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UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

REGION III

IN THE MATTER OF:	)	
	)	
USX Corporation Fairless Hills, PA	)	FINAL ADMINISTRATIVE ORDER ON CONSENT
	)	
	)	U.S. EPA Docket Number: RCRA-III-065-CA
	)	
	)	
EPA I.D. No. PAD002375376	)	
	)	
RESPONDENT	)	
	)	
	)	Proceeding under Section 3008(h) of the Resource Conservation and Recovery Act, as amended, 42 U.S.C. Section 6928(h).

I hereby certify that the within is a true and correct copy of the original [illegible] filed in this matter.

[signature]

Attorney for EPA

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I. JURISDICTION

This Final Administrative Order on Consent ("Consent Order" or "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, as amended by the Hazardous and Solid Waste Amendments of 1984 (collectively referred to hereinafter as "RCRA"), 42 U.S.C. Section 6928(h). The authority vested in the Administrator has been delegated to the Regional Administrators by EPA Delegation Nos. 8-31 and 8-32, dated March 6, 1986.

On January 30, 1986, EPA granted the Commonwealth of Pennsylvania ("Commonwealth") authorization to operate a hazardous waste program in lieu of EPA, pursuant to Section 3006(b) of RCRA, 42 U.S.C. Section 6926(b). The Commonwealth, however, does not have authority to enforce Section 3008(h) of RCRA.

This Consent Order is issued to USX Corporation ("Respondent"), the owner and operator of a facility located at Fairless Hills, Pennsylvania ("Facility"). The Respondent

consents to and agrees not to contest EPA's jurisdiction to issue this Consent Order and to enforce its terms. Further, the Respondent shall not contest EPA's jurisdiction to: compel compliance with this Consent Order in any subsequent enforcement proceedings, either administrative or judicial; require the Respondent's full or interim compliance with the terms of this Consent Order; or impose sanctions for violation of this Consent Order. Respondent's consent to the entry of this Consent Order shall not constitute or be deemed an admission by Respondent of any fact or conclusion of law made by EPA, or an admission that the circumstances to be investigated hereunder represent a threat to human health or the environment or to any private or public interest.

II. PARTIES BOUND

1. This Consent Order shall apply to and be binding upon EPA, the Respondent and Respondent's agents, officers, directors, representatives, successors, and assigns.

2. No change in ownership of any property covered by this Consent Order, or in corporate or partnership status of the Respondent, shall in any way alter, diminish, or otherwise affect the Respondent's obligations and responsibilities under this Consent Order.

3. The Respondent shall provide a copy of this Consent Order to all supervisory personnel, contractors, subcontractors, laboratories, and consultants retained to conduct or monitor any portion of the work performed pursuant to this Consent Order and shall do so within seven (7) days of the effective date of this Consent Order or date of such retention, whichever is later. The Respondent shall require all supervisory personnel, contractors, subcontractors, laboratories, consultants, and other persons retained to perform any work required under this Consent Order to perform the work in accordance with the requirements of this Consent Order and shall ensure that all contractors, subcontractors, laboratories, consultants, supervisory personnel, and agents comply with this Consent Order. Notwithstanding the terms of any contract, the Respondent is responsible for complying with this Consent Order and for ensuring that all contractors, subcontractors, laboratories, consultants, supervisory personnel and agents comply with this Consent Order.

4. In the event of any change in ownership or operation of the Facility and/or in the event of any change in majority ownership or control of the Respondent, Respondent shall

notify EPA in writing of the nature of any such change no later than fifteen (15) days after the effective date of such change. In addition, the Respondent shall provide a copy of this Consent Order to any successor to the Respondent and/or to the Facility at least fifteen (15) days prior to the effective date of such change.

III. STATEMENT OF PURPOSE

In entering into this Consent Order, the mutual objectives of EPA and the Respondent are: (1) to perform Interim Measures ("IM") (including, but not limited to, Stabilization Measures), as described in Section VI.A, below, and Attachment B to this Consent Order at the Site (as defined in Section IV.2, below) to prevent or relieve threats to human health or the environment, (2) to perform a RCRA Facility Investigation ("RFI") to determine fully the nature and extent of any release of hazardous waste and/or hazardous constituents at or from the Site; and (3) to perform a Corrective Measures Study ("CMS") to identify and evaluate alternatives for corrective action necessary to prevent or mitigate migration or releases of hazardous wastes and/or hazardous constituents at or from the Site.

IV. FINDINGS OF FACT

1. The Respondent is a corporation doing business in the Commonwealth of Pennsylvania and is a "person" as defined in Section 1004(15) of RCRA, 42 U.S.C. Section 6903(15).

2. The Respondent owns and operates a steel finishing facility located at Fairless Hills, Pennsylvania. The property on which the steel facility is located, and all contiguous property under the ownership or control of the Respondent as of the date of this Consent Order, is hereafter referred to as the "Facility." The Facility and Solid Waste Management Units ("SWMUs") identified as BP 21, BP 31, and BP31A (as set forth in Attachment A to this Consent Order), which were formerly owned or controlled by the Respondent, in addition to other properties to which hazardous wastes and/or hazardous constituents from the Facility and the above-referenced SWMUs have migrated or are migrating, are referred to in this Consent Order as the "Site."

3. On August 18, 1980, the Respondent submitted to EPA a Notification of Hazardous Waste Activity ("Notification") for the Site, pursuant to Section 3010 of RCRA, 42 U.S.C. Section 6930. In the Notification, the Respondent identified itself as a

generator and transporter of hazardous waste and an owner/operator of a hazardous waste treatment, storage and/or disposal facility. EPA assigned the Site EPA Identification Number # PAD002375376 on October 9, 1980.

4. The Respondent submitted to EPA a RCRA Part A permit application on November 19, 1980. In the RCRA Part A permit application, the Respondent indicated that it treated/stored/disposed of the following hazardous wastes at the Site:

a. Hazardous waste that exhibits the characteristic of EP toxicity for chromium (D007); and

b. Hazardous wastes from specific sources identified at 40 C.F.R. Section 261.32 (K061, K062, K087, K060).

5. On August 5, 1981, EPA sent to the Respondent a letter acknowledging that the Site had qualified for interim status under Section 3005(e) of RCRA, 42 U.S.C. Section 6925(e).

6. On February 3, 1986, Respondent submitted a revised Notification of Hazardous Waste Activity for burning used oil fuel in an industrial furnace.

7. In a RCRA Facility Assessment ("RFA") dated 1986, EPA identified 48 SWMUs at the Site. These SWMUs included excavated areas ("borrow pits") into which the following had been disposed:

slag
dredging spoils
coal dust
contaminated stormwater runoff
ladle house solid wastes
Vac-All dust
paint waste
tar from coke works
coke plant tar decanter sludge
coke fines
quench water from blast furnace
sump pump discharge from coal conveyor pit
rinse acid water from wire mill
borax
flue dust
underflow and dredgings from Terminal Treatment Plant
slurry from open hearth gas cleaning system

sludge from blast furnace thickeners and clarifiers
blast furnace dry dustcatcher dust
sludge from sinter plant scrubbers
electric furnace scrubber underflow
ore washing fines
ammonia still lime sludge
waste pickle liquor sludge
sludge and skimmings from Oil Interceptor Plant
waste oil
decanter tank tar sludge
sludge from National Tube Works pumping station
overflow from coke quencher
phenol-bearing spent caustic
overflow from recirculation of coke plant.

Identification of and information about the SWMUs listed in the RFA appears in the administrative record supporting issuance of this Consent Order.

8. On April 18 and 19, 1990, EPA performed a Sampling Inspection at the Facility. As part of this inspection, samples from eight (8) shallow groundwater monitoring wells, fourteen (14) samples of sludge, soils, and sediments, and two (2) surface water samples were collected. Results from this Sampling Inspection are presented in a Draft Field Trip Report prepared by CDM Federal Programs Corporation and dated August 8, 1990.

9. Selected results from the ground water sampling described in paragraph IV.8, above, are presented in Table I, below. The locations of these samples are depicted in Attachment A.

Table I
Selected Ground Water Sampling Results
USX Fairless Works, April, 1990
(Concentrations in Parts per Billion ("ppb"))

Substance Detected	Monitoring Well Identification Number				
	MW43	TB5B	MW79	MW53	TB-1A
chromium	101	293	81	44	104
lead	23	57	54	110	85
manganese	3250	3,820	5160	3720	9660
nickel	46	158	72	31[1]	126

[1] Analyte was also found in blank.

10. Selected results from soil, sediment and sludge sampling described in paragraph IV.8, above, are presented in Table II, below. The locations of these samples are depicted in Attachment A.

Table II
Selected Soil and Sediment Sampling Results
USX Fairless Works, April, 1990
(ppb)

Substance Detected	Sample Number			
	5 (Sediment)	6 (Sediment)	10 (Soil)	14 (Sediment)
chromium	18	35	32,800	144
pyrene	93,000	77,000[2]	ND[3]	ND
benzo(a)anthracene	63,000	91,000	ND	ND
benzo(b)fluoranthene	58,000	57,000	ND	ND
benzo(k)fluoranthene	48,000	55,000	ND	ND
indeno(1,2,3-cd)pyrene	36,000	44,000	ND	ND
benzo(g,h,i)perylene	31,000	38,000	ND	ND

11. On August 7, 1990, the Respondent collected a water sample from monitoring well 6, whose location is depicted in Attachment A. Results from this sampling event are presented in a Closure/Site Characterization Report, American Bridge, Dispensing Station, Open Hearth, and Bar Mill Tanks, USX Fairless Works, prepared by UEC Environmental Systems, Inc. and dated October, 1990. This groundwater sample contained a concentration of 120 ppb benzene.

12. During an inspection of the Facility from May 21 through 23, 1991, EPA discovered a number of electrical transformers which contain dielectric fluid contaminated with polychlorinated biphenyls ("PCBs"). Some of those transformers

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[2] EPA Contract Laboratory Program criteria not met, but presence is strongly suspected.

[3] ND = Not Detected

were found to be leaking dielectric fluid contaminated with PCBs. In addition, EPA sampled sediments from Borrow Pit 35, which is one of the SWMUs referenced in Section IV.7, above. The results of such sampling revealed the presence of chromium at concentrations of 710,000 ppb.

13. The materials found in the SWMUs referenced in paragraph IV.7, above, are solid wastes and certain of these wastes are "hazardous wastes" as defined in Section 1004(5) of RCRA, 42 U.S.C. Section 6903(5), and 40 C.F.R. Sections 260.10 and 261.3. These hazardous wastes are identified in the Administrative Record supporting issuance of this Consent Order and are listed in 40 C.F.R. Section 261.32.

14. In addition, hazardous constituents found at the Site are identified in the Administrative Record supporting issuance of this Consent Order and are listed in 40 C.F.R Part 261, Appendix VIII.

15. The hazardous wastes and/or hazardous constituents referred to in Paragraphs IV.9 through IV.14 of this Consent Order have been shown in scientific studies to have potentially adverse effects on human health and/or the environment under certain conditions of exposure and concentration. EPA's data concerning these health threats may be found in the Administrative Record supporting issuance of this Consent Order.

16. The Site is located on the following formations: Holocene sediments, Cape May, Pennsauken, Magothy, Raritan, and Wissahickon Schist. Local groundwater in the unconsolidated sediments of these formations flows toward the north, east and south with the possibility of flow toward the west. Regional groundwater from the Site and vicinity is expected to flow east to southeast and discharge into the Delaware River.

17. The Delaware River is classified as a warm-water fishery by the Pennsylvania Department of Environmental Resources ("PADER").

18. Approximately thirteen (13) acres of Wetlands, which are waters of the United States as defined at 33 C.F.R. Section 323.2(a), and are navigable waters as defined by Section 502(7) of the Clean Water Act ("CWA"), 33 U.S.C. Section 1362(7), are located at the Facility along Biles Creek in Slag Disposal Areas A and B. These areas were delineated by Keystone Environmental Resources, Inc. for the Respondent in a document entitled "USS Fairless Works Wetlands Delineation for Slag Disposal Areas A and B", dated November, 1990, and are shown as

"BP 28A" and "BP 28B", respectively, on Attachment A to this Order. In addition, other wetlands and environmentally sensitive areas may be located on the Delaware River along the periphery of the Site.

19. Actual environmental receptors located at the Site include Canada geese and other wildlife exposed to hazardous wastes and/or hazardous constituents in on-Site water treatment lagoons in the Terminal Treatment Plant and in Borrow Pits 35, 35A, 35B, and 35C, identified in Attachment A to this Consent Order.

20. Respondent has constructed wire netting over three (3) lagoons in the Terminal Treatment Plant in order to protect the Canada Geese and other wildlife from exposure to the hazardous wastes and/or hazardous constituents in those lagoons. Respondent is also operating two (2) sound devices in the vicinity of Borrow Pits 35, 35A, 35B, and 35C to discourage the Canada Geese and other wildlife from entering those borrow pits.

21. Potential environmental receptors located at or near the Site, the pathways to which Respondent has neither confirmed nor denied, include surface waters and wetlands ecosystems. EPA's data concerning these potential environmental receptors may be found in the Administrative Record supporting issuance of this Consent Order.

22. Potential human receptors located at or near the Site, the pathways to which Respondent has neither confirmed nor denied, include residential inhabitants and recreational users of nearby surface waters. EPA's data concerning these potential human receptors may be found in the Administrative Record supporting issuance of this Consent Order.

23. The hazardous wastes and/or hazardous constituents referred to in Paragraphs IV.9 through IV.14 of this Consent Order are hazardous wastes within the meaning of Section 3008(h), 42 U.S.C. Section 6928(h), and may migrate from or within the Site to the receptors referred to in Sections IV.21 and IV.22, as well as to other human and environmental receptors via groundwater, surface runoff, and windblown dusts.

V. CONCLUSIONS OF LAW AND DETERMINATIONS

EPA hereby determines that all of the legal requirements, Conclusions of Law, and Determinations necessary for issuance of an order pursuant to Section 3008(h) of RCRA, 42 U.S.C. Section 6928(h), are met.

VI. WORK TO BE PERFORMED

EPA acknowledges that the Respondent may have completed some of the tasks required by this Consent Order and that the Respondent may have available some of the information and data required by this Consent Order. This previous work may be used to meet the requirements of this Consent Order, upon submission to and formal approval by EPA.

Pursuant to Section 3008(h) of RCRA, 42 U.S.C. Section 6928(h), the Respondent agrees and is hereby ordered to perform the following acts in the manner and by the dates specified herein. All work undertaken pursuant to this Consent Order shall be developed and performed in accordance with, at a minimum: the Scope of Work for Interim Measures ("IMSOW") set forth in Attachment B; the Scope of Work for a RCRA Facility Investigation ("RFISOW") set forth in Attachment C; the Scope of Work for Corrective Measures Study ("CMSSOW") set forth in Attachment D; the Scope of Work for the Health and Safety Plan set forth in Attachment E; and RCRA, its implementing regulations and relevant EPA guidance documents. All Scopes of Work and other Attachments to this Consent Order are incorporated herein by reference. Relevant guidances may include, but are not limited to, the "Interim Final RCRA Facility Investigation (RFI) Guidance" (EPA 530/SW-89-031, May 1989); "RCRA Ground Water Monitoring Technical Enforcement Guidance Document" (OSWER Directive 9950.1, September 1986); "Test Methods For Evaluating Solid Waste" (SW-846, November 1986); "Construction Quality Assurance for Hazardous Waste Land Disposal Facilities" (EPA 530/SW-85-031, July 1986); "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans," December 1980, QAMS-005/80; "Handbook of Suggested Practices for the Design and Installation of Ground-water Monitoring," (EPA 600/4-89/043, October 1989); "Risk Assessment Guidance for Superfund," Volume I (EPA/540/1-89/002, December 1989); "Risk Assessment Guidance for Superfund: Volume II: Human Health Evaluation Manual, Part B, Development of Risk-Based Preliminary Remediation Goals" (EPA/540-R-92-003, December 1991); "Human Health Evaluation Manual," Volume II; "Environmental Evaluation Manual Interim Final" (EPA/540/1-89/001, March 1989); and the "Federal Manual for Identifying and Delineating Jurisdictional Wetlands," January 10, 1989. Respondent shall perform the work in the manner specified in any revisions to the above-mentioned regulations and guidances upon their effective date.

The parties acknowledge that the Site is complex and diverse and occupies a substantial geographic area; in addition, portions of the Facility include active manufacturing units. This may affect the scheduling and implementation of the work to

be performed under this Consent Order. Accordingly, in the RFI and CMS Workplans, submitted to EPA for approval and described in Sections VI.B and VI.C, Respondent may propose to divide the Site into two or more Study Areas to be investigated in phases. Throughout the work Respondent shall address the Site systematically in accordance with the schedules and requirements in the approved RFI and CMS Workplans. The parties acknowledge that certain portions of the work, however, may be performed and evaluated on a Site-wide basis (e.g., characterization of groundwater migration and runoff of surface water) in accordance with the EPA-approved RFI and CMS Workplans before, during, or after the Study Areas have been investigated.

The parties agree that the Statements of Work ("SOWs") attached hereto contain a generic and comprehensive description of work which may need to be performed, the sequence, timing, and appropriateness of which shall be addressed in the documents required to be submitted to EPA for approval pursuant to this Consent Order. In addition, EPA in its sole discretion, which shall not be subject to review under Section XV, "DISPUTE RESOLUTION," below, or otherwise, may waive, consistent with the requirements of this Consent Order, any of the requirements or may toll or suspend any of the milestones set forth in the SOWs or this Section VI.

"Days" as used herein shall mean calendar days unless otherwise specified.

A. INTERIM MEASURES

1. Within thirty (30) days after the effective date of this Consent Order, Respondent shall submit an IM Workplan which shall set forth interim corrective measures to protect wildfowl and other wildlife from releases of hazardous wastes, and/or hazardous constituents from the On-Site Terminal Treatment Plant lagoons and Borrow Pits 35, 35A, 35B, and 35C. Upon receipt of EPA approval of the IM Workplan, Respondent shall implement the approved IM Workplan in accordance with the requirements and schedules contained therein. Unless provided for in the EPA-approved IM Workplan or until receipt of notice from EPA to cease, Respondent shall continue to operate and maintain the wirenetting, oil skimming system, and sound devices in order to protect the wildfowl and other wildlife from releases of oil, hazardous wastes and/or hazardous constituents from the On-Site Terminal Treatment Plant lagoons and Borrow Pits 35, 35A, 35B, and 35C.

2. If at any time during the pendency of this Consent Order, the Respondent obtains or discovers information concerning

a release of any hazardous waste or hazardous constituent, except a Federally-permitted release, at or from the Site into the environment in addition to or different from that described in Section IV, "FINDINGS OF FACT" above, and the administrative record supporting issuance of this Consent Order, the Respondent shall address such releases as follows:

a. For any such release which may pose a threat or potential threat to human health and/or the environment and which requires an IM Workplan pursuant to Section VI.A.4, below, Respondent shall within one (1) day notify EPA verbally of such release and shall notify EPA in writing within three (3) days of providing verbal notification. Within twenty (20) days after the effective date of this Consent Order, Respondent shall submit for EPA approval the criteria for those releases requiring an IM Workplan. Verbal and written notifications shall describe, to the extent known, the nature and extent of the release and any threat or potential threat to human health and/or the environment posed by such release. Respondent may confer with EPA as soon as practicable to review the available information regarding the release and to discuss what corrective interim measure, if any, must be implemented to protect human health and/or the environment. Regardless of whether any such conference is held, if EPA determines, based on its decision regarding the nature and extent of the release, the threat or potential threat to human health and/or the environment, and any other relevant information, that interim measures for such release must be implemented to protect human health or the environment, EPA shall notify the Respondent. Within twenty (20) days of receipt of such notice from EPA, Respondent shall submit to EPA for approval an IM Workplan which identifies Interim Measures which will protect human health and the environment from such release. Prior to submission of such IM workplan for EPA approval, Respondent may request that EPA waive one or more of items A-D set forth in Task I of Attachment B to this Consent Order. Upon receipt of EPA approval of the IM Workplan, Respondent shall implement the EPA-approved IM Workplan in accordance with the requirements and schedules contained therein.

b. Respondent shall provide summaries of all other releases not requiring an IM Workplan in the bimonthly progress reports submitted pursuant to Section VI.G.3, below. Such summaries shall contain the information required by Section VI.A of the IM Scope of Work in

Attachment B to this Consent Order. For all such releases, Respondent shall implement those Interim Measures necessary to protect human health and/or the environment. Thereafter, Respondent shall summarize the progress and results of all such Interim Measures in the bimonthly progress reports. If EPA determines that any releases reported pursuant to this Section VI.A.3.b required an IM Workplan and should have been reported pursuant to Section VI.A.3.a, immediately above, Respondent shall be liable for the stipulated penalties set forth in Section XIV.1.a, below.

3. Within ninety (90) days after the effective date of this Consent Order, Respondent shall submit to EPA for approval a list of Interim Measures at the Site that Respondent proposes to implement ("List of Interim Measures"). Within twenty (20) days of receipt of EPA approval of the List of Interim Measures, Respondent shall submit for EPA approval an IM Workplan for Implementation of the approved List of Interim Measures. Upon receipt of EPA approval of the IM Workplan, the Respondent shall implement the approved IM Workplan in accordance with the requirements and schedules contained therein.

4. Each IM Workplan submitted pursuant to this Section VI.A shall be developed in accordance with the IM Scope of Work in Attachment B to this Consent Order and shall be consistent with and integrated into any long-term remediation of the Site. The Data Collection Quality Assurance Plan ("QAPP"), described in Section VII of this Consent Order and in Attachments B and C to this Consent Order, shall be submitted/revised as necessary to address the data quality needs of Interim Measures.

5. In addition to an IM Workplan and revisions to/preparation of the QAPP, the Respondent shall submit in accordance with the requirements and schedules contained in each EPA-approved IM Workplan, the submissions and items specified in Task IV of Attachment B to this Consent Order.

6. Concurrent with submission of an IM Workplan, the Respondent shall submit/revise the Health and Safety Plan submitted in accordance with Attachment E to this Consent Order.

B. RCRA FACILITY INVESTIGATION

1. Within seventy-five (75) days of the effective date of this Consent Order, the Respondent shall submit to EPA for approval a Description of the Current Conditions at the Site ("Description"). This Description shall be developed in

accordance with the Scope of Work contained in Attachment C to this Consent Order.

2. Within one hundred five (105) days of the effective date of this Consent Order, the Respondent shall submit to EPA for approval a Technical Approach to the RFI/CMS ("Technical Approach"). The Technical Approach shall be developed in accordance with the RFI Scope of Work contained in Attachment C to this Consent Order.

3. Within sixty (60) days after receipt of EPA approval of the Technical Approach, the Respondent shall submit to EPA for approval a Draft Workplan for a RCRA Facility Investigation ("RFI Workplan") at the Site. The Draft RFI Workplan shall be developed in accordance with, at a minimum, the RFI Scope of Work contained in Attachment C to this Consent Order, RCRA, its implementing regulations, and relevant EPA guidance documents. Within thirty (30) days after receipt of EPA's comments on the Draft RFI Workplan, Respondent shall, in accordance with Section VI.G, below, submit for EPA approval a Final RFI Workplan that responds to comments received from and/or remedies deficiencies identified by EPA on the Draft RFI Workplan.

4. The RFI Workplan shall document the procedures that the Respondent shall use to conduct those investigations necessary to: (A) characterize the source(s) of contamination; (B) define the degree and extent of contamination; (C) characterize the potential pathways of contaminant migration; (D) delineate jurisdictional Wetlands at the Site which are contaminated with hazardous wastes and/or hazardous constituents; (E) assess the risks that the Site poses to actual or potential human and/or ecological receptors, and; (F) support the development of alternatives from which a corrective measure(s) will be selected by EPA. A schedule for expeditious implementation of all activities shall be included in the RFI Workplan.

5. In accordance with the provisions of Attachment C to this Consent Order, the RFI Workplan shall include: (A) a Project Management Plan; (B) a Data Collection Quality Assurance Plan; (C) a Data Management Plan; (D) a Community Relations Plan; and (E) a provision for the submission of draft and final RFI Reports.

6. Concurrent with the submission of the Description, the Respondent shall prepare/revise the Site Health and Safety Plan in accordance with the provisions of Attachment E of this Consent Order.

7. Upon receipt of EPA approval of the Final RFI Workplan, Respondent shall implement the EPA-approved RFI Workplan in accordance with the terms and schedule contained therein. Upon completion of implementation of the RFI Workplan, Respondent shall submit to EPA for approval an RFI Report in accordance with the requirements and schedules in the EPA-approved RFI Workplan. Respondent shall prepare a Laboratory and Pilot Sale Testing Report in accordance with the requirements and schedule contained in the RFI Project Management Plan and the schedule contained in Attachment C of this Consent Order.

C. CORRECTIVE MEASURES STUDY

1. Within sixty (60) days after receipt of EPA approval of the Technical Approach, Respondent shall submit to EPA for approval a Draft CMS Workplan in accordance with the CMS Scope of Work in Attachment D. Within thirty (30) days after receipt of EPA's comments on the Draft CMS Workplan, Respondent shall, in accordance with Section VI.G, below, submit for EPA approval a Revised CMS Workplan that responds to comments received from and/or remedies deficiencies identified by EPA on the Draft CMS Workplan.

2. In accordance with the schedules contained in Attachment D of this Consent Order and the EPA-approved CMS Workplan, the Respondent shall conduct a Corrective Measures Study ("CMS").

3. Within thirty (30) days of receipt of EPA's comments on the Draft CMS Report, or such longer time as specified by EPA based upon the extent of its comments, the Respondent shall, in accordance with Section VI.G., below, submit to EPA a Revised CMS Report for public review. The Revised CMS Report shall respond to comments received from and/or remedy deficiencies identified by EPA on the Draft CMS Report.

D. PUBLIC COMMENT AND PARTICIPATION

1. Upon approval of the Revised CMS Report, EPA will make the Final RFI Report, the Revised CMS Report, and a summary of EPA's proposed corrective measure and EPA's justification for proposing selection of that corrective measure(s) (the "Statement of Basis") available to the public for review and comment for thirty (30) days.

2. Following the public review and comment period, EPA will notify the Respondent of necessary changes to the Revised CMS Report to respond to concerns raised by the public during the Public Comment Period. If the corrective measure(s)

recommended in the Revised CMS Report is not the corrective measure(s) selected by EPA after consideration of public comments, EPA will inform the Respondent in writing of the reasons for such decision and may require revision to the Revised CMS Report ("Final CMS Report"). If Respondent disagrees with EPA's revisions to the Revised CMS Report, it shall state both its own and EPA's recommendations for corrective measures in the Final CMS Report. Respondent shall, in accordance with Section VI.G, below, submit the Final CMS Report for EPA approval within thirty (30) days of receipt of any notification from EPA of additional changes in the Revised CMS Report, or such longer time as specified by EPA. EPA will select the final corrective measure(s) in a RCRA Record of Decision ("RCRA ROD").

E. CORRECTIVE MEASURE(S) IMPLEMENTATION

If Respondent has complied with the terms of this Consent Order, EPA may provide a sixty (60)-day period for negotiation of an administrative order on consent (or a judicial consent decree) for implementation of the final corrective measure(s). The sixty (60)-day negotiation period shall begin on the date the Respondent receives EPA's notification of the final corrective measure(s) described in Paragraph VI.D.2, above. If agreement is not reached during this period, EPA reserves all rights it has to implement the corrective measure(s) or other remedial response and to take any other appropriate action under RCRA, the Comprehensive Environmental Response, Compensation and Liability Act, as amended by the Superfund Amendments and Reauthorization Act of 1986, 42 U.S.C. Section 9601 et seq. ("CERCLA"), or any other available legal authority, including issuance of a unilateral administrative order directing the Respondent to implement the final corrective measure(s). In addition, Respondent reserves all rights available under applicable laws and regulations.

F. HEALTH AND SAFETY PLAN

Concurrent with the submission of the IM Workplan set forth in Section VI.A.1, above, the Respondent shall submit a Site Health and Safety Plan ("SH&SP") in accordance with the provisions of Attachment E of this Consent Order. The Site Health and Safety Plan submitted to EPA shall include, but not be limited to, provisions for Site security. Thereafter, Respondent shall revise the SH&SP to address any additional health and safety requirements during Respondent's implementation of the work required under this Consent Order. EPA retains the right to disapprove at any time such SH&SP and shall specify the reasons for such rejection. Within thirty (30) days of receipt of such disapproval, Respondent shall submit a revised SH&SP to EPA which

responds to comments received from and/or remedies deficiencies identified by EPA.

G. SUBMISSIONS/EPA APPROVAL/ADDITIONAL WORK

1. EPA will review the Respondent's Submissions, including the IM, RFI, and CMS Workplans, RFI and CMS Draft Reports, and all other documents submitted pursuant to Attachments B-D of this Consent Order (hereinafter "Submissions"), with the exception of the bimonthly progress reports required under paragraph 3, below, and will notify the Respondent in writing of EPA's approval or disapproval of each such Submission, after a reasonable opportunity of the Commonwealth of Pennsylvania to review and comment to EPA on the Submissions. In the event of EPA's disapproval, EPA shall specify in writing any deficiencies in the Submission. Such disapproval shall not be subject to the dispute resolution procedures of Section XV, below.

2. Except with respect to each IM Workplan, within thirty (30) days of receipt of EPA's disapproval of the Submission, or such longer time as specified by EPA based upon the extent its comments, the Respondent shall submit to EPA for approval a revised Submission ("Revised Submission"), which responds to any comments received and remedies any deficiencies identified by EPA. Within fifteen (15) days of receipt of EPA's disapproval of any IM Workplan, Respondent shall submit to EPA for approval a revised IM Workplan which responds to any comments received and remedies any deficiencies identified by EPA. In the event that EPA disapproves the Revised Submission, the Respondent may invoke the dispute resolution procedures of Section XV, below. In the event EPA disapproves such Revised Submission, EPA reserves the right to revise such Submission and to seek to recover from the Respondent, the costs thereof, in accordance with CERCLA and any other applicable law and to take any other action authorized by law. Respondent reserves its right to defend against any action by EPA to recover the costs of revising the Submission or to defend against any other action by EPA, except as otherwise provided herein. Any Submission approved by EPA under this Consent Order shall be deemed incorporated into and made an enforceable part of this Consent Order.

3. Beginning with the first day of the second full month following the effective date of this Consent Order, and every two (2) months thereafter on the first day of the month, throughout the period that this Consent Order is effective, the Respondent shall provide EPA with bimonthly (every two months) progress reports. The bimonthly progress reports shall contain

the information required in the relevant Scope(s) of Work attached hereto.

4. All Submissions required by this Consent Order shall be sent to the individuals and in the manner prescribed in Section XIII, "NOTIFICATION," below.

5. All work performed pursuant to this Consent Order shall be under the direction and supervision of the professional engineer or geologist or otherwise qualified individual ("Project Coordinator"), referenced in Section XII, below, with expertise in hazardous waste site investigation. Subject to the requirements of this Section VI.G.5, Respondent has designated Richard L. Mennozi, Environmental Engineer, as its Project Coordinator. Within ten (10) days after the effective date of this Consent Order, the Respondent shall submit to EPA, in writing, the qualifications of Mr. Mennozi. In addition, within ten (10) days after the effective date of this Consent Order, the Respondent shall submit to EPA, in writing, the name, title, and qualifications of any contractors or subcontractors to be used in carrying out the terms of this Consent Order. EPA retains the right to reject at any time the use of any Project Coordinator, contractor, or subcontractor selected by the Respondent. EPA will present its basis for disapproval of any such Project Coordinator, contractor, or subcontractor, except that EPA shall not be required to state the cause(s) for disapproval nor shall disapproval be subject to review under the Dispute Resolution procedures of Section XV, below or otherwise, if such cause(s) relate(s) to relevant pending civil or criminal investigations for fraud, false statements, violations of environmental laws, or other relevant violations of law. Within thirty (30) days after receipt of EPA's disapproval of Respondent's Project Coordinator, contractors, or subcontractors, Respondent shall submit to EPA in writing, the name, title, and qualifications of the Project Coordinator, contractor(s), or subcontractor(s) to replace any disapproved by EPA. Notwithstanding the Respondent's selection of a Project Coordinator, contractor or subcontractor, nothing herein shall relieve the Respondent of its obligation to comply with the terms and conditions of this Consent Order. The Respondent shall notify EPA ten (10) days prior to replacing or adding any Project Coordinator, contractors, and/or subcontractors to be used in carrying out the terms of this Consent Order, and shall submit to EPA in writing, the name, title, and qualifications of the new persons(s).

6. EPA may determine that certain tasks including, but not limited to, investigatory work or engineering evaluation require additional work. These tasks and deliverables may or may not have been in the Submissions or Revised Submissions,

including, but not limited to, the IM, RFI, and CMS Workplans. When new findings indicate that such additional work is necessary, EPA may request, in writing, that the Respondent perform the additional work. In the written request EPA will specify the basis and reasons for EPA's determination that additional work is necessary. Within fifteen (15) days after the receipt of such request, the Respondent shall have the opportunity to meet or confer with EPA to discuss the additional work EPA has requested. In the event that the Respondent agrees to perform the additional work, this Consent Order shall be modified in accordance with Section XXII, "SUBSEQUENT MODIFICATION," below, and such work shall be performed in accordance with this Consent Order. A decision by Respondent to decline EPA's request to perform such additional work shall not constitute a violation of this Consent Order and shall not subject Respondent to the stipulated penalties set forth in Section XIV of this Consent Order. In the event that the Respondent fails to perform the additional work, EPA reserves the right to order the Respondent to perform such additional work; to perform such additional work itself and to seek to recover from the Respondent all costs of performing such additional work; and to disapprove of the IM or RFI Workplan and/or the RFI or CMS Reports. Respondent reserves its right to defend any action by EPA to recover the costs of performing such additional work.

VII. QUALITY ASSURANCE

Throughout all sample collection and analysis activities, the Respondent shall use EPA-approved quality assurance, quality control, and chain-of-custody procedures, as specified in the approved Workplans and in relevant guidance. Concurrent with the submission of the IM Workplan, set forth in Section VI.A.1 of this Consent Order, the Respondent shall submit a Data Collection Quality Assurance Plan ("QAPP") which shall document data quality objectives and all monitoring procedures related to sampling, field analysis, and sample analysis to be performed pursuant to the requirements of the IM Workplan. Thereafter, Respondent shall revise the QAPP to address any additional data quality requirements during Respondent's implementation of the work required under this Consent Order. In addition, the Respondent shall:

1. Ensure that laboratories used by the Respondent for analyses perform such analyses according to the EPA methods included in "Test Methods for Evaluating Solid Waste" (SW-846, November 1986) or other methods deemed satisfactory to EPA. If methods other than EPA methods are to be used, the Respondent shall submit all analytical protocols to be used for analyses to

EPA for approval at least thirty (30) days prior to the commencement of analyses and shall obtain EPA approval prior to the use of such analytical protocols.

2. Ensure that laboratories used by the Respondent for analyses participate in a quality assurance/quality control program equivalent to that which is 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.

3. Identify in the QAPP the laboratory(ies) which will be used by the Respondent and ensure that EPA personnel and EPA authorized representatives have access at all reasonable times to the laboratories and personnel used for analysis. Respondent shall provide EPA with such identification at least fourteen (14) days in advance of any laboratory analysis.

VIII. PUBLIC REVIEW OF ADMINISTRATIVE RECORD

The Administrative Record supporting the issuance of this Consent Order and any decisions or determinations made by EPA pursuant to the Consent Order will be available for public review on Mondays through Fridays, from 9:00 a.m. to 5:00 p.m., by contacting the EPA Project Coordinator at:

U.S. Environmental Protection Agency
Region III
841 Chestnut Building
Philadelphia, PA 19107
Attn: Gerallyn Valls 3HW62
Telephone # 215-597-6681.

IX. ON-SITE AND OFF-SITE ACCESS

1. EPA and/or its authorized representatives shall have the authority to enter and freely move about all property at the Facility at all reasonable times during the effective dates of this Consent Order for the purposes of, inter alia: interviewing Facility personnel and contractors; inspecting records, operating logs, and contracts related to the Site; reviewing the progress of the Respondent in carrying out the terms of this Consent Order; conducting any tests, sampling or monitoring which EPA deems necessary; using a camera, sound recording, or other documentary-type equipment; and verifying the reports and data submitted to EPA by Respondent. The Respondent shall permit such persons to inspect and copy all records, files,

photographs, documents, and other writings, including all sampling and monitoring data, that pertain to work undertaken pursuant to this Consent Order. While on Respondent's property, EPA will comply with the final Health and Safety Plan, submitted pursuant to Section VI.F, which has been revised in accordance with any comments provided by EPA and which has not been rejected by EPA. Claims of confidentiality and privilege for any material to be inspected and copied may be asserted in accordance with Section X, "SAMPLING AND DATA/DOCUMENT AVAILABILITY".

2. To the extent that work required by this Consent Order, or by any approved Workplan prepared pursuant hereto, must be performed on property not owned or controlled by the Respondent, the Respondent shall use its best efforts to obtain site access agreement(s) from the present owner(s) and/or lessee(s) of such property, as appropriate, within thirty (30) days of receipt of EPA approval of any Workplan pursuant to this Consent Order which requires work on such property. For purposes of this Paragraph, "best efforts" shall include, at a minimum, but shall not be limited to: a certified letter from the Respondent to the present owner(s) or lessee(s) of such property requesting agreements to permit the Respondent, EPA, and its authorized representatives access to such property. In the event that such agreements for access are not obtained within thirty (30) days after receipt of EPA approval of any Workplan pursuant to this Consent Order which requires work on property which is not owned or controlled by the Respondent, the Respondent shall notify EPA in writing within seven (7) days after inability to obtain such agreements. Such notification shall describe Respondent's efforts to obtain access and the reasons Respondent cannot obtain such agreements.

3. Nothing in this Consent Order limits or otherwise affects EPA's rights of access and entry pursuant to applicable law, including, but not limited to, RCRA and CERCLA.

X. SAMPLING AND DATA/DOCUMENT AVAILABILITY

1. The Respondent shall submit to EPA the results of all sampling and/or tests or other data generated by, or on behalf of, the Respondent in accordance with the requirements of this Consent Order and the Attachments appended hereto and incorporated herein.

2. The Respondent shall notify EPA, in writing of a revision to the RFI Workplan, at least fourteen (14) days in advance of any field activities, such as well drilling, installation of equipment, or sampling. At the request of EPA,

the Respondent shall provide or allow EPA or its authorized representatives to take split or duplicate samples of all samples collected by the Respondent pursuant to this Consent Order. To the extent practicable, EPA will notify Respondent seven (7) days before conducting any sampling under this Consent Order and will allow Respondent to take split or duplicate samples of all samples collected by EPA. Nothing in this Consent Order shall limit or otherwise affect EPA's authority to collect samples pursuant to applicable law, including, but not limited to, RCRA and CERCLA.

3. The Respondent may assert a business confidentiality claim covering all or part of any information submitted to EPA pursuant to this Consent Order in the manner described in 40 C.F.R. Section 2.203(b). Any assertion of confidentiality shall be adequately substantiated by the Respondent when the assertion is made in accordance with 40 C.F.R. Section 2.204(e)(4). Information subject to a confidentiality claim shall be disclosed only to the extent and by the means of the procedures set forth in 40 C.F.R. Part 2, Subpart B. If no such confidentiality claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA without further notice to the Respondent. The Respondent shall not assert any confidentiality claim with regard to any physical, sampling, monitoring, or analytical data.

4. Respondent may withhold those documents or records or portions thereof which Respondent asserts are subject to the attorney-client or attorney work product privileges. In the event that Respondent withholds such documents, or records as privileged, the Respondent shall provide EPA with the following:

a. the title of the document or record;

b. the date of the document or record;

c. the author of the document or record;

d. the name of the addressee or recipient;

e. a description of the contents of the document or record; and

f. the identification of the privilege asserted.

Notwithstanding the assertion of such privileges, all documents, records, or other data created, generated, or collected pursuant to the terms and requirements of this Consent Order shall not be

withheld on the grounds that they are privileged. In addition, notwithstanding the provisions of Section XI, "RECORD PRESERVATION," below, Respondent shall preserve any documents or records for which it claims privilege until EPA has exhausted all available challenges to such privilege claims.

XI. RECORD PRESERVATION

The Respondent agrees that it shall preserve, during the pendency of this Consent Order and for a minimum of at least six (6) years after its termination, all documents, records, and data in its possession or control or in the possession or control of its divisions, officers, directors, employees, agents, contractors, successors, and assigns which relate in any way to this Consent Order or to hazardous waste management and/or disposal at the Site. After six (6) years, the Respondent shall make such documents, records, and data available to EPA for inspection and copying. The Respondent shall notify EPA at least thirty (30) days prior to the proposed destruction of any such records, and shall provide EPA with a reasonable opportunity to inspect, copy and/or take possession of any such records. Claims of confidentiality or privilege for any documents, records, or data in this Section XI may be asserted in accordance with Section X, above. Nothing in this Section XI shall in any way limit the authority of EPA under Section 3007 of RCRA, 42 U.S.C. Section 6927, Section 104(e) of CERCLA, 42 U.S.C. Section 9604(e), or other applicable law.

XII. PROJECT COORDINATORS

1. EPA hereby designates Gerallyn Valls as the EPA Project Coordinator. Subject to the requirements set forth in Section VI.G.5, above, the Respondent hereby designates Richard L. Mennozi, Environmental Project Engineer, as its Project Coordinator. Each Project Coordinator shall be responsible for overseeing the implementation of the Consent Order. The EPA Project Coordinator will be EPA's primary designated representative at the Site. To the maximum extent possible, all communications between the Respondent and EPA, and all documents, reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Consent Order, shall be directed through the Project Coordinators.

2. The parties agree to provide at least seven (7) days written notice prior to changing Project Coordinators.

3. If EPA determines that conditions at the Site, whether or not in compliance with this Consent Order, have caused or may cause a release or threatened release of hazardous wastes, hazardous constituents, hazardous substances, pollutants or contaminants, which threaten or may pose a threat to the public health or welfare or to the environment, EPA may direct, in writing, that the Respondent stop further implementation of this Consent Order for such period of time as may be needed to abate any such release or threatened release and/or to undertake any action which EPA determines is necessary to abate such release or threatened release.

4. The absence of the EPA Project Coordinator from the Site shall not be cause for the delay or stoppage of work.

XIII. NOTIFICATION

1. Unless otherwise specified, reports, correspondence, approvals, disapprovals, notices, or other submissions relating to or required under this Consent Order shall be in writing and shall be sent as follows:

a. Four (4) copies of all Submissions or other documents required by this Consent Order shall simultaneously be hand-delivered or sent by an acceptable and recognized overnight service to:

Ms. Gerallyn Valls
U.S. EPA, Region III 3HW62
841 Chestnut Building
Philadelphia, Pennsylvania 19107

b. One (1) copy of all Submissions and other documents sent to EPA shall simultaneously be hand-delivered or sent by an acceptable and recognized overnight service to:

Mr. Bruce Beitler
Operations Manager
Pennsylvania Department of
Environmental Resources
555 North Lane
Suite 6010
Conshohocken, Pennsylvania 19428

c. Documents to be submitted to Respondent shall be sent to:

Mr. Richard L. Mennozi
Environmental Project Engineer
United States Steel
600 Grant Street
Room 2300
Pittsburgh, PA 15219

2. Any notice, report, certification, data presentation, or other document submitted by Respondent pursuant to this Consent Order which discusses, describes, demonstrates, supports any finding or makes any representation concerning Respondent's compliance or noncompliance with any requirement of this Consent Order shall be certified by a responsible corporate officer of Respondent. Responsible corporate officer means: (a) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or (b) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $35 million (in 1987 dollars when the Consumer Price Index was 345.3), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

3. The certification of the responsible corporate officer required by paragraph 2, above, shall be in the following form:

> I certify that the information contained in or accompanying this [type of submission] is true, accurate, and complete. As to [the/those identified portion(s)] of this [type of submission] for which I cannot personally verify [its/their] accuracy, I certify under penalty of law that this [type of submission] and all attachments were prepared in accordance with procedures 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, or the immediate supervisor of such person(s), 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: _____

XIV. DELAY IN PERFORMANCE/STIPULATED PENALTIES

1. Unless there has been a written modification of this Consent Order by the parties in accordance with Section XXII "SUBSEQUENT MODIFICATION," or excusable delay as defined below in Section XVI, "FORCE MAJEURE AND EXCUSABLE DELAY," in the event the Respondent fails to comply with any requirement set forth in this Consent Order, the Respondent shall pay stipulated penalties, as set forth below, upon written demand by EPA. Compliance by the Respondent shall include commencement or completion in an acceptable manner and within the specified time schedules in and approved under this Consent Order, of any activity or Submission required by this Consent Order. Stipulated penalties shall be as follows:

a. $1,000 per day for one to five days or part thereof of delay; $2,500 per day for six to nine days or part thereof of delay; and $5,000 per day for each day of delay, or part thereof, thereafter, for the following violations:

i. Failure to submit any Workplan, Report, Plan or other Submission as required pursuant to this Consent Order and the schedules contained in the SOWs;

ii. Failure to make sampling data and documents available to EPA pursuant to Section X or to preserve records pursuant to Section XI of this Consent Order;

iii. Failure to report a release which may pose a threat or potential threat to human health and/or the environment and which requires an IM Workplan in accordance with Section VI.A.2.a, above; or

iv. Failure to comply with the provisions of this Consent Order after receipt of notice of

noncompliance by EPA, in addition to any stipulated penalties imposed for the underlying non-compliance.

b. $500 per day for one to five days or part thereof of delay; $1,000 per day for six to nine days or part thereof of delay; and $2,500 per day for each day of delay, or part thereof, thereafter, for the following violations:

i. Failure to submit bimonthly progress reports as required pursuant to this Consent Order;

ii. Failure to notify EPA of a change in Project Coordinator, as set forth in Sections XII.2;

iii. Failure to provide EPA with timely notice of field activities, in accordance with Section X.2; or

iv. Failure to comply with any other provisions of this Consent Order not otherwise stated in Section XIV.1.a and b.i-iii, above.

2. All penalties shall begin to accrue on the date that complete performance is due or a violation occurs, and shall continue to accrue through the final day of or correction of the violation. Nothing herein shall prevent the simultaneous accrual of separate stipulated penalties for separate violations of this Consent Order.

3. All penalties owed to EPA under this Section XIV shall be due within thirty (30) days of Respondent's receipt of a notification of violation unless the Respondent invokes the dispute resolution procedures under Section XV, below. Such notification shall describe the non compliance and shall indicate the amount of penalties due. Interest shall begin to accrue on the unpaid balance at the end of the thirty (30)-day period and shall accrue at the United States Tax and Loan Rate.

4. All penalty payments shall be made by certified or cashier's check payable to: "Treasurer, United States of America and shall be remitted to:

Regional Hearing Clerk
U.S. Environmental Protection Agency
Region III
P.O. Box 360515
Pittsburgh, Pennsylvania 15251-6515

All payments shall reference the name of the Site, the Respondent's name and address, and the EPA Docket Number of this Consent Order. Copies of the transmittal of payment shall be sent simultaneously to the EPA Project Coordinator and the Regional Hearing Clerk (3RC00), U.S. Environmental Protection Agency, Region III, 841 Chestnut Building, Philadelphia, Pennsylvania 19107.

5. The Respondent may dispute EPA's basis for imposition of stipulated penalties by invoking the dispute resolution procedures under Section XV, "DISPUTE RESOLUTION." Stipulated penalties shall continue to accrue, but need not be paid, for any alleged noncompliance which is the subject of dispute resolution during the period of such dispute resolution. To the extent that the Respondent does not prevail upon resolution of the dispute, the Respondent shall remit to EPA within seven (7) days of receipt of such resolution any outstanding penalty payment, including any accrued interest, in the manner described above in paragraph 4 of this Section XIV. To the extent the Respondent prevails upon resolution of the dispute, no penalties shall be payable.

6. Neither the filing of a petition to resolve a dispute nor the payment of penalties shall alter in any way Respondent's obligation to comply with requirements of this Consent Order.

7. The stipulated penalties set forth in this Section XIV shall not prelude EPA from pursuing any other remedies or sanctions, including, without limitation, the assessment of penalties under Section 3008(h)(2) of RCRA, 42 U.S.C. Section 6928(h)(2), which may be available to EPA by reason of Respondent's failure to comply with any of the requirements of this Consent Order. However, if EPA subsequently seeks statutory penalties for Respondent's failure to comply with a requirement of this Consent Order for which Respondent has paid a stipulated penalty, those penalties shall be reduced by the amount of any stipulated penalty paid by Respondent for such failure to comply.

8. EPA may in its sole discretion, which shall not be subject to review under Section XV, "DISPUTE RESOLUTION," below, or otherwise, reduce or forgive a portion or all of any stipulated penalty incurred and may toll or suspend any compliance obligation or deadline under this Consent Order.

XV. DISPUTE RESOLUTION

1. If the Respondent disagrees, in whole or in part, with any EPA disapproval, modification or other decision or directive made by EPA pursuant to this Consent Order, the Respondent shall notify EPA in writing of its objections, and the basis therefor, within fourteen (14) days of receipt of EPA's disapproval, decision or directive. Such notice shall set forth the specific points of the dispute, the position which the Respondent asserts should be adopted as consistent with the requirements of this Consent Order, the basis for the Respondent's position, and any matters which it considers necessary for EPA's determination. EPA and the Respondent shall have an additional fourteen (14) days from the receipt by EPA of the notification of objection, during which time representatives of EPA and the Respondent shall make a good faith effort to resolve the dispute. If an agreement on the dispute is reached, the resolution shall be written and signed by an authorized representative of each party. In the event that resolution is not reached within this fourteen (14)-day period, the Chief of the RCRA Enforcement/Underground Storage Tank Branch, EPA Region III, will furnish to the Respondent, in writing, EPA's decision on the pending dispute. Thereafter, Respondent and EPA may pursue whatever remedies they may have under law. To the extent Respondent prevails in the dispute, affected schedules or time periods relating to work to be performed under this Consent Order shall be modified to reflect the time taken to resolve the dispute. EPA may in its sole discretion, which shall not be subject to review under this Section XV or otherwise, extend such schedules or time periods, taking into account the nature of the dispute and any other relevant matters.

2. Except as provided in Section XIV.5, "DELAY IN PERFORMANCE/STIPULATED PENALTIES," the existence of a dispute, as defined in this Section XV, and EPA's consideration of matters placed into dispute shall not excuse, toll or suspend any compliance obligation or deadline required pursuant to this Consent Order during the pendency of the dispute resolution process; provided, however, that EPA may in its sole discretion, which shall not be subject to review under this Section XV or otherwise, toll or suspend any such compliance obligation or milestone during the pendency of the dispute resolution process, after consideration of the nature of the dispute, Respondent's assertions relative to the matter in dispute, and any other relevant matters.

XVI. FORCE MAJEURE AND EXCUSABLE DELAY

1. The Respondent shall perform the requirements of this Consent Order in the manner and within the time limits set forth herein, unless the performance is prevented or delayed by events which constitute a force majeure. Respondent shall have the burden of proving such a force majeure. A force majeure is defined as any event arising from causes not reasonably foreseeable and beyond the control of the Respondent, which cannot be overcome by due diligence and which delays or prevents performance in the manner or by a date required by this Consent Order. Such events do not include increased costs of performance, changed economic circumstances, reasonably foreseeable weather conditions, or weather conditions which could have been overcome by due diligence. Such events do include failure to obtain federal, state, or local permits which are necessary to perform any portion of the work under this Consent Order, provided EPA determines that the Respondent has made timely and complete application for and diligently attempted to obtain such permit; and failure to obtain access to property necessary to perform the work under this Consent Order, provided EPA determines that Respondent has used its best efforts to obtain such access in accordance with Section IX.2, "ON-SITE AND OFF-SITE ACCESS".

2. The Respondent shall notify EPA, in writing, within ten (10) days after it becomes aware of any event which causes or may cause a delay in complying with any requirement of this Consent Order or prevents compliance in the manner required by this Consent Order and any event which the Respondent claims constitutes a force majeure. Such notice shall estimate the anticipated length of delay, including necessary demobilization and remobilization, its cause, measures taken or to be taken to prevent or minimize the delay, and an estimated timetable for implementation of these measures. Failure to comply with the notice provision of this Section XVI shall constitute a waiver of the Respondent's right to assert a force majeure claim with respect to such event. In addition to the above notification requirements, the Respondent further shall undertake all reasonable actions to prevent or to minimize any delay in achieving compliance with any requirement of this Consent Order after it becomes aware of any event which may delay such compliance.

3. If EPA determines that the failure to comply or delay has been or will be caused by circumstances not reasonably foreseeable and beyond the control of the Respondent, which cannot be overcome by due diligence, the time for performance of that requirement of this Consent Order shall be extended, upon

EPA approval, for a period equal to the delay resulting from such circumstances. This shall be accomplished through an amendment to this Consent Order pursuant to Section XXII, "SUBSEQUENT MODIFICATION". EPA hereby acknowledges that the time of performance for other requirements of this Consent Order affected by the original delay may also be extended. However, any extension of the time for performance of the original task shall not alter the schedule for performance or completion of any other tasks required by this Consent Order, unless these tasks are also specifically altered by amendment of the Consent Order. In the event that EPA and Respondent cannot agree that any delay or failure has been or will be caused by circumstances not reasonably foreseeable and beyond the control of Respondent, which cannot be overcome by due diligence, or if there is no agreement on the length of the extension, the Respondent may invoke the dispute resolution procedures set forth in Section XV, "DISPUTE RESOLUTION".

XVII. RESERVATION OF RIGHTS

1. EPA expressly reserves all rights and defenses that it may have, including the right both to disapprove of work performed by the Respondent pursuant to this Consent Order and to request that the Respondent perform tasks in addition to those stated in the Scope(s) of Work, Workplans, or this Consent Order. Except as expressly provided in this Consent Order, Respondent expressly reserves all rights and defenses it may have.

2. EPA hereby reserves all of its statutory and regulatory powers, authorities, rights and remedies, both legal and equitable, including any which may pertain to the Respondent's failure to comply with any of the requirements of this Consent Order, including, without limitation, the assessment of penalties under Section 3008(h)(2) of RCRA, 42 U.S.C. Section 6928(h)(2). However, if EPA subsequently seeks statutory penalties for Respondent's failure to comply with a requirement of this Consent Order for which Respondent has paid a stipulated penalty, those penalties shall be reduced by the amount of any stipulated penalty paid by Respondent for such failure to comply.

3. Except as provided in Section XVII.8 of this Consent Order, so long as Respondent is performing the work required by this Consent Order, in compliance with the terms and conditions of this Consent Order, and all attachments and modifications hereto, EPA shall not undertake or perform the same work.

4. Following EPA determination that Respondent has satisfied the requirements of this Consent Order and any attachments and modifications hereto, as set forth in Section XXIV, "TERMINATION AND SATISFACTION", Respondent shall have resolved its liability to EPA for the work performed by Respondent pursuant to this Consent Order, except for Respondent's continuing obligations set forth in Section XXIV, below. Except as provided in the previous sentence, this Consent Order shall not be construed as a covenant not to sue, or as a release, waiver or limitation of any rights, remedies, powers and/or authorities, civil or criminal, which EPA has under RCRA, CERCLA, or any other statutory, regulatory or common law authority of the United States.

5. Compliance by the Respondent with the terms of this Consent Order shall not relieve the Respondent of its obligations to comply with RCRA or any other applicable local, state, or federal laws and regulations.

6. The signing of this Consent Order and the Respondent's consent to comply shall not limit or otherwise preclude EPA from taking additional enforcement action pursuant to Section 3008(h) of RCRA, 42 U.S.C. Section 6928(h), should EPA determine that such actions are warranted.

7. This Consent Order is not intended to be, nor shall it be construed as, a permit. This Consent Order does not relieve the Respondent of any obligation to obtain and comply with any local, state, or federal permit.

8. EPA reserves the right to perform any portion of the work consented to herein or any additional site characterization, feasibility study, and response/corrective actions it deems necessary to protect public health or welfare or the environment. EPA may exercise its authority under Section 7003 of RCRA, 42 U.S.C. Section 6973, and CERCLA to undertake removal actions or remedial actions at any time. In any event, EPA reserves its right to seek reimbursement from Respondent for such additional costs incurred by the United States. Notwithstanding compliance with the terms of this Consent Order, Respondent is not released from liability, if any, for the costs of any response actions taken by EPA. Respondent reserves any rights it may have to defend against such an action.

9. EPA reserves whatever right it may have under CERCLA or any other law, or equity, to recover from the Respondent any costs incurred by EPA in overseeing the implementation of this Consent Order. Respondent reserves any rights it may have to defend against such an action.

10. Except as expressly provided herein, Respondent reserves any claim, cause of action, demand, or defense in law or equity that Respondent may have.

11. This Consent Order shall not be construed to confer any rights upon a party not a signatory.

XVIII. OTHER CLAIMS

Nothing in this Consent Order shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person, firm, partnership, or corporation, or other entity for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous constituents, hazardous substances, hazardous wastes, pollutants, or contaminants found at, taken to, or taken from the Site.

XIX. OTHER APPLICABLE LAWS

All actions required to be taken pursuant to this Consent Order shall be undertaken in accordance with the requirements of all applicable local, state, and federal laws and regulations. The Respondent shall obtain or require its authorized representatives to obtain all permits and approvals necessary under such laws and regulations.

XX. INDEMNIFICATION OF THE UNITED STATES GOVERNMENT

The Respondent agrees to indemnify and save and hold harmless the United States Government, 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 agents, independent contractors, receivers, trustees, and assigns in carrying out activities required by this Consent 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 their various contracts. The United States shall not be deemed to be a party to any contract entered into by the Respondent for the purposes of carrying out any activities required by this Consent Order.

XXI. NOTICE OF NON-LIABILITY OF EPA

EPA shall not be deemed a party to any contract involving the Respondent and relating to activities at the Site and shall not be liable for any claim or cause of action arising from or on account of any act, or the omission of the Respondent, its officers, employees, contractors, receivers, trustees, agents or assigns, in carrying out the activities required by this Consent Order.

XXII. SUBSEQUENT MODIFICATION

1. Except as provided in Paragraph 3 of this Section XXII, below, this Consent Order may only be amended by mutual agreement of EPA and the Respondent. Any such amendment shall be in writing, shall be signed by an authorized representative of each party, shall have as its effective date the date on which it is signed by EPA, and shall be incorporated into this Consent Order. Any oral agreement between EPA and the Respondent, the purpose of which is to modify this Consent Order to address exigent circumstance, and which is subsequently ratified in writing by EPA and Respondent shall have as its effective date the date of such oral agreement.

2. Any reports, plans, specifications, schedules, other submissions and attachments required by this Consent Order are, upon written approval by EPA, incorporated into this Consent Order. Any noncompliance with such EPA-approved reports, plans, specifications, schedules, and attachments shall be considered a violation of this Consent Order and shall subject Respondent to the stipulated penalty provisions included in Section XIV, "DELAY IN PERFORMANCE/STIPULATED PENALTIES".

3. Minor modifications in the studies, techniques, procedures, design or schedules utilized in carrying out this Consent Order and necessary for the completion of the project, may be made by mutual agreement of the Project Coordinators. Such modifications shall be made by exchange of letters by the Project Coordinators and shall have as an effective date the date on which the letter from the EPA Project Coordinator is signed.

4. No informal advice, guidance, suggestions, or comments by EPA regarding reports, plans, specifications, schedules, and any other writing submitted by the Respondent shall be construed as relieving Respondent of its obligation to obtain written approval, if and when required by this Consent Order.

XXIII. SEVERABILITY

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

XXIV. TERMINATION AND SATISFACTION

The provisions of this Consent Order shall be deemed satisfied upon the Respondent's receipt of written notice from EPA that Respondent has demonstrated, to the satisfaction of EPA, that the terms of this Consent Order, including any additional tasks determined by EPA to be required pursuant to this Consent Order, have been satisfactorily completed. Respondent may petition EPA, which petition shall be certified in accordance with Section XIII.3 of this Consent Order, to issue such written notice when Respondent concludes that the terms of this Consent Order, including any additional tasks, have been satisfactorily completed. Any written notice from EPA that the terms of this Consent Order have been satisfactorily completed shall not terminate the Respondent's obligation to comply with any continuing obligations hereunder including, but not limited to, Sections XI ("RECORD PRESERVATION"), XVII ("RESERVATION OF RIGHTS") and XIX ("OTHER APPLICABLE LAWS"). In addition, this notice shall not relieve Respondent of any stipulated penalty liability for violations of its obligations set forth in the previous sentence.

XXV. SURVIVABILITY/PERMIT INTEGRATION

1. Subsequent to the issuance of this Consent Order, a RCRA permit may be issued to the Site incorporating the requirements of this Consent Order by reference into the permit.

2. No requirement of this Consent Order shall terminate upon the issuance of a RCRA permit unless such requirement is expressly replaced by a requirement in the permit.

XXVI. ATTORNEYS' FEES

The Respondent shall bear its own costs and attorneys fees.

XXVII. EFFECTIVE DATE

The effective date of this Consent Order shall be the date on which it is signed by EPA. Because this Consent Order was entered with the consent of both parties, the Respondent waives its right to request a public hearing pursuant to Section 3008(b) of RCRA, 42 U.S.C. Section 6928(b).

IT IS SO AGREED AND ORDERED:

DATE: March 31, 1993

BY: Charles G. Carson II

[NAME] Charles G. Carson II
[TITLE]Vice President-Environmental Affairs
RESPONDENT USX Corporation

DATE: 4/2/93

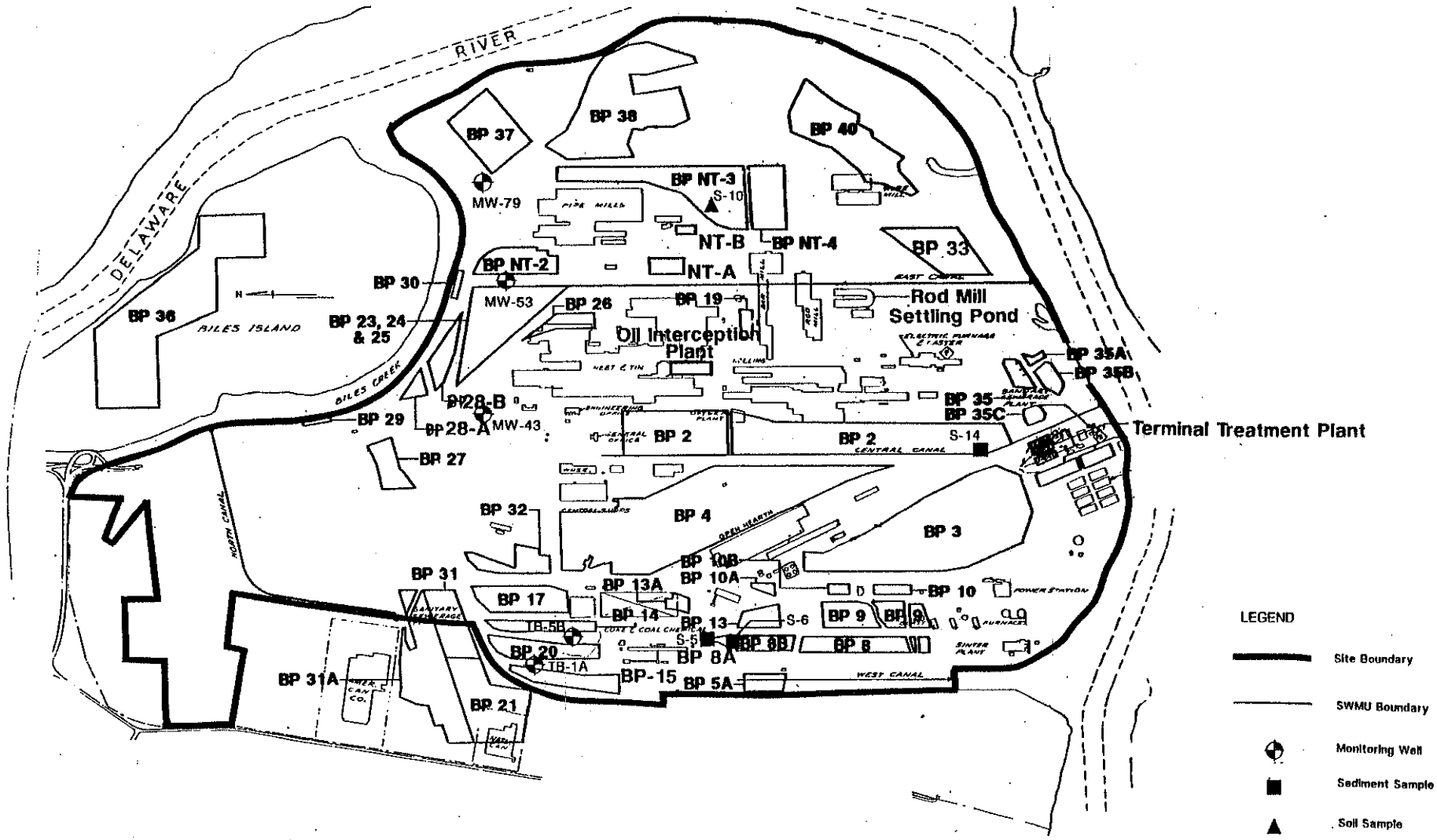
BY: Stanley L. Laskowski

STANLEY L. LASKOWSKI
ACTING REGIONAL ADMINISTRATOR
UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY, REGION III

Attachment A

BCM

USX CORPORATION



BCM Project No. 00-5039-70

1500 FT

NORTH

Solid Waste Management Un (SWMU)
and Property Boundaries, USX Fairless Hills

Attachment B

INTERIM MEASURES
SCOPE OF WORK

PURPOSE

This Statement of Work ("SOW") sets forth the requirements and/or tasks for implementation of Interim Measures pursuant to the Final Administrative Order on Consent ("Order") to which this SOW is attached. The purpose of Interim Measures is to expeditiously identify and correct any releases of hazardous waste and/or hazardous constituents at or from regulated units, solid waste management units, and other source areas at the Site, as defined in the Order, to protect human health or the environment. Interim Measures may include, but not be limited to, stabilization measures.

SCOPE

Task I. INTERIM MEASURES WORKPLAN

A. Interim Measures Project Management Plan
B. Interim Measures Data Collection Quality Assurance Plan
C. Interim Measures Data Management Plan
D. Interim Measures Community Relations Plan

Task II. INTERIM MEASURES DESIGN PROGRAM

A. Design Plans and Specifications
B. Interim Measures Operations and Maintenance Plan
C. Project Schedule
D. Final Design Documents

Task III. INTERIM MEASURES CONSTRUCTION

A. Interim Measures Construction Quality Assurance Plan
B. Construction Implementation
C. Inspection Activities

Task IV. REPORTS

A. Progress
B. Interim Measures Workplan
C. Revision to QAPP
D. Final Design Documents
E. Interim Measures Operation and Maintenance Plan
F. Interim Measures Report

TASK I: INTERIM MEASURES WORKPLAN

For each Interim Measure to be implemented throughout the RFI and CMS, Respondent shall prepare or revise, as necessary, an Interim Measures Workplan. The Workplan shall specify the objectives of the interim measures, demonstrate how the interim measures will abate releases, if any, and, to the extent possible, be consistent and integrated with any long-term solution at the Site.

Unless requirements for the components of a Workplan are waived by EPA as set forth in the Order, the Interim Measures Workplan shall include the development of the following plans which shall be prepared in accordance with the schedule set forth in the Order and Attachments. The Interim Measures Project Management Plan, Interim Measures Data Collection Quality Assurance Plan, Interim Measures Data Management Plan, and Interim Measures Community Relations Plan shall each be part of the Project Management Plan, Data Collection Quality Assurance Plan (QAPP), Data Management Plan, and Community Relations Plan described in Attachment C to this Order, regardless of whether any Interim Measures Workplan is submitted to EPA before the RFI Workplan. The purpose of this requirement to integrate Submissions under this Statement of Work with Submissions described in Attachment C to the Order is to facilitate a coordinated EPA review of Submissions under this Consent Order.

A. Interim Measures Project Management Plan

The Interim Measures Project Management Plan will include a discussion of the technical approach, engineering design, engineering plans, schedules, budget, and personnel. The Interim Measures Project Management Plan shall include a project schedule for expeditious completion of interim measures. Respondent shall specifically identify dates for completion of the project and major interim milestones which are enforceable terms of this order. The Interim Measures Project Management Plan also shall include a description of qualifications of personnel performing or directing the interim measures, including contractor personnel. Finally, this plan shall document the overall management approach to the interim measures.

B. Interim Measures Data Collection Quality Assurance Plan

The Interim Measures Data Collection Quality Assurance Plan shall document all monitoring procedures including sampling, field measurements and sample analysis performed during the investigation to characterize the Site and contamination at the Site. The Interim

Measures Data Collection Quality Assurance Plan shall ensure that all information, data and resulting decisions regarding Interim Measures are technically sound, statistically valid, and properly documented.

1. Data Collection Strategy

The Interim Measures Data Collection Quality Assurance Plan shall include, but not be limited to, the following:

a. Description of the intended uses for the data collected as part of Interim Measures, and the necessary level of precision and accuracy for these intended uses;

b. Description of methods and procedures to be used as part of Interim Measures to assess the precision, accuracy and completeness of the measurement data;

c. Description of the rationale used to assure that the data used as part of Interim Measures accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition or an environmental condition. Examples of factors which shall be considered and discussed include:

i) Environmental conditions at the time of sampling;

ii) Number of sampling points;

iii) Representativeness of selected media; and

iv) Representativeness of selected analytical constituents.

d. Description of the measures to be taken as part of Interim Measures to assure that the following data sets can be compared to each other:

i) Data generated by the Respondent over some time period;

ii) Data generated by an outside laboratory or consultant versus data generated by the Respondent;

iii) Data generated by separate consultants or laboratories; and

iv) Data generated by an outside consultant or laboratory over some time period.

e. Details relating to the Interim Measures schedule outlined in the Interim Measures - Project Management Plan and information to be provided in quality assurance reports. The reports should include, but not be limited to the following, as related to Interim Measures:

i) Periodic assessment of measurement data accuracy, precision, and completeness;

ii) Results of performance audits;

iii) Results of system audits;

iv) Significant quality assurance problems and recommended solutions; and

v) Resolutions of previously stated problems.

2. Sampling and Field Measurements

The Sampling and Field Measurements section of the Interim Measures Data Collection Quality Assurance Plan shall address the following as related to Interim Measures:

a. Selecting appropriate sampling and field measurement locations, depths, etc.;

b. Providing a statistically sufficient number of sampling and field measurement sites;

c. Measuring all necessary ancillary data;

d. Determining which media are to be sampled (e.g., ground water, soil, sediment, etc.);

e. Determining which constituents and characteristics are to be measured and where;

f. Selecting the frequency of sampling and field measurement and length of sampling period;

g. Selecting the types of sample (e.g.,

composites vs. grabs) and number of samples to be collected;

h. Documenting field sampling and field measurement operations and procedures, including:

i) Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters, and adsorbing reagents);

ii) Procedures and forms for recording the exact location and specific considerations associated with sample and field measurement data acquisition;

iii) Documentation of specific sample preservation method;

iv) Calibration of field devices;

v) Collection of replicate samples;

vi) Submission of field-biased blanks, where appropriate;

vii) Potential interferences present at the Site;

viii) Construction materials and techniques, associated with monitoring wells and piezometers;

ix) Field equipment listing and sample containers;

x) Sampling and field measurement order; and

xi) Decontamination procedures.

i. Selecting appropriate sample containers;

j. Sample preservation; and

k. Chain-of-custody, including:

i) Standardized field tracking reporting forms to establish sample custody in the field prior to shipment; and

ii) Sample labels consisting of a pre-printed form that is completed in the field to provide all information necessary for effective sample tracking.

3. Sample Analysis

The Sample Analysis section of the Interim Measures Data Collection Quality Assurance Plan shall specify the following as related to Interim Measures:

a. Chain-of-custody procedures, including:

i) Identification of a responsible party to act as sample custodian at the laboratory facility authorized to sign for incoming field samples, obtain documents of shipment, and verify the data entered onto the sample custody records;

ii) Provision for a laboratory sample custody log consisting of serially numbered standard lab-tracking report sheets; and

iii) Specification of laboratory sample custody procedures for sample handling, storage, and dispersement for analysis.

b. Sample storage and holding times;

c. Sample preparation methods;

d. Analytical procedures, including:

i) Scope and application of the procedure;

ii) Sample matrix;

iii) Potential interferences;

iv) Precision and accuracy of the methodology; and

v) Method detection limits.

e. Calibration procedures and frequency;

f. Data reduction, validation and reporting;

g. Internal quality control checks, laboratory performance and systems audits and frequency, including:

i) Method blank(s);

ii) Laboratory control sample(s);

iii) Calibration check sample(s);

iv) Replicate sample(s);

v) Matrix-spiked sample(s);

vi) "Blind" quality control sample(s);

vii) Control charts;

viii) Surrogate samples;

ix) Zero and span gases; and

x) Reagent quality control checks.

h. Preventive maintenance procedures and schedules;

i. Corrective action (for laboratory problems); and

j. Turnaround time.

Performance audits may be conducted by EPA on the laboratories selected by the Respondent.

C. Interim Measures Data Management Plan

The Interim Measures Data Management Plan will document and track investigation data and results. This Plan shall identify data documentation materials and procedures, project file requirements, and project-related progress reporting procedures and documents. The Plan also shall provide the format to be used to present the raw data and conclusions related to Interim Measures in the Interim Measures Design Documents and Interim Measures Report.

1. Data Record

The data record shall include the following:

a. Unique sample or field measurement code;

b. Sampling or field measurement location and sample or measurement type;

c. Sampling or field measurement raw data;

d. Laboratory analysis ID number;

e. Property or component measured; and

f. Result of analysis (e.g., concentration).

2. Tabular Displays

Data shall be available to EPA on a disk in a format compatible with EPA's personal computers so that EPA can sort the data as needed including:

a. Unsorted (raw) data;

b. Results for each medium, or for each constituent monitored;

c. Data reduction for numerical analysis;

d. Sorting of data by potential stratification factors (e.g., location, soil layer, topography); and

e. Summary data.

3. Graphical Displays

The following data shall be presented in graphical formats (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transects, three dimensional graphs, etc.):

a. Sampling location and sampling grid;

b. Boundaries of sampling area, and areas where more data are required;

c. Levels of contamination at each sampling location;

d. Geographical extent of contamination;

e. Contamination levels, averages, and maxima;

f. Changes in concentration in relation to distance from the source, time, depth or other parameters; and

g. Features affecting intramedia transport and potential receptors.

D. Interim Measures Community Relations Plan

The Interim Measures Community Relations Plans will outline a means to disseminate to the public information regarding Interim Measures to be implemented during the RFI and CMS. Upon receipt of approval from EPA of the Community Relations Plan, the Respondent shall implement the Community Relations Plan.

TASK II: INTERIM MEASURES DESIGN PROGRAM

A. Design Plans and Specifications

Respondent shall develop clear and comprehensive design plans and specifications which shall include but are not limited to the following:

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

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

   b. Minimization of environmental and public impacts;

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

   d. The constructability of the design; and

   e. Use of currently acceptable construction practices and techniques.

2. Description of assumptions made and detailed justification of these assumptions.

3. Discussion of the possible sources of error and references to any possible operation and maintenance problems.

4. Detailed drawings of the proposed design including, but not limited to:

   a. Qualitative flow sheets;

   b. Quantitative flow sheets;

   c. Site layouts; and

   d. Utility locations.

5. Tables listing materials, equipment, and/or specifications.

6. Tables giving material balances.

7. Appendices including:

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

   b. Derivation of equations essential to understanding the report; and

   c. Results of laboratory or field tests.

Before submitting any project specifications, Respondent shall coordinate and cross-check the specifications and drawings and complete the proofing of the edited specifications to ensure that drawings and specifications are correlated.

B. Interim Measures Operation and Maintenance (O&M) Plan

Respondent shall prepare an Interim Measures O&M Plan to cover both implementation and long-term maintenance of the interim measure(s). The plan shall be composed of the following elements:

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

2. Description of normal O&M:

   a. Description of tasks for operation;

   b. Description of tasks for maintenance;

   c. Description of prescribed treatment or operation conditions;

   d. Schedule showing frequency of each O&M task; and

e. Common and/or anticipated remedies.

3. Description of routine monitoring and laboratory testing:

   a. Description of monitoring tasks;

   b. Description of required laboratory tests and their interpretation;

   c. Required QA/QC; and

   d. Schedule of monitoring frequency and date, if appropriate, when monitoring may cease.

4. 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.

5. Records and reporting mechanisms required.

   a. Daily operating logs;

   b. Laboratory records;

   c. Mechanism for reporting emergencies;

   d. Personnel and maintenance records; and

   e. Monthly/annual reports to Federal/State agencies.

The Interim Measures O&M Plan shall be submitted with the Final Interim Measures Design Documents.

C. Project Schedule

Respondent shall revise the detailed Project Schedule in the Interim Measures Project Management Plan to address construction and implementation of the interim measure(s). A revised Project Schedule shall be submitted simultaneously with the Final Design Documents.

D. Final Design Documents

The Final Design Documents shall consist of the Final Design Plans and Specifications (100 percent complete), the Final Draft O&M Plan, and project schedule revision in the Interim Measures Project Management Plan. Respondent shall submit the final documents with reproducible drawings and reproducible drawings and specifications. The quality of the design documents shall be such that Respondent would be able to include them in a bid package and invite contractors to submit bids for the construction project.

TASK III: INTERIM MEASURE CONSTRUCTION

A. Interim Measure Construction Quality Assurance Plan

Respondent shall revise the Interim Measures Quality Assurance Plan described in Task I.B of this SOW, as part of the QAPP described in Attachment C of this Order, to identify and document the objectives and framework for the development of an interim measures construction quality assurance program. The Interim Measure Construction QAPP ("IMCQA Plan") shall include, but not be limited to, the following:

1. personnel qualifications;
2. inspection activities;
3. sampling requirements;
4. responsibility and authority of all organizations (i.e., technical consultants, construction firms, etc.);
5. summaries of the observations and tests that will be used to monitor the construction and/or installation of the components of the interim measure(s);
6. scope and frequency of each type of inspection;
7. key personnel involved in the construction of the interim measure;
8. provisions for the final storage of all records.

Reporting requirements for CQA activities shall be described in detail in IMCQA Plan. This plan shall include such items as daily summary reports, inspection data sheets, problem identification and interim measures reports, design acceptance reports, and final documentation. The IMCQA Plan shall identify a CQA officer and the necessary supporting inspection staff.

B. Construction Implementation

Following EPA approval of the Interim Measures Final Design Documents and IMCQA Plan, the Respondent shall implement construction in accordance with procedures, specifications, and schedules in the EPA-approved

Interim Measures Design Documents, Interim Measures Project Management Plan, and IMCQA Plan.

C. Inspection Activities

1. Preconstruction inspection and meeting

Respondent shall conduct a preconstruction inspection and meeting to:

a. Review methods for documenting and reporting inspection data;

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

c. Review work area security and safety protocol;

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

e. 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 should be transmitted to all parties.

2. Oversight Inspections

Respondent will conduct inspections to monitor the construction and/or installation of components of the corrective measure. Inspections shall verify compliance with all environmental requirements and include, but not be limited to, review of air quality and emissions monitoring records, waste disposal records (e.g., RCRA transportation manifests), etc. Inspections will also serve to evaluate compliance with all health and safety procedures. Any treatment equipment will be operationally tested by the Respondent. The Respondent will certify that the equipment has performed to meet the purpose and intent of the specifications. Retesting will be completed where deficiencies are revealed.

TASK IV: REPORTS

A. Progress

Respondent shall provide the EPA with signed, bimonthly progress reports containing:

1. A description and estimate of the percentage of the interim measures completed;

2. Summaries of all findings, including, but not limited to, information concerning all releases, addressed in Section VI.A.2 of the Order, of any hazardous wastes or hazardous constituents at or from the Site into the environment during the reporting period;

3. Summaries of all changes made in the interim measures during the reporting period;

4. Summaries of all contacts with representative of the local community, public interest groups, or State government during the reporting period;

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

6. Actions being taken to rectify problems, including, but not limited to, interim measures taken in resonse to a release of any hazardous waste and/or hazardous constituent at or from the Site into the environment during the reporting period;

7. Changes in personnel during the reporting period;

8. Projected work for the next reporting period; and

9. Copies of daily reports, inspection reports, summaries of laboratory/monitoring data, etc.

B. Interim Measures Workplan

Respondent shall submit each Interim Measures Workplan in accordance with Section VI.A of this Order. Respondent shall submit modifications to the Interim Measures Project Management Plan to depict changes in the Project Schedule.

C. QAPP

Respondent shall prepare/revise the QAPP, described in Attachment C to the Order, in accordance with Section VII of the Consent Order and as described in this Attachment.

D. Interim Measure Design Documents

Respondent shall submit the Design Documents as described in this Attachment.

E. Interim Measures O&M Plan

Respondent shall submit an Interim Measures Operation and Maintenance Plan as described in this Attachment.

F. Interim Measures Report

At the completion of the construction of each interim measure, Respondent shall submit a draft Interim Measures Implementation Report to EPA. The Report shall document that the project is consistent with the design specifications and that the interim measures are performing properly. The Report shall include, but not be limited to, the following elements:

1. Synopsis of the interim measures and certification of the design and construction;

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

3. Listing of the criteria, established before the interim measures were initiated, for judging the functioning of the interim measures and also explaining any modification to these criteria;

4. Results of facility monitoring, indicating that the interim measures will meet or exceed the performance criteria; and

5. Explanation of the operation and maintenance (including monitoring) to be undertaken at the Site.

This report shall include the inspection summary reports, inspection data sheets, problem identification and corrective reporting data sheets, design engineers' acceptance reports, deviations from design and material specifications (with justifying documentation) and as-built drawings.

Attachment C

RCRA FACILITY INVESTIGATION
SCOPE OF WORK

PURPOSE

The purpose of this RCRA Facility Investigation ("RFI") is to determine the nature and extent of releases of hazardous waste and/or hazardous constituents at or from regulated units, solid waste management units, and other source areas at the Site, as defined in the Final Administrative Order on Consent to which this SOW is attached ("Order"), and to gather all necessary data to support the Corrective Measures Study ("CMS"). The RFI includes the collection of site-specific data to evaluate potential and/or actual human health and/or ecological impacts of contamination from the Site. This Statement of Work ("SOW") sets forth the requirements and tasks for implementation of the RFI pursuant to the Order.

SCOPE

The RFI consists of the following tasks:

Task I: Description of Current Conditions

A. Site Background
B. Nature and Extent of Contamination
C. Implemented Interim Measures

Task II Technical Approach to the RFI/CMS

Task III: List of Interim Measures Respondent Proposes to Implement at the Site

Task IV: RFI Workplan

A. Project Management Plan
B. Data Collection Quality Assurance Plan
C. Data Management Plan
D. Community Relations Plan

Task V: Facility Investigation

A. Environmental Setting
B. Source Characterization
C. Contamination Characterization
D. Potential Receptor Identification
E. Risk Assessment

Task VI: Investigation Analysis

A. Data Analysis
B. Clean-up Goals

Task VII: Laboratory and Bench-Scale Studies

Task VIII: Reports

A. Description of Current Conditions Report
B. Technical Approach to RFI/CMS
C. List of Interim Measures Respondent Proposes to Implement at the Site
D. RFI Workplan
E. RFI Report
F. Laboratory/Pilot Scale Testing Report
G. Bimonthly Progress Reports

TASK I: DESCRIPTION OF CURRENT CONDITIONS

The Respondent shall submit for EPA approval a Description of Current Conditions Report providing the background information pertinent to the Site, nature and extent of contamination, and interim measures as set forth below. The data gathered during any previous investigations or inspections and other relevant data shall be included.

A. Site Background

Site background, to be described in the Description of Current Conditions Report, shall summarize the regional location, pertinent boundary features, general Site physiography, hydrogeology, and historical use of the Site for the treatment, storage, or disposal of solid and hazardous waste and/or hazardous constituents. Site background shall be based on existing information and records and shall include:

1. **Map(s), based** on existing information and records, **depicting the** following:

   a. **General** geographic location;

   b. Property lines, with the owners of all adjacent property clearly indicated;

   c. Topography (with a contour interval of two feet and a scale of 1 inch = 200 feet), waterways, all known wetlands, floodplains, water features, drainage patterns;

   d. All rights-of-way, and other features;

e. All solid or hazardous waste treatment, storage, or disposal areas active after November 19, 1980;

f. All known past solid or hazardous waste treatment, storage, or disposal areas and all known spill, fire, or other accidental release locations regardless of whether they were active on November 19, 1980;

g. All known past and present product and waste underground tanks or piping;

h. Surrounding land uses (residential, commercial, agricultural, recreational);

i. The location of all production and ground water monitoring wells, including ground and top of casing elevations;

j. Locations of all PCB transformers;

k. Locations of all PCB transformers that leaked or may have leaked at any time during the Site's operation;

l. Locations of NPDES outfalls;

m. Results of OSHA inspections relevant to releases of hazardous wastes and/or hazardous constituents since 1988;

All maps shall be consistent with the requirements set forth in 40 C.F.R. Section 270.14 and be of sufficient detail and accuracy to locate and report all current and future work performed at the Site;

2. A history and description of ownership and operation, solid and hazardous waste generation, and treatment, storage, and disposal activities at the Site;

3. Approximate dates or periods of past product, and waste spills, identification of the materials spilled, the amount spilled, the location of the spills, and a description of the response actions conducted by local, State, or Federal response units or private parties, including any inspection reports or technical reports generated as a result of the response; and

4. A summary of past permits requested and/or received, any enforcement actions and their subsequent responses;

B. Nature and Extent of Contamination

The Description of Current Conditions Report also shall describe the existing information on the nature and extent of contamination at the Site including:

1. A summary of all possible contamination at the Site. At a minimum, this summary shall include all regulated units, solid waste management units, spill areas, and other suspected sources of contamination with hazardous wastes and/or hazardous constituents at the Site. For each area, the Respondent shall identify the following:

   a. Location of unit/area (which shall be depicted on a Site map);

   b. Quantities of solid and hazardous wastes and/or hazardous constituents;

   c. Chemical analysis of the slag material that was used as fill in each borrow pit and/or other filled area and/or wetland area(s);

   d. Hazardous waste and/or hazardous constituents, to the extent known; and

   e. Identification of areas where additional information is necessary.

2. An assessment and description of the existing degree and extent of contamination. This shall be based on existing information and include a Conceptual Site Model as described in "Risk Assessment Guidance for Superfund," Volume I (EPA/540/1-89/002, December, 1989), and "Risk Assessment Guidance for Superfund," Volume II, (EPA/540-R-92-003, December, 1991). The following shall be described in the Description of Current Conditions and shall provide a basis for the Conceptual Site Model:

   a. Available monitoring data and qualitative information on locations and levels of contamination at the Site;

   b. Potential migration pathways including information on geology, pedology, hydrogeology, physiography, hydrology, water quality, meteorology, and air quality; and

   c. The potential impact(s) on human health and the environment, including demography, ground water and surface water use, and land use.

C. Implemented Interim Measures

The Description of Current Conditions Report also shall document interim measures which were or are being undertaken at the Site. This shall include:

1. Objectives of the interim measures: how the measure is mitigating a potential threat to human health and/or the environment and is consistent with and integrated into any long-term solution at the Site;

2. Plans for decommissioning existing PCB transformers, if any are to be decommissioned;

3. Design, construction, operation, and maintenance requirements of interim measures; and

4. Schedules for design, construction, operation and maintenance, and monitoring of interim measures.

TASK II: TECHNICAL APPROACH TO THE RFI/CMS

The Respondent shall prepare and submit for EPA approval a Plan which outlines the technical approach to the RFI/CMS. The Submission under this Task shall consist of:

A. A preliminary Conceptual Site Model, based on the Description of Current Conditions.

B. An outline of general tasks to be performed in the RFI and CMS.

C. The proposed sequence of the general tasks to be performed in the RFI and CMS.

D. An explanation of:

1. how the proposed general tasks and sequence relate to the Conceptual Model;

2. how the List of Recommended Interim Measures, submitted pursuant to Task III of this SOW, is considered in the Technical Approach for the RFI/CMS; and

3. how the need for expeditious completion of the RFI and CMS is considered in the Technical Approach for the RFI/CMS.

The Technical Approach for the RFI/CMS may involve investigating the site and evaluating corrective measure alternatives in phases, as two or more study areas, provided the rationale

included in the Submission under this Task is consistent with the Statement of Purpose set forth in the Order.

TASK III: LIST OF INTERIM MEASURES RESPONDENT PROPOSES TO IMPLEMENT AT THE SITE

The Respondent shall submit to EPA a report that lists the Interim Measures which Respondent proposes to implement to protect human health and the environment. The report shall also include the following:

A. A summary of all threats to human health and the environment posed by the Site, based on the Description of Current Conditions.

B. A summary of all sources of release to the environment from the Site, based on the Description of Current Conditions.

C. A summary of all known human and environmental receptors from releases identified in (B), above.

D. Sources of release(s) or potential release(s) and/or areas contaminated with hazardous wastes and/or hazardous constituents Respondent proposes to address as Interim Measures under this Order.

E. A justification for implementation of Interim Measure(s) listed in Task III.D, showing consideration for Tasks III.A through III.C, above.

F. A schedule for submission of Interim Measure Work-plan(s) to address these sources of release(s) or potential release(s) and/or areas contaminated with hazardous wastes and/or hazardous constituents and pathways.

TASK IV: RFI WORKPLAN

The Respondent shall submit for EPA approval an RFI Workplan that documents the procedures Respondent shall use to conduct those investigations necessary to characterize the potential pathways of contaminant migration, characterize the source(s) of contamination, define the degree and extent of contamination, delineate jurisdictional Wetlands at the Site contaminated with hazardous wastes and/or hazardous constituents, identify actual or potential human and/or ecological receptors, and support the development of alternatives from which a corrective measure(s) will be selected by EPA.

During the RFI, Respondent may revise the RFI Workplan, for EPA approval, to increase or decrease the information collected to

meet Site-specific data quality objectives.

The RFI Workplan shall be developed in accordance with the EPA-approved Technical Approach to the RFI/CMS and this RFI SOW. The Interim Measures Project Management Plan, Interim Measures Data Collection Quality Assurance Plan, Interim Measures Data Management Plan, and Interim Measures Community Relations Plan, and subsequent revisions, described in Attachment B to the Order, shall each be part of the respective Project Management Plan, Data Collection Quality Assurance Plan, Data Management Plan, and Community Relations Plan described below, regardless of whether any Interim Measures Workplan is submitted to EPA before the RFI Workplan. The purpose of this requirement to consolidate such Submissions under Attachment B to the Order with this SOW is to facilitate a coordinated EPA review of Submissions under this Order. The RFI Workplan shall be revised as necessary to address any additional requirements or schedule changes during implementation of the work required under this Order.

The RFI Workplan shall include the following plans, which shall be prepared and submitted concurrently to EPA :

A. Project Management Plan

The Respondent shall prepare/revise a Project Management Plan which will outline the following:

1. expeditious schedules for conducting RFI, including bench and pilot-scale studies;

2. description of qualifications of personnel performing or directing the RFI, including contractor personnel; and

3. overall management approach to the RFI, in accordance with the EPA-approved Technical Approach to the RFI/CMS.

B. Data Collection Quality Assurance Plan

The Respondent shall prepare or revise a Data Collection Quality Assurance Plan ("QAPP") to document data quality objectives and all monitoring procedures related to sampling, field measurements and sample analysis performed during the RFI. The Data Collection Quality Assurance Plan also shall include the Interim Measures Data Collection Quality Assurance Plan to be submitted pursuant to Attachment B to the Order. The Data Collection Quality Assurance Plan shall ensure that all information, data and resulting decisions are technically sound, statistically valid, and properly documented.

1. Data Collection Strategy

The Strategy Section of the Data Collection Quality Assurance Plan shall include, but not be limited to, the following:

a. Description of the intended uses for the data, and the necessary level of precision and accuracy for these intended uses;

b. Description of methods and procedures to be used to assess the precision, accuracy, and completeness of the data;

c. Description of the rationale used to assure that the data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Examples of factors which shall be considered and discussed include but not be limited to:

i) Environmental conditions at the time of sampling

ii) Number of sampling points

iii) Representativeness of selected media, and

iv) Representativeness of selected analytical parameters;

d. Description of the measures to be taken to assure that the following data sets can be compared to each other:

i) RFI data generated by the Respondent over some time period

ii) RFI data generated by an outside laboratory or consultant versus data generated by the Respondent

iii) Data generated by separate consultants or laboratories, and

iv) Data generated by an outside consultant or laboratory over some time period;

e. Details relating to the schedule and information to be provided in quality assurance reports. The reports shall include, but not be limited to:

i) Periodic assessment of measurement data accuracy, precision, and completeness

ii) Results of performance audits

iii) Results of system audits

iv) Significant quality assurance problems and recommended solutions, and

v) Resolutions of previously stated problems.

2. Sampling

The Sampling section of the Data Collection Quality Assurance Plan shall document how the following will be performed to meet data quality objectives:

a. Selecting appropriate sampling locations, depths, etc.;

b. Providing a statistically sufficient number of sampling sites;

c. Measuring all necessary ancillary data;

d. Determining conditions under which sampling shall be conducted;

e. Determining which media are to be sampled (e.g., ground water, air, soil, sediment, etc.);

f. Determining which constituents are to be measured and where;

g. Selecting the frequency of sampling and length of sampling period;

h. Selecting the types of sample (e.g., composites vs. grabs) and number of samples to be collected;

i. Documenting field sampling operations and procedures, including:

i) Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters, and adsorbing reagents)

ii) Procedures and forms for recording the exact location and specific considerations associated with sample acquisition

iii) Documentation of specific sample preservation method

iv) Calibration of field devices

v) Collection of replicate samples

vi) Submission of field-biased blanks, where appropriate

vii) Potential interferences present at the Site

viii) Construction materials and techniques associated with monitoring wells and piezometers

ix) Field equipment listing and sample containers

x) Sampling order, and

xi) Decontamination procedures;

j. Selecting appropriate sample containers;

k. Sample preservation; and

l. Chain-of-custody, including:

i) Standardized field tracking reporting forms to establish sample custody in the field prior to shipment, and

ii) Sample labels consisting of a pre-printed form that is completed in the field to provide all information necessary for effective sample tracking.

3. **Field Measurements**

The Field Measurements section of the Data Collection **Quality Assurance** Plan shall outline how the following **will be performed** to meet data quality objectives:

a. Selecting appropriate field measurement locations, depths, etc.;

b. Providing a statistically sufficient number of field measurements;

c. Measuring all necessary ancillary data;

d. Determining conditions under which field measurement

shall be conducted;

e. Determining which media are to be addressed by appropriate field measurements (e.g., ground water, air, soil, sediment, etc.);

f. Determining which parameters are to be measured and where;

g. Selecting the frequency of field measurement and length of field measurement periods; and

h. Documenting field measurement operations and procedures, including:

i) Procedures and forms for recording raw data and the exact location, time, and Site-specific considerations associated with the data acquisition

ii) Calibration of field devices

iii) Collection of replicate measurements

iv) Submission of field-biased blanks, where appropriate

v) Potential interferences present at the Site

vi) Construction materials, well drilling procedures, and techniques associated with monitoring wells and piezometers used to collect field data

vii) Field equipment listing

viii) Order in which field measurements will be made, and

ix) Decontamination procedures.

4. **Sample Analysis**

The Sample Analysis section of the Data Collection Quality Assurance Plan shall specify the following:

a. Chain-of-custody procedures, including:

i) Identification of a responsible party to act as sample custodian at the laboratory facility authorized to sign for incoming field samples, obtain documents of shipment, and verify the

data entered onto the sample custody records

ii) Provision for a laboratory sample custody log consisting of serially numbered standard lab-tracking report sheets, and

iii) Specification of laboratory sample custody procedures for sample handling, storage, and dispersement for analysis;

b. Sample storage;

c. Sample preparation methods;

d. Analytical procedures, including:

i) Scope and application of the procedure

ii) Sample matrix

iii) Potential interferences

iv) Precision and accuracy of the methodology, and

v) Method detection limits;

e. Calibration procedures and frequency;

f. Data reduction, validation, and reporting;

g. Internal quality control checks, laboratory performance and systems audits and frequency, including:

i) Method blank(s)

ii) Laboratory control sample(s)

iii) Calibration check sample(s)

iv) Replicate sample(s)

v) Matrix-spiked sample(s)

vi) "Blind" quality control sample(s)

vii) Control charts

viii) Surrogate samples

ix) Zero and span gases, and

x) Reagent quality control checks;

A performance audit may be conducted by EPA on the laboratories selected by the Respondent. If EPA requires, this audit must be completed and approved prior to the RFI.

h. Preventive maintenance procedures and schedules;

i. Corrective action (for laboratory problems); and

j. Turnaround time.

C. Data Management Plan

The Respondent shall prepare/revise and initiate a Data Management Plan to document and track investigation data and results. This Plan shall identify and set up data documentation materials and procedures, project file requirements, and project-related progress reporting procedures and documents. The Plan also shall provide the format to be used to present the raw data and conclusions of the investigation.

1. Data Record

Each data record shall include the following:

a. Unique sample or field measurement code;

b. Sampling or field measurement location and sample or measurement type;

c. Sampling or field measurement raw data;

d. Laboratory analysis ID number;

e. Property or component measured; and

f. Result of analysis (e.g., concentration).

2. Tabular Displays

The following data shall be submitted to EPA on a disk compatible with EPA's personal computers so that EPA can sort the data as needed, including:

a. Unsorted (raw) data;

b. Results for each medium, or for each constituent monitored;

c. Data reduction for statistical analysis;

d. Sorting of data by potential stratification factors (e.g., location, soil layer, topography); and

e. Summary of data.

3. Graphical Displays

The following data shall be presented in graphical formats (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transects, three dimensional graphs, etc.):

a. Sampling location and sampling grid;

b. Boundaries of sampling area, and areas where more data are required;

c. Levels of contamination at each sampling location for each sampling event;

d. Geographical extent of contamination;

e. Contamination levels, averages, and maxima;

f. Changes in concentration in relation to distance from the source, time, depth, or other parameters; and

g. Features affecting intramedia transport and show potential receptors.

D. Community Relations Plan

The Respondent shall prepare/revise a Community Relations Plan in accordance with the EPA "Region III Final RCRA Corrective Action Community Relations Guide", dated August, 1990, to disseminate to the public information regarding the Interim Measures described pursuant to Attachment B to the Order, the RFI and Corrective Measures Study. Upon receipt of approval from EPA of the Community Relations Plan, the Respondent shall implement the Community Relations Plan.

TASK V: FACILITY INVESTIGATION

In accordance with the EPA-approved RFI Workplan, the Respondent shall conduct those investigations necessary to: characterize the Site and affected off-site areas, characterize sources of releases, characterize the degree and extent of contamination, identify actual or potential receptors, and determine the

impact(s) of contamination on human health and/or ecological receptors. The investigations shall result in data of adequate technical quality to support the development and evaluation of the corrective measure alternative or alternatives during the Corrective Measures Study. Wetlands that are contaminated with hazardous wastes and/or hazardous constituents shall be assessed using the Wetlands Evaluation Technique II, Habitat Evaluation Procedures, or equivalent Data Quality and Habitat Evaluation Procedures, and delineated using the "Federal Manual for Identifying and Delineating Jurisdictional Wetlands" and any revisions to that manual upon the effective date of such revisions.

The site investigation activities shall follow the plans set forth in Task IV to this SOW. All sampling locations shall be documented in a log and identified on a detailed site map.

A. Environmental Setting

The Respondent shall collect information to supplement and verify existing information on the environmental setting at the Site. The Respondent shall characterize the following:

1. Hydrogeology

The Respondent shall evaluate hydrogeologic conditions at the Site. Respondent shall provide the following information:

a. A description of the regional and Site-specific geologic and hydrogeologic characteristics affecting ground water flow beneath the Site, including:

i) Regional and Site-specific stratigraphy: description of strata including strike and dip, identification of stratigraphic contacts

ii) Structural geology: description of orientation and location of bedrock troughs and/or depressions. Respondent shall determine regional structure from the literature while supplementing information on the local structure with information to be collected during the RFI (e.g., drilling logs)

iii) Depositional history

iv) Identification and characterization of areas and amounts of recharge and discharge

v) Regional and Site-specific ground water flow patterns

vi) Site-specific ground water flow patterns in the saturated soil horizon, the shallow bedrock aquifer, and the deep bedrock aquifer systems, and

vii) Characterization of seasonal variations in each ground water flow regime;

b. An analysis of any topographic features that might influence the ground water flow system, including stereographic analysis of aerial photographs if appropriate;

c. A representative geologic classification, based on field data, tests, and cores, and a description of the hydrogeologic units which may be part of the contaminant migration pathways at the Site, including:

i) Hydraulic conductivity and porosity (total and effective)

ii) Lithology, grain size, sorting, and degree of cementation

iii) An interpretation of hydraulic interconnections between saturated zones, and

iv) The attenuation capacity and mechanisms of the natural earth materials (e.g., ion exchange capacity, organic carbon content, mineral content etc.);

d. Based on field studies and cores, structural geology and hydrogeologic cross sections showing the extent (depth, thickness, lateral extent) of hydrogeologic units which may be part of the migration pathways, identifying:

i) Sand and gravel deposits in unconsolidated deposits

ii) Zones of fracturing or channeling in consolidated or unconsolidated deposits

iii) Zones of high permeability or low permeability that might direct and/or restrict the flow of contaminants

iv) The uppermost aquifer: geologic formation, group of formations, or part of a formation capable of yielding a significant amount of ground water to wells or springs, and

v) Water-bearing zones above the first confining layer that may serve as a pathway for contaminant migration, including perched zones of saturation;

e. Based on data obtained from ground water monitoring wells and/or piezometers installed upgradient and downgradient of the potential contaminant source, a representative description of water level or fluid pressure monitoring, including:

i) Water-level contour and/or potentiometric maps, considering tidal changes, if any

ii) Hydrologic cross-sections showing vertical gradients

iii) The flow system, including the vertical and horizontal components of flow, and

iv) Any temporal changes in hydraulic gradients, for example, due to seasonal influences;

f. A description of man-made influences that may affect the hydrogeology of the site and potential fate-and-transport of contaminants, identifying:

i) Active and inactive local water supply and production wells with an approximate schedule of pumping, and

ii) Manmade hydraulic structures (pipelines, french drains, ditches, unlined ponds, septic tanks, NPDES outfalls, retention areas, underground storage tanks, above-ground fuel tanks, etc.).

2. Soils

The Respondent shall conduct a program that supplements existing data to characterize the soil and rock units above the water table in the vicinity of contaminant releases. Such characterization shall include, but not be limited to, the following information:

a. Soil Conservation Service (SCS) soil

classification;
b. Surface soil distribution;
c. Soil profile, including American Standard Test Method (ASTM) classification of soils;
d. Transects of soil stratigraphy;
e. Hydraulic conductivity (saturated and unsaturated);
f. Relative permeability;
g. Bulk density;
h. Porosity;
i. Soil sorptive capacity;
j. Cation exchange capacity;
k. Soil organic content;
l. Soil pH;
m. Particle size distribution;
n. Depth of water table;
o. Moisture content;
p. Effect of stratification on unsaturated flow;
q. Infiltration
r. Evapotranspiration;
s. Storage capacity;
t. Vertical flow rate; and
u. Mineral content.

3. Surface Water and Sediment

The Respondent shall conduct a program that supplements existing data to characterize the surface water bodies in the vicinity of the Site. Such characterization shall include, but not be limited to, the following activities and information:

a. Description of the temporal and permanent surface water bodies including:

i) For lakes and estuaries: location, elevation, surface area, inflow, outflow, depth, temperature stratification, and volume

ii) For impoundments: location, elevation, surface area, depth, volume, freeboard, and purpose of impoundment

iii) For streams, ditches, and channels location, elevation, flow, velocity, depth, width, seasonal fluctuations, and flooding tendencies (i.e., 100 year event)

iv) Drainage patterns

v) Evapotranspiration, and

vi) For wetlands: a map and description of all wetlands filled including but not limited to: details on the nature, extent and purpose of these activities, a chronology of events, and copies of plans, specifications, maps and documents of a technical nature associated with the planning and implementation of filling activities. For tidal wetlands that may be considered for restoration creation as part of Corrective Measure Alternative(s): description of existing quality, potential future quality after restoration, description of vegetation to be planted, location, and acreage;

b. Description of the chemistry of the natural surface water and sediments (e.g., pH, total dissolved solids, total suspended solids, biological oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients, chemical oxygen demand, total organic carbon, and specific contaminant concentrations);

c. Description of sediment characteristics including:

i) Deposition area

ii) Thickness profile, and

iii) Physical and chemical parameters (e.g., grain size, density, organic carbon content, ion exchange capacity, pH, etc.).

4. Air

The Respondent shall provide information characterizing the climate in the vicinity of the Site to support the risk assessment described in Section V.E of this SOW. Such information shall be obtained from local sources and may include, but not be limited to:

a. A description of the following parameters:

i) Annual and monthly rainfall averages

ii) Monthly temperature averages and extremes

iii) Wind speed and direction

iv) Relative humidity/dew point

v) Atmospheric pressure

vi) Evaporation data

vii) Development of inversions, and

viii) Climate extremes that have been known to occur in the vicinity of the Site, including frequency of occurrence;

b. A description of topographic and manmade features which affect air flow and emission patterns, including:

i) Ridges, hills, or mountain areas

ii) Canyons or valleys

iii) Surface water bodies (e.g., rivers, lakes, bays, etc.)

iv) Wind breaks and forests, and

v) Buildings.

B. Source Characterization

The Respondent shall provide analytical data to supplement and update the Description of Current Conditions prepared pursuant to Task I herein. The Respondent shall characterize the hazardous wastes and hazardous constituents, such as PCBs, and the areas where such hazardous wastes and hazardous constituents are located so that corrective measure alternatives may be evaluated. Respondent shall use aerial photography throughout the RFI as appropriate to characterize such areas. Characterization of such area(s) shall include, but not be limited to:

1. Area Characteristics:

a. Location of area;
b. Type of area;
c. Design features;
d. Operating practices (past and present);
e. Period of operation;
f. Age of area;
g. General physical conditions; and
h. Method used to close the area.

2. Hazardous Waste and/or Hazardous Constituent Characteristics:

a. Type of hazardous waste and/or constituent placed in the area:

i) Hazardous classification (e.g., flammable, reactive, corrosive, oxidizing, or reducing agent)

ii) Quantity

iii) Chemical composition;

b. Physical and chemical characteristics:

i) Physical form (solid, liquid, gas)

ii) Physical description (e.g., powder, oily sludge)

iii) Temperature

iv) pH

v) General chemical class (e.g., acid, base, solvent)

vi) Molecular weight

vii) Density

viii) Boiling point

ix) Viscosity

x) Solubility in water

xi) Cohesiveness of the waste

xii) Vapor pressure;

c. Migration and dispersal characteristics of the waste/product:

i) Sorption

ii) Biodegradability, bioconcentration, biotransformation

iii) Photodegradation rates

iv) Hydrolysis rates

v) Chemical transformations

vi) Other characteristics necessary for modelling emission dispersion;

The Respondent shall document the procedures used in making the above determinations.

C. Contamination Characterization

The Respondent shall collect and provide analytical data on ground water, soils, surface water, sediment, and air emissions (including from point and fugitive sources) at or from the Site. These data shall be sufficient to define the extent, origin, direction, and rate of movement of contaminants to receptors and potential receptors. Data shall include time and location of sampling, media sampled, concentrations found, conditions during sampling, and the identity of the individuals performing the sampling and analysis. The Respondent shall address the following types of contamination at the Site:

1. Ground Water Contamination

The Respondent shall conduct a Ground Water Investigation to fully characterize all plumes of contamination at the Site. This investigation shall provide the following information:

a. The specific source of each contaminant plume;

b. A description of the full horizontal and vertical extent of immiscible or dissolved plume(s) originating from the Site;

c. The horizontal and vertical direction of contaminant movement;

d. The velocity of contaminant movement;

e. The horizontal and vertical concentration profiles of hazardous waste and/or hazardous constituents in the plume(s);

f. An evaluation of factors influencing plume movement; and

g. An extrapolation of future contaminant movement.

The Respondent shall document the procedures used to characterize contaminant plume(s), for example, geophysics, modeling, pump tests, slug tests, nested piezometers, etc.

2. Soil Contamination

The Respondent shall conduct an investigation to

characterize the contamination of the soil and rock units above the water table and in the tidal areas in the vicinity of the contaminant release. The investigation shall include the following information:

a. The specific origin (source) of soil contamination areas;

b. A description of the full vertical and horizontal extent of contamination;

c. A description of contaminant and soil chemical properties within the contaminant source area and plume. This shall include contaminant solubility, speciation, adsorption, leachability, exchange capacity, biodegradability, hydrolysis, photolysis, oxidation, and other factors that might affect contaminant migration and transformation;

d. Specific contaminant concentrations;

e. The velocity and direction of contaminant movement; and

f. An extrapolation of future contaminant movement in full consideration of tidal influences, if any.

The Respondent shall document the procedures used in making the above determinations.

3. Surface Water and Sediment Contamination

The Respondent shall conduct a surface water investigation to characterize contamination in surface water bodies, such as on-Site and adjacent wetlands, the Delaware River, and Van Sciver Lake, affected and potentially affected by releases of hazardous wastes and/or hazardous constituents, such as PCBs, from sediments near NPDES outfalls and in wetlands, at the Site. The investigation shall include, as appropriate, but not be limited to, the following information:

a. The specific origin (source) of each contaminant release to surface water, if any;

b. A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the Site, and the extent of contamination in underlying sediments;

c. The horizontal and vertical direction of contaminant movement;

d. The contaminant velocity;

e. An evaluation of the physical, biological, and chemical factors influencing contaminant movement;

f. An extrapolation of future contaminant movement; and

g. A description of the chemistry of the contaminated surface waters and sediments. This includes determining the pH, total dissolved solids, specific contaminant concentrations, etc.

The Respondent shall document the procedures used in making the above determinations.

4. Air Contamination

The Respondent shall conduct, as appropriate, an investigation to characterize the particulate and gaseous contaminants released into the atmosphere at or from the Site. This investigation shall provide the following information:

a. The specific origin (source) of each contaminant release to the air, if any;

b. A description of the horizontal and vertical extent and velocity of contaminant movement;

c. The rate and amount of the release; and

d. The chemical and physical composition of the contaminants(s) released, including horizontal and vertical concentration profiles.

The Respondent shall document the procedures used in making the above determinations.

5. Subsurface Gas Contamination

The Respondent shall conduct an investigation to characterize subsurface gases emitted from buried hazardous waste and hazardous constituents in the ground water. This investigation shall include the following information:

a. The specific origin (source) of each release of subsurface gas contaminants, if any;

b. A description of the horizontal and vertical extent of subsurface gas migration;

c. The chemical composition of the gases being emitted;

d. The rate, amount, and density of the gases emitted; and

e. Horizontal and vertical concentration profiles of the subsurface gases emitted.

The Respondent shall document the procedures used in making the above determinations.

D. Potential Receptors

The Respondent shall collect data that supplements existing data describing the human populations and environmental systems that are susceptible to contaminant exposure from the Site. Chemical analysis of biological samples may be needed. Data on observable effects in ecosystems may also be obtained. The following characteristics shall be identified:

1. Local uses and possible future uses of ground water:

   a. Type of use (e.g., drinking water source: municipal or residential, agricultural, domestic/non-potable, and industrial); and

   b. Location of ground water users, including wells and discharge areas.

2. Local uses and possible future uses of surface waters draining from the Site:

   a. Domestic and municipal (e.g., potable and lawn/garden watering);

   b. Recreational (e.g., swimming, fishing);

   c. Agricultural;

   d. Industrial; and

   e. Environmental (e.g., fish and wildlife propagation).

3. Human use of or access to the Site, including, but not limited to:

a. Industrial;

b. Recreational;

c. Hunting;

d. Residential;

e. Commercial;

f. Zoning; and

g. Relationship between population locations and prevailing wind direction.

4. A ecological description of the Site, including, but not limited to:

a. the location and size of each identified habitat (e.g. stream reaches, roads, wetlands) within the physical boundaries defined for the assessment; and

b. a listing and physical assessment of the ecosystems and population potentially exposed to contamination.

5. An evaluation of the pollutant impacts on the ecosystems and/or populations potentially exposed to contamination, including contaminated sediments near NPDES outfalls. This evaluation may be accomplished through the use of toxicity test (acute and chronic) population surveys, and/or literature reviews.

6. A demographic profile of the people who use or have access to the Site, including, but not limited to, age, sex, and sensitive subgroups.

7. A description of the significance, uniqueness or protected status of potentially exposed ecosystems.

E. **Risk Assessment**

Respondent shall conduct a baseline risk assessment to identify potential adverse human health and environmental effects caused by hazardous substance releases at or from the Site in the absence of any actions to control or mitigate these releases (under the assumption of no action). The Risk Assessment shall be performed in accordance with EPA Guidance entitled, "Risk Assessment Guidance for Superfund, Volumes I and II Manual" [EPA/540/1-89/002 and 001], "Risk Assessment Guidance for Superfund: Volume I:

Human Health Evaluation Manual, Part B, Development of Risk-Based Preliminary Remediation Goals" [EPA Publication 9285.7-01B], and "Risk Assessment Guidance for Superfund: Volume I: Human Health Evaluation Manual, Part C, Risk Evaluation of Remedial Alternatives" [EPA Publication 9285.7-01C, December, 1991], or other relevant or applicable guidance. The risk assessment shall include:

1. Identification of contaminants of concern.

2. An exposure assessment to identify: potential human and environmental receptors, estimate the magnitude of actual and/or potential human and environmental exposures, and the frequency and duration of these exposures, and to identify the pathways by which humans and environmental receptors are potentially exposed. Reasonable maximum estimates of exposure will be developed for both current and future land-use assumptions.

3. A toxicity assessment to identify the types of adverse health and environmental effects associated with chemical exposures and the relationship between the magnitude of exposure and adverse effects.

4. Summary of baseline risk, combining outputs of the exposure and toxicity assessments. Risk characterization will include both quantitative expressions and qualitative statements addressing both human health and environmental risk.

TASK VI: INVESTIGATION ANALYSIS

The Respondent shall prepare an analysis and summary of all facility investigations and the results of such investigations. This task shall ensure that the investigation data are sufficient in quality (e.g., quality assurance procedures have been followed) and quantity to describe the nature and extent of contamination, potential threat to human health and/or the environment, and to support the CMS.

A. Data Analysis

The Respondent shall analyze facility investigation data outlined in Task V, "FACILITY INVESTIGATION", and prepare a report ("RFI Report") on the type and extent of contamination at the Site. The RFI Report shall provide a qualitative and quantitative description of the extent of contamination in relation to background levels indicative of the area.

B. Clean-up Goals

Remedial objectives, to be identified in the CMS Work Plan and to be considered in determining sufficiency of data supporting the CMS, shall include, but not be limited to, the following:

1. Ground Water Protection Standards

For regulated units the Respondent shall provide information to support EPA's selection and/or development of Ground Water Protection Standards for all of the Appendix VIII constituents found in the ground water during the Facility Investigation (Task IV to this SOW).

a. The Ground Water Protection Standards shall consist of:

i) the Maximum Contaminant Level (MCL) for any constituents with an EPA promulgated Maximum Contaminant Level (MCL), if the background level of the constituent is below the value of the EPA approved MCL, or

ii) the background level of that constituent in the ground water, or

iii) an EPA-approved Alternate Concentration Limit (ACL);

b. Information to support the EPA's selection of ACLs shall be developed by the Respondent in accordance with applicable EPA guidance. For any proposed ACLs the Respondent shall include a justification based upon the criteria set forth in 40 C.F.R. Section 264.94(b).

2. Other Relevant Protection Standards

The Respondent shall identify all relevant and applicable standards for the protection of human health and the environment (e.g., National Ambient Air Quality Standards, Federally-approved state water quality standards, etc.).

3. Qualitative Goals

The Respondent shall identify all appropriate qualitative goals for consideration in the Corrective Measures Study (e.g. restoration and/or replacement of wetlands, protection of worker health and safety, etc.

TASK VII: LABORATORY AND PILOT-SCALE STUDIES

Based on the EPA-approved CMS Work Plan to be submitted pursuant to Task I of the CMS SOW, the Respondent shall conduct laboratory and/or pilot-scale studies to determine the applicability of certain corrective measure technologies to Site conditions. The Respondent shall analyze the technologies, based on literature review, vendor contracts, and past experience to determine the testing requirements.

In accordance with the schedule in the Project Management Plan and Corrective Measures Study Work Plan, the Respondent shall develop a Laboratory and/or Pilot-Scale Testing Work Plan identifying the types(s) and goal(s) of the study(ies), the level of effort needed, and the procedures to be used for data management and interpretation. Upon completion of the testing, the Respondent shall evaluate the testing results to assess the technology or technologies with respect to the site-specific questions identified in the test plan.

The Respondent shall prepare a report summarizing the testing program and its results, both positive and negative. The timing and phasing of Laboratory and Pilot-Scale Studies and ensuing Report(s) shall be consistent with the EPA-approved Technical Approach to the RFI/CMS.

TASK VIII: REPORTS

The Respondent shall submit the following reports. With the exception of Progress Reports, all reports listed below shall be initially submitted as drafts. After receipt of EPA comments on respective draft reports and in accordance with the Schedule listed in this SOW, Respondent shall then submit the reports listed below as final reports subject to approval by EPA.

A. Description of Current Conditions Report

The Respondent shall submit to EPA a report on Task I to this SOW.

B. Technical Approach to RFI/CMS

The Respondent shall submit to EPA a report on Task II to this SOW.

C. List of Interim Measures Respondent Proposes to Implement at the Site

The Respondent shall submit to EPA a report on Task III to this SOW.

D. RFI Workplan

The Respondent shall submit to EPA an RFI Workplan (Task IV to this SOW).

E. RFI Report

The Respondent shall prepare an RFI Report to present Tasks V-VI of this SOW. The RFI Report shall be developed in draft form for EPA review. The RFI Report shall be developed in final format, incorporating EPA comments received on the Draft RFI Report.

F. Laboratory/Pilot Scale Testing Report(s)

Task VII shall be documented in a separate draft and final report or reports. The draft Laboratory/Pilot Scale Testing Report(s) shall be submitted due to EPA in accordance with the schedule in the approved RFI Project Management Plan. The final Laboratory/Pilot Scale Report shall incorporate EPA comments on the draft Laboratory/Pilot Scale Report.

G. Bimonthly Progress Reports

The Respondent shall provide EPA with signed, bimonthly progress reports containing:

1. A description and estimate of the percentage of the RFI completed.

2. Summaries of all findings.

3. Summaries of all changes made in the RFI during the reporting period.

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

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

6. Actions being taken to rectify problems.

7. Changes in personnel during the reporting period.

8. Projected work for the next reporting period.

9. Copies of daily reports, inspection reports, summaries of laboratory/monitoring data, etc.

REPORT SUBMISSION SUMMARY

A summary of the information reporting requirements contained in the RFI Scope of Work is presented below:

Report Submission	Due Date
Description of Current Conditions (Task I)	Seventy-five (75) calendar days after effective date of this Order
Technical Approach to RFI/CMS	One hundred five (105) calendar days after effective date of this Order
List of Interim Measures Respondent Proposes to Implement at the Site (Task III)	Ninety (90) calendar days after effective date of this Order
Draft RFI Workplan (Task IV)	Sixty (60) calendar days after receipt of EPA approval on Technical Approach to RFI/CMS (Task II)
Final RFI Workplan (Task IV)	Thirty (30) calendar days after receipt of EPA comments on the Draft RFI Workplan
Draft RFI Report (Tasks V-VI)	According to the schedule in the EPA-approved RFI Workplan
Final RFI Report (Tasks V-VI)	Thirty (30) days after receipt of EPA comments on the Draft RFI Report
Draft Laboratory and Pilot-Scale Testing Report (Task VII)	According to schedule in EPA-approved CMS Workplan and Project Management Plan
Final Laboratory and Pilot-scale Testing Report (Task VII)	Thirty (30) calendar days after receipt of EPA comments on the draft Laboratory and Pilot-Scale Testing Report
Progress Reports	Bi-monthly, beginning the first day of second month after effective date of this Order.

Attachment D

CORRECTIVE MEASURE STUDY
SCOPE OF WORK

PURPOSE

This Statement of Work ("SOW") sets forth the requirements and/or tasks for conducting a Corrective Measure Study ("CMS") pursuant to the Consent Order ("Order") to which this SOW is attached. The purpose of this CMS is to develop and evaluate the corrective action alternative or alternatives and to recommend the corrective measure or measures to be taken at the Site, as defined in the Order. The Respondent shall furnish the personnel, materials, and services necessary to prepare the CMS, except as otherwise specified.

SCOPE

The CMS consists of the following Tasks:

Task I: CMS Work Plan

Task II: Identification and Development of the Corrective Measure Alternative or Alternatives

A. Refined Conceptual Site Model
B. Establishment of Corrective Action Objectives
C. Screening of Corrective Measures Technologies
D. Identification of the Corrective Measure Alternative or Alternatives

Task III: Evaluation of the Corrective Measure Alternative or Alternatives

A. Criteria for Evaluation of Corrective Measure Alternatives
B. Cost Estimate

Task IV: Recommendation of the Corrective Measure or Measures

A. **Technical**
B. **Environmental**
C. **Human Health**

Task V: Reports

A. Progress
B. Corrective Measure Study Work Plan
C. Report on Task II to this SOW
D. CMS Report

TASK I: CMS WORK PLAN

The CMS Work Plan shall propose the specific project scope for the CMS. The CMS Work Plan shall comprehensively summarize the work to be performed as part of the CMS and shall supplement and be consistent with the deliverables provided under Tasks I and II of the RCRA Facility Investigation ("RFI"), as described in Attachment C to the Order. Particularly, the Conceptual Site Model, to be described in the Description of Current Conditions pursuant to Attachment C to the Order, shall provide a basis for the corrective measures to be assessed as part of the CMS. The draft CMS Work Plan shall be used for a CMS Scoping meeting.

The CMS Work Plan shall include:

A. Preliminary remedial objectives for corrective measure alternatives to be developed.

B. A list of potential corrective measure technologies known to Respondent at the time of report submittal that may be used on-site and/or off-site for the containment, treatment, remediation, and/or disposal of hazardous wastes and/or hazardous constituents.

C. A preliminary identification of data needs for evaluation of corrective measure alternatives.

D. Identification of any field, laboratory, bench- or pilot-scale data that need to be collected in the RFI to facilitate the evaluation and selection of the final corrective measure or measures (e.g., compatibility of waste and construction materials, information to evaluate effectiveness, treatability of wastes, etc.). The Respondent also shall consider, in the report, the suitability of restoring and/or creating wetlands in addition to or in lieu of remediating on-Site filled Wetlands, including but not limited to "Slag Disposal Area 2" as described in "USS Fairless Works Wetlands Delineation for Slag Disposal Areas A & B," which is included in the Administrative Record.

E. Flow charts describing the phasing of data gathering in the RFI, completion of the Risk Assessment, and refinement of the Conceptual Site Model with the following phases of the CMS:

1. Development and screening of corrective measure alternatives

   a. scoping meeting with EPA;
   b. identification of remedial objectives; and
   c. screening of corrective measure alternatives;

2. Detailed evaluation of corrective measure alternatives.

F. A description of the process and criteria to be used in screening and evaluating corrective measure alternatives.

G. A schedule.

TASK II: IDENTIFICATION AND DEVELOPMENT OF THE CORRECTIVE ACTION ALTERNATIVE OR ALTERNATIVES

Respondent shall identify, screen and develop the alternative or alternatives for removal, containment, treatment, and/or other remediation of the contamination based on the objectives established for the corrective action in accordance with the EPA-approved CMS Work Plan. Respondent shall submit to EPA a draft report of the tasks listed below with the draft RFI Report, or earlier, to determine additional data needs after a first phase of remedial investigation field work is completed:

A. Refined Conceptual Site Model

Respondent shall propose a refined Conceptual Site Model of the Site, based on Task V of the RFI, "FACILITY INVESTIGATION." Respondent shall provide an update of previous response activities and any interim measures which have or are being implemented at the Site.

B. Establishment of Corrective Action Objectives

Respondent shall review preliminary remedial objectives proposed in the CMS Work Plan and shall propose refined Site-specific objectives for the corrective action. These objectives shall consider public health and environmental criteria, information gathered during the RFI, EPA guidance, and the requirements of any applicable Federal statutes. These objectives will specify the contaminants and media of concern, exposure pathways and receptors, and an acceptable contaminant level or range of levels for each exposure routes. At a minimum, all corrective actions concerning ground water releases from regulated units must be consistent with, and as stringent as, those required under 40 C.F.R. Section 264.100.

C. Screening of Corrective Measure Technologies

Respondent shall review the preliminary results of the RFI and reassess the technologies specified in the CMS Work Plan as approved by EPA and identify additional technologies which are applicable at the Site. Respondent shall screen the preliminary corrective measure technologies identified

in the CMS Workplan 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 achieve the corrective measure objective within a reasonable time period. This screening process focuses on eliminating those technologies which have severe limitations for a given set of waste and site-specific conditions. The screening step may also eliminate technologies based on inherent technology limitations. However, if available information indicates that innovative technologies will provide comparable or superior treatment performance, fewer or lesser adverse impacts, or lower cost for a similar level of performance, they shall be retained for further evaluation.

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

1. Site Characteristics

   Site data should be reviewed to identify conditions that may limit or promote the use of certain technologies. The use of technologies which are clearly precluded by site characteristics shall be eliminated from further consideration.

2. Waste Characteristics

   Waste characteristics particularly affect the feasibility of remediating waste by utilizing in-situ methods, direct treatment methods, or land disposal (on/off-site) methods. Technologies clearly limited in effectiveness and/or feasibility by these waste characteristics shall be eliminated from consideration.

3. Technology Limitations and Innovative Technologies

   During the screening process, the level of technological development, performance record, and inherent construction, operation, and maintenance problems should be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process. However, where reasonable, one representative process option which includes innovative treatment technologies shall be retained for further evaluation.

D. Identification of the Corrective Measure Alternative or Alternatives

Respondent shall develop the corrective measure alternative or alternatives based on the corrective action objectives and screening of Corrective Measure Technologies as presented in the CMS Workplan and as supplemented following the preparation of the RFI Report. Respondent shall rely on engineering practice to determine which of the previously identified technologies appear most suitable for the site. Technologies may be combined to form the overall corrective action alternative or alternatives. The alternative or alternatives developed shall represent a workable number of option(s) to adequately address all site problems and corrective action objectives. Each alternative may consist of an individual technology or a combination of technologies. One or more representative alternative which addresses the suitability of restoring and/or creating wetlands in addition to or in lieu of removing hazardous wastes from area(s) where slag has been disposed or any other area(s) of the Site where wetlands have been filled shall be retained for evaluation.

Respondent shall document the reasons for excluding technologies, identified in the CMS Workplan, as supplemented in the development of the alternative or alternatives.

TASK III: EVALUATION OF THE CORRECTIVE MEASURE ALTERNATIVE OR ALTERNATIVES

Respondent shall describe each corrective measure alternative that passes through the initial screening in Task II of this SOW and evaluate each corrective measure alternative and its components. The evaluation shall be based on technical, human health, environmental and institutional concerns. Respondent shall also develop cost estimates of each corrective measure alternative.

A. Criteria for Evaluation of Corrective Measure Alternatives

The Respondent shall provide a description of each corrective measure alternative which shall include, as appropriate, but is not limited to, the following: preliminary process flow sheets; preliminary sizing and type of construction for buildings and structures; and rough quantities of utilities required. Respondent shall evaluate each alternative in the following four areas:

1. Technical:

Respondent shall 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:

   i) Effectiveness shall be evaluated in terms of the ability to meet remedial objectives through performance of intended functions, such as containment, diversion, removal, or treatment. The effectiveness of each corrective measure shall be determined either through design specifications or by performance evaluation. Any specific waste or site characteristics which could potentially impede effectiveness shall be considered. Respondent shall also consider the effectiveness of combinations of technologies; and

   ii) Useful life is defined as the length of time the level of effectiveness can be maintained. Each corrective measure shall be evaluated in terms of the projected service lives of its component technologies. Respondent shall consider resource availability in the future life of the technologies, as well as appropriateness of the technologies in estimating the useful life of the project.

b. Respondent shall provide information on the reliability of each corrective measure, including the following:

   i) Operation and maintenance requirements, including the frequency and complexity of necessary operation and maintenance. Technologies that require frequent or complex operation and maintenance activities shall be regarded as less reliable than technologies requiring little or straightforward operation and maintenance. The availability of labor and materials to meet these requirements also shall be considered; and

   ii) Demonstrated and expected reliability, as a way of measuring the risk and effect of failure. Respondent shall evaluate whether the technologies have been used effectively under analogous conditions; whether the combination of technologies has been used

effectively; whether failure of any one technology would have an immediate impact on receptors; and whether the corrective measure has the flexibility to address uncontrollable changes at the Site.

c. Respondent shall describe the implementability of each corrective measure, including the following:

i) Constructability, as determined by conditions both internal and external to the Site conditions. Constructibility includes such items as location of underground utilities, depth to water table, heterogeneity of subsurface materials, and location of the facility (i.e., 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 may include the need for special permits or agreements, equipment availability, and the location of suitable off-site treatment or disposal facilities; and

ii) Time to implement a corrective measure, and time to actually obtain beneficial results shall be addressed. Beneficial results are defined as the reduction of contaminants to some acceptable, pre-established level.

d. Respondent shall evaluate each corrective measure alternative with regard to safety. This evaluation shall include threats to the safety of nearby communities and environments, as well as those to the safety of workers during implementation. Factors to consider include, but are not limited to, fire, explosion, and exposure to hazardous substances.

2. **Human Health:**

Respondent shall assess each alternative in terms of the extent to which it mitigates short- and long-term potential exposure to any residual contamination and protects human health, both during and after implementation of the corrective measure alternative. The assessment will describe the contaminants on-Site, potential exposure routes, and potentially affected populations. Respondent shall evaluate each alternative to determine the level of exposure to

contaminants and the associated risk reduction over time. The relative reduction of risk will be determined by comparing residual levels of each chemical of concern with existing criteria, standards, or guidelines acceptable to EPA.

3. Environmental:

Respondent shall perform an Environmental Assessment for each alternative which focuses on Site conditions and contaminant migration pathways to receptors to be addressed by each alternative. The Environmental Assessment for each alternative will include, at a minimum, an evaluation of:

a. The short-and long-term beneficial and adverse effects of the response alternative on environmentally sensitive areas such as wetlands and environmentally sensitive species; and

b. An analysis of measures to mitigate such adverse effects.

4. 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, and ordinances, including requirements for construction and operating permits, on the design, operation, and timing of each alternative shall be assessed. Anticipated community response and appropriate community relations also shall be considered.

B. Cost Estimate

Respondent shall develop an estimate of the cost of each corrective measure alternative (and for each phase or segment of the alternative). The cost estimate shall include both capital and operation and maintenance costs.

1. Capital costs consist of direct (construction) and indirect (nonconstruction and overhead) costs.

a. Direct capital costs include:

i) Construction costs: Costs of materials, labor (including fringe benefits and worker's compensation), and equipment required to install the corrective measure;

ii) Equipment costs: Costs of treatment, containment, disposal, and/or service equipment necessary to implement the action;

iii) Land and site-development costs: Expenses associated with purchase of land and development of existing property; and

iv) Buildings and services costs: Costs of process and nonprocess buildings, utility connections, purchased services, and disposal costs.

b. Indirect capital costs include:

i) Engineering expenses: Costs of administration, design, construction supervision, drafting, and testing of corrective measure alternatives;

ii) Legal fees and license or permit costs: Administrative and technical costs necessary to obtain licenses and permits for installation and operation;

iii) Startup and problem solving immediately following startup(shakedown) costs: Costs incurred during corrective measure startup; and

iv) Contingency allowances: Funds to cover costs resulting from unforeseen circumstances, such as adverse weather conditions, strikes, and inadequate Site characterization.

2. Operation and maintenance costs are post-construction costs necessary to ensure continued effectiveness of a corrective measure. The following operation and maintenance cost components, at a minimum, shall be considered:

a. Operating labor costs: Wages, salaries, training, overhead, and fringe benefits associated with the labor needed for post-construction operations;

b. Maintenance materials and labor costs: Costs for labor, parts, and other resources required for routine maintenance of facilities and equipment;

c. Auxiliary materials and energy: Costs of items such as chemicals and electricity for treatment plant operations, water and sewer service, and

fuel;

d. Purchased services: Sampling costs, laboratory fees, and professional fees for which the need can be predicted;

e. Disposal and treatment costs: Costs of transporting, treating, and disposing of waste materials, such as treatment plant residues, generated during operations;

f. Administrative costs: Costs associated with administration of corrective measure operation and maintenance not included under other categories;

g. Insurance, taxes, and licensing costs: Costs of such items as liability and sudden accident insurance, real estate taxes on purchased land or rights-of-way, licensing fees for certain technologies, and permit renewal and reporting costs;

h. Maintenance reserve and contingency funds: Annual payments into escrow funds to cover:

   i) costs of anticipated replacement or rebuilding of equipment, and

   ii) any large unanticipated operation and maintenance costs; and

i. Other costs: Costs that do not fit any of the above categories.

TASK IV: RECOMMENDATION OF THE CORRECTIVE MEASURE OR MEASURES

Respondent shall recommend a corrective measure alternative or alternatives based on the criteria evaluated in Task III. This recommendation shall include summary tables which allow the alternative or alternatives to be understood easily. Tradeoffs among health risks, environmental effects, and other pertinent factors among the alternatives, such as feasibility of institutional controls, shall be highlighted. EPA will select the corrective measure alternative or alternatives to be implemented. At a minimum, the Respondent shall show how the following criteria were considered in developing the corrective measure alternative recommendation.

A. Technical Criteria

1. Performance - corrective measure or measures which are most effective in performing the intended functions

and maintaining the performance over extended periods of time shall be given preference;

2. Reliability - corrective measure or measures which do not require frequent or complex operation and maintenance activities and that have been proven to be effective under waste and Site conditions similar to those anticipated shall be given preference;

3. Implementability - corrective measure or measures which can be constructed and operated to reduce levels of contamination to attain or exceed applicable standards in the shortest period of time shall be preferred;

4. Safety - corrective measure or measures which pose the least threat to the safety of nearby residents and environments, as well as to workers, during implementation shall be preferred; and

5. Reduction in toxicity, mobility and/or volume - Corrective measure alternatives which will result in a reduction in toxicity, mobility and/or volume are preferred over those which shall not do so.

B. Human Health Criteria

The corrective measure or measures must comply with existing EPA criteria, standards, or guidelines for protection of human health. Corrective measures which provide the minimum level of exposure to contaminants and the maximum reduction in exposure over time shall be preferred.

C. Environmental Criteria

The corrective measure or measures posing the least adverse impact (or greatest improvement) over the shortest period of time on the environment shall be favored.

TASK V: REPORTS

With an exception for progress reports and Report on Task II to this SOW, all reports listed below shall be submitted to EPA as drafts for comment. In accordance with the schedule listed below, draft reports shall be resubmitted, incorporating EPA's comments, as final reports, subject to EPA approval.

Respondent shall submit the following reports:

A. Progress

Bimonthly progress reports shall be signed and contain, at a minimum:

1. A description and estimate of the percentage of the CMS completed;

2. Summaries of all findings;

3. Summaries of all changes made in the CMS during the reporting period;

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

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

6. Actions being taken to rectify problems;

7. Changes in personnel during the reporting period;

8. Projected work for the next reporting period; and

9. Copies of daily reports, inspection reports, summaries of laboratory/monitoring data, etc.

B. Corrective Measure Study Work Plan

Respondent shall submit to EPA a Corrective Measure Study Work Plan. If required by EPA, Respondent shall revise the Corrective Measure Study Work Plan in response to EPA comments.

C. Report on Task II to this SOW

Respondent shall submit to EPA a Report summarizing the results of Task II to this SOW, whereby corrective measures objectives shall be established, technologies shall be screened, and corrective measures for evaluation shall be identified.

D. CMS Report

The CMS Report shall, at a minimum, include:

1. A description of the Site:

   a. Site topographic map and preliminary layouts

   b. A summary of the RCRA Facility Investigation;

2. Remedial objectives;

3. A summary of the corrective measure or measures

evaluated in detail:

a. Description of the corrective measure or measures and rationale for the proposed selection for evaluation

b. Performance standards for each technology comprising each corrective measure evaluated

c. Preliminary design criteria and rationale for each technology comprising each corrective measure evaluated

d. General operation and maintenance requirements for each corrective measure evaluated, and

e. Long-term monitoring requirements for each corrective measure evaluated;

4. An assessment of each corrective measure or measures in obtaining remedial objectives, including results of laboratory studies (bench scale, pilot scale).

5. Design and implementation considerations:

a. Special technical problems

b. Additional engineering data required

c. Permits and regulatory requirements

d. Access, easements, right-of-way

e. Health and safety requirements, and

f. Community relations activities;

6. Cost Estimates and Schedules:

a. Capital cost estimate, and

b. Operation and maintenance cost estimate;

7. A recommendation of a corrective measure alternative or alternatives with justification of such recommendation consistent with Task IV to this SOW;

REPORT SUBMISSION SUMMARY

A summary of the information reporting requirements contained in the Corrective Measure Study Scope of Work is presented below:

Report Submission	Due Date
Draft CMS Work Plan	60 calendar days after receipt of EPA approval on Technical Approach to RFI/CMS (Task II of Attachment C)
Revised CMS Work Plan	30 calendar days after receipt of EPA comments on Draft CMS Work Plan
CMS Task II Report	Concurrent with Draft RFI Report or earlier, to be scheduled in CMS Work Plan
Draft CMS Report	60 calendar days after receipt of EPA comments CMS Task II Report[1]
Revised CMS Report	30 calendar days after receipt of EPA comments on the Draft CMS Report
Final CMS Report (if required by EPA)	30 calendar days after receipt of EPA comments, based on comments received during the Public Comment Period on the Revised CMS Report
Progress Reports	Bimonthly, beginning the first day of second month following effective date of Order

[1] Timing and Phasing of Laboratory and Pilot-Scale Testing Report (Task VII to Attachment C to this Order) may affect scheduling of submission of draft CMS Report.

Attachment E
Health and Safety Plan

The Respondent shall prepare a Health and Safety Plan for all activities to be performed under the Final Administrative Order on Consent to which this SOW is attached. The Health and Safety Plan shall be submitted to EPA with the first Interim Measures Workplan or the RFI Workplan, whichever is submitted first. The Health and Safety Plan shall be revised, as appropriate, to reflect activities addressed in subsequent Interim Measures Workplans and/or the RFI Workplan.

1. Major elements of the Health and Safety Plan shall include:

   a. Site description including availability of resources such as roads, water supply, electricity, and telephone service;

   b. Description of the known hazards and evaluations of the risks associated with such hazards and with each activity conducted, including, but not limited to on and off-site exposure to contaminants;

   c. List of key personnel and alternates responsible for Site safety, response operations, and for protection of public health;

   d. Delineation of work area;

   e. Description of levels of protection to be worn by personnel in work area;

   f. Establishment of procedures to control Site access and security;

   g. Description of decontamination procedures for personnel and equipment;

   h. Establishment of Site emergency procedures;

   i. Emergency medical care available for injuries and toxicological problems;

   j. Description of requirements for an environmental surveillance program;

   k. Routine and special training required for responders; and

   l. Establishment of procedures for protecting workers

from weather-related problems.

2. The Health and Safety Plan shall be consistent with:

   a. NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985);

   b. EPA Order 1440.3 - Respiratory Protection;

   c. EPA Order 1440.2 - Health and Safety Requirements for Employees engaged in Field Activities;

   d. Facility Contingency Plan;

   e. EPA Standard Operating Safety Guide (1984);

   f. OSHA regulations particularly in 29 C.F.R. Parts 1910 and 1926;

   g. State and local regulations; and

   h. Other EPA guidance as provided.

3. The Respondent shall revise the Health and Safety Plan to address any additions and/or changes in planned activities.