



177-0082

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

REPLY TO ATTENTION OF:

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

OCT 31 1989

Jack Vankley
Office of the Attorney
General of Ohio
State Office Tower
30 E. Broad Street
Columbus, OHIO 43266-0410

Re: Notification of Issuance of Administrative Order by Consent
for Portsmouth Gaseous Diffusion Plant

Dear Mr. Vankley:

In accordance with the requirement of Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, (CERCLA), U.S. EPA hereby gives notice of the issuance of a Section 106(a) Administrative Order by Consent for the Portsmouth Gaseous Diffusion Plant in Portsmouth, Ohio. As you are aware, this is essentially a RCRA 3008(h) Order which includes CERCLA 106 authority to address the release of radionuclides at the facility.

Enclosed is a copy of the Order and the notification of concurrence by the Department of Justice as required by section 4(e) of Executive Order 12580 (January 23, 1987). Section XXVII of the Order provides that the effective date of the Order will be seven days from the date of concurrence by the Department of Justice.

Please give me a call at (312) 886-6827 if you have any questions regarding the Order.

Sincerely,

Peggy Andrews

Peggy Andrews
Assistant Regional Counsel

Enclosures

cc: Tyler Przybylek, U.S. DOE (ORO)

RECORD COPY

OCT 25 1989

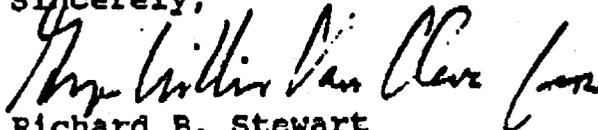
Valdas V. Adamkus
Regional Administrator
United States Environmental Protection Agency,
Region 5
230 South Dearborn Street
Chicago, Illinois 60604

Joseph LaGrone
Manager
United States Department of Energy
Oak Ridge Operations
P.O. Box E
Oak Ridge, Tennessee 37831

Gentlemen:

I hereby concur in the Administrative Order By Consent between the Environmental Protection Agency and the Department of Energy, recently signed by each of you, which will govern certain response actions at the Department of Energy's Portsmouth Gaseous Diffusion Plant located in Piketon, Ohio. I make this concurrence pursuant to section 4(e) of Executive Order 12580 (January 23, 1987), which provides that the Administrator's authority under sections 104(e)(5)(A) and 106(a) of the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§ 9604(e)(5)(A) and 9606(a), may be exercised only with the concurrence of the Attorney General, and pursuant to the Attorney General's Order No. 1285-88 (June 30, 1988), which delegates the Attorney General's authority under Executive Order 12580 to the Assistant Attorney General for the Land and Natural Resources Division.

Sincerely,



Richard B. Stewart
Assistant Attorney General

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Enclosed is a copy of the Order and the notification of concurrence by the Department of Justice as required by section 4(e) of Executive Order 12580 (January 23, 1987). Section XXVII of the Order provides that the effective date of the Order will be seven days from the date of concurrence by the Department of Justice.

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Office of the Assistant Attorney General

Washington, D.C. 20530

OCT 25 1989

Valdas V. Adamkus
Regional Administrator
United States Environmental Protection Agency,
Region 5
230 South Dearborn Street
Chicago, Illinois 60604

Joseph LaGrone
Manager
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P.O. Box E
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Sincerely,

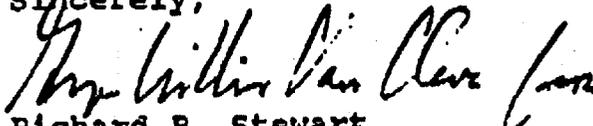

Richard B. Stewart
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U.S. DOE are as follows: (1) to perform Interim Remedial Measures (IRM) sufficient to prevent any release of Hazardous Waste, Hazardous Constituents, and/or Hazardous Substances from the Facility; (2) to prepare work plans for: (a) performance of a RCRA Facility Investigation (RFI) to determine fully the nature and extent of the presence of any release or the potential for future releases of Hazardous Wastes, Hazardous Constituents, and/or Hazardous Substances at or from the Facility; (b) performance of a Corrective Measures Study (CMS) to identify and evaluate alternatives for the appropriate extent of corrective action necessary to prevent or mitigate any migration or release of Hazardous Wastes, Hazardous Constituents, and/or Hazardous Substances at or from the Facility; and (c) any Corrective Measure Implementation (CMI) which is deemed necessary by the U.S. EPA to protect human health or the environment; and (3) to implement the work plans in an expeditious manner to protect human health and the environment.

II. APPLICABILITY

A. This Order shall apply to U.S. DOE, its officers, successors in office, directors, agents, employees, contractors, and subsequent owners and all operators of PORTS in Piketon, Ohio.

B. No change in ownership or corporate or partnership status relating to the Facility will in any way alter U.S. DOE's responsibility under this Order.

C. U.S. DOE and U.S. EPA shall provide a copy of this

Order to all contractors, subcontractors, laboratories, and consultants retained to conduct or monitor any portion of the work performed pursuant to this Order within seven (7) days of the effective date of this Order or date of such retention.

D. U.S. DOE agrees to give notice of this Order to any subsequent owner and/or operator prior to the transfer of ownership or the obligation of a new contractor/operator and shall simultaneously notify U.S. EPA of any such change or transfer.

III. AUTHORITY

The duty of U.S. DOE to operate its facilities in compliance with all Federal, State, interstate, and local requirements, both substantive and procedural, respecting control and abatement of solid waste or hazardous waste disposal is prescribed in Section 6001 of RCRA, 42 U.S.C. Section 6961. U.S. EPA is authorized to order such actions as may be necessary to protect the public health or welfare or the environment as prescribed in Section 106(a) of CERCLA, 42 U.S.C. Section 9606(a). This Order contains a plan to enable U.S. DOE to achieve and maintain compliance with applicable environmental standards.

IV. JURISDICTION

A. Jurisdiction for this action is conferred upon U.S. EPA by Sections 2002(a)(1) and 3008(h) of RCRA, 42 U.S.C. Sections 6912(a)(1) and 6928(h), respectively. The authority vested in the Administrator has been delegated to the Regional

Administrators by U.S. EPA Delegation Nos. 8-31 and 8-32 dated April 16, 1985, and further delegated to the Director, Waste Management Division, by U.S. EPA Delegation No. 8-32 dated August 1987. From July 15, 1983, until January 31, 1986, the State of Ohio had Phase I interim authorization pursuant to Section 3006 of RCRA, 42 U.S.C. Section 6926, to administer a hazardous waste program in lieu of the Federal program. Under this authorization, either the State or U.S. EPA could enforce the authorized Hazardous Waste program requirements, where applicable, in lieu of the Federal program. U.S. EPA retained authority in matters related to the issuance of RCRA permits during this period.

B. With respect to any Hazardous Substance which is not a Hazardous Waste, U.S. EPA enters into this Consent Order pursuant to the authority vested in the President of the United States by Sections 104 and 106(a) of CERCLA 42 U.S.C. Sections 9604 and 9606(a). The authority of the President to issue this Order has been delegated under Sections 104 and 106(a) of CERCLA, 42 U.S.C. Section 9604 and 9606(a), to the Administrator of U.S. EPA, with the concurrence of the Attorney General, by Executive Order 12580 dated January 23, 1987, 52 Federal Register 2923 (January 29, 1987), and further delegated to the Assistant Administrator for Solid Waste and Emergency Response and the Regional Administrator by U.S. EPA Delegation No. 14-14-C and further delegated to the Associate Division Director of Superfund.

C. With respect to any Hazardous Substance which is not a Hazardous Waste, U.S. DOE enters into this Order pursuant to Sections 104 and 106(a) of CERCLA, 42 U.S.C. Sections 9604 and 9606(a), Executive Order 12580, and the Atomic Energy Act of 1954, as amended, 42 U.S.C. Sections 2011 et seq. U.S. DOE waives any claims or demands for compensation or payment under Section 106(b), 111, and 112 of CERCLA against the Hazardous Substance Response Trust Fund established by Section 221 of CERCLA for, or arising out of, any activity performed or expenses incurred pursuant to this Order. This Order does not constitute any decision or preauthorization of funds under Section 111(a)(2) of CERCLA.

V. DEFINITIONS

"CERCLA" means the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. Section 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub. L. 99-499.

"Consent Order" means this Consent Order and all attachments hereto.

"Days" means calendar days, unless business days are specified. Any Submittal, Written Notice of Position or written statement of dispute that under the terms of this Order would be due on a Saturday, Sunday or holiday shall be due on the following business day.

"Effective date" means seven (7) days from the date on which this Order is signed by U.S. EPA.

"Exclusionary Areas" means the interior of Building 345 and that portion of the southwest corner of Building 326 marked as "product withdrawal area."

"Facility" shall have the meaning provided in 40 CFR Section 260.10 and Section 101(9) of CERCLA, as amended, 42 U.S.C. Section 9601(9).

"Hazardous Constituents" are the substances listed in Appendix VIII to 40 CFR Part 261 and Appendix IX to 40 CFR Part 264.

"Hazardous Substance" shall have the meaning provided in Section 101(14) of CERCLA, 42 U.S.C. Section 9601(14).

"Hazardous Waste" shall have the meaning provided in Section 1004(5) of RCRA, 42 U.S.C. Section 6903(5).

"Interim Remedial Measure" means any action taken to prevent releases of additional contamination, prevent or reduce the further spread of contamination, and reduce, abate or remove the exposure threat presented by releases, and/or any activity outlined in Section IX.C. and Section IX.E.3.

"Quadrant" means each of the four areas defined by the hydraulic boundaries outlined in Attachment IV.

"Radionuclide" means any facility-related radionuclide including, but not limited to, uranium-234, uranium-235, uranium-238, technetium-99, and protractinium-234m; and any nonfacility-related radionuclide including, but not limited to, radon-220, radon-222, radium-226, radium-228, and fall-out related radionuclides.

"RCRA" means the Resource Conservation and Recovery Act, 42 U.S.C. Section 6901 et seq., as amended by the Hazardous and Solid Waste Amendments of 1984, Pub. L. 98-616.

"Solid Waste Management Unit" means any discernable unit that has ever collected, source separated, stored, transported, transferred, processed, treated, or disposed of solid wastes from which Hazardous Constituents may migrate, irrespective of whether the unit was intended for the management of solid wastes or Hazardous Wastes. These units include, but are not limited to, landfills, surface impoundments, waste piles, land treatment units, incinerators, injection wells, tanks, container storage areas and transfer stations. Also considered to be Solid Waste Management Units are certain areas associated with production processes at facilities which have become contaminated as a result of routine, systematic or deliberate releases of Hazardous Wastes or Hazardous Constituents from wastes.

"Submittal" means every permit application, document, report, schedule, deliverable, work plan or other item to be submitted to U.S. EPA pursuant to this Order.

"Waste Unit" means all areas used for disposal or spreading of waste oils, all areas which are contaminated by spills or leaks, and all areas defined in Section VI.E.

"Work" means any activity directly related to completing all required or necessary action to achieve the purposes of this Order.

"Written Notice of Position" means a written statement by a party of its position with respect to any matter which any other party may dispute pursuant to Section XXVI of this Order.

VI. FINDINGS OF FACT

U.S. EPA, Region V, makes the following findings of fact:

A. U.S. DOE entered into a management and operating contract with Martin Marietta Energy Systems, Inc. for the operation of PORTS, an industrial Facility owned by the U.S. Government. The Facility commenced operations in 1954. The Facility is located approximately twenty miles north of downtown Portsmouth, Ohio. PORTS operations are located on a 15.4 square kilometer (3700 acres) federally owned site. Several rural communities lie within a few kilometers of the site.

B. The primary function of PORTS is the enrichment of uranium for use in fueling power plants and U.S. Navy vessels. The principal radioactive elements present in waste materials handled at the Facility are uranium and technetium. The principal non-radioactive Hazardous Wastes known to be generated at PORTS are those exhibiting characteristics of ignitability; EP toxicity for chromium, lead, and cadmium (Hazardous Waste Numbers D001, D007, D008, and D006); and various listed wastes including: spent halogenated solvents such as TCE; spent non-halogenated solvents; as well as small quantities of laboratory chemicals such as vanadium pentoxide, aniline, formaldehyde, formic acid, lead acetate, and thioacetamide (Hazardous Waste Numbers F001,

F002, F003, F004, P120, U012, U122, U123, U144, and U218).

C. On August 18, 1980, the U.S. DOE submitted a notification of hazardous waste activity at the Facility as required by Section 3010(a) of RCRA, 42 U.S.C. Section 6930(a), and on July 12, 1984, the U.S. DOE filed a RCRA Part A permit application as required by Section 3005(a) of RCRA, 42 U.S.C. Section 6925(a), to treat, store, and dispose of Hazardous Waste at the Facility. Subsequently U.S. DOE filed a RCRA Part A permit application revision on September 9, 1988.

D. Hazardous Waste disposal and storage areas at Portsmouth include the X-616 and X-701B surface impoundments and containment areas, the X-231B land treatment area, the X-749 landfill, and the X-752 container storage area. U.S. DOE has identified thirty-one (31) Solid Waste Management Units including but not limited to those as described below:

X-230	South Holding Pond
X-230L	North Holding Pond
X-230J5	West Holding Pond
X-230J6	Northeast Holding Pond
X-230J7	East Holding Pond
X-231A	Oil Biodegradation Plot
• X-231B	Oil Biodegradation Plot •
X-333	PCB Storage Area
X-342C	Waste HF Neutralization Pit
X-344D	HF Neutralization Pit
X-611A	Lime Sludge Lagoon
X-611B	Lime Sludge Lagoon
X-614A, B, D, and P	Sewage Waste Lift Stations
X-615	Old Sewage Treatment Plant
• X-616	Chromate Reduction Facility
X-617	pH Adjustment Facility
X-701C	Neutralization Pit
X-705A	Incinerator
X-734	Old Sanitary Landfill
X-735	Sanitary Landfill
X-740	Waste Oil Handling Facility
• X-749	Contaminated Materials Disposal Facility

**SOLID WASTE MANAGEMENT UNITS
QUADRANT I**

UNIT NUMBER	UNIT NAME	COORDINATES		DESCRIPTION	
		N	E		
1)	X-230K	South Holding Pond/Waste File	5.1	8.8	Plant effluent treatment pond and dredged material
		Big Run Creek Water and Sediments	-	-	Receives outfall from X-230K
2)	X-231A	Southeast Oil Biodegradation Plot	6.4	8.5	Landfaring disposal of waste oils
	X-231B	Southwest Oil Biodegradation Plot	6.6	7.7	Landfaring disposal of waste oils
3)	X-600A	Coal Pile Yard	7.1	8.35	Storage of coal for steam plant fuel
	X-621	Coal Pile Runoff Treatment Facility	6.95	8.55	Treats coal pile runoff and coal wash water
4)	X-626-1	Recirculating Water Pump House	6.65	7.7	Pumps RCW water through cooling system
	X-626-2	Cooling Tower/Basin Under Tower	6.5	6.3	2.2 million gallon basin under cooling tower
5)	X-710	Technical Services Building	7.8	8.4	Laboratory
	X-760	Pilot Investigation Building	7.4	8.0	Pilot and demonstration experiments for plant operations
6)	X-747F	Miscellaneous Material Storage Yard	8.7	8.5	Previously used as materials storage yard

SOLID WASTE MANAGEMENT UNITS
 QUADRANT I
 (Continued)

UNIT NUMBER	UNIT NAME	COORDINATES		DESCRIPTION
		N	E	
7)	X-749 Low Level Radioactive Waste Landfill	3.6	7.1	Landfill contains low level waste and contaminated equipment
8)	X-749A Classified Material Burial Grounds	6.9	8.9	Landfill contains classified waste
9)	X-750 Fuel Station/Mobile Equipment Maintenance Shop	8.2	8.9	Plant fuel station and light maintenance shop
10)	X-2230M Southwest Holding Pond	2.9	4.0	Receives storm sewer drainage from GCEP area
11)	Old Training Facility (demolished)	4.8	6.7	Site of old training building, machine shop, sheet metal shop and warehouses
12)	Peter Kiewit Landfill	4.5	7.7	Landfill contains construction spoils, mixed waste
	XT-847 Construction Warehouse	4.4	7.3	Built on site of old landfill
13)	Storm Sewer System	-	-	Collection of storm water runoff

SOLID WASTE MANAGEMENT UNITS
QUADRANT I
(Continued)

UNIT NUMBER	UNIT NAME	COORDINATES		DESCRIPTION
		N	E	
14) XT-614D	Sanitary Sewer System Sewage Lift Station	- 4.8	- 7.8	Transport of sewage to X-6619 Pumps raw sewage toward treatment plant
15) X-104	Indoor Firing Range			
16) XT-801	South Office Building			Built on site of old landfill

**SOLID WASTE MANAGEMENT UNITS
QUADRANT II**

UNIT NUMBER	UNIT NAME	COORDINATES		DESCRIPTION
		N	E	
1)	X-230J7 East Holding Pond/East Monitoring Facility	10.9	11.4	Controls sedimentation resulting from storm-water runoff
2)	X-633-1 Recirculating Water Pump House	11.9	10.3	Recirculates cooling water for plant functions
	X-633-2A Cooling Tower	12.2	10.2	Dissipates waste heat to atmosphere
	X-633-2B Cooling Tower	11.7	10.6	Dissipates waste heat to atmosphere
	X-633-2C Cooling Tower	12.6	10.1	Dissipates waste heat to atmosphere
	X-633-2D Cooling Tower	11.4	10.9	Dissipates waste heat to atmosphere
3)	X-700 Chemical and Petroleum Storage Contaminant Tanks			
4)	X-700 Chemical Cleaning Facility	10.2	9.1	Cleaning facility for non-contaminated cascade components
5)	X-700 TCE/TCA Outside Storage Tank	9.8	9.3	Storage of TCA for the X-700 Building
6)	X-701 Northeast Oil Biodegradation Plot	10.2	9.3	Disposal area for waste oils and contaminated sludge
7)	X-701B Holding Pond	10.7	10.4	Treatment facility for acidic, radioactive wastes

SOLID WASTE MANAGEMENT UNITS
 QUADRANT II
 (Continued)

UNIT NUMBER	UNIT NAME	COORDINATES		DESCRIPTION
		N	E	
8)	X-701C Neutralization Pit	10.1	9.3	pH control of process effluent from X-700 Cleaning Building
9)	X-705 Decontamination Building	10.2	8.7	Decontamination of contaminated equipment, and uranium recovery
10)	X-705A Incinerator	10.4	8.9	Incineration of contaminated burnable wastes
	X-705B Contaminated Burnables Storage Lot	10.3	8.9	Temporary storage of contaminated burnables
11)	X-720 Maintenance and Stores Building	9.4	9.0	Storage, maintenance, and testing of process equipment
12)	X-744G Bulk Storage Building	10.3	10.5	Storage of contaminated materials
13)	East Drainage Ditch Little Beaver Creek	-	-	Receives effluent from X-701B and storm sewers D and E
14)	Process Waste Lines from X-700 and X-705	-	-	Drain process effluents; discharged to X-701B

SOLID WASTE MANAGEMENT UNITS
QUADRANT II
(Continued)

UNIT NUMBER	UNIT NAME	COORDINATES		DESCRIPTION
		N	E	
15)	Sanitary Sewers and X-614P	-	-	Transports sewage to X-6619
16)	Storm Sewers D and E	-	-	Collection of storm-water runoff
17)	Barren Area - Mary Walker Report			

**SOLID WASTE MANAGEMENT UNITS
QUADRANT III**

	UNIT	DESCRIPTION	YEAR BUILT	FLOOR AREA	COORDINATES
1)	X-230J5	West Holding Pond and Monitoring Facility	1983	1.7 ac 150	N9.3, E3.5
2)	X-326	Process Building	1956	2,566,200	N8.0, E7.7
3)	X-330	Process Building	1955	2,796,600	N10.5, E7.7
4)	X-530A	Switch Yard	1954		N10.5, E6.7
	X-530B	Switch House	1954	112,600	N10.5, E7.1
	X-530C	Test and Repair Building	1954	1200	N11.0, E6.9
	X-530D	Oil House	1954	500	N10.0, E6.7
	X-530E	Valve House	1954	500	N11.0, E7.0
	X-530F	Valve House	1954	500	N9.9, E7.0
	X-530G	GCEP Oil Pumping Station	1981	200	N11.0, E6.5
5)	X-615	Sewage Plant	Abandoned	—	N8.0, E5.8
6)	X-616	Liquid Effluent Control Facility	1977	2000	N8.5, E6.1
7)	X-740	Waste Oil Storage Facility	1982	6300	N9.6, E6.8
8)	X-744N	Associated Area			N7.6, E3.5
	X-744P	Associated Area			N7.7, E3.5
	X-744Q	Associated Area			N7.8, E3.4
9)	X-744S	Warehouse S - Non-UESA	1957	50,000	N8.7, E5.5
	X-744T	Warehouse T - Non-UESA	1957	50,000	N8.7, E5.3
	X-744U	Warehouse U - Non-UESA	1957	50,000	N8.7, E5.4
10)	X-745C	West Waste Process Gas Yard	—	—	N11.4, E6.5
11)	X-2230N	West Holding Pond #2	1978	—	N9.0, E4.0

SOLID WASTE MANAGEMENT UNITS
QUADRANT III
(Continued)

UNIT	DESCRIPTION	YEAR BUILT	FLOOR AREA	COORDINATES
12)	Don Marquis Substation			N12.6, E5.0
13)	West Drainage Ditch			
14)	Storm Sewers			
15)	Sanitary Sewers			
X-614A	Sewage Pumping Station	1953	300	N9.4, E7.8
X-6614E	Sewage Lift Station	—	—	N8.4, E4.9
16)	X-6619 Sewage Treatment Facility	1981	5030	N8.9, E4.9

SOLID WASTE MANAGEMENT UNITS
QUADRANT IV

	UNIT	DESCRIPTION	YEAR BUILT	FLOOR AREA	COORDINATES
1)	X-114A	Pistol Range	1979	600	N14.5, E11.4
2)	X-230J6	Northeast Monitoring Facility	1983	150	N12.7, E10.9
3)	X-230L	North Holding Pond	1976	700	N14.5, E7.3
4)	X-333	Process Building	1955	2,850,000	N11.1, E9.0
5)	X-342C	Waste HF Neutralization Pit	—	—	N12.4, E8.0
6)	X-344A	UF ₆ Sampling Facility	1958	91,600	N12.2, E7.6
7)	X-344D	HF Neutralization Pit	—	—	N12.9, E7.6
8)	X-533A	Switchyard	1982	—	N12.2, E9.0
	X-533B	Switch House	1955	148,800	N11.9, E9.0
	X-533C	Test and Repair Building	1955	1,200	N12.2, E9.5
	X-533D	Oil House	1955	500	N12.3, E8.6
	X-533E	Valve House	1955	500	N12.0, E9.6
	X-533F	Valve House	1955	500	N12.0, E8.4
	X-533H	Gas Reclaiming Cart Garage	1985	1,500	N12.3, E9.5
9)	X-611	Water Treatment Plant and Appurtenances	1954	8,000	N13.4, E10.2
10)	X-611A	Line Sludge Lagoons	1954	700 cu yd	N12.8, E11.8
11)	X-611B	Sludge Lagoon	1960	700 cu yd	N14.8, E12.0
12)	X-630-1	Recirculating Water Pump House	1954	10,200	N12.0, E7.0
	X-630-2A	Cooling Tower	—	—	N12.2, E7.1
	X-630-2B	Cooling Tower	—	—	N11.9, E6.8

SOLID WASTE MANAGEMENT UNITS
 QUADRANT IV
 (Continued)

UNIT	DESCRIPTION	YEAR BUILT	FLOOR AREA	COORDINATES
13) X-630-3	Acid Handling Station	--	--	N12.0, E7.3
14) X-734 X-734A	Old Sanitary Landfill Construction Spoils Landfill	--1985	--	N15.4, E6.9 N14.9, E6.7
15) X-734B	Construction Spoils Landfill			N14.3, E6.6
16) X-735	Sanitary Landfill	--	--	N16.4, E9.0
17) X-744H	Bulk Storage Yard	1956	58,700	N13.6, E6.7
18) X-752	HAZARDOUS WASTE STORAGE FACILITY			N13.2, E6.6
19) X-614B	Sanitary Sewers Sewage Lift Station	1954	551 ln ft	N11.8, E8.1
20)	Storm Sewers			
21)	Old Firing Range - NE Site			
22)	Railroad Spur Yard - NE of DM Substation			
23)	Transformer Cleaning Pad - N of 533 Switch Yard			
24) x-533	Chemical and Petroleum Containment Tanks - E of 533 Switch Yard			

X-749A Classified Materials Disposal Facility
 X-2230M Southwest Holding Pond
 X-2230N West Holding Pond
 X-6619 Sewage Treatment Plant
 Northeast Oil Biodegradation Plot
 Construction Spoils Area
 Old Construction Spoils Area
 Peter Kiewit Landfill
 South Holding Pond Waste Pile

E. Other Waste Units include but are not limited to:

X-760 Neutralization Pit
 X-700/X-701/x-705 Underground Pipelines
 X-720 Neutralization Pit
 X-744 Retrievable Waste Storage Area
 X-752 Hazardous Waste Storage Facility
 X-530D Oil House
 X-344A HF Neutralization Pit
 X-533D Oil House

F. On July 8, 1985, and November 12, 1985, U.S. EPA issued Findings of Non-Compliance to U.S. DOE identifying the current RCRA violations and U.S. EPA's major concerns over the environmental impacts associated with PORTS past and present operations.

G. On September 30, 1986, U.S. EPA and U.S. DOE entered into a Federal Facility Compliance Agreement (FFCA) addressing RCRA violations cited in the July 8, 1985, and November 12, 1985, U.S. EPA Findings of Non-compliance.

H. On July 30, 1985, December 10, 1985, June 13, 1986, September 3, 1986, November 19, 1986, March 3, 1987, April 29, 1987, August 26, 1987, September 28, 1987, February 5, 1988, July 11-12, 1988, August 15-16, 1988, and October 27, 1988, conferences were held between U.S. DOE and U.S. EPA representatives to discuss the violations, their adverse environmental impacts, and the steps U.S. DOE has taken and

proposes to take to achieve and maintain compliance.

I. U.S. DOE is conducting Hydrogeologic and Groundwater Quality Investigations at the RCRA-regulated X-701B Holding Pond, the RCRA-regulated X-749 Low-Level Radioactive Landfill (recently reclassified as a mixed waste landfill), the RCRA-regulated X-231B Land Treatment Area, and the RCRA-regulated X-616 Chromate Reduction Facility. Results of these studies have documented elevated levels of gross alpha (26.0 pCi/L) and gross beta (2700 pCi/L) radiation in some groundwater samples as well as the presence of at least the following contaminants:

<u>Well #</u>	<u>Contaminant</u>	<u>Concentration ppm</u>
X-701-2	trichloroethylene (TCE)	.003
X-701-3	TCE	.003
X-701-4	TCE	.026
X-701-5	TCE	.008
X-701-5s	TCE	.018
X-701-6	TCE	.057
X-701-7	TCE	320
X-701-7s	TCE	.022
X-701-8	TCE	750
X-701-8s	TCE	44
X-701-9	TCE	790
X-701-10	TCE	7.6
BW-3	TCE	.037
BW-2	TCE	(1)
X-749-1	TCE	.030
X-749-2	TCE	.48
	1,1 - dichloroethylene (DCE)	.970
	1,1,1 - trichloroethane (TCA)	4.3
	Freon 113	.39
X-749-3	TCE	.61
	DCE	.57
	TCA	1.9
	Freon 113	.7
X-749-4	TCE	.25
X-749-5	TCE	.14

1 A 1.65 foot immiscible phase of trichloroethylene (TCE) has been measured in monitoring well BW-2 at the X-701B Holding Pond.

	DCE	.026
	TCA	.14
	Freon 113	.083
X-749-6	TCE	.15
	DCE	.027
	TCA	.12
	Freon 113	.092
X-749-7	TCE	3
	DCE	.15
	TCA	.38
X-749-8	TCE	.04
	DCE	.008
	TCA	.037
	Freon 113	.012
X-749-10	TCE	3.4
	DCE	2.3
	TCA	9.4
X-749-11	TCE	.012
X-749-12	TCE	.034
	DCE	.047
	TCA	.39
BG-1	TCE	.003
BG-4	TCE	6.1
	DCE	.81
	TCA	3.1
X-231B-1	TCE	.308
X-231B-5	TCE	.696
X-231B-6	TCE	.345

J. With the exception of Freon 113, all of the contaminants listed in Paragraph I are considered toxic. TCE and 1,1,1-trichloroethane are also considered probable and possible carcinogens, respectively. These Hazardous Wastes, Hazardous Constituents, and Hazardous Substances can affect the central nervous system and damage internal organs at low levels and represent a threat to human health by ingestion and/or absorption. Therefore, the presence of these contaminants may pose a threat to human health and the environment.

VII. DETERMINATIONS BY EPA

Based on the Findings of Fact set forth above, and the administrative record, the Regional Administrator of the U.S. EPA

has made the following conclusions of law and determinations:

A. U.S. DOE is subject to all Federal, State, interstate, and local requirements, both substantive and procedural, respecting control and abatement of solid waste or hazardous waste disposal as set forth in Section 6001 of RCRA, 42 U.S.C. Section 6961.

B. U.S. DOE is subject to the same requirements as a "person" within the meaning of Section 1004(15) of RCRA, 42 U.S.C. Section 6903(15), and Section 101(21) of CERCLA, as amended 42 U.S.C. Section 9601(21).

C. U.S. DOE is the owner of a Facility that has operated or is operating subject to Section 3005(e) of RCRA, 42 U.S.C. Section 6925(e).

D. Certain wastes and constituents thereof found at the Facility are Hazardous Wastes or Hazardous Constituents as defined by Section 1004(5) of RCRA, 42 U.S.C. Section 6903(5). These are also Hazardous Wastes or Hazardous Constituents within the meaning of Section 3001 of RCRA, 42 U.S.C. Section 6921, and 40 CFR Part 261.

E. There are or have been releases of Hazardous Wastes and Hazardous Constituents from the Facility into the environment within the meaning of Section 3008(h) of RCRA, 42 U.S.C. Section 6928(h), and the issuance of a Corrective Action Order is authorized pursuant to this Section.

F. The PORTS is a facility within the meaning of Section 101(9) of CERCLA, as amended, 42 U.S.C. Section 9601(9).

G. Certain wastes found at the Facility are Hazardous Substances as defined by Section 101(14) of CERCLA, 42 U.S.C. Section 9601(14).

H. There are or have been releases of Hazardous Substances from the Facility into the environment within the meaning of Section 101(22) of CERCLA.

I. All determinations necessary for the issuance of an Order under Section 106(a) of CERCLA, 42 U.S.C. Section 9606(a), have been made at the Facility.

H. The actions and response measures required by this Order are consistent with RCRA and CERCLA and are necessary to ascertain the nature and extent of the releases from the Facility and to protect human health and the environment.

VIII. COMPUTATION OF TIME

In computing any period of time prescribed in this Order, the day of the act from which the designated period of time begins to run shall not be included.

IX. WORK TO BE PERFORMED

In order to address Hazardous Wastes and Hazardous Constituents pursuant to Section 3008(h) of RCRA, 42 U.S.C. Section 6928(h), and Hazardous Substances pursuant to Section 106(a), 42 U.S.C. Section 9606(a), at the Facility, U.S. DOE agrees to perform the following acts in the manner and by the dates specified herein:

A. All Work to be performed by U.S. DOE pursuant to this Order shall be under the direction and supervision of a

qualified project coordinator. Prior to the initiation of any Work at the Facility, U.S. DOE shall notify U.S. EPA in writing of the name, title, and qualifications of a proposed project coordinator, and of any contractors and/or subcontractors sought to be used in carrying out the Work.

B. The Work shall consist of four elements: (1) Interim Remedial Measures (IRM); (2) a RCRA Facility Investigation (RFI); (3) a Corrective Measures Study (CMS); and (4) the Corrective Measure Implementation (CMI). All Work undertaken pursuant to this order shall be performed in a manner consistent, as determined by U.S. EPA, with, at a minimum, EPA approved IRM, RFI, CMS, and CMI Work Plans; RCRA and CERCLA and their implementing regulations; and U.S. EPA guidance documents including, but not limited to, the RCRA Groundwater Monitoring Technical Enforcement Guidance Document (TEGD), September 1986, Test Methods for Evaluating Solid Waste (SW-846), and the RCRA Facility Investigation (RFI) Guidance, July 1987.

C. The Interim Remedial Measures shall include, but not be limited to:

1. Within sixty (60) days of the effective date of this Order, U.S. DOE shall complete and submit to U.S. EPA an evaluation of all process and industrial wastes produced at the PORTS. (The evaluation shall contain the information required by 40 CFR Section 262.11). The description shall include the source, physical description, treatment, storage, and disposal methods for each waste and a determination of whether each waste

is a listed waste under Subpart D of 40 CFR Section 261.30 to Section 261.33, and/or exhibits the characteristics of a Hazardous Waste under Subpart C of 40 CFR Section 261.10 to Section 261.24. The evaluation shall include the radiological characteristics of each waste stream; this shall include the identification of each specific radionuclide and its activity and solubility class. The evaluation of all waste oils generated at the PORTS shall also include analysis to determine the presence of polychlorinated biphenyls (PCBs). Where physical or chemical analyses are conducted to determine the nature of the waste, a copy of all such analyses shall be provided to U.S. EPA. Where analytical data are not used to evaluate such wastes, the basis for the determination of the nature of the waste shall be explained.

2. Within sixty (60) days of the effective date of this Order, U.S. DOE shall prepare and submit to U.S. EPA complete analyses of runoff and any surface leachate observed being discharged from the X-749 landfill. Such analyses shall include a determination of radiological characteristics, including the identification of each specific radionuclide and its activity and solubility class; PCBs; and those parameters found in samples collected from groundwater monitoring wells installed at the Facility.

3. Within one hundred eighty (180) days of the effective date of this Order, U.S. DOE shall complete and submit to U.S. EPA the results of a groundwater quality assessment for

RCRA units X-616, X-231B, X-701B and X-749. The assessment report shall comply with the requirements of 40 CFR 265 Subpart F and describe the vertical and horizontal rate and extent of migration of any contaminant plumes from RCRA units X-616, X-231B, X-701B and X-749. The report shall include at least a detailed hydrogeologic description of the RCRA units; potentiometric surface maps; geologic cross/sections; fence diagrams; and isoconcentration maps of the various contaminants emanating from the RCRA units. U.S. DOE shall make available for inspection by U.S. EPA raw data from soil gas monitoring conducted by IEP, Inc. and shall provide copies of such data as requested by U.S. EPA.

4. Within thirty (30) days of the effective date of this Order, U.S. DOE shall, in accordance with 40 CFR Section 265.52 through Section 265.56, modify its Facility contingency plan to describe the actions to be taken by Facility personnel in the event of an unplanned release of Hazardous Waste or Hazardous Constituents to include X-744G and X-326 units, and submit the modified plan, which includes the emergency response function of U.S. EPA and that of communities in the vicinity of the plant, to appropriate Emergency Response authorities.

5. Within thirty (30) days of the effective date of this Order, U.S. DOE shall develop and thereafter shall use an internal tracking system for the categorization and management of Hazardous Wastes generated at PORTS. The internal tracking system shall be designed to document the flow of Hazardous Waste

from its point of generation through storage, treatment, or disposal, including the date, time and place of generation, storage, treatment, and disposal. Upon U.S. DOE's development of this system, a description of the system shall be submitted to U.S. EPA.

6. U.S. DOE shall investigate any past or present disposal, placement, and/or discharge of PCBs into soil or water at PORTS. For those locations not included within the RCRA units, Solid Waste Management Units, and other Waste Units listed in Section VI, Paragraph D, of this Order, U.S. DOE shall within 270 days of the effective date of this Order, develop a PCB Spill Cleanup Plan consistent with 40 CFR 761 Subpart G, 52 Fed. Reg. 10688, April 2, 1987, as it may be amended from time to time hereafter. U.S. DOE shall submit the plan to U.S. EPA for approval and implement the plan according to the approved schedule. Upon approval by U.S. EPA, the PCB Spill Cleanup Plan shall be incorporated into and made a part of this Order.

7. Trichloroethylene (TCE) Report and Removal: U.S. DOE has submitted a report of the Work it has performed to pump and remove TCE from the groundwater in the vicinity of X-701B, and a proposal for further steps to remove, minimize and monitor the TCE. Within thirty (30) days from U.S. EPA's approval of the proposal, U.S. DOE shall begin its implementation.

8. Should U.S. DOE discover evidence of off-site groundwater contaminant migration, U.S. DOE shall immediately notify U.S. EPA of this finding and within sixty (60) days of the

date of discovery submit to U.S. EPA for approval a plan for the installation of a network of groundwater plume interceptor wells, and manage the contaminated groundwater in a manner consistent with all Federal, State, or local laws, regulations, rules, or ordinances. These activities shall be designed to mitigate a potential threat to human health and/or the environment, be consistent with and integrated into any long term response action at the Facility, and be implemented according to the schedule in the U.S. EPA approved plan. Upon approval by U.S. EPA of the plan for the installation of a network of groundwater plume interceptor wells, the plan shall be incorporated into and made a part of this Order.

D. Attachments I, II and III to this Order provide Scopes of Work for the completion of an RFI, a CMS, and CMI. These Scopes of Work are incorporated into and made a part of this Order.

E. U.S. DOE shall perform the following activities in conducting the RFI and CMS Work at the Facility:

1. Within forty-five (45) days of receipt of U.S. EPA performance evaluation samples, U.S. DOE shall provide analyses results for laboratory approval.

2. Within forty-five (45) days of receipt of the performance audit analyses, U.S. EPA shall notify U.S. DOE, in writing, of the results of the performance audit. In the event that U.S. DOE fails all or part of the laboratory evaluation, the U.S. EPA may require either the selection of another laboratory

for laboratory approval or analysis of a second set of test blanks by the original laboratory. Ten (10) days will be allowed for the analysis of a second set of test blanks by either the new or the original laboratory.

3. In the event U.S. DOE identifies a current or potential threat to human health or the environment, the U.S. DOE shall immediately notify U.S. EPA orally and, if so directed by U.S. EPA, will within thirty (30) days submit to U.S. EPA an Interim Measures Plan (IMP) that identifies Interim Remedial Measures which mitigate this threat and are consistent with and integrated into any long term response action at the Facility. This Plan shall include explicit detailed tasks for the implementation of the Interim Remedial Measures including: the objectives of the Interim Remedial Measures; design, construction, operation, and maintenance requirements; and schedules for design, construction, and monitoring. Upon approval by U.S. EPA, the IMP shall be implemented according to the approved schedule. The approved IMP shall be incorporated into and made a part of this Order.

4. Within fifteen (15) days of the effective date of this Order, U.S. DOE shall submit to U.S. EPA for approval a work plan for the RCRA Facility Investigation (RFI Work Plan).

5. In accordance with the Scope of Work in Attachment I, the RFI Work Plan will include: (1) a Project Management Plan; (2) a Data Collection Quality Assurance Plan with supporting graphics and flow charts; (3) a Data Management Plan; (4) a Health and

Safety Plan; (5) a schedule for submittal of the work plan for each of the four Quadrants (Quadrant RFI Work Plan), including preparation and submission of preliminary and final reports to U.S. EPA; and (6) a Community Relations Plan.

6. The Quadrant RFI Work Plans shall be submitted for approval by U.S. EPA in accordance with the schedule required in Section IX.E.5. The Quadrant RFI Work Plans shall be designed to define the presence, magnitude, maximum concentrations, extent, direction, and rate of movement of any Hazardous Wastes, Hazardous Constituents, and/or Hazardous Substances, within and beyond the Facility boundary. Each Quadrant RFI Work Plan shall include explicit detailed tasks explaining how U.S. DOE will determine: (1) the presence or absence of Hazardous Wastes, Hazardous Constituents, and/or Hazardous Substances; (2) the nature, extent, and the rate of movement of contamination on and off U.S. DOE's property; (3) the possible routes of migration of Hazardous Wastes, Hazardous Constituents, and/or Hazardous Substances on and off the Facility including characterization of the geology and hydrology of the Facility which delineates possible routes of migration; (4) the extent and potential for migration of Hazardous Wastes, Hazardous Constituents, and/or Hazardous Substances through each of the environmental media; and (5) corrective measure alternatives to remediate any observed and potential contamination. Each Quadrant RFI Work Plan shall include specific schedules for the implementation of all activities described in that Work Plan.

7. U.S. EPA shall notify the U.S. DOE in writing of

approval, modification or disapproval of the RFI Work Plan or Quadrant RFI Work Plan or any part thereof. In the event of any disapproval, in whole or part, U.S. EPA shall specify in writing both the deficiencies and any U.S. EPA required modifications regarding the RFI Work Plan or Quadrant RFI Work Plan.

8. Within thirty (30) days of the receipt of U.S. EPA's notification of disapproval of the RFI Work Plan or Quadrant RFI Work Plan, U.S. DOE shall amend and submit a revised Work Plan to U.S. EPA for review and approval. U.S. DOE shall have the opportunity to meet with U.S. EPA to discuss problems with the RFI Work Plan and/or Quadrant RFI Work Plans and to propose alternatives or suggestions to resolve them.

9. U.S. DOE shall implement the Work detailed in the RFI Work Plan and each Quadrant RFI Work Plan as approved by U.S. EPA. The fully approved RFI Work Plan and Quadrant RFI Work Plans shall be incorporated into and made a part of this Order. The RFI Work shall be performed in accordance with the standards, specifications, and schedules contained in the RFI Work Plan and Quadrant RFI Work Plans. Within seven (7) days of receipt of U.S. EPA's full approval of the RFI Work Plan or a Quadrant RFI Work Plan, U.S. DOE shall commence performance of the RFI Work detailed in the approved plan.

10. Within ninety (90) days after U.S. DOE submits to U.S. EPA a draft RFI Report for each Quadrant, U.S. DOE shall submit to U.S. EPA for approval a work plan for the Corrective Measure Study (CMS Work Plan) for that Quadrant.

11. The CMS Work Plan for each Quadrant will be designed to inform U.S. EPA how U.S. DOE will develop and evaluate the corrective action alternative(s) and to recommend the corrective measure(s) to be undertaken at PORTS. The CMS Work Plan shall include tasks 7 through 11 in accordance with the Scope of Work in Attachment II.

12. U.S. EPA shall notify the U.S. DOE in writing of approval, modification or disapproval of the CMS Work Plan or any part thereof for each Quadrant. In the event of any disapproval, in whole or part, U.S. EPA shall specify in writing both the deficiencies and any U.S. EPA required modifications regarding the CMS Work Plan.

13. Within thirty (30) days of the receipt of U.S. EPA's notification of disapproval of the CMS Work Plan for a Quadrant, U.S. DOE shall amend and submit a revised Work Plan to U.S. EPA for approval. U.S. DOE shall have the opportunity to meet with U.S. EPA to discuss problems with the CMS Work Plan and to propose alternatives or suggestions to resolve them.

14. U.S. DOE shall implement the Work detailed in the CMS Work Plan for each Quadrant as approved by U.S. EPA. The fully approved CMS Work Plan shall be incorporated into and made a part of this Order. The CMS Work shall be performed in accordance with the standards, specifications, and schedules contained in the CMS Work Plan. Within seven (7) days of receipt of U.S. EPA's approval of the CMS Work Plan, U.S. DOE shall

commence performance of the CMS Work detailed in the approved plan.

F. Upon completion of the final RFI and draft final CMS for each Quadrant in accordance with the terms and specifications of this Order, the final RFI and draft final CMS will be released for public comment for a minimum of thirty (30) days. Within forty-five (45) days of the completion of the public review and comment period, the U.S. EPA shall select the corrective measures to be implemented at the Facility. U.S. EPA shall notify U.S. DOE in writing of the corrective measure(s) to be implemented.

G. Factors which the U.S. EPA may take into consideration in selecting the corrective measures to be implemented will include, but not be limited to, the environmental impact, public health risks, reasonably available, feasible and reliable technology, and public comment. If several corrective measure alternatives achieve the environmental and public health protection deemed necessary by U.S. EPA, the most cost effective corrective measure alternative will be favored by U.S. EPA. The written notification of selected corrective measures shall be incorporated into and made a part of this Order.

H. U.S. DOE shall perform the following activities in conducting the CMI Work at the Facility:

1. Within forty-five (45) days of receipt of the written notification of the corrective measure(s) to be

implemented for each Quadrant, as required in Paragraph F of this Section, U.S. DOE shall submit to U.S. EPA for approval a work plan for corrective measure implementation (CMI Work Plan). The CMI Work Plan shall be based upon the Scope of Work provided by U.S. EPA in Attachment III and shall include general plans, and a schedule for preparation of design criteria and detailed engineering plans, specifications and construction drawings as necessary to implement the approved cleanup actions, and schedules for selection of contractors, commencement of Work, and completion of Work. Following U.S. EPA approval of each Work Plan, U.S. DOE shall implement the cleanup action in accordance with the approved schedule.

2. The U.S. EPA shall notify the U.S. DOE in writing of approval, modification or disapproval of the CMI Work Plan or any part thereof for each Quadrant. In the event of any disapproval, the U.S. EPA shall specify in writing both the deficiencies and any U.S. EPA required modifications regarding the CMI Work Plan.

3. Within thirty (30) days of receipt of the U.S. EPA's notification of disapproval of the CMI Work Plan or any part thereof for each Quadrant, the U.S. DOE shall amend and submit a revised CMI Work Plan to U.S. EPA. U.S. DOE shall have the opportunity to meet with U.S. EPA to discuss problems with the CMI Work Plan and to propose alternatives or suggestions to resolve them.

4. The U.S. DOE shall implement the Work detailed in the CMI Work Plan for each Quadrant as approved by the U.S. EPA. The fully approved CMI Work Plan shall be incorporated into and made a part of this Order. The Work shall be conducted in accordance with the standards, specifications, and schedules contained in the CMI Work Plan. Within seven (7) days of receipt of U.S. EPA's final written approval of the CMI Work Plan, the U.S. DOE shall commence performance of the Work detailed in the approved plan.

X. REVIEW OF SUBMITTALS

A. All submittals made to U.S. EPA, and all RFI, CMS and CMI Work performed by U.S. DOE, are subject to the review, modification, and approval of U.S. EPA. U.S. EPA retains the right to amend reports, perform additional Work, and to conduct the RFI, CMS, and/or CMI if U.S. EPA decides any of the above are necessary. U.S. DOE agrees to make such modifications requested by U.S. EPA.

B. The U.S. DOE shall provide monthly written progress reports to the U.S. EPA. At a minimum these progress reports shall: (1) describe the actions which have been taken toward achieving compliance with this Order; (2) include all results of sampling and tests and all other data generated or received during the period; and (3) include a summary of all plans and procedures completed during the past month, as well as such actions, data collection, and plans which are scheduled for the next month. These reports are to be submitted to the U.S. EPA by

the tenth day of each month following the effective date of this Order. Any modifications by U.S. EPA, or alterations of such monthly progress reports concerning any future actions, data collection or plans shall be incorporated by the U.S. DOE into future actions at the Facility.

C. U.S. DOE shall provide draft, draft final, and final IRM, RFI, CMS, and CMI reports to the U.S. EPA in accordance with schedules contained in the approved plans.

D. The review process of each permit application, document, report, deliverable, work plan or schedule (collectively referred to as "submittal") submitted by U.S. DOE to U.S. EPA under this agreement, shall proceed as follows:

1. Within twenty-one (21) calendar days after U.S. EPA receives a submittal from U.S. DOE, U.S. EPA shall notify U.S. DOE whether the submittal contains information sufficient for U.S. EPA's review; or whether and in what respects, if any, the submittal is deficient in the amount or type of information it provides.

2. Within thirty (30) calendar days after U.S. EPA has notified U.S. DOE that a submittal contains information sufficient for U.S. EPA's review, U.S. EPA shall notify U.S. DOE in writing of the results of its review.

3. Within thirty (30) calendar days of receipt by U.S. DOE of any notice by U.S. EPA of the substantive deficiency of any submittal, U.S. DOE shall submit revisions.

4. If U.S. EPA shall be unable to meet the review commitments within the times stated above, it shall provide notice and an explanation to U.S. DOE within the times stated of its inability to meet the commitment and projected date for meeting its commitment. Such failure to make timely review shall result in an adjustment of affected schedules for a period determined or approved by U.S. EPA.

E. Five (5) copies of all documents, including draft and final reports, and other correspondence to be submitted by U.S. DOE pursuant to this Order shall be hand delivered or sent by certified mail, return receipt requested, to the Project Coordinator designated pursuant to Section XVI of this Order.

XI. ADDITIONAL WORK

A. The U.S. EPA, in order to achieve the purposes of this Order, may determine that Work in addition to that detailed in the attached Scopes of Work, including investigatory Work and/or engineering evaluation, is necessary as part of an IMP, RFI, CMS, or CMI. The U.S. DOE shall implement any additional Work which the U.S. EPA determines to be necessary, and shall complete such additional Work in accordance with the standards, specifications, and schedule determined or approved by the U.S. EPA.

B. Any dispute arising as to the performance of additional Work directed by U.S. EPA shall be resolved in accordance with the procedures set forth in Section XXVI. If the U.S. EPA determines that such additional Work is necessary, U.S.

EPA shall request in writing that U.S. DOE perform the additional Work and shall specify the basis and reasons for U.S. EPA's determination that the additional Work is necessary. Within ten (10) days after the receipt of such request, U.S. DOE shall have the opportunity to meet with U.S. EPA to discuss the additional Work U.S. EPA has requested and to propose alternatives. Within five (5) days of this meeting or the receipt of U.S. EPA's request for additional Work, whichever is later, U.S. DOE will notify U.S. EPA in writing of its decision whether or not it intends to submit the matter for Dispute Resolution.

C. Within forty-five days of receipt of U.S. EPA's written request to perform additional Work, or within forty-five days of a final determination that the Work is required if the Dispute Resolution procedures of Section XXVI are invoked, U.S. DOE shall submit for approval to U.S. EPA a work plan for additional Work. U.S. DOE shall perform the additional Work according to the U.S. EPA approved work plan. The U.S. EPA approved work plan for additional Work shall be incorporated into and made a part of this Order. All additional Work performed by U.S. DOE under this paragraph shall be performed in a manner consistent with this Order.

D. Should U.S. DOE determine that additional Work is necessary to achieve the purposes of this Order, U.S. DOE shall submit to U.S. EPA for approval U.S. DOE's plan and schedule for performing such Work.

XII. QUALITY ASSURANCE

Throughout all sample collections and analysis activities required by this Order, U.S. DOE shall use U.S. EPA-approved quality assurance, quality control, and chain-of-custody procedures, which shall be part of proposed and approved work plans. In addition, U.S. DOE shall:

- A. Follow the U.S. EPA guidance for sampling and analysis contained in the RCRA Groundwater Monitoring Technical Enforcement Guidance Document (TEGD), September 1986, and Test Methods for Evaluating Solid Waste (SW-846)
- B. Consult with U.S. EPA in planning for, and prior to, field sampling and laboratory analysis.
- C. Inform the U.S. EPA Project Coordinator in advance which laboratories will be used by U.S. DOE and ensure that U.S. EPA personnel and U.S. EPA authorized representatives have reasonable access to the laboratories and personnel used for analyses.
- D. Ensure that laboratories used by U.S. DOE for analyses perform such analyses according to U.S. EPA methods (SW-846). If methods other than U.S. EPA methods are to be used, U.S. DOE shall submit all protocols to be used for analyses to U.S. EPA in the QAPP element of the work plan.
- E. Ensure that laboratories used by U.S. DOE for analyses participate in a quality assurance/quality control program equivalent to that which is followed by U.S. EPA. As part of such a program, and upon request by U.S. EPA, such laboratories shall perform analysis of a reasonable number of

known samples provided by U.S. EPA to demonstrate the quality of analytical data.

F. Use the U.S. EPA guidance to evaluate all data to be used in the work plans including what is collected prior to U.S. EPA approval of the work plans required by Section IX of this Order. This evaluation shall be provided to U.S. EPA as part of the work plans required by Section IX of this Order, and shall be updated as necessary.

XIII. PUBLIC COMMENT AND COMMUNITY RELATIONS

A. Following proposed modification or proposed approval by U.S. EPA of the CMS draft Final Report for each Quadrant, U.S. EPA shall make both the RFI Final Report and CMS draft Final Report and U.S. EPA's justification for selecting the proposed remedy available to the public for review and comment for at least thirty (30) days.

B. Following the public review and comment period, U.S. EPA shall notify U.S. DOE which alternative corrective measure is selected, if any. If the Corrective Measure proposed and tentatively scheduled by U.S. EPA after review of the CMS draft Final Report is not the corrective measure approved by U.S. EPA after consideration of public comments, U.S. EPA shall inform U.S. DOE, in writing, of the reasons for such decision.

C. The complete Administrative Record supporting the selection of the corrective measure will be available for public review at Waverley Public Library in Pike County when the CMS

draft Final Report for each Quadrant is released for public comment.

XIV. CORRECTIVE MEASURE IMPLEMENTATION

Upon completion of the RFI and CMS in accordance with the terms and specifications of this Order, and after completion of the public review and comment period, the U.S. EPA in consultation with OEPA shall select the corrective action to be implemented at the Facility. The U.S. EPA shall then notify the U.S. DOE, in writing, of the selected corrective action. U.S. DOE shall perform the selected corrective action in accordance with the terms and specifications of Section IX, Paragraph H.

XV. PROJECT COORDINATORS

A. All Work performed pursuant to this Order shall be under the direction and supervision of a Project Coordinator appointed by U.S. DOE who shall be a qualified professional engineer or person otherwise qualified to supervise the activities to be performed hereunder. Prior to the initiation of Work at the Facility, U.S. DOE shall notify U.S. EPA in writing of the name, title and qualifications of the Project Coordinator, and of any known contractors and/or subcontractors to be used in carrying out the terms of this Order.

B. Within ten (10) days of the effective date of this Order, U.S. EPA shall designate its Project Coordinator, who shall be responsible for overseeing implementation of this Order.

C. To the maximum extent feasible, communications between U.S. DOE and U.S. EPA shall be made between Project Coordinators.

The Project Coordinators shall operate by agreement whenever possible and attempt to resolve disputes informally. It is acknowledged that the U.S. EPA Project Coordinator shall have the authority to halt or direct any task required hereunder to protect public health or welfare or the environment should an emergency situation arise at the Facility.

D. The absence of the U.S. EPA Project Coordinator from the Facility shall not be cause for stoppage of Work.

E. The parties agree to provide at least 7 days written notice prior to changing Project Coordinators.

XVI. NOTICES

Documents, including reports, approvals or disapprovals, and other correspondence, to be submitted pursuant to this Order, shall be sent by certified mail to the following addresses, or to such addresses as the U.S. DOE or the U.S. EPA hereafter may designate in writing:

1. Documents to be submitted to the U.S. EPA Project Coordinator should be sent in duplicate to:

U.S. EPA, Region V

Waste Management Division

230 South Dearborn Street

Chicago, Illinois 60604

Attention: James Saric, 5HR-12

2. Documents to be submitted to the U.S. DOE Project Coordinator should be sent to:

Eugene W. Gillespie, Site Manager

U.S. DOE
3930 U.S. Route 23
P.O. Box 700
Piketon, Ohio 45661

XVII. COMPLIANCE WITH APPLICABLE LAWS

Nothing herein shall affect the U.S. DOE's obligation to comply with any applicable Federal, State or local law, regulation, rule or ordinance. The U.S. DOE shall be responsible for obtaining all Federal, State or local permits which are necessary for the performance of the Work.

XVIII. ACCESS

A. 1. U.S. EPA and/or any U.S. EPA representative, including U.S. EPA contractors, are authorized in a manner consistent with 10 CFR Parts 1016 and 1017 to enter and freely move about all property at the Facility related to Work performed under this Order, for the purposes of inter alia: interviewing Facility personnel and contractors; inspecting records, operating logs, and contracts related to Work performed under this Order; reviewing the progress of U.S. DOE in carrying out the terms of this Order; conducting such sampling and tests as U.S. EPA or its representative deem necessary; and verifying the reports and data submitted to U.S. EPA by U.S. DOE. The U.S. DOE 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 Order, and shall comply with all approved health and safety plans

required by Task 3 of Attachment I to this Order. If the use of a camera, sound recording or other documentary-type equipment is determined to be required by U.S. EPA, U.S. DOE will provide these services upon request.

2. U.S. DOE represents and agrees that no Work to be performed under this Order will require "access authorization" or "security clearance" as defined in 10 CFR Section 1016 and 1017. Consequently, consistent with the access procedures in this Section, U.S. EPA representatives will be granted access, when accompanied by an escort, to all areas where Work is being performed under this Order. If either party proposes to add Additional Work in accordance with Section XI which involves Work in Exclusionary Areas, U.S. EPA representatives will be granted access consistent with 10 CFR Parts 1016 and 1017.

3. U.S. DOE or its management and operating contractor will provide, without advance notice, escorts for U.S. EPA representatives who are seeking access to the facility in accordance with the terms and conditions of this Order. Such escorts will be made available to facilitate the movement of U.S. EPA representatives about the site and is not to be construed as in any way limiting the ability of U.S. EPA representatives from obtaining access to areas of Work under this Order.

4. U.S. EPA, its representatives and contractors shall comply with all approved health and safety plans.

B. To the extent that Work required by the work plans must be done on property not owned by U.S. DOE, U.S. DOE will use

its best efforts to obtain site access agreements from the present owner(s) of such property within forty-five (45) days of approval of the work plans. U.S. DOE agrees to exercise its authorities pursuant to Section 104(e) of CERCLA, as amended, 42 U.S.C. Section 9604(e), when necessary to obtain access from the present owners and/or lessees. With respect to property not owned/leased by U.S. DOE and upon which any monitoring wells or other response actions are to be located, any access agreements obtained by U.S. DOE after the signing of this Consent Order shall provide for written notice to U.S. DOE before a conveyance of title, easement, or other interest in the property is consummated. In the event that property to which U.S. DOE has obtained access is subsequently conveyed or leased to a third party, U.S. DOE shall use its best efforts to obtain access from the new owner/lessee so that delays or disruptions in work or other response actions are minimized. Any such access agreement shall be incorporated by reference into this Order. In the event that agreements for site access are not obtained within forty-five (45) days of the effective date of this Order, U.S. DOE shall notify U.S. EPA regarding both the lack of and its failure to obtain such agreements within fourteen (14) days thereafter.

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

XIX. SAMPLING AND DATA/DOCUMENT AVAILABILITY

A. U.S. DOE shall make available to U.S. EPA all results of sampling, tests, or other data generated by or on its behalf with respect to the implementation of this Order. U.S. DOE shall submit these results in progress reports described in Section X of this Order. Similarly, upon request, U.S. EPA will make available to U.S. DOE the results of sampling or tests generated pursuant to this Order by U.S. EPA within forty-five (45) days after any such results or data pass U.S. EPA quality assurance review.

B. 1. U.S. EPA and/or its representatives may come into possession of classified information in the course of carrying out its duties under this Order. Classified information, for purposes of this provision, shall mean information appropriately marked as "top secret", "secret", and "confidential", as defined in Executive Order No. 12356, Section 1.1, or "unclassified controlled nuclear information" as defined in 10 CFR Part 1017. U.S. EPA shall notify DOE immediately and comply with U.S. DOE's direction concerning the proper handling and disposition of any classified information. U.S. DOE will provide such guidance as soon as practicable upon notice from U.S. EPA and/or its representatives.

2. The U.S. DOE may assert a confidentiality claim, if appropriate, covering part or all of the information requested by this Order. Analytical data shall not be claimed as confidential by the U.S. DOE. Information determined to be confidential will be afforded the protection specified in 40 CFR Part 2, Subpart B.

C. U.S. DOE shall notify U.S. EPA at least fifteen (15) days before conducting any well drilling, installation of equipment, or sampling. This notice provision may be waived by written mutual agreement of the Project Coordinators and/or his alternate exchanged prior to the commencement of any such activity. The monthly progress report received at least fifteen (15) days prior to the commencement of the specified field activity may be considered sufficient notice under this provision. At the request of U.S. EPA, U.S. DOE shall allow split or duplicate samples to be taken by U.S. EPA of any samples collected by U.S. DOE pursuant to this Order.

D. In any subsequent administrative or legal action enforcing the terms of this Order or enforcing implementation of any subsequent corrective action alternative selected for the Facility, the U.S. DOE and U.S. EPA waive evidentiary objections, except for relevancy, to the admissibility into evidence of data gathered or generated pursuant to this Order that have been verified by the quality control/quality assurance procedures in the QAPP approved by U.S. EPA. U.S. DOE or U.S. EPA may object to a specific item of evidence if the objecting party demonstrates that such item of evidence was not gathered in accordance with the sampling and analytical procedures contained in the QAPP.

XX. RECORD PRESERVATION

During the pendency of this Order and for a period of seven (7) years after its termination, U.S. DOE agrees to retain

and maintain and, upon request, make available to U.S. EPA all records and documents in its possession, custody, or control, including, but not limited to, documents embodying or relating to the results of sampling, tests, Hazardous Waste management and disposal at the Facility, or other data or information generated or acquired by U.S. DOE, or on U.S. DOE's behalf, which relate to the performance of this Order. At the conclusion of seven (7) years, U.S. DOE shall then make such records available to U.S. EPA for inspection or U.S. EPA's retention or shall provide copies of any such records to U.S. EPA. U.S. DOE shall notify U.S. EPA thirty (30) days prior to the destruction of any such records, and shall provide U.S. EPA with the opportunity to take possession of any such records.

U.S. DOE further agrees that within five (5) days of the effective date of this Order or of retaining or employing an agent, consultant or contractor, whichever comes first, U.S. DOE will enter into an agreement, to be confirmed in writing within fifteen (15) days, with its agents, consultants and/or contractors whereby its agents, consultants and/or contractors will be required to deposit with U.S. DOE, or its representative or contractor, for maintenance and preservation all records and documents within their respective possession which relate in any way to this Order.

XXI. FUNDING

It is the expectation of the Parties to this Order that all obligations of the U.S. DOE arising under this Order will be

fully funded. The U.S. DOE shall take all necessary steps and use its best efforts to obtain timely funding to meet its obligations under this Order. U.S. DOE shall advise U.S. EPA of its efforts to obtain the funding necessary to implement this Order. This requirement shall include, but not be limited to, U.S. DOE providing U.S. EPA a copy of its annual report to Congress which includes the specific cost estimates and budgetary proposals associated with the implementation of this Order.

U.S. DOE's performance of the commitments under this Order is subject to the availability of appropriated funds for such purposes. Failure to obtain adequate funds or appropriations from Congress does not, in any way, release U.S. DOE from its obligations to comply with RCRA and CERCLA. In cases where payment or obligation of funds would constitute a violation of the Anti-Deficiency Act, 31 U.S.C. Section 1341, the schedule established under this Order requiring the payment or obligation of such funds shall be appropriately adjusted. If appropriated funds are not available to fulfill requirements of the Order, U.S. EPA reserves the right to initiate such action as it deems appropriate to the extent permitted by law.

XXII. RESERVATION OF RIGHTS

A. U.S. EPA expressly reserves all rights and defenses that it may have, including the right both to disapprove of Work performed by U.S. DOE and to request, in accordance with Section XI, that U.S. DOE perform tasks in addition to those stated in the work plans.

B. Compliance by U.S. DOE with the terms of this Order shall not relieve U.S. DOE of its obligations to comply with RCRA or any other applicable State or Federal law. U.S. EPA reserves the right to take an enforcement action pursuant to RCRA, CERCLA and/or any available legal authority against U.S. DOE or its contractors/operators of PORTS for violations of applicable laws or regulations. Nothing in this Order shall preclude U.S. EPA from exercising any administrative, legal and equitable remedies available to them to require additional response actions by U.S. DOE in the event that: (1) conditions previously unknown or undetected by U.S. EPA arise or are discovered at the Facility; or (2) U.S. EPA receives additional information not previously available concerning the premises which it employed in reaching the terms of this Order, and the implementation of the requirements of this Order are no longer protective of human health and the environment.

C. U.S. EPA reserves the right to perform any portion of the Work agreed to herein or any additional site characterization, feasibility study, and response/corrective actions as it deems necessary to protect public health or welfare or the environment. Absent an immediate hazard, U.S. EPA will not perform Work agreed to herein if U.S. DOE is performing said Work in a timely and satisfactory manner. Notwithstanding compliance with the terms of this Order, U.S. DOE is not released from liability, if any, for the costs of any response actions taken by U.S. EPA.

XXIII. OTHER CLAIMS AND PARTIES

Nothing in this Order shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person, firm, partnership, or corporation not a signatory to this Order 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 Facility.

XXIV. ENFORCEABILITY

A. U.S. DOE recognizes its obligations to comply with RCRA, as set forth in Section 6001 of RCRA, 42 U.S.C. Section 6961. U.S. DOE in no way waives any defenses U.S. DOE may have or wish to pursue in any action outside the terms of this Order with the exception that U.S. DOE agrees not to contest U.S. EPA's jurisdiction to issue this Order. Nothing in this Order shall constitute an admission on the part of U.S. DOE or any other party, in whole or in part, in any proceeding or litigation including those between U.S. DOE and any other party or agency except in proceedings to enforce this Order.

B. The provisions of this Order including those related to statutory requirements, regulations, permits, closure plans, or corrective action, including recordkeeping, reporting, and schedules of compliance, shall be enforceable under citizen suits pursuant to 42 U.S.C. Section 6972(a)(1)(A), including

actions or suits by the State of Ohio and its agencies. The U.S. DOE agrees that the State and its agencies are a "person" within the meaning of Section 7002(a) of RCRA.

C. In the event of any action filed under Section 7002(a) of RCRA alleging any violation of any requirement of this Order, it shall be presumed that the provisions of this Order including those provisions which address recordkeeping, reporting, and schedules of compliance are related to statutory requirements, regulations, permits, closure plans, or corrective action, and are thus enforceable under Section 7002(a) of RCRA. U.S. DOE shall have the burden of proving that any provision is not so related.

D. The Parties to this Order have the right to enforce the terms, conditions, and requirements of this Consent Order.

E. Any person not a party to this Order has the right to commence a civil action against any person who violates the terms, conditions, and requirements of this Order to the extent provided in Section 310 of CERCLA, as amended, 42 U.S.C. Section 9859.

XXV. FORCE MAJEURE

A. U.S. DOE shall perform the requirements of this Order within the time limits set forth herein, unless the performance is prevented or delayed by events which constitute a force majeure. U.S. DOE shall have the burden of proving such a force majeure. A force majeure is defined as any event arising from causes not foreseeable and beyond the control of U.S. DOE

which could not be overcome by due diligence and which delays or prevents performance by the date required by this Consent Order. Such events do not include increased costs of performance, changed economic circumstances, normal precipitation events, or failure to obtain Federal, State or Local permits. It shall be presumed, for purposes of this Order, that delays due to compliance with applicable statutes and regulations governing procurement, despite the exercise of reasonable diligence are unforeseeable and beyond the control of U.S. DOE.

B. U.S. DOE shall notify U.S. EPA in writing seven (7) days after it becomes aware of events which U.S. DOE knows or should know constitute 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 minimize the delay, and an estimated time table for implementation of these measures. Failure to comply with the notice provisions of this section shall constitute a waiver of U.S. DOE right to assert a force majeure.

C. If U.S. EPA determines that the delay has been or will be caused by circumstances not foreseeable and beyond U.S. DOE's control, which could not have been overcome by due diligence, the time for performance for that element of the relevant scope of Work may be extended, upon U.S. EPA approval, for a period equal to the delay resulting from such circumstances. This shall be accomplished through an amendment to the appropriate schedule of this Consent Order. Such an

extension does not alter the schedule for performance or completion of other tasks required by any work plan unless these are also specifically altered by amendment of the schedule. In the event that U. S. EPA and U.S. DOE cannot agree that any delay or failure has been or will be caused by circumstances not reasonably foreseeable and beyond the control of U. S. DOE, which could not have been overcome by due diligence, or if there is no agreement on the length of the extension, the dispute shall be resolved in accordance with the Dispute Resolution provisions of Section XXVI of this Consent Order.

XXVI. DISPUTE RESOLUTION

If a dispute arises as to any part of this Order, the procedures of this Section shall apply. In addition, during the pendency of any dispute, U.S. DOE agrees that it shall continue to implement those portions of this Order which are not in dispute and which U.S. EPA determines can be reasonably implemented pending final resolution of the issue(s) in dispute. All parties to this Order agree they shall make reasonable efforts to informally resolve all disputes at the project coordinator or immediate supervisor level. If resolution of the dispute cannot be reached, the following procedures shall be implemented:

1. U.S. DOE shall, within thirty (30) days of the date of the U.S. EPA action or Written Notice of Position on a matter which leads to or generates the dispute, submit to U.S. EPA in writing: (1) a statement describing the dispute; (2) a brief

description of U.S. DOE's position with respect to the dispute; (3) the Work affected by the dispute; and (4) a copy of the pertinent references and other information that U.S. DOE is relying on to support its position. If U.S. DOE does not submit such documentation to U.S. EPA within this 30-day period, the U.S. DOE shall be deemed to have agreed to U.S. EPA's position.

2. Upon receipt of the written statement of dispute, the parties shall engage in dispute resolution among the Project Coordinators and/or their immediate supervisors. The parties shall have ten (10) days from the receipt by the U.S. EPA of the written statement of dispute to resolve the dispute. During this period, the Project Coordinators shall meet as many times as necessary to discuss and attempt resolution of the dispute. If agreement cannot be reached on any issue within this ten-day period, U.S. DOE may within ten (10) days of the conclusion of the 10-day dispute resolution period, submit a written notice to U.S. EPA escalating the dispute to the Dispute Resolution Committee (DRC) for resolution. If U.S. DOE fails to elevate the dispute to the DRC within this 10-day escalation period, U.S. DOE shall be deemed to have agreed with U.S. EPA's position with respect to the dispute.

3. The DRC will serve as forum for resolution of review and resolve disputes for which agreement has not been reached pursuant to Paragraphs 1 or 2 of this Section. The parties shall each designate one individual and an alternate to serve on the DRC. The individuals designated to serve on the DRC

shall be employed at the policy level (SES or equivalent) or be delegated the authority to participate on the DRC for the purposes of dispute resolution under this Order. Following escalation of a dispute to the DRC as set forth in Paragraph 2, the DRC shall have thirty (30) days to unanimously resolve the dispute. If the DRC is unable to unanimously resolve the dispute within this 30-day period, U.S. DOE may within ten (10) days of the conclusion of the 30-day dispute resolution period submit a written notice of dispute to the Administrator of U.S. EPA, or his designee, for a final resolution of the dispute in accordance with all applicable laws and procedures. In the event that the dispute is not escalated to the Administrator of U.S. EPA within the designated 10-day escalation period, the parties shall be deemed to have agreed with the U.S. EPA DRC representative's position with respect to the dispute.

4. Upon escalation of a dispute to the Administrator of U.S. EPA pursuant to Paragraph 3, the Administrator will review and resolve such dispute as expeditiously as possible. Upon resolution, the Administrator shall provide U.S. DOE with a written final decision setting forth resolution of the dispute.

5. The U.S. EPA representative on the DRC is the Waste Management Division Director of U.S. EPA's Region V. The U.S. DOE designated member is the Assistant Manager for Enriching Operations, Oak Ridge Operations Office. Notice of any delegation of authority from a party's designated representative on the DRC shall be provided to all other parties.

6. The pendency of any dispute under this Section shall not affect the U.S. DOE's responsibility for timely performance of Work required under this Order, except that the time period for completion of Work affected by such dispute shall be extended for a period of time not to exceed the actual time taken to resolve any good faith dispute in accordance with the procedures specified herein. All elements of the Work required by this Order which are not affected by the dispute shall continue and be completed in accordance with the applicable schedule. The determination of elements of Work, submittals, or actions affected by the dispute shall be determined by U.S. EPA and shall not be subject to dispute under this Section.

7. Within fourteen (14) days of resolution of a dispute pursuant to the procedures specified in this Section, the U.S. DOE shall incorporate the resolution and final determination into the appropriate plan, schedule, or procedures and proceed to implement this Order according to the amended plan, schedule, or procedures.

8. Resolution of a dispute pursuant to this Section of the Order constitutes a final resolution of any dispute arising under this Order. The U.S. DOE shall abide by all terms and conditions of any final resolution of dispute obtained pursuant to this Section of this Order.

XXVII. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION

A. The effective date of this Order shall be seven (7) days from the date on which it is signed by U.S. EPA or the date

on which concurrence by the Attorney General is received by U.S. EPA, whichever is later.

B. Modifications to this Order may be requested by U.S. EPA or U.S. DOE. All such modifications shall be by mutual agreement of U.S. EPA and U.S. DOE. Such amendments shall be in writing and shall have as the effective date, that date on which such amendments are signed by U.S. EPA, and shall become an integral part of this Order.

C. Any reports, plans, specifications, schedules, and attachments required in this Order are, upon approval by the U.S. EPA, incorporated into this Order.

D. No informal advice, guidance, suggestions or, comments by U.S. EPA regarding reports, plans, specifications, schedules, and any other writing submitted by the U.S. DOE may be construed as relieving U.S. DOE of its obligations to obtain such formal approval as may be required by this Order.

E. Upon demonstration of compliance by U.S. DOE with this Order, there will be a continuing obligation to comply with applicable permit requirements and other requirements under the relevant statutes.

XXVIII. NOTICE TO THE STATE

U.S. EPA has notified the State of Ohio pursuant to Section 106(a) of CERCLA, 42 U.S.C. Section 9606(a).

PORTS Administrative Order By Consent

XXIX. TERMINATION AND SATISFACTION

The provisions of this Consent Order shall be deemed satisfied upon U.S. DOE's receipt of written notice from U.S. EPA that U.S. DOE has demonstrated, to the satisfaction of U.S. EPA, that the terms of this Consent Order, including any additional tasks which, subject to the limitations set forth herein, U.S. DOE has agreed to undertake, have been satisfactorily completed. U.S. EPA shall issue such notice after it has been determined that all requirements of this Consent Order have been satisfactorily completed. The parties intend that any corrective action selected, implemented and completed to remediate Hazardous Waste, Hazardous Constituents, and hazardous substances contamination identified under this Order shall be protective of human health and the environment such that the corrective action covered by this Order shall obviate the need for further corrective remediation of that contamination.

IT IS SO AGREED:

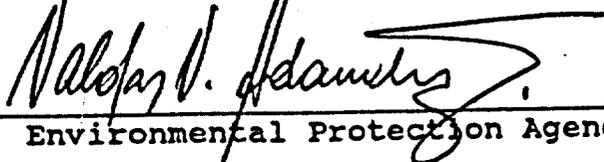
By:



 U.S. Department of Energy

September 8, 1989
 Date

By:



 U.S. Environmental Protection Agency

September 27, 1989
 Date

Dept. of Justice signed Oct 26, 1989

ATTACHMENT I

SCOPE OF WORK FOR A RCRA FACILITY INVESTIGATION AT PORTSMOUTH URANIUM ENRICHMENT COMPLEX

PURPOSE

The purpose of this RCRA Facility Investigation (RFI) is to determine the nature and extent of releases of hazardous waste or hazardous constituents from regulated units, solid waste management units, and other source areas at the facility and to gather all necessary data to support the Corrective Measures Study. United States Department of Energy (U.S. DOE) or its agent(s) shall furnish all personnel, materials, and services necessary for, or incidental to performing the RCRA Facility Investigation at Portsmouth Uranium Enrichment Complex (the "facility").

SCOPE

The RCRA Facility Investigation consists of six tasks:

Task 1: Description of Current Conditions

- A. Facility Background
- B. Nature and Extent of Contamination
- C. History of Response Actions
- D. Define Boundary Conditions
- E. Site Map
- F. Laboratory Certification
- G. Implementation of Interim Measures

Task 2: Pre-Investigation Evaluation of Corrective Measures Technologies

Task 3: RFI Workplan Requirements

- A. Project Management Plan
- B. Data Collection Quality Assurance Plan
- C. Data Management Plan
- D. Health and Safety Plan
- E. Community Relations Plan

Task 4: Facility Investigation

- A. Environmental Setting
- B. Source Characterization

- C. Contamination Characterization
- D. Potential Receptor Identification

Task 5: Investigation Analysis

- A. Data Analysis
- B. Protection Standards

Task 6: Reports

TASK 1: DESCRIPTION OF CURRENT CONDITIONS

U.S. DOE or its agent(s) shall supplement the description of the background information pertinent to the site and its problems and outline the purpose for the RCRA Facility Investigation at the Facility. The data gathered during any previous investigations or inspections and other relevant data should be incorporated.

This task may be conducted concurrently with Task 3, during development of the Work Plan.

A. Facility Background

U.S. DOE or its agent(s) will prepare a summary of the regional location, pertinent area boundary features, boundary features, general Facility physiography, hydrogeology, and historical use of the Facility for the treatment, storage, or disposal of solid and hazardous waste.

This summary shall at a minimum include:

1. Maps depicting the following:
 - a. The general geographic location;
 - b. Portsmouth Uranium Enrichment Complex property lines and any adjacent property lines with the owners of all adjacent property clearly indicated;
 - c. All known past solid or hazardous waste treatment, storage or disposal areas;
 - d. All known past and present product and waste underground tanks or lines.
2. A history of solid and hazardous waste treatment, storage, and disposal activities at the Facility;
3. Details on past product and waste spills including volume, nature, location, and cleanup activities.
4. A description of current closure or remedial activities at the site.

B. Nature and Extent of Problem

Prepare a summary of the actual and potential off-site and on-site health and environmental effects. Include a discussion of the population in the area potentially affected by release of contaminants from the Facility. Describe and report any human or animal illness that may be related to the Facility. Emphasis should be placed upon describing the threat or potential threat to public health and the environment.

C. History or Response Action

Prepare a summary of any previous response actions conducted by either local, State, Federal, or private parties, including site inspections and other technical reports, and their results. A list of reference documents and their locations should be included. The scope of the RCRA Facility Investigation should be developed to address the problems and questions that have resulted from previous work at the site.

D. Define Boundary Conditions

Establish boundary conditions to limit the areas of site investigations. The boundary conditions should be set so that subsequent investigations will cover the contaminated media in sufficient detail to support the following activities (e.g., corrective measures study). The boundary conditions may also be used to identify boundaries for site access control and security.

E. Site Map

Prepare a site map showing all wetlands, floodplains, water features, drainage patterns, tanks, building, utilities, paved areas, easements, rights-of-way, and other features. The site map and all topographical surveys shall be consistent with the requirements of 40 CFR 270.14 and be of sufficient detail and accuracy to locate and report all existing and future work performed at the site.

F. Laboratory Certification

U.S DOE or its agent(s) laboratory will be required to pass a performance audit prior to performing any analyses under this Agreement. The audit will include a maximum of two (2) performance evaluation samples for each of the analytical methods specified under Task 3B.

U.S DOE or its agent(s) are expected to qualify as well as quantify the parameters of interest. The results shall include all supporting data as required for a Quality Assurance Project Plan (QAPP) as specified by U.S. EPA.

An on-site laboratory visit will be performed by an U.S. EPA Quality Assurance Office to verify compliance with required analytical procedures.

G. Implementation of Interim Measures

U.S. DOE's or its agent(s)' report shall document interim measures which were or are being undertaken at the facility. This shall include:

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

2. Design, construction, operation, and maintenance requirements;
3. Schedules for design, operation, and maintenance requirements; and
4. Schedules for progress reports.

TASK 2: PRE-INVESTIGATION EVALUATION OF CORRECTIVE MEASURES TECHNOLOGIES

U.S. DOE or its agent(s) shall submit to U.S. EPA a report that identifies the potential corrective measure technologies that may be used on-site or off-site for the containment, treatment, remediation, and/or disposal of contamination. This report shall also identify any field data that needs to be collected in the facility investigation 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.)

TASK 3: RFI WORK PLAN REQUIREMENTS

U.S. DOE or its agent(s) shall prepare a RCRA Facility Investigation (RFI) Workplan. This RFI Workplan shall include the submission of several plans to the U.S. EPA for approval, each of which is a unique product, but represents a combined work product and require concurrent preparations. During the RFI, it may be necessary to revise the Sampling Plan to increase or decrease the detail of information collected to accommodate the facility specific situation. The RFI Work Plan shall include the following:

A. Project Management Plan

U.S. DOE or its agent(s) shall prepare a Project Management Plan which will include a discussion of the technical approach, schedules, and personnel. The Project Management Plan will also include a description of qualifications of personnel performing or directing the RFI, including contractor personnel. This plan shall also document the overall management approach to the RFI.

B. Data Collection Quality Assurance Plan

U.S. DOE or its agent(s) shall prepare a plan to document all monitoring procedures, sampling, field measurements and sample analyses performed during the investigation to characterize the environmental setting, source, and contamination, so as to 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 measurement data; and
- 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:
 - 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 Owner/Operator over some time period;
 - ii) RFI data generated by an outside laboratory or consultant versus data generated by the Owner/Operator;
 - 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 should 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;
- v) U.S. EPA performance audits; and
- vi) Resolutions of previously stated problems.

2. Sampling

The Sampling section of the Data Collection Quality Assurance Plan shall discuss:

- 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 should be conducted;
- e. Determining which media are to be sampled (e.g., groundwater, air, soil, sediment, etc.);
- f. Determining which parameters are to be measured and where;
- g. Selecting the frequency of sampling and length of sampling period;
- h. Selecting the types of samples (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) Specific sample preservation methods;
 - iv) Calibration of field devices;
 - v) Collection of replicate samples;
 - vi) Submission of field-biased blanks, where appropriate;
 - vii) Potential interferences present at the facility;

- viii) Construction materials and techniques, associated with monitoring wells and piezometers;
 - ix) Field equipment 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 from the time of collection through arrival at the designated laboratory; and
 - ii) Pre-prepared sample labels containing all information necessary for effective sample tracking.

3. Field Measurements

The Field Measurements section of the Data Collection Quality Assurance Plan shall discuss:

- 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 should be conducted;
- e. Determining which media are to be addressed by appropriate field measurements (e.g., groundwater, 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 period; and
- h. Documenting field measurement operations and procedures, including:
 - i) Procedures and forms for recording raw data and the exact location, time, and facility-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 facility;
- vi) Construction materials and techniques associated with monitoring wells and piezometers used to collect field data;
- vii) Field equipment listing;
- viii) Order in which field measurements were 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 dispersment 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 system 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. Preventative maintenance procedures and schedules;
- i. Corrective action (for laboratory problems); and
- j. Turnaround time.

C. Data Management Plan

U.S. DOE or its agent(s) shall develop 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 shall also provide the format to be used to present the raw data and conclusions of the investigation.

1. Data Record

The data record shall include the following:

- a. Unique sample or field measurement codes;
- 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 presented in tabular displays:

- 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 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. Display sampling location and sampling grid;
- b. Indicate boundaries of sampling area, and areas where more data are required;
- c. Displays levels of contamination at each sampling location;
- d. Display geographical extent of contamination;
- e. Display contamination, levels, averages, and maxima;
- f. Illustrate changes in concentration in relation to distance from the source, time, depth or other parameters; and
- g. Indicate features affecting intramedia transport and show potential receptors.

D. Health and Safety Plan

U.S. DOE or its agent(s) shall prepare a facility Health and Safety Plan.

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

- a. Facility description, including availability of resources such as roads, water supplies, electricity and telephone service;

- b. Describe the known hazards and evaluate the risks associated with the incident and with each activity conducted;
 - c. List key personnel and alternates responsible for site safety, response operations, and for protection of public health;
 - d. Describe levels of protection to be worn by personnel;
 - e. Delineate work area;
 - f. Establish procedures to control site access;
 - g. Describe decontamination procedures for personnel and equipment;
 - h. Establish site emergency procedures;
 - i. Address emergency medical care for injuries and toxicological problems;
 - j. Describe requirements for an environmental surveillance program;
 - k. Specify any routine and special training required for responders;
 - l. Establish procedures for protecting workers from weather-related problems; and
 - m. Establish emergency site procedures.
2. The Facility Health and Safety Plan shall be consistent with:
- a. NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985);
 - b. U.S. EPA Order 1440.1 - Respiratory Protection;
 - c. U.S. EPA Order 1440.3 - Health and Safety Requirements for Employees engaged in Field Activities;
 - d. Facility Contingency Plan;
 - e. U.S. EPA Standard Operating Safety Guide (1984);
 - f. OSHA regulations particularly in 29 CFR 1910 and 1926;
 - g. State and local regulations; and
 - h. Other U.S. EPA guidance as provided.

E. Community Relations Plan

U.S. DOE or its agent(s) shall prepare a plan for the dissemination of information to the public regarding investigation activities and results.

TASK 4 - FACILITY INVESTIGATION

U.S. DOE or its agent(s) shall conduct those investigations necessary to: characterize the facility (Environmental Setting); define the source (Source Contamination); define the degree and extent of contamination (Contamination Characterization); and identify the actual or potential receptors.

The investigations should result in data of adequate technical content to support the development and evaluation of the corrective measure alternative or alternatives during the Corrective Measures Study.

The site investigation activities shall follow the subplans set forth in Task 3. All sampling and analysis shall be conducted in accordance with the Data Collection Quality Assurance Plan. All sampling locations shall be documented in a log and identified on a detailed site map.

A. Environmental Setting

U.S. DOE or its agent(s) shall collect information to supplement and verify existing information on the environmental setting at the facility.
U.S. DOE or its agent(s) shall characterize the following:

1. Hydrogeology

U.S. DOE or its agent(s) shall conduct a program to evaluate hydrogeologic conditions at the facility. This program shall provide the following information:

- a. A description of the regional and facility specific geologic and hydrogeologic characteristics affecting groundwater flow beneath the facility, including:
 - i) Regional and facility specific stratigraphy: description of strata including strike and dip, and identification of stratigraphic contacts;
 - ii) Structural geology: description of local and regional structural features (e.g., folding, faulting, tilting, jointing, etc.);
 - iii) Depositional history;
 - iv) Regional and facility specific groundwater flow patterns; and
 - v) Identification and characterization of areas and amounts of recharge and discharge.
- b. An analysis of topographic features that might influence the groundwater flow system. (Note: Stereographic analysis of aerial photographs should aid in this analysis);

- c. Based on field data, tests, and cores; a representative and accurate classification and description of the hydrogeologic units which may be part of the migration pathways at the facility (i.e., the aquifers and any intervening saturated and unsaturated units), including:
- i) Hydraulic conductivity and porosity (total and effective);
 - ii) Lithology, grain size, sorting, degree of cementation;
 - iii) An interpretation of hydraulic interconnections between saturated zones; and
 - iv) The attenuation capacity and mechanism 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 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 groundwater 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 groundwater monitoring wells and 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;
 - 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 tidal or seasonal influences; and
- f. A description of manmade influences that may effect the hydrogeology of the site, identifying:
 - i) Local water-supply and production wells with an approximate schedule of pumping; and
 - ii) Manmade hydraulic structures (pipelines, french drains, ditches).

2. Soils

U.S. DOE or its agent(s) shall conduct a program to characterize the soil and rock units above the water table in the vicinity of the contaminant release(s). Such characterization shall include but not be limited to, the following information:

- a. SCS soil classification;
- b. Surface soil distribution
- c. Soil profile, including 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 (CEC);
- 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

U.S. DOE or its agent(s) shall conduct a program to characterize the surface water bodies in the vicinity of the facility. 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; and
- v) Evapotranspiration.

b. Description of the chemistry of the natural surface water and sediments. This includes determining the pH, total dissolved solids, total suspended solids, biological oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients (NH₃, NO₃/NO₂, PO₄), chemical oxygen demand, total organic carbon, specific contaminant concentrations, etc.; and

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

U.S. DOE or its agent(s) shall provide information characterizing the climate in the vicinity of the facility. Such information shall 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) Evapotranspiration data; and
 - vii) Climate extremes that have been known to occur in the vicinity of the facility, including frequency of occurrence; and
- b. A description of topographic and manmade features which affect air flow and emission patterns, including:
- i) Hills, or valleys;
 - ii) Surface water bodies (e.g., rivers, lakes, etc.);
 - iii) Wind breaks and forests; and
 - iv) Buildings

B. Source Characterization

U.S. DOE or its agent(s) shall collect analytical data to completely characterize the wastes and the areas where wastes have been placed, including: type; quantity; physical form; disposition (containment or nature of deposits); and facility characteristics affecting release (e.g., facility security, and engineered barriers). This shall include quantification of the following specific characteristics, at each source area:

1. Unit/Disposal Area characteristics:
 - a. Location of unit/disposal area;
 - b. Type of unit/disposal area;
 - c. Design features;
 - d. Operating practices (past and present);
 - e. Period of operation;
 - f. Age of unit/disposal area;
 - g. General physical conditions; and
 - h. Method used to close the unit/disposal area.
2. Waste Characteristics:
 - a. Type of wastes placed in each unit; including:
 - i) Hazardous classification (e.g., flammable, reactive corrosive, oxidizing or reducing agent);
 - ii) Quantities; and
 - iii) Chemical compositions
 - b. Physical and chemical characteristics, including:
 - 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;
- xi) Cohesiveness of the waste;
- xxi) Vapor pressure;
- xxii) Radionuclide;
- xxiii) Radiological activity; and
- xxiv) Radiological solubility class (D,W,Y).

c. Migration and dispersal characteristics of the waste; including

- i) Sorption;
- ii) Biodegradability, bioconcentration, biotransformation
- iii) Photodegradation rates;
- iv) Hydrolysis rates; and
- v) Chemical transformation.

U.S. DOE or its agent(s) shall document the procedures used in making the above determination.

C. Contamination Characterization

U.S. DOE or its agent(s) shall collect analytical data on groundwater, soils, surface water, sediment, and ~~subsurface gas contamination~~ in the vicinity of the facility. These data shall be sufficient to define the extent, origin, direction, and rate of movement of contaminant plumes and shall include appropriate radiological backgrounds. Data shall include time and location of samplings, and the identity of the individuals performing the sampling and analysis. U.S. DOE or its agent(s) shall address the following types of contamination at the facility:

1. Groundwater Contamination

U.S. DOE or its agent(s) shall conduct a groundwater investigation to characterize any immiscible or dissolved plumes of contamination at the facility. This investigation shall at a minimum provide the following information:

- a. A description of the horizontal and vertical extent of any immiscible or dissolved contaminant plume(s) at or originating from the facility;
- b. The horizontal and vertical directions of contamination movement;
- c. The velocity of contaminant movement;
- d. The horizontal and vertical concentration profiles of Appendix IX constituents in the plume(s);
- e. An evaluation of factors influencing the plume movement; and
- f. An extrapolation of future contaminant movement.

U.S. DOE or its agent(s) shall document the procedures to be used in making the above determinations (e.g., well design, well construction, soil gas surveys, geophysics, modeling, etc.).

2. Soil Contamination

U.S. DOE or its agent(s) shall conduct an investigation to characterize the contamination of the soil, interstitial gas, and sediments above the water table in the vicinity of the contaminant releases. The investigation shall include the following information:

- a. A description of the vertical and horizontal extent of contamination;
- b. A description of contaminant and soil chemical properties within the contaminant source area and plume. This includes contaminant solubility, speciation, leachability, exchange capacity, biodegradability, hydrolysis, photolysis, oxidation and other factors that might affect contaminant migration and transformation;
- c. Specific contaminant concentrations;
- d. The velocity and direction of contaminant movement; and
- e. An extrapolation of future contaminant movement.

U.S. DOE or its agent(s) shall document the procedures used in making the above determinations.

3. Surface-Water and Sediment Contamination

U.S. DOE or its agent(s) shall conduct a surface-water investigation to characterize contamination in surface-water bodies resulting from contaminant releases at the facility. The investigation shall include, but not be limited to, the following information:

- a. A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility, and the extent of contamination in underlying sediments;
- b. The horizontal and vertical directions of contaminant movement;
- c. The contaminant velocities;
- d. An evaluation of the physical, biological and chemical factors influencing contaminant movement;
- e. An extrapolation of future contaminant movement; and
- f. A description of the chemistry of the contaminated surface waters and sediments. This includes determining the pH, total dissolved solids, and specific contaminant concentrations, etc;

4. Air Contamination

U.S. DOE or its agent(s) shall conduct an investigation to characterize the particulate and gaseous contaminants released into the atmosphere. This investigation shall provide the following information:

- a. A description of the horizontal and vertical directions and velocity of contaminant movement;
- b. The rates and amounts of the release; and
- c. The chemical and physical composition of the contaminants released, including horizontal and vertical concentration profiles.

D. Potential Receptors

U.S. DOE or its agent(s) shall collect data describing the human populations and environmental systems that are susceptible to contaminant exposure from the facility. 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 groundwater:
 - a. Type of use (e.g., drinking water source, municipal,

residential, agricultural, domestic/non-potable, and industrial); and

- b. Locations of groundwater users, including wells and discharge areas.
2. Local uses and possible future uses of surface water draining from the facility:
 - a. Domestic and municipal (e.g., potable, lawn/gardening watering);
 - b. Recreational (e.g., swimming, fishing);
 - c. Agricultural;
 - d. Industrial; and
 - e. Environmental (e.g., fish and wildlife propagation).
3. Human use or access to the facility and adjacent lands, including but not limited to:
 - a. Recreation;
 - b. Hunting;
 - c. Residential;
 - d. Commercial; and
 - e. Relationship between population locations and prevailing wind direction.
4. A description of the biota in surface water bodies on, adjacent to, or affected by the facility.
5. A description of the ecology overlying and adjacent to the facility.
6. A demographic profile of the people who use or have access to the facility and adjacent land, including, but not limited to: age, sex, and sensitive subgroups.
7. A description of any endangered or threatened species near the facility.

TASK 5: INVESTIGATION ANALYSIS

U.S. DOE or its agent(s) shall prepare an analysis and summary of all facility investigations and their results. The objective of this task shall be to 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 Corrective Measures Study.

A. Data Analysis

U.S. DOE or its agent(s) shall analyze all facility investigation data outlined in Task 4 and prepare a report on the type and extent of contamination at the facility including sources and migration pathways. The report shall describe the extent of contamination (qualitative/quantitative) in relation to the background levels for the area.

B. Protection Standards

1. Groundwater Protection Standards

U.S. DOE or its agent(s) shall provide information to support the Agency's selection/development of Groundwater Protection Standards for all Appendix IX constituents found in the groundwater during the Facility Investigation (Task 4).

a. The Groundwater Protection Standards shall consist of:

i) for any constituents listed in Table 1 of 40 CFR 264.94, the respective value given in that table (MCL) if the background level of the constituents is below that given in Table 1; or

ii) the background level of that constituent in the groundwater; or

iii) A U.S. EPA-approved Alternate Concentration Limit (ACL).

b. Information to support the Agency's selection of Alternate Concentration Limits (ACL's) shall be developed by the U.S. DOE or its agent(s) in accordance with U.S. EPA guidance. For any proposed ACL's the U.S. DOE or its agent(s) shall include a justification based upon the criteria set forth in 40 CFR 264.94(b).

c. Within forty-five (45) days of receipt of any proposed ACL's, the U.S. EPA shall notify U.S. DOE or its agent(s) in writing of approval, disapproval or modifications. The U.S. EPA shall specify in writing the reason(s) for any disapproval or modification.

d. Within forty-five (45) days of receipt of the U.S. EPA's notification of disapproval of any proposed ACL, the U.S. DOE or its agent(s) shall amend and submit revisions to the U.S. EPA.

2. Other Relevant Protection Standards

U.S. DOE or its agent(s) 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, radiological waste disposal criteria, etc.).

TASK 6: REPORTS

U.S. DOE or its agent(s) shall submit to the U.S. EPA and OEPA reports on Tasks 1 and 2 when it submits the RCRA Facility Investigation Work Plan (Task 3).

U.S. DOE or its agent(s) shall at a minimum provide both agencies with signed, monthly progress reports containing:

- An estimate of the percentage of the project completed;
- Summaries of all change orders and claims made on the program
- Summaries all contacts with representative of the local community, public interest groups or State government during the reporting period;
- Summaries of all problems or potential problems encountered during the reporting period;
- Projected work for the next reporting period; and

Copies of daily reports, change orders, inspection reports, laboratory/monitoring data, etc.

Upon approval U.S. DOE or its agent(s) shall prepare a RCRA Facility Investigation Report to present Tasks 4 through 5. The RCRA Facility Investigation Report shall be developed in draft form for U.S. EPA review and OEPA review. The RCRA Facility Investigation Report shall be developed in final format incorporating comments received on the Draft RCRA Facility Investigation Report.

Five (5) copies of all reports, including the Task 1 report, Task 2 report, Task 3 workplan, and both the Draft and Final RCRA Facility Investigation Reports (Tasks 4 and 5) shall be provided by the Respondent or its agent(s) to U.S. EPA and OEPA.

Facility Submission Summary

A summary of the information reporting requirements contained in the RCRA Facility Investigation Scope of Work is presented below:

Facility Submission	Due Date
Description of Current Situation (Task 1)	15 days after the effective date of the Consent Order
Pre-Investigation Evaluation of Corrective Measure Technologies (Task 2)	15 days after the effective date of the Consent Order
RFI Workplan (Task 3)	15 days after the effective date of the Consent Order
Progress Reports on Tasks 1 through 5	Monthly
Quadrant I Workplan (Task 3)	30 days after approval of RFI Workplan or Feb. 1, 1989, whichever is later
Quadrant I Draft RFI Report (Tasks 4 and 5)	12 months after U.S. EPA approval of Quadrant I RFI Workplan
Quadrant I Final RFI Report (Tasks 4 and 5)	30 days after U.S. EPA comments on Quadrant I Draft RFI Report
Quadrant II Workplan (Task 3)	12 months after effective date of Consent Order
Quadrant II Draft RFI Report (Tasks 4 and 5)	12 months after U.S. EPA approval of Quadrant II RFI Workplan
Quadrant II Final RFI Report (Tasks 4 and 5)	30 days after U.S. EPA comments on Quadrant II Draft RFI Report
Quadrant III Workplan (Task 3)	18 months after effective date of Consent Order
Quadrant III Draft RFI Report (Tasks 4 and 5)	10 months after U.S. EPA approval of Quadrant III RFI Workplan

Facility Submission

Due Date

Quadrant III Final RFI Report
(Tasks 4 and 5)

30 days after U.S. EPA
comments on Quadrant III
Draft RFI Report

Quadrant IV Workplan
(Task 3)

23 months after effective
date of Consent Order

Quadrant IV Draft RFI Report
(Tasks 4 and 5)

9 months after U.S. EPA
approval of Quadrant IV
RFI Workplan

Quadrant V Final RFI Report
(Tasks 4 and 5)

30 days after U.S. EPA
comments on Quadrant V Draft
RFI Report

ATTACHMENT II

SCOPE OF WORK FOR A CORRECTIVE MEASURES STUDY AT PORTSMOUTH URANIUM ENRICHMENT COMPLEX

PURPOSE

The purpose of this Corrective Measures Study (CMS) is to develop and evaluate the corrective action alternative(s) and to recommend the corrective measure or measures, if any, to be taken at Portsmouth Uranium Enrichment Complex. The United States Department of Energy (U.S. DOE) or its agent(s) will furnish the personnel, materials, and services necessary to prepare the Corrective Measures Study CMS, except as otherwise specified.

SCOPE

The Corrective Measure Study consists of five tasks:

Task 7: Identification and Development of the Corrective Measure Alternative(s)

- A. Description of Current Situation
- B. Establishment of Corrective Action Objectives
- C. Screening of Corrective Measures Technology
- D. Identification of the Corrective Measure Alternative(s)

Task 8: Laboratory and Bench Scale Studies

Task 9: Evaluation of the Corrective Measures Alternative(s)

- A. Technical/Environmental/Human Health/Institutional
- B. Cost Estimates

Task 10: Justification and Recommendation of the Corrective Measure(s)

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

Task 11: Reports

- A. Progress
- B. Draft
- C. Final

TASK 7: IDENTIFICATION AND DEVELOPMENT OF THE CORRECTIVE MEASURE
ALTERNATIVE(S)

Based upon the results of the RCRA Facility Investigation and consideration of the identified Preliminary Corrective Measure Technologies (Task 2), U.S. DOE or its agent(s) shall identify, screen, and develop the alternative(s) for removal, containment, treatment, and/or other remediation of the contamination based on the objectives established for the corrective action.

A. Description of Current Situation

U.S. DOE or its agent(s) shall submit an update to the information describing the current situation at the facility and the known nature and extent of the contamination as documented by the RCRA Facility Investigation (RFI) Report. U.S. DOE or its agent(s) shall provide an update to the information presented in Task 1 of the RFI to the U.S. EPA regarding previous response activities and any interim measures which have or are being implemented at the facility. U.S. DOE or its agent(s) shall also make a facility-specific statement of the purpose for the response, based on the results of the RFI. The statement of purpose should identify the actual or potential exposure pathways that should be addressed by corrective measures.

B. Establishment of Corrective Action Objectives

U.S. DOE or its agent(s), in conjunction with the U.S. EPA, shall establish site specific objectives for the corrective action. These objectives shall be based on public health and environmental criteria, information gathered during the RCRA Facility Investigation, U.S. EPA guidance, and the requirements of any applicable Federal statutes. At a minimum, all corrective actions concerning groundwater releases from regulated units must be consistent with, and as stringent as, those required under 40 CFR 264.100.

C. Screening of Corrective Measure Technologies

U.S. DOE or its agent(s) shall review the results of the RFI and reassess the technologies specified in Task 2 to identify the additional technologies which are applicable at the facility. U.S. DOE or its agent(s) shall screen the preliminary corrective measure technologies identified in Task 2 of the RFI 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 several limitations for a given set of waste and site specific conditions. The screening step may also eliminate technologies based on inherent technology limitations.

D. Identification of the Corrective Measure Alternative or Alternatives

The U.S. DOE or its agent(s) shall develop the Corrective measure alternative or alternatives based on the corrective action objectives and analysis of Preliminary Corrective Measure Technologies, as presented in Task 2 of the RFI and as supplemented following the preparation of the RFI Report. The U.S. DOE or its agent(s) shall rely on engineering practices to determine which of the previously identified technologies appear most suitable for the site. Technologies can be combined to form the overall corrective action alternative or alternatives. The alternative or alternatives developed should represent a workable number of option(s) that each appear to adequately address all site problems and corrective action objectives. Each alternative may consist of an individual technology or a combination of technologies. The U.S. DOE or its agent(s) shall document the reasons for excluding technologies, identified in Task 2, as supplemented in the development of the alternative or alternatives.

TASK 8: LABORATORY AND BENCH-SCALE STUDIES

The U.S. DOE or its agent(s) shall conduct laboratory and/or bench-scale studies to determine the applicability of remedial technologies to site conditions and problems. The U.S. DOE or its agent(s) shall analyze the technologies based on literature review, vendor contracts, and past experience to determine the testing requirements.

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The U.S. DOE or its agent(s) shall develop a testing plan identifying the type(s) and goal(s) of the study(ies), the level of effort needed, and data management and interpretation guidelines for submission to U.S. EPA for review and approval.

Upon completion of the testing, U.S. DOE or its agent(s) shall evaluate the testing results to assess the technologies with respect to site-specific questions identified in the test plan and scale up those technologies selected based on testing results.

The U.S. DOE or its agent(s) shall prepare a report summarizing the testing program and its results, both positive and negative.

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

A. Site Characteristics

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

B. Waste Characteristics

Identification of waste characteristics that limit the effectiveness or feasibility of technologies is an important part of the screening process. Technologies clearly limited by these waste characteristics should be eliminated from consideration. Waste characteristics particularly effect the feasibility of in-situ methods, direct treatment methods, and land disposal (on/off-site).

C. Technology Limitations

During the screening process, the level of technology 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. For example, certain treatment methods have been developed to a point where they can be implemented in the field without extensive technology transfer or development.

TASK 9: EVALUATION OF THE CORRECTIVE MEASURE ALTERNATIVE OR ALTERNATIVES

U.S. DOE or its agent(s) shall describe each corrective measure alternative that passes through the Initial Screening in Task 7 and evaluate each corrective measure alternative and its components. The evaluation shall be based on technical, environmental, human health, and institutional concerns. U.S. DOE or its agent(s) shall also develop cost estimates for each corrective measure.

A. Technical/Environmental/Human Health/Institutional

U.S. DOE or its agent(s) shall provide a description of each corrective measure alternative which includes, 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. U.S. DOE or its agent(s) shall evaluate each alternative in the four following areas:

1. Technical

U.S. DOE or its agent(s) shall evaluate each corrective measure alternative based on performance reliability, implementability and safety.

- a. U.S. DOE or its agent(s) 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 perform intended functions, such as containment, diversion, removal, destruction, or treatment. The effectiveness of each corrective measure shall be

determined either through design specifications or by performance evaluation. Any specific waste or site characteristic which could potentially impede effectiveness shall be considered. The evaluation should 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. Most corrective measure technologies, with the exception of destruction, deteriorate with time. Often, deterioration can be slowed through proper system operation and maintenance, but the technology eventually may require replacement. Each corrective measure shall be evaluated in terms of the projected service lives of its component technologies. The appropriateness of the technologies must also be considered in estimating the useful life of the project
- b. U.S. DOE or its agent(s) shall provide information on the reliability of each corrective measure including its operation and maintenance requirements and their demonstrated reliability;
- i) Operation and maintenance requirements include the frequency and complexity of necessary operation and maintenance. Technologies requiring frequent or complex operation and maintenance activities should be regarded as less reliable than technologies requiring less operation and maintenance. The availability of labor and materials to meet these requirements shall also be considered; and
 - ii) Demonstrated and expected reliability is a way of measuring the risk and effect of failure. U.S. DOE or its agent(s) shall evaluate whether the technologies have been used effectively under analogous conditions; whether the combinations of technologies have been used together effectively, whether failure of any one technology has an immediate impact on receptors; and whether the corrective measure has the flexibility to deal with uncontrollable changes at the site.
- c. U.S. DOE or its agent(s) shall describe the implementability of each corrective action measure, including the relative ease of installation (constructability) and the time required to achieve a given level of response:
- i) Constructability is determined by conditions both internal and external to the facility conditions, and 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). U.S. DOE or its agent(s) shall evaluate what measures can be taken to facilitate construction under these conditions. External factors which affect implementation include the need for special permits or agreements, equipment availability, and the location of suitable off-site treatment or disposal facilities; and

ii) Time has two components that shall be addressed: the time it takes to implement a corrective measure and the time it takes to actually see beneficial results. Beneficial results are defined as the reduction of contaminants to some acceptable, pre-established level.

d. U.S. DOE or its agent(s) shall evaluate each corrective measure alternative with regard to safety. This evaluation shall include threat to the safety of nearby communities and environments as well as to workers during implementation. Factors to consider are fire, explosion, and exposure to hazardous substances.

2. Environmental

U.S. DOE or its agent(s) shall perform an Environmental Assessment for each alternative. The Environmental Assessment shall focus on the facility conditions and pathways of contamination actually addressed by each alternative.

The Environmental Assessment for each alternative will include, at a minimum, an evaluation of: the short and long-term beneficial and adverse effects of the response alternatives; any adverse effects on an environmentally sensitive area; and an analysis of measures to mitigate adverse effects.

3. Human Health

U.S. DOE or its agent(s) shall assess each alternative in terms of the extent to which it mitigates short and long-term potential exposure to any residual contamination and how it protects human health both during and after implementing the corrective measure. The assessment will describe the levels and characterizations of contaminants on-site, potential exposure routes, and the potentially affected population. Each alternative will be evaluated to determine the level of exposure to contaminants and the reduction over time. For management of mitigation measures, the relative reduction of impact will be determined by comparing residual levels of each alternative with existing criteria, standards, or guidelines acceptable to both U.S. EPA and OEPA.

4. Institutional

U.S. DOE or its agent(s) shall assess relevant institutional needs for each alternative. Specifically, the effects of Federal, State

and local environmental and public health standards, regulations, guidance, advisories, ordinances, or community relations on the design, operation, and timing of each alternative.

B. Cost Estimate

The U.S. DOE or its agent(s) shall develop an estimate of the cost of each corrective measure alternative (and 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 (non-construction 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; these materials remain until the corrective action is complete;
 - iii) Land and site-development costs: Expenses associated with purchase of land and development of existing property; and
 - iv) Buildings and service 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 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 facility characterization.
2. Operation and maintenance costs are post-construction costs necessary to ensure continued effectiveness of a corrective measure. The

U.S. DOE or its agent(s) shall consider the following operating and maintenance cost components:

- a. Operating labor costs: Wages, salaries, training, overhead, and fringe benefits associated with 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 such items as chemicals and electricity for treatment plant operations, water, 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 transportation, 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 accidental insurance; real estate taxes on purchased land or right-of-ways; licensing fees for certain technologies; and permit renewal and reporting costs;
- h. Maintenance reserve and contingency funds: Annual payments into escrow funds to cover: (1) costs of anticipated replacement or rebuilding of equipment; and (2) any large unanticipated operation and maintenance costs; and
- i. Other costs: Items that do not fit any of the above categories.

TASK 10: JUSTIFICATION AND RECOMMENDATION OF THE CORRECTIVE MEASURE OR MEASURES

U.S. DOE or its agent(s) shall justify and recommend a corrective measure alternative using technical, human health, and environmental criteria. This recommendation shall include summary tables which allow the alternative or alternatives to be easily understood. Tradeoffs among health risks, environmental effects, and other pertinent factors shall be highlighted. At a minimum, the following criteria will be used to justify the final corrective measure or measures.

A. Technical

1. Performance - corrective measure or measures which are most effective at performing their intended functions and maintaining the performance over extended periods of time will be given preference;
2. Reliability - corrective measure or measures which do not require frequent or complex operation and maintenance activities and that have proven effective under waste and facility conditions similar to those anticipated will 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 will be preferred; and
4. Safety - corrective measure or measures which pose the least threat to the safety of nearby residents and environments as well as workers during implementation will be preferred.

B. Human Health

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

C. Environmental

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

TASK 11: REPORTS

The U.S. DOE or its agent(s) shall prepare a Corrective Measure Study Report presenting the results of Tasks 7 through Task 10 and recommending a corrective measure alternative.

A. Progress

The U.S. DOE or its agent(s) shall submit to the U.S. EPA and OEPA monthly progress reports containing:

1. An estimate of the percentage of the CMS work completed;
2. Summaries of all problems encountered during the reporting period; and

3. Projected work for next reporting period.

B. Draft

The Report shall at a minimum include:

1. A description of the facility including a site topographic map and preliminary layouts.
2. A summary of the corrective measure or measures, including:
 - a. Description of the corrective measure or measures and rationale for selection;
 - b. Performance expectations;
 - c. Preliminary design criteria and rationale;
 - d. General operation and maintenance requirements; and
 - e. Long-term monitoring requirements.
3. A summary of the RCRA Facility Investigation and impact on the selected corrective measure or measures, including:
 - a. Field studies (groundwater, surface water, soil, air); and
 - b. Laboratory studies (bench scale, pick scale)
4. Design and Implementation Precautions, including:
 - 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.
5. Cost Estimates and Schedules, including:
 - a. Capital cost estimate;
 - b. Operation and maintenance cost estimate; and
 - c. Project schedule (design, construction, operation).

Facility Submission Summary

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

Facility Submission	Due Date
Progress Reports (Tasks 7, 8, 9, 10)	Monthly
Quadrant I CMS Workplan (Tasks 7, 8, 9, 10)	90 days after submittal of Quadrant I Draft RFI Report
Quadrant I Draft CMS Report (Tasks 7, 8, 9, 10)	9 months after U.S. EPA approval of Quadrant I CMS Workplan
Quadrant I Draft Final CMS Report (Tasks 7, 8, 9, 10)	30 days after U.S. EPA comments on Quadrant I Draft CMS Report
Quadrant I Final CMS Report (Tasks 7, 8, 9, 10)	45 days after public and U.S. EPA comment on Quadrant I Draft Final CMS Report
Quadrant II CMS Workplan (Tasks 7, 8, 9, 10)	90 days after submittal of Quadrant II Draft RFI Report
Quadrant II Draft CMS Report (Tasks 7, 8, 9, 10)	6 months after U.S. EPA approval of Quadrant II CMS Workplan
Quadrant II Draft Final CMS Report (Tasks 7, 8, 9, 10)	30 days after U.S. EPA comments on Quadrant II Draft CMS Report
Quadrant II Final CMS Report (Tasks 7, 8, 9, 10)	45 days after public and U.S. EPA comment on Quadrant II Draft Final CMS Report
Quadrant III CMS Workplan (Tasks 7, 8, 9, 10)	90 days after submittal of Quadrant III Draft RFI Report
Quadrant III Draft CMS Report (Tasks 7, 8, 9, 10)	5 months after U.S. EPA approval of Quadrant III CMS Workplan

Facility Submission

Due Date

Quadrant III Draft Final CMS Report
(Tasks 7, 8, 9, 10)

30 days after U.S. EPA
comments on Quadrant III
Draft CMS Report

Quadrant III Final CMS Report
(Tasks 7, 8, 9, 10)

45 days after public and
U.S. EPA comment on
Quadrant III Draft Final CMS
Report

Quadrant IV CMS Workplan
(Tasks 7, 8, 9, 10)

90 days after submittal of
Quadrant IV Draft RFI
Report

Quadrant IV Draft CMS Report
(Tasks 7, 8, 9, 10)

3 months after U.S. EPA
approval of Quadrant IV
CMS Workplan

Quadrant IV Draft Final CMS Report
(Tasks 7, 8, 9, 10)

30 days after U.S. EPA
comments on Quadrant IV
Draft CMS Report

Quadrant IV Final CMS Report
(Tasks 7, 8, 9, 10)

45 days after public and
U.S. EPA comment on
Quadrant IV Draft Final CMS
Report

ATTACHMENT III

SCOPE OF WORK FOR THE CORRECTIVE MEASURE IMPLEMENTATION AT PORTSMOUTH URANIUM ENRICHMENT COMPLEX

PURPOSE

The purpose of this Corrective Measure Implementation (CMI) program is to design, construct, operate, maintain, and monitor the performance of the corrective measure(s) selected to protect human health and the environment. U.S. DOE or its agent(s) will furnish all personnel, materials and services necessary for the implementation of the corrective measure or measures.

SCOPE

The Corrective Measure Implementation programs consists of four tasks:

Task 12: Corrective Measure Implementation Program Plan

- A. Program Management Plan
- B. Community Relations Plan

Task 13: Corrective Measure Design

- A. Design Plans and Specifications
- B. Operation and Maintenance Plan
- C. Cost Estimate
- D. Construction Quality Assurance Objectives
- E. Health and Safety Plan
- F. Design Phases

Task 14: Corrective Measure Construction

- A. Responsibility and Authority
- B. Construction Quality Assurance Personnel Qualifications
- C. Inspection Activities
- D. Sampling Requirements
- E. Documentation

Task 15: Reports

- A. Progress
- B. Draft
- C. Final

TASK 12: CORRECTIVE MEASURE IMPLEMENTATION PROGRAM PLAN

U.S. DOE or its agent(s) shall prepare a Corrective Measure Implementation Program Plan. This program will include the development and implementation of several plans, which require concurrent preparation. It may be necessary to revise plans as the work is performed to focus efforts on a particular problem. The Program Plan includes the following:

A. Program Management Plan

U.S. DOE or its agent(s) shall prepare a Program Management Plan which will document the overall management strategy for performing the design, construction, operation, maintenance and monitoring corrective measure(s). The plan shall document the responsibility and authority of all organizations and key personnel involved with the implementation. The Program Management Plan will also include a description of qualifications of key personnel directing the Corrective Measure Implementation Program, including contractor personnel.

B. Community Relations Plan

U.S. DOE or its agent(s) shall revise the Community Relations Plan to include any changes in the level of concern of information need to the community during design and construction activities.

1. Specific activities which must be conducted during the design stage are the following:
 - a. Revise the facility Community Relations Plan to reflect knowledge of citizen concerns and involvement at this stage of the process; and
 - b. Prepare and distribute a public notice and updated fact sheet at the completion of engineering design.
2. Depending on the level of citizen interest at a facility during the construction phase of the corrective action process, community relation activities could range from group meeting to fact sheets on the technical status.

TASK 13: CORRECTIVE MEASURE DESIGN

U.S. DOE or its agent(s) shall prepare final construction plans and specifications to implement the corrective measure(s) at the facility as defined in the Corrective Measure Study.

A. Design Plans and Specifications

U.S. DOE or its agent(s) shall develop clear and comprehensive design plans and specifications which 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; and
 - b. Minimization of environmental and public impacts.
2. Discussion of the technical factors of importance, including:
 - a. Use of currently accepted environmental control measures and technology;
 - b. The constructability of the design; and
 - c. Use of currently acceptable construction practices and techniques.
3. Description of assumptions made and detailed justification of these assumptions.
4. Discussion of the possible sources of error and references to possible operation and maintenance problems.
5. Detailed drawings of the proposed design, including:
 - a. Qualitative flow sheets; and
 - b. Quantitative flow sheets.
6. Tables listing equipment and specifications.
7. Tables giving material and energy balances.
8. Appendices, including:
 - a. Sample calculations (one example presented and explained clearly for each type of calculation);
 - b. Derivation of equations essential to understanding the report; and
 - c. Results of laboratory or field tests.

B. Operation and Maintenance Plan

U.S. DOE or its agent(s) shall prepare and Operation and Maintenance Plan to cover both implementation and long term maintenance of the corrective measure. The plan shall be composed of the following elements:

1. Description of normal operation and maintenance (O&M), including:
 - a. Description of tasks for operation;

- b. Description of tasks for maintenance;
 - c. Description of prescribed treatment or operation conditions; and
 - d. Schedule showing frequency of each O&M task.
2. Description of potential operating problems, including:
 - a. Description and analysis of potential operation problems;
 - b. Sources of information regarding problems; and
 - c. Common and/or anticipated remedies.
 3. Description of routine monitoring and laboratory testing, including:
 - 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 alternate O&M, including:
 - a. Should systems fail, alternate procedures to prevent undue hazard; and
 - b. Analysis of vulnerability and additional resource requirements should a failure occur.
 5. Safety plan, including:
 - a. Description of precautions, of necessary equipment, etc., for site personnel; and
 - b. Safety tasks required in event of systems failure.
 6. Description of equipment, including:
 - a. Equipment identification;
 - b. Installation of monitoring components;
 - c. Maintenance of site equipment; and
 - d. Replacement schedule for equipment and installed components.

7. Records and reporting mechanisms required, including:
 - a. Daily operating logs;
 - b. Laboratory records;
 - c. Records for operating costs;
 - d. Mechanism for reporting emergencies;
 - e. Personnel and maintenance records; and
 - f. Monthly/annual reports to State agencies.

An initial Draft Operation and Maintenance Plan shall be submitted simultaneously with the Prefinal Design Documents submission and the Final Operation and Maintenance Plan with the Final Design Documents.

C. Cost Estimate

U.S. DOE or its agent(s) shall develop cost estimates for the purpose of assuring that the facility has the financial resources necessary to construct and implement the corrective measure. The cost estimate developed in the Corrective Measure Study shall be refined to reflect the more detailed/accurate design plans and specifications being developed. The cost estimate shall include both capital and operation and maintenance.

D. Construction Quality Assurance Objectives

U.S. DOE or its agent(s) shall identify and document the objectives and framework for the development of a construction, quality assurance program including, but not limited to the following: responsibility and authority, personnel qualifications, inspection activities, sampling requirements, and documentation.

E. Health and Safety Plan

U.S. DOE or its agent(s) shall modify the Health and Safety Plan developed for the RCRA Facility Investigation to address the activities to be performed at the facility to implement the corrective measure(s).

F. Design Phases

1. Preliminary design

U.S. DOE or its agent(s) shall submit the Preliminary design when the design effort is approximately 30% complete. At this stage U.S. DOE or its agent(s) shall have field verified the existing conditions of the facility. The preliminary design shall reflect a level of effort such that technical requirements of the project have been addressed and outlined so they may be reviewed to determine if the final design

will provide an operable and usable corrective measure. Supporting data and documentation shall be provided with the design documents defining the functional aspects of the program. The preliminary construction drawings by the Respondent or its agent(s) shall reflect organization and clarity. The scope of the technical specifications shall be outlined in a manner reflecting the final specifications. U.S. DOE or its agent(s) shall include with the preliminary submission design calculations reflecting the same percentage of completion as the designs they support.

2. Intermediate design

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

3. Correlating plans and specifications

General correlation between drawings and technical specifications, is a basic requirement of any set of working construction plans and specifications. Before submitting the project specifications U.S. DOE or its agent(s) shall:

- a. Coordinate and cross-check the specifications and drawings;
- b. Complete the proofing of the edited specifications and required cross-checking of all drawings and specifications.

These activities shall be completed prior to the 95% prefinal submittal to this Agency.

4. Equipment start-up and operator training

U.S. DOE or its agent(s) shall prepare, and include in the technical specification governing treatment systems, contractor requirements for providing: appropriate service visits by experienced personnel to supervise the installation, adjustment, startup and operation of the treatment systems, and training covering appropriate operational procedures once the startup has been successfully accomplished.

5. Additional studies

Corrective Measure Implementation may require additional studies to supplement the available technical data. At the direction of the Agency for any such studies required, U.S. DOE or its agent(s) shall furnish all services, including field work as required, materials, supplies, plant, labor equipment, investigations, studies and superintendence. Sufficient sampling, testing and analysis shall be performed to optimize the required treatment and/or disposal operations and system. There shall be an initial meeting of all

principal personnel involved in the development of the program. The purpose will be to discuss objectives, resources, communication channels, role of personnel involved and orientation of the site, etc. The interim report shall present the results of the testing with the recommended treatment of disposal system (including options). A review conference shall be scheduled after the interim report has been reviewed by all interested parties. The final report of the testing shall include all data taken during the testing and summary of the results of the studies.

6. Prefinal and final design

U.S. DOE or its agent(s) shall submit the prefinal/Final design documents in two parts. The first submission shall be at 95% completion of design (i.e., prefinal). After approval of the prefinal submission, U.S. DOE or its agent(s) shall execute the required revisions and submit the final documents 100% complete with reproducible drawings and specifications.

The prefinal design submittal shall consist of the Design Plans and Specifications, Operation and Maintenance Plan, capital and Operating and Maintenance Cost Estimate, Quality Assurance Plan and Specifications for the Health and Safety Plan.

The final design submittal shall consist of the Final Design Plans and Specifications (100% complete), Final Construction Cost Estimate, Final Draft Operation and Maintenance Plan, Final Quality Assurance Plan, and Final Health and Safety Plan specifications. The quality of the design documents should be such that U.S. DOE or its agent(s) would be able to include them in a bid package and invite contractors to submit bids for the construction project.

TASK 14: CORRECTIVE MEASURE CONSTRUCTION

Following U.S. EPA approval of the final design, U.S. DOE or its agent(s) shall develop and implement a construction quality assurance (CQA) program to ensure, with a reasonable degree of certainty, that a completed corrective measure(s) meets or exceeds all design criteria, plans and specifications. The CQA plan is facility specific document which must be submitted to the Agency for approval prior to the start of construction. At a minimum, the CQA plan should include the elements which are summarized below.

A. Responsibility and Authority

The responsibility and authority of all organizations (i.e., technical consultants, construction firms, etc.) and key personnel involved in the CQA plan and the necessary supporting inspection staff.

B. Inspection Activities

The observation and tests that will be used to monitor the construction and/or installation of the components of the corrective measure(s) shall

be summarized in the CQA plan. The plan shall include the scope and frequency of each type of inspection. Inspections shall verify compliance with all environmental requirements and include, but not be limited to air quality emissions monitoring records, waste disposal records (e.g., RCRA transportation manifests), etc. The inspection should also ensure compliance with all health and safety procedures. In addition to oversight inspections, U.S. DOE or its agent(s) shall conduct the following activities.

1. Preconstruction inspection and meeting

U.S. DOE or its agent(s) 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 CQA 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. Prefinal inspection

Upon preliminary project completion, U.S. DOE or its agent(s) shall notify U.S. EPA for the purposes of conducting a prefinal inspection. The prefinal inspection will consist of a walk-through inspection of the entire project site. The inspection is to determine whether the project is complete and consistent with the contract documents and the U.S. EPA-approved corrective measure. Any outstanding construction items discovered during the inspection will be identified and noted. Additionally, treatment equipment will be operationally tested by U.S. DOE or its agent(s). U.S. DOE or its agent(s) will certify that the equipment has performed to meet the purpose and intent of the specifications. Retesting will be completed where deficiencies are revealed. The prefinal inspection report should outline the outstanding construction items, actions required to resolve items, completion date for these items, and date for final inspection.

3. Final inspection

Upon completion of any outstanding construction items, U.S. DOE or its agent(s) shall notify U.S. EPA for the purposes of conducting a final

inspection. The final inspection will consist of a walk-through inspection of the project site. The prefinal inspection report will be used as a checklist with the final inspection focusing on the outstanding construction items identified in the prefinal inspection. Confirmation shall be made that outstanding items have been resolved.

D. Sampling Requirements

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

E. Documentation

Reporting requirements for CQA activities shall be described in detail in the CQA plan. This should include such items as daily summary reports, inspection data sheets, problem identification and corrective measures reports, design acceptance reports, and final documentation. Provisions for the final storage of all records should also be presented in the CQA plan.

TASK 15: REPORTS

U.S. DOE or its agent(s) shall prepare plan, specifications, and reports as set forth in Tasks 12 through 15 to document the design, construction, operation, maintenance, and monitoring of the corrective measure. The documentation shall include, but not be limited to the following:

A. Progress

U.S. DOE or its agent(s) shall at a minimum provide U.S. EPA with signed, monthly progress reports containing:

1. An estimate of the percentage of projects completed;
2. Summaries of all change orders and claims made on the program during the reporting period;
3. Summaries of all contracts with representatives of the local community public interest groups or State government during the reporting period;
4. Summaries of all problems or potential problems encountered during the reporting period;
5. Projected work for the next reporting period; and
6. Copies of daily reports, change orders, inspection reports, laboratory/monitoring data, etc.

B. Draft

1. U.S. DOE or its agent(s) shall submit a draft Corrective Measure Implementation Program Plan as outlined in Task 12.
2. U.S. DOE or its agent(s) shall submit Construction Plans and Specifications, Design Reports, and Study Reports as outlined in Task 13;
3. U.S. DOE or its agent(s) shall submit a draft Construction Quality Assurance Program Plan and Documentation as outlined in Task 14; and
4. At the "completion" of the construction of the project, Portsmouth Uranium Enrichment Complex shall submit a Corrective Measure Implementation Report to both the U.S. EPA and OEPA. The Report shall document that the report is consistent with the design specifications, and that the corrective measure is performing adequately. The Report shall include, but not be limited to the following elements:
 - a. Synopsis of the corrective measure and certification of design and construction;
 - b. Explanation of any modifications to the plans and why these were necessary of the project;
 - c. Listing of the criteria established before the corrective measure was initiated, for judging the functioning of the corrective measure and also explaining any modification to these criteria;
 - d. Results of facility monitoring, indicating that the corrective measure will meet or exceed the performance criteria; and
 - e. Explanation of the operation and maintenance (including monitoring) to be undertaken at the facility.

This report should include problem identification and corrective measure reports, block evaluation reports, photographic reporting data sheets, design engineers' acceptance reports, deviations from design and material specifications (with justifying documentation) and as-built drawings.

C. Final

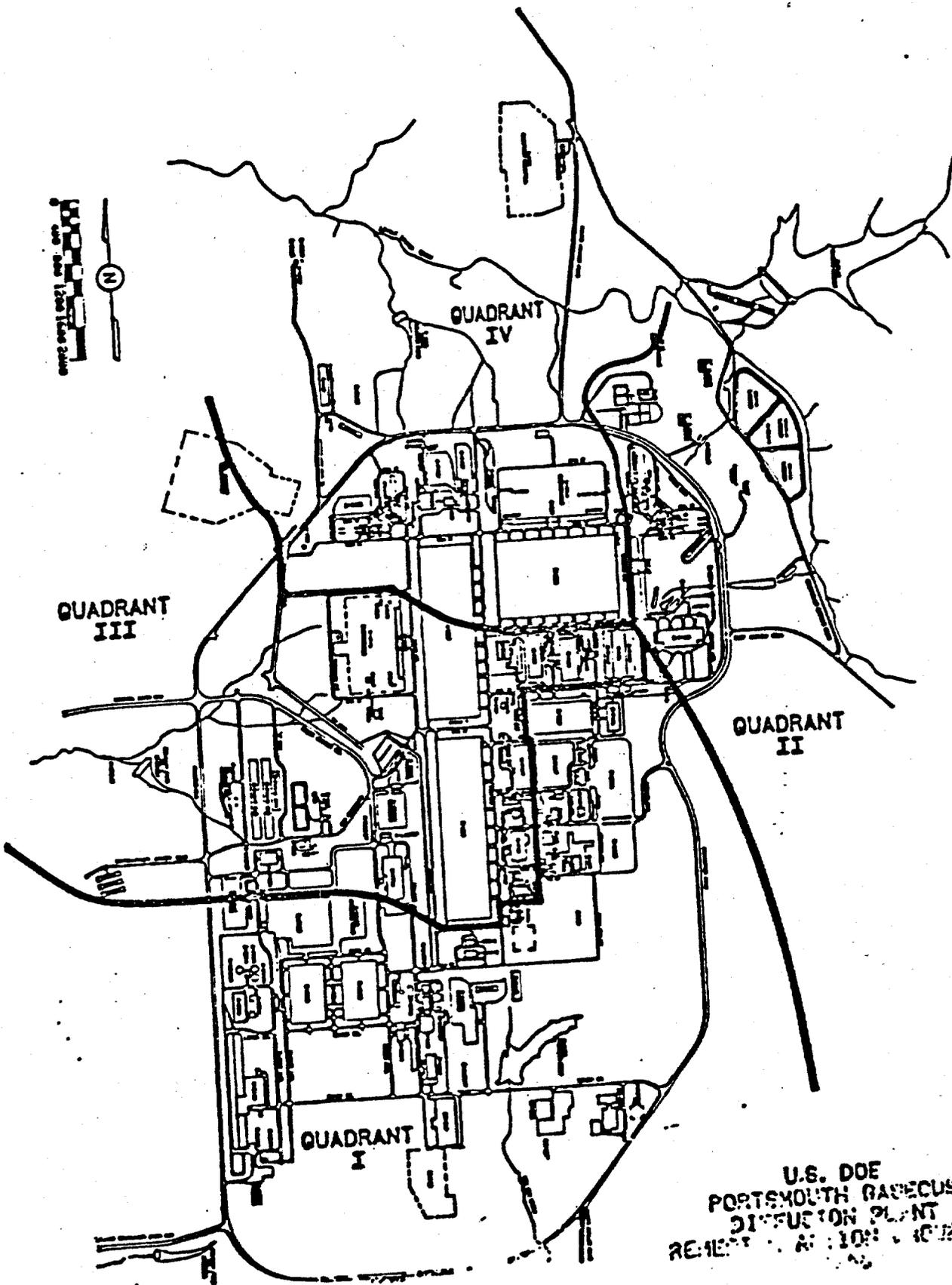
U.S. DOE or its agent(s) shall finalize the Corrective Measure Implementation Program Plan, Construction Plans and specifications, Design Reports, Study Reports, Construction Quality Assurance Program Plan/Documentation and the Corrective Measure Implementation Report incorporating comments received on draft submissions.

Facility Submission Summary

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

Facility Submission	Due Date
Progress Reports Tasks 12, 13, 14	Monthly
Quadrant I CMI Workplan (Tasks 12, 13, 14)	45 days after U.S. EPA approval of Quadrant I Final CMS Report
Quadrant II CMI Workplan (Tasks 4 and 5)	45 days after U.S. EPA approval of Quadrant II Final CMS Report
Quadrant III CMI Workplan (Tasks 12, 13, 14)	45 days after U.S. EPA approval of Quadrant III Final CMS Report
Quadrant IV CMI Workplan (Tasks 12, 13, 14)	45 days after U.S. EPA approval of Quadrant IV Final CMS Report

ATTACHMENT IV



U.S. DOE
PORTSMOUTH GASCOIS
DIFFUSION PLANT
REHEAT & ACTION GROUP