a month in 1925. Citizens of the town of Northport, Washington situated just south of the U. S.-Canada border in the Columbia River valley, complained that pollution from the Trail smelter was threatening their health and environment.

VI. CONCLUSIONS OF LAW AND DETERMINATIONS

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

19. Wastes and constituents thereof at the Site, sent to the Site, disposed of at the Site, and/or transported to the Site identified in Paragraphs 11 and 16 are "hazardous substances" as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), or constitute "any pollutant or contaminant" that may present an imminent and substantial danger to public health or welfare under Section 104(a)(1) of CERCLA, 42 U.S.C. § 9604(a)(1).

20. The presence of hazardous substances at the Site or the past, present, or potential migration of hazardous substances currently located at or emanating from the Site, constitute actual and/or threatened "releases" as defined in Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

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

22. Respondent is a responsible party under Sections 104, 107, and 122 of CERCLA,

42 U.S.C. §§ 9604, 9607, and 9622.

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

VII. NOTICE

24. By providing a copy of this AOC to the state, EPA is notifying the state of Washington that this Order is being issued and that EPA is the lead agency for coordinating, overseeing, and enforcing the response action required by the Order.

VIII. WORK TO BE PERFORMED

25. All work performed under this AOC shall be under the direction and supervision of qualified personnel. Within thirty (30) days of the effective date of this Order, and before the work outlined below begins, the Respondent shall notify EPA, in writing, of the names, titles, and qualifications of the personnel, including contractors, subcontractors, consultants, and laboratories to be used in carrying out such work. The qualifications of the persons undertaking the work for Respondent shall be subject to EPA's review, for verification that such persons meet minimum technical background and experience requirements. This Order is contingent on Respondent's demonstration to EPA's satisfaction that Respondent is qualified to perform properly and promptly the actions set forth in this AOC. If EPA disapproves, in writing, of any person(s)' technical qualifications, Respondent shall notify EPA of the identity and qualifications of the replacement(s) within thirty (30) days of the written notice. If EPA subsequently disapproves of the replacement(s), EPA reserves the right to terminate this Order and to conduct a complete RI/FS, and to seek reimbursement for costs and penalties from Respondent. During the course of the RI/FS, Respondent shall notify EPA, in writing, of any changes or additions in the personnel used to carry out such work,

providing their names, titles, and qualifications. EPA shall have the same right to approve changes and additions to personnel as it has hereunder regarding the initial notification.

26. Respondent shall conduct activities and submit deliverables as provided by the attached RI/FS Statement of Work, which is incorporated by reference, for the development of the RI/FS. All such work shall be conducted in accordance with CERCLA, the NCP, and EPA guidance including, but not limited to, the "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (OSWER Directive # 9355.3-01), "Guidance for Data Usability in Risk Assessment" (OSWER Directive # 9285.7-05) and guidance referenced therein, and guidance referenced in the Statement of Work, as may be amended or modified by EPA. The general activities that Respondent is required to perform are identified below, followed by a list of deliverables. The tasks that Respondent must perform are described more fully in the Statement of Work and guidance. The activities and deliverables identified below shall be developed as provisions in the Work Plan and Sampling and Analysis Plan, and shall be submitted to EPA as provided. All work performed under this AOC shall be in accordance with the schedules herein, and in full accordance with the standards, specifications, and other requirements of the Work Plan and Sampling and Analysis Plan, as initially approved or modified by EPA, and as may be amended or modified by EPA from time to time. For the purposes of this Order, day means calendar day unless otherwise noted in the Order.

A. Task I: Scoping. EPA determines the Site-specific objectives of the RI/FS and devises a general management approach for the Site, as stated in the attached Statement of Work. Respondent shall conduct the remainder of scoping activities as described in the attached Statement of Work and referenced guidance. At the conclusion of the project planning phase, Respondent shall provide EPA with the following deliverables:

1. RI/FS Work Plan. Within two hundred ten (210) days of the effective date of this Order, Respondent shall submit to EPA a complete RI/FS Work Plan. If EPA disapproves of or requires revisions to the RI/FS Work Plan, in whole or in part, Respondent shall amend and

submit to EPA a revised Work Plan which is responsive to the directions in all EPA comments, within thirty (30) days of receiving EPA's comments.

2. Sampling and Analysis Plan. Within two hundred ten (210) days of the effective date of this Order, Respondent shall submit to EPA the Sampling and Analysis Plan. This plan shall consist of a Field Sampling Plan (FSP) and a Quality Assurance Project Plan (QAPP), as described in the Statement of Work and guidance. If EPA disapproves of, or requires revisions to, the Sampling and Analysis Plan, in whole or in part, Respondent shall amend and submit to EPA a revised Sampling and Analysis Plan which is responsive to the directions in all EPA comments, within thirty (30) days of receiving EPA's comments.

3. Site Health and Safety Plan. Within two hundred ten (210) days of the effective date of this Order, Respondent shall submit to EPA the Site Health and Safety Plan.

Following approval or modification by EPA, the RI/FS Work Plan and the Sampling and Analysis Plan are incorporated by reference herein.

B. Task II: Community Relations Plan. EPA will prepare a Community Relations Plan, in accordance with EPA guidance and the NCP. Respondent shall provide information supporting EPA's community relations programs.

When requested by EPA, Respondent also shall provide EPA with the following deliverable:

Technical Assistance Plan: Within 30 days of a request by EPA, Respondent shall provide EPA with a Technical Assistance Plan (TAP) for providing and administering up to $50,000 of Respondent's funds to be used by a qualified community group to hire independent technical advisors during the Work conducted pursuant to this Consent Order. The TAP shall state that Respondent will provide and administer any additional amounts needed if EPA, in its unrevieweable discretion, determines that the selected community group has demonstrated such a need prior to EPA's issuance of the ROD contemplated by this Order. If EPA disapproves of or requires revisions to the TAP, in whole or in part, Respondent shall amend and submit to EPA a revised TAP that is responsive to EPA's comments, within thirty (30) days of receiving EPA's comments.

C. Task III: Site Characterization. Following EPA approval or modification of the Work Plan and Sampling and Analysis Plan, Respondent shall implement the provisions of these plans to characterize the Site. Respondent shall complete Site characterization within twelve (12) months of EPA approval or modification of the Work Plan and Sampling and Analysis Plan. Respondent shall provide EPA with analytical data within fifteen (15) days of each sampling activity, in a electronic format (i.e., computer disk) showing the location, medium, and results. Within seven (7) days of completion of field activities, Respondent(s) shall notify EPA, in writing. During Site characterization, Respondent shall provide EPA with the following deliverables, as described in the Statement of Work and Work Plan:

1. Technical Memorandum on Modeling of Site Characteristics. Where Respondent proposes that modeling is appropriate, within sixty (60) days of the initiation of Site characterization, Respondent shall submit a technical memorandum on modeling of Site characteristics, as described in the Statement of Work. If EPA disapproves of or requires revisions to the technical memorandum on modeling of Site characteristics, in whole or in part, Respondent shall amend and submit to EPA a revised technical memorandum on modeling of Site characteristics which is responsive to the directions in all EPA comments, within thirty (30) days of receiving EPA's comments.

2. Preliminary Site Characterization Summary. Within sixty (60) days of completion of the field sampling and analysis, as specified in the Work Plan, Respondent shall submit a Site characterization summary to EPA.

D. Draft Remedial Investigation Report Within sixty (60) days of receipt, Respondent shall submit a draft remedial investigation report consistent with the Statement of Work, Work Plan, and Sampling and Analysis Plan. If EPA disapproves of or requires revisions to the RI report, in whole or in part, Respondent shall amend and submit to EPA a revised RI report which is responsive to the directions in all EPA comments, within thirty (30) days of receiving EPA's comments.

E. Task IV: Treatability Studies. Respondent shall conduct treatability studies, except where

Respondent can demonstrate to EPA's satisfaction that they are not needed. Major components of the treatability studies include determination of the need for, and scope of, studies, the design of the studies, and the completion of the studies, as described in the Statement of Work. During treatability studies, Respondent shall provide EPA with the following deliverables:

1. Identification of Candidate Technologies Memorandum. This memorandum shall be submitted within thirty (30) days of the effective date of this Order. If EPA disapproves of or requires revisions to the technical memorandum identifying candidate technologies, in whole or in part, Respondent shall amend and submit to EPA a revised technical memorandum identifying candidate technologies which is responsive to the directions in all EPA comments, within thirty (30) days of receiving EPA's comments.

2. Treatability Testing Statement of Work. If EPA determines that treatability testing is required, within sixty (60) days thereafter [or as specified by EPA], Respondent shall submit a treatability testing statement of work.

3. Treatability Testing Work Plan. Within thirty (30) days of submission of the Treatability Testing Statement of Work, Respondent shall submit a Treatability Testing Work Plan, including a schedule. If EPA disapproves of, or requires revisions to, the Treatability Testing Work Plan, in whole or in part, Respondent shall amend and submit to EPA a revised Treatability Testing Work Plan which is responsive to the directions in all EPA comments, within thirty (30) days of receiving EPA's comments.

4. Treatability Study Sampling and Analysis Plan. Within thirty (30) days of the identification of the need for a separate or revised QAPP or FSP, Respondent shall submit a Treatability Study Sampling and Analysis Plan. If EPA disapproves of or requires revisions to the Treatability Study Sampling and Analysis Plan, in whole or in part, Respondent shall amend and submit to EPA a revised Treatability Study Sampling and Analysis Plan which is responsive to the directions in all EPA comments, within thirty (30) days of receiving EPA's comments.

5. Treatability Study Site Health and Safety Plan. Within thirty (30) days of the identification of the need for a revised Health and Safety Plan, Respondent shall submit a Treatability Study Site Health and Safety Plan.

6. Treatability Study Evaluation Report. Within sixty (60) days of completion of any treatability testing, Respondent shall submit a Treatability Study Evaluation Report as provided in the Statement of Work and Work Plan. If EPA disapproves of or requires revisions to the Treatability Study Report, in whole or in part, Respondent shall amend and submit to EPA a Revised Treatability Study Report which is responsive to the directions in all EPA comments, within thirty (30) days of receiving EPA's comments.

F. Task V: Development and Screening of Alternatives. Respondent shall develop an appropriate range of waste management options that will be evaluated through the development and screening of alternatives, as provided in the Statement of Work and Work Plan. During the development and screening of alternatives, Respondent shall provide EPA with the following deliverables:

1. Memorandum on Remedial Action Objectives. Within thirty (30) days of receipt of EPA's Baseline Risk Assessment, Respondent shall submit a memorandum on remedial action objectives.

2. Memorandum on Development and Preliminary Screening of Alternatives, Assembled Alternatives Screening Results and Final Screening. Within sixty (60) days of submittal of the memorandum on remedial action objectives, Respondent shall submit a memorandum summarizing the development and screening of remedial alternatives, including an alternatives array document as described in the Statement of Work.

G. Task VI: Detailed Analysis of Alternatives. Respondent shall conduct a detailed analysis of remedial alternatives, as described in the Statement of Work and Work Plan. During the detailed analysis of alternatives, Respondent shall provide EPA with the following deliverables and presentation:

1. Report on Comparative Analysis and Presentation to EPA. Within sixty (60) days of

submission of a memorandum on the development and screening of remedial alternatives, Respondent shall submit a report on comparative analysis to EPA summarizing the results of the comparative analysis performed between the remedial alternatives. If EPA disapproves of or requires revisions to the report on comparative analysis, Respondent shall amend and submit to EPA a revised report on comparative analysis which is responsive to the directions in all EPA comments, within thirty (30) days of receiving EPA's comments. Within two (2) weeks of submitting the original report on comparative analysis, Respondent shall make a presentation to EPA during which Respondent shall summarize the findings of the RI and remedial action objectives, and present the results of the nine criteria evaluation and comparative analysis, as described in the Statement of Work.

2. Draft Feasibility Study Report. Within sixty (60) days of the presentation to EPA, Respondent shall submit a Draft FS Report which reflects the findings in EPA's Baseline Risk Assessment. Respondent shall refer to Table 6-5 of the RI/FS Guidance for report content and format. If EPA disapproves of or requires revisions to the Draft FS Report, in whole or in part, Respondent shall amend and submit to EPA a Revised FS Report which is responsive to the directions in all EPA comments, within thirty (30) days of receiving EPA's comments. The report, as amended, and the administrative record, shall provide the basis for the Proposed Plan under CERCLA §§ 113(k) and 117(a) by EPA, and shall document the development and analysis of remedial alternatives.

27. EPA reserves the right to comment on, modify, and direct changes for all deliverables. At EPA's discretion, Respondent must fully correct all deficiencies and incorporate and integrate all information and comments supplied by EPA either in subsequent or resubmitted deliverables.

28. Respondent shall not proceed further with any subsequent activities or tasks until receiving EPA approval for the following deliverables: RI/FS Work Plan, Sampling and Analysis Plan, Draft RI Report, Treatability Testing Work Plan, and Sampling and Analysis Plan, and Draft FS

Report. While awaiting EPA approval on these deliverables, Respondent shall proceed with all other tasks and activities which may be conducted independently of these deliverables, in accordance with the schedule set forth in this AOC.

29. Upon receipt of the Draft FS Report, EPA will evaluate, as necessary, the estimates of the risk to the public and environment that are expected to remain after a particular remedial alternative has been completed.

30. For all remaining deliverables not enumerated above in Paragraph 28, Respondent shall proceed with all subsequent tasks, activities, and deliverables without awaiting EPA approval on the submitted deliverable. EPA reserves the right to stop Respondent from proceeding further, either temporarily or permanently, on any task, activity, or deliverable at any point during the RI/FS.

31. In the event that Respondent amends or revises a report, plan, or other submittal upon receipt of EPA comments, if EPA subsequently disapproves of the revised submittal, or if subsequent submittals do not fully reflect EPA's directions for changes, EPA retains the right to seek stipulated or statutory penalties, perform its own studies, complete the RI/FS (or any portion of the RI/FS) under CERCLA and the NCP, and seek reimbursement from the Respondent for its costs, and/or seek any other appropriate relief.

32. In the event that EPA takes over some of the tasks, but not the preparation of the RI/FS, Respondent shall incorporate and integrate information supplied by EPA into the Final RI/FS Report.

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

34. Respondent shall, prior to any off-Site shipment of hazardous substances from the Site to an out-of-state waste management facility, provide written notification to the appropriate state environmental official in the receiving state and to EPA's Designated Project Coordinator of such

shipment of hazardous substances. However, the notification of shipments shall not apply to any such off-Site shipments when the total volume of such shipments will not exceed ten (10) cubic yards.

(a) The notification shall be in writing, and shall include the following information, where available: (1) the name and location of the facility to which the hazardous substances are to be shipped; (2) the type and quantity of the hazardous substances to be shipped; (3) the expected schedule for the shipment of the hazardous substances; and (4) the method of transportation. Respondent shall notify the receiving state of major changes in the shipment plan, such as a decision to ship the hazardous substances to another facility within the same state, or to a facility in another state.

(b) The identity of the receiving facility and state will be determined by Respondent following the award of the contract for the RI/FS. Respondent shall provide all relevant information, including information under the categories noted in Paragraph 34(a) above, on the off-Site shipments, as soon as practical after the award of the contract and before the hazardous substances are actually shipped.

IX. EPA'S BASELINE RISK ASSESSMENT

35. EPA will perform the Baseline Risk Assessment. Respondent shall support EPA in the effort by providing various information to EPA as outlined above. The major components of the Baseline Risk Assessment include contaminant identification, exposure assessment, toxicity assessment, and human health and ecological risk characterization.

36. EPA will provide, after review of the Respondent's Site characterization summary, sufficient information concerning the baseline risks such that the Respondent can begin drafting the FS Report and the Memorandum on Remedial Action Objectives. This information will normally be in the form of two or more Baseline Risk Assessment memoranda prepared by EPA. One memorandum will generally include a list of the chemicals of concern for human health and ecological effects and the corresponding toxicity values. Another should list the current and potential future exposure scenarios, exposure assumptions, and exposure point concentrations that EPA plans to use

in the Baseline Risk Assessment. The public, including the Respondent, may comment on these memoranda. However, the Agency is obligated to respond only to significant comments that are submitted during the formal public comment period.

37. After considering any significant comments received, EPA will prepare a Baseline Risk Assessment Report based on the data collected by the Respondent during the Site characterization. EPA will release this report to the public at the same time it releases the Final RI Report. Both reports will be put into the administrative record for the Site.

38. EPA will respond to all significant comments on the memoranda or the Baseline Risk Assessment that are resubmitted during the formal comment period in the Responsiveness Summary of the Record of Decision.

X. MODIFICATION OF THE WORK PLAN

39. If at any time during the RI/FS process, Respondent identifies a need for additional data, a memorandum documenting the need for additional data shall be submitted to the EPA Project Coordinator within twenty (20) days of identification. EPA, in its discretion, will determine whether the additional data will be collected by Respondent and whether it will be incorporated into reports and deliverables.

40. In the event of conditions posing an immediate threat to human health or welfare or the environment, Respondent shall notify EPA and the state immediately. In the event of unanticipated or changed circumstances at the Site, Respondent shall notify the EPA Project Coordinator by telephone within twenty-four (24) hours of discovery of the unanticipated or changed circumstances. In addition to the authorities in the NCP, in the event that EPA determines that the immediate threat or the unanticipated or changed circumstances warrant changes in the Work Plan, EPA shall modify or amend the Work Plan, in writing, accordingly. Respondent shall perform the Work Plan as modified or amended.

41. EPA may determine that in addition to tasks defined in the initially approved

Work Plan, other additional work may be necessary to accomplish the objectives of the RI/FS as set forth in the Statement of Work for this RI/FS. EPA may require that the Respondent perform these response actions in addition to those required by the initially approved Work Plan, including any approved modifications, if it determines that such actions are necessary for a complete RI/FS. Respondent shall confirm its willingness to perform the additional work, in writing, to EPA within seven (7) days of receipt of the EPA request or Respondent shall invoke dispute resolution. Subject to EPA resolution of any dispute, Respondent shall implement the additional tasks which EPA determines are necessary. The additional work shall be completed according to the standards, specifications, and schedule set forth or approved by EPA in a written modification to the Work Plan or written Work Plan Supplement. EPA reserves the right to conduct the work itself at any point, to seek reimbursement from Respondent, and/or to seek any other appropriate relief.

XI. QUALITY ASSURANCE

42. Respondent shall assure that work performed, samples taken, and analyses conducted conform to the requirements of the Statement of Work, the QAPP and guidance identified therein. Respondent will assure that field personnel used by Respondent are properly trained in the use of field equipment and in chain-of-custody procedures.

XII. FINAL RI/FS, PROPOSED PLAN, PUBLIC COMMENT, RECORD OF DECISION, AND ADMINISTRATIVE RECORD

43. EPA retains the responsibility for the release to the public of the RI/FS Report. EPA retains responsibility for the preparation and release to the public of the Proposed Plan and the Record of Decision in accordance with CERCLA and the NCP.

44. EPA shall provide Respondent with the final RI/FS Report, Proposed Plan, and Record of Decision.

45. EPA will determine the contents of the administrative record file for selection of the remedial action. Respondent must submit to EPA documents developed during the course of the

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

XIII. PROGRESS REPORTS AND MEETINGS

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

47. In addition to the deliverables set forth in this Order, Respondent shall provide to EPA monthly progress reports by the tenth (10th) day of the following month. At a minimum, with respect to the preceding month, these progress reports shall: (1) describe the actions which have been taken to comply with this AOC during that month; (2) include all results of sampling and tests and all other data received by the Respondent; (3) describe work planned for the next two (2) months with schedules relating such work to the overall project schedule for RI/FS completion; and (4) describe all problems encountered and any anticipated problems, any actual or anticipated delays, and solutions developed and implemented to address any actual or anticipated problems or delays.

XIV. SAMPLING, ACCESS, AND DATA AVAILABILITY/ADMISSIBILITY

48. All results of sampling, tests, modeling, or other data (including raw data) generated by Respondent, or on Respondent's behalf, during implementation of this AOC, shall be

submitted to EPA in the subsequent Monthly Progress Report as described in Section XIII of this Order. EPA will make available to the Respondent validated data generated by EPA unless it is exempt from disclosure by any federal or state law or regulation.

49. Respondent will verbally notify EPA at least fifteen (15) days prior to conducting significant field events as described in the Statement of Work, Work Plan, or Sampling and Analysis Plan. At EPA's verbal or written request, or the request of EPA's oversight assistant, Respondent shall allow split or duplicate samples to be taken by EPA (and its authorized representatives) of any samples collected by the Respondent in implementing this AOC. All split samples of Respondent shall be analyzed by the methods identified in the QAPP.

50. At all reasonable times, EPA and its authorized representatives shall have the authority to enter and freely move about all property at the Site and off-Site areas where work, if any, is being performed, for the purposes of inspecting conditions, activities, the results of activities, records, operating logs, and contracts related to the Site or Respondent and its contractor pursuant to this Order; reviewing the progress of the Respondent in carrying out the terms of this AOC; conducting tests as EPA or its authorized representatives deem necessary; using a camera, sound recording device, or other documentary type equipment; and verifying the data submitted to EPA by the Respondent. The Respondent shall allow these persons to inspect and copy all records, files, photographs, documents, sampling and monitoring data, and other writings related to work undertaken in carrying out this AOC. Nothing herein shall be interpreted as limiting or affecting EPA's right of entry or inspection authority under federal law. All parties with access to the Site under this paragraph shall comply with all approved Health and Safety Plans.

51. The Respondent may assert a claim of business confidentiality covering part or all of the information submitted to EPA pursuant to the terms of this AOC under 40 C.F.R. § 2.203, provided such claim is allowed by Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7). This claim shall be asserted in the manner described by 40 C.F.R. § 2.203(b), and substantiated at the time the claim is made. Information determined to be confidential by EPA will be given the protection

specified in 40 C.F.R. Part 2. If no such claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA or the state without further notice to the Respondent. Respondent agrees not to assert confidentiality claims with respect to any data related to Site conditions, sampling, or monitoring.

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

53. If the Site, or the off-Site area that is to be used for access or is within the scope of the RI/FS, is owned in whole or in part by parties other than those bound by this AOC, Respondent will obtain, or use its best efforts to obtain, Site access agreements from the present owner(s) within sixty (60) days of the effective date of this AOC. Such agreements shall provide access for EPA, its contractors and oversight officials, the state and its contractors, and the Respondent or its authorized representatives, and such agreements shall specify that Respondent is not EPA's representative with respect to liability associated with Site activities. Copies of such agreements shall be provided to EPA prior to Respondent's initiation of field activities. Respondent's best efforts shall include providing reasonable compensation to any off-Site property owner. If access agreements are not obtained within the time referenced above, Respondent shall immediately notify EPA of its failure to obtain access. EPA may obtain access for the Respondent, perform those tasks or activities with EPA contractors, or terminate the AOC in the event that Respondent cannot obtain access agreements. In the event that EPA performs those tasks or activities with EPA contractors and does not terminate the AOC, Respondent shall perform all other activities not requiring access to

that Site, and shall reimburse EPA for all costs incurred in performing such activities. Respondent additionally shall integrate the results of any such tasks undertaken by EPA into its reports and deliverables. Furthermore, the Respondent agrees to indemnify the U.S. Government as specified in Section XXVII of this Order. Respondent also shall reimburse EPA for all costs and attorney fees incurred by the United States to obtain access for the Respondent pursuant to Paragraph 76.

XV. DESIGNATED PROJECT COORDINATORS

54. Documents including reports, approvals, disapprovals, and other correspondence which must be submitted under this AOC, shall be sent by certified mail, return receipt requested, to the following addressees or to any other addressees which the Respondent and EPA designate in writing:

(a) Documents to be submitted to EPA should be sent to [seven copies]:

Cami Grandinetti
EPA Project Coordinator
Environmental Cleanup Office
U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue, Mail Code ECL-113
Seattle, Washington 98101

(b) Documents to be submitted to the Respondent should be sent to [include number of copies]:

Name, Title,
Teck Cominco Metals Ltd.
P.O. Box 1000
Trail, British Columbia
Canada V1R 4L8

55. On or before the effective date of this AOC, EPA and the Respondent shall each designate their own Project Coordinator. Each Project Coordinator shall be responsible for overseeing the implementation of this AOC. To the maximum extent possible, communications between the Respondent and EPA shall be directed to the Project Coordinator by mail, with copies to such other persons as EPA, the state, and Respondent may respectively designate. Communications

include, but are not limited to, all documents, reports, approvals, and other correspondence submitted under this AOC.

56. EPA and the Respondent each have the right to change their respective Project Coordinator. The other party must be notified, in writing, at least ten (10) days prior to the change.

57. EPA's Project Coordinator shall have the authority lawfully vested in a Remedial Project Manager (RPM) and On-Scene Coordinator (OSC) by the NCP. In addition, EPA's Project Coordinator shall have the authority consistent with the NCP, to halt any work required by this AOC, and to take any necessary response action when he or she determines that conditions at the Site may present an immediate endangerment to public health or welfare or the environment. The absence of the EPA Project Coordinator from the area under study pursuant to this AOC shall not be cause for the stoppage or delay of work.

58. EPA shall arrange for a qualified person to assist in its oversight and review of the conduct of the RI/FS, as required by Section 104(a) of CERCLA, 42 U.S.C. § 9604(a). The oversight assistant may observe work and make inquiries in the absence of EPA, but is not authorized to modify the Work Plan.

XVI. OTHER APPLICABLE LAWS

59. Respondent shall comply with all laws that are applicable when performing the RI/FS. No local, state, or federal permit shall be required for any portion of any action conducted entirely on-Site, including studies, where such action is selected and carried out in compliance with Section 121 of CERCLA, 42 U.S.C. § 9621.

XVII. RECORD PRESERVATION

60. All records and documents in EPA's and Respondent's possession that relate in any way to the Site shall be preserved during the conduct of this AOC and for a minimum of ten (10) years after commencement of construction of any remedial action. The Respondent shall acquire and

retain copies of all documents that relate to the Site and are in the possession of its employees, agents, accountants, contractors, or attorneys. After this 10-year period, the Respondent shall notify EPA at least ninety (90) days before the documents are scheduled to be destroyed. If EPA requests that the documents be saved, the Respondent shall, at no cost to EPA, give EPA the documents or copies of the documents.

XVIII. DISPUTE RESOLUTION

61. Any disputes concerning activities or deliverables required under this Order, excluding the Baseline Risk Assessment, for which dispute resolution has been expressly provided for, shall be resolved as follows: If the Respondent objects to any EPA notice of disapproval or requirement made pursuant to this AOC, Respondent shall notify EPA's Project Coordinator, in writing, of its objections within fourteen (14) days of receipt of the disapproval notice or requirement. Respondent's written objections shall define the dispute, state the basis of Respondent's objections, and be sent certified mail, return receipt requested. EPA and the Respondent then have an additional fourteen (14) days to reach agreement. If an agreement is not reached within fourteen (14) days, Respondent may request a determination by EPA's Director, Environmental Cleanup Office (ECL). The ECL Director's determination is EPA's final decision. Respondent shall proceed in accordance with EPA's final decision regarding the matter in dispute, regardless of whether Respondent agrees with the decision. If the Respondent does not agree to perform or does not actually perform the work in accordance with EPA's final decision, EPA reserves the right in its sole discretion to conduct the work itself, to seek reimbursement from the Respondent, to seek enforcement of the decision, to seek stipulated penalties, and/or to seek any other appropriate relief.

62. Respondent is not relieved of its obligations to perform and conduct activities and submit deliverables on the schedule set forth in the Work Plan, while a matter is pending in dispute resolution. The invocation of dispute resolution does not stay stipulated penalties under this Order.

XIX. DELAY IN PERFORMANCE/STIPULATED PENALTIES

63. For each day that the Respondent fails to complete a deliverable in a timely manner or fails to produce a deliverable of acceptable quality, or otherwise fails to perform in accordance with the requirements of this Order, Respondent shall be liable for stipulated penalties. Penalties begin to accrue on the day that performance is due or a violation occurs, and extend through the period of correction. Where a revised submission by Respondent is required, stipulated penalties shall continue to accrue until a satisfactory deliverable is produced. EPA will provide written notice for violations that are not based on timeliness; nevertheless, penalties shall accrue from the day a violation commences. Payment shall be due within thirty (30) days of receipt of a demand letter from EPA.

63. Respondents shall pay interest on the unpaid balance, which shall begin to accrue at the end of the 30-day period, at the rate established by the Department of Treasury pursuant to 30 U.S.C. § 3717. Respondents shall further pay a handling charge of one percent (1%), to be assessed at the end of each thirty-one (31) day period, and a six percent (6%) per annum penalty charge, to be assessed if the penalty is not paid in full within ninety (90) days after it is due.

64. Respondent shall make all payments by forwarding a check to:

U.S. Environmental Protection Agency
Superfund Accounting
P.O. Box 360903M
Pittsburgh, Pennsylvania 15251

Checks should identify the name of the Site, the Site identification number, the account number, and the title of this Order. A copy of the check and/or transmittal letter shall be forwarded to the EPA Project Coordinator.

65. For the following major deliverables, stipulated penalties shall accrue in the amount of $1,000 per day, per violation, for the first seven days of noncompliance; $5,000 per day, per violation, for the 8th through 14th day of noncompliance; $10,000 per day, per violation, for the 15th day through the 30th day; and $20,000 per day per violation for all violations lasting beyond thirty (30) days.

1) An original and any revised Work Plan.

2) An original and any revised Sampling and Analysis Plan.

3) An original and any revised RI Report.

4) An original and any revised Treatability Testing Work Plan.

5) An original and any revised Treatability Study Sampling and Analysis Plan.

6) An original and any revised FS Report.

66. For the following interim deliverables, stipulated penalties shall accrue in the amount of $300 per day, per violation, for the first week of noncompliance; $750 per day, per violation, for the 8th through 14th day of noncompliance; $2,500 per day, per violation, for the 15th day through the 30th day of noncompliance; and $5,000 per day per violation for all violations lasting beyond thirty (30) days.

1) Technical memorandum on modeling of Site characteristics.

2) Preliminary Site Characterization Summary.

3) Summary of RI data.

4) Identification of candidate technologies memorandum.

5) Treatability Testing Statement of Work.

6) Treatability Study Evaluation Report.

7) Memorandum on remedial action objectives.

8) Memoranda on development and preliminary screening of alternatives, assembled alternatives screening results, and final screening.

9) Comparative analysis report.

67. For the Monthly Progress Reports, stipulated penalties shall accrue in the amount of $200 per day, per violation, for the first week of noncompliance; $500 per day, per violation, for the 8th through 14th day of noncompliance; $1,000 per day, per violation, for the 15th day through the 30th day; and $2,000 per day, per violation, for all violations lasting beyond thirty (30) days.

68. Respondent may dispute EPA's right to the stated amount of penalties by invoking

the dispute resolution procedures under Section XVIII herein. Penalties shall accrue, but need not be paid, during the dispute resolution period. If Respondent do not prevail upon resolution, all penalties shall be due to EPA within thirty (30) days of resolution of the dispute. If Respondent prevails upon resolution, no penalties shall be paid.

69. In the event that EPA provides for corrections to be reflected in the next deliverable and does not require resubmission of that deliverable, stipulated penalties for that interim deliverable shall cease to accrue on the date of such decision by EPA.

70. The stipulated penalties provisions do not preclude EPA from pursuing any other remedies or sanctions which are available to EPA because of the Respondent's failure to comply with this AOC, including, but not limited to, conduct of all or part of the RI/FS by EPA. Payment of stipulated penalties does not alter Respondent's obligation to complete performance under this AOC.

XX. FORCE MAJEURE

71. "Force Majeure," for purposes of this AOC, is defined as any event arising from causes entirely beyond the control of the Respondent and of any entity controlled by Respondent, including their contractors and subcontractors, that delays the timely performance of any obligation under this AOC notwithstanding Respondent's best efforts to avoid the delay. The requirement that the Respondent exercise "best efforts to avoid the delay" includes using best efforts to anticipate any potential Force Majeure event and best efforts to address the effects of any potential Force Majeure event (1) as it is occurring, and (2) following the potential Force Majeure event, such that the delay is minimized to the greatest extent practicable. Examples of events that are not Force Majeure events include, but are not limited to, increased costs or expenses of any work to be performed under this Order or the financial difficulty of Respondent to perform such work.

72. If any event occurs or has occurred that may delay the performance of any obligation under this Order, whether or not caused by a Force Majeure event, Respondent shall notify, by telephone, the Remedial Project Manager or, in his or her absence, the Director of the

Environmental Cleanup Office, EPA Region 10, within forty-eight (48) hours of when the Respondent knew or should have known that the event might cause a delay. Within five (5) business days thereafter, Respondent shall provide, in writing, the reasons for the delay, the anticipated duration of the delay, all actions taken or to be taken to prevent or minimize the delay, a schedule for implementation of any measures to be taken to mitigate the effect of the delay, and a statement as to whether, in the opinion of Respondent, such event may cause or contribute to an endangerment to public health, welfare, or the environment. Respondent shall exercise best efforts to avoid or minimize any delay and any effects of a delay. Failure to comply with the above requirements shall preclude Respondent from asserting any claim of Force Majeure.

73. If EPA agrees that the delay or anticipated delay is attributable to Force Majeure, the time for performance of the obligations under this Order that are directly affected by the Force Majeure event shall be extended by agreement of the parties, pursuant to Section XXVII of this Order, for a period of time not to exceed the actual duration of the delay caused by the Force Majeure event. An extension of the time for performance of the obligation directly affected by the Force Majeure event shall not, of itself, extend the time for performance of any subsequent obligation.

74. If EPA does not agree that the delay or anticipated delay has been or will be caused by a Force Majeure event, or does not agree with Respondent on the length of the extension, the issue shall be subject to the dispute resolution procedures set forth in Section XVIII of this Order. In any such proceeding, to qualify for a Force Majeure defense, Respondent shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a Force Majeure event, that the duration of the delay was or will be warranted under the circumstances, that Respondent did exercise or is exercising due diligence by using its best efforts to avoid and mitigate the effects of the delay, and that Respondent complied with the requirements of Paragraph 72.

75. Should Respondent carry the burden set forth in Paragraph 74, the delay at issue shall be deemed not to be a violation of the affected obligation of this AOC.

XXI. REIMBURSEMENT OF PAST COSTS

76. Within fifteen (15) days of the effective date of this Order, Respondent shall remit a certified or cashiers check to EPA in the amount of $ 1,844,550, as previously demanded in the RI/FS Special Notice Letter, dated October 10, 2003, together with interest that has accrued thereon at the rate of interest specified for the Hazardous Substances Superfund under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), for all past response costs incurred by the United States in its conduct of assessment activities at the Site from March 22, 2000 to September 30, 2003.

77. Checks should be made payable to the Hazardous Substances Superfund and should include the name of the Site, the Site identification number, the operable unit, if any, the Regional Lock Box Number, account number, and the title of this Order. Checks should be forwarded to:

U.S. Environmental Protection Agency
Superfund Accounting
P.O. Box 360903M
Pittsburgh, Pennsylvania 15251

78. A copy of the check should be sent simultaneously to the EPA Project Coordinator.

XXII. REIMBURSEMENT OF RESPONSE AND OVERSIGHT COSTS

79. Following the issuance of this AOC, EPA shall submit to the Respondent on a periodic basis an accounting of all response costs including oversight costs incurred by the U.S. Government with respect to this RI/FS. Response costs may include, but are not limited to, costs incurred by the U.S. Government in overseeing Respondent's implementation of the requirements of this Order and activities performed by the government as part of the RI/FS and community relations, including any costs incurred while obtaining access. Costs shall include all direct and indirect costs, including, but not limited to, time and travel costs of EPA personnel and associated indirect costs, contractor costs, cooperative agreement costs, compliance monitoring, including the collection and analysis of split samples, inspection of RI/FS activities, Site visits, discussions regarding disputes that

may arise as a result of this AOC, review and approval or disapproval of reports, costs of performing the Baseline Risk Assessment, EPA's costs in preparing the Proposed Plan, the Record of Decision, and the Response to Comment, and costs of redoing any of Respondent's tasks. Any necessary summaries, including, but not limited to, EPA's certified Agency Financial Management System summary data (SPUR Reports), or such other summary as certified by EPA, shall serve as basis for payment demands.

80. Respondent shall, within thirty (30) days of receipt of each accounting, remit a certified or cashier's check for the amount of those costs. Interest shall accrue from the latter of: the date payment of a specified amount is demanded in writing; or the date of the expenditure. The interest rate is the rate of interest on investments for the Hazardous Substances Superfund in Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

81. Checks should be made payable to the Hazardous Substances Superfund and should include the name of the Site, the Site identification number, the account number and the title of this Order. Checks should be forwarded to:

U.S. Environmental Protection Agency
Superfund Accounting
P.O. Box 360903M
Pittsburgh, Pennsylvania 15251

82. Copies of the transmittal letter and check should be sent simultaneously to the EPA Project Coordinator.

83. Respondent agrees to limit any disputes concerning costs to accounting errors and the inclusion of costs outside the scope of this AOC. Any disputes regarding payment of costs shall be governed by the resolution procedures of Section XVIII of this Order. Respondent shall identify any contested costs and the basis of its objection. All undisputed costs shall be remitted by Respondent in accordance with the schedule set forth above. Disputed costs shall be paid by Respondent into an escrow account while the dispute is pending. Respondent bears the burden of establishing an EPA accounting error or the inclusion of costs outside the scope of this AOC.

XXIII. RESERVATIONS OF RIGHTS AND REIMBURSEMENT OF OTHER COSTS

84. EPA reserves the right to bring an action against the Respondent under Section 107 of CERCLA, 42 U.S.C. § 9607, for recovery of all response costs including oversight costs, incurred by the United States at the Site that are not reimbursed by the Respondent, any costs incurred in the event that EPA performs the RI/FS or any part thereof, and any future costs incurred by the United States in connection with response activities conducted under CERCLA at this Site.

85. EPA reserves the right to bring an action against Respondent to enforce the past costs and response and oversight cost reimbursement requirements of this AOC, to collect stipulated penalties assessed pursuant to Section XIX of this AOC, and to seek penalties pursuant to Section 109 of CERCLA, 42 U.S.C. § 9609.

86. Except as expressly provided in this Order, each party reserves all rights and defenses it may have. Nothing in this AOC shall affect EPA's removal authority or EPA's response or enforcement authorities including, but not limited to, the right to seek injunctive relief, stipulated penalties, statutory penalties, and/or punitive damages.

87. Following satisfaction of the requirements of this AOC, Respondent shall have resolved its liability to EPA for the work performed by Respondent pursuant to this AOC. Respondent is not released from liability, if any, for any response actions taken beyond the scope of this Order regarding removals, other operable units, remedial design/remedial action of this operable unit, or activities arising pursuant to Section 121(c) of CERCLA, 42 U.S.C. § 9621(c).

XXIV. DISCLAIMER

88. By signing this AOC and taking actions under this Order, the Respondent does not necessarily agree with EPA's Findings of Fact and Conclusions of Law. Furthermore, the participation of the Respondent in this Order shall not be considered an admission of liability and is not admissible in evidence against the Respondent in any judicial or administrative proceeding other than a proceeding by the United States, including EPA, to enforce this AOC or a judgment relating to

it. Respondent retains its rights to assert claims against other potentially responsible parties at the Site. However, the Respondent agrees not to contest the validity or terms of this Order, or the procedures underlying or relating to it in any action brought by the United States, including EPA, to enforce its terms.

XXV. NATURAL RESOURCE DAMAGE ASSESSMENT PROVISION

For the purposes of Section 113(g)(1) of CERCLA, the parties agree that, upon issuance of this AOC for performance of an RI/FS at the Site, remedial action under CERCLA shall be deemed to be scheduled and an action for damages (as defined in 42 U.S.C. § 9601(6) must be commenced within 3 years after the completion of the remedial action.

XXVI. OTHER CLAIMS

90. In entering into this Order, Respondent waives any right to seek reimbursement under Section 106(b) of CERCLA, 42 U.S.C. § 9696(b). Respondent also waives any right to present a claim under Section 111 or 112 of CERCLA, 42 U.S.C. §§ 9611 or 9612. This Order does not constitute any decision on preauthorization of funds under Section 111(a)(2) of CERCLA, 42 U.S.C. § 9611(a)(2). Respondent further waives all other statutory and common law claims against EPA, including, but not limited to, contribution and counterclaims, relating to or arising out of conduct of the RI/FS.

91. Nothing in this Order shall constitute or be construed as a release from any claim, cause of action, or demand in law or equity against any person, firm, partnership, subsidiary, or corporation not a signatory to this AOC for any liability it may have arising out of, or relating in any way to, the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous substances, pollutants, or contaminants found at, taken to, or taken from the Site.

92. Respondent shall bear its own costs and attorneys fees.

XXVII. FINANCIAL ASSURANCE, INSURANCE, AND INDEMNIFICATION

93. Respondent shall establish and maintain a financial instrument or trust account or other financial mechanism acceptable to EPA, funded sufficiently to perform the work and any other obligations required under this AOC, including a margin for cost overruns. Within fifteen (15) days after the effective date of this AOC, Respondent shall fund the financial instrument or trust account sufficiently to perform the work required under this AOC projected for the period beginning with the effective date of the Order through December 31, 2003. Beginning January 1, 2004, and on or before the 15th calendar day of each calendar year quarter thereafter, Respondent shall fund the financial instrument or trust account sufficiently to perform the work and other activities required under this Order projected for the succeeding calendar year quarter.

94. If at any time the net worth of the financial instrument or trust account is insufficient to perform the work and other obligations under the Order for the upcoming quarter, Respondent shall provide written notice to EPA within seven (7) days after the net worth of the financial instrument or trust account becomes insufficient. The written notice shall describe why the financial instrument or trust account is funded insufficiently and explain what actions have been or will be taken to fund the financial instrument or trust account adequately.

95. (a) Prior to commencement of any work under this Order, Respondent shall secure, and shall maintain in force for the duration of this Order, and for two (2) years after the completion of all activities required by this AOC, Comprehensive General Liability ("CGL") and automobile insurance, with limits of $ five (5) million dollars, combined single limit, naming as insured the United States. The CGL insurance shall include Contractual Liability Insurance in the amount of $ 1 million per occurrence, and Umbrella Liability Insurance in the amount of $ 2 million per occurrence.

(b) Respondent shall also secure, and maintain in force for the duration of this Order and for two (2) years after the completion of all activities required by this AOC the following:

i. Professional Errors and Omissions Insurance in the amount of $ 1,000,000.00 per occurrence.

ii. Pollution Liability Insurance in the amount of $ 1,000,000.00 per occurrence, covering as appropriate both general liability and professional liability arising from pollution conditions.

(c) For the duration of this Order, Respondent shall satisfy, or shall ensure that their contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of employer's liability insurance and workmen's compensation insurance for all persons performing work on behalf of the Respondent, in furtherance of this Order.

(d) If Respondent demonstrates by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering the same risks but in a lesser amount, then with respect to that contractor or subcontractor Respondent need provide only that portion of the insurance described above which is not maintained by the contractor or subcontractor.

(e) Prior to commencement of any work under this Order, and annually thereafter on the anniversary of the effective date of this Order, Respondent shall provide to EPA certificates of such insurance and a copy of each insurance policy.

95. At least seven (7) days prior to commencing any work under this AOC, Respondent shall certify to EPA that the required insurance has been obtained by that contractor.

96. The Respondent agrees to indemnify and hold the United States Government, its agencies, departments, agents, and employees harmless from any and all claims or causes of action arising from or on account of acts or omissions of Respondent, its employees, agents, servants, receivers, successors, or assignees, or any persons including, but not limited to, firms, corporations, subsidiaries, and contractors, in carrying out activities under this AOC. The United States Government or any agency or authorized representative thereof shall not be held as a party to any contract entered into by Respondent in carrying out activities under this AOC.

XXVIII. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION

97. The effective date of this AOC shall be the date it is signed by EPA.

98. This AOC may be amended by mutual agreement of EPA and Respondent. Amendments shall be in writing and shall be effective when signed by EPA. EPA Project Coordinators do not have the authority to sign amendments to the AOC.

99. No informal advice, guidance, suggestions, or comments by EPA regarding reports, plans, specifications, schedules, and any other writing submitted by the Respondent will be construed as relieving the Respondent of its obligation to obtain such formal approval as may be required by this Order. Any deliverables, plans, technical memoranda, reports (other than progress reports), specifications, schedules, and attachments required by this AOC are, upon approval by EPA, incorporated into this Order.

XXVIX. TERMINATION AND SATISFACTION

100. This AOC shall terminate when the Respondent demonstrates, in writing, and certifies to the satisfaction of EPA that all activities required under this AOC, including any additional work, payment of past costs, response and oversight costs, and any stipulated penalties demanded by EPA, have been performed and EPA has approved the certification. This notice shall not, however, terminate Respondent's obligation to comply with Sections XVII, XXI, and XXII of this AOC.

101. The certification shall be signed by a responsible official representing the Respondent. The representative shall make the following attestation: "I certify that the information contained in or accompanying this certification is true, accurate, and complete." For purposes of this AOC, a responsible official is a corporate official who is in charge of a principal business function.

BY:_____ DATE:_____

(Respondent) Title

BY: David Croxton DATE: 10/10/03

David Croxton, Unit Manager, Office of Environmental Cleanup

U.S. Environmental Protection Agency

STATEMENT OF WORK FOR
REMEDIAL INVESTIGATIONS AND FEASIBILITY STUDIES
UPPER COLUMBIA RIVER SITE

INTRODUCTION

The Purpose of this Remedial Investigation/Feasibility Study (RI/FS) is to investigate the nature and extent of contamination at the Upper Columbia River site, provide information for EPA to perform the baseline risk assessment for human health and the environment and develop and evaluate potential remedial alternatives. The RI and FS are interactive and may be conducted concurrently so that the data collected in the RI influences the development of remedial alternatives in the FS, which in turn affects the data needs and the scope of treatability studies.

The respondent will conduct this RI/FS except for the baseline risk assessment component and will produce a draft RI and FS report that are in accordance with this statement of work, the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (U.S. EPA, Office of Emergency and Remedial Response, October 1988), and any other guidance that EPA uses in conducting an RI/FS (a list of the primary guidance is attached), as well as any additional requirements in the administrative order. The RI/FS Guidance describes the report format and the required report content. The respondent will furnish all necessary personnel, materials, and services needed, or incidental to, performing the RI/FS, except as otherwise specified in the administrative order.

At the completion of the RI/FS, EPA will be responsible for the selection of a site remedy and will document this selection in a Record of Decision (ROD). The remedial action alternative selected by EPA will meet the cleanup standards specified in Section 121 of CERCLA. That is, the selected remedial action will be protective of human health and the environment, will be in compliance with, or include a waiver of, applicable or relevant and appropriate requirements of other laws, will be cost-effective, will utilize permanent solutions and alternative treatment technologies or resource recovery technologies, to the maximum extent practicable, and will address the statutory preference for treatment as a principal element. The final RI/FS report, as adopted by EPA, and EPA's baseline risk assessment will, with the administrative record, form the basis for the selection of the site's remedy and will provide the information necessary to support the development of the ROD.

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

TASK 1 - SCOPING

Scoping is the initial planning process of the RI/FS and is initiated by EPA prior to issuing special notice. During this time, the site-specific objectives of the RI/FS, including the preliminary remediation goals (PRGs), are determined by EPA. Scoping is therefore initiated prior to negotiations between the PRPs and EPA, and is continued, repeated as necessary, and refined throughout the RI/FS process. In addition to developing the site-specific objectives of the RI/FS, EPA will determine a general management approach for the site. Consistent with the general management approach, the specific project scope will be planned by the respondent and EPA. The respondent will document the specific project scope in a work plan. Because the work required to perform an RI/FS is not fully known at the onset, and is phased in accordance with a site's complexity and the amount of available information, it may be necessary to modify the work plan during the RI/FS to satisfy the objectives of the study.

When scoping the specific aspects of a project, the respondent must meet with EPA to discuss all project planning decisions and special concerns associated with the site. The following activities shall be performed by the respondent as a function of the project planning process.

a. Site Background

The respondent will gather and analyze the existing site background information and will conduct a site visit to assist in planning the scope of the RI/FS.

Collect and analyze existing data and document the need for additional data

Before planning RI/FS activities, all existing site data will be thoroughly compiled and reviewed by the respondent. Specifically, this will include presently available data relating to the varieties and quantities of hazardous substances at the site, and past disposal practices. This will also include results from any previous sampling events that may have been conducted. The respondent will refer to Table 2-1 of the RI/FS Guidance for a comprehensive list of data collection information sources. This information will be utilized in determining additional data needed to characterize the site, better define potential applicable or relevant and appropriate requirements (ARARs), and develop a range of preliminarily identified remedial alternatives. Data Quality Objectives (DQOs) will be established subject to EPA approval which specify the usefulness of existing data. Decisions on the necessary data and DQOs will be made by EPA.

Conduct Site Visit

The respondent will conduct a site visit during the project scoping phase to assist in developing a conceptual understanding of sources and areas of contamination as well as potential exposure pathways and receptors at the site. During the site visit the respondent should observe the sit's physiography, hydrology, geology, and demographics, as well as

natural resource, ecological, and cultural features. This information will be utilized to better scope the project and to determine the extent of additional data necessary to characterize the site, better define potential ARARs, and narrow the range of preliminarily identified remedial alternatives.

b. Project Planning

Once the respondent has collected and analyzed existing data and conducted a site visit, the specific project scope will be planned. Project planning activities include those tasks described below, as well as identifying data needs, developing a work plan, designing a data collection program, and identifying health and safety protocols. The respondent will meet with EPA regarding the following activities and before the drafting of the scoping deliverables below. These tasks are described in Section c of this task since they result in the development of specific required deliverables.

Refine and document preliminary remedial action objectives and alternatives

Once existing site information has been analyzed and an understanding of the potential site risks has been determined by EPA, the respondent will review and, if necessary, refine the remedial action objectives that have been identified by EPA for each actually or potentially contaminated medium. The revised remedial action objectives will be documented in a technical memorandum and subject to EPA approval. The respondent will then identify a preliminary range of broadly defined potential remedial action alternatives and associated technologies. The range of potential alternatives should encompass, where appropriate, alternatives in which treatment significantly reduces the toxicity, mobility, or volume of the waste; alternatives that involve containment with little or no treatment; and a no-action alternative.

Document the need for treatability studies

If remedial actions involving treatment have been identified by the respondent or EPA, treatability studies will be required, except where the respondent can demonstrate to EPA's satisfaction that they are not needed. Where treatability studies are needed, initial treatability testing activities (such as research and study design) will be planned to occur concurrently with site characterization activities (see Tasks 3 and 5).

Begin preliminary identification of potential ARARs

The respondent will conduct a preliminary identification of potential state and federal ARARs (chemical-specific, location-specific, and action specific) to assist in the refinement of remedial action objectives, and the initial identification of remedial alternatives and ARARs associated with particular actions. ARAR identification will continue as site conditions, contaminants, and remedial action alternatives are better defined.

c. Scoping Deliverables

At the conclusion of the project planning phase, the respondent will submit an RI/FS work plan, a sampling and analysis plan, and a site health and safety plan. The RI/FS work plan and sampling and analysis plan must be reviewed and approved by EPA prior to the initiation of field activities.

RI/FS Work Plan

A work plan documenting the decisions and evaluations completed during the scoping process will be submitted to EPA for review and approval. The work plan should be developed in conjunction with the sampling and analysis plan and the site health and safety plan, although each plan may be delivered under separate cover. The work plan will include a comprehensive description of the work to be performed, including the methodologies to be utilized, as well as a corresponding schedule for completion. in addition, the work plan must include the rationale for performing the required activities. Specifically, the work plan will present a statement of the problem(s) and potential problem(s) posed by the site and the objectives of the RI/FS. Furthermore, the plan will include a site background summary setting forth the site description including the geographic location of the site, and to the extent possible, a description of the site's physiography, hydrology, geology, demographics, ecological, cultural, and natural resource features; a synopsis of the site history and a description of previous responses that have been conducted at the site by local, state, federal, or private parties; a summary of the existing data in terms of physical and chemical characteristics of the contaminants identified, and their distribution among the environmental media at the site. The plan will recognize EPA's preparation of the baseline risk assessment. In addition, the plan will include a description of the site management strategy developed by EPA during scoping; a preliminary identification of remedial alternatives and data needs for evaluation of remedial alternatives. The plan will reflect coordination with treatability study requirements (see Tasks 1 and 4). It will include a process for and manner of identifying federal and state ARARs (chemical-specific, location-specific, and action-specific).

Finally, the major part of the work plan is a detailed description of the tasks to be performed, information needed for each task and for EPA's baseline risk assessment, information to be produced during and at the conclusion of each task, and a description of the work products that will be submitted to EPA. This includes the deliverables set forth in the remainder of this statement of work; a schedule for each of the required activities which is consistent with the RI/FS guidance; and a project management plan, including a data management plan (e.g., requirements for project management systems and software, minimum data requirements, data format and backup data management), monthly reports to EPA and meetings and presentations to EPA at the conclusion of each major phase of the RI/FS. The respondent will refer to Appendix B of the RI/FS Guidance for a comprehensive description of the contents of the required work plan.

Because of the unknown nature of the site and iterative nature of the RI/FS, additional data requirements and analyses may be identified throughout the process. The respondent will submit a technical memorandum documenting the need for additional data, and identifying the DQOs whenever such requirements are identified. In any event, the respondent is responsible for fulfilling additional data and analysis needs identified by EPA consistent with the general scope and objectives of this RI/FS.

Sampling and Analysis Plan

The respondent will prepare a sampling and analysis plan (SAP) to ensure that sample collection and analytical activities are conducted in accordance with technically acceptable protocols and that the data meet 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 FSP will define in detail the sampling and data-gathering methods that will be used on the project. It will include sampling objectives, sample location and frequency, sampling equipment and procedures, and sample handling and analysis. The QAPP will describe the project objectives and organization, functional activities, and quality assurance and quality control (QA/QC) protocols that will be used to achieve the desired DQOs. The DQOs will, at a minimum, reflect use of analytic methods to identify contamination and remediate contamination consistent with the levels for remedial action objectives identified in the proposed National Oil and Hazardous Substances Pollution Contingency Plan (NCP), pages 51425-26 and 51433 (December 21, 1988). In addition, the QAPP will address sampling procedures, sample custody, analytical procedures, and data reduction, validation, reporting, and personnel qualifications. Field personnel should be available for EPA QA/QC training and orientation where applicable. The respondent will demonstrate, in advance and to EPA's satisfaction, that each laboratory it may use is qualified to conduct the proposed work. This includes use of methods and analytical protocols for the chemicals of concern in the media of interest within detection and quantification limits consistent with both QA/QC procedures and DQOs approved in the QAPP for the site by EPA. The laboratory must have and follow an approve QA program. If a laboratory not in the Contract Laboratory Program (CLP) is selected, methods consistent with CLP methods that would be used at this site for the purposes proposed and QA/QC procedures approved by EPA will be used. If the laboratory is not in the CLP program, a laboratory QA program must be submitted for EPA review and approval. EPA may require that the respondent submit detailed information to demonstrate that the laboratory is qualified to conduct the work, including information on personnel qualifications, equipment, and material specifications. The respondent will provide assurances that EPA has access to laboratory personnel, equipment, and records for sample, collection, transportation, and analysis.

Site Health and Safety Plan

A health and safety plan will be prepared in conformance with the respondent's health and safety program, and in compliance with OSHA regulations and protocols. The health and safety plan will include the eleven (11) elements described in the RI/FS Guidance, such as a health and safety risk analysis, a description of monitoring and personal protective equipment, medical monitoring, and site control. It should be noted that EPA does not "approve" the respondent's health and safety plan, but rather EPA reviews it to ensure that all necessary elements are included, and that the plan provides for the protection of human health and the environment.

TASK 2 - COMMUNITY RELATIONS

The development and implementation of community relations activities are the responsibility of EPA. The critical community relations planning steps performed by EPA include conducting community interviews and developing a community relations plan. Although implementation of the community relations plan is the responsibility of EPA, the respondent may assist by providing information regarding the site's history, participating in public meetings, or by preparing fact sheets for distribution to the general public. Two or more baseline risk assessment memoranda will be prepared by EPA which will summarize the toxicity assessment and exposure assessment components of the baseline risk assessment. EPA will make these memoranda available to all interested parties for comment and place them in the Administrative Record. (EPA is not required, however, to formally respond to significant comments except during the formal public comment period on the proposed plan.) In addition, the respondent may establish a community information repository, at or near the site, to house one copy of the administrative record. The extent of PRP involvement in community relations activities is left to the discretion of EPA. The respondents' community relations responsibilities, if any, are specified in the community relations plan. All PRP-conducted community relations activities will be subject to oversight by EPA.

TASK 3 - SITE CHARACTERIZATION

As part of the RI, the respondent will perform the activities described in this task, including the preparation of a site characterization summary and a RI report. The overall objective of site characterization is to describe areas of a site that may pose a threat to human health or the environment. This is accomplished by first determining a site's physiography, geology, and hydrology. Surface and subsurface pathways of migration will be defined. The respondent will identify the sources of contamination and define the nature, extent, and volume of the sources of contamination, including their physical and chemical constituents as well as their concentrations at incremental locations to background in the affected media. The respondent will also investigate the extent of migration of this contamination as well as its volume and any changes in its physical or chemical characteristics, to provide for a

comprehensive understanding of the nature and extent of contamination at the site. Using this information, contaminant fate and transport is then determined and projected.

During this phase of the RI/FS, the work plan, SAP, and health and safety plan are implemented. Field data are collected and analyzed to provide the information required to accomplish the objectives of the study. The respondent will notify EPA at least two weeks in advance of the field work regarding the planned dates for field activities, including ecological field surveys, field layout of the sampling grid, excavation, installation of wells, initiating sampling, installation, and calibration of equipment, pump tests, and initiation of analysis and other field investigation activities. The respondent will demonstrate that the laboratory and type of laboratory analyses that will be utilized during site characterization meets the specific QA/QC requirements and the DQOs of the site investigation as specified in the SAP. In view of the unknown site conditions, activities are often iterative, and to satisfy the objectives of the RI/FS it may be necessary for the respondent to supplement the work specified in the initial work plan. In addition to the deliverables below, the respondent will provide a monthly progress report and participate in meetings at major points in the RI/FS.

a. Field Investigation

The field investigation includes the gathering of data to define site physical and biological characteristics, sources of contamination, and the nature and extent of contamination at the site. These activities will be performed by the respondent in accordance with the work plan and SAP. At a minimum, this shall address the following:

<u>Implement and document field support activities</u>

The respondent will initiate field support activities following approval of the work plan and SAP. Field support activities may include obtaining access to the site, scheduling, and procuring equipment, office space, laboratory services, and/or contractors. The respondent will notify EPA at least two weeks prior to initiating field support activities so that EPA may adequately schedule oversight tasks. The respondent will also notify EPA, in writing, upon completion of field support activities.

<u>Investigate and define site physical and biological characteristics</u>

The respondent will collect data on the physical and biological characteristics of the site and its surrounding areas, including the physiography, geology, and hydrology, and specific physical characteristics identified in the work plan. This information will be ascertained through a combination of physical measurements, observations, and sampling efforts, and will be utilized to define potential transport pathways and human and ecological receptor populations. In defining the site's physical characteristics the respondent will also obtain sufficient engineering data (such as river/reservoir characteristics) for the projection of contaminant fate and transport, and development and

screening of remedial action alternatives, including information to assess treatment technologies.

Define sources of contamination

The respondent will locate each source of contamination. For each location, the areal extent and depth of contamination will be determined by sampling at incremental depths on a sampling grid. The physical characteristics and chemical constituents and their concentrations will be determined for all known and discovered sources of contamination. The respondent shall conduct sufficient sampling to define the boundaries of the contaminant sources to the level established in the QA/QC plan and DQOs.

Defining the source of contamination will include analyzing the potential for contaminant release (e.g., long term leaching from soil), contaminant mobility and persistence, and characteristics important for evaluating remedial actions, including information to assess treatment technologies.

Describe the nature and extent of contamination

The respondent will gather information to describe the nature and extent of contamination as a final step during the field investigation. To describe the nature and extent of contamination, the respondent will utilize the information and site physical and biological characteristics and sources of contamination to give a preliminary estimate of the contaminants that may have migrated. The respondent will then implement an iterative monitoring program and any study program identified in the work plan or SAP such that by using analytical techniques sufficient to detect and quantify the concentration of contaminants, the migration of contaminants through the various media at the site can be determined. In addition, the respondent will gather data for calculations of contaminant fate and transport. This process is continued until the area and depth of contamination are known to the level of contamination established in the QA/QC plan and DQOs. EPA will use the information on the nature and extent of contamination to determine the level of risk presented by the site. Respondent will use this information to help to determine aspects of the appropriate remedial action alternatives to be evaluated.

b. Data Analyses

Evaluate site characteristics

The respondent will analyze and evaluate the data to describe: (1) site physical and biological characteristics; (2) contaminant source characteristics; (3) nature and extent of contamination; and (4) contaminant fate and transport. Results of the site physical characteristics, source characteristics, and extent of contamination analyses are utilized in the analysis of contaminant fate and transport. The evaluation will include the actual and

potential magnitude of releases from the sources, and horizontal and vertical spread of contamination as well as mobility and persistence of contaminants. Where modeling is appropriate, such models shall be identified to EPA in a technical memorandum prior to their use. All data and programming, including any proprietary programs, shall be made available to EPA together with a sensitivity analysis. The RI data shall be presented in a format (i.e., computer disc or equivalent) to facilitate EPA's preparation of the baseline risk assessment. The Respondent shall agree to discuss and then collect any data gaps identified by EPA that is needed to complete the baseline risk assessment. (See "Guidance for Data Usability in Risk Assessment - OSWER Directive # 9285.7-05 - October 1990.) Also, this evaluation shall provide any information relevant to site characteristics necessary for evaluation of the need for remedial action in the baseline risk assessment and for the development and evaluation of remedial alternatives. Analyses of data collected for site characterization will meet the DQOs developed in the QA/QC plan stated in the SAP (or revised during the RI).

c. Data Management Procedures

The respondent will consistently document the quality and validity of field and laboratory data compiled during the RI.

Document field activities

Information gathered during site characterization will be consistently documented and adequately recorded by the respondent in well-maintained field logs and laboratory reports. The method(s) of documentation must be specified in the work plan and/or the SAP. Field logs must be utilized to document observations, measurements, and significant events that have occurred during field activities. Laboratory reports must document sample custody, analytical responsibility, analytical results, adherence to prescribed protocols, nonconformity events, corrective measures, and/or data deficiencies.

Maintain sample management and tracking

The respondent will maintain field reports, sample shipment records, analytical results, and QA/QC reports to ensure that only validated analytical data are reported and utilized in the development and evaluation of remedial alternatives. Analytical results developed under the work plan will not be included in any site characterization reports unless accompanied by or cross-referenced to a corresponding QA/QC report. In addition, the respondent will establish a data security system to safeguard chain-of-custody forms and other project records to prevent loss, damage, or alteration of project documentation.

d. Site Characterization Deliverables

The respondent will prepare the preliminary site characterization summary and once the baseline risk assessment (Task 4) is complete, the remedial investigation report.

Preliminary Site Characterization Summary

After completing field sampling and analysis, the respondent will prepare a concise site characterization summary. This summary will review the investigative activities that have taken place, and describe and display site data documenting the location and characteristics of surface and subsurface features and contamination at the site, including the affected medium, location, types, physical state, concentration of contaminants and quantity. In addition, the location, dimensions, physical condition and varying concentrations of each contaminant throughout each source, and the extent of contaminant migration through each of the affected media will be documented. The site characterization summary will provide EPA with a preliminary reference for developing the risk assessment, and evaluating the development and screening of remedial alternatives, and the refinement and identification of ARARs.

Remedial Investigation (RI) Report

The respondent will prepare and submit a draft RI report to EPA for review and approval. after completion of the baseline risk assessment (see Task 4). This report shall summarize results of field activities to characterize the site, sources of contamination, nature and extent of contamination, and the fate and transport of contaminants. The respondent will refer to the RI/FS Guidance for an outline of the report format and contents. Following comment by EPA, the respondent will prepare a final RI report which satisfactorily addresses EPA's comments.

TASK 4 - TREATABILITY STUDIES

Treatability testing will be performed by the respondent to assist in the detailed analysis of alternatives. In addition, if applicable, testing results and operating conditions will be used in the detailed design of the selected remedial technology. The following activities will be performed by the respondent.

a. Determination of Candidate Technologies and of the Need for Testing

The respondent will identify in a technical memorandum, subject to EPA review and approval, candidate technologies for a treatability studies program during project planning (Task 1). The listing of candidate technologies will cover the range of technologies required for alternatives analysis (Task 6.a.) The specific data requirements for the testing program will be determined and refined during site characterization and the development and screening of remedial alternatives (Tasks 2 and 6, respectively).

Conduct literature survey and determine the need for treatability testing

The respondent will conduct a literature survey to gather information of performance, relative costs, applicability, removal efficiencies, operation and maintenance (O&M) requirements, and implementability of candidate technologies. If practical candidate technologies have not been sufficiently demonstrated, or cannot be adequately evaluated for this site on the basis of available information, treatability testing will be conducted. Where it is determined by EPA that treatability testing is required, and unless the respondent can demonstrate to EPA's satisfaction that they are not needed, the respondent will submit a statement of work to EPA outlining the steps and data necessary to evaluate and initiate the treatability testing program.

Evaluation treatability studies

Once a decision has been made to perform treatability studies, the respondent and EPA will decide on the type of treatability testing to use (e.g., bench versus pilot). Because of the time required to design, fabricate, and install pilot scale equipment as well as perform testing for various operating conditions, the decision to perform pilot testing should be made as early in the process as possible to minimize potential delays of the FS. To assure that a treatability testing program is completed on time, and with accurate results, the respondent will either submit a separate treatability testing work plan or an amendment to the original site work plan for EPA review and approval.

b. Treatability Testing and Deliverables

The deliverables that are required, in addition to the memorandum identifying candidate technologies, where treatability testing is conducted, include a work plan, a sampling and analysis plan, and a final treatability evaluation report. EPA may also require a treatability study health and safety plan, where appropriate.

Treatability testing work plan

The respondent will prepare a treatability testing work plan or amendment to the original site work plan for EPA review and approval describing the site background, remedial technology(ies) to be tested, test objectives, experimental procedures, treatability conditions to be tested, measurements of performance, analytical methods, data management and analysis, health and safety, and residual waste management. The DQOs for treatability testing should be documented as well. If pilot scale treatability testing is to be performed, the pilot scale work plan will describe pilot plant installation and start-up, pilot plant operation and maintenance procedures, operating conditions to be tested, a

sampling plan to determine pilot plant performance, and a detailed health and safety plan. If testing is to be performed off-site, permitting requirements will be addressed.

Treatability study SAP

If the original QAPP or FSP is not adequate for defining the activities to be performed during the treatability tests, a separate treatability study SAP or amendment to the original site SAP will be prepared by the respondent for EPA review and approval. Task 1, Item c. of this statement of work provides additional information on the requirements of the SAP.

Treatability study health and safety plan

If the original health and safety plan is not adequate for defining the activities to be performed during the treatment tests, a separate or amended health and safety plan will be developed by the respondent. Task 1, Item c, of this statement of work provides additional information on the requirements of the health and safety plan. EPA does not "approve" the treatability study health and safety plan.

Treatability study evaluation report

Following completion of treatability testing, the respondent will analyze and interpret the testing results in a technical report to EPA. Depending on the sequence of activities, this report may be a part of the RI/FS report or a separate deliverable. The report will evaluate each technology's effectiveness, implementability, cost, and actual results as compared with predicted results. The report will also evaluate full scale application of the technology, including a sensitivity analysis identifying the key parameters affecting full-scale operation.

TASK 5 - DEVELOPMENT AND SCREENING OF REMEDIAL ALTERNATIVES

The development and screening of remedial alternatives is performed to develop an appropriate range of waste management options that will be evaluated. This range of alternatives should include, as appropriate, options in which treatment is used to reduce the toxicity, mobility, or volume of wastes, but varying in the types of treatment, the amount treated, and the manner in which long-term residuals or untreated wastes are managed; options involving containment with little or no treatment; options involving both treatment and containment; and a no-action alternative. The following activities will be performed by the respondent as a function of the development and screening of remedial alternatives.

a. Development and Screening of Remedial Alternatives

The respondent will begin to develop and evaluate a range of appropriate waste management options that, at a minimum, ensure protection of human health and the environment, concurrent with the RI site characterization task.

Refine and document remedial action objectives

Based on EPA's baseline risk assessment, the respondent will review and, if necessary, modify the site-specific remedial action objectives, specifically the PRG. The revised PRGs will be documented in a technical memorandum that will be reviewed and approved by EPA. These modified PRGs will specify the contaminants and media of interest, exposure pathways and receptors, and an acceptable contaminant level or range of levels (at particular locations for each exposure route).

Develop general response actions

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

Identify areas or volumes of media

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

Identify, screen, and document remedial technologies

The respondent will identify and evaluate technologies applicable to each general response action to eliminate those that cannot be implemented at the site. General response actions will be refined to specify remedial technology types. Technology process options for each of the technology types will be identified either concurrent with the identification of technology types, or following the screening of the considered technology types. Process options will be evaluated on the basis of effectiveness, implementability, and cost factors to select and retain one or, if necessary, more representative processes for each technology type. The technology types and process options will be summarized for inclusion in a technical memorandum. The reasons for eliminating alternatives must be specified.

Assemble and document alternatives

The respondent will assemble selected representative technologies into alternatives for each affected medium or operable unit. Together, all of the alternatives will represent a range of treatment and containment combinations that will address either the site or the

operable unit as a whole. A summary of the assembled alternatives and their related action-specific ARARs will be prepared by the respondent for inclusion in a technical memorandum. The reasons for eliminating alternatives during the preliminary screening process must be specified.

Refine alternatives

The respondent will refine the remedial alternatives to identify contaminant volume addressed by the proposed process and sizing of critical unit operations as necessary. Sufficient information will be collected for an adequate comparison of alternatives. PRGs for each chemical in each medium will also be modified as necessary to incorporate any new risk assessment information presented in EPA's baseline risk assessment information presented in EPA's baseline risk assessment report. Additionally, action-specific ARARs will be updated as the remedial alternatives are refined.

Conduct and document screening evaluation of each alternative

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

b. Alternatives Development and Screening Deliverables

The respondent will prepare a technical memorandum summarizing the work performed in and the results of each task above, including an alternatives array summary. These will be modified by the respondent if required by EPA's comments to assure identification of a complete and appropriate range of viable alternatives to be considered in the detailed analysis. This deliverable will document the methods, rationale, and results of the alternatives screening process.

TASK 6 - DETAILED ANALYSIS OF REMEDIAL ALTERNATIVES

The detailed analysis will be conducted by the respondent to provide EPA with the information needed to allow for the selection of a site remedy. This analysis is the final task to be performed by the respondent during the FS.

a. Detailed Analysis of Alternatives

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

Apply nine criteria and document analysis

The respondent will apply nine evaluation criteria to the assembled remedial alternatives to ensure that the selected remedial alternative will be protective of human health and the environment; will be in compliance with, or include a waiver of, ARARs; will be cost-effective; will utilize permanent solutions and alternative treatment technologies, or resource recovery technologies, to the maximum extent practicable; and will address the statutory preference for treatment as a principal element. The evaluation criteria include: (1) overall protection of human health and the environment; (2) compliance with ARARs; (3) long-term effectiveness and permanence; (4) reduction of toxicity, mobility, or volume; (5) short-term effectiveness; (6) implementability; (7) costs; (8) state (or support agency) acceptance; and (9) community acceptance. (Note: Criteria 8 and 9 are considered after the RI/FS report has been released to the general public.) For each alternative, the respondent should provide: (1) a description of the alternative that outlines the waste management strategy involved and identifies the key ARARs associated with each alternative; and (2) a discussion of the individual criterion assessment. If the respondent does not have direct input on Criteria 8 state (or support agency) acceptance and (9) community acceptance, these will be addressed by EPA.

Compare alternatives against each other and document the comparison of alternatives

The respondent will perform a comparative analysis between the remedial alternatives. That is, each alternative will be compared against the others using the evaluation criteria as a basis of comparison. Identification and selection of the preferred alternative are reserved by EPA. The respondent will prepare a technical memorandum summarizing the results of the comparative analysis.

b. Detailed Analysis Deliverables

In addition to the technical memorandum summarizing the results of the comparative analysis, the respondent will submit a draft FS report to EPA for review and approval. Once

EPA's comments have been addressed by the respondent to EPA's satisfaction, the final FS report may be bound with the final RI report.

Feasibility study report

The respondent will prepare a draft FS report for EPA review and comment. This report, as ultimately adopted or amended by EPA, provides a basis for remedy selection by EPA and documents the development and analysis of remedial alternatives. The respondent will refer to the RI/FS Guidance for an outline of the report format and the required report content. The respondent will prepare a final FS report which satisfactorily addresses EPA's comments.

REFERENCES FOR CITATION

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

The (revised) National Oil and Hazardous Substance Pollution Contingency Plan (NCP).

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

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

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

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

"EPA NEIC Policies and Procedures Manual", May 1978, revised November 1984, EPA-330/9-78-991-R.

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

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

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

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

"Interim Guidance on Compliance with Applicable or Relevant and Appropriate Requirements", U.S. EPA, Office of Emergency and Remedial 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 Remedial Response, August 1988 (draft), OSWER Directive No. 9234.1-01 and -02.

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

"Draft Guidance on Preparing Superfund Decision Documents", U.S. EPA, Office of Emergency and Remedial 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.

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

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

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

"Health and Safety Requirements of Employees Employed in Field Activities", U.S. EPA, Office of Emergency and Remedial 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, 19889, OSWER Directive No. 9833.3A.

"Community Relations in Superfund: A Handbook", U.S. EPA, Office of Emergency and Remedial Response, June 1988, OSWER Directive No. 9320.0-03B.

"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.