UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 10

IN THE MATTER OF:	)	
	)	ADMINISTRATIVE ORDER
BP EXPLORATION (ALASKA) INC.,	)	ON CONSENT
PRUDHOE BAY, ALASKA 99744	)	
# AKD 00064 3239	)	
	)	
	)	EPA Docket No.: RCRA-10-2007-0222
Respondent	)	
	)	
Proceeding under Section	)	
3008(h) of the Resource	)	
Conservation and Recovery Act,	)	
as amended, 42 U.S.C. §6928(h)		

ADMINISTRATIVE ORDER ON CONSENT

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I. JURISDICTION

1. This Administrative Order on Consent (Order) is issued pursuant to the authority vested in the Administrator of the United States Environmental Protection Agency (EPA) by Section 3008(h) of the Solid Waste Disposal Act, commonly referred to as the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C. §6928(h). The authority vested in the Administrator to issue orders under Section 3008(h) of RCRA has been delegated to the Regional Administrators by EPA Delegation Nos. 8-31 and 8-32 dated April 16, 1985 (as revised on March 6, 1986), and further delegated by the Regional Administrator for Region 10 to the Director, Office of Air, Waste and Toxics by EPA Delegation No. R10 8-32 dated May 28, 2004.

2. This Order is issued to BP Exploration (Alaska) Inc. (BPXA or "Respondent"), as the operator of the Prudhoe Bay facility located on the North Slope of Alaska, 250 miles north of the Arctic Circle, 175 miles west of the Alaska-Canada border, and 1,300 miles south of the true North Pole (see Attachment A).

3. For the purpose of this Order, or any subsequent order agreed to by the parties to implement corrective actions at the Site pursuant to RCRA Section 3008(h), 42 U.S.C. § 6928(h), Respondent consents to and agrees not to contest EPA's jurisdiction to issue this Order or enforce its terms. Further, Respondent will not contest EPA's jurisdiction to: compel compliance with this Order in any subsequent enforcement proceedings, either administrative or judicial; require Respondent's full or interim compliance with the terms of this Order; or impose sanctions for Violations of this Order.

II. DEFINITIONS

4. Unless otherwise expressly provided herein, terms used in this Order which are defined in RCRA or in regulations promulgated under RCRA shall have the meaning assigned to them under RCRA or regulations promulgated thereunder. Whenever the following terms are used in this Order, the definitions specified hereinafter shall apply:

(a)Administrative Record shall mean the record compiled and maintained by EPA relative to this Order.

(b)Area of Concern, or AOC, shall mean any area of the Site where a release to the environment of hazardous waste or hazardous constituents has occurred, is suspected to have occurred, or may occur, regardless of the frequency or duration of the release.

(c)Contractor shall include any subcontractor, consultant, or laboratory retained to conduct or monitor any portion of the Work performed pursuant to this Order.

(d)Corrective Measure shall mean any EPA-selected measure or actions to control, prevent, or mitigate the release or potential release of hazardous wastes and/or hazardous constituents into the environment at or from the Site.

(e)Corrective Measures Implementation, or CMI, shall mean those activities necessary to initiate, complete, monitor, and maintain the remedies EPA has selected or may select to protect human health and/or the environment from the release or potential release of hazardous waste and/or hazardous constituents into the environment at or from the Site.

(f)Corrective Measures Study, or CMS, shall mean the investigation and evaluation of potential remedies which will protect human health and/or the environment from the release or potential release of hazardous waste and/or hazardous constituents into the environment at or from the Site.

(g)Data Quality Objectives shall mean qualitative and quantitative statements designed to ensure that data of known and appropriate quality are obtained.

(h)Day shall always mean a calendar day. In computing any period of time under this Order, if the last day falls on a Saturday, Sunday, or Federal Holiday, the period shall run until the end of the next day which is not a Saturday, Sunday, or Federal Holiday.

(i)EPA shall mean the United States Environmental Protection Agency, and any successor departments or agencies in the United States (U.S.).

(j)Innovative Treatment Technologies shall mean those technologies for treatment of soil, sediment, sludge, or debris other than incineration or solidification/stabilization and those technologies for treatment of suprapermafrost groundwater contamination that are alternatives to pump and treat.

(k)Interim Measures, or IM, shall mean those actions initiated in advance of implementation of final Corrective Measures to control or abate immediate threats to human health and/or the environment and to prevent or minimize the potential release or spread of hazardous waste and/or hazardous constituents into the environment at or from the Site, while long-term Corrective Measures alternatives are evaluated.

(l)Order shall mean the text of this Order and all attachments to this Order, all EPA–approved submittals required by this Order and all modifications to any of the foregoing, all of which are incorporated into this Order by this reference and are enforceable parts of this Order as if set out at length in this Order. In the event of conflict between this Order and any provision of any other agreement, order or writing, the terms and conditions of this Order shall control.

(m)Pad Porewater shall mean water that exists within the man-made gravel pads that support the Site activities. The Pad Porewater zone is typically less than two (2) feet in thickness within the gravel pad. For purposes of interpreting the Order, EPA regulation, and guidance for Work under this Order, Pad Porewater shall be treated as groundwater. Pad Porewater has the potential to migrate to surface water, but is not a direct source of drinking water.

(n)Project Area shall mean the physical area of a Project Group or, where distinct conditions exist, the physical area of individual SWMUs or AOCs within the Project Group.

(o)Project Group shall mean a Project Group from the Project Group list required under Attachment D, Scope of Work for Site-Wide Project Work Plan. These Project Groups are SWMUs and AOCs from the list in Attachment C which have been organized into manageable groups.

(p)RCRA Facility Investigation, or RFI, shall mean any required investigation and characterization of hazardous wastes and/or hazardous constituents and the nature and extent including, but not limited to, the direction, rate, movement, and concentration of those hazardous wastes and/or hazardous constituents that have been, or are likely to be, released into the environment at or from the Site.

(q)Receptors shall mean those humans, animals, or plants and their habitats that are or may be affected by releases of hazardous wastes and/or hazardous constituents to the environment at or from the Site.

(r)Scope of Work, or SOW, shall mean the outline of Work Respondent must use to develop all Work Plans and reports required by this Order as set forth in this Order and its attachments. All SOW attachments and modifications or amendments thereto, are incorporated into this Order and are an enforceable part of this Order.

(s)Site shall mean that portion of the physical area of the Prudhoe Bay facility shown in Attachment A.

(t)Solid Waste Management Unit, or SWMU, shall mean any discernible unit at which solid wastes have been placed at any time irrespective of whether the unit was intended for the management of solid or hazardous wastes, including those areas of or at the facility where solid waste has been treated, stored, disposed of, managed, or released.

(u)Stabilization shall mean the techniques intended to control or abate threats to human health and/or environment, and to prevent or minimize the spread of hazardous

wastes and/or hazardous constituents while long-term corrective action alternatives are evaluated.

(v)Submittal shall include any Work Plan, report, progress report, or any other written document Respondent is required to submit to EPA pursuant to this Order.

(w)Suprapermafrost Groundwater shall mean water in the active layer above permafrost. Hydrogeology at the Site is dominated by permafrost, which is perpetually frozen soil and or strata extending from a depth of about thirty-six (36) inches below ground surface to about two thousand (2000) feet below ground surface. The depth of seasonal thaw is termed the “active layer.” Water in the active layer is typically referred to as Suprapermafrost Groundwater, although the flow is limited and bounded by the permafrost at shallow depths.

(x)Violations of this Order shall mean those actions or omissions, failures, or refusals to act by Respondent that result in a failure to meet the terms and conditions of this Order or its attachments.

(y)Work or Obligation shall mean any activity Respondent must perform to comply with this Order.

(z)Work Plan shall mean the detailed plans prepared by Respondent to satisfy the requirements of the Order and any corresponding Scope of Work.

III. STATEMENT OF PURPOSE

5. In entering into this Order, the mutual objectives of EPA and Respondent are:

(a) To recognize and utilize, to the extent possible, data and information collected during voluntary investigations or corrective action activities conducted at the Site under the oversight of the Alaska Department of Environmental Conservation.

(b) To conduct site investigations as necessary to determine the nature and extent of contamination and any threat to the public health or the environment caused by the release or threatened release of hazardous wastes and/or hazardous constituents at or from SWMUs and/or AOCs at the Site, to report on those investigations, as needed, and to provide sufficient data and information to design and implement any necessary corrective measures.

(c) To conduct Corrective Measures Studies as necessary to identify and evaluate, in accordance with the results of the site investigation and other such data as may be relevant or necessary, the Corrective Measures alternatives necessary to mitigate, remedy or otherwise respond to any release, threatened release or migration of hazardous wastes and/or hazardous constituents at or from the Site.

(d) To design and implement the Corrective Measures selected by EPA in accordance with the process and requirements set forth in this Order.

(e) To implement any Interim Measures that may be required to control or abate immediate threats to human health and/or the environment and to prevent or minimize the potential release or spread of hazardous wastes and/or hazardous constituents into the environment at or from the Site throughout the implementation of this Order.

(f) To perform any other activities necessary to address, correct, or evaluate actual or potential threats to human health and/or the environment resulting from the

release or potential release of hazardous waste and/or hazardous constituents at or from the Site.

(g) To recognize to the extent possible the ongoing and long-term nature of the operations at the Prudhoe Bay Facility while at the same time requiring Respondent to prioritize and expedite necessary Corrective Measures on a media- and Project Area-specific basis based on risk to human health and the environment.

IV. PARTIES BOUND

6. This Order shall apply to and be binding upon EPA; Respondent and its officers, directors, employees, agents, successors and assigns, heirs, trustees, and receivers; and upon all persons, including but not limited to Contractors and consultants, acting on behalf of Respondent.

7. No change in ownership of the facility or in Respondent's form of business organization will in any way alter Respondent's responsibilities under this Order. Respondent will be responsible for any failure to carry out Work required by this Order, and any Violation of this Order, notwithstanding Respondent's use of agents, contractors, or consultants to perform any Work.

8. Respondent shall provide a copy of this Order to all Contractors, laboratories, and consultants retained to conduct or monitor any portion of the Work within fourteen (14) Days after the issuance of this Order or the retention of such person(s), whichever occurs later, and shall condition all such contracts on compliance with this Order.

9. Respondent shall give written notice of this Order to any successor in interest prior to transfer of its ownership or operation of the facility, or a significant portion thereof, and shall notify EPA not later than ninety (90) Days prior to any such transfer. Not later than thirty (30) Days after any transfer, Respondent shall submit copies of the transfer documents to EPA.

10. Respondent agrees to perform all Work required by this Order. Respondent waives any rights to request a hearing on this matter, pursuant to Section 3008(b) of RCRA and 40 C.F.R. Part 24, and consents to the issuance of this Order without a hearing pursuant to Section 3008(h) of RCRA as a Consent Order issued pursuant to Section 3008(h) of RCRA.

11. Where this Order creates duties upon Respondent, any directory language, including the words “will,” or “shall,” when used in reference to any action to be taken by EPA, is intended only, and shall be interpreted, as conditions precedent to Respondent’s duty(ies), and not as any duty of EPA to act, or to act within a specified time period.

V. FINDINGS OF FACT

12. Respondent, BPXA, is a person as defined in Section 1004(15) of RCRA, 42 U.S.C. § 6903(15) conducting business in the State of Alaska.

13. The Prudhoe Bay facility is an on-shore oil and gas field on the North Slope of Alaska that is currently being used for development and production of oil and gas. The Prudhoe Bay facility operates under long-term leases from the State of Alaska, which owns the majority of the surface land. Prudhoe Bay operations include, but are not limited to: oil and gas production wells; water and gas injection wells; operation centers; several flow stations/gathering centers; central compressor plant; central power station; crude oil topping unit; seawater treatment plant; seawater injection plant; grind and inject facility; support facilities such as an airport, kitchen facilities, living quarters, auto and paint shops and warehouses; various associated roads; oil and gas pipelines; and electrical power transmission lines.

14. Respondent is the operator of the Prudhoe Bay facility, which is a hazardous waste management facility known as BP Exploration Alaska, Inc. (BPXA)/Prudhoe Bay.

The facility is located on the North Slope of Alaska. Respondent engages in the generation of non-hazardous and hazardous waste at the facility. Respondent engages in the storage of hazardous waste generated from support activities associated with the exploration and production of oil fields and is subject to applicable interim status requirements at 40 C.F.R. Part 265. The Site boundaries are depicted on Attachment A.

15. As a result of permafrost conditions, Alaskan North Slope oil field operations, including support operations, are built on thick gravel pads which serve to insulate the permafrost and support heavy equipment and buildings.

16. Wastes from the oil and gas development operations include large but varying volumes of drilling muds and fluids, produced waters, brine solutions, crude oil, diesel fuel, natural gas liquids, methanol, glycol and water mixtures, spent acids, well development fluids, and other substances such as biocides, foam suppressants, emulsion breakers, corrosion inhibitors, lubricating oils, hydraulic fluids, and oxygen scavengers. Support operations which have generated wastes, and/or continue to generate wastes at the facility include laboratory operations, vehicle maintenance, and facility maintenance.

17. The Site is located on the rural and sparsely populated North Slope of Alaska. Much of the North Slope tundra is considered to be a wetland. The area has a low topographic relief covered by numerous small, shallow lakes. More than 230 species of waterfowl and shorebirds have been recorded in this area. Terrestrial and marine mammals found in the area include caribou, grizzly bears, polar bears, wolves, ground squirrels, foxes, musk oxen, lemmings, and hares. Arctic char, whitefish, and grayling spawn in the upper reaches of rivers such as the Putuliguyuk, Sagavanirktok,

and Kuparuk. The North Slope supports a wide diversity of plant life, including grasses, sedges, willows, mosses, and flowering plants. In addition, the North Slope has an important cultural past. Native Alaskans have historically relied and continue to rely on the natural resources of the North Slope for sustenance.

18. The Prudhoe Bay oilfield is divided into two oil and gas "operating areas," the Western Operating Area (WOA) and the Eastern Operating Area (EOA), each of which was previously operated as a separate and distinct facility. The WOA was operated by BPXA, formerly Standard Alaska Production Company formerly SOHIO Alaska Petroleum Company (all of which are referred to herein as "BPXA") and the EOA was operated by ARCO Alaska, Inc. (AAI). In 2000, BP Amoco p.l.c. (BP) and Atlantic Richfield Company (ARCO) merged. As a condition to government approval of that merger, BP was forced to sell the Alaska assets of ARCO, including ARCO's interest in Prudhoe Bay and AAI. Those assets, among others, were sold to Phillips Petroleum Company and AAI was renamed Phillips Alaska Inc., now ConocoPhillips Alaska Inc. Concurrent with the above merger and sale of AAI, BPXA took over as operator of both the WOA and the EOA. The following findings of fact list a separate chronology of events for the EOA and WOA up to the point that operations merged in 2000.

Prudhoe Bay Eastern Operating Area (EOA)

19. AAI operated the EOA starting before November 19, 1980, the applicable date which renders hazardous waste treatment, storage, and/or disposal facilities subject to the requirement to have a permit under Sections 3004 and 3005 of RCRA.

20. Pursuant to Section 3010 of RCRA, 42 U.S.C. § 6930, on August 13, 1980, AAI submitted a "Notification of Hazardous Waste Activity" (EPA Form 8700-12) identifying the facility as a generator of hazardous waste and an owner and/or operator

of a treatment, storage, and/or disposal facility for hazardous waste. The original notification was for four separate facilities located within the EOA, Prudhoe Bay Oilfield. On October 17, 1980, AAI submitted an amended notification which included the entire EOA as one facility.

21. In its RCRA Part A permit application, dated November 14, 1980, AAI applied to handle and store hazardous waste identified as “waste lube oil.” Numerous revised Part A applications were submitted to EPA over the years. Most of these revised applications involved the listing of additional waste codes.

22. On October 27, 1986, EPA acknowledged that AAI had achieved interim status for storage of hazardous waste in containers and tanks.

23. EPA assigned the EOA EPA Identification Number AKD 99128 1221.

24. On November 4, 1988, AAI submitted a RCRA Part A and Part B permit application, pursuant to 40 C.F.R. Part 270, requesting a permit for a hazardous waste container storage facility. AAI withdrew its Part B permit application on August 3, 1992, stating its conclusion that on-site storage of hazardous waste for greater than 90 Days was no longer required or desirable. No permit has been issued for hazardous waste storage at the EOA.

25. On August 9, 1993, a RCRA Facility Assessment Report for the EOA (EOA RFA) was completed. The EOA RFA identified 33 SWMUs and five AOCs. EPA determined that further investigation/assessment is required at some of these units/areas to ensure the protection of human health and the environment.

Prudhoe Bay Western Operating Area (WOA)

26. BPXA has operated the WOA starting before November 19, 1980, the applicable date which renders hazardous waste treatment, storage, and/or disposal

facilities subject to the requirement to have a permit under Sections 3004 and 3005 of RCRA.

27. Pursuant to Section 3010 of RCRA, 42 U.S.C. § 6930, on August 11, 1980, BPXA submitted a “Notification of Hazardous Waste Activity” (EPA Form 8700-12) identifying the facility as a generator of hazardous waste and an owner and/or operator of a treatment, storage, and/or disposal facility for hazardous waste.

28. In its RCRA Part A permit application, dated November 14, 1980, BPXA applied to handle and store hazardous waste identified by codes F002, D001, and D008 in containers. BPXA submitted numerous revised Part A applications to EPA over the years. Most of these revised applications involved the listing of additional waste codes.

29. On November 30, 1982, EPA acknowledged that BPXA had achieved interim status for storage of hazardous waste in containers.

30. EPA assigned the WOA EPA Identification Number AKD 00064 3239.

31. On November 4, 1988, BPXA submitted a RCRA Part B permit application, pursuant to 40 C.F.R. Part 270, requesting a permit for a hazardous waste container storage facility. BPXA submitted a revised Part B application on June 17, 1998. No permit has been issued for hazardous waste storage at the WOA.

32. On December 14, 1990, a RCRA Facility Assessment Report for the WOA (WOA RFA) was completed. The WOA RFA Report identified 74 SWMUs. EPA determined that further investigation/assessment is required at some of these units to ensure the protection of human health and the environment.

Prudhoe Bay Facility Post-August 2000

33. On August 21, 2000, BPXA notified EPA that BPXA had become the operator of both the WOA and the EOA of Prudhoe Bay. On that date, BPXA submitted a Subsequent Notification of Regulated Waste Activity form for the combined EOA and

WOA. On November 28, 2000, EPA approved, pursuant to 40 CFR §270.72, BPXA's August 22, 2000 request to transfer the interim status hazardous waste container storage from the existing WOA C Pad unit and EOA C Pad unit to the POL building, an indoor facility located in the WOA. BPXA submitted a revised RCRA Part A permit application on December 15, 2000, for the combined WOA and EOA facility.

34. On January 10, 2001, EPA acknowledged receipt of BPXA's August 21, 2000 Subsequent Notification of Regulated Waste Activity form and December 15, 2000 revised Part A, and designated EPA Identification Number AKD 00064 3239 for the combined EOA/WOA container storage facility. In the most recent revised RCRA Part A permit application, submitted March 1, 2004, BPXA applied to handle and store several hazardous wastes in containers. These hazardous wastes are listed in Attachment B to the Order. BPXA submitted closure certifications for the previously operated WOA C Pad unit and EOA C Pad unit. EPA concluded these units were closed in accordance with EPA-approved closure plans and released BPXA from financial assurance obligations specific to the WOA C Pad unit and EOA C Pad unit on February 27, 2007.

35. Respondent has previously undertaken various investigation and remediation activities at the Site, including at certain production reserve pits under the order dated May 3, 1993 in *Natural Resources Defense Council Inc. v. ARCO Alaska Inc.*, No. A88-287 CIV (D. Alaska), as amended.

36. Releases and potential releases of hazardous wastes and/or hazardous constituents from some of the SWMUs and AOCs at the Site are documented in the WOA and EOA RFA reports. Analysis of environmental samples conducted by Respondent has detected hazardous constituents in the surface soils and gravels, in the suprapermafrost groundwater, and in the surface water at some of the Project Areas listed in Attachment C to the Order. Detected constituents include, but are not limited

to: benzene, toluene, tetrachloroethylene, trichloroethylene, dichloroethylene, 1,1,1-trichloroethane, 1,2-dichloroethane, acetone, methylene chloride, methanol, methyl ethyl ketone, methyl isobutyl ketone, 4-methyl-2-pentanone, naphthalene, fluorene, 2 methyl naphthalene, phenanthrene, chrysene, barium, cadmium, chromium, lead, mercury, silver, and zinc. Data submitted by Respondent indicates that several of these constituents have been detected at levels which exceed the federal drinking water Maximum Contaminant Level (MCL), federal Ambient Water Quality Criteria (AWQC), EPA Region 6 Human Health Medium-Specific Screening Levels, and/or criteria promulgated by the State of Alaska Department of Environmental Conservation for protection of human health and the environment.

37. Current information, including RFAs, conclusively document that hazardous constituents have been released at the Site into the soil, suprapermafrost groundwater and surface water. Potential Receptors of such releases include the flora and fauna of the tundra and consumers of potentially contaminated game species taken from in and around these areas. Since the facility is located in a remote area, the general population is not a likely Receptor while the facility continues to operate. Industrial and commercial workers, however, are potential Receptors.

38. Respondent currently operates as an oil and gas production facility. Several of the SWMUs and AOCs listed in Attachment C to this Order are currently in operation and will continue in operation for decades.

VI. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the foregoing findings of fact and after consideration of the Administrative Record, EPA has made the following conclusions of law and determinations:

39. Respondent is a “person” within the meaning of Section 1004(15) of RCRA, 42 U.S.C. § 6903(15).

40. Respondent is the owner or operator of a facility, as “Facility” is defined in 40 C.F.R. § 260.10, that has operated, is operating, should be operating, or should have been operating under interim status subject to Section 3005(e) of RCRA, 42 U.S.C. § 6925(e).

41. Certain waste and constituents found at the facility are hazardous waste, including hazardous constituents, as defined and set forth in Section 1004(5) of RCRA, 42 U.S.C. § 6903(5).

42. There is or has been a release of hazardous waste, including hazardous constituents, into the environment from the facility.

43. The actions required by this Order are necessary to protect human health and/or the environment.

VII. PROJECT COORDINATORS

44. All activities required of Respondent under this Order shall be performed only by well-qualified persons who possess all necessary professional licenses required by federal and state law. All Work conducted under this Order shall be performed in accordance with prevailing professional standards and shall be under the direction and supervision of qualified personnel. Respondent shall designate a Project Coordinator who shall be responsible for administration of all Respondent’s actions required by this Order. To the greatest extent possible, Respondent’s Project Coordinator shall be readily available during all Work to be performed pursuant to this Order. Within fifteen (15) Days after the effective date of this Order, Respondent shall notify EPA in writing of the name, title and qualifications of Respondent’s selected Project Coordinator. EPA retains the right to disapprove Respondent’s initial and any subsequently selected

Project Coordinator. In the event that EPA disapproves Respondent's selected Project Coordinator, EPA shall notify Respondent in writing of the disapproval and the reasons for the disapproval. If EPA disapproves Respondent's selected Project Coordinator, Respondent shall select a different Project Coordinator within a reasonable period of time, not to exceed thirty (30) Days following receipt of EPA's disapproval letter and shall notify EPA of the name, title, and qualifications of the new Project Coordinator within five (5) Days of selection. EPA disapproval shall not be subject to review under Section XVII: Dispute Resolution, below.

45. During the course of the Work conducted pursuant to this Order, Respondent shall notify EPA in writing of any change to Respondent's Project Coordinator, providing the name, title and qualifications. Such notification shall occur at least five (5) Days prior to such change and EPA shall have the same right to disapprove changes to the new Project Coordinator as it has regarding the initial selection. EPA disapproval shall not be subject to review under Section XVII: Dispute Resolution, below.

46. All Work shall be under the direction and supervision of a professional engineer, hydrologist, geologist, or environmental scientist, with expertise in hazardous waste investigation and/or cleanup. Respondent or its Contractor or consultant shall have the technical expertise sufficient to adequately perform all aspects of the Work he/she shall perform. Within ninety (90) Days after issuance of this Order, Respondent shall notify EPA in writing of the name, title, and qualifications of all principal engineers, hydrologists, geologists, or environmental scientists (Experts) and of any principal Contractors to be used in performing Work. Respondent shall provide an updated list of all such principal personnel performing Work for Respondent on Work associated with this Order with the annual report specified in Section IX: Annual Report. EPA may disapprove any Expert or Contractor and shall notify Respondent in writing of the

disapproval. If EPA disapproves Respondent's Expert or Contractor, Respondent shall, within forty-five (45) Days after receipt of EPA disapproval, notify EPA, in writing, of the name, title, and qualifications of a replacement. EPA disapproval shall not be subject to review under Section XVII: Dispute Resolution, below.

47. EPA has designated Roberta Hedeen as its Project Coordinator. Respondent shall direct all Submittals required by this Order to:

Roberta Hedeen
U.S. Environmental Protection Agency
1200 Sixth Avenue, Suite 900, AWT-121
Seattle, Washington, 98101

Phone: 206/553-0201
Fax: 206/553-8509
Email: hedeen.roberta@epa.gov

EPA's Project Coordinator may be changed. Respondent will be notified in writing if such a change does occur. When the EPA Project Coordinator is temporarily out of the office, an alternate contact may be designated for emergency contact purposes. Should an emergency situation occur which requires EPA direction in accordance with any section of this Order, and the EPA Project Coordinator or any designated alternate is unavailable, Respondent shall contact EPA at 206/553-1200 and ask for any currently available member of the RCRA Corrective Action and Permits Team (CAPT) in the Office of Air, Waste and Toxics. If no RCRA CAPT member is available, Respondent shall contact the EPA Project Coordinator's supervisor, the Director of the Office of Air, Waste and Toxics, at 206/553-1847. Respondent shall document any such emergency contact, including date, EPA contact, topic of conversation and any direction given. This information shall be emailed to the EPA Project Coordinator within five (5) Days of such emergency contact.

48. The EPA Project Coordinator will be EPA's designated representative for purposes of this Order. All communications between Respondent and EPA shall be directed to and from the Project Coordinators. Receipt by Respondent's Project Coordinator of any notice or communication from EPA relating to this Order shall constitute receipt by Respondent. The absence of the EPA Project Coordinator shall not be cause for the delay or stoppage of any Work.

VIII. WORK TO BE PERFORMED

49. All Work shall be performed in accordance with this Order, RCRA and all regulations promulgated thereunder. All Work shall be consistent with all EPA guidance unless not applicable. The SWMUs and AOCs to be addressed under this Order are listed in Attachment C to this Order. The list in Attachment C may be revised to include additional SWMUs and AOCs within the Site boundary depicted in Attachment A if new information about an existing SWMU or AOC becomes available or if a new SWMU or AOC is created. Such revisions shall be incorporated in accordance with the procedures in Attachment D to this Order. However, new releases to the environment which are not of large enough volume, extent, toxicity, or impact to be significant do not need to be added to the list in Attachment C, provided that EPA concurs. For example, a spill of very limited volume that has remained at shallow depth with no migration in Pad Porewater or to any surface water and is removed within a few months of the date of the release may not need to be addressed under this Order. In its annual written progress report prepared in accordance with Section IX: Annual Report, of this Order, Respondent shall document and summarize its releases for the reporting year that were reported to the National Response Center. The report shall include sufficient information for EPA to make an inclusion determination, such as the nature and amount of the release, the size of the area impacted, the response effort, any confirmation sampling, and identification of those releases that the Respondent believes should be

considered subject to this Order. Additionally, Respondent shall notify the EPA Project Coordinator via email or facsimile within five (5) Days anytime there is a release reportable to the National Response Center of: a) greater than 10 gallons to water or tundra; or b) greater than 55 gallons to a gravel pad. Snow, ice roads, and ice pads are to be treated as gravel pads.

Based on the foregoing and pursuant to Section 3008(h) of RCRA, 42 U.S.C. § 6928(h), Respondent agrees to and is hereby ordered to comply with all the requirements of this Order, including the following:

A. SITE-WIDE PROJECT PLANNING

50. The Site-Wide Project Work Plan, which will be comprised of four parts, will serve as an overarching plan which provides facility information and a strategy for managing the progression of SWMUs and AOCs throughout the corrective action process, including distinct schedules for investigating and completing corrective action activities. Within one hundred and twenty (120) Days of the effective date of this Order, Respondent shall submit Part I of the Site-Wide Project Work Plan to EPA, as described in Attachment D to this Order. Part I of the Site-Wide Project Work Plan shall include (1) a Site-wide background report, including a facility history and description of the environmental settings; (2) a current conditions report; and (3) a public involvement plan. Within one hundred and eighty (180) Days of the effective date of this Order, Respondent shall submit Part II of the Site-Wide Project Work Plan to EPA, as described in Paragraph 52 of this Order and Attachment D. Part II of the Site-Wide Project Work Plan shall include a list of constituents of potential concern (COPCs), the associated screening levels, and a rationale for the selection of the COPCs and screening levels. Within two hundred and seventy (270) Days of the effective date of this Order, Respondent shall submit Part III of the Site-Wide Project Work Plan. As described in Attachment D, Part III of the Site-Wide Project Work Plan shall establish an

overall Site-wide strategy for prioritizing Work at the Site and managing that Work in a reasoned, systematic, and effective manner. This Work Plan shall describe how individual Project Areas will be managed over the long-term (aggregated/reorganized/segregated into Project Groups) to efficiently complete all required Work, including, where applicable, a RCRA Facility Investigation, Risk Assessment, Corrective Measures Study, and Corrective Measures Implementation. Part III of the Site-Wide Project Plan shall also include a comprehensive schedule for all activities, a Site-wide conceptual site model, and the other components set forth in Attachment D. Annually, Respondent shall submit Part IV of the Site-Wide Project Work Plan, the annual report, to EPA, as described in Section IX: Annual Report, of this Order and Attachment D.

51. EPA acknowledges that Respondent has previously collected information and data that may satisfy some or all of the requirements of this section. This information may be used to comply with the requirements of this section, provided it satisfies the requirements of this Order. Previously collected data of unknown quality may be used qualitatively or may be used if a limited sampling effort substantiates the previously collected data. Data of unknown quality will not be used for decision-making without some level of confirmation. EPA also acknowledges that some ongoing corrective action and Interim Measures are underway at the Site under the oversight of the Alaska Department of Environmental Conservation. Respondent may continue those activities while the Site-wide strategy is under development and review. EPA reserves its right to review this work to determine whether it is sufficient to meet the requirements of this Order.

52. **Site Screening Levels** Respondent shall submit to EPA for review and approval proposed Site screening levels in accordance with Attachment D, Scope of Work for Site-Wide Project Work Plan. Levels of hazardous waste and/or hazardous

constituents will be screened using the Site screening levels. If results from investigation reports which have been determined by EPA to be sufficient for purposes of this Order show no hazardous constituent(s) that were required to be sampled as part of the approved RFI Work Plan have exceeded the approved screening levels in any medium at a Project Area, that Project Area generally will not be subject to remediation or further study under this Order and Respondent may request a determination of Corrective Action Complete in accordance with Paragraph 69 of this Order. To the extent feasible, all investigative analytical methods must be able to detect and report constituents at or below the Site screening levels. Detection limits for all analytical methods will be defined in the EPA-approved Site-wide Quality Assurance Project Plan (QAPP), described in Attachment E, Scope of Work for RCRA Facility Investigation Work Plans. Respondent may submit a request to EPA to revise the screening level of a constituent based on new information such as a revision of toxicological data, background studies, unachievable detection limits, or a Site-specific risk assessment. All such requests must be fully supported and submitted to EPA in writing. All such requests shall be submitted to EPA for review and approval.

B. INTERIM MEASURES (IM)/STABILIZATION

53. As part of the Site-Wide Project Work Plan and as new data become available, Respondent shall evaluate available data for each Project Area and assess the need for Interim Measures. Interim Measures shall be used whenever necessary to achieve the goals of Stabilization which are to control or abate immediate threats to human health and/or the environment, and to prevent or minimize the spread of hazardous waste and/or hazardous waste constituents while long-term Corrective Measures alternatives are being evaluated. The Site-Wide Project Work Plan shall contain an assessment of previously implemented Interim Measures and a determination of the need for initial or additional Interim Measures. The assessment

must evaluate Interim Measures alternatives that could be implemented at the Site and identify any new data needed for making a determination regarding whether any Interim Measures are needed. EPA will review Respondent's data and assessment and other information available to EPA, and select, if any, appropriate Interim Measure(s) for implementation by Respondent. Within thirty (30) Days of receiving EPA's written approval of Interim Measure(s), or such other time as EPA approves, Respondent shall submit to EPA an IM Work Plan containing the components listed in Paragraph 54, below.

54. An IM Work Plan shall include the following components (Work Plan may reference specific section(s) of previously submitted document(s) as appropriate and subject to EPA's approval:

A. Interim Measure(s) Description and Objectives;

B. Health and Safety Plan;

C. Public Involvement Plan, as needed;

D. Data Collection Quality Assurance Project Plan, as needed;

E. Data Management Plan, as needed;

F. Bench Scale Treatability Study Plan, as needed;

G. Design Plan and Specifications;

H. Operation and Maintenance Plan;

I. Project Schedule;

J. Interim Measure(s) Construction Quality Assurance Plan; and

K. Reporting Requirements.

55. In the event Respondent identifies at any time a significant immediate or potential threat to human health and/or the environment, Respondent shall notify the EPA Project Coordinator, verbally within two (2) Days of discovery, and in writing within fifteen (15) Days of such discovery, summarizing the immediacy and magnitude of the

potential threat(s) to human health and/or the environment. Upon request of EPA, Respondent shall submit to EPA an IM Work Plan that identifies appropriate measures which will mitigate the threat and that includes the IM Work Plan components listed in Paragraph 54 above. If EPA determines that immediate action is required, the EPA Project Coordinator may verbally authorize Respondent to act prior to EPA's approval of the IM Work Plan.

56. If EPA identifies at any time a significant immediate or potential threat to human health and/or the environment, EPA will notify Respondent, in writing. Within thirty (30) Days of receiving EPA's written notification, Respondent shall submit to EPA an IM Work Plan that identifies appropriate measures which will mitigate the threat and that includes the IM Work Plan components listed in Paragraph 54 above. If EPA determines that immediate action is required, the EPA Project Coordinator may verbally require Respondent to act prior to Respondent's receipt of EPA's written notification or EPA’s approval of Respondent’s IM Work Plan.

57. All IM Work Plans shall ensure that the Interim Measures are designed to mitigate immediate or potential threat(s) to human health and/or the environment, and should be consistent with the objectives of, and contribute to the performance of, any long-term remedy which may be required at the Site. IM Work Plans shall be submitted to EPA for review and approval. Respondent shall implement EPA-selected activities described in IM Work Plans in accordance with the schedule contained therein.

58. Existing BPXA Administrative Order on Consent (EPA Docket No: RCRA-10-99-0179) (Tuboscope Order) provides for the implementation of interim measures at the Tuboscope Site located within the BPXA Facility. Within one (1) year of the effective date of this Order, Respondent shall submit an updated Tuboscope IM Work Plan in accordance with this Order. The Tuboscope Order will continue in effect until such time as EPA approves the updated IM Work Plan for Tuboscope, at which time

EPA will terminate the existing Tuboscope Order. Respondent shall implement the activities described in the updated Tuboscope IM Work Plan in accordance with the schedule contained therein.

C. RCRA FACILITY INVESTIGATION (RFI)

59. The objectives of a RCRA Facility Investigation (RFI) are to characterize the environmental conditions of the Site and to determine the nature and extent of the release(s) or potential release(s). This Order is structured so that multiple RFIs, not one inclusive RFI, will be conducted to address the SWMUs and AOCs at the Site. A full RFI may not be necessary for each individual SWMU or AOC on Attachment C. In accordance with the timeframes for each individual project in the approved schedule of the Site-Wide Project Work Plan, the Respondent shall submit to EPA for review and approval RFI Work Plans as described in the Scope of Work (Attachment E of this Order). The RFI Work Plans may be submitted by Respondent and approved by EPA in discrete parts, corresponding to phases of investigation as set forth in the EPA-approved Site-Wide Project Work Plan. Where applicable, the RFI Work Plans must meet the objectives and requirements set forth in Attachment E.

60. In accordance with Paragraph 59 and as applicable based on the level of corrective action that has already been undertaken at the individual SWMU or AOC at each Project Area, the RFI Work Plan shall detail the methodology the Respondent shall use to: (1) identify and characterize all sources of the contamination identified within the Project Area; (2) define the nature and extent of contamination at or from the Project Area; (3) characterize the potential pathways of contaminant migration; (4) identify actual or potential human and/or ecological Receptors; (5) support the development of a Project Area-specific risk assessment, if applicable; and (6) support the development of alternatives for any EPA selection of Corrective Measures.

61. The Work Plan for a full RFI shall include a Project Area-specific conceptual site model (or, with EPA approval, reference the Site-wide conceptual site model), a Project Management Plan, the Project Area-specific components of the Quality Assurance Project Plan (QAPP), and the other components set forth in the Attachment E, Scope of Work for RCRA Facility Investigation Work Plans. The Work Plan for a limited RFI may include a subset of the components set forth in Attachment E as appropriate to the needs of the Project Area and as approved by EPA. A specific schedule for implementation of all activities described in each RFI Work Plan shall be included in that RFI Work Plan. A Site-wide QAPP as described in Attachment E shall be submitted to EPA for review and approval with the first RFI Work Plan.

62. Respondent shall implement activities described in each RFI Work Plan in accordance with the schedule contained therein.

63. The results of Work performed under an approved RFI Work Plan shall be submitted to EPA for review and approval in an RFI Report to be submitted in accordance with the schedule contained in the associated RFI Work Plan. Each RFI Report shall be completed and submitted to EPA for approval in accordance with Attachment E.

D. CORRECTIVE MEASURES STUDY

64. Within one hundred and twenty (120) Days after Respondent receives notice of EPA's approval of a final RFI Report for a Project Area, Respondent shall submit a Draft Corrective Measures Study (CMS) Report to EPA for review and approval. The Draft CMS Report shall identify and evaluate one or more alternative Corrective Measures that address the hazardous wastes and hazardous waste constituents that have been identified at the Site that require Corrective Measures and may include Respondent's proposed Corrective Measures. The Draft CMS Report shall be developed in accordance with Attachment F and is subject to EPA review and approval.

Within thirty (30) Days after Respondent receives notice of EPA's approval of a final RFI Report for a Project Area, and depending on the results of the RFI, Respondent may propose a CMS Report of more limited scope than outlined in Attachment F. Such proposal shall outline all components to be submitted in the CMS Report and include a schedule for submission. All such proposals for a limited CMS Report shall be subject to review and approval by EPA.

65. **Media Cleanup Standards** Within the timeframe allowed for submission of the CMS Report and in accordance with EPA guidance, Respondent shall submit to EPA, as applicable, proposed media cleanup standards, proposed points of compliance, a proposed schedule, a land use evaluation, any proposed determinations of technical impracticability, and a Project Area-specific human health and ecological risk assessment, if it has been conducted. If a Project Area-specific risk assessment is to be conducted, Respondent may request an additional one hundred and eighty (180) Day extension to the schedule for submission of the Draft CMS Report.

66. After Respondent has adequately addressed EPA's initial comments on the Draft CMS Report, EPA will provide the public with an opportunity to review the Draft Final CMS Report, media cleanup standards, points of compliance, land use evaluation, performance standards, and a Statement of Basis which identifies EPA's proposed remedy and the justification for EPA's selection of the proposed remedy. EPA will receive public comment for a period of at least thirty (30) Days. A public hearing may be held at EPA's discretion.

67. Following the public comment period, Respondent shall address any comments received and perform any additional Corrective Measures Studies required by EPA, and revise the Draft Final CMS Report accordingly. Respondent shall submit the Final CMS Report for review and approval within forty-five (45) Days of receipt of EPA's notice directing Respondent to revise the Draft Final CMS Report; provided that if

EPA's notice directs Respondent to perform additional Corrective Measures Studies, the notice shall specify the schedule for submittal of the Final CMS Report, which period shall not be less than the time necessary to complete the additional Corrective Measures Studies. The Final CMS Report shall be subject to EPA review and approval in accordance with this Order. Upon approval or modification and approval of the Final CMS Report, EPA will prepare a final decision and response to comments which will address public comments and explain the bases and rationale for EPA's decisions. EPA will notify Respondent of the final media cleanup standards, final points of compliance, final performance standards, and approved Corrective Measures.

E. CORRECTIVE MEASURES IMPLEMENTATION

68. Within sixty (60) Days after Respondent's receipt of written notification of EPA's approval, conditional approval, or modification and approval of the Final CMS Report and selection of the Corrective Measures, Respondent shall submit for EPA review and approval a Corrective Measures Implementation (CMI) Work Plan. The CMI Work Plan shall be prepared in accordance with Attachment G and applicable EPA guidance and shall detail the design, construction, operation, maintenance, and monitoring of the performance of the Corrective Measures selected by EPA to protect human health and the environment, and shall include a schedule for all activities, including Submittals. Respondent shall design the Corrective Measures so that the established media cleanup standards will be achieved. Respondent shall implement the Corrective Measures selected by EPA in accordance with Attachment G and all approved Submittals, including the CMI Work Plan.

69. **Completion of Corrective Action With or Without Controls** Respondent may request that EPA issue a determination that Respondent has met the requirements for a determination of Corrective Action Complete for all or a portion of the Project

Areas. A request for a determination of Corrective Action Complete shall be supported by the findings of an RFI Report, CMS Report, CMI Report, and other such documentation. A determination of Corrective Action Complete may be requested for the whole Site or on a SWMU/AOC or Project Area basis. EPA will assess and process completion determination requests no more than once per calendar year. Completion determinations will be consistent with applicable EPA guidance and will require an opportunity for public comment.

70. Notwithstanding any other provision in this Order, the Parties agree that if conditions contained in Paragraph 71 below are met and Respondent chooses not to implement the Corrective Measures selected by EPA following the completion of the dispute resolution process, Respondent may withdraw its consent to implement said Corrective Measures. To be effective, such withdrawal of consent must be in writing, signed by the company signatory to this Order, and received by EPA Region 10, Office of Air, Waste and Toxics Director no later than fifteen (15) Days from receipt of the final dispute decision by EPA.

71. Respondent's right to withdraw its consent is limited only to implementation of the final Corrective Measures selected by EPA, and such right to withdraw shall not accrue until: (1) EPA has selected Corrective Measures as provided in this Order; and (2) EPA has issued a final decision under the dispute resolution procedures contained in Section XX. Nothing in this section shall affect or diminish Respondent's consent to any other provision of this Order, including its Obligations hereunder to conduct Interim Measures, a Current Condition Report, RFIs, Corrective Measures Studies, Additional Work as provided in Section XII for matters other than Corrective Measures Implementation, or issuance of stipulated penalties as provided in Section XIX.

72. As provided in Section XXII: Reservation of Rights, EPA retains all authorities it has under RCRA, CERCLA, or other authority to enforce implementation of

the Corrective Measures or to conduct response actions related to the Site, including in the event that Respondent exercises its right to withdraw its consent to implement the Corrective Measures EPA selects pursuant to this section.

IX. ANNUAL REPORT

73. Respondent shall submit an annual written progress report to EPA concerning actions undertaken pursuant to this Order in accordance with the schedule and format in the EPA-approved Site-Wide Project Work Plan. The annual report shall include, at a minimum, the components of an annual report outlined in Attachment D. The annual report shall be submitted every year on the same date and cover the same performance period until termination of this Order, unless otherwise directed by the EPA Project Coordinator. These reports shall describe all significant developments during the performance period, including the actions performed and any problems encountered for all Work required by this Order, and the developments anticipated during the next reporting period including a schedule of actions to be performed, anticipated problems, and planned resolutions of past or anticipated problems. In addition, these reports shall include all information specified in this Order for inclusion in the annual reports, including but not limited to references to the results of all sampling or tests, inspection reports, change orders, and all other data generated by Respondent or its Contractors, or on Respondent's behalf, and received during the reporting period.

X. SUBMITTALS

74. EPA may, at its discretion, extend due dates for Submittals. All extensions must be in writing.

75. Four (4) hard copies, plus one (1) electronic copy on a CD-ROM or similar storage device approved by EPA, of all Submittals shall be hand-delivered, sent by certified mail, return receipt requested, or overnight express-mailed to the EPA Project

Coordinator identified in Section VII or to other addressees she/he designates. An additional copy shall also be submitted concurrently to:

Alaska Department of Environmental Conservation
Contaminated Sites Program
ATTN: Linda Nuechterlein
555 Cordova Street
Anchorage, AK 99501

76. Respondent may assert a business confidentiality claim covering all or part of any information submitted to EPA pursuant to this Order. Any assertion of confidentiality must be accompanied by information that satisfies 40 C.F.R. § 2.204(e)(4) or such claim shall be deemed waived. Information determined by EPA to be confidential shall be disclosed only to the extent permitted by 40 C.F.R. Part 2. If no such confidentiality claim accompanies the information when it is submitted to EPA, the information may be made available to the public by EPA without further notice to Respondent. Respondent agrees not to assert any confidentiality claim with regard to any physical or analytical data.

XI. EPA APPROVALS

77. With the exception of the annual reports (as required by Section IX of this Order) and health and safety plans, EPA will review all Submittals required by this Order and, for each Submittal, will provide written approval, conditional approval, or disapproval with comments and/or proposed modifications to be made by Respondent. If EPA disapproves and provides comments or proposes modifications to Respondent on any Submittal, all EPA comments or proposed modifications must be addressed in a revised Submittal submitted to EPA within twenty (20) Days of receipt of the comments or proposed modifications or such longer time as EPA specifies in such notice. Subject to the above, provided Respondent has been provided the opportunity to revise its initial Submittal, EPA may then choose to modify any Submittal, notify Respondent of such

modification, and approve it as modified. No Submittal shall be final until it is approved by EPA in writing. Respondent may invoke the procedures set forth in Section XX: Dispute Resolution, to dispute EPA's modification and approval of a Submittal. EPA may also require approval for the annual reports required by Section IX: Annual Report, and exercise the process set forth in this section if EPA determines that such action is necessary.

78. Following approval of any Submittal, Respondent shall commence all Work required thereby in accordance with the schedule contained in the approved Submittal, unless a longer time is requested by Respondent and approved by EPA. All Work must be performed in accordance with applicable regulations as of the time of the Work and the standards, specifications, and schedules in the approved Submittal, and any applicable, previously approved Submittals.

79. Verbal approval, advice, suggestions, or comments by EPA personnel or representatives do not constitute approval under any circumstances.

80. Any noncompliance with an approved Submittal, or with a decision following dispute resolution, constitutes a Violation of this Order subject to penalties in Section XIX, below.

XII. ADDITIONAL WORK

81. EPA may determine or Respondent may propose that certain tasks, including investigations, engineering evaluation, or procedure/methodology modifications are necessary in addition to or in lieu of the tasks included in any EPA-approved Work Plan, when such Additional Work is necessary to meet the purposes set forth in Section III: Statement of Purpose. If EPA determines that Additional Work is necessary, it will specify in writing the basis for its determination that the Additional Work is necessary. Within fifteen (15) Days of such request, Respondent may request a meeting with EPA to informally discuss the Additional Work. Based on this informal discussion, EPA may

retract its initial request in writing, modify its initial request in writing, or confirm its initial request in writing. Such final determination shall be subject to the provisions of Section XX: Dispute Resolution. If required by EPA and subject to the above, Respondent shall submit for EPA approval a Work Plan for the Additional Work. EPA will specify the required contents of the Work Plan. Such Work Plan shall address the effect of the Additional Work on each part of the approved initial Work Plan, if applicable, and shall be submitted within thirty (30) Days of receipt of EPA's request that Additional Work is necessary or according to an alternative schedule established by EPA. Upon approval of a Work Plan, Respondent shall implement the Work in accordance with the schedule and provisions contained therein.

XIII. QUALITY ASSURANCE

82. Throughout all sample collection and analysis activities, Respondent shall use EPA-approved quality assurance, quality control, and chain-of-custody procedures as specified in the approved Work Plans and Scopes of Work. In addition, Respondent shall:

(a) Develop and submit Quality Assurance Project Plans (QAPPs) to EPA for environmental sampling events in accordance with the Scope of Work for RFI Work Plans, Attachment E. Respondent shall implement EPA-approved QAPPs in accordance with the protocols contained therein.

(b) Ensure that laboratories used by Respondent for analyses perform such analyses according to the EPA methods included in Test Methods for Evaluating Solid Waste (SW-846, Third Edition, November 1986 or as updated) or other methods deemed satisfactory to EPA. If methods other than EPA methods are to be used, Respondent shall submit all protocols to be used for analysis to EPA for approval not later than forty-five (45) Days prior to the commencement of analyses.

(c) Ensure that laboratories used by Respondent for analysis participate in a quality assurance/quality control program equivalent to that followed by EPA. As part of such a program, and upon request by EPA, such laboratories shall perform analyses of samples provided by EPA to demonstrate the quality of the analytical data.

(d) Inform the EPA Project Coordinator at least fifteen (15) Days in advance of any analytical Work which laboratories will be used by Respondent and ensure that EPA personnel and EPA-authorized representatives have access to the laboratories and personnel used for analyses.

(e) Use EPA guidance (e.g., Functional Guidelines) to validate all data required by this Order, unless otherwise approved in writing by EPA or provided for in Paragraph 51 of this Order.

(f) Submit data packages to EPA following completion of data validation after each sampling event, within the schedules and containing the documentation and information delineated in Work Plans and Attachments D and F to this Order.

83. All data submitted to EPA must be of known and documented quality. Respondent is responsible for ensuring, monitoring, and confirming the quality of data obtained by any laboratory which it utilizes for analyses of samples. EPA reserves the right to reject any data, and will provide Respondent with written reasons for such rejection.

XIV. SAMPLING AND DATA/DOCUMENT AVAILABILITY

84. All sampling and analyses shall be done pursuant to protocols or procedures approved by EPA. Samples taken by Respondent shall be handled according to appropriate chain-of-custody procedures that shall be described in submitted Work Plans.

85. Respondent shall submit to EPA the results of all sampling and/or tests or other data generated and/or prepared by Respondent, its employees, divisions, agents, consultants, or Contractors with respect to the implementation of this Order.

86. Respondent shall notify EPA in writing at least ten (10) Days before engaging in any field activities including, but not limited to, well drilling, installation of equipment, or sampling, unless otherwise agreed to by EPA. Notwithstanding Paragraph 79 above, if Respondent believes it must commence emergency field activities without delay, Respondent may seek emergency telephone authorization from the EPA Project Coordinator or, if the EPA Project Coordinator is unavailable, his/her designated alternate or others as described in Paragraph 47, above, to commence such activities immediately. Any such request for emergency approval must be contemporaneously documented in writing and sent by email and/or facsimile to EPA within twenty-four (24) hours and reflect the decision from EPA to proceed with the activities.

87. EPA or its authorized representatives may take split or duplicate samples of all samples collected by Respondent pursuant to this Order. Similarly, at the request of Respondent, EPA shall allow Respondent or its authorized representative(s) to take split or duplicate samples of all samples collected by EPA at the Site.

XV. COMMUNITY RELATIONS

88. Community relations regarding implementation of this Order shall be a joint effort between EPA and Respondent. EPA shall have the primary responsibility and Respondent shall cooperate and provide assistance to EPA upon request for its community relations activities and in accordance with Respondent's Public Involvement Plan in the EPA-approved Site-Wide Project Work Plan.

XVI. ACCESS

89. EPA, its Contractors, its employees, and/or any EPA representative are authorized upon presentation of their identification to enter and freely move about the

facility pursuant to this Order for the purpose of, *inter alia*: interviewing facility personnel and Contractors; inspecting records, operating logs, and contracts related to the facility; reviewing the progress of Respondent in carrying out the terms of this Order; conducting such tests, sampling, or monitoring as EPA deems necessary; using a camera, sound recording, or other documentary-type equipment; and verifying the reports and data submitted to EPA by Respondent. Respondent agrees to provide EPA and its representatives access at all reasonable times to the facility and, subject to Paragraph 91 below, to any other property to which access is required for implementation of this Order. Respondent shall permit such persons to inspect and copy all records, files, photographs, and documents, including all sampling and monitoring data, that pertain to Work undertaken pursuant to this Order and that are within the possession or under the control of Respondent or its Contractors.

90. Respondent's Obligation to produce documents under the preceding Paragraph of this Order may exclude those portions of documents that are privileged from discovery as attorney-client privileged communications, or as attorney work product as defined in Federal Rule of Civil Procedure 26. For any document or portion thereof sought to be withheld hereunder, Respondent shall identify in writing the subject, author, addresses, and date, as well as any other information necessary to determine the basis of Respondent's claim of privilege. EPA may at any time challenge claims of privilege. Respondent agrees not to assert any privilege claim with regard to physical or analytical data or documents required to be produced pursuant to this Order.

91. To the extent that Work being performed pursuant to this Order must be done beyond the Site or facility property boundary, Respondent shall use its best efforts to obtain access necessary to complete Work required by this Order from the present owner(s) of such property within thirty (30) Days of approval of any Work Plan for which access is required. Best efforts as used in this paragraph shall include, at a minimum, a

certified letter from Respondent to the present owner(s) of such property requesting access to permit Respondent, EPA and its authorized representatives to access such property, and the payment of reasonable sums of money in consideration of granting access. Respondent shall insure that the EPA Project Coordinator has a copy of any access agreement(s). In the event that access is not obtained within thirty (30) Days of approval of any Work Plan for which access is required, or of the date that the need for access became known to Respondent, Respondent shall notify EPA, in writing, within fourteen (14) Days thereafter of both the efforts undertaken to obtain access and the failure to obtain such access. EPA may, at its discretion, assist Respondent in obtaining access. In the event EPA obtains access, Respondent shall undertake EPA-approved Work on such property.

92. The Respondent agrees to indemnify the United States as provided in Section XXVI: Indemnification of the United States, for any and all claims arising from activities on such property.

93. Nothing in this section limits or otherwise affects EPA's right of access and entry pursuant to applicable law, including RCRA and CERCLA.

94. Nothing in this section shall be construed to limit or otherwise affect Respondent's liability and Obligation to perform Corrective Measures including Corrective Measures beyond the Site or facility boundary, notwithstanding the lack of access.

XVII. RECORDS PRESERVATION/AVAILABILITY

95. Respondent shall retain, while this Order is in effect and for a minimum of six (6) years after its termination, all data, records, and documents now in its possession or control or which come into its possession which relate to any decisions made under this Order, except as EPA may otherwise agree in writing. At the end of the six (6) year period and ninety (90) Days before any documents or information are destroyed,

Respondent shall notify EPA that such documents and information are available for inspection and, upon request, shall provide the originals or copies of such documents and information to EPA. Such written notification shall reference the effective date, caption, and docket number of this Order and shall be addressed to:

Director, Office of Air, Waste and Toxics
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 9000
Seattle, WA 98101

96. In addition, Respondent shall provide documents and information retained under this section at any time before the expiration of the six (6) year period at the written request of EPA.

97. Respondent further agrees that within thirty (30) Days after retaining or employing any agent or Contractor for the purpose of implementing any portion of this Order, Respondent will enter into a written agreement with any such agents or Contractors whereby such agents and/or Contractors will be required to provide Respondent a copy of all documents produced pursuant to this Order.

98. All documents relating to this Order shall be stored together by Respondent in a centralized location which affords ease of access to EPA and its representatives. This location may be either at the Site or at the Respondent's offices in Anchorage. Within 30 Days of the effective date of this Order, Respondent shall identify and submit to EPA the storage location for all documents relating to this Order. Once identified, all documents must be maintained at that location unless written permission is received from EPA for an alternate storage location.

XVIII. NOTIFICATION AND DOCUMENT CERTIFICATION

99. Unless otherwise provided, all written notices of approvals, disapprovals, noncompliance, or other decisions by EPA pursuant to this Order shall be effective upon

receipt at the office of Respondent's Project Coordinator. Unless otherwise provided, any written notices required by Respondent pursuant to this Order shall be deemed effective upon receipt at the office of the EPA Project Coordinator.

100. Any submission which makes any representation concerning Respondent's compliance or noncompliance with any requirement of this Order shall be certified by a responsible corporate officer of Respondent. A responsible corporate officer means a president, secretary, treasurer, or vice-president in charge of a principal relevant business function, or any other person who performs similar policy or decision-making functions.

101. The certification required by Paragraph 100 above, shall be in the following form:

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

Signature: _____

Name: _____

Title: _____

Date: _____

XIX. DELAY IN PERFORMANCE/STIPULATED PENALTIES

102. Unless there is an excusable delay as defined in Section XXI: *Force majeure* and Excusable Delay, or an applicable written modification of a requirement by EPA, if Respondent fails to comply with any requirement of this Order, Respondent shall be liable for stipulated penalties as set forth below:

(a) For failure to commence, perform, and/or complete field Work in a manner acceptable to EPA, or within the time required by this Order:

i. $2,000.00 per day for each of the first seven (7) Days for each Violation;

ii. $5,000.00 per day for the eighth (8th) through twenty-first (21st) day for each Violation; and

iii. $8,000.00 per day for each Violation thereafter;

(b) For failure to complete and submit any Work Plans or reports (other than progress reports and health and safety plans) in a manner acceptable to EPA or within the time required by this Order:

i. $2,000.00 per day for each of the first seven (7) Days for each Violation;

ii. $3,000.00 per day for the eighth (8th) through twenty-first (21st) day for each Violation; and

iii. $5,000.00 per day for each Violation thereafter;

(c) For failure to complete and submit other written Submittals not included in paragraph (b) of this section in a manner acceptable to EPA or within the time required pursuant to this Order:

i. $1,000.00 per day for each of the first seven (7) Days for each Violation;

ii. $2,000.00 per day for the eighth (8th) through twenty-first (21st) day for each Violation; and

iii. $3,000.00 per day for each Violation thereafter;

(d) For failure to comply with any other provisions of this Order not specified in subparagraphs (a), (b), or (c) in a manner acceptable to EPA or within the time required pursuant to this Order and/or EPA-approved Work Plans required in Section VIII of this Order:

i. $1,000.00 per day for each of the first seven (7) Days for each Violation;

ii. $2,000.00 per day for the eighth (8th) through twenty-first (21st) day for each Violation; and

iii. $3,000.00 per day for each Violation thereafter.

103. Penalties shall begin to accrue on the day after complete performance was due, or the day a Violation occurs, and shall continue to accrue through the day of correction of the Violation. Nothing herein shall prevent the simultaneous accrual of separate stipulated penalties for separate Violations of this Order. Penalties for timeliness shall continue to accrue regardless of whether EPA has notified Respondent of a Violation. Penalties based on the quality of Work, as determined by EPA, shall commence to accrue from the date EPA notifies Respondent of a Violation, provided that EPA has previously described why such Work is unacceptable and has previously provided Respondent a reasonable time to cure the unacceptable Work.

104. All penalties owed to the United States under this section shall be due and payable within thirty (30) Days after Respondent's receipt of a written demand for payment of the penalties by EPA, unless Respondent invokes the dispute resolution procedures in Section XX below. The written demand will describe the Violation and compute the penalty amount due. Interest shall begin to accrue on any unpaid stipulated penalty balance beginning on the thirty-first (31st) Day after Respondent's receipt of EPA's demand letter. Interest shall accrue at the Current Value of Funds Rate established by the Secretary of the Treasury. Pursuant to 31 U.S.C. § 3717, an additional penalty of six percent (6%) per annum on any unpaid principal shall be assessed for any stipulated penalty payment which is overdue for ninety (90) Days or more.

105. Respondent shall make payments by money order, certified check, company check, electronic funds transfer, or cashier's check payable to the United States of America. Currently, payment shall be remitted to:

U.S. Environmental Protection Agency
Fines and Penalties
Cincinnati Finance Center
P.O. Box 979077
St. Louis, MO 63197-9000

During the pendency of this Order, this address may change. EPA will notify Respondent of any payment address change. All such payments shall reference the name of the facility, Respondent's name and address, and the EPA docket number of this Order. Copies of all payments and accompanying transmittal letters shall be sent simultaneously to the EPA Project Coordinator specified in Section VII and to:

Regional Hearing Clerk
EPA Region 10, M/S ORC-158
1200 Sixth Avenue, Suite 900
Seattle, WA 98101

106. Respondent may dispute an EPA determination that it failed to comply with this Order and the number of days of any Violation, if any, by invoking the dispute resolution procedures in Section XX, below, unless the matter has already been or is the subject of dispute resolution. Stipulated penalties shall continue to accrue, but need not be paid, during the dispute resolution process. Respondent shall pay stipulated penalties and interest, if any, in accordance with the dispute resolution decision and/or agreement. If Respondent does not prevail upon resolution, all penalties shall be due within thirty (30) Days of resolution of the dispute. If Respondent prevails upon resolution, no penalties shall be paid. In the event that Respondent prevails in part, penalties shall be due on those matters in which Respondent did not prevail.

107. Neither the invocation of dispute resolution nor the payment of penalties shall in any way alter Respondent's Obligation to comply with this Order.

108. The stipulated penalties set forth in this section do not preclude EPA from pursuing any other remedies or sanctions which may be available to EPA by reason of Respondent's failure to comply with this Order.

109. No payments made under this section shall be deducted for federal tax purposes.

110. Notwithstanding any other provision of this section, EPA may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this Order.

XX. DISPUTE RESOLUTION

111. Respondent and EPA shall use their best efforts to informally and in good faith resolve all disputes or difference of opinion. These parties agree that the procedures contained in this section are the sole procedures for resolving disputes arising under

this Order. Any written direction, disapproval, or unilateral modification, in whole or part, by EPA under this Order may be addressed through the dispute resolution procedures of this section, whether or not specifically authorized by the provisions of this Order, except as may be expressly excluded herein. If Respondent fails to follow any of the requirements in this section, then it shall have waived its right to further consideration of the disputed issue.

112. If Respondent disagrees, in whole or in part, with any written decision issued by EPA pursuant to this Order (Initial Written Decision), Respondent's Project Coordinator shall notify the EPA Project Coordinator of the dispute. Respondent shall provide a statement of concerns to EPA, in writing, within ten (10) Days of the date Respondent received notice of EPA's action to which it is objecting. The Project Coordinators shall attempt to resolve the dispute informally.

113. If the Project Coordinators cannot resolve the dispute informally, Respondent may pursue the matter formally by placing its objections in writing. Respondent's written objections must be directed to the EPA Project Coordinator. This written notice must be mailed within fourteen (14) Days of Respondent's receipt of the Initial Written Decision. Respondent's written objection must set forth the specific points of the dispute, the position Respondent claims should be adopted as consistent with the requirements of this Order, the basis for Respondent's position, and any matters which it considers necessary for EPA's determination.

114. EPA and Respondent shall have thirty (30) Days from EPA's receipt of Respondent's written objections to attempt to resolve the dispute through formal negotiations. This time period may be extended by EPA for good cause. During such time period (Negotiation Period), Respondent may request a conference with the EPA

Region 10 Director of the Office of Air, Waste and Toxics to discuss the dispute and Respondent's objections. EPA agrees to confer in person or by telephone to resolve any such disagreement with Respondent the conference will not extend the Negotiation Period.

115. If Respondent and EPA reach agreement on the dispute at any time, the agreement shall be set forth in writing, and shall, if applicable, upon signatures of the parties, be incorporated into and become an enforceable part of the Order. If Respondent and EPA are unable to reach an agreement within the Negotiation Period, the EPA Director of the Office of Air, Waste and Toxics shall provide to Respondent, based on the record, EPA's written decision on the dispute (EPA Dispute Decision). Such decision shall be incorporated into and become an enforceable element of this Order, but will not be considered final Agency action for purposes of judicial review, and shall no longer be subject to dispute resolution pursuant to this Order. Any disputes under this Order, including whether Respondent agrees with the EPA Dispute Decision regarding the matter, are not subject to judicial review until such time as EPA seeks to enforce this Order.

116. Except as provided in Section XIX: Delay in Performance/Stipulated Penalties, the existence of a dispute as defined in this section and EPA's consideration of matters placed into dispute shall not excuse, toll or suspend any compliance Obligation or deadline required pursuant to this Order during the pendency of the dispute resolution process.

XXI. *FORCE MAJEURE* AND EXCUSABLE DELAY

117. "*Force majeure,*" for purposes of this Order, is defined as any event arising from causes unforeseen and beyond the control of Respondent or any person or entity

controlled by Respondent, including Respondent's agents and Contractors, which delays the timely performance of any Obligation under this Order notwithstanding Respondent's best efforts to avoid such delay. The requirement that Respondent use best efforts to avoid the delay includes using best efforts to anticipate potential *force majeure* events and using best efforts to address the effects of any *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, work stoppages or other labor disputes, difficulty in obtaining access to property owned in whole or in part by parties other than Respondent, or Respondent's financial difficulties.

118. If any event occurs or has occurred which may delay the performance of any Work under this Order, regardless of whether caused by a *force majeure* event, Respondent shall verbally notify the EPA Project Coordinator or designated alternate, or if both are unavailable, others as described in Paragraph 47 above, within forty-eight (48) hours after Respondent knew or should have known that any event might cause a delay. Within seven (7) Days thereafter, Respondent shall submit the reasons for the delay to EPA in writing, and describe the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for the implementation of any measures to be taken to mitigate the effect of the delay; a statement as to whether Respondent believes the delay was caused by a *force majeure* event and a justification for that belief; and a statement as to whether Respondent believes the event may cause or contribute to an endangerment to public health or the environment. This Submittal shall include all available documentation. Respondent shall exercise

best efforts to avoid or minimize any delay and any effects of any delay. Failure to comply with the above requirements shall preclude Respondent from asserting any claim of *force majeure*.

119. 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 EPA for such time as EPA determines is necessary to complete the Obligation. An extension of time for performance of the Obligation directly affected by the *force majeure* event shall not extend the time for performance of any other Obligations, unless Respondent can demonstrate that more than one Obligation was affected by the *force majeure* event. If EPA determines that the delay or anticipated delay has been or will be caused by a *force majeure* event, EPA will notify Respondent, in writing, of the length of the extension for performance of such Obligations affected by the *force majeure* event.

120. 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 as to the appropriate length of any extension due to the *force majeure* event, Respondent may elect to invoke the dispute resolution procedures set forth in Section XX of this Order. In dispute resolution, Respondent shall have the burden of demonstrating to EPA 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 or extension sought 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 has complied with all of the requirements of this section. If

Respondent carries this burden, the time for performance of such Obligation will be extended by EPA for such time as is necessary to complete such Obligation.

XXII. RESERVATION OF RIGHTS

121. Except as specifically provided in this Order, EPA and Respondent expressly reserve all their rights and defenses, both legal and equitable.

122. EPA reserves all its statutory and regulatory powers, authorities, rights, and remedies regarding any failure by Respondent to comply with this Order, including, without limitation, the assessment of penalties under Section 3008(h)(2) of RCRA, 42 U.S.C. § 6928(h)(2). This Order shall not be construed as a covenant not to sue, release, waiver, or limitation of any rights, remedies, powers, and/or authorities, civil or criminal, by EPA under RCRA, CERCLA, or any other lawful authority.

123. EPA reserves the right to disapprove Work performed by Respondent pursuant to this Order and to require that Respondent perform Additional Work.

124. EPA reserves the right to perform any portion of the Work consented to herein or any additional site characterization, remedy feasibility study, and remedial Work as it deems necessary to protect human health or the environment. EPA may exercise its authority under CERCLA to undertake response actions at any time, and EPA reserves its right to seek reimbursement from Respondent for costs incurred by the United States as may be authorized by law. Notwithstanding compliance with this Order, Respondent is not released from liability, if any, for the costs of any response actions taken or authorized by EPA.

125. If EPA determines that activities in compliance or noncompliance with this Order have caused or may cause a release of hazardous waste or hazardous constituent(s), or a threat to human health or the environment, or that Respondent is not

capable of undertaking any Work, EPA may order Respondent to stop further implementation of this Order for such time as EPA determines may be necessary to abate any such release or threat and/or to undertake any action which EPA determines is necessary to abate such release or threat. This determination is not subject to Section XVII: Dispute Resolution.

126. This Order is not intended to be and shall not be construed to be a permit. The parties acknowledge and agree that EPA's approval of any Submittal does not constitute a warranty or representation that any Submittal will achieve the required result or performance standards. Compliance by Respondent with this Order shall not relieve Respondent of its Obligation to comply with RCRA or any other applicable local, state, or federal laws and regulations.

127. In any subsequent administrative or judicial proceeding initiated by the United States for injunctive or other appropriate relief relating to the Site, Respondent shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, *res judicata*, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States in the subsequent proceeding were or should have been raised in the present matter.

XXIII. JUDICIAL REVIEW

128. Respondent shall not seek judicial review of this Order in any action except an action by the United States to: 1) enforce this Order; 2) recover costs incurred in connection with this Order; or 3) compel action relating to the releases of hazardous wastes and/or hazardous constituents. Judicial review of this Order shall be limited to the Administrative Record. Otherwise applicable principles of administrative law shall govern whether any supplemental material may be considered by the court.

XXIV. OTHER CLAIMS

129. Nothing in this Order shall constitute or be construed as a release from any claim, cause of action, demand, or defense in law or equity against any person for any liability arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous constituents, hazardous substances, hazardous waste, pollutants, or contaminants at or from the facility. Respondent waives any claims or demands for compensation or payment under Sections 106(b), 111, and 112 of CERCLA, 42 U.S.C. §§ 9606(b), 9611 and 9612, against the United States or the Hazardous Substance Superfund established by 26 U.S.C. § 9507 for, or arising out of, any Work performed or expense incurred pursuant to this Order. This Order does not constitute any decision or preauthorization of funds under Section 111(a)(2) of CERCLA, 42 U.S.C. § 9611 (a)(2).

XXV. OTHER APPLICABLE LAWS

130. All Work required by this Order shall be undertaken in accordance with the requirements of all applicable local, state, and federal laws and regulations. Respondent shall timely obtain or cause its representatives to timely obtain all permits and approvals necessary under such laws and regulations.

XXVI. INDEMNIFICATION OF THE UNITED STATES

131. Respondent agrees to indemnify and save and hold harmless the United States, and its agencies, departments, agents, and employees, from any and all claims or causes of action arising from or on account of acts or omissions of Respondent or its officers, employees, agents, independent Contractors, receivers, trustees, and assigns in carrying out Work required by this Order. This indemnification shall not be construed in any way as affecting or limiting the rights or Obligations of Respondent or the United States under applicable federal statutes and their various contracts.

XXVII. FINANCIAL RESPONSIBILITY

132. **Estimated Cost of the Work**

A. Respondent shall submit to EPA detailed written estimates, in current dollars, of the cost of hiring a third party to perform the Work under this Order (hereafter "Estimated Cost of the Work"). The Estimated Cost of the Work must account for the total costs of the Work activities that they cover, as described in Section VIII: Work to Be Performed and the Scopes of Work (SOWs) in the Order attachments, including any necessary long-term costs, such as operation and maintenance costs and monitoring costs. A third party is a party who (1) is neither a parent nor a subsidiary of Respondent and (2) does not share a common parent or subsidiary with Respondent. The cost estimates must not incorporate any salvage value that may be realized from the sale of wastes, facility structures or equipment, land, or other assets associated with the facility.

B. Within thirty (30) Days after EPA has approved the Site-Wide Project Work Plan under Section VIII, Respondent shall submit to EPA for review and approval an initial Estimated Cost of the Work. Following this initial estimate, within thirty (30) Days after EPA has approved an Interim Measures Work Plan, RCRA Facility Investigation Work Plan, Corrective Measures Study Report, or Corrective Measures Implementation Work Plan, Respondent shall submit to EPA for review and approval an Estimated Cost of the Work to be performed for that activity.

C. Respondent shall submit each Estimated Cost of the Work (cost estimate) to EPA for review. EPA will review each cost estimate and notify Respondent in writing of EPA's acceptance or non-acceptance of the cost estimate. If EPA notifies Respondent that any cost estimate is not accepted, Respondent shall submit a revised cost estimate that addresses EPA's comments within fifteen (15) Days of receipt of EPA's non-acceptance.

D. Concurrent with submitting its annual report, Respondent must update its total Estimated Cost of the Work for all Work under this Order to include new and revised cost estimates submitted to and approved by EPA during the past year and annually adjust any unrevised Estimated Cost of the Work for the previous year for inflation until the Work required by this Order is completed. In addition, Respondent must at the same time adjust the Estimated Cost of the Work if EPA has determined during the previous year that any Additional Work is required, pursuant to Section XII: Additional Work, or if any other condition has increased the cost of the Work to be performed under this Order. Respondent shall submit to EPA for review and approval this adjusted Estimated Cost of the Work to be financially assured.

133. **Assurances of Financial Responsibility for Completing the Work**

A. In order to secure the full and final completion of the Work in accordance with this Order, Respondent shall establish and maintain financial assurance for the benefit of EPA in at least the amount of the most recent annual Estimated Cost of the Work. Respondent may use one or more of the financial assurance forms generally described in Paragraphs i - vi below. Any and all financial assurance instruments provided pursuant to this Order must be satisfactory in form and substance as determined by EPA. Respondent shall be entitled to use any of the financial assurance mechanisms described in Paragraphs i, ii ,iii ,iv , or v, for which it qualifies, or a combination of i, ii, iii, or iv, provided that EPA determines the mechanism(s) is satisfactory in form and substance.

i. A trust fund established for the benefit of EPA, administered by a trustee who has the authority to act as a trustee under federal or state law and whose trust operations are regulated and examined by a federal or state agency, and that is acceptable in all respects to EPA. The trust agreement shall provide that the trustee shall make payments from the fund as the EPA Region 10 Director of the Office of Air,

Waste and Toxics shall direct in writing (1) to reimburse Respondent from the fund for expenditures made by Respondent for Work performed in accordance with this Order, or (2) to pay any other person whom the EPA Region 10 Director of the Office of Air, Waste and Toxics determines has performed or will perform the Work in accordance with this Order. The trust agreement shall further provide that the trustee shall not refund to the grantor any amounts from the fund unless and until EPA has advised the trustee that the Work under this Order has been successfully completed.

ii. A surety bond unconditionally guaranteeing performance of the Work in accordance with this Order, or guaranteeing payment at the direction of the EPA Region 10 Director of the Office of Air, Waste and Toxics into a standby trust fund that meets the requirements of the trust fund in Paragraph i above. The surety company issuing the bond shall, at a minimum, be among those listed as acceptable sureties on federal bonds as set forth in Circular 570 of the U.S. Department of the Treasury.

iii. One or more irrevocable letters of credit, payable at the direction of the EPA Region 10 Director of the Office of Air, Waste and Toxics into a standby trust fund that meets the requirements of the trust fund in Paragraph i above. The letter(s) of credit shall be issued by one or more financial institution(s) (1) that have the authority to issue letters of credit, and (2) whose letter-of-credit operations are regulated and examined by a federal or state agency.

iv. A policy of insurance that (1) provides EPA with acceptable rights (as determined by EPA) as a beneficiary thereof; and (2) is issued by an insurance carrier (a) that has the authority to issue insurance policies in the applicable jurisdiction(s), and (b) whose insurance operations are regulated and examined by a federal or state agency. The insurance policy shall be issued for a face amount at least equal to the current Estimated Cost of the Work to be performed under this Order, except where costs not covered by the insurance policy are covered by another financial assurance

instrument, as permitted in Paragraph 133.G. below. The Policy shall provide that the insurer shall make payments as the EPA Region 10 Director of the Office of Air, Waste and Toxics shall direct in writing to reimburse Respondent for expenditures made by Respondent for Work performed in accordance with this Order, or to pay any other person whom the EPA Region 10 Director of the Office of Air, Waste and Toxics determines has performed or will perform the Work in accordance with this Order, up to an amount equal to the face amount of the policy.

v. A corporate guarantee, executed in favor of EPA by one or more of the following: (1) a direct or indirect parent company, or (2) a company that has a "substantial business relationship" with Respondent (as defined in 40 C.F.R. ' 264.141(h)), to perform the Work in accordance with this Order or to establish a trust fund as permitted by Paragraph i above; provided, however, that any company providing such a guarantee shall demonstrate to the satisfaction of EPA that it satisfies the financial test requirements of 40 C.F.R. ' 264.143(f) with respect to the Estimated Cost of the Work that it proposes to guarantee; or

vi. A demonstration by Respondent that Respondent meets the financial test criteria of 40 C.F.R. ' 264.143(f) with respect to the Estimated Cost of the Work, provided that all other requirements of 40 C.F.R. § 264.143(f) are satisfied, and provided that Respondent establishes a standby trust fund that meets the requirements of the trust fund in Paragraph i above.

B1. **[For initial financial assurance under Paragraphs A.i., A.ii, A.iii, A.iv, or A.v:]** Within thirty (30) Days after EPA has approved the Site-Wide Project Work Plan under Section VIII, Respondent shall submit draft financial assurance instruments and related documents to EPA, concurrently with Respondent's submission of the initial Estimated Cost of the Work, for EPA's review and approval, pursuant to Section XI: EPA Approvals. Within thirty (30) Days after EPA's approval of both the initial

Estimated Cost of the Work, and the draft financial assurance instruments, whichever date is later, Respondent shall execute or otherwise finalize all instruments and other documents required in order to make the selected financial assurance legally binding in a form substantially identical to the financial assurance documents reviewed and approved by EPA. Respondent shall submit all executed and/or otherwise finalized instruments or other documents to EPA within forty-five (45) Days after EPA's acceptance of the initial Estimated Cost of the Work and the draft financial assurance instruments, whichever date is later.

B2. **[For initial financial assurance under Paragraph A.vi.:]** Within thirty (30) Days after EPA has approved the Site-Wide Project Work Plan under Section VIII, Respondent shall submit to EPA, in draft, for review and approval, pursuant to Section XI: EPA Approvals, all documentation and financial instruments necessary to demonstrate that Respondent satisfies the financial test criteria pursuant to Paragraph A.vi. Within thirty (30) days after EPA's approval of draft financial assurance instruments, Respondent shall execute or otherwise finalize all instruments and other documents required in order to make the selected financial assurance legally binding in a form substantially identical to the financial assurance documents reviewed and approved by EPA, at which time such financial assurance shall be effective immediately. Respondent shall submit all executed and/or otherwise finalized instruments or other documents to EPA within forty-five (45) days after EPA's approval of the draft financial assurance instruments.

C. If Respondent seeks to establish financial assurance by using a surety bond, a letter of credit, a corporate guarantee, or the financial test, Respondent shall also establish and maintain a standby trust fund, which meets the requirements of Paragraph A.i. above, into which funds from the other financial assurance instrument shall be

deposited, if the financial assurance provider is directed to do so by EPA, pursuant to Paragraph K.ii. below.

D. Respondent shall submit all financial assurance instruments and related required documents by hand delivery, certified mail, return receipt requested, or by overnight express to the EPA Region 10 Director of the Office of Air, Waste and Toxics (address below), with copies to the EPA Project Coordinator and EPA Project Attorney (address below).

Richard Albright, Director	Kelly Cole, Assistant Regional Counsel
Office of Air, Waste and Toxics	Office of Regional Counsel
U.S. Environmental Protection Agency	U.S. Environmental Protection Agency
1200 Sixth Avenue, Suite 900, AWT-107	1200 Sixth Avenue, Suite 900, ORC-158
Seattle, Washington, 98101	Seattle, Washington, 98101

E. If at any time during the effective period of this Order Respondent provides financial assurance for completion of the Work by means of a corporate guarantee or financial test pursuant to Paragraph A.v. or A.vi. above, Respondent shall also comply with the other relevant requirements of 40 C.F.R. ' 264.143(f), 40 C.F.R. ' 264.151(f), and 40 C.F.R. ' 264.151(h)(1) relating to these methods, unless otherwise provided in this Order, including but not limited to (1) the initial submission of required financial reports and statements from the guarantors' chief financial officer and independent certified public accountant; (2) the annual re-submission of such reports and statements within ninety (90) Days after the close of each of the guarantors' fiscal years; and (3) the notification of EPA within ninety (90) Days after the close of any of the guarantors= fiscal years in which any such guarantor no longer satisfies the financial test requirements set forth at 40 C.F.R. § 264.143(f)(1). EPA reserves the right to request additional information (including financial statements and accountant's reports) from the Respondent or corporate guarantor at any time, provided that the requested information can be released after consideration of Federal Securities and Exchange Commission regulations.

F. For purposes of the corporate guarantee or the financial test described above, references in 40 CFR § 264.143(f) to "the sum of current closure and post-closure costs and the current plugging and abandonment cost estimates" shall mean "the sum of current closure, post-closure and corrective action obligations under RCRA and the environmental remediation obligations under CERCLA, UIC, TSCA or their state equivalents, guaranteed by such company or for which such company is using the financial test as the mechanism to provide financial assurance in addition to the Work to be performed in accordance with this Order."

G. Respondent may combine more than one mechanism to demonstrate financial assurance for the Work to be performed in accordance with this Order, except that mechanisms guaranteeing performance rather than payment may not be combined with other instruments.

H. If at any time (1) EPA determines that a financial assurance instrument provided pursuant to this section is inadequate, or no longer satisfies the requirements set forth or incorporated by reference in this section, whether due to an increase in the estimated cost of completing the Work or for any other reason, or (2) Respondent becomes aware of information indicating that any financial assurance instrument provided pursuant to this section is inadequate or no longer satisfies the requirements set forth or incorporated by reference in this section, whether due to an increase in the estimated cost of completing the Work or for any other reason, then Respondent, within thirty (30) Days of receipt of notice of EPA's determination or, as the case may be, within thirty (30) Days of Respondent’s becoming aware of such information, shall obtain and present to EPA for approval a proposal for a revised or alternative form of financial assurance listed in Paragraph A above that satisfies all requirements set forth or incorporated by reference in this section. In seeking approval for a revised or

alternative form of financial assurance, Respondent shall follow the procedures set forth in Paragraph L.ii. below.

I. Respondent's inability or failure to maintain financial assurance for completion of the Work shall in no way excuse performance of any other requirements of this Order, including, without limitation, the Obligation of Respondent to complete the Work in strict accordance with the terms of this Order.

J. Any and all financial assurance instruments provided pursuant to Paragraphs A.ii., A.iii., A.iv. or A.v. shall be automatically renewed at the time of their expiration unless the financial assurance provider has notified by hand delivery, certified mail, return receipt requested, or overnight express both the Respondent and the EPA Project Coordinator at least one hundred and twenty (120) Days prior to expiration, cancellation, or termination of the instrument of a decision to cancel, terminate, or not renew a financial assurance instrument. Under the terms of the financial assurance instrument, the one hundred and twenty (120) Days will begin to run with the date of receipt of the notice by both the EPA Project Coordinator and Respondent. Furthermore, if Respondent has failed to provide alternate financial assurance and obtain written approval for such alternate financial assurance within ninety (90) Days following receipt of such notice by both Respondent and the EPA Project Coordinator, then the EPA Project Coordinator will so notify the financial assurance provider in writing prior to the expiration of the instrument, and the financial assurance provider shall immediately deposit into the standby trust fund, or a newly created trust fund approved by EPA, the remaining funds obligated under the financial assurance instrument for the performance of the Work in accordance with this Order.

K. <u>Performance Failure</u>

i. In the event that EPA determines that Respondent (1) has ceased implementation of any portion of the Work, (2) is significantly or repeatedly deficient or

late in its performance of the Work, or (3) is implementing the Work in a manner that may cause an endangerment to human health or the environment, EPA may issue a written notice (Performance Failure Notice) to both Respondent and the financial assurance provider of Respondent's failure to perform. The notice issued by EPA will specify the grounds upon which such a notice was issued and will provide Respondent with a period of ten (10) Days, or some other period of time as EPA determines, within which to remedy the circumstances giving rise to the issuance of such notice.

ii. Failure by Respondent to remedy the relevant performance failure to EPA's satisfaction before the expiration of the notice period specified in Paragraph K.i. above shall trigger EPA's right to have immediate access to and benefit of the financial assurance provided pursuant to this section. EPA shall at any time thereafter direct the financial assurance provider, or Respondent in the event financial assurance is provided pursuant to Paragraph 133.A.vi. above, to immediately (1) deposit into the standby trust fund, or a newly created trust fund approved by EPA, the remaining funds obligated under the financial assurance instrument, or (2) arrange for performance of the Work in accordance with this Order.

iii. If EPA has determined that any of the circumstances described in clauses (1), (2), or (3) of Paragraph 133.K.i. above have occurred, and if EPA is nevertheless unable after reasonable efforts to secure the payment of funds or performance of the Work in accordance with this Order from the financial assurance provider pursuant to this Order, then, upon receiving written notice from EPA, Respondent shall within ten (10) Days thereafter deposit into the standby trust fund, or a newly created trust fund approved by EPA, in immediately available funds and without setoff, counterclaim, or condition of any kind, a cash amount equal to the estimated cost of the remaining Work to be performed in accordance with this Order as of such date, as determined by EPA.

iv. Respondent may invoke the procedures set forth in Section XX: Dispute Resolution to dispute EPA's determination that any of the circumstances described in clause (1), (2), or (3) of Paragraph 133.K.i. above have occurred. Invoking the dispute resolution provisions shall not excuse, toll or suspend the Obligation of the financial assurance provider, under Paragraph 133.K.ii. above, to fund the trust fund or perform the Work. Furthermore, notwithstanding Respondent's invocation of such dispute resolution procedures, and during the pendency of any such dispute, EPA may in its sole discretion direct the trustee of such trust fund to make payments from the trust fund to any person that has performed the Work in accordance with this Order until the earlier of (1) the date that Respondent remedies, to EPA's satisfaction, the circumstances giving rise to EPA's issuance of the relevant Performance Failure Notice, or (2) the date that a final decision is rendered in accordance with Section XX: Dispute Resolution, that Respondent has not failed to perform the Work in accordance with this Order.

L. Modification of Amount and/or Form of Performance Guarantee

i. Reduction of Amount of Financial Assurance If Respondent believes that the estimated cost to complete the remaining Work has diminished below the amount covered by the existing financial assurance provided under this Order, Respondent may, at the same time that Respondent submits the annual cost adjustment, pursuant to Paragraph 132.D. above, or at any other time agreed to by EPA, submit a written proposal to EPA to reduce the amount of the financial assurance provided under this section so that the amount of the financial assurance is equal to the estimated cost of the remaining Work to be performed. The written proposal shall specify, at a minimum, the cost of the remaining Work to be performed and the basis upon which such cost was calculated. In seeking approval of a revised financial assurance amount, Respondent shall follow the procedures set forth in Paragraph 133.L.ii.(b) below. If EPA

accepts such a proposal, EPA shall notify Respondent of its decision in writing. After receiving EPA's written decision, Respondent may reduce the amount of the financial assurance only in accordance with and to the extent permitted by such written decision. In the event of a dispute, Respondent may reduce the amount of the financial assurance required hereunder only in accordance with the final EPA Dispute Decision resolving such dispute. No change to the form or terms of any financial assurance provided under this section, other than a reduction in amount, is authorized except as provided in Paragraph L.ii. below.

ii. Change of Form of Financial Assurance

(a) If Respondent desires to change the form or terms of financial assurance, Respondent may, at the same time that Respondent submits the annual cost adjustment, pursuant to Paragraph 132.D. above, or at any other time agreed to by EPA, submit a written proposal to EPA to change the form of financial assurance. The submission of such proposed revised or alternative form of financial assurance shall be as provided in Paragraph (b) below. The decision whether to approve a proposal submitted under this Paragraph L. shall be made in EPA's sole and unreviewable discretion and such decision shall not be subject to challenge by Respondent pursuant to the dispute resolution provisions of this Order or in any other forum.

(b) A written proposal for a revised or alternative form of financial assurance shall specify, at a minimum, the cost of the remaining Work to be performed, the basis upon which such cost was calculated, and the proposed revised form of financial assurance, including all proposed instruments or other documents required in order to make the proposed financial assurance legally binding. The proposed revised or alternative form of financial assurance shall satisfy all requirements set forth or incorporated by reference in this section. EPA shall notify Respondent in writing of its decision to accept or reject a revised or alternative form of financial assurance submitted pursuant to this

paragraph. Within thirty (30) Days after receiving a written decision approving the proposed revised or alternative financial assurance, Respondent shall execute and/or otherwise finalize all instruments or other documents required in order to make the selected financial assurance legally binding in a form substantially identical to the documents submitted to EPA as part of the proposal, and such financial assurance shall be fully effective. Respondent shall submit all executed and/or otherwise finalized instruments or other documents required in order to make the selected financial assurance legally binding to the EPA Region 10 Director of the Office of Air, Waste and Toxics, with copies to the EPA Project Coordinator and EPA Project Attorney within forty-five (45) Days of receiving a written decision approving the proposed revised or alternative financial assurance. Respondent may release, cancel, or terminate its prior existing financial assurance instruments only after it has submitted all executed and/or otherwise finalized new financial assurance instruments or other required documents to EPA.

iii. Release of Financial Assurance Respondent may submit a written request to the EPA Region 10 Director of the Office of Air, Waste and Toxics that EPA release Respondent from the requirement to maintain financial assurance under this section at such time as EPA and Respondent have both executed an "Acknowledgment of Termination and Agreement to Record Preservation and Reservation of Rights" pursuant to Section XXXI: Termination and Satisfaction of the Order. The EPA Region 10 Director of the Office of Air, Waste and Toxics shall notify both the Respondent and the provider(s) of the financial assurance that Respondent is released from all financial assurance Obligations under this Order. Respondent shall not release, cancel, or terminate any financial assurance provided pursuant to this section except as provided in this paragraph or Paragraph 133.L.ii.(b) above. In the event of a dispute, Respondent may release, cancel, or terminate the financial assurance required

hereunder only in accordance with a final administrative or judicial decision resolving such dispute.

XXVIII. INSURANCE

134. At least seven (7) Days prior to commencing any on-Site 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 Order, comprehensive general liability insurance and automobile insurance with limits of two million dollars, combined single limit. Within the same time period, and annually thereafter with the annual report specified in Section IX, Respondent or its Contractors shall provide EPA with certificates of such insurance and a copy of each insurance policy upon request. If Respondent demonstrates by evidence satisfactory to EPA that its Contractor maintains insurance described above, or insurance covering some or all of the same risks but in an equal or lesser amount, then Respondent need provide only that portion of the insurance described above which is not maintained by such Contractor.

135. Respondent or its Contractors 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 Order, the following: (i) Professional Errors and Omissions Insurance in the amount of two million dollars per occurrence, and (ii) Pollution Liability Insurance in the amount of two million dollars per occurrence, covering as appropriate both general liability and professional liability arising from pollution conditions. Upon request, Respondent shall provide EPA with certificates of insurance and a copy of each insurance policy.

136. For the duration of this Order, Respondent shall satisfy, or shall ensure that its Contractors satisfy, all applicable laws and regulations regarding the provision of

employer's liability insurance and worker's compensation insurance for all persons performing Work on behalf of Respondent, in furtherance of this Order.

137. At least seven (7) Days prior to commencing any Work under this Order, Respondent shall certify to EPA that the required insurance has been obtained by its Contractors.

XXIX. MODIFICATION

138. This Order may be modified by mutual agreement by EPA and Respondent. Any agreed modification shall be in writing and signed by both parties. Any agreed modification shall become effective when signed by EPA and incorporated into this Order.

139. Any requests for a compliance date modification or revision of an approved Work Plan requirement must be made in writing. Such requests must provide justification for any proposed compliance date modification or Work Plan revision. EPA has no Obligation to approve such requests, but if it does so, such approval must be in writing. Any EPA-approved compliance date or Work Plan modification shall be incorporated by reference into this Order.

XXX. SEVERABILITY

140. If any provision or authority of this Order or the application of this Order to any party or circumstances is held by any judicial or administrative authority to be invalid, the application of such provisions to other parties or circumstances and the remainder of the Order shall remain in force and shall not be affected thereby.

141. This Order and its attachments constitute the final, complete, and exclusive agreement and understanding between EPA and Respondent with respect to the Work embodied in this Order. These parties acknowledge that there are no representations,

agreements, or understandings relating to the Work other than those expressly contained in this Order.

XXXI. TERMINATION AND SATISFACTION

142. This Order shall be deemed satisfied upon Respondent's and EPA's execution of an "Acknowledgment of Termination and Agreement to Record Preservation and Reservation of Rights" (Acknowledgment). EPA will prepare the Acknowledgment for Respondent's signature. The Acknowledgment will specify that Respondent has demonstrated to EPA's satisfaction that this Order, including any Additional Work determined by EPA to be required by this Order, has been satisfactorily completed. Respondent's execution of the Acknowledgment will affirm Respondent's continuing Obligation (1) to preserve all records and (2) to recognize EPA's continuing reservation of rights, in accordance with these respective sections of the Order after the rest of the Order is satisfactorily completed.

XXXII. SURVIVABILITY/PERMIT INTEGRATION

143. Except as otherwise expressly provided in this section, this Order shall survive the issuance or denial of a RCRA permit for the facility, and this Order shall continue in full force and effect after either the issuance or denial of any permit. Accordingly, Respondent shall continue to be liable for the performance of Obligations under this Order notwithstanding the issuance or denial of any permit. If the facility is issued a RCRA permit and the permit expressly incorporates all or a part of the requirements of this Order, or expressly states that its requirements are intended to replace some or all of the requirements of this Order, Respondent may request a modification of this Order and shall, with EPA approval, be relieved of liability under this Order for those specific Obligations.

XXXIII. EFFECTIVE DATE

144. The undersigned signatory for Respondent certifies that he or she is fully authorized to execute and legally bind Respondent to the terms and conditions of this Order.

145. This Order shall be effective on the date on which it is signed by EPA.

Agreed this ____ day of _____,_____.

By: _____
Signature

_____
Print Name

_____
Title

_____
Company

It is so ORDERED and Agreed this ____ day of _____,____.

By: _____

Richard Albright

Director, Office of Air, Waste and Toxics

Region 10, U.S. Environmental Protection Agency

EFFECTIVE DATE: _____

EXCLUDED AREAS

FORMER DIVISION EASTERN/WESTERN OPERATING AREAS

NORTH

STEFANSSON SOUND

3 Mile Limit

PRUDHOE BAY UNIT

STUMP ISLAND

WEST DOCK

PM2

PT. MCINTYRE

PM1

WDSP

AGI

LG1

DSL1

GULL ISLAND

NIAKUK ISLANDS

NIAKUK 4,5 & 6

DSNK

HEALD PT.

DSL5

PRUDHOE BAY

EAST DOCK

DSL2

DSL3

DSL4

SURFCOTE PAD

DS11

DS4

FS2

DS5

ARCO C PAD

SIP

FS1

COTU

PBOC

DS9

DS3

DS16

DS17

DS1

DS6

DS14

FS3

PS1

DS7

DS2

DS18

LPC

NSB LANDFILL

DS15

PUT 23 MINE SITE

CGF

WGI

NG1

CCP

K PAD

E PAD

G PAD

GC1

C PAD

BOC

GC3

CPS

B PAD

A PAD

X PAD

D PAD

D PAD LAKE

BIG LAKE

LAKE ARIOCA

F PAD

T PAD

J PAD

H PAD

Q PAD

GC2

N PAD

U PAD

Y PAD

P PAD

R PAD

M PAD

S PAD

TW-C (BPX)

SERVICE CITY

PUT RIVER 331213 (BPX)

N KUP STATE-1 (MOBIL)

KUP RIVER STATE-1 (ARCO)

RUPARUK RIVER DELTA

NWE-1

NW EILEEN-1 (ARCO)

NW EILEEN-2 (ARCO)

EILEEN WE

Z PAD

W PAD

HIGHLAND STATE-1 (ARCO)

KUP STATE-1 (MOBIL)

SE EILEEN-1,2 (ARCO)

GETTY STATE-1 (PLACID)

PUT RIVER STATE-1 (ARCO)

PUTULIGAYUK RIVER

RUPARUK RIVER

SAKONOWYAK RIVER

MILNE POINT ROAD

WEST OPERATING AREA

EAST OPERATING AREA

COLEEN LAKE

DS 12

DS13

DEADHORSE

SEE INSERT

SAGAVANIRKTOK RIVER

SAGAVANIRKTOK RIVER MAIN CHANNEL

T13N

T12N

T11N

T10N

T9N

R10E

R11E

R12E

R13E

R14E

R15E

R16E

Deadhorse

DS-13

DS-12

Coleen Lake

Sagavanirktok River

Deadhorse Airport

Caribou Construction Pad

HGS Pad

BP EXPLORATION (ALASKA) INC.

ATTACHMENT A
PRUDHOE BAY SITE MAP
BPXA ADMINISTRATIVE ORDER ON CONSENT
U.S. EPA DOCKET NO. RCRA-10-2007-0222

DATE: October 3, 2007
Version 0

0 2 Miles

BPXA Cartography / 10-01-07 / xp14343_07a.dgn

Attachment B

Hazardous Wastes Indicated for Container (S01) Storage from Respondent=s Revised RCRA Part A Application*, 3/01/04 BPXA Administrative Order on Consent U.S. EPA Docket No. RCRA-10-2007-0222

D001	ignitable
D002	corrosive
D003	reactive
D004	Arsenic
D005	Barium
D006	Cadmium
D007	Chromium
D008	Lead
D009	Mercury
D010	Selenium
D011	Silver
D017	2,4,5-TP (Silvex)
D018	Benzene
D019	Carbon tetrachloride
D020	chlordane
D021	Chlorobenzene
D022	Chloroform
D023	o-Cresol
D024	m-Cresol
D025	p-Cresol
D026	Cresol
D027	1,4 - Dichlorobenzene
D028	1,2 - Dichloroethane
D029	1,1 - Dichloroethylene
D030	2,4 - Dinitrotoluene
D031	Heptachlor (and its epoxide)
D032	Hexachlorobenzene
D033	Hexachlorobutadiene
D034	Hexachloroethane
D035	Methyl ethyl ketone
D036	Nitrobenzene
D037	Pentachlorophenol
D038	Pyridine
D039	Tetrachloroethylene
D040	Trichloroethylene
D041	2,4,5-Trichlorophenol
D042	2,4,6-Trichlorophenol
D043	Vinyl chloride
F001	spent halogenated solvents (degreasing)
F002	spent halogenated solvents
F003	spent nonhalogenated solvents
F004	spent nonhalogenated solvents
F005	spent nonhalogenated solvents
F027	chlorodibenzo-p-dioxins, chlorodibenzofurans, chlorophenols
K050	heat exchanger bundle sludge
K052	tank bottoms (leaded)
P001	2H-1-benzopyran-2-one,4-hydroxy-3-(3-oxo-1-phenylbutyl)-(Warfarin)
P030	Cyanides (soluble salts), NOS
P042	1,2-Benzenediol,4-[1-hydroxy-2-(methylamino)ethyl](Epinephrine)
P081	Nitroglycerine
P088	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
P098	Potassium cyanide
P105	Sodium azide
P106	Sodium cyanide
U002	Acetone
U003	Acetonitrile (I,T)
U031	1-Butanol (I)/n-Butyl alcohol (I)
U037	Chlorobenzene
U044	Chloroform
U056	Cyclohexane
U075	Dichlorodifluoromethane
U080	Methylene chloride
U112	Ethyl acetate (I)
U114	Ethylenebisdithiocarbamic acid, salts & esters
U117	Ethane, 1,1'-oxybis-
U120	Fluoranthene
U121	Methane, trichlorofluoro-
U122	Formaldehyde
U124	Furan
U136	Arsinic acid, dimethyl-
U144	Lead Acetate
U151	Mercury
U154	Methanol
U159	Methyl ethyl ketone
U161	Methyl isobutyl ketone
U165	Naphthalene
U188	Phenol
U196	Pyridine
U208	1,1,1,2-Tetrachloroethane
U210	Tetrachloroethylene
U211	Carbon tetrachloride
U213	Tetrahydrofuran (I)
U220	Toluene
U226	1,1,1-Trichloroethane
U228	Trichloroethene
U239	Xylene
U359	Ethylene glycol monoethyl ether

*This list reflects materials BPXA listed as hazardous wastes handled or potentially handled at the Site's Hazardous Waste Management Unit for container storage. Whether these hazardous wastes are reasonably expected to be Potential Contaminants of Concern will be addressed in the proposed Site Screening Levels submittal in accordance with Part I. D. of the Scope of Work for Site-Wide Project Work Plan.

ATTACHMENT C

LIST OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN
BPXA ADMINISTRATIVE ORDER ON CONSENT
U.S. EPA DOCKET NO. RCRA-10-2007-0222

The purpose of the list of Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) is to:

a. Describe the process which is used to categorize and prioritize the SWMUs or AOCs to be covered by this Order, and
b. List the known SWMUs and AOCs which may have corrective action requirements under this Order.

A. Process for Categorizing and Prioritizing SWMUs and AOCs

The SWMUs and AOCs within the following ten categories were first segregated into Project Groups based on operational history. The Project Groups were then prioritized based on existing regulatory requirements. Those Project Groups that are comprised of facilities which require corrective action under either a State of Alaska or US EPA program were given a higher priority than Project Groups that are not currently the subject of corrective action. Active facilities, such as the facility flare pits and solid waste storage cells were given a lower priority. Based on information developed during the corrective action process, SWMUs, AOCs, or Project Groups may be re-prioritized and the Project Groups may be modified to reflect these changes. Additionally, newly identified SWMUs or AOCs to be addressed by the Order will be incorporated into the Project Groups based on similarity to SWMUs and AOCs in existing Project Groups. Or, if appropriate, a newly identified SWMU or AOC may constitute its own Project Group. Revisions to the list of SWMUs and AOCs shall be made in accordance with Attachment D, Scope of Work for Site-Wide Project Work Plans.

<u>Explanation of Project Groups</u>
These groups are listed in order of priority.

Project Group I. Inactive Production Reserve Pits

Inactive Production Reserve Pits are the largest group of SWMUs/AOCs to be addressed by the Order and cover the greatest amount of land surface of any of the Order's Project Groups (approximately 2 acres per reserve pit). These reserve pits are being remediated under the oversight of the Alaska Department of Environmental Conservation (ADEC) in accordance with the requirements of 18 AAC 60.430-60.440. Work on these SWMUs began in 1996 and will continue during implementation of this Order. Within this Project Group, production reserve pits with approved State closure are given the highest priority for completion of the RCRA corrective action process. Early completion of this process at these

sites will facilitate implementation of rehabilitation plans approved by ADEC, the Corps of Engineers (COE) and the Alaska Department of Natural Resources (ADNR).

Project Group II. Inactive Exploration Sites

Inactive exploration sites are also being remediated under the regulatory oversight of ADEC. The inactive exploration site Project Group is comprised of 40 sites. SWMUs/AOCs within this group have also undergone a significant amount of remediation under State oversight. These SWMUs/AOCs will have remedial measures in progress as implementation of the Order begins. Completing the RCRA corrective action process will allow wetlands from these numerous sites to be restored.

Project Group III. Inactive Oily Waste Cells

The four cells that comprise this Project Group are inactive. The State of Alaska requested early action for removal of three cells (Cells 1, Cell 2, and East Pit) located at Pad 3 to remove any further threat of release of hydrocarbons to the environment. That work will be essentially complete by the end of 2007. The fourth cell in this Project Group, Pingut Pit, remains to be remediated.

Project Group IV. Tuboscope

Work at the Tuboscope SWMU has been conducted under a separate Administrative Order on Consent (EPA Docket No: RCRA-10-99-0179), which requires the interim measures at the Tuboscope SWMU. Active interim remedial measures have been in place since 2000. In 2006 a pilot in-situ treatment test was conducted to evaluate the use of nanoscale, bi-metallic particles (Iron and Palladium) to remediate the remaining contaminants in the Pad. Interim measures and monitoring at this site will continue under the existing Tuboscope Order until approval by EPA of the revised Tuboscope Interim Measures Work Plan (due one year after the effective date of this Order), at which time the Tuboscope Order will be terminated and work at Tuboscope will be conducted under this Order.

Project Group V. Alaska Charter Sites

SWMUs and AOCs in this Project Group are those that are listed on the Charter Agreement executed among BP, ARCO and the State of Alaska. Under the terms of the Charter Agreement, executed on December 2, 1999, deadlines were established for remediating those sites that could be remediated prior to facility abandonment. SWMUs and AOCs that can not

be remediated prior to facility or equipment abandonment are to be remediated on a mutually agreed schedule at that time.

Project Group VI. Non Charter Sites

This Project Group is comprised of SWMUs/AOCs where releases have occurred. Current activity includes monitoring of those sites that have not yet received closure from ADEC.

Project Group VII. Old Landfill Sites

This Project Group consists of five landfills that may largely contain residual ash from historic burning operations or inert metals or debris. Respondent believes these sites present a low release risk. Sites within this Project Group may be re-prioritized based on information developed during the preparation of the Site Wide Strategy Plan.

Project Group VIII. Other Inactive Impoundments

This Project Group covers impoundments that may have been used during early field operations but are currently inactive. Completion of the RCRA corrective action process for these impoundments would allow wetlands from these numerous sites to be rehabilitated.

Project Group IX. Active Operational Sites Where Releases May Have Occurred, Potential Areas of Concern

This Project Group includes well cellars, fire training grounds, active flare pits and relief pits that are still being actively used at the Site. Ongoing operations limit the scope of work that can be performed at SWMU/AOCs within this Project Group. In most instances, investigations of a limited scope to characterize the SWMU/AOC and to demonstrate that contaminants are not migrating outside the boundary of the SWMU/AOC may be the only work possible while the areas remain operational.

Project Group X. Other Active Operational Sites (Solid Waste Cells)

This Project Group consists of five active, permitted storage impoundments that are currently used at the Site**.** As with Category IX, ongoing operations limit the scope of work that can be performed at SWMUs within this Project Group. In most instances, investigations of a limited scope to characterize the SWMU/AOC and to demonstrate that contaminants are not migrating outside the boundary of the SWMU/AOC may be the only work possible while the areas remain operational.

B. Solid Waste Management Units and Areas of Concern

Below is the list of the SWMUs and AOCs to be addressed by this Order. The SWMUs and AOCs have been incorporated into Project Groups which are listed in order of priority. This listing may be modified as described in Paragraph A of this Attachment. A more detailed list of these SWMUs and AOCs is included as Appendix 1 to this attachment.

Project Group I
Inactive Production Reserve Pits

1. Inactive Reserve Pits-Final ADEC Closure Approved, EPA Determination of Corrective Action Complete To Be Requested
2. Inactive Reserve Pits-Awaiting Final ADEC Closure Approval
3. Inactive Reserve Pits – Remedial Measure Not Complete, Scheduled to be closed by 2007

Project Group II
Inactive Exploration Sites Within Prudhoe Bay Boundary (entire 'site' including reserve pit and flare pit)

1. Sites that have received ADEC closure-wastes buried in place
2. Sites that have received ADEC closure-waste removed
3. Sites where remedial actions still pending or ongoing, no ADEC closure
4. Sites where remedial actions have not yet occurred

Project Group III
Inactive Oily Waste Cells

1. Cell 1 at Pad 3
2. Cell 2 at Pad 3
3. East Pit at Pad 3
4. Pingut Pit

Project Group IV
Tuboscope Site, WOA
(Interim Measures Order Already In Place)

Project Group V
Contaminated Sites or Potential Areas of Concern, Alaska Charter Sites (see detailed list on spreadsheet)

1. Remedial measures have been conducted and ADEC closure received
2. Remedial measures/monitoring conducted, BP to submit data for state closure approval
3. Remedial measures/monitoring in progress, no closure

Project Group VI
Contaminated Sites or Potential Areas of Concern, Non-Charter Sites (See detailed list on spreadsheet)

1. Remedial measures have been conducted and ADEC closure received
2. Remedial measures/monitoring conducted, BP to submit data for state closure approval
3. Remedial measures/monitoring in progress, no state closure

Project Group VII
Old Landfill Waste Accumulation Sites

1. Sand Dunes Landfill—Inactive since early 80s
2. Surfcote Waste Pile including natural gas flare
3. Pad 13 Waste Pile
4. ARCO Hanger Site-potential landfill site of buried drums
5. C Pad Production Site, Buried Ash from Burn Pit

Project Group VIII
Other Inactive Impoundments (no waste contained in impoundments, study may be required to determine if remedial measures required)

1. Drill Site Flare Pits
2. Drill Site Seawater Displacement Pits (listed in EOA doc)
3. Drill Site Relief Pits
4. Drill Site Drill Rig Wastewater Lagoons

Project Group IX
Active Operational Sites Where Releases May Have Occurred, Potential Areas of Concern

1. Well cellars
2. Fire training grounds and permitted open burn areas
3. Flare pits at all facilities
4. Active relief pits at some production pads (if any)

Project Group X
Other Active Operational Sites (Solid Waste Storage Cells)

1. T Pad
2. CC-2A
3. G&I storage cells
4. W Pad Drilling Storage Cell
5. West Pit at Pad 3

APPENDIX 1 TO ATTACHMENT C
DETAIL LIST OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN
BPXA ADMINISTRATIVE ORDER ON CONSENT
U.S. EPA DOCKET NO. RCRA-10-2007-0222

Project Group I: Inactive Production Reserve Pits

SWMU #	SWMU Name
1.1.1	Drill Site 1
1.1.2	Drill Site 2
1.1.3	Drill Site 3
1.1.4	Drill Site 4
1.1.5	Drill Site 5
1.1.6	Drill Site 6
1.1.7	Drill Site 7
1.1.11	Drill Site 11
1.1.12	Drill Site 12
1.1.13	Drill Site 13
1.1.14	Drill Site 14
1.1.15	Drill Site 15
1.1.18	Drill Site 18
1.2.1	Lisburne 1
1.2.2	Lisburne 2
1.2.3	Lisburne 3
1.2.4	Lisburne 4
1.2.5	Lisburne 5
1.2.6	Lisburne Gas Injection
1.2.7	A Gas Injection
1.2.8	W Gas Injection
1.3.1	A Pad
1.3.2	B Pad
1.3.3	C Pad
1.3.4	D Pad
1.3.5	E Pad
1.3.6	F Pad
1.3.7	G Pad
1.3.8	H Pad
1.3.9	J Pad
1.3.10	K Pad
1.3.11	M Pad
1.3.12	N Pad
1.3.13	Q Pad
1.3.14	R Pad
1.3.15	S Pad
1.3.16	T Pad
1.3.17	U Pad
1.3.18	W Pad
1.3.19	X Pad
1.3.20	Y Pad
1.3.21	Z Pad

Project Group II: Inactive Exploration Sites

SWMU #	SWMU Name
2.1.1	Put River 24-10-14
2.1.2	N. Prudhoe Bay St. #2
2.1.3	Sag River State 1
2.1.4	PBU PWDW1-1
2.1.5	PBU PWDW1-2
2.1.6	PBU PWDW1-3
2.1.7	Pt. McIntyre 01/02

Project Group II: Inactive Exploration Sites (Continued)

SWMU #	SWMU Name
2.1.8	Sag Delta 6 (DS L5 Pad)
2.1.9	Put River 19-10-15 (S. pit only)
2.1.10	West Kuparuk State 3-11-11
2.2.1	Kuparuk River State #1
2.2.2	Sag Delta #1
2.2.3	Sag Delta #2
2.2.4	NW Eileen #1/#2
2.2.5	Kuparuk 7-11-12 (Chevron Tract Well)
2.2.6	Highland State #1
2.2.7	Eileen West End
2.3.1	PBU Tract T3C
2.3.2	PBU Term Well A
2.3.3	Pingut State 1
2.4.4	Lake State 1
2.4.5	Beechey Pt St 1/2
2.4.6	East Bay State 1
2.4.7	East Dock Storage Cell
2.4.8	Getty State #1
2.4.9	Hurl State 5-10-13
2.4.10	Kuparuk 30-11-13
2.4.11	Kuparuk State #1
2.4.12	N. Kuparuk State #1
2.4.13	Prudhoe Bay Unit 31-11-13
2.4.14	PBU Term Well C
2.4.15	Abel State #1
2.4.16	Put River 1, 11 & 12 (-10-14)
2.4.17	Put River 19-10-15
2.4.18	Put River 33-12-13
2.4.19	Put River St 1
2.4.20	SE Eileen St #1/#2
2.4.21	South Bay St 1 (DS L3 Pad)
2.4.22	South Point St 1 (DS L2 Pad)
2.4.23	West Beach St 1/1-A/2/3/4

Project Group III: Inactive Oily Waste Cells

SWMU #	SWMU Name
3.1	Pad 3, Cell 1
3.2	Pad 3, Cell 2
3.3	Pad 3, East Pit
3.4	Pingut Pit

Project Group IV: Tuboscope

SWMU #	SWMU Name
4.1	Tuboscope

Project Group V: Alaska Charter Sites

SWMU #	SWMU Name
5.1.1	ARCO EOA C Pad - Stoddard Solvent Site
5.1.2	Niakuk #4 Island
5.1.3	ARCO Building U5A
5.2.1	ARCO Drill Site 2
5.2.2	ARCO Drill Site L2 Bioremediation
5.2.3	ARCO Point McIntyre PM-1
5.2.4	ARCO Pad 10
5.2.5	ARCO DSM Warm Storage Facility
5.3.1	BP WOA D Pad
5.3.2	ARCO Crude Oil Topping Unit (COTU)
5.3.3	ARCO DSM Shop Site
5.3.4	ARCO East Dock Bioventing Site
5.3.5	Kuparuk River State 1
5.3.6	ARCO CGF NGL Flare Pit
5.3.7	ARCO Pad 3 (East End)

Project Group VI: Non Charter Sites

SWMU #	SWMU Name
6.1.1	BOC Fueling Island Site (WOA)
6.1.2	MOFW Bulk Fuel Island (BOC Pad, WOA)
6.2.1	PBOC Generator Site
6.2.2	Building U-21
6.2.3	CGF Flare Pit Therminol Spill
6.2.4	DS L-2 Pipeline Spill to tundra
6.2.5	MCC Fuel Loading Dock (Old)
6.2.6	MCC Fuel Loading Dock (New)
6.2.7	GC-2 OTL Release
6.2.8	FS-2 OTL Release

Project Group VII: Old Landfills

SWMU #	SWMU Name
7.1	Sand Dunes Landfill
7.2	Surfcote Waste Pile
7.3	Pad 13 Waste Pile
7.4	ARCO Hangar
7.5	C Pad

Project Group VIII: Other Inactive Impoundments

SWMU #	SWMU Name
8.1	Drill Site Flare Pits
8.2	Seawater Displacement Pits
8.3	Drill Site Relief Pits
8.4	Drill Rig Wastewater Lagoons

Project Group IX: Active Operational Sites where releases may have occurred, Potential Areas of Concern

SWMU #	SWMU Name
9.1	Well Cellars
9.2	Fire Training Areas/Permitted Open Burn Areas
9.3	Facility Flare Pits
9.4	Active Relief Pits

Project Group X: Other Active Operational Sites (Solid Waste Cells)

SWMU #	SWMU Name
10.1	T Pad
10.2	CC-2A
10.3	G&I Storage Pad
10.4	W Pad Drilling Storage Cell
10.5	West Pit at Pad 3

ATTACHMENT D

SCOPE OF WORK FOR SITE-WIDE PROJECT WORK PLAN
BPXA ADMINISTRATIVE ORDER ON CONSENT
U.S. EPA DOCKET NO. RCRA-10-2007-0222

The purpose of the Site-Wide Project Work Plan is to provide Site-wide environmental information and to provide a strategic approach and schedule to effectively and efficiently conduct and report corrective action activities on a large number of diverse units across a physically extensive geographic area.

Components of the Site-Wide Project Work Plan

The Respondent shall submit, for review and approval, a Site-Wide Project Work Plan (Work Plan). The Work Plan will have three distinct and separable parts: Part I, due within one hundred and twenty (120) Days of the effective date of this Order, describes the Site background information, previous work, public involvement and includes an interim schedule; Part II, due within one hundred and eighty (180) Days of the effective date of this Order, proposes and provides a rationale for Site screening levels and potential contaminants of concern; and Part III, due within two hundred and seventy (270) Days of the effective date of this Order, provides a strategy and schedule for completing the corrective action process. Additionally, Part IV of this Scope of Work describes the annual report content and submission requirements. The Site-Wide Project Work Plan shall meet the requirements and deadlines set forth in the Order and shall be based on the following requirements.

PART I FACILITY INFORMATION

A. <u>Site-Wide Background</u>

The Work Plan shall include a Background section which summarizes: a) the facility's waste management history; and b) the general environmental setting of the Site.

1. Site Background

The Site Background section shall include, to the extent information is available or is able to be collected:

a) A history and description of ownership and operation, solid and hazardous waste generation, treatment, storage and disposal activities at the Site, including a description of how each type of waste generating activity, including volume and composition of the generated waste, may have changed over time;

b) Dates, periods, estimated volume and nature, and location of all Alaska Department of Environmental Conservation (ADEC)–reportable releases of product and/or waste, and a description of the types of spill response actions used to conduct spill cleanup. Should EPA request more detailed information regarding any release, including location and response actions taken, for specific spill events in this data submittal, Respondent shall provide such information

within thirty (30) Days, or such other time as EPA approves, of receiving EPA's request.

c) A list, including performance period or expiration date, of all active or pending environmental permits and orders involving solid waste or water discharge, waste cleanup, pit storage, and waste injection disposal wells applicable to the Site.

2. Environmental/Regional Setting

a) A general description of regional geologic and hydrogeologic characteristics affecting or potentially affecting soil, suprapermafrost groundwater, surface water, and contaminant migration at the Site. This information may be organized by region. The description will include, but is not limited to, the following information, as applicable:

(1) Regional stratigraphy;
(2) An evaluation of the continuity of stratigraphic units within the Site;
(3) Surface soil distribution;
(4) Soil descriptions in accordance with the Unified Soil Classification system;
(5) An analysis of generalized regional soil properties, including hydraulic conductivity (saturated), bulk density, porosity, cation exchange capacity (CEC), soil organic matter content, soil pH, particle size distribution based on sieve analyses, moisture content, presence of stratification or soil structures that may affect unsaturated flow, mineral content;
(6) An analysis of generalized pad gravel properties, including hydraulic conductivity (saturated), bulk density, porosity, cation exchange capacity (CEC), soil organic matter content, soil pH, particle size distribution based on sieve analyses, moisture content, presence of stratification or soil structures that may affect unsaturated flow, mineral content;
(7) An identification and discussion of the movement of suprapermafrost groundwater in a tundra environment;
(8) Any changes in the hydraulic flow regime due to seasonal (intraseasonal) influences, including spring thaw sheet flow and polygonal troughs;
(9) A discussion of the surface condition of permafrost in the region where it interfaces with the active layer, including continuity and an assessment of the impacts on permafrost conditions due to:
i.) area activities such as drilling or excavation,
ii.) location (e.g., proximity to gravel pads and roads, buildings, pipes, ponds, reserve pits, rivers, the ocean)
iii.) annual variations in thaw zone depth, and
iv.) other factors that may impact the fate and transport of contaminants;
(10) A topographic map of the Site/region;
(11) A generalized cross section of the region; and

(12) A brief description of regional climatology, including, but not limited to approximate dates of freeze up and spring thaw, seasonal temperature extremes and averages, average annual rainfall and total precipitation, average monthly precipitation, seasonal wind roses, description of annual thaw impacts, flooding.

b) A general description of the regional human presence and ecological conditions at the Site. This description shall include, but not be limited to:

(1) A summarized description of the approximate numbers, work type, and types of work schedules of staff, contractors, and others working at the Site. This description shall include an assessment of the seasonal and annual variability to these numbers;

(2) A description of human activity that is not associated with the work at the Site, with a focus on any hunting, fishing, and gathering associated with traditional lifestyle activities at the Site and in the region;

(3) An overview description of regional plants and animals, with a focus on, but not limited to, any species listed as endangered or threatened under the Endangered Species Act and including a description of critical habitat;

(4) Verification that an archeological assessment has been completed for the Site and is on the State Preservation List. This list is held confidential by the State of Alaska. All SWMU and AOC sites will be screened against this list by an approved state authority. Respondent shall notify EPA in writing that an issue may exist within fourteen (14) Days of Respondent's receipt of such notification by the State of Alaska; and

(5) Information regarding drinking water sources at or near the Site will not be included in the Work Plan due to Homeland Security concerns. This information can be obtained by EPA from ADEC.

(6) A list of the key North Slope environmental and human attributes relevant to the development and selection of screening levels for contaminants of potential concern (COPCs).

B. <u>Current Conditions Report</u>

The Site-Wide Project Work Plan shall include a Current Conditions Report which summarizes the existing information for the SWMUs and AOCs, including:

1. SWMUs and AOCs

Attachment C of the Order provides the list of known SWMUs and AOCs to be covered by the Order. The SWMUs and AOCs are organized into Project Groups. Attachment C includes the approach and justification used to aggregate the SWMUs and AOCs into the Project Groups and to prioritize the Project Groups. It may be necessary to update Attachment C from time to time to include any newly identified SWMUs or AOCs as described in Section VIII of the Order. This update shall include the justification used to aggregate and prioritize the newly added SWMU or AOC. If a new SWMU/AOC is identified, the list of Project Groups in

Attachment C shall be updated and submitted to EPA within thirty (30) Days of EPA's written determination that the SWMU/AOC is subject to the Order. Throughout the duration of the Order, it may become necessary to reorganize the Project Groups as listed in Attachment C. For example, a large Project Group may need to be split into subsets to remain manageable or a SWMU may need to be removed from a Project Group and re-prioritized due to information discovered in the course of an investigation. EPA or Respondent may propose such a reorganization. Following discussion, if EPA directs Respondent in writing to revise the list, Respondent shall submit to EPA the revised Attachment C within thirty (30) Days. Any updated or revised list of Project Groups shall follow the aggregation and prioritization approach in Attachment C or request a modification to the approach. Changes to Attachment C may trigger a change to the project schedule which will be revised in accordance with Part III of this Attachment. Although various deliverables required under the Order will be organized by Project Groups, it will be necessary to identify and describe distinct SWMUs and AOCs within the Project Group.

2. Description and Assessment

For SWMUs, and AOCs (or Project Groups, where appropriate), identified in Attachment C and for any newly identified SWMUs/AOCs throughout the duration of the Order, Respondent shall:

a) Identify the location of SWMU or AOC on a Site map;

b) Provide an estimate of the quantities of solid and hazardous wastes (both managed and released);

c) List the type of hazardous waste and hazardous waste constituents (both causing and potentially causing contamination), to the extent known. This information may be summarized for like SWMUs/AOCs in a Project Group, if appropriate;

d) Identify and describe any investigation/characterization of each SWMU, AOC, or Project Group (if appropriate) or in the surrounding area;

e) Provide a summary of findings for each investigation (citing the appropriate documentation), including any constituents identified, the highest levels of those constituents, and the extent of contamination. Provide an appropriate scale map showing site features, constituent levels, and extent of contamination, if known;

f) Provide a summary of any remedial work performed (citing the appropriate documentation), including type of work performed, the affected media, the physical extent of the action, the disposition of any remediation wastes, the results of any confirmation sampling, and any physical changes to the area or unit (e.g., fill material placed in unit);

g) Identify additional information (e.g., data gaps) necessary to meet the purposes of this Order;

h) Provide a preliminary assessment of the nature and extent of contamination for each SWMU, AOC, or Project Group, as appropriate, in accordance with the applicable EPA guidances (e.g., RCRA Corrective Action Plan, EPA 520-R-94-004/OSWER Directive 9902.2-2A); and

i) Provide an assessment regarding previously implemented Interim Measures and the need for initial or additional Interim Measures at each SWMU, AOC, or Project Group consistent with Subsection B: Interim Measures(IM)/Stabilization, in Section VIII: Work to Be Performed, of the Order.

j) Provide a ranking of the SWMUs and AOCs listed in Attachment C in order (highest to lowest) of release potential and Respondent's assessment of risk to human health and/or the environment. This ranking will not change the schedule or sequence that the Respondent performs Work under this Order unless there is an immediate threat to human health or the environment.

3. Reference List

a) Respondent shall provide a reference list organized in sections by SWMU, AOC or Project Group which lists, in chronological order, all documents relating to background, investigation and/or remediation of that SWMU, AOC, or Project Group, including those prepared in response to this Order. Documents relating to site-wide background, investigation and/or remediation efforts shall be listed chronologically in a section for site-wide documents.

b) The list shall provide sufficient information to clearly identify the document and shall include, but not be limited to, the full title of the document, the date it was prepared, and the name/affiliation of the preparer.

c) Documents on the list shall be numbered sequentially within each identified section.

d) Upon request, Respondent shall provide a copy of specified documents from this list to EPA within fourteen (14) days of receipt of the request.

e) This reference list shall be updated throughout the duration of the Order to reflect ongoing documentation. The updated reference list shall be provided to EPA each year as a component of the annual report, or as otherwise requested.

C. <u>Public Involvement Plan</u>

Respondent shall prepare a Public Involvement Plan, to be developed in consultation with EPA, for the dissemination of information to the public regarding corrective action activities, including proposed actions and investigation results. The Public Involvement Plan shall specify a public repository for submittals and reports required by this Order. This Plan will detail the criteria for establishing and maintaining the public repository. The Public Involvement Plan shall also specify the methodology for identifying and notifying members of the public that may be interested in corrective action activities at

the Site. Any notifications shall include, but not be limited to, the owners and operators of adjacent properties and Alaska Native Tribes in the Arctic Region.

C. Interim Schedule

Respondent shall submit an interim schedule of Order deadlines and any remedial actions to be conducted prior to approval of Part II of the Site-Wide Project Work Plan.

PART II SITE SCREENING LEVELS

Respondent shall submit to EPA for review and approval proposed site screening levels. This submission shall include documentation explaining the preparation of the site screening levels, including a justification for the selection of contaminants of potential concern (COPCs) and a rationale for the selection of the screening levels. The site screening levels shall be provided in tabular format. COPCs shall be listed alphabetically within analytical groups (e.g., metals, volatiles, etc.) The COPCs shall include any hazardous constituents known or suspected to be used, stored or produced in significant quantities at the Site as well as any breakdown products of these constituents that are also hazardous constituents. Should any such constituent not be included, a justification for the exclusion shall be provided. Site screening levels shall be proposed for water and for soil. A separate category of water for Project Areas near drinking water sources may be necessary. The proposed site screening levels shall be based on EPA accepted risk-based sources and shall be developed in consideration of both human health and ecological receptors together with the unique environmental characteristics of the North Slope.

PART III SITE-WIDE STRATEGY

A. Corrective Action Strategy

Respondent shall develop a Site-wide strategy for completing corrective action activities in accordance with the process specified in Section VIII of the Order and Order Attachments E, F, and G. The Site-wide strategy shall clearly describe how the SWMUs, AOCs, and Project Groups will progress through each step of the corrective action process. At a minimum, the Site-wide strategy must include the following:

1. The sequence and schedule in which SWMUs, AOCs, or Project Groups will be addressed must be clearly stated and a rationale for the sequence and schedule must be provided. A specific calendar date must be included for the submission of each required RCRA Facility Investigation (RFI) Work Plan as described in Attachment E of this Order. The strategy shall include a timeline depicting the proposed schedule for all other required submittals for each Project Group;

2. Phasing of efforts within the Project Groups shall be described and justified;

3. A strategy must be proposed to describe how SWMUs and AOCs will be efficiently managed after the investigation phase including, but not limited to, how the Project Groups might be reorganized, if necessary. Such reorganization of projects shall be subject to EPA approval; and

4. Scheduling must give priority to projects which require the implementation of Interim Measures to protect human health or the environment.

B. <u>Site-Wide Conceptual Site Model</u>

The Site-Wide Project Work Plan shall include a Site-Wide Conceptual Site Model prepared in accordance with applicable EPA guidances.

C. <u>Schedule</u>

The Respondent shall provide, in tabular format, a comprehensive schedule for performing corrective action activities.

1. The schedule will list, by Project Group, SWMU, or AOC, as appropriate, scheduled dates/timelines for all submittals and work required under the order, including draft and final Work Plans, investigation work, and draft and final reports.

2. The schedule shall be maintained and updated on an annual basis and submitted concurrently with the Annual Report throughout the duration of the Order. Each Work Plan and report approval will lead to more definitive information regarding dates by which Work will be performed. A corresponding adjustment to the schedule may be necessary. In addition, an updated schedule shall be provided to EPA within thirty (30) days of a request from the EPA Project Coordinator.

3. Any modification to the existing schedule must be approved in writing by EPA.

4. EPA reserves its right to modify the approved schedule as needed upon notice to and opportunity to comment by the Respondent.

PART IV ANNUAL REPORT

Respondent shall submit an annual written progress report.

1. The reporting period for the report shall be January 1 - December 31. The annual report shall be due on March 31 of each year.

2. The annual report shall describe activities conducted during the reporting period, and shall include, but not be limited to, the following information:

a) A description of any newly identified SWMUs or AOCs, including all information required under Part I. B.2. of this attachment;

b) A description of Work conducted pursuant to this Order during the performance period.

c) For all field work, a summary description of the data collected with a specific reference to where the data is documented (e.g., citation to an RFI Report with the date submitted or due date);

d) Any issues or problems encountered and resolutions implemented or suggested;

e) A description of all Work planned for the next reporting period;

f) An updated reference list in accordance with Part I. B.3.e);

g) Documentation regarding all releases reported to the National Response Center during the reporting year in accordance with Section VIII of the Order;

h) A list of all new environmental permits and/or orders as described in Part I.A.1.c. applied for or received during the reporting period; and

3. A current schedule for all work to be performed under the Order shall be submitted concurrently with the annual report.

4. An updated list of all Corrective Action Completion determinations that have been issued by EPA pursuant to the Order shall be submitted concurrently with the annual report.

5. An updated list of principal personnel performing Work for Respondent associated with this Order shall be submitted concurrently with the annual report.

6. An updated total cost estimate as specified in Section XXVII of this Order shall be submitted concurrently with the annual report.

7. Certificates of insurance as specified in Section XXVIII of this Order shall be submitted concurrently with the annual report.

ATTACHMENT E

SCOPE OF WORK FOR RCRA FACILITY INVESTIGATION WORK PLANS
BPXA ADMINISTRATIVE ORDER ON CONSENT
U.S. EPA DOCKET NO. RCRA-10-2007-0222

OBJECTIVES OF A RCRA FACILITY INVESTIGATION WORK PLAN

The objectives of a RCRA Facility Investigation (RFI) are to characterize the environmental conditions and to determine the full nature and extent of contamination in all media for the purposes of selecting, designing, and implementing corrective measures.

In accordance with the Site-Wide Project Work Plan, multiple project-specific RFI Work Plans will be needed to characterize environmental conditions at Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) within the Site. These RFI Work Plans will be organized in accordance with the Project Groups established in the approved Site-Wide Project Work Plan. Where several SWMUs and/or AOCs are included in one RFI Work Plan, it will be necessary to address at least some of the components described below, for each individual SWMU or AOC. As defined in Section II of the Order, the term "Project Area" shall mean the physical area of the Project Group, or, where distinct conditions exist, the area of individual SWMUs or AOCs within the Project Group.

RFI Work Plans shall include provisions for carrying out investigations necessary to characterize geology, stratigraphy and hydrogeology beneath the Project Areas, define the sources, nature and extent of contamination in all media, and identify actual or potential receptors and pathways. The investigations must result in data of adequate technical quality and assure that the full nature and extent of each hazardous waste and hazardous constituent released at or from SWMUs and AOCs at the Site has been determined in each media to EPA's satisfaction and as necessary to identify, develop and implement appropriate corrective measures that protect human health and the environment. The investigations may be planned in a phased approach. Detailed Work Plans and technical specifications for supplemental investigative activities shall be approved by EPA prior to implementation or incorporation into the project schedule as described in the Scope of Work for the Site-Wide Project Work Plan. Each RFI Work Plan shall include provisions for characterizing the Project Area as set forth below.

The Order, including this Attachment, is structured so that multiple RFIs, rather than one inclusive RFI, will be conducted to address the Project Areas at the Site. Due to the broad and variable nature of the individual Project Areas, the detail and extent of each RFI will be based upon the needs of that Project Area. For example, factors that may impact the composition of each RFI include the stage and applicability of investigation or corrective action performed prior to the effective date of this Order, the complexity of the Project Area, and the nature and extent of the release. There will be some Project Areas that will require a complete RFI as outlined in this attachment. Other Project

Areas will require only certain parts of each of the RFI sections outlined below, including limited investigations or confirmatory sampling and analysis. The RFI for still other Project Areas may essentially consist of reporting the results of work previously conducted and subsequently accepted by EPA.

Where a SWMU or an AOC, prior to the effective date of this Order, has already been investigated by the Respondent, data summary reports may be submitted and referenced in an abbreviated RFI Work Plan. In cases where a SWMU or an AOC has already had remedial work performed prior to effective date of the Order, project completion reports and/or confirmatory sampling data may also be submitted and referenced in the RFI Work Plan to support or fulfill characterization requirements. These reports/data must have sufficient information and detail to document how and where data were collected. In addition, data submitted must be of sufficient and documented quality to be approved for use in lieu of new data as described in Paragraph 51 of the Order. If approved by EPA in the RFI Work Plan, these data, along with a Project Area-specific Conceptual Site Model, if needed, may form the basis for determining the presence or absence of a release, determining that adequate remediation has been completed, or characterizing the nature and extent of contamination at the SWMU or AOC. Where appropriate, this process may be applied to a Project Group.

The Respondent shall submit the anticipated scope of each RFI to EPA for approval in that RFI Work Plan. For abbreviated RFIs, a very brief RFI Work Plan may be appropriate. All RFI Work Plans shall have an option for a second RFI phase in case additional information is needed to fully characterize the Project Area.

COMPONENTS OF A RCRA FACILITY INVESTIGATION WORK PLAN

I. Project Management Plan

RFI Work Plans shall include a Project Management Plan which shall set forth the Project Area-specific objectives for the RFI and shall include detailed schedules and a description of the technical approach.

II. Project Area-Specific Conceptual Site Model

An RFI Work Plan shall include plans for the development of Project Area-specific conceptual site model(s), if needed, in accordance with applicable EPA guidances. A separate conceptual site model may be needed for each SWMU or AOC or set of similar SWMUs or AOCs. The Project Area-specific conceptual site models, when needed, will be updated as new information about the Project Area is acquired. At a minimum, those Project Area-specific conceptual site models will be refined with each phase of an investigation and included with the report for that phase and in the final RFI Report.

III. Environmental Setting

RFI Work Plans shall include provisions to collect information to supplement and verify existing information, if needed, on the environmental setting of each Project Area. To

the extent that the Environmental Settings Report and the Current Conditions Report adequately describe the information needed below for a Project Area, the RFI Work Plan may reference and include a specific citation to these earlier Order deliverables. Each RFI Work Plan shall ensure that the full nature and extent of each hazardous waste and hazardous constituent released in the Project Area will be identified as necessary to ensure protection of human health and the environment.

RFI Work Plans shall include provisions to document and, if necessary, collect the following information:

A. Hydrogeology

1. A description of local geologic and hydrogeologic characteristics affecting the movement of suprapermafrost groundwater, pad porewater, and surface water, as well as contaminant migration at the Project Area. This description shall include, but is not limited to:

a. Project Area stratigraphy;
b. Surface soil distribution;
c. Soil descriptions in accordance with the Unified Soil Classification system;
d. An analysis of tundra soil properties, to the extent practicable, including hydraulic conductivity (saturated), bulk density, porosity, cation exchange capacity (CEC), soil organic matter content, soil pH, particle size distribution based on sieve analyses, moisture content, presence of stratification or soil structures that may affect unsaturated flow, mineral content;
e. An analysis of local pad gravel properties, including hydraulic conductivity (saturated), bulk density, porosity, cation exchange capacity (CEC), soil organic matter content, soil pH, particle size distribution based on sieve analyses, moisture content, presence of stratification or soil structures that may affect unsaturated flow, mineral content;
f. Any changes in the local hydraulic flow regime due to seasonal (intraseasonal) influences;
g. A discussion of the condition of permafrost in the Project Area, including fracturing, thaw bulbs, continuity and an assessment of the impacts on permafrost conditions due to:
   (1) Project Area activities such as drilling or excavation;
   (2) location (e.g., proximity to gravel pads and roads, buildings, pipes, ponds, reserve pits, rivers, ocean);
   (3) annual variations in thaw zone depth; and
   (4) other factors which may impact the fate and transport of contaminants.
h. Cross sections indicating the location and extent of each hydrogeologic (or porewater) zone, to include depictions of

expected permafrost thaw patterns due to impacts described under item g) above;

i. An identification of zones of contrasting hydraulic conductivity that may affect the migration of contaminants as necessary to characterize suprapermafrost groundwater flow and potential contaminant transport.

j. Water level contour and/or potentiometric surface maps of pad porewater and suprapermafrost groundwater, to the extent practicable,using measurements from existing and newly installed wells. Contour maps shall reflect the presence and influence of any non-aqueous phase liquids. Any measurements necessary to correct water levels for the presence of these liquids shall be taken at the time of water level measurements. Interphase probes must be utilized in measuring non-aqueous phase liquids.

k. Hydrogeologic cross sections and/or other graphical representations showing the magnitude and influence of vertical and horizontal gradients on the potential contaminant transport at the Project Area;

l. The flow system, including the vertical and horizontal components of flow, as described through flow vectors or the construction of flow nets, as necessary to identify and characterize potential contaminant transport pathways; and

m. An evaluation and investigation of pad porewater at the Project Area which may affect contaminant transport pathways.

2. A description of local surface water flow regimes based on present and historical conditions.

3. A characterization of the soil/gravels in the vicinity of known and suspected contaminant releases. Such characterization shall include all factors necessary and appropriate to define the potential for contaminant migration and to evaluate contaminant fate and transport in the soil/gravel system.

a. All soil borings conducted under the RFI Work Plan shall be logged continuously. Respondent shall conduct sufficient soil borings to provide for a detailed lithologic description from the ground surface into, at a minimum, the continuous permafrost structure.

b. All soil borings shall be abandoned using bentonite or bentonite grout, unless such boring is completed as a groundwater monitoring well under this Order.

B. Human Influences

A description of human influences or operational uses, including off-site structures and conditions, that may affect the hydrogeology of and migration of any contaminants at or from the Project Area, identifying:

1. Active and inactive local water pumping with the potential to affect suprapermafrost groundwater or surface water flow at the Project Area, and approximate pumping schedules;

2. Structures including, but not limited to, gravel pads and roads, buildings, gas and electric utilities, pipelines, french drains, ditches, unlined ponds, National Pollutant Discharge Elimination System (NPDES) outfalls, stormwater drains, and retention areas, etc.; and

3. A list, including performance period or expiration date, of all active or pending environmental permits not submitted under the Site-Wide Project Work Plan and relevant to the Project Area investigation and/or corrective remedies.

IV. Contamination Characterization

The RFI Work Plan shall specify collection of and/or summarizing existing analytical data in suprapermafrost groundwater, pad porewater, soils, surface water, and sediment at and from the Project Area. These data shall be sufficient to characterize the nature and extent of contamination including, but not limited to, the direction, rate, movement, and concentration of each hazardous waste and/or hazardous constituent that has been, or is likely to be, released into the environment. Data obtained shall include, but is not limited to, the time and location of sampling, environmental conditions during sampling, media sampled, contaminant concentrations, the identity of the individuals performing the sampling and analysis, and any issues or problems encountered during sampling and/or analysis.

A. Quality Assurance

Prior to or with the submission of Respondent's first RFI Work Plan, Respondent shall submit a Site-wide Quality Assurance Project Plan (QAPP) supporting all data investigations required by this Attachment and the Order with the following requirements:

All data and data collection, unless specifically exempted by the EPA Project Coordinator, must be consistent with the Region 10 Quality Assurance requirements and policies as found at:
http://yosemite.epa.gov/R10/OEA.NSF/webpage/QA+Main

1. Analytical Methodology
Analytical methods must be those specified in the most recent version of Test Methods For Evaluating Solid Waste-Physical/Chemical Methods, U.S. EPA Publication No. SW-846, Final Update III, promulgated on June 13, 1997, (See 62 FR 32452), Methods for Chemical Analysis of Water and Wastes, EPA Report 600/4-79-020, March 1983, or alternate methods approved by EPA that will perform equal to or better than SW-846 methods under conditions expected in the investigation.

2. Quality Assurance Project Plan

RFI Work Plans shall reference the Site-wide Quality Assurance Project Plan (QAPP), developed as per the requirements set forth at the EPA quality assurance website cited above. Requirements for a QAPP include those found in: **EPA QA/R-5 - EPA Requirements for Quality Assurance Project Plans**, EPA/240/B-01/003 March 2001, or the most recent update of this document. Revisions to the Site-wide QAPP shall be carefully tracked and recorded on a revisions page within the document. If sampling will be performed, Respondent shall prepare separate supplemental Sampling and Analysis Plans for event-specific sampling and analysis requirements that are different from those described in the QAPP as well as any unique Project Area requirements. Such Sampling and Analysis Plans shall be submitted as part of the RFI Work Plan. Sampling and Analysis Plans shall include detailed descriptions of the sampling methodology and equipment, and shall include a rationale for the number of samples, sample location and the analytical parameters selected.

B. Respondent shall address the following types of contamination at or from the Project Area if applicable:

1. Suprapermafrost Groundwater Contamination

Hydrogeology at the Site is dominated by permafrost, which is perpetually frozen soil and or strata extending from a depth of about thirty-six (36) inches below ground surface to about two thousand (2000) feet below ground surface. The depth of seasonal thaw is termed the “active layer”. Water in the active layer is typically referred to as “suprapermafrost groundwater”, although the flow is limited and bounded by the permafrost at shallow depths. Surface water is present as ponds and streams.

a. The RFI Work Plan shall include provisions to characterize any suprapermafrost groundwater contamination at or from the Project Area. This investigation shall, at a minimum, be designed to provide the following information:

(1) A description of the horizontal and vertical extent of any immiscible or dissolved contaminants originating from the Project Area, including concentration profiles of all parameters identified;
(2) The rate of contaminant migration;
(3) An evaluation of factors influencing the migration of contaminants; and,
(4) A prediction of future contaminant migration and a justification of any assumptions, calculations or models used to develop the prediction.

The RFI Work Plan shall identify the procedures to be used in making the above determinations (e.g., well design, well construction, the use of Push

Probe technology to aid in the placement of wells, iterative sampling concepts, geophysical investigative methods, groundwater modeling, etc.)

Should there be technical challenges to the collection of suprapermafrost groundwater, Respondent may describe all collection methods attempted and propose alternate data collection strategies in the RFI Work Plan.

If Respondent has verified that contaminants have not been found in tundra soils or surface water beyond the boundaries of the Project Area, Repondent may propose on a case by case basis in the RFI Work Plan that suprapermafrost groundwater monitoring at the Project Area is unnecessary.

b. The RFI Work Plan shall include provisions for conducting the investigation needed to delineate the nature and extent of any suprapermafrost contamination at or from the Project Area. These provisions shall define the criteria for placement of wells or sampling locations, and the design and installation procedures to be used. The RFI Work Plan shall include provisions to extend or relocate the monitoring system as necessary both horizontally and vertically to determine the full extent of groundwater contamination to the extent practicable. The proposed groundwater monitoring system and monitoring well network shall meet the following requirements:

(1) The network shall contain upgradient wells capable of yielding samples representative of background water quality and that are not affected by releases of hazardous waste and/or hazardous constituents from the Project Area. The number and location of the wells must be sufficient to characterize the spatial variability of background water quality.

(2) The network shall contain downgradient wells capable of detecting any release to surface water or suprapermafrost groundwater in each hydrogeologic unit of hazardous waste and/or hazardous constituents from the Project Area. The number and location of these wells must be sufficient to characterize the nature and extent of any such releases, including any such releases which have migrated out of the Project Area or off-site.

(3) The network shall be capable of operating for a period of time sufficient to provide representative suprapermafrost groundwater samples during the investigation and for the evaluation and implementation of any corrective measures required at the Project Area.

(4) Any existing wells at the Project Area included in the monitoring network that cannot meet the requirements of IV.B.1.b.(1), (2) and (3) above, shall be decommissioned and replaced by new monitoring wells, unless otherwise approved by EPA.

(5) The RFI Work Plan shall include provisions to evaluate results of sampling and analysis throughout the investigation, and to modify the monitoring network (including well abandonment) and the QAPP as necessary, based on this evaluation, to meet the objectives of the investigation as set forth in the Project Management Plan.

c. RFI Work Plans shall include provisions to record and submit the following information for all monitoring wells at each Project Area:

(1) A description and map showing all well locations, including each well's surveyed surface reference point and vertical reference point elevation. New wells shall be surveyed using the National Geodetic Vertical Datum (NGVD), 1929, or updated to North American Vertical Datum of 1988 (NAVD88) to an accuracy of within 0.01 foot. Existing well elevations shall be converted or re-surveyed to the NGVD, or updated to NAVD88 to an accuracy of within 0.01 foot. Horizontal surveying accuracy shall be within 1.0 foot. The table which provides these data must reference the datum used for all measurements;

(2) The boring and casing diameter and depth of each well;

(3) Specification of well intake design, including screen slot type, size and length, depth of screen, filter pack materials, and method of filter pack emplacement;

(4) Specification of the well casing and screen materials. Well construction materials shall be chosen based on parameters to be monitored, and the nature of contaminants that could potentially exist at the Project Area. Well materials shall: (1) minimize the potential of adsorption of constituents from the samples; and, (2) not be a source of sample contamination;

(5) Documentation of methods used to seal the well from the surface to prevent infiltration of water into the well and downward migration of contaminants through the well annulus;

(6) Description of well development methods and procedures;

(7) Documentation of all well design and installation parameters; and

(8) Documentation that all boring, well installation, and well abandonment procedures comply with all applicable federal, state, and local laws, and were conducted by a licensed driller.

2. Pad Porewater Contamination

Water exists within the man-made gravel pads that support the Site activities. This water is frequently termed “pad porewater”. The pad porewater zone is typically less than two (2) feet in thickness within the gravel pad. For purposes of interpreting the Order, EPA regulation, and guidance for an RFI conducted under this Order, pad porewater shall be treated as groundwater. Pad porewater has the potential to migrate to surface water, but is not a direct source of drinking water.

a. The RFI Work Plan shall include provisions for conducting the investigation needed to characterize the nature and extent of any pad porewater contamination at or from the Project Area. This investigation shall, at a minimum, be designed to provide the following information:

(1) A description of the horizontal and vertical extent of any immiscible or dissolved contaminants originating from the Project Area, including concentration profiles of all parameters identified;
(2) The rate of contaminant migration, to the extent practicable,
(3) An evaluation of factors influencing the migration of contaminants; and,
(4) A prediction of future contaminant migration and a justification of any assumptions, calculations or models used to develop the prediction.

b. The RFI Work Plan shall define the criteria for placement of wells or sampling locations and shall include provisions to extend the monitoring system as necessary both horizontally and vertically to determine the full extent of contamination, to the extent practicable. The RFI Work Plan will include a discussion of the design and installation procedures to be used (e.g., well design, well construction, the use of Push Probe technology to aid in the placement of wells, iterative sampling concepts, geophysical investigative methods, etc.). The proposed monitoring system and monitoring network shall meet the following requirements:

(1) The network shall contain upgradient wells capable of yielding samples representative of background water quality and that are not affected by releases of hazardous waste and/or hazardous constituents from the Project Area. The number and location of the wells must be sufficient to characterize the spatial variability of background water quality.
(2) The network shall contain downgradient wells capable of detecting any release to surface water, suprapermafrost groundwater, or pad porewater in each hydrogeologic unit of hazardous waste and/or hazardous constituents from the Project Area. The number and location of these wells must be sufficient to characterize the nature and extent of any such releases, including any such releases which have migrated out of the Project Area or off-site.
(3) The network shall be capable of operating for a period of time sufficient to provide representative pad porewater samples during the investigation and for the evaluation and implementation of any corrective measures required at the Project Area.
(4) Any existing wells at the Project Area included in the monitoring network that cannot meet the requirements of IV.B.2.b.(1), (2) and (3) above, shall be decommissioned and replaced by new monitoring wells, unless otherwise approved by EPA.

(5) The RFI Work Plan shall include provisions to evaluate results of sampling and analysis throughout the investigation, and to modify the monitoring network (including well abandonment) and the QAPP as necessary, based on this evaluation, to meet the objectives of the investigation as set forth in the Project Management Plan.

c. RFI Work Plans shall include provisions to record and submit the following information for all monitoring wells at each Project Area:

(1) A description and map showing all well locations, including each well's surveyed surface reference point and vertical reference point elevation. New wells shall be surveyed using the National Geodetic Vertical Datum (NGVD), 1929, or updated to North American Vertical Datum of 1988 (NAVD88) to an accuracy of within 0.01 foot. Existing well elevations shall be converted or re-surveyed to the NGVD, or updated to NAVD88 to an accuracy of within 0.01 foot. Horizontal surveying accuracy shall be within 1.0 foot. The table which provides this data must reference the datum used for all measurements;

(2) The boring and casing diameter and depth of each well;

(3) Specification of well intake design, including screen slot type, size and length, depth of screen, filter pack materials, and method of filter pack emplacement;

(4) Specification of the well casing and screen materials. Well construction materials shall be chosen based on parameters to be monitored, and the nature of contaminants that could potentially exist at the Project Area. Well materials shall: (1) minimize the potential of adsorption of constituents from the samples; and, (2) not be a source of sample contamination;

(5) Documentation of methods used to seal the well from the surface to prevent infiltration of water into the well and downward migration of contaminants through the well annulus;

(6) Description of well development methods and procedures;

(7) Documentation of all well design and installation parameters; and

(8) Documentation that all boring, well installation, and well abandonment procedures comply with all applicable federal, state, and local laws, and were conducted by a licensed driller.

3. Tundra Soil and Pad Gravel Contamination

For purposes of interpreting the Order, EPA regulation, and guidance for an RFI conducted under this Order, tundra soil and pad gravel shall be treated as soil.

a. RFI Work Plans shall include, where necessary, provisions to characterize the contamination of tundra soil and/or pad gravel at the Project Area and any contaminant releases. Where Project Area

corrective remedies have been completed in accordance with ADEC regulation prior to the effective date of this Order, confirmation soil and/or pad gravel sampling for a Project Area may be conducted to support risk assessment and/or remedy review.

The RFI Work Plans shall include provisions to extend any required tundra soil or pad gravel characterization as necessary, both vertically and horizontally, to determine the full extent of soil contamination. Sampling shall occur at the following locations, and any other location, where necessary, to meet the investigation objectives:

(1) From all soil borings from the tundra or pad surface as necessary to determine the full extent of contamination, at intervals as approved by EPA. Tundra and pad borings and sampling shall be extended vertically as necessary to determine the full extent of contamination;
(2) At all stratigraphic unit contacts; and
(3) At the location of any preferred routes of contaminant migration.

b. The RFI Work Plan shall provide for documentation and submission of the following information, including any associated calculations, derivations or assumptions:

(1) A description of the vertical and horizontal extent of contamination for all contaminants detected in tundra soil or pad gravel at the Project Area;
(2) A description of contaminant properties and contaminant/soil or gravel interactions within the contaminant source area and plume that might affect contaminant migration and transformation. Examples of properties and interactions which may be required include contaminant solubility, speciation, adsorption, leachability, retardation coefficients, biodegradability, hydrolysis, photolysis, oxidation, soil cation exchange capacity. This information shall be prepared in sufficient detail to fulfill the objectives of the investigation;
(3) Concentrations of each contaminant in all soil and gravel samples; and
(4) The rate and direction of contaminant migration and a prediction of future contaminant migration rate, including consideration of releases of contamination from soils and pad gravel to suprapermafrost groundwater, pad porewater, and/or surface water.

4. Surface Water Contamination

a. The RFI Work Plan shall include provisions to determine the nature and extent of surface water and sediment contamination due to discharges and overland flow of contaminated suprapermafrost groundwater and

surface water at or from the Project Area. The Work Plan shall specify the methods and procedures to be used to determine the following:

(1) Project Area surface water and suprapermafrost groundwater flow paths to the extent practicable and an evaluation of the potential for surface and suprapermafrost groundwater flows to discharge to existing surface water drainage and ponds. This evaluation shall consider current and historical conditions and operations, elevation of suprapermafrost groundwater to the extent practicable, and proximity to surface water, the proximity of potential surface and groundwater receptors to contamination and other appropriate information. The Work Plan shall include methods to be used to identify areas that have a potential to be suprapermafrost groundwater or surface water discharge points to surface water and areas of overland flow and shall include the criteria for selection of areas of potential concern;

(2) The contribution of contaminated suprapermafrost groundwater discharges (if feasible) and contaminated stormwater and/or run-off to surface water at and downgradient from the Project Area, including discharges of contaminated suprapermafrost groundwater to surface drainage ways and surface waters; and

(3) The nature and extent of surface water and sediment contamination due to contributions of hazardous waste and/or hazardous constituents from the releases, including those sources identified in Paragraph IV.B.4.a.(2) above.

b. RFI Work Plans shall include specifications for the following aspects of the surface water contamination investigation:

(1) The methods and equipment to be used to collect surface water and sediment samples for analysis;

(2) The locations for surface water and sediment sampling, and the rationale for their selection (e.g., suprapermafrost groundwater discharge areas identified through topographic measurements or other feasible methods performed for the hydrogeologic characterization of the Project Area and potentially affected downgradient areas). At a minimum, sediment samples shall be taken at any discharges, outfalls, outlets, or catch basins associated with surface water flow from the Project Area; and

(3) The rationale for selection of all parameters shall be provided.

C. RCRA Facility Investigation Report

Following the implementation of each RFI Work Plan, Respondent shall submit a comprehensive stand alone RFI Report.

If an RFI has been planned in phases, an RFI Report shall be submitted at the completion of each phase. The RFI Report submitted at the completion of the final phase shall be a comprehensive stand alone RFI Report.

The information required in the RFI Report shall be in the form of narrative, charts, graphs, maps, diagrams and/or tables, as approved by EPA. The RFI Work Plan shall specify the outline, format, and requirements for the RFI Report to present the findings of the investigation.

These specifications shall include, but are not limited to, the following:

1. A narrative description of the work performed and findings of the investigation;

2. Provisions for groundwater data reporting procedures which are consistent with the EPA Region 10 Groundwater Data Management System;

3. Construction of contour maps of pad porewater and suprapermafrost groundwater contaminant concentrations, to the extent practicable, and pad gravel and tundra soil contaminant concentrations for parameters selected based on the results of the initial round of sampling or subsequent sampling. Contoured parameters will include the most abundant and representative constituents from each contaminant group including volatile organic compounds, semi-volatile organic compounds, metals, and petroleum hydrocarbons, if detected. Additional constituents may be required for contouring due to their high mobility, high toxicity, or other characteristics as determined by EPA. All contour maps shall be presented at a scale of one inch equals 50 feet or other such scale approved by EPA, and shall show the Project Area and cultural features sufficient for clear representation of the tundra soil, pad gravel, suprapermafrost groundwater, and pad porewater plumes, and all affected down-gradient areas. All wells and borings in the sampling program shall be accurately located on the map, and the concentrations of each constituent shall be clearly visible. Data manipulation, such as kriging, shall not be employed. Contour intervals shall be selected to clearly indicate changes in concentration within the plume, and are subject to EPA review and approval;

4. Construction of flow nets (if feasible), maps and cross sections showing surface discharges of suprapermafrost groundwater that flows beneath the Project Area, delineating the extent of discharge of contaminated water, and showing areas of water discharge that may become contaminated due to continued migration of contaminants in the subsurface;

5. Maps and cross sections of pad gravel, tundra soil pad porewater and suprapermafrost groundwater contamination, to the extent practicable,

depicting the concentrations and estimated migration rates for contaminants, considering advection, dispersion, adsorption, and degradation processes. The migration evaluations shall be prepared for the most abundant and representative constituents from each of the compound groups, to include volatile organic compounds, semi-volatile organic compounds, metals, and petroleum hydrocarbons. Additional constituents may require mapping due to high toxicity or mobility, as required by EPA;

6. The RFI Report shall describe all input data algorithms, estimates, assumptions, boundary conditions, sensitivity analyses, and model calibration procedures used to derive these predictions of contaminant migration;

7. The nature and extent of surface water and sediment contamination due to releases at or from the Project Area, including maps depicting the concentration distribution over the sample locations illustrated at a scale of one inch equals 50 feet, or other such scale as approved by EPA;

8. An assessment of the fate and transport of contamination in surface water and sediment, including maps depicting the maximum extent of exposure of aquatic organisms to contaminant concentrations at levels that may have adverse impacts, to the extent these impacts can be distinguished from those due to ambient surface water and sediment quality in the area;

9. The RFI Report must contain tabular displays that present the results for all constituents monitored in each medium (pad gravel, tundra soil, suprapermafrost groundwater, pad porewater, surface water, etc.) for both historic monitoring events and for monitoring events undertaken during the implementation of the RFI Work Plan.

10. The RFI Report shall include a comprehensive list of all contaminants of concern that have been detected above screening levels in the Project Area. The RFI Report shall also include a list of any contaminants of concern for which the achieved detection limits exceeded the screening levels. Those contaminants of concern will be carried forward into the Corrective Measures Study.

    Note: Should the Respondent conclude that the presence of organics that are naturally occurring in the tundra has created a significant interference resulting in a situation where the detection limit exceeds the screening level, the Respondent may submit to EPA for review and approval a request for an exception to the screening level. This request shall include a detailed justification for the exception, including a discussion of all analytical methods used and all efforts used to attempt to remove interferences from the analytical samples. Similarly, should the screening

levels be unachievable by EPA-approved analytical methods, the Respondent may present such data to EPA and request a modification to the screening level. In such cases, if approved, the screening level shall be set at the achievable detection limit for that constituent.

D. Corrective Action Completion

If results from investigation reports which have been determined by EPA to be sufficient for purposes of this Order show no hazardous constituent(s) that were required to be sampled as part of the approved RFI Work Plan have exceeded the approved screening levels in any medium at a Project Area, that Project Area generally will not be subject to remediation or further study under this Order and Respondent may request a determination of Corrective Action Complete in accordance with Paragraph 69 of this Order.

ATTACHMENT F
SCOPE OF WORK FOR CORRECTIVE MEASURES STUDY
BPXA ADMINISTRATIVE ORDER ON CONSENT
U.S. EPA DOCKET NO. RCRA-10-2007-0222

The purpose of a Corrective Measure Study (CMS) is to identify, evaluate, and recommend potential Corrective Measure alternatives for the releases that require corrective action to protect human health and the environment.

In accordance with the Site-Wide Project Work Plan, individual CMSs will be needed to address releases from Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) for which one or more contaminants of concern have exceeded Site screening levels. These CMSs will be organized by Project Groups as established in Attachment C and managed in accordance with the approved Site-Wide Project Work Plan. The need for a CMS at a Project Area will be triggered based upon results reported in the corresponding approved RCRA Facility Investigation (RFI) Report. Where several SWMUs and/or AOCs have been included in one RFI, it will be necessary to address at least some of the components described below for each individual SWMU and AOC. As defined in Section II of the Order, the term "Project Area" shall mean the physical area of the Project Group, or, where distinct conditions exist, the area of individual SWMUs or AOCs within the Project Group.

The scope of the CMS will depend on the needs of the Project Area as determined by the RFI. EPA may determine that an abbreviated or streamlined CMS is sufficient for an individual Project Area under certain circumstances. For example, if only small areas of soils have low levels of a contaminant in a Project Area, the CMS may be limited to one tailored remedy or treatment approach that is commonly effective at Respondent's Site. For example, the commonly used remedy for low level hydrocarbon contamination on the North Slope is to excavate the contaminated media. In this circumstance, it may be necessary to describe multiple remediation waste disposal alternatives in the CMS.

Phased remedies or interim measures may be proposed for active, operating areas where final remedy is not warranted until that area and/or the facility ceases to operate.

Deviations from this Scope of Work may be made only with prior written EPA approval, based on the findings of the RFI. Each CMS will consist of the following tasks, the results of which will be documented in the CMS Report.

TASK 1: DEVELOPMENT OF RISK-BASED MEDIA CLEANUP STANDARDS

A. Developing Media Cleanup Standards

Should the results of an EPA-approved RFI Report show that Site screening levels have been exceeded, Respondent will propose media cleanup standards in accordance with Paragraph 65 of the Order for Project Areas that require corrective action. Proposed Media Cleanup Standards shall be based upon a Project Area-specific or Site-specific risk assessment, the approved Site screening levels, and/or other appropriate risk-based criteria that are acceptable to EPA.

B. Risk Assessment

Respondent may prepare a Project Area-specific risk assessment in accordance with applicable EPA guidance. The approved risk assessment may be used to support a recommendation that no further action is necessary or to establish risk-based media cleanup standards for that Project Area.

For SWMUs, AOCs or Project Groups where remedies have been completed in accordance with Alaska Department of Environmental Conservation (ADEC) regulations prior to the effective date of this Order, and the approved RFI Report verifies that the Project Area has met the Site screening levels or risk-based cleanup standards that EPA has approved for the Project Area, Respondent may submit an abbreviated or streamlined CMS with a recommendation that no further action is needed. If screening levels have been exceeded, Respondent may conduct a risk assessment to determine whether residual contamination poses an unacceptable risk to human health or the environment. If the EPA-approved risk assessment demonstrates there is no unacceptable risk, Respondent may submit the risk assessment as part of the CMS Report and include a recommendation that no further action is needed. Following the opportunity for public comment on these results as recorded in the CMS Report and EPA's Statement of Basis, EPA may designate corrective action complete with or without controls for the Project Area.

BP has submitted to EPA a document, **Overview of Preliminary Conceptual Site Model for Ecological Risk Assessment, North Slope Excavated Production Reserve Pits, Alaska**, dated November 22, 2005. This document may be used as a starting point for risk assessments for excavated production reserve pits at the Site.

TASK 2: IDENTIFICATION AND DEVELOPMENT OF CORRECTIVE ACTION ALTERNATIVES

Based on the results of the relevant RFI, the Respondent shall identify, screen, and develop alternatives for remediation of the contamination necessary to achieve the corrective action objectives established in Section III of the Order.

A. Description of Current Situation

Respondent shall prepare a summary of the information contained within the RFI Report describing the environmental setting of the Project Area and the known nature and extent of the contamination as documented by the RFI. Respondent shall identify the actual or potential exposure pathways that will be addressed by Corrective Measures.

B. Screening of Corrective Measure Technologies

Respondent shall review the results of the RFI and identify and describe commercially available technologies which might be suitable for application at the Project Area, given the nature and extent of contaminants and the risk posed to the receptors. Respondent shall screen Corrective Measure technologies and any supplemental technologies to eliminate those that may prove infeasible to implement, that rely on technologies unlikely to perform satisfactorily or reliably, or that do not protect human health and the environment, achieve media cleanup objectives, or remediate sources of release in

accordance with the Corrective Measure objectives within a reasonable time period. This screening process shall focus on eliminating those technologies which have severe limitations for a given set of contaminants and Project Area-specific conditions. The screening step may also eliminate technologies based on inherent technology limitations.

It may be appropriate, based on the nature and extent of any contamination at the Project Area, as documented in the EPA-approved RFI Report, to limit this screening evaluation to one known and effective remedy. Respondent may request EPA's approval to streamline the CMS for a Project Area following EPA's approval of the applicable RFI.

Site, contaminant, and technology characteristics which are to be used to eliminate inapplicable technologies are described in more detail below:

1. **Project Area Characteristics**
   Project Area data shall be reviewed to identify conditions that may limit or promote the use of certain technologies. Any technology which is clearly precluded from use by Project Area characteristics should be eliminated from further consideration.

2. **Contaminant Characteristics**

   Identification of contaminant characteristics that limit the effectiveness or feasibility of technologies is an important part of the screening process. Technologies clearly limited by contaminant characteristics at the Project Area may be eliminated from consideration. Contaminant characteristics may particularly affect the feasibility of on-site methods, direct treatment methods, and land disposal.

3. **Technology Limitations**
   During the screening process the level of technology development, performance record, and inherent construction, operation, and maintenance problems shall be identified for each technology considered. Technologies that have proven to be unreliable or perform poorly at other facilities with comparable contamination and site characteristics may be eliminated in the screening process.

C. <u>Identification of Corrective Measure Alternatives</u>

Respondent shall develop the Corrective Measure alternatives based on the results of the RFI, the corrective action objectives established in the Order, and the analysis of Corrective Measure technologies. Respondent shall rely on engineering practice to determine which of the identified technologies appear most suitable for the Project Area. Technologies can be combined to form the overall corrective action alternatives. The alternatives developed, evaluated and presented in the Report outlined in Task 4, below, shall represent a workable number of options that each appear adequately to address all Project Area problems and corrective action objectives. Each alternative may consist of an individual technology or a combination of technologies. Respondent

shall document the reasons for excluding technologies which were not excluded by the screening process in Task 2 B., above.

TASK 3: EVALUATION OF CORRECTIVE MEASURE ALTERNATIVE(S)

Respondent shall describe each Corrective Measure alternative that passes through the initial screening in Task 1 and evaluate each Corrective Measure alternative and its components. The evaluation shall be based on technical, environmental, human health, and institutional concerns. Respondent shall also develop net present value cost estimates of each Corrective Measure, including any costs for long term operation and maintenance.

It may be appropriate, based on the nature and extent of any contamination at the Project Area, as documented in the EPA-approved RFI Report, to limit this evaluation to one known and effective remedy. Respondent may request EPA's approval to streamline the CMS for a Project Area following EPA's approval of the applicable RFI.

A. Technical/Environmental/Human Health/Institutional

Respondent shall provide a description of each Corrective Measure alternative, including the degree to which they employ treatment and ultimate disposition of contaminants. The description shall include, but is not limited to, the following factors:

1. **Technical**

   Respondent shall describe and evaluate each Corrective Measure alternative based on performance, reliability, implementability, and safety.

   a. Respondent shall evaluate performance based on the effectiveness and useful life of the Corrective Measure:

      (1) Effectiveness shall be evaluated in terms of the ability to perform intended functions, such as containment, diversion, removal, destruction, and/or treatment. The effectiveness of each Corrective Measure shall be determined either through design specifications or by performance evaluation. Any specific contaminant or Project Area characteristics which could potentially impede effectiveness shall be considered. The evaluation shall also consider the effectiveness of combinations of technologies; and,

      (2) Useful life is defined as the length of time the level of effectiveness can be maintained. Many Corrective Measure technologies deteriorate with time. Often, deterioration can be slowed through proper system operation and maintenance, but the technology eventually may require replacement. Each corrective measure shall be evaluated in terms of the projected service lives of its component technologies. Resource availability in the future life of the technologies, as well as appropriateness of the technologies, must be considered in estimating the useful life of the project.

b. Respondent shall provide information on the reliability of each Corrective Measure alternative including their operation and maintenance requirements and their demonstrated reliability:

(1) Operation and maintenance requirements include the frequency and complexity of necessary operation and maintenance. Technologies requiring frequent or complex operation and maintenance activity should be regarded as less reliable than technologies requiring little or straightforward operation and maintenance. The availability of labor and materials to meet these requirements shall also be considered; and,

(2) Demonstrated and expected reliability is a way of measuring the risk and effect of failure. Respondent shall evaluate, at a minimum: whether the technologies have been used effectively under similar conditions; whether the combination of technologies have been used together effectively; whether failure of any one technology has an immediate impact on receptors; and, whether the Corrective Measure has the flexibility to deal with uncontrollable changes at the Project Area.

c. Respondent shall evaluate the implementability of each corrective measure alternative including the relative ease of installation (constructability) and the time required to achieve a given level of response;

(1) Constructability is determined by conditions both internal and external to the Project Area conditions and include such items as location of underground utilities, depth to water table, heterogeneity of subsurface materials, and location of the Project Area (e.g., remote location vs. a congested urban area). Respondent shall evaluate what measures can be taken to facilitate construction under these conditions. External factors which affect implementation include the need for special permits or agreements, equipment availability, and the location of suitable off-site treatment or disposal facilities; and,

(2) Time has two components that shall be addressed: the time it takes to implement a Corrective Measure; and the time it takes to actually see beneficial results. Beneficial results are defined as the reduction of contaminants to some pre-established level which is acceptable to EPA.

d. Respondent shall evaluate each Corrective Measure alternative with regard to safety. This evaluation shall include threats to the safety of nearby communities and the environment as well as to workers during implementation. Factors to consider include fire, explosion, and exposure to hazardous substances.

2. **Human Health and Environment**
Respondent shall describe and assess each Corrective Measure alternative in terms of the extent to which it mitigates short and long-term exposure to any residual contamination and protects human health and the environment both during and after implementation of the Corrective Measure. The assessment will describe the levels and characterizations of contaminants on Project Area, potential exposure routes, and potentially affected receptors. Each alternative will be evaluated to determine the level of exposure to contamination and the reduction over time. For management of mitigation measures, the relative reduction of impact will be determined by comparing residual levels of contamination as a result of each alternative with criteria, standards, or guidelines acceptable to EPA including approved risk-based media cleanup standards prepared in accordance with Task 1 of this Attachment.

3. **Institutional**
Respondent shall assess relevant institutional needs for each alternative. Specifically, the effects of federal, state, and local environmental and public health standards, regulations, guidance, advisories, ordinances, or community relations on the design, operation, and timing of each alterative.

B. <u>Cost Estimate</u>

Respondent shall develop a detailed net present value estimate of the cost of each Corrective Measure alternative including the cost for each phase of the Corrective Measure (e.g, construction or implementation, operations, maintenance, monitoring). The cost estimate shall include, but not be limited to, capital costs and operation and maintenance costs.

TASK 4: JUSTIFICATION AND RECOMMENDATION OF CORRECTIVE MEASURES

Respondent shall justify and recommend one or more Corrective Measure alternatives that satisfy corrective action objectives using technical, human health, and environmental criteria. This recommendation shall include summary tables which allow all the alternatives evaluated to be understood and compared easily. EPA will select the Corrective Measures. At a minimum, the following criteria will be used to justify the recommended Corrective Measures:

A. <u>Technical</u>

1. **Performance** -- Corrective Measures which are most effective at performing their intended functions and maintaining the performance over extended periods of time will be given preference;

2. **Reliability** -- Corrective Measures which do not require frequent or complex operation and maintenance activities, and that have proven effective under conditions similar to those anticipated will be given preference;

3. **Implementability** -- Corrective Measures which can be constructed and operated to reduce levels of contamination to attain or exceed cleanup standards in the shortest period of time will be preferred;

4. **Safety** -- Corrective Measures which pose the least threat to the safety of nearby residents or industrial workers and the environment as well as workers implementing the remedy will be preferred; and

5. **Toxicity, Mobility, and Volume Reduction** – Corrective Measures should be justified based on the degree to which they employ treatment, including treatment of principal threats, that reduces the toxicity, mobility or volume of hazardous wastes and hazardous constituents, considering, as appropriate: the treatment processes to be used and the amount of hazardous waste and hazardous constituents that will be treated; the degree to which treatment is irreversible; and, the types of treatment residuals that will be produced.

B. Human Health

Corrective Measures must comply with EPA criteria, standards, and guidelines for the protection of human health. Corrective Measures which provide the minimum level of exposure are preferred.

C. Environmental

Corrective Measures must comply with EPA criteria, standards and guidelines for the protection of ecological receptors. Corrective Measures providing the greatest environmental protection and posing the least adverse impact (or greatest improvement) over the shortest period of time on the environment will be favored.

D. Cost

The relative cost of a Corrective Measure may be an appropriate consideration, especially in those situations where several different technical alternatives to remediation will offer equivalent protection of human health and the environment, but may vary widely in cost. Cost estimates shall include, but are not limited to, costs for: engineering, work site preparation, construction, materials, labor, sampling/analysis, waste management/disposal, permitting, health and safety measures, training, operations and maintenance, and potential replacement.

TASK 5: REPORTS

Respondent shall prepare Draft, Draft Final, and Final CMS Reports as described below.

A. Draft CMS Report

Respondent shall prepare a Draft CMS Report presenting the results of Tasks 1 through 3 and shall identify Respondent's preferred Corrective Measure(s) alternative.

The Report shall, at a minimum, include:

1. A description of the Project Group and /or Project Area, including, as necessary: an RFI summary; topographic map(s); and exposure pathways;

2. A list and short description of any and all technologies considered, but screened out;

3. A summary of each Corrective Measure evaluated, including criteria described in Task 3 and:

    a. Description of each Corrective Measure or Measures evaluated and rationales for selection and rejection;

    b. Performance expectations, including an evaluation of the overall protectiveness of human health and the environment, ability to attain the corrective action objectives, ability to control the sources of releases, and an assessment of short-term and of long-term reliability and effectiveness, including, but not limited to, the methodology used to estimate the short-term and long-term reduction of toxicity, mobility, or volume of waste and the resulting estimate;

    c. Preliminary design criteria and rationale, including an estimate and analysis of quantity, volume, and/or toxicity of the waste generated, including, but not limited to, contaminated soil, sludge, and groundwater, and methods to minimize the volume, toxicity, and/or mobility of waste to be generated;

    d. General operation and maintenance requirements;

    e. Long-term monitoring requirements;

    f. Design and Implementation Considerations:

        (1) Special technical problems;

        (2) Additional engineering and other data required for implementation;

        (3) Permits and regulatory requirements, including an assessment of how institutional and legal requirements including federal, state, or local environmental or public health standards, regulations, and/or ordinances will affect the design, operation, and timing of each Corrective Measure studied;

        (4) Access, easement, right-of-way;

        (5) Health and safety requirements; and,

        (6) Public involvement activities.

g. Detailed Cost Estimates:

(1) Capital cost estimate;

(2) Operation and maintenance cost estimate; and,

(3) Other costs.

h. Project schedule:

(1). design;

(2) construction;

(3) operation, including when contaminants levels first reduced; and

(4) completion/corrective action goals achieved.

4. A recommendation as to which Corrective Measure(s), in Respondent's opinion, are the most appropriate, and the rationale for such recommendation. At a minimum, the criteria listed in Task 3 shall be used to justify the recommended Corrective Measure(s). A summary table with all evaluated technologies will be included to facilitate comparison between the alternatives.

5. A Risk Assessment, if conducted.

6. The items set out in Paragraph 65 of the Order, including proposed media cleanup standards and points of compliance.

B. <u>Draft Final and Final CMS Report</u>

Respondent shall prepare a Draft Final CMS Report incorporating comments received from EPA on the Draft CMS Report, as set forth in Paragraph 67 of the Order. Following the public comment period, Respondent shall incorporate any additional comments received from EPA into a Final CMS Report, as set forth in Section VIII of the Order.

ATTACHMENT G

SCOPE OF WORK FOR CORRECTIVE MEASURES IMPLEMENTATION
BPXA ADMINISTRATIVE ORDER ON CONSENT
U.S. EPA DOCKET NO. RCRA-10-2007-0222

The purpose of this Corrective Measures Implementation (CMI) program is to design, implement, and as necessary, construct, operate, maintain, and monitor the performance of the Corrective Measure(s) selected to protect human health and the environment.

In accordance with the Site-Wide Project Work Plan, CMI programs will be conducted to address releases from Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) at the Site. These CMI programs will be organized in accordance with the Project Groups established in the approved Site-Wide Project Work Plan, the approved RCRA Facility Investigation (RFI) Reports, and the approved Final Corrective Measures Study (CMS) Reports. As defined in Section II of the Order, the term "Project Area" shall mean the physical area of the Project Group, or, where distinct conditions exist, the area of individual SWMUs or AOCs within the Project Group.

The scope of a Corrective Measures Implementation project (CMI Work Plan, Corrective Measure Design, Implementation, and Reports) will depend on the needs of the Project Area as determined by the RFI, the CMS, and the approved Corrective Measures. The required components of the CMI project will be tailored to reflect the complexity of the planned Corrective Measures. The specific components required for the Corrective Measure, including the applicability of a Performance-Based CMI Approach or CMI Alternate A or B (below), will be agreed upon between EPA and the Respondent prior to preparation of the CMI Work Plan. This agreement will be documented in the CMI Work Plan. In general, EPA anticipates that the majority of Corrective Measures selected under this Order will be straightforward and will be amenable to a Performance-Based CMI Approach, if proposed by the Respondent. For more complex Corrective Measures, or for those that EPA believes present unique or special circumstances, or if Corrective Measures have proved difficult to implement, it may be necessary to follow CMI Alternate A or B. Inability of the parties to reach agreement on the required components for the Corrective Measure will not release the Respondent from schedule deadlines and shall be resolved pursuant to Section XX of the Order.

Under this Scope of Work, all projects will require a CMI Work Plan in accordance with Task 1, below. The remaining tasks (Tasks 2, 3, and 4: Corrective Measure Design, Implementation, and Reports) are divided into separate pathways: a Performance-Based CMI Approach; CMI Alternate A; or CMI Alternate B. Respondent may propose a Performance-Based CMI Approach. Under this approach, specific remedial goals and milestones are identified in the CMI Work Plan, along with verification and reporting requirements. Respondent then designs and implements or designs, constructs,

operates and maintains the approved Corrective Measure in a manner which achieves the remedial goals. Corrective Measures that are generally eligible to follow the Performance-Based CMI Approach include those less complex or routine Corrective Measures that would otherwise follow CMI Alternate A, as described below. Examples of such routine or less complex Corrective Measures include excavation (and backfilling) of SWMUs or AOCs such as production and exploration reserve pits. Respondent may also propose CMI Alternate A or B. Under these approaches, the design, implementation, and reporting requirements are outlined in the applicable sections of this Attachment. CMI Alternate A describes the scope of work for Corrective Measures of a less complex nature which are not being conducted under a Performance-Based CMI Approach, such as excavation of landfills in Project Group VII or in-situ treatment. CMI Alternate A outlines a streamlined process to address these types of Corrective Measures. CMI Alternate B describes the scope of work for Corrective Measures that are generally more complex and that require substantial construction and/or have ongoing complex operation and maintenance (other than routine maintenance and ongoing monitoring) requirements, such as an incinerator or RCRA cap. Both CMI Alternate A and CMI Alternate B may be adapted to reflect the needs of an individual project.

CMI projects will include the following elements:

TASK 1: CORRECTIVE MEASURE IMPLEMENTATION WORK PLAN

Respondent shall prepare a Corrective Measures Implementation Work Plan for each Project Area which requires the implementation of Corrective Measure(s) approved in a Final CMS Report. The CMI Work Plan shall be submitted to EPA for review and approval. It may be necessary to revise the individual CMI Work Plans as the work is performed to focus efforts on a particular problem or a change in field conditions. The CMI Work Plans shall include the following:

A. Program Management Plan

Respondent shall prepare a Program Management Plan which will document the overall management strategy for performing the design, construction, operation, maintenance, and monitoring of the selected Corrective Measure(s). The Program Management Plan shall document any agreement between Respondent and EPA regarding the scope and required components of the CMI project. The plan will clearly identify whether a Performance-Based CMI Approach, CMI Alternate A, or CMI Alternate B will be implemented. The plan shall document the responsibility and authority of all organizations and key personnel involved with the implementation. The Program Management Plan will also include a description of qualifications of key personnel directing the Corrective Measures Implementation project, including contractor personnel.

For any Corrective Measures which are addressed under a Performance-Based CMI Approach, Respondent shall propose clear, specific and detailed remedial goals in the Program Management Plan. Project milestones shall be identified. Detailed verification procedures shall be identified, including as applicable, post-remedy sampling and analysis plans. Reporting requirements shall be identified.

B. Public Involvement Plan

Respondent shall revise the Public Involvement Plan required under this Order to reflect any changes in the level of concern or information needs of the community for design and construction activities.

1. Specific activities which must be conducted during the design stage are:

   a. Revise the Public Involvement Plan to reflect knowledge of citizen concerns and involvement at this stage of the process; and,

   b. Prepare and distribute a public notice and an updated fact sheet at the conclusion of the Corrective Measures Design process.

2. Depending on citizen interest, specific activities that may be conducted during the construction stage could range from group meetings to fact sheets on the technical status.

C. Project Schedule

Respondent shall develop a Project Schedule for design, construction, and implementation of the selected Corrective Measure(s) which identifies the timing for initiation and completion of all critical path tasks. Respondent shall specifically identify dates for completion of the project and major interim milestones. An updated schedule shall be submitted simultaneously with the Final Design Document and with any interim design submittals that may be required by EPA.

D. Environmental Permits

Respondent shall provide a list, including performance period or expiration date, of all active or pending environmental permits and orders which may be applicable to or affected by the implementation of the approved Corrective Measures.

The remaining CMI tasks/documentation are dependent upon the pathway selected for the CMI project, as outlined below.

PERFORMANCE-BASED CMI APPROACH

Upon approval of the CMI Work Plan, Respondent shall design and implement the Corrective Measure in accordance with the remedial goals and timelines provided in the approved CMI Work Plan. Reports shall be submitted to EPA in accordance with the schedule in the approved CMI Work Plan.

CMI ALTERNATE A

CMI Alternate A outlines a streamlined Corrective Measure process. It is intended that CMI Alternate A be used for Corrective Measures that are of a less complex nature in terms of design and implementation. Examples of Corrective Measures that may follow CMI Alternate A are excavation or in-situ treatment. Below is a description of the Corrective Measure Design, Implementation and Reports to be followed under CMI Alternate A.

TASK 2: CORRECTIVE MEASURE DESIGN

Respondent shall prepare plans and specifications to implement each Corrective Measure at the Project Area as defined in the CMS and as approved by EPA.

The specific components required for Corrective Measure design will be agreed upon between EPA and the Respondent and documented in the CMI Work Plan. For CMI Alternate A, if EPA agrees, the design components may be submitted as part of the CMI Work Plan.

A. <u>Design Plans and Specifications</u>
Respondent shall develop clear and comprehensive design plans and specifications which include, but are not limited to, the following items.

1. Discussion of the design strategy and the design basics, including:

    a. Compliance with all applicable or relevant environmental and public health standards; and,

    b. Minimization of short- and long-term environmental and public health impacts.

2. Discussion of the technical factors of importance including:

   a. Use of currently accepted environmental control measures and technology;

   b. The constructability of the design; and,

   c. Use of currently acceptable construction practices and techniques.

3. Description of assumptions made and adequate justification of these assumptions;

4. Discussion of the possible sources of error and references to possible operation and maintenance problems;

5. Engineering drawings of the proposed design;

6. Tables listing equipment and specifications;

7. Appendices including:

   a. Sample calculations (one example presented and explained clearly for significance or unique design calculations);

   b. Results of laboratory or field tests.

B. <u>Design Phases</u>

1. Conceptual Design

   Respondent shall submit a conceptual design for the selected Corrective Measures. At this stage, Respondent shall have field verified the existing conditions of the Project Area. The preliminary design shall reflect a level of effort such that the technical requirements of the project have been addressed and outlined so that they may be reviewed to determine if the final design will provide effective, operable and usable Corrective Measure(s). Supporting data and documentation shall be provided with the design documents defining the functional aspects of the program.

2. Final Design

   The final design submittal shall include: Final Design Plans and

Specifications (95 percent complete), Respondent's Final Construction Cost Estimate, the Final Operation and Maintenance Plan, Final Construction Quality Assurance Plan, Final Project Schedule, and Final Health and Safety Plan. Requirements for these plans and documents are outlined under CMI Alternate B, below.
The quality of the design documents should be such that the Respondent would be able to include them in a bid package and invite contractors to submit bids for the construction project.

C. Design Elements

1. Equipment Start-up and Operator Training (if applicable)

Respondent shall prepare, and include in the technical specifications governing treatment systems, contractor requirements for providing: appropriate service visits by experienced personnel to supervise the installation, adjustment, start-up, and operation of the treatment systems, and training covering appropriate operations procedures once the start-up has been successfully accomplished.

2. Additional Studies

Corrective Measures Implementation may require additional studies to supplement the available technical data. At the direction of EPA, Respondent shall conduct such studies. Sufficient sampling, testing, and analysis shall be performed to optimize the required treatment and/or disposal operations and systems. There may be an initial meeting of all principal personnel involved in the development of the additional studies. The purpose of the meeting will be to discuss objective, resources, communication channels, personnel responsibilities, and provide an orientation to the site, etc. An interim and final report documenting the additional studies may be required by EPA. The interim report shall present the results of the testing with the recommended treatment or disposal systems (including options). A review conference may be scheduled after the interim report has been reviewed by all interested parties. The final report shall include all data taken during the testing and a summary of the results of the studies.

D. Updated Cost Estimate

Respondent shall develop cost estimates for the purpose of assuring that the Respondent has the financial resources necessary to construct and implement the selected Corrective Measure(s). The cost estimate developed in the CMS shall be refined to reflect the more detailed/accurate design plans and specifications that

have been developed. The cost estimate shall include the capital costs and (if applicable) operation and maintenance costs. A cost estimate shall be submitted concurrently with each Final Design submittal.

TASK 3: CORRECTIVE MEASURE IMPLEMENTATION

Upon EPA approval of the CMI Work Plan (including the schedule) and the final design submittal, the Respondent shall implement the Corrective Measure(s) in accordance with the approved schedule and design.

TASK 4: REPORTS

Respondent shall prepare plans, specifications, and reports as set forth in Tasks 1 through 3 to document the design, implementation and monitoring (if any) of the Corrective Measure(s). The documentation shall include, but not be limited to, the following:

A. Progress Reports

1. Design and Implementation Progress Reporting

If the design and implementation of the Corrective Measure takes greater than three (3) months, Respondent shall provide EPA with progress reports during the design and implementation phases. Unless otherwise agreed, these reports shall be submitted quarterly and shall be due thirty (30) days from the last day of the calendar quarter. Design and Implementation Progress Reports shall contain:

a. A description of the work accomplished during the reporting period;

b. An estimate of the percentage of the CMI completed;

c. Summaries of all contacts with representatives of the local community, public interest groups or state government during the reporting period;

d. Summaries of all problems or potential problems encountered during the reporting period;

e. Actions suggested or accomplished to rectify problems;

f. Projected work for the next reporting period; and,

g. Copies of inspection reports, laboratory/monitoring data, etc.

2. Annual Operation and Maintenance Reports (if applicable)

Respondent shall provide EPA with annual Operations and Maintenance (O&M) reports during implementation of the selected Corrective Measure(s). These reports shall document the performance of the selected Corrective Measure(s) and describe operation and maintenance activities performed during the reporting period. The reporting period shall be the calendar year. These O&M annual reports shall be submitted concurrently with or as a part of the Annual Report required by Section IX of the Order and the Site-Wide Project Work Plan. This reporting shall include:

a. An operations summary, including any maintenance activities;

b. An assessment of progress with respect to system goals;

c. Summaries of all contacts with representatives of the local community, public interest groups or state government during the reporting period;

d. Summaries of all problems or potential problems encountered during the reporting period;

e. An accounting of any down time during the reporting period;

f. Actions suggested or accomplished to rectify problems;

g. Any suggested modifications to the Corrective Measure(s); and

h. Copies of inspection reports, laboratory/monitoring data, etc.

B. <u>Draft Plans and Reports</u>

1. Respondent shall submit a draft Corrective Measures Implementation Work Plan as outlined in Task 1.

2. Respondent shall submit draft Construction Plans and Specifications, draft Construction Quality Assurance Program Plan and Documentation, Design Reports, Cost Estimates, Schedules, Operation and Maintenance Plans, and Additional Study Reports as outlined in Task 2.

C. Final Plans and Reports

1. Respondent shall finalize the Corrective Measures Implementation Work Plan, Construction Plans and Specifications, Construction Quality Assurance Program Plan and Documentation, Design Reports, Cost Estimates, Project Schedule, Operation and Maintenance Plan, Additional Study Reports, and the Corrective Measures Implementation Report incorporating comments received on draft submissions and within the timeframe specified in EPA's comment letter.

2. At the completion of the construction of the selected Corrective Measure(s), Respondent shall submit a Corrective Measures Implementation Report to EPA. The Report shall document that the project is consistent with the design specifications, and that the Corrective Measure is performing adequately. The Report shall include, but not be limited to, the following elements:

   a. Synopsis of the Corrective Measure(s) and certification of the design and construction;

   b. Explanation of any modifications to the plans and why these were necessary for the project;

   c. Listing of the corrective action performance standards, established in conjunction with EPA during the CMS, for judging the effectiveness and efficiency of the Corrective Measure;

   d. Results of the Project Area monitoring, indicating that the Corrective Measure will meet or exceed the performance standards; and,

   e. Explanation of the operation and maintenance (including monitoring) to be undertaken at the Project Area (if applicable).

   This report shall include all of the inspection summary reports, inspection data sheets, problem identification and remedy, photographs of constructed system, design engineers' acceptance reports, deviations from design and material specification (with justifying documentation), and as-built drawings.

CMI ALTERNATE B

CMI Alternate B outlines a traditional Corrective Measure process. It is intended that CMI Alternate B be used for Corrective Measures that require substantial construction and/or have ongoing operation and maintenance (other than ongoing monitoring) requirements, such as an incinerator or RCRA cap. Below is a description of the Corrective Measures Design, Implementation and Reports to be followed under CMI Alternate B.

TASK 2: CORRECTIVE MEASURE DESIGN

Respondent shall prepare plans and specifications to implement each Corrective Measure at the Project Area as defined in the CMS and as approved by EPA. The specific components required for Corrective Measure Design will be agreed upon between EPA and the Respondent and documented in the CMI Work Plan.

A. Design Plans and Specifications
Respondent shall develop clear and comprehensive design plans and specifications which include, but are not limited to, the following items.

1. Discussion of the design strategy and the design basics, including:

   a. Compliance with all applicable or relevant environmental and public health standards; and,

   b. Minimization of short- and long-term environmental and public health impacts.

2. Discussion of the technical factors of importance including:

   a. Use of currently accepted environmental control measures and technology;

   b. The constructability of the design; and,

   c. Use of currently acceptable construction practices and techniques.

3. Description of assumptions made and adequate justification of these assumptions;

4. Discussion of the possible sources of error and references to possible operation and maintenance problems;

5. Engineering drawings of the proposed design;

6. Tables listing equipment and specifications;

7. Appendices including:

   a. Sample calculations (one example presented and explained clearly for significance or unique design calculations);

   b. Results of laboratory or field tests.

B. Design Phases

The design of the selected Corrective Measure(s) should include the phases outlined below.

1. Preliminary Design

   Respondent shall submit the preliminary design when the design effort is approximately 30 percent complete. At this stage, Respondent shall have field verified the existing conditions of the Project Area. The preliminary design shall reflect a level of effort such that the technical requirements of the project have been addressed and outlined so that they may be reviewed to determine if the final design will provide operable and usable Corrective Measure(s). Supporting data and documentation shall be provided with the design documents defining the functional aspects of the program. The scope of the technical specifications shall be outlined in a manner reflecting the final specifications. Respondent shall include with the preliminary submission, design calculations reflecting the same percentage of completion as the designs they support.

2. Intermediate Design

   Complex project design may necessitate EPA review of the design documents between the preliminary and the prefinal/final design. At the discretion of EPA, a design review may be required at 60 percent completion of the project. This intermediate design submittal should include the same elements as the prefinal design.

3. Prefinal and Final Design

   If required by EPA, Respondent shall submit the prefinal/final design

documents in two parts. The first submission shall be at 95 percent completion of design (i.e., prefinal). After approval of the prefinal submission, Respondent shall execute the required revisions and submit the final documents 100 percent complete with reproducible drawings and specifications.

In addition to the Design Plans and Specifications, the prefinal design submittal shall consist of the Operation and Maintenance Plan (if applicable), Capital Cost Estimate, Operating and Maintenance Cost Estimate (if applicable), Project Schedule, the Construction Quality Assurance Plan, and the Health and Safety Plan. Requirements for these plans and documents are outlined below.

The final design submittal shall include: Final Design Plans and Specifications (100 percent complete), Respondent's Final Construction Cost Estimate, the Final Operation and Maintenance Plan, Final Construction Quality Assurance Plan, Final Project Schedule, and Final Health and Safety Plan. The quality of the design documents should be such that the Respondent would be able to include them in a bid package and invite contractors to submit bids for the construction project.

C. Design Elements

1. Correlating Plans and Specifications

General correlation between drawings and technical specifications is a basic requirement for all sets of working construction plans and specifications.

Before submitting the project specifications, Respondent shall:

a. Coordinate and cross-check the specifications and drawings; and,

b. Complete the proofing of the edited specifications and required cross-checking of all drawings and specifications.

These activities shall be completed prior to the 95 percent prefinal submittal to EPA.

2. Equipment Start-up and Operator Training (if applicable)

Respondent shall prepare, and include in the technical specifications governing treatment systems, contractor requirements for providing: appropriate service visits by experienced personnel to supervise the installation, adjustment, start-up, and operation of the treatment systems, and training covering appropriate operations procedures once the start-up has been successfully accomplished.

3. Additional Studies

Corrective Measures Implementation may require additional studies to supplement the available technical data. At the direction of EPA for any such studies required, Respondent shall furnish all services, including field work as required, materials, supplies, plant, labor, equipment, investigations, studies, and superintendence. Sufficient sampling, testing, and analysis shall be performed to optimize the required treatment and/or disposal operations and systems. There may be an initial meeting of all principal personnel involved in the development of the additional studies. The purpose of the meeting will be to discuss objective, resources, communication channels, personnel responsibilities, and provide an orientation to the site, etc. An interim and final report documenting the additional studies may be required by EPA. The interim report shall present the results of the testing with the recommended treatment or disposal systems (including options). A review conference may be scheduled after the interim report has been reviewed by all interested parties. The final report shall include all data taken during the testing and a summary of the results of the studies.

D. Updated Cost Estimate

Respondent shall develop cost estimates for the purpose of assuring that the Respondent has the financial resources necessary to construct and implement the selected Corrective Measure(s). The cost estimate developed in the CMS shall be refined to reflect the more detailed/accurate design plans and specifications being developed. The cost estimate shall include the capital costs and (if applicable) operation and maintenance costs. An initial cost estimate shall be submitted simultaneously with the Prefinal Design submission and the final cost estimate with the Final Design Document.

E. Project Schedule

Respondent shall refine and update the Project Schedule required under Task 1.C.

F. Operation and Maintenance Plan (if applicable)

Respondent shall prepare an Operation and Maintenance Plan to cover both implementation and long-term maintenance of the selected Corrective Measure(s). The plan shall be composed of, but is not limited to, the following elements:

1. Standard Operating Procedures for the Corrective Measure(s).

2. Description of potential operating problems:

    a. Description of analysis of potential operation problems;

    b. Sources of information regarding problems; and,

    c. Common and/or anticipated remedies.

3. Description of alternate operation and maintenance:

    a. Should systems fail, alternate procedures to prevent undue hazard; and,

    b. Analysis of vulnerability and additional resource requirements should a failure occur.

4. Safety Plan:

    a. Description of precautions, or necessary equipment, etc., for site personnel; and,

    b. Safety tasks required in event of systems failure.

5. Description of equipment:

    a. Equipment identification;

    b. Installation of monitoring components;

    c. Maintenance of site equipment; and,

d. Replacement schedule for equipment and installed components.

6. Records and reporting mechanisms:

a. Daily operating logs;

b. Laboratory records;

c. Records for operating costs;

d. Mechanism for reporting emergencies; and,

e. Personnel and maintenance records.

A Draft Operation and Maintenance Plan shall be submitted simultaneously with the Prefinal Design Document required by Task 2.B.3 of this Attachment, and the Final Operation and Maintenance Plan shall be submitted simultaneously with the Final Design Documents.

G. Construction Quality Assurance Program

Respondent shall develop and implement a construction quality assurance (CQA) program to ensure, with a reasonable degree of certainty, that the completed Corrective Measure(s) meets or exceeds all design criteria, plans, and specifications. The CQA Plan is a facility specific document which must be submitted to EPA for approval prior to the start of construction. The CQA Plan shall identify and document the objectives and framework for the development of the construction quality assurance program. At a minimum, the CQA plan should include the elements summarized below.

1. Responsibility and Authority

The responsibility and authority of all organizations (e.g., technical consultants, construction firms, etc.) and key personnel involved in the construction of the selected Corrective Measure(s) shall be described in the CQA plan. Respondent must identify a CQA officer and the necessary supporting inspection staff.

2. Construction Quality Assurance Personnel Qualifications

The qualifications of the CQA officer and supporting inspection personnel shall be presented in the CQA plan to demonstrate that they possess the training and experience necessary to fulfill their identified responsibilities.

3. Inspection Activities

The observations and test that will be used to monitor the construction and/or installation of the components of the selected corrective measure(s) shall be specified in the CQA plan. The plan shall include the scope and frequency of each type of inspection. Inspections shall verify compliance with all applicable environmental requirements and include, but not be limited to, air quality and emissions monitoring records, waste disposal records (e.g., RCRA transportation manifests), etc. The inspection should also ensure compliance with all applicable health and safety procedures. In addition to oversight inspections, the Respondent shall conduct the following activities.

a. Preconstruction Inspection and Meeting

Respondent shall conduct a preconstruction inspection and meeting to:

i. Review methods for documenting and reporting inspection data;

ii. Review methods for distributing and storing documents and reports;

iii. Review work area security and safety protocol;

iv. Discuss any appropriate modifications of the construction quality assurance plan to ensure that site-specific considerations are addressed; and,

v. Conduct a site walk-around to verify that the design criteria, plans, and specifications are understood and to review material and equipment storage locations.

The preconstruction inspection and meeting shall be documented by a designated person and minutes shall be transmitted to all parties and to EPA.

b. Prefinal Inspection

Upon preliminary project completion, Respondent shall conduct a

prefinal inspection. Respondent shall notify EPA of the date of the prefinal inspection at least fifteen days prior to conducting the inspection. The prefinal inspection will consist of a walk-through inspection of the entire project site. The inspection is to determine whether the project is complete and consistent with the contract documents and the EPA approved corrective measure(s). Any outstanding construction items discovered during the inspection will be identified and noted. Any treatment equipment will be operationally tested by Respondent. Respondent will certify that any equipment has performed to meet the purpose and intent of the specifications. Retesting will be completed where deficiencies are revealed. Respondent shall prepare and submit to EPA the prefinal inspection report within thirty (30) days of the prefinal inspection. This report shall outline the outstanding construction items, actions required to resolve items, completion date for these items, and date for final inspection.

c. Final Inspection

Upon completion of any outstanding construction items, Respondent shall conduct a final inspection. Respondent shall notify EPA of the date of the final inspection at least fifteen days prior to conducting the inspection. The final inspection will consist of a walk-through inspection of the project site. The prefinal inspection report will be used as a checklist with the final inspection focusing on the outstanding construction items identified in the prefinal inspection. Respondent shall prepare and submit to EPA a final inspection report within thirty (30) days of the final inspection. This report shall confirm that outstanding items have been resolved and that the construction phase is complete. If the Corrective Measure(s) includes ongoing operation and maintenance, the Corrective Measure(s) shall be considered to be in the operation and maintenance phase upon EPA's receipt of the final inspection report.

If outstanding issues exist at the time of the final inspection, Respondent shall submit a secondary prefinal inspection report within fifteen (15) days of the inspection. This report shall outline the outstanding construction items, actions required to resolve items, completion date for these items, and date for final inspection. There shall not be a need for more than one secondary prefinal inspection report.

4. Sampling Requirements

The sampling activities, sample size, sample locations, frequency of testing, acceptance and rejection criteria, and plans for correcting problems as addressed in the design plans shall be presented in the CQA plan.

5. Documentation

Reporting requirements for CQA activities shall be described in the CQA plan. This should include such items as daily summary reports, inspection data sheets, problem identification and remedy reports, design acceptance reports, and final construction documentation.

TASK 3: CORRECTIVE MEASURE IMPLEMENTATION

Upon EPA approval of the design, schedule, and the CQA plan, the Respondent shall construct and implement the Corrective Measure(s) in accordance with the approved design, schedule, and the CQA plan. If ongoing operations and maintenance are required components of the Corrective Measure(s), the Respondent shall also implement the elements of the approved Operation and Maintenance plan.

TASK 4: REPORTS

Respondent shall prepare plans, specifications, and reports as set forth in Tasks 1 through 3 to document the design, construction, operation, maintenance, and monitoring of the Corrective Measure(s). The documentation shall include, but not be limited to, the following:

A. Progress Reports

1. Quarterly Design and Construction Reports

If the design and construction of the Corrective Measure takes greater than three (3) months, Respondent shall provide EPA with quarterly progress reports during the design and construction phases. Quarterly reports shall be due thirty (30) days from the last day of the calendar quarter and shall contain:

a. A description of the work accomplished during the quarter;

b. An estimate of the percentage of the CMI completed;

c. Summaries of all contacts with representatives of the local

community, public interest groups or state government during the reporting period;

d. Summaries of all problems or potential problems encountered during the reporting period;

e. Actions suggested or accomplished to rectify problems;

f. Projected work for the next reporting period; and,

g. Copies of inspection reports, laboratory/monitoring data, etc.

2. Annual Operation and Maintenance Reports (if applicable)

Beginning with the year in which the final construction inspection report is received by EPA, Respondent shall provide EPA with annual Operations and Maintenance reports during implementation of the selected Corrective Measure(s). These reports shall document the performance of the selected Corrective Measure(s) and describe operation and maintenance activities performed during the reporting period. The reporting period shall be the calendar year. These O&M annual reports shall be submitted concurrently with or as a part of the Annual Report required by Section IX of the Order and Attachment D, Scope of Work for Site-Wide Project Work Plan. This reporting shall include:

a. An operations summary, including any maintenance activities;

b. An assessment of progress with respect to system goals;

c. Summaries of all contacts with representatives of the local community, public interest groups or state government during the reporting period;

d. Summaries of all problems or potential problems encountered during the reporting period;

e. An accounting of any down time during the reporting period;

f. Actions suggested or accomplished to rectify problems;

g. Any suggested modifications to the Corrective Measure(s); and

h. Copies of inspection reports, laboratory/monitoring data, etc.

B. Draft Plans and Reports

1. Respondent shall submit a draft Corrective Measures Implementation Work Plan as outlined in Task 1.

2. Respondent shall submit draft Construction Plans and Specifications, draft Construction Quality Assurance Program Plan and Documentation, Design Reports, Cost Estimates, Schedules, Operation and Maintenance Plans, and Additional Study Reports as outlined in Task 2.

C. Final Plans and Reports

1. Respondent shall finalize the Corrective Measures Implementation Plan, Construction Plans and Specifications, Construction Quality Assurance Program Plan and Documentation, Design Reports, Cost Estimates, Project Schedule, Operation and Maintenance Plan, Additional Study Reports, and the Corrective Measures Implementation Report incorporating comments received on draft submissions and within the timeframe specified in EPA's comment letter.

2. At the completion of the construction of the selected Corrective Measure(s), Respondent shall submit a Corrective Measures Construction Report to EPA. The Report shall document that the project is consistent with the design specifications, and that the Corrective Measure is performing adequately. The Report shall include, but not be limited to, the following elements:

   a. Synopsis of the Corrective Measure(s) and certification of the design and construction;

   b. Explanation of any modifications to the plans and why these were necessary for the project;

   c. Listing of the corrective action performance standards, established in conjunction with EPA during the CMS, for judging the effectiveness and efficiency of the Corrective Measure;

   d. Results of the Project Area monitoring, indicating that the Corrective Measure will meet or exceed the performance standards; and,

e. Explanation of the operation and maintenance (including monitoring) to be undertaken at the Project Area (if applicable).

This report shall include all of the inspection summary reports, inspection data sheets, problem identification and remedy, photographs of constructed system, design engineers' acceptance reports, deviations from design and material specification (with justifying documentation), and as-built drawings.