UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

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| IN THE MATTER OF:<br><br>Western New York Nuclear Service Center<br><br>New York State Energy Research Development Authority, EPA ID Number NYD986905545;<br><br>U.S. Department of Energy, EPA ID Number NYD 980779540<br><br>RESPONDENTS | ADMINISTRATIVE ORDER ON CONSENT<br><br>DOCKET No. II RCRA-3008(h)-92-0202<br><br>Proceeding under Section 3008(h), of the Resource Conservation and Recovery Act, as amended. |

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## I. Preliminary Statement

This Administrative Order on Consent ("Order") is being issued on consent to New York State Energy Research and Development Authority ("NYSERDA"), and the United States Department of Energy ("DOE"), (which hereinafter may be collectively referred to as "Respondent" or "Respondents") pursuant to the Resource Conservation and Recovery Act of 1976, ("RCRA") as amended by the Hazardous and Solid Waste Amendments of 1984, ("HSWA") codified at 42 U.S.C. § 6901 et. seq., ("the Act") and the New York State Environmental Conservation Law ("ECL") Article 27, Titles 9 and 13 and §§ 71-2727 and 3-0301.

Section 71-2727 of the ECL authorizes the Commissioner of the New York State Department of Environmental Conservation ("NYSDEC") to issue orders requiring corrective action. Such orders may require corrective action beyond the facility boundary when necessary to protect human health and the environment. Such orders may issue for any and all releases of hazardous waste or hazardous constituents from any solid waste management unit at any treatment, storage or disposal facility which has interim status regardless of the time at which waste was placed in the unit.

Section 3008(h) of the Act, 42 U.S.C. § 6928(h), authorizes the Administrator of the United States Environmental Protection Agency ("EPA") to issue an order requiring corrective action or such other response which he deems necessary to protect human health or the environment, if, on the basis of any information,

he determines that there is or has been a release of hazardous waste or hazardous constituents into the environment from a facility that is or was authorized to operate under Section 3005(e) of the Act, 42 U.S.C. § 6925(e). The authority vested in the Administrator has been delegated to the Regional Administrators by EPA Delegation Number 8-31, dated April 16, 1985. This authority has been further delegated by the Regional Administrator of EPA, Region II, to the Director of the Air and Waste Management Division of EPA, Region II, by Region II Delegation Number 8-32, effective July 1, 1987.

## II. Parties Bound

1. This Order, and the responsibilities and obligations it imposes, shall apply to and bind the Respondent, its present and future officers, directors, officials, employees, agents, trustees, receivers, successors, assigns, and all other persons including, but not limited to, firms, corporations, parent companies, contractors, independent contractors, subcontractors, or consultants who act for, are owned by, or are in an agency relationship with the Respondent, and who conduct, monitor or perform any work pursuant to or required by this Order.

2. Regardless of Respondent's employ of, or contractual agreement with, any entity named in paragraph 1 of this section, the Respondent remains ultimately liable for failure to carry out, or comply with, any term or condition imposed by this Order.

3. All contractual agreements entered into by Respondent aimed at satisfying its responsibilities or obligations under

this Order shall strictly comply with the terms and conditions of this Order. In addition, Respondent shall, within one week of the effective date of this order and immediately, upon hiring, provide a copy of this Order, and any relevant attachments, to all contractors, subcontractors, laboratories, consultants, or any entity retained to conduct, monitor or perform any work pursuant to this Order.

4. Respondent shall give notice, and a copy, of this Order to any successor in interest prior to any transfer of ownership or operation of the Facility (as defined in Section IV below) and shall notify EPA's designated contact thirty (30) days prior to any such transfer.

5. No change in the Respondent's organizational form or in the ownership of the Facility, except as specifically provided for by an act of Congress or the New York State Legislature, shall in any way alter or alleviate Respondent's responsibility and obligation to carry out all the terms and conditions of this Order.

## III. Statement of Purpose

1. This Order is being issued to protect human health and the environment from releases of hazardous waste and/or hazardous constituents, as defined by Section 1004(5) of the Act, 42 U.S.C. § 6903(5), 40 C.F.R. Part 261.3, ECL § 27-0901(3), and 6 NYCRR Part 371 and 40 C.F.R. Part 261 Appendix VIII, and 6 NYCRR Part 371, Appendix 23, at or from Respondent's Facility.

2. To achieve this purpose, DOE and NYSERDA shall, among other things: (a) perform Interim Measures ("IM") at the Facility to reduce or eliminate any threats to human health or the environment; (b) perform a RCRA Facility Investigation ("RFI") to determine fully the nature and extent of any release(s) of hazardous waste and/or hazardous constituents from the Facility into the environment; and (c) if any releases exceed action limits set by the EPA consistent with applicable law and applicable guidance, or agreed upon by the Parties (including Respondents and EPA) to reduce or eliminate any threats to human health or the environment, perform a Corrective Measures Study ("CMS") to determine the most environmentally beneficial corrective measure(s) for each solid waste management unit.

## IV. Findings of Fact

1. History of Site Operations:

a) In 1962, Nuclear Fuel Services, Inc. ("NFS") entered into Agreements with the Atomic Energy Commission and New York State to construct the first commercial reprocessing plant of nuclear fuel in the United States. The NFS reprocessing facility was located on state-owned property known as the Western New York Nuclear Service Center ("Center"). A provisional operating license for the Center was issued to the Center by the Atomic Energy Commission on April 19, 1966.

b) From 1966 to 1972, the Center was the location of the only commercial nuclear fuel reprocessing facility ever operated in the United States. As a result of this operation, nearly 600,000 gallons of high level liquid nuclear waste, a by-product of reprocessing, was produced and a part of which remains in underground storage tanks at the Center as of the date of this Order.

c) In 1972, the NFS Reprocessing plant was shut down for modifications to increase capacity. In 1976 NFS withdrew from the reprocessing business and the plant never reopened.

2. Legislative History:

a) In 1980, Congress passed the West Valley Demonstration Project Act ("WVDP Act"), Public Law 96-368, directing DOE in cooperation with the State of New York to carry out a high level radioactive waste management demonstration project at the Center for the purpose of demonstrating solidification techniques for preparing high level radioactive waste for disposal.

b) Under the WVDP Act, DOE is mandated, in part, to dispose of low-level and transuranic waste produced by WVDP activities, decontaminate

and decommission the tanks in which the high level waste was stored as well as the facilities, hardware and material used in the WVDP.

c) Effective October 1, 1980, DOE, on behalf of the United States of America, and NYSERDA, on behalf of the State of New York, entered into a Cooperative Agreement to establish a framework for the implementation of the WVDP Act by DOE and NYSERDA.

d) On September 30, 1981, the Nuclear Regulatory Commission ("NRC") issued an amendment to the Facility license which permitted transfer of the Facility to DOE for the purpose of carrying out the WVDP (46 Fed. Reg. 49237). In 1982 NYSERDA became the exclusive licensee, but presently lacks authority under the license to possess, use, or operate the Facility on WVDP premises or on the Center. NYSERDA's authority for activities with regard to the State Licensed Disposal (Burial) Area ("SDA") is separate from this license.

3. State Authorization:

a) Section 3006(b) of RCRA, 42 U.S.C. § 6926(b), permits the Administrator of the EPA to authorize a state to operate a hazardous waste program. New York State Department of Environmental Conservation ("NYSDEC") received final authorization to administer the pre-HSWA hazardous waste program as of May 29, 1986 (51 Fed. Reg. 17737 (May 15, 1986)).

b) On September 23, 1988, EPA published a Clarification Notice (53 Fed. Reg. 37045) which stated that "Facilities treating, storing, or disposing of radioactive mixed waste in states that received authorization by September 23, 1988 are not subject to RCRA regulations until the state revises its existing authorized hazardous waste program to include authority to regulate radioactive mixed waste." The State of New York has revised its authorized program as required by the above Notice.

c) In a rule published on March 6, 1990, New York State was authorized to regulate the hazardous waste constituents of radioactive mixed waste, effective May 7, 1990 (55 Fed. Reg. 7896).

4. Owner/Operator:

EPA has determined that Respondent DOE is the operator of the West Valley Demonstration Project ("WVDP") and that Respondent NYSERDA owns the Center and is the operator for all parts of the Center except those parts which are used or are in the possession of DOE as part of the WVDP.

5. Respondent is a "Person":

NYSERDA is a "person" as defined by Section 1004(15) of the Act, 42 U.S.C. § 6905(15) and Title Six (6) New York Codes, Rules and Regulations, Part 370, Section 370.2(b)(102) [6 NYCRR § 370.2(b)]. Pursuant to Section 6001 of the Act, 42 U.S.C. § 6961, DOE is subject to all federal, state, interstate, and local requirements, both substantive and procedural, just as any person is subject to such requirements.

6. Notification:

Pursuant to Section 3010 of the Act, 42 U.S.C. § 6930, on October 17, 1984, Respondent DOE notified EPA of its hazardous waste activity, as that term is defined by Section 1004(5) of the Act, 42 U.S.C. § 6903(5) and requested the issuance of an EPA Hazardous Waste Identification number. On June 5, 1990, Respondent NYSERDA notified EPA of its hazardous waste activity, as that term is defined by Section 1004(5) of the Act, 42 U.S.C. § 6903(5) and requested the issuance of an EPA Hazardous Waste Identification number. In these notifications, Respondent DOE

identified itself as a generator of hazardous waste and an operator of a hazardous waste treatment, storage, and disposal facility; and NYSERDA established itself as the owner of the Center as the term "owner" is used under RCRA. In addition, EPA has determined that NYSERDA is a generator of hazardous waste due to the generation of hazardous waste in the leachate at the SDA.

7. Part A Permit Application:

Pursuant to Section 3005(e) of the Act, 42 U.S.C. § 6925(e), on June 4, 1990, Respondent DOE submitted to EPA and NYSDEC its Part A Hazardous Waste Permit application. Based on Respondent DOE's Part A application, Respondent DOE stores and treats hazardous wastes at its Facility, including storage in containers, storage in tanks, and treatment of the following:

a) D005 (wastes that are EP Toxic for Barium)

b) D006 (wastes that are EP Toxic for Cadmium)

c) D007 (wastes that are EP Toxic for Chromium)

d) D009 (wastes that are EP Toxic for Mercury)

e) D010 (wastes that are EP Toxic for Selenium)

f) D002 (corrosive wastes).

Pursuant to Section 3005(e) of the Act, 42 U.S.C. § 6925(e), on June 5, 1990, Respondent NYSERDA submitted to DEC and EPA its Part A Hazardous Waste Permit application in which NYSERDA asserted that it submitted its application to EPA and NYSDEC as a protective filing. Based on Respondent NYSERDA's Part A application, EPA has determined that Respondent NYSERDA

stores and treats the following hazardous wastes at its Facility:

a) Storage of hazardous wastes (F002, F003, F005, U019, U159, U044, U165, U101, U076, U083, U210, U228, U080, U239, U002, U161, and U188) in tanks;

b) Treatment of hazardous wastes (F002, F003, F005, U019, U159, U044, U165, U101, U076, U083, U210, U228, U080, U239, U002, U161, and U188); and

c) Storage of hazardous wastes in containers.

8. Interim Status:

Pursuant to Section 3005(e) of the Act, 42 U.S.C. and at 40 C.F.R. §§ 270.1(b) and 270.70(a), Respondents DOE and NYSERDA received "interim status" due to timely submission of their:

a) Section 3010 Notification; and

b) Part A of the Permit Application.

Interim status facilities are subject to the regulations promulgated pursuant to Sections 3004 and 3005 of the Act, 42 U.S.C. §§ 6924 and 6925, which are codified in 40 C.F.R. Parts 260 - 265, 268 and 270, and 6 NYCRR Parts 370 - 373.

9. Facility:

a) The Facility subject to this Order includes the Center and consists of approximately

3,300 acres. The Center is owned by NYSERDA and is located in Cattaraugus County, New York State and includes:

(i) the property used for the West Valley Demonstration Project ("WVDP");

(ii) the New York State Low Level Burial (Disposal) Area ("SDA"); and,

(iii) all contiguous land and structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous waste.

b) The WVDP, approximately 200 acres in size and located within the Center, includes all land and improvements utilized as part of the WVDP, including, but not necessarily limited to, the Process Plant and project areas within the perimeter of an eight-foot chain link fence, including the NRC Licensed Burial (Disposal) Area ("NDA") and SWMU 21 (the RTS Drum Cell), but excluding the SDA. The WVDP also includes the following SWMUs listed in Table I, below:

TABLE I

LIST OF INDIVIDUAL SOLID WASTE MANAGEMENT UNITS (SWMU)

SWMU #

1. Construction and Demolition Debris Landfill -

2 NRC-Licensed Disposal Area (NDA) -

3. Lagoon 1 -

4. Active LLWTF Lagoons 2, 3, 4, & 5 -

5. Demineralizer Sludge Ponds (2) -

6. Solvent Dike -

7. Effluent Mixing Basin -

8. Maintenance Shop Leach Field -

9. & 9A. Old/New Hardstand Storage Area -

10. Paper Waste Incinerator -

11.& 11a Kerosene Tanks and NDA Container Storage -

12 & 12a Vitrification Facility Test Waste Storage Tanks

13. High-Level Waste Tank Farm -

14. Chemical Process Cell (CPC) Waste Container Storage Area -

15. Containerized Low-Level and Transuranic Waste Storage Area (Lag Storage 1 & 2)

16 & 16a Lag Storage Building, Extension and Addition Areas (3 & 4) -

17. Low-Level Waste Treatment Facility (LLWTF) -

18. Liquid Waste Treatment System (LWTS) -

19. Supernatant Treatment System (STS) -

20. High-Level Waste Vitrification Facility -

21. Radwaste Treatment System Drum Cell -

22. Cement Solidification System (CSS) -

23. Trench Interceptor Project -

24. Hazardous Waste Storage Lockers (New SWMU) -

c) The SDA comprises approximately 15 acres and is located adjacent to the southeastern boundary of the WVDP. The SDA includes the following SWMUs: 14 Inactive LLRW Disposal Trenches; Inactive Lagoon; Northern Filled Lagoon; Southern Filled Lagoon; and Trench 14 Leachate Treatment Facility.

d) NYSERDA is responsible for maintaining the SDA, including SWMUs SDA-1 through SDA-5, and SWMU 25. (These SWMUs are detailed in Table II, below). DOE is responsible for the WVDP. The maps appended to this Order in Attachments 3A and B, depict those areas in which DOE and NYSERDA shall conduct the Interim Measures required pursuant to this Order. DOE asserts that it has no authority under the WVDP Act with respect to those portions of the Facility not used pursuant to the WVDP Act and that it does not generally have authority under the WVDP Act for disposition of facilities beyond the WVDP.

TABLE II

LIST OF NON-WVDP SOLID WASTE MANAGEMENT UNITS (SWMUs)

| SWMU# | |
|---|---|
| SDA-1 | 14 Inactive LLRW Disposal Trenches |
| SDA-2 | Inactive Lagoon |

SDA-3 Northern Filled Lagoon

SDA-4 Southern Filled Lagoon

SDA-5 Trench 14 Leachate Treatment Facility

25 Inactive Scrap Material Landfill Adjacent to Bulk Storage Warehouse

10. Documentation of Release:

a) Information supplied by DOE concerning sampling of groundwater monitoring wells in 1983-1989 in the NDA revealed the presence of a mixed petroleum hydrocarbon solvent (C-10 to C-16) contaminated with radionuclides. A record review indicates that this solvent is either "AMSCO Odorless Mineral Spirits" or "ADAKANE-12," which were used as diluents in the fuel recycling process by Nuclear Fuel Services from 1966-1971. These products contain a small percentage of aromatic components, including the hazardous constituent Naphthalene.

b) Information supplied by DOE and NYSERDA concerning sampling of leachate from Trench #14 in the SDA revealed the presence of certain organic constituents mixed with radionuclides. These organic chemicals include the following twenty-two (22), identifiable organic compounds which are

hazardous constituents and may constitute listed hazardous wastes (the concentration levels at which they have been found is also indicated below:)

| Compound (parts per billion) | 1984 | 1989 (Average) |
|---|---|---|
| Methylene chloride | 390 | 2850 |
| 1,1 Dichloroethane | ND | 370 |
| Chloroform | 65 | 443 |
| 1,2 Dichloropropane | ND | 62 |
| Trichloroethene | ND | 25 |
| Benzene | ND | 450 |
| 2-Hexanone | ND | 41 |
| 4-Methyl-2-Pentanone | ND | 41 |
| Tetrachloroethane | ND | 27 |
| Toluene | 750 | 28000 |
| Ethylbenzene | ND | 770 |
| 2-Butanone | ND | 777 |
| Acetone | ND | 4825 |
| Vinyl Acetate | ND | 370 |
| Xylene | 40 | 725 |
| Phenol | <1 | 420 |
| Naphtalene | 400 | 140 |

| | | |
|---|---|---|
| Benzyl Alcohol | <2 | 16 |
| 4-Methylphenol | <1 | 425 |
| 2,4-Dimethylphenol | <1 | 37 |
| Benzoic Acid | <10 | 425 |
| Toxaphene | <18 | <1 |

11. Exposure Pathways:

Hazardous wastes and/or hazardous constituents may migrate from units at the Facility into the environment via the following pathways:

a) Groundwater: either discharges directly or indirectly through surface waters.
   (i) Hazardous wastes and/or hazardous constituents have been detected in the groundwater and SDA leachate.
   (ii) There is the potential for the movement of hazardous wastes and/or hazardous constituents beyond the Facility's boundaries.

b) Soils: Soils containing hazardous wastes and/or hazardous constituents are contained in some of the SWMUs at the Facility. Hazardous waste in soil may be directly and/or indirectly ingested, leached into groundwater, transported by runoff, or blown by wind.

c) Surface Water and Sediment: Sludges and liquids containing permissible levels of hazardous wastes and/or hazardous constituents have been released directly into the streams and/or drainage channels under a State Pollution Discharge Elimination System ("SPDES") Permit. These stream courses may potentially receive hazardous wastes and/or hazardous constituents as a result of surface runoff from contaminated soils and discharge from contaminated groundwater.

d) Air: Air currents can suspend fine, silt-sized particles along with hazardous wastes and/or hazardous constituents in the air and transport them to areas beyond the Facility's boundaries.

12. Need to Protect Human Health and Environment:

a) The following hazardous wastes and/or hazardous constituents have been detected in groundwater or SDA leachate at the Facility.

i) Benzene

ii) Toluene

iii) Chloroform

iv) Methylene Chloride

v) Naphthalene

vi) Phenol

vii) Tetrachloroethane

b) On December 30, 1988, DOE published a Notice of Intent to prepare an Environmental Impact Statement ("EIS") jointly with NYSERDA for "Completion of the West Valley Demonstration Project Activities and Closure of the Western New York Nuclear Service Center." (53 Fed. Reg. 53052). The EIS is to provide environmental information for consideration in federal and NYSERDA decision-making related to WVDP completion activities by DOE, and the closure of the Center by NYSERDA.

c) DOE and NYSERDA have indicated their desire to coordinate and integrate the requirements of this Order with the development of the EIS.

d) EPA and NYSDEC intend to accommodate the DOE and NYSERDA's efforts to coordinate and integrate the EIS process described above, with the work required under this Order to the extent EPA and NYSDEC deem such coordination and integration to be consistent with applicable regulations and the protection of human health and the environment and such coordination and integration do not unduly delay the

completion of the work required under this Order.

## V. Conclusions of Law

Based on the Findings of Fact set out above, and the administrative record, the Director of the Air and Waste Management Division, EPA Region II, has determined, and the Commissioner of NYSDEC has concurred, as a matter of law, that:

1. The Facility (as defined in Section IV, Subsection 9, above) is authorized to operate under Section 3005(e), 42 U.S.C. § 6925(e).

2. Respondent DOE is the operator of the WVDP portion of the Facility. Pursuant to Section 6001, 42 U.S.C. § 6961, DOE is subject to all applicable hazardous waste requirements to the same extent as any "person" as defined in Section 1004(15) of the Act, 42 U.S.C. § 6903(15).

3. Respondent NYSERDA is the owner of the Facility as owner is defined under RCRA.

4 Respondent NYSERDA is the operator of the SDA portion of the Facility.

5. Certain wastes found at the Facility are hazardous wastes and/or hazardous constituents as those terms are defined by Section 1004(5) of the Act, 42 U.S.C. § 6903(5) and 40 C.F.R. Part 261.

6. There is or has been a release of hazardous waste(s) and/or hazardous constituents into the environment from the Facility; and

7. The actions required to be taken pursuant to this Order are deemed to be necessary to protect human health and/or the environment.

VI. Order: Work To Be Performed by DOE AND NYSERDA

1. DOE and NYSERDA shall implement the RCRA Facility Investigation ("RFI") set forth in Attachment I to this Order.

2. The Respondents shall undertake and complete the RFI for the Facility and shall evaluate the potential for releases from 1) all SWMUs identified in Tables I and II, above, and 2) any additional SWMUs discovered during the course of groundwater monitoring, field investigations, environmental audits, or other means. This RFI program shall be implemented in accordance with the Act, its implementing regulations and relevant EPA guidance documents, submitted to Respondents in a timely manner. Schedules contained in this Order establishing work-related deadlines which are expressed in terms of "days," shall refer to calendar days. Deadlines falling on federal holidays or weekends shall be understood to extend to the first subsequent business day.

3. Assessment of Newly Identified SWMUs:

a) The Respondents shall notify the EPA and NYSDEC in writing, of any additional SWMUs discovered during the course of groundwater monitoring, field investigations, environmental audits, or other means within 15 days of discovery.

b) Within sixty (60) days from notification of the EPA and NYSDEC, the Respondents shall prepare a SWMU assessment plan and a proposed schedule of implementation and completion for any additional SWMU which is discovered subsequent to the issuance of this Order and is known or suspected to have releases of hazardous waste or releases of hazardous constituents to the environment. The plan shall include methods and specific actions as necessary to determine whether a prior or continuing release of hazardous waste or hazardous constituents has occurred at each SWMU. The plan must also include, at a minimum, the following information for each unit:

(i) Type of unit;

(ii) Location of each unit on a topographic map of appropriate scale;

(iii) Dimensions and capacities;

(iv) Function of unit;

(v) Dates that the unit was operated;

(vi) Description of the wastes that were placed in the unit; and

(vii) Description of any known releases or spills (to include groundwater data,

soil analyses, and/or surface water data).

4. The Respondents may, at their option, combine two or more units into a common RFI or CMS with concurrent investigations, studies, and remedial actions and a single set of reports. The Respondents may also conduct the RFI in a phased approach (e.g., conducting soils investigation after ground water investigations) provided that the entire investigation is completed in accordance with the schedules contained in this Order and its Attachments.

5. RCRA Facility Investigation ("RFI"):

a) RFI Workplan for known SWMUs.

(i) Within sixty (60) days after the effective date of this Order, the Respondent shall prepare an RFI Workplan for all SWMUs identified in Tables I and II.

(ii) This RFI Workplan shall include schedules of implementation and completion of specific actions necessary to determine the nature and extent of releases and the potential pathways of contaminant releases to the air, land, subsurface gas, surface water, and ground water. The Respondents shall, at a minimum, characterize releases from

those units, to the specific media of concern at each unit.

b) RFI Workplan for New SWMUs.

Within ninety (90) days after completion of the assessment of newly identified SWMUs described above, the Respondents shall prepare and submit to the EPA and NYSDEC, a RFI workplan which includes schedules of implementation and completion of specific actions necessary to determine the nature and extent of releases indicated by the assessment, and the potential pathways of contaminant releases to the environment. The Respondents must provide documentation that a release has not occurred and is not likely to occur if a newly identified SWMU is not included in this RFI workplan.

c) Scope of Work.

(i) General Requirements. The RFI Workplans required above, shall at a minimum, address the requirements of the Scope of Work included as Attachment I to this Order. The RFI shall be conducted in accordance with the approved RFI Workplan. The Respondents shall provide written justification for any omissions

or deviations from the minimum requirements of Attachment I.

d) Approval of Plans and Schedules. All future plans and schedules not initiated on the effective date of this Order shall be subject to approval of the EPA prior to implementation. The Respondents shall revise all submittals and schedules as specified by the EPA.

e) Submittal of Plans and Reports. The results of all plans and reports shall be submitted in accordance with the approved schedule. Extensions of the due date for submittals may be granted by the EPA Project Coordinator based on the Respondents' demonstration that sufficient justification for the extension exists.

f) Progress Reports. The Respondents shall submit quarterly progress reports to EPA and NYSDEC until termination of this Order. The Respondents shall submit quarterly reports to EPA within forty five (45) days following the end of a quarter. For the purposes of this Order, quarterly reporting periods are defined as follows:

October 1 to December 31- First (1st) Quarter

January 1 to March 31 - Second (2nd) Quarter
April 1 to June 30 - Third (3rd) Quarter
July 1 to September 30 - Fourth (4th) Quarter

g) Imminent Hazard Report. The Respondents shall immediately notify EPA and NYSDEC orally of any imminent or existing hazard to public health or the environment from the present or past release of hazardous constituents. This oral report shall be followed up with a written report within 14 days, summarizing the immediacy and magnitude of the potential threat to human health and the environment.

h) RFI Report. The Respondents shall submit the RFI Report to the EPA in accordance with the schedule contained in the approved RFI Workplan. The RFI Report shall be developed in draft form for EPA and NYSDEC review. The RFI Report shall be developed in final form within sixty (60) days of receipt of the EPA's comments on the draft RFI Report. The RFI Report shall be prepared in accordance with the applicable specifications and schedules contained in the Scope of Work included as Attachment I to this Order.

i) Previously Submitted Information. If any items required by this Order or by the attached Scope of Work have previously been submitted or completed, it shall be so stated in the RFI Workplan. For these items, the RFI Workplan shall include the following information:

(i) A description of the items previously submitted and/or a summary of the previously completed investigations;

(ii) The date(s) of submission and/or completion; and

(iii) Any known changes or new information developed since the previous submission and/or completion.

The EPA will determine the extent to which prior submissions and/or completions satisfy specific items required by this Order and reserves the right to require the resubmittal and modification of any prior submissions.

6. Corrective Measures Study:

(a) Review of Final RFI Report. The EPA shall review the final reports on the RFI and notify the Respondents of the need for further investigative actions.

(b) Corrective Measures Study ("CMS").

(i) Upon determination by EPA that additional corrective action is needed, the Respondents shall submit to the EPA and NYSDEC, a CMS in accordance with the specifications and schedule contained in the Scope of Work included as Attachment II to this Order. The proposed CMS must include an evaluation and recommendation of corrective action alternatives using technical, human health and environmental criteria, and media protection standards set by EPA.

(ii) The Respondents may, subject to EPA approval, conduct CMS activities related to (a) source control and (b) plume control and recovery as separate and distinct requirements and submit workplans, schedules, and CMS reports accordingly.

(c) Scope of Work.

The RCRA CMS shall, at a minimum, address the requirements of the Scope of Work included as Attachment II to this Order. The Respondents shall provide written justification for any omissions or deviations from the minimum requirements of Attachment II.

(d) Previously Submitted Information.

If any items required by this Order or by the attached Scope of Work have previously been submitted or completed, it shall be so stated in the CMS Report. For these items, the CMS Report shall include the following information:

(i) A description of the items previously submitted and/or a summary of the previously completed investigations;

(ii) The date(s) of submission and/or completion; and

(iii) Any known changes or new information developed since the previous submission and/or completion.

The EPA will determine the extent to which prior submissions and/or completions satisfy specific items required by this Order and reserves the right to require the resubmittal and modification of any prior submissions.

7. Interim Measures:

(a) Interim Measures ("IM") must be designed to mitigate environmental problems that pose a threat to human health and/or the environment. IM may also be required by the EPA in order to prevent the movement of

hazardous waste or hazardous constituents beyond the Facility's boundary or to mitigate the effects of releases, if any, that may have already migrated beyond the Facility's boundary. IM should be designed to be consistent with the anticipated final corrective measures for the Facility. The EPA shall decide if and when IM are required in accordance with the requirements of this Order.

(b) The Respondents shall continue to conduct all existing interim remedial measures that may be specified in any part of this Order. The Respondents shall continue to conduct these existing remedial measures until receiving written notice from the EPA that the existing remedial measures are no longer needed or until such time as the EPA approves modification of the interim remedial measures.

(c) In the event that during, or as a result of, the Remedial Investigation, the Respondents or the EPA determines that newly acquired information indicates an imminent threat to human health and/or the environment, the Respondents shall:

(i) Undertake additional IM as directed by the EPA, to be implemented by the Respondents within a timeframe specified by the EPA; and/or

(ii) Submit a proposal for additional IM to be approved and/or modified by the EPA and implemented within an approved timeframe.

d) **Interim Measures in the NRC-Licensed Disposal Area (NDA):**

(i) Description of Events Leading to Interim Measures:

A record review indicates that Tributyl phosphate (TBP) dissolved in either "AMSCO Mineral Spirits" or "ADAKANE-12" were solvents used by NFS in the solvent extraction phase of reprocessing spent nuclear fuel. A record review indicates that a total of twenty two, one thousand gallon tanks containing the solvent/sorbent material was disposed of episodically between 1968 and 1972 in disposal holes designated "special holes" in the NDA.

In November of 1983, solvent was detected in the NDA area. Following the exhumation of certain tanks in 1986, monitoring results remained static until August, 1988, when

again solvent was discovered in the NDA in a monitoring well downgradient from one of the disposal holes.

(ii) Description of Interim Measures: During investigations in 1989, DOE discovered that water had entered all of the disposal holes which contain solvent disposal tanks. The Parties detected lateral migration of the solvent, and radioactively contaminated groundwater beneath it.

Based upon this discovery and the results of prior efforts to address the solvent migration problem, interim maintenance measures to prevent potential migration to nearby surface waters (Erdman Brook) were deemed necessary by DOE. DOE decided that the installation of an eight hundred and two foot interceptor trench between the boundary of the NDA and Erdman Brook to recover potentially contaminated groundwater was the preferred maintenance measure.

Trenching construction was initiated in January of 1990 and completed in December 1990. Non-contaminated liquid pumped from the trench is routed to temporary holding tanks and then routed to State Pollutant

Discharge Elimination System (SPDES) permitted outfall 001 via the Low Level Waste Treatment Facility (LLWTF). A "pretreatment system" to remove any solvent and radioactive Iodine-129, has been designed and is in final stages of construction. Upon the detection of contaminated groundwater in the trench, the liquids will be processed through the pretreatment system. The pretreated liquids will then be processed to remove low-level radioactive contaminants in the existing LLWTF, and then discharged to Erdman Brook via SPDES permitted Outfall 001. As of July 1, 1991, approximately 355,000 gallons of "trench water," consisting of snow melt and rainwater, collected during the trench construction, and non-contaminated groundwater have been transferred to the LLWTF and then discharged through Outfall 001 to Erdman Brook.

(iii) Interim Measures Workplan.

Within ninety days of the effective date of this Order, an IM Workplan and schedule for the NDA trench project shall be submitted by DOE to the EPA and NYSDEC for approval, consistent with this Order and RCRA. The IM

Workplan shall document specific procedures to be implemented in carrying out the activities summarized in section (d)(ii), above.

The IM Workplan and schedule shall include sufficient information to satisfy the following elements: 1) "IM" objectives; 2) a Health and Safety Plan; 3) a Community Relations Plan; 4) a Data Collection Quality Assurance Plan; 5) a Data Management Plan; 6) Design Plans and Specifications; 7) an Operation and Maintenance Plan; 8) a Project Schedule; 9) "IM" Construction Quality Assurance Plan; and 10) Reporting Requirements.

Interim measures that were begun in January 1990 and which are currently proceeding, shall continue until otherwise directed by the EPA.

IM implementation should in no way interfere with the execution or scheduling of the RFI; however, adjustments to this schedule may be sought, if appropriate, pursuant to the modification provisions of this Order.

(e) **Interim Measures in the State Licensed Disposal Area (SDA):**

(i) Description of Events Leading to Interim Measures:

From 1963 to 1975, the SDA was operated by Nuclear Fuels Services, Inc. as a commercial low level radioactive waste disposal facility. Packaged waste was placed in long trenches excavated in highly impermeable, silty till soil native to the site, and covered with four to eight feet of native soil. Due to the character of the soil and the wet climate, water management problems were experienced from the very early years of operation. Water accumulated in the open uncompleted trenches and in covered completed trenches. Water continued to accumulate in several of the original trenches until March 1975 when it crested the original terrain and began to seep through the cover of two trenches. Redesigning and reworking the covers has thus far reduced but not eliminated the problem of water accumulation in the trenches. In its present condition, the SDA will continue to require active maintenance.

In March 1983, responsibility for management of the SDA was transferred to NYSERDA. As

part of its maintenance of the SDA, NYSERDA monitors the water levels within each of the inactive disposal trenches. The accumulated water must be pumped out of the trenches from time to time and treated, prior to discharge. Accumulated water was last treated and discharged from the SDA in 1981.

One of these trenches, Trench #14, experienced large water infiltration rates due to a previously undiscovered adjacent sand and gravel body. The sand and gravel body was removed and maintenance efforts have greatly reduced the water infiltration rates. The water levels in Trench #14, like those of other trenches, continue to rise. Because the level in Trench #14 is near its historically highest point, the water in the trench needs to be pumped out and treated as soon as possible to minimize the possibility of an uncontrolled untreated release.

(ii) Description of Current and Proposed Activities:

The purpose of this interim measure is to install a system to remove, process, and dispose of water from Trench #14 in the SDA. The system is being installed in two parts.

Initially, NYSERDA will be installing storage capacity sufficient to store 50,000 gallons of untreated water while the treatment system is being designed and constructed. To date, NYSERDA has installed an 8,000 gallon vented storage tank on a concrete pad within a weather protection building and, on March 7, 1991, pumped 7,462 gallons of water from Trench #14 into that tank. NYSERDA is in the process of installing two additional storage tanks with a capacity of 21,000 gallons each. Water from Trench #14 will be pumped into these tanks in the event that further reduction of the water level in the Trench becomes necessary prior to completion of the treatment system. When the treatability study currently being conducted by NYSERDA is completed, a treatment system will be designed and constructed to process approximately 60,000 gallons of water for disposal. Although the treatment process has not yet been determined, it is anticipated that it will include a pre-filter for removal of particulates, followed by a biological, evaporative or UV catalyzed oxidation treatment system for the destruction of

hazardous organic constituents and BOD, ion exchange columns for radionuclide removal and activated carbon columns for polishing. The treated water will be stored in tanks and batch released to Erdman Brook via a SPDES permitted outfall.

(iii) Interim Measures Workplan:

Within ninety days of the effective date of this Order, NYSERDA shall submit to the EPA for approval, an IM Workplan and schedule consistent with this Order and RCRA. The IM Workplan shall document specific procedures to be implemented in carrying out the activities summarized in section (e)(ii), above.

The IM Workplan and schedule shall include sufficient information to satisfy the following elements: 1.) "IM" objectives; 2.) a Health and Safety Plan; 3.) a Community Relation Plan; 4.) a Data Collection Quality Assurance Plan; 5.) a Data Management Plan; 6.) Design Plans and Specifications; 7.) an Operation and Maintenance Plan; 8.) a Project Schedule; 9.) an "IM" Construction Quality Assurance Plan; and 10.) Reporting Requirements.

IM implementation should in no way interfere with the implementation or scheduling of the RFI; however, Respondents may, if appropriate, seek a modification of this schedule pursuant to the modification provisions of this Order.

(f) **Interim Measures Related to detection of 1,1,1-Trichloroethane in Groundwater Seep.**

(i) 1,1,1-Trichloroethane Detection.

Measurable levels of 1,1,1-trichloroethane equal to or less than five micrograms per liter to forty-one micrograms per liter were detected by DOE in or about June, 1990, in samples collected from sample point "WNGSEEP," located outside the WVDP Project Premises security fence.

(ii) Subsequent Investigations.

Further investigations will include:

- o Continuation of non-routine groundwater monitoring in the area;
- o Collection of additional samples in the immediate area of WNGSEEP, to determine the lateral extent of contamination; and,

- Continued development of contour maps for use in identifying potential sources of 1,1,1-trichloroethane.

A full investigation report will be provided by DOE to EPA and NYSDEC no later than ninety days following the effective date of this Order. The report will include procedures employed to ensure data quality, all relevant analytical data, pertinent hydrogeological information, maps depicting sample locations and topography of the area, and other information relative to assessing health risks associated with the release.

If the source of the contamination is determined by EPA to be inside the WVDP portion of the facility, as defined in section IV, subsection 9(b), and as illustrated in the map at Attachment 3A as the area shaded with yellow cross-hatching, DOE shall conduct interim measures relating to 1,1,1-Trichlorethane. If the source of the contamination is determined by EPA to be within any other portion of the facility, as that term is defined in section IV, subsection 9(a), and as illustrated in the map at Attachments 3A and B as the area

shaded with green dots and dashes, NYSERDA shall conduct such interim measures. If EPA is unable to determine the source of the contamination, DOE shall conduct those interim measures necessary to be taken inside the WVDP portion of the facility, and NYSERDA shall conduct those interim measures necessary to be taken within any other portion of the facility until EPA is able to determine the source of the contamination. (This allocation is for the purpose of implementing this Order only and does not affect the resolution of related issues between DOE and NYSERDA. Both parties reserve their rights against each other as indicated in section XV of this Order.) EPA's determinations, as described above, are subject to Dispute Resolution under section XIX of this Order.

(iii) Interim Measures Workplan:

After review of the investigative report, if the EPA determines that interim measures are required, an IM Workplan consistent with this Order and RCRA, shall be submitted to the EPA for approval within 180 days of Respondent's receipt of EPA's written determination. (The

IM Workplan shall be submitted by the party conducting the IM relating to 1,1,1-Trichloroethane.) The IM Workplan and schedule shall include sufficient information to satisfy the following elements: 1). "IM" objectives; 2.) a Health and Safety Plan; 3.) a Community relations Plan; 4.) a Data Collection Quality Assurance Plan; 5.) a Data Management Plan; 6.) Design Plans and Specifications; 7.) an Operation and Maintenance Plan; 8.) a Project Schedule; 9.) "IM" Construction Quality Assurance Plan; and 10.) Reporting Requirements.

Upon receipt of written approval from EPA, the IM Workplan and schedule shall be implemented in accordance with the requirements and schedules contained therein. IM implementation should in no way interfere with the execution or scheduling of the RFI; however, an adjustment to this schedule, if appropriate, pursuant to the modification provisions of this Order may be sought.

g) **Unexpected Threats.**

(i) In the event Respondents become aware of existing information or identify new or additional information concerning an

unexpected threat or potential threat to human health or the environment at or near the facility, Respondents shall notify EPA and NYSDEC as described in section X, below. Within thirty (30) calendar days of notifying EPA and NYSDEC, Respondents shall submit to EPA for approval an IM Workplan that identifies the proposed IM which will be taken to prevent or mitigate this threat or potential threat to human health and/or the environment which are consistent with, and can be integrated into, any long term remediation at the Facility.

(ii) The IM Workplan shall be developed in a manner consistent with this Order and the Act. The IM Workplan shall document the procedures to be implemented by the Respondents.

(iii) The IM Workplan shall include: 1) "IM" Objectives; 2) a Health and Safety Plan; 3) a Community Relations Plan; 4) a Data Collection Quality Assurance Plan; 5) a Data Management Plan; 6) Design Plans and Specification; 7) an Operation and

Maintenance Plan; 8) a Project Schedule; 9) an "IM" Construction Quality Assurance Plan; and 10) Reporting Requirements.

(iv) Upon receipt of written approval from EPA, Respondents shall implement the IM Workplan in accordance with the requirements and schedules contained therein. IM implementation should in no way interfere with the implementation or scheduling of the RFI; however, Respondents may, if appropriate, seek a modification of this scheduling pursuant to the modification provisions of this Order.

(v) Environmental emergency situations may arise which require the Respondents to immediately implement necessary actions to mitigate any such emergencies. All emergencies and any situations arising from such emergencies must be dealt with pursuant to Section VIII of this Order.

8. Coordination of Activities:

a) DOE and NYSERDA will jointly conduct the RFI and CMS required under this Order. DOE and

NYSERDA intend to complete these activities as part of the joint EIS process.

b) DOE will conduct interim measures that are required under this Order with respect to sources of contamination on the WVDP portion of the facility, as defined in section IV, subsection 9(b), and as illustrated in the map at Attachment 3. NYSERDA will conduct interim measures that are required under this Order with respect to sources of contamination on any other portion of the Facility, as that term is defined in section IV, subsection 9(a), and as illustrated in the map at Attachment 3.

c) The allocation set forth in subparagraph (b), above, is for the purpose of implementing this Order only and does not affect the resolution of related issues, including financial issues, between DOE and NYSERDA. Both parties reserve their rights against each other as indicated in section XV of this Order.

9. Schedules:

a) The approved RFI Workplan shall be initiated within one hundred and twenty (120) days of the date this Order is executed by EPA, or in

accordance with the schedule approved by EPA, if a longer timeframe is justified.

b) If the Respondents determine that any investigations required under this Order cannot be completed within the specified period, a request for an extension period, not to exceed three hundred and sixty five (365) days, must be submitted, in writing, to EPA for approval. This request shall be submitted no later than ninety (90) days prior to the originally scheduled completion date and must be accompanied by a Project Progress Summary Report which details all of the investigative work completed to date, the work which still must be accomplished, the factors which have prevented adherence to the specified schedules, and the duration of the specific extension period requested. EPA will notify the Respondents whether the request has been approved, disapproved, or requires modification.

## VII. Additional Work

EPA may determine that work, in addition to that detailed in this Order and Attachments I and II but excluding corrective measures implementation (CMI), is necessary to protect human health and/or the environment. If EPA determines that any such

additional work is necessary, it shall notify the Respondent in writing specifying the basis and reason for EPA's determination and the additional work deemed necessary. Within fifteen (15) days after receipt of any such notice, the Respondent shall be afforded an opportunity to meet with EPA and NYSDEC to discuss the additional work required by EPA. If Respondent disagrees with EPA's determination that additional work is required, it may invoke the dispute resolution procedures as set forth in this Order. Following the conclusion of the dispute resolution procedures set forth in this Order, Respondent shall perform such additional work, if any, including the submission of a workplan, in accordance with the standards, specifications, and schedules deemed necessary and approved by EPA subject to the determinations made in the dispute resolution process. All approved additional work performed by the Respondent pursuant to this paragraph shall be performed subject to, and in a manner consistent with, the terms and conditions of this Order. Any requirements for additional work shall be incorporated into this Order as if fully set forth herein.

## VIII. EMERGENCY PROVISION

1. In the event Respondents identify a current or immediate threat to human health or the environment, the NYSERDA or DOE shall immediately notify EPA and NYSDEC orally and shall notify EPA and NYSDEC in writing within fourteen (14) days of such identification, summarizing the immediacy and magnitude of the potential threats to human health or the environment.

Respondents shall submit to EPA and NYSDEC as soon as possible a plan which mitigates this threat. EPA will approve or modify this plan, and Respondents shall implement this plan as approved or modified by EPA.

2. If EPA determines that immediate action is required, then the Director of the Air and Waste Management Division, Region II, may orally authorize Respondents to act prior to making the required written submission to EPA.

3. If EPA determines that activities in compliance or non-compliance with this Order have caused or may cause a release of a hazardous waste, hazardous constituent, pollutant or contaminant or may pose a threat to human health or the environment, EPA may order DOE and NYSERDA to stop further implementation of this Order for such period of time as may be needed to abate any such release or threat and/or to undertake any action which EPA determines is necessary to abate such release or threat.

## IX. MINIMUM QUALIFICATIONS FOR PERSONNEL

All work performed by Respondents pursuant to this Order shall be under the direction and supervision of an individual(s) who has demonstrated experience and expertise in hazardous waste investigations and remediations. Before any work is performed, Respondents shall notify EPA in writing giving the name, title and qualifications of the supervisory personnel and contractors or subcontractors and their key personnel to be used in carrying out the terms of this Order. In addition, Respondents shall

ensure that when necessary, it shall use licensed individuals for performing any work required by this Order. Nothing herein shall be interpreted to affect or supersede Respondents' authority over their personnel or contracting actions.

X. Project Coordinator/Information

1. On or before the effective date of this Order, EPA and NYSDEC and each Respondent shall designate a Project Coordinator ("PC") and the name of at least one alternate who may function in the absence of the designated PC. The PCs shall be responsible for overseeing the implementation of this Order. The EPA PC, or his designee, will be EPA's designated representative at the Facility. The NYSDEC PC, or his designee, will be the NYSDEC's designated representative at the facility.

2. All communications between Respondent and the Agencies (EPA and NYSDEC), and all documents, reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Order, shall be directed to and through the respective PCs. Unless otherwise specified, reports, correspondence, approvals, disapprovals, notices, or other submissions relating to or required under this Order shall be in writing and originals or copies shall be sent to:

1 copy: Chief
Hazardous Waste Compliance Branch
U.S. EPA
26 Federal Plaza - Rm. 1009
New York, N.Y. 10278

1 copy: Project Coordinator
Hazardous Waste Compliance Branch
U.S. EPA
26 Federal Plaza - Rm. 1000

New York, N.Y. 10278

1 copy: Permits Administration Branch
U.S. EPA
26 Federal Plaza - Room 505
New York, N.Y. 10278

1 copy: Chief
Hazardous Waste Facilities Branch
U.S. EPA
26 Federal Plaza - Rm. 1043
New York, N.Y. 10278

2 copies: Director
Bureau of Hazardous Waste Facility
Permitting
Division of Hazardous Substances
Regulation
New York State Department of
Environmental Conservation
50 Wolf Road
Albany, New York 12233-4016

1 copy: Regional Director
New York State Department of Environmental
Conservation - Regional 9
600 Delaware Avenue
Buffalo, NY 14202

3. Each party shall provide at least five (5) days written notice prior to changing the PC(s) and shall immediately provide written notification once a new PC is selected.

## XI. Quality Assurance/Quality Control

1. All sampling, monitoring, analytical, and chain-of-custody plans shall be developed in accordance with the standard and recommended procedures contained in SW-846 - "Test Methods for the Chemical and Physical Analysis of Solid Waste", third edition, as amended, and the EPA Region II Quality Assurance Manual. Any deviations from these two documents must be accompanied by an appropriate justification and a demonstration

of the effectiveness and applicability of the proposed alternative. EPA and NYSDEC must approve the use of such alternatives prior to such use.

2. Respondents shall inform the EPA Project Coordinator in advance which laboratories will be used by Respondent and ensure that EPA personnel and EPA authorized representatives have access to the laboratories and personnel performing any analyses. In the event that EPA or its representatives cannot satisfactorily obtain access to the laboratories for any reason for the purposes of auditing protocols and technical proficiency, then EPA shall so inform the Respondents and the Respondents shall, as soon as practicable thereafter, substitute another certified laboratory which provides access in a manner deemed satisfactory to EPA.

3. Respondents shall consult with EPA in planning for field sampling and laboratory analysis, including a description of the chain of custody procedures to be followed.

## XII. EPA Approvals

1. Unless otherwise specified, EPA shall review any plan, report, specification or schedule submitted pursuant to, or required by this Order, and provide its written approval/disapproval, comments and/or modifications to the Respondents. Within fifteen (15) days of Respondents' receipt of EPA's approval/disapproval, comments and/or modifications, Respondents may request a meeting with EPA and NYSDEC to discuss the approval/disapproval, comments and/or modifications. Within thirty (30) days of such meeting, or if no meeting is requested,

within forty-five (45) days of receipt of EPA's approval/disapproval, comments and/or modifications, Respondents shall either: (1) notify EPA of its intention to amend or modify the submission to incorporate all EPA comments and proposed modifications necessary to meet the purposes of this Order and submit the amended submission to EPA and NYSDEC within thirty (30) days thereafter or according to a mutually agreed schedule; or (2) provide EPA and NYSDEC with a written notice of dispute, setting forth Respondents' position, any actions which Respondents considers necessary to resolve the dispute, and the basis for Respondents' position. Any such written notice of dispute shall be subject to the dispute resolution procedures as set forth in Section XIX of this Order.

2. Any reports, plans, specifications or schedules, submitted pursuant to, or required by this Order, are hereby incorporated by reference into this Order on the date EPA's written approval is received by Respondents or the dispute resolution proceeding concerning such submittal, if any, has been concluded with notice to Respondents. Prior to this approval determination or dispute resolution determination, no plan, report, specification or schedule shall be construed as a final approved plan. Oral advice, suggestions, or comments given by EPA and NYSDEC representatives shall not constitute an official approval, nor shall any oral approval or oral assurance of approval be considered binding.

3. Any noncompliance with an approved EPA document or determination under the dispute resolution provision of this Order constitutes noncompliance with this Order.

## XIII. ACCESS

1. Until this Order is terminated pursuant to Section XXI, EPA and NYSDEC representatives, authorized designees, employees, agents, contractors, subcontractors, and consultants are hereby authorized to enter and move about the Facility pursuant to Section 3007 of RCRA. Any person entering Respondents' Facility pursuant to this subparagraph shall fully comply with all health and safety plans referenced in this Order. In the event that entry onto the facility is necessary before completion of all required health and safety plans, entrants shall make their best efforts to comply with all applicable OSHA and DOE rules and regulations including applicable WVDP radiological safety and security procedures (WVDP-010, "Radiological Controls Manual," Rev. 4, dated October 24, 1990, and WV-544, "Visitor Control," Rev. 8, dated October 19, 1990).

2. To the extent that work required by this Order must be performed on property not owned or controlled by the Respondents, the Respondents shall use their best efforts to obtain "Site Access Agreements" to perform such work within thirty (30) days of the date Respondents become aware of the need to perform such work. Any such access agreement shall provide for reasonable access by EPA and NYSDEC representatives. A copy of such agreement shall be submitted to the EPA and NYSDEC Project

Coordinators. In the event that Site Access Agreements are not obtained within the thirty (30) day period, the Respondents shall notify EPA and NYSDEC in writing documenting their best efforts to obtain such agreements. Best efforts as used in this paragraph shall include, but is not limited to:

a) a certified letter from the Respondents to the present owner of such property requesting permission to allow the Respondents, EPA and NYSDEC and any of their authorized representative(s) access to such property; and,

b) the property owner's response, if any.

3. Nothing in this section shall be construed to limit or otherwise affect EPA's or NYSDEC's right of access and entry pursuant to any applicable laws and regulations, including, but not necessarily limited to, the Comprehensive Environmental Response Compensation and Liability Act of 1980 ("CERCLA"), as amended by 42 U.S.C. §9601 et. seq., and provisions of the Environmental Conservation Laws of New York.

4. Nothing in this section shall be construed to limit or otherwise affect the Respondents' liability, if any, with respect to off-site contamination from the Facility, notwithstanding the lack of access.

## XIV. RECORD PRESERVATION

1. Each Respondent shall preserve, throughout the duration of this Order and for a minimum of six (6) years after its

termination, all data, records and documents in its possession or in the possession of any officer, director, employee, agent, consultant, contractor (including independent and subcontractors), successor, or assign which relates in any way to this Order, to its implementation or to the past and/or current hazardous waste management practice(s) at the Facility. Six (6) years after the termination of this Order, Respondents shall make such records available to both EPA and NYSDEC and shall provide originals or copies of any documents that either EPA or NYSDEC requests. In addition, written notification shall be provided to EPA and to NYSDEC, sixty (60) days before the destruction of any such documents. Such written notification shall reference the effective date, caption and docket number of this Order and shall be addressed to:

Director
Air & Waste Management Division
U.S. Environmental Protection Agency
26 Federal Plaza,
New York, New York 10278

Director
Bureau of Hazardous Waste Facility
Permitting
Division of Hazardous Substances
Regulation
New York State Department of
Environmental Conservation
50 Wolf Road
Albany, New York 12233-4016

2. Each Respondent shall preserve all documents pertaining to this Order which are in its possession, or in the possession of the persons and entities referenced in paragraph one, above,

in a centralized location to afford ease of access by EPA, NYSDEC or its representatives.

## XV. RESERVATION OF RIGHTS

1. EPA and NYSDEC expressly reserve, subject only to paragraph 13 of this section, all of their statutory and regulatory powers, authorities, rights, remedies and defenses, both legal and equitable, including, without limitation the right to seek injunctive relief, cost recovery, monetary penalties or punitive damages.

2. This Order and Respondents' consent to its issuance shall not limit or otherwise preclude EPA and NYSDEC from taking any additional legal action against Respondents should EPA and NYSDEC determine that any such additional legal action is necessary or warranted.

3. This Order shall not relieve Respondents of their obligation to obtain and comply with any federal, state, county or local permit nor is this Order intended to be, nor shall it be construed to be, a ruling or determination on, or of, any issue related to any federal, state, county or local permit.

4. EPA and NYSDEC reserve the right to perform any and all work required by this Order including, but not limited to, any additional site characterization, feasibility study, and/or response or corrective action deemed necessary to protect human health or the environment.

5. Notwithstanding compliance with the terms of this Order, Respondents are not released from liability for the costs

of any response actions taken by EPA. EPA and NYSDEC reserve any rights they may have to seek reimbursement from the Respondents for any such costs incurred by the EPA and/or NYSDEC.

6. By entering into this Order, neither DOE nor NYSERDA waives any claim of immunity from payment of fines or penalties, nor does either waive any claim of jurisdiction over matters reserved to DOE under the Atomic Energy Act ("AEA").

7. Respondents do not waive any defenses Respondents may have or wish to pursue in any action beyond the scope of this Order.

8. Nothing in this Order and no determination made or action taken (including any failure to act) pursuant to the Order, including, without limitation, any determination or resolution resulting from Dispute Resolution under Section XIX, shall constitute an admission or evidence of an admission by Respondents or otherwise constitute an adjudication of any fact or conclusion of law, except in an action or proceeding by EPA to enforce the terms of this Order, nor shall anything in this Order release, waive, or otherwise affect or diminish any right, defense, authority, responsibility, immunity or claim for relief which NYSERDA or DOE may have against the other (or any person or entity not a party to this Order) under applicable provisions of law or contract, including, without limitation, NYSERDA and DOE's respective rights, authorities and responsibilities under the WVDP Act or the Cooperative Agreement.

9. The Parties acknowledge the existence of the DOE's Management and Operating Contract, and the Cooperative Agreement between DOE and NYSERDA.

10. In the event that one of the Respondents is alleged to be out of compliance with the Interim Measures provisions of this Order, the noncompliance of that Party shall not affect the compliance status of the other Respondent.

11. DOE and NYSERDA reserve the right to seek judicial review of disputes between them concerning their respective authority and responsibility arising from or related to the WVDP Act or the Cooperative Agreement (including disputes concerning the SDA and the NDA). Nothing in this Subsection will diminish the responsibility of DOE or NYSERDA to proceed with studies, investigations, or interim measures, or to implement the final resolution of any dispute as provided in Section XIX, "Dispute Resolution," in a timely manner as set forth in this Order.

12. Nothing in this section shall diminish, impair, or otherwise adversely affect the authority of EPA or DEC to enforce the provisions of this Order.

13. Based on the facts and circumstances known to EPA and NYSDEC as of the effective date of this Order, and as set forth in this Order, EPA and NYSDEC hereby agree not to initiate any further administrative enforcement action (or to refer a civil judicial enforcement action to the Department of Justice or the State Attorney General), to compel the performance of the corrective action specifically required hereunder for so long as

this Order remains effective and for so long as DOE and NYSERDA are in compliance with the requirements of this Order.

However, in the event that DOE is delayed in fulfilling its obligations as set forth in this Order as a result of insufficient availability of funding, and the Parties are unable to agree to an extension of schedules as provided for in section XXIII, the covenant set forth above shall terminate.

14. Nothing herein shall preclude any actions by EPA or NYSDEC to enforce the terms of this Order, or to address or bring any available legal or equitable claim for: (1) any pre-existing, current or future violations or conditions at the facility not specifically covered by this Order; (2) any emergency conditions or imminent hazard which may exist or arise at the facility; (3) any corrective action pursuant to the Act, not specifically covered by this Order; or (4) any response action pursuant to CERCLA, as amended.

15. Subject to the provisions in XXII of this Order, the Parties recognize that EPA and/or NYSDEC may issue a hazardous waste management permit under the Act or state law to the owner or operator of the Facility which includes corrective action requirements. EPA and DEC reserve the right to enforce the requirements of such permits, including corrective action. EPA and NYSDEC will not take any administrative action (or make any referral for judicial enforcement action to the Department of Justice or the State Attorney General) for a violation of such permits until EPA or NYSDEC (whichever agency has issued the permit) has afforded DOE and NYSERDA the opportunity to present their position to the permit issuing agency.

16. Although this Order is issued under the Act (RCRA), DOE and NYSERDA reserve any right each may have to exercise any other available authority as provided by law (including CERCLA, as amended) to implement the provision of this Order.

17. Except as otherwise provided in Section XXX, "Consent," in the event of any judicial action by EPA or DEC, all Parties reserve all rights, claims, and defenses, available under law.

18. Except as otherwise specifically provided herein, all Parties reserve all other rights they may have under law with respect to any person.

## XVI. NON-RELEASE OF OTHER CLAIMS AND PARTIES

1. Nothing in this Order shall constitute, or be construed to constitute, 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 constituent, hazardous substance, waste, pollutant or contaminant found at, taken to, taken from or emanating from the Facility.

2. Subject to the provisions of Section XXII of this Order, EPA or NYSDEC may issue one or more hazardous waste management permits under RCRA or pursuant to the provisions of the Environmental Conservation Law Article 27, Title 9 which may include corrective action requirements for one or more of the same SWMUs covered by this Order.

## XVII. PUBLIC PARTICIPATION

1. EPA will coordinate with NYSDEC, DOE and NYSERDA, as appropriate, in making the RCRA Facility Investigation Final Report, Final Corrective Measures Study, and any EPA summaries of these reports, available for public review and comment.

## XVIII. OTHER APPLICABLE LAWS

All actions undertaken pursuant to this Order by Respondents shall be done in accordance with all applicable local, state and federal laws, regulations, ordinances and Executive Orders. Respondents retain the obligation and agree to obtain all permits or approvals necessary to perform the work required by this Order.

## XIX. DISPUTE RESOLUTION

All Parties to this Order shall make reasonable efforts to informally resolve all disputes arising under any part of this Order at the Project Coordinator or immediate supervisor level. If resolution cannot be achieved informally, the procedures of this section shall be implemented to resolve a dispute.

1. Within forty-five (45) days of the EPA or NYSDEC action that leads to or generates a dispute, the disputing Party shall submit to the other Parties a written statement of dispute setting forth the nature of the dispute, the work affected by the dispute, the disputing Party's position with respect to the dispute and the information the disputing Party is relying upon to support its position. If the disputing Party does not provide such written statement within this forty-five (45) day period, that Party shall be deemed to be in agreement with EPA.

2. Prior to NYSERDA or DOE's issuance of a written statement of dispute, the disputing Party shall engage the other Parties in informal dispute resolution among the Project Coordinators and/or their immediate supervisors. During this thirty (30) day informal dispute resolution period the Parties shall meet as many times as are necessary to discuss and attempt resolution of the dispute.

3. If agreement cannot be reached on the issue within the thirty (30) day informal dispute resolution period, the disputing Party may, within a fifteen (15) day period following the end of the thirty (30) day informal dispute resolution period, forward

the written statement of dispute to the Dispute Resolution Committee (DRC) thereby elevating the dispute to the DRC for resolution. Alternatively, the Parties may, within the forty-five (45) day period noted above, unanimously decide to escalate the dispute directly to the Senior Executive Committee (SEC).

4. Any party may decide at any level of the disputes process, by written notice to the participating parties, not to participate in dispute resolution concerning any one or more issues. However, any resolution reached by the participating parties shall be binding on all parties to this Order.

5. The DRC will serve as a forum for resolution of disputes for which agreement has not been reached through informal dispute resolution. 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 purpose of dispute resolution under this Order. The EPA's representative is the Air and Waste Management Division Director, Region II. The NYSDEC's representative is the Director of the Division of Hazardous Substances Regulation. DOE's representative is the West Valley Project Office Manager. NYSERDA's representative is the Program Director, Radioactive Waste Management. Written notice of any delegation of authority for a Party's designated representative on the DRC shall be provided to all other Parties.

6. Following the receipt of all statements of dispute or the expiration of the escalation time periods noted above, the DRC shall have twenty-one (21) days to unanimously resolve the dispute and issue a written decision. If the DRC is unable to unanimously resolve the dispute within this twenty-one (21) day period the written statement of dispute shall be forwarded by the disputing party to the SEC for resolution. Alternatively, within the twenty-one (21) day period noted above, the parties may unanimously decide to escalate disputes involving nationally significant issues directly to the Administrator of EPA.

7. The SEC will normally serve as the forum for resolution of disputes for which agreement has not been reached by the DRC. The EPA representative is the Regional Administrator of Region II. The NYSDEC's representative is the Commissioner. The DOE's representative is the Idaho Field Office Manager. NYSERDA's representative on the SEC is the President of NYSERDA. Written notice of any delegation of authority for a Party's designated representative on the DRC shall be provided to all other Parties. The SEC members shall, as appropriate, confer, meet and exert their best efforts to resolve the dispute and issue a written decision. If unanimous resolution of the dispute is not reached within twenty-one (21) days, EPA's Regional Administrator shall issue a written position on the dispute. The DOE or NYSERDA may, within twenty-one (21) days of the Regional Administrator's issuance of EPA's position, issue a written notice elevating the dispute to the Administrator of EPA for resolution in accordance

with applicable laws and procedures. In the event that DOE or NYSERDA elects not to elevate the dispute to the Administrator within the designated twenty-one (21) day escalation period, the DOE or NYSERDA shall be deemed to have agreed with the Regional Administrator's written position with respect to the dispute.

8. Upon escalation of a dispute to the Administrator of EPA pursuant to subpart 7, above, the Administrator will review and resolve the dispute as expeditiously as possible. Upon request by the Commissioner of the NYSDEC, the Secretary of the DOE, or the President of NYSERDA, and prior to resolving the dispute, the EPA Administrator shall meet and confer with such person(s), as appropriate, to discuss the issue(s) under dispute. Upon resolution, the Administrator shall provide the DOE or NYSERDA with a written final decision setting forth resolution of the dispute.

9. The pendency of any dispute under this section shall not affect the DOE's or NYSERDA's responsibility for timely performance of the work required by this Order, except that the time period for completion of work affected by such dispute shall be extended for a period of time usually 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. If EPA or NYSDEC determines, pursuant to applicable law and guidance, that an actual or potential emergency exists

and directs Respondent to take appropriate action (in accordance with sections VI, VII, and VIII), timely performance of such action shall not be delayed by the dispute resolution procedures and such direction is subject to the result of these procedures.

10. When dispute resolution is in progress, work affected by the dispute will immediately be discontinued if the Air and Waste Management Division Director for EPA's Region II requests, in writing, that work related to the dispute be stopped because, in EPA's opinion, such work is inadequate or defective, and such inadequacy or defect is likely to yield an adverse effect on human health or the environment, or may have a substantial adverse effect on the remedy selection or implementation process. To the extent possible, EPA shall give DOE or NYSERDA prior notification that a work stoppage request is forthcoming. After stoppage of work, if the DOE or NYSERDA believes that the work stoppage is inappropriate or may have potential significant adverse impacts, DOE or NYSERDA may meet with the EPA Division Director to discuss the work stoppage. Following this meeting, and further consideration of the issues, the Division Director will issue, in writing, a final decision with respect to the work stoppage. The final written decision of the Division Director may immediately be subjected to formal dispute resolution. Such dispute may be brought directly to the either the DRC or the SEC at the discretion of DOE or NYSERDA.

11. Within twenty-one (21) days of resolution of a dispute pursuant to the procedures specified in this Section, DOE and

NYSERDA, as appropriate, 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.

12. Resolution of a dispute pursuant to this section of the Order constitutes a final resolution of that dispute arising under this Order. DOE or NYSERDA shall abide by all terms and conditions of any final resolution of dispute obtained pursuant to this section of this Order.

13. Disputes between NYSERDA and DOE concerning their respective authority and responsibilities arising from or related to the WVDP Act or the Cooperative Agreement or any cost share arrangement, shall not affect the timely completion of any work pursuant to this Order. DOE or NYSERDA may request an extension of time to resolve such disputes. Notwithstanding any other provision of this Order, neither such disputes between DOE or NYSERDA, nor any EPA decision with regard to such request for extension of time, shall be subject to Dispute Resolution.

14. The procedures of this section shall also not apply to disputes about: (a) EPA's and/or NYSDEC's designation of project coordinators; (b) EPA's and/or NYSDEC's access to the facility (such access to be subject to section XIII, paragraph 1, and section XV, paragraph 6); and/or (c) EPA and/or NYSDEC enforcement actions (such enforcement actions to be subject to section XV, paragraph 13, and only after notice to EPA's Office of Enforcement).

## XX. Availability of Information/Notification

1. To the maximum extent possible, Respondents shall give the EPA and NYSDEC Project Coordinators twenty (20) days advance oral notice of the following activities undertaken pursuant to this Order: all well monitoring activities, drilling, well installation and testing; as well as all on-site and off-site field activities, such as installation or removal of equipment or sampling events, geophysical studies, and soil gas monitoring. At the request of EPA and/or NYSDEC, Respondents shall provide or allow EPA, NYSDEC, and/or their authorized representatives to take split samples of any or all samples collected by the Respondents pursuant to this Order. EPA will, to the extent possible, give Respondents notice of EPA's intentions to take samples and/or allow Respondents to take split or duplicate samples of all samples collected by EPA or NYSDEC under this Order.

2. All data, information, and other nonprivileged records concerning, created for or maintained by the Respondents pursuant to this Order, except attorney-client privilege or work product privileged material, shall be made available to EPA and/or NYSDEC upon request. All employees of the Respondents and all persons, including contractors and subcontractors who engage in activities under this Order, shall be made reasonably available to and cooperate with EPA and/or NYSDEC if information, whether written or oral, is sought.

3. All final reports, plans, studies, records, or other documents submitted or otherwise in the possession of EPA or NYSDEC under the terms of this Order by DOE or NYSDEC shall be made available to the public pursuant to the Freedom of Information Act, 5 U.S.C., 552, et seq., or the New York State Freedom of Information Law, Public Officers Law Article 6, except (a) those identified by DOE which are classified pursuant to Executive Order or Statute, or unclassified controlled nuclear information within the meaning and in conformance with Section 148 of the Atomic Energy Act (AEA); (b) those that are appropriately withheld pursuant to the Freedom of Information Act or Freedom of Information Law; and, (c) those entitled to a business confidentiality claim covering all or part of any information submitted to EPA. Any assertion of confidentiality shall be accompanied by a response to the questions listed at 40 C.F.R. § 2.204(e)(4). Information determined to be confidential by EPA shall be disclosed only to the extent permitted by 40 C.F.R. Part 2. Respondents agree not to assert any confidentiality claim with regard to any physical or analytical data that has been validated or otherwise evaluated using applicable quality assessment/quality control (QA/QC) methods. Nothing in this paragraph shall preclude the use of such information, records, or other documents in administrative proceedings.

4(a) Upon request by EPA or NYSDEC, the DOE or NYSERDA shall make available to EPA and/or NYSDEC for inspection and review at the facility, copies of non-quality assured data or results, nonprivileged records, and other documents, including sampling and monitoring data, which have been received by DOE or NYSERDA, that EPA determines are necessary for oversight activities. Such data or results shall not be duplicated or removed from the facility unless EPA determines that an imminent and substantial hazard exists or may exist. If such records and documents are duplicated or removed from the facility by EPA or NYSDEC, DOE reserves its right to assert a claim of confidentiality with respect to such records or documents. Where EPA or NYSDEC duplicates or removes non-quality assured data, Respondent(s) shall attempt to complete quality assurance within sixty (60) days following the receipt of such data by the DOE or NYSERDA. The sixty day period provided for completing quality assurance is for the purposes of this section only.

b) To the extent the non-quality assured data are made available to, or are reviewed by, EPA or NYSDEC, such data:

(i) shall not form the basis for agency action unless EPA determines that an imminent and substantial hazard exists or may exist; and,

(ii) shall be held in confidence and shall not be disclosed further unless EPA or NYSDEC receives a request for such data under FOIA or FOIL, or unless disclosure is otherwise mandated by law. Upon receipt of such request, and prior to any

mandatory disclosure under this paragraph, EPA or NYSDEC shall endeavor to consult and coordinate with DOE or NYSERDA, including possibly transfering to DOE responsibility for responding to a request for such data, as provided in 40 C.F.R. § 2.111(d)(2).

## XXI. Termination and Satisfaction

1. The provisions of this Order shall be deemed satisfied and the obligations of the Respondents under this Order shall terminate upon Respondents' receipt of a written statement from EPA stating that Respondents have completed, to EPA's satisfaction, all the terms and conditions of this Order, including any additional work which EPA may determine to be necessary pursuant to this Order. So long as the Respondents are performing work pursuant to, or required by this Order, this Order shall not be deemed terminated or satisfied.

2. Following the issuance of a final RCRA Part B permit, or upon the satisfactory completion of all required actions and upon written request by DOE or NYSERDA, EPA shall endeavor to send to DOE and NYSERDA (as appropriate) a written notice of satisfaction of the terms of this Order as soon as practicable. The notice shall state that EPA considers DOE or NYSERDA (as appropriate) to have satisfied the terms of this Order. The notice, or lack of notice, may be subject to dispute resolution.

## XXII. Survivability/Permit Integration

1. After the effective date of this Order, a RCRA/HSWA Permit may be issued to the Facility (or any portion of the Facility) incorporating the requirements of this Order by

reference into the permit. The requirements of this Order shall not terminate upon the issuance of a permit unless the requirement(s) of this Order are expressly replaced by equivalent or more stringent requirements in the permit and EPA approves such termination.

2. Notwithstanding any other provision of this Order, EPA and NYSDEC agree that in issuing a RCRA/HSWA (including equivalent state law) Permit to Respondent, absent any new information that requires a different approach, EPA and NYSDEC will not include in a draft permit any condition or requirement that directs Respondent to perform or refrain from performing any action that is clearly inconsistent with the requirements of this Order. If it appears that an inconsistent condition may be included in the final permit, EPA and NYSDEC will attempt to confer with DOE and NYSERDA before the final permit is issued. To the extent EPA or NYSDEC includes all or part of the requirments of this Order in such permit, EPA and NYSDEC agree to modify this Order accordingly. Requirements of this Order not incorporated into a permit shall remain an enforceable part of this Order. Requirements of this Order incorporated into a permit shall no longer be enforceable under this Order.

3. The limitations of subsection 2, above, shall not apply to: (a) any interim measure or corrective action that EPA or NYSDEC determine is not within the scope of this Order; (b) any pre-existing, current, or future condition at the Facility not explicitly covered by this Order or which was not known to EPA or

NYSDEC at the time the Order was executed; or, (c) any response action pursuant to CERCLA, as amended.

4. Respondent's good-faith belief that a condition or requirement of this Order is inconsistent with a requirement in any final RCRA/HSWA Permit, shall constitute a dispute to be resolved under the terms of section XIX (Dispute Resolution) of this Order.

## XXIII. Modification/Extension

1. This Order may be modified by mutual agreement of EPA and NYSDEC and Respondents. Such modification shall be in writing, shall be signed by the Respondents first, and shall have as its effective date the date on which it is signed by the Director of the Air and Waste Management Division, Region II, EPA, and a signed copy is received by the Respondents. Any such modification is, on its effective date, hereby incorporated into this Order.

2. Notwithstanding the above, the appropriate Project Coordinators may agree to extensions concerning timetables, deadlines, or the scheduling of events. Any such extensions must be requested in writing by the Respondents and be approved in writing by the EPA Project Coordinator.

3. In the event the parties cannot agree on the appropriate extension of timetables, deadlines, or scheduling, such disagreement may be subject to dispute resolution in accordance with section XIX.

4. No informal advice, guidance, suggestions, or comments by EPA and NYSDEC regarding reports, plans, specifications, schedules, and any other writing submitted by the Respondents will be construed as an amendment or modification to this Order.

## XXIV. No Final Agency Action

1. Notwithstanding any other provision of this Order, no action or decision by EPA pursuant to this Order, including without limitation, decisions of the Administrator, the Regional Administrator, the Director of the Air and Waste Management Division for Region II, or any authorized representative of EPA, shall constitute final agency action giving rise to any rights of judicial review prior to EPA's initiation of a judicial action for a violation of this Order, including an action for penalties or an action to compel Respondent's compliance with the terms and conditions of this Order.

## XXV. Severability

If any provision or authority of this Order or the application of this Order to any party or circumstance is found to be invalid, or is temporarily stayed, the remainder of this Order shall remain in force and shall not be affected thereby.

## XXVI. Force Majeure and Excusable Delay

1. Respondent shall perform all the requirements of this Order within the time limits set forth, approved, or established herein, unless the performance is prevented or delayed solely by events which constitute a force majeure. A force majeure is defined as an event arising from causes not reasonably

foreseeable and beyond the control of the Respondents which could not be overcome by due diligence and which delays or prevents performance by a date required by this Order. Such events do not include unanticipated or increased costs or expenses of response actions, whether or not anticipated at the time such performance or response action was initiated. Nor does Force majeure include changed economic circumstances, normal precipitation events, or failure to exercise due diligence in obtaining federal, state, or local permits.

2. Force majeure shall include acts of God; fire; war; insurrection; civil disturbance; explosion; restraint by court order or order of an existing public authority; inability to obtain, after due diligence, any necessary authorizations, approvals, permits or licenses due to action or inaction of any governmental agency or authority other than the DOE or NYSERDA; delays caused by compliance with applicable statutes or regulations governing contracting, procurement or acquisition procedures, despite the exercise of due diligence; any strike or other labor dispute, whether or not within the control of the Parties affected thereby; and insufficient availability of appropriated funds, provided DOE or NYSERDA, as appropriate, made timely request for such funds as part of the budgetary process as set forth in Section XXVIII (Funding) of this Order.

3. The Respondents shall notify the EPA or NYSDEC Project Coordinator within seventy-two (72) hours, if possible, but in no event after forty (40) days, after Respondent(s) first becomes

aware of an event, which it knows or should have known, constitutes a force majeure. Within five (5) business days, if possible, but in no event after thirty (30) business days after Respondent(s) provides such initial notice, the Respondent shall submit to EPA a written report detailing the estimated length of delay, including necessary demobilization and remobilization, its causes, measures taken or to be taken to minimize the delay, and an estimated timetable for implementation of these measures. Respondents must adopt all reasonable measures to avoid and minimize the delay. Failure to comply with the forty (40) day notice provision of this section shall constitute a waiver of Respondents' right to assert a force majeure and shall be grounds for EPA to deny Respondents an extension of time for performance. Such a waiver of a force majeure under this Order shall not be deemed to be a waiver of any other defense the Respondent may have at law with regard to the performance of obligations of contracts that become impossible.

4. If a force majeure has occurred, the time for performance may be extended, upon EPA approval, for a period equal to the delay resulting from such circumstances. This shall be accomplished through written amendment to this Order pursuant to Section XXIII. Such an extension does not alter the schedule for performance or completion of any other tasks required by this Order unless these are also specifically altered by amendment of this Order.

## XXVII. ENFORCEMENT

1. DOE and NYSERDA recognize their respective obligations to comply with the applicable federal and state laws and regulations, including RCRA, as set forth in Section 6001 of RCRA, 42 U.S.C. § 6961 and Title 27, Article 9 of the ECL, and Title 6 of the New York Code, Rules and Regulations, and to faithfully discharge the requirements of this Order.

2. The provisions of this Order shall constitute requirements which are enforceable against DOE or NYSERDA pursuant to the citizen suit provision of Section 7002 of RCRA, 42 U.S.C. § 6972. DOE and NYSERDA agree that the State (NYSDEC) constitutes a "person" pursuant to Section 7002(a) of RCRA. Therefore, citizen suits include actions or suits by the State to enforce the terms of this Order.

## XXVIII. FUNDING

1. It is the expectation of the Parties to this Agreement that all obligations of DOE or NYSERDA arising under this Agreement will be fully funded. Consistent with Congressional and State Legislative limitations on future funding, NYSERDA and DOE shall take all necessary steps and make best efforts to obtain timely funding to meet their obligations under this Order, including but not limited to the submission of timely budget requests.

2. Any requirement for the payment or obligation of funds by DOE or NYSERDA established by the terms of this Order shall be subject to the availability of appropriated funds and no

provision herein shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, 31 U.S.C. § 1341, or New York State Finance Law, Section 41. In cases where payment or obligation of funds would constitute a violation of the Anti-Deficiency Act, or the New York State Finance Law, the dates established requiring the payment or obligation of such funds shall be appropriately adjusted.

3. DOE has prepared an Environmental Restoration and Waste Management Five-Year Plan (the "Five Year Plan") to identify, integrate, and prioritize DOE's compliance and cleanup activities at all DOE nuclear facilities and sites. DOE will update the Five-Year Plan on an annual basis.

4. The terms of the Five-Year Plan shall be consistent with the provisions of this Order, including all requirements and schedules contained herein; it is the intent of DOE that the Five-Year Plan be drafted and updated in a manner that ensures that the provisions of this Order are incorporated into the DOE planning and budget process. Nothing in the 5-Year Plan shall be construed to affect the provisions of this Order.

5. DOE is developing a national prioritization system for inclusion in the Five-Year Plan. DOE's application of its national prioritization system may indicate to DOE that amendment or modification of the provisions and/or milestones established by this Order is appropriate. In that event, DOE may request, in writing, amendment or modification of this Order, including deadlines established herein. EPA may contend that the Five-Year

Plan should accommodate the milestones established by this Order. Where the parties are unable to reach agreement on a requested amendment or modification, the Parties may invoke the dispute resolution provisions of this Order. Pending resolution of any such dispute, the provisions and deadlines in effect pursuant to this Order shall remain in effect and enforceable in accordance with the terms of this Order. Any amendment or modification of this Order will be incorporated, as appropriate, in the annual update to DOE's Five-Year Plan.

6. If appropriated funds are not available to fulfill NYSERDA's or DOE's obligations under this Order, EPA reserves the right to initiate any other action which it deems to be appropriate absent this Order.

7. Nothing herein shall affect NYSERDA's or DOE's authority over, or responsibility for, its budget and funding level submissions.

## XXIX. Effective Date

The effective date of this Order shall be ten (10) days after the date on which the Director of the Air and Waste Management Division, Region II, signs this Order.

## XXX. Consent

1. Respondents consent to the issuance of this Order, and agree to undertake all actions required by the terms and conditions of this Order, including any portions of the Order incorporated by reference. Respondents consent to the issuance of this Order, as an Order, pursuant to Section 3008(h) of RCRA,

42 U.S.C. § 6928(h), and explicitly waive their right to request a hearing on this matter. In addition, whether brought in an administrative or judicial proceeding, the Respondents consent to and agree not to contest EPA's jurisdiction to enforce or compel compliance with any term of this Order or the validity of this Order and all of its provisions. Subject to the Reservation of Rights in Section XV, the Respondents agree not to contest, and waive any defense concerning, the validity of this Order, or any particular provision contained herein.

2. Each undersigned signatory to this Order certifies that he or she is fully authorized to enter into the terms and conditions of this Order.

IT IS SO AGREED:

Date: 2/27/92

SIGNED: _____
A. A. Pitrolo
Manager
U.S. Department of Energy
Idaho Falls Operation Office

IT IS SO AGREED:

Date: 2/28/92

SIGNED: _____
F. Wm. Valentino
Acting President
New York State Energy Research
and Development Authority

IT IS SO ORDERED:

Date: January 6, 1992

SIGNED: Thomas C Jorling
Thomas Jorling
Commissioner
New York State Department of
Environmental Conservation

IT IS SO ORDERED:

Date: March 5, 1992

SIGNED: _____
CONRAD SIMON, Director
Air and Waste Management Division
U.S Environmental Protection
Agency - Region II

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, NEW YORK 10278



August 12, 1991

Mark Olsen
Brett Bowhan
Counsel
Office of Chief Counsel
U.S. Department of Energy
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Idaho Falls, Idaho 83402

Hal Brodie
Assistant Counsel
NYS Energy Research and
Development Authority
2 Rockefeller Plaza
Albany, NY 12223

Re: West Valley RCRA 3008(h) Order

Dear Messers. Olsen, Bowhan and Brodie:

Enclosed please find the revised Attachments. I have not QA/QC'd them, so to speak, but am sending them out to you to compare with the Attachments you should already have. Let me know on Wednesday during our conference call if any problems arise or may arise with regard to these Attachments.

Sincerely,

Carl Howard by RHH

Carl R. Howard
Assistant Regional Counsel
Office of Regional Counsel

Enclosure

cc: Deborah Christian, DEC
Victor Franklin, WVNS



0105:92:09

# ATTACHMENT I

## SCOPE OF WORK FOR A RCRA FACILITY INVESTIGATION
## At
## WESTERN NEW YORK NUCLEAR SERVICE CENTER

### RCRA FACILITY INVESTIGATION

Task I: Description of Current Conditions

Task II: Pre-Investigation Evaluation of Corrective Measure Technologies

Task III: RFI Workplan Requirements

Task IV: Facility Investigation

Task V: Investigation Analysis

Task VI: Laboratory and Bench-Scale Studies

Task VII: Reports

# SCOPE OF WORK FOR A RCRA FACILITY INVESTIGATION (RFI)
# At
# WESTERN NEW YORK NUCLEAR SERVICE CENTER

## PURPOSE

The purpose of this RCRA Facility Investigation 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 Western New York Nuclear Service Center and to gather all necessary data to support the Corrective Measures Study, if one is determined to be necessary. The Respondent (the term Respondent whenever used in this Attachment shall iclude both the New York State Energy Research and Development Authority (EPA ID Number NYD986905545) and the U.S. Department of Energy (EPA ID Number NYD980779540) shall furnish all personnel, materials, and services necessary for, or incidental to, performing this RCRA Facility Investigation.

## SCOPE

The RCRA Facility Investigation consists of seven tasks:

Task I: Description of Current Conditions

- A. Facility Background
- B. Nature and Extent of Contamination
- C. Implementation of Interim Measures

Task II: Pre-Investigation Evaluation of Corrective Measure Technologies

Task III: 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 IV: Facility Investigation

- A. Environmental Setting
- B. Source Characterization
- C. Contamination Characterization
- D. Potential Receptor Identification

Task V: Investigation Analysis

- A. Data Analysis
- B. Protection Standards

Task VI: Laboratory and Bench-Scale Studies

Task VII: Reports

A. Preliminary and Workplan
B. Progress
C. Draft and Final

## TASK I: DESCRIPTION OF CURRENT CONDITIONS

The Respondent shall submit for U.S. EPA approval, a Preliminary Report providing the background information pertinent to the facility, contamination, and interim measures as set forth below. The data gathered during any previous investigations or inspections and other relevant data shall be included.

### A. Facility Background

The Respondent's report shall summarize the regional location, pertinent boundary features, general facility physiography, hydrogeology, and historical use of the facility for the treatment, storage or disposal of solid and hazardous waste. The Respondent's report shall include:

1. Map(s) depicting the following:

   a. General geographic location;

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

   c. Topography and surface drainage (with a contour interval of two (2) feet and a scale of 1 inch = 100 feet) depicting all waterways, wetlands, floodplains, water features, drainage patterns, and surface water containment areas;

   d. All tanks, buildings, utilities, paved areas, easements, rights-of-way, and other features;

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

   f. All known past solid or hazardous waste treatment, storage or disposal areas regardless of whether they were active on November 19, 1980;

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

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

   i. The location of all production and ground water monitoring wells. These wells shall be clearly labeled and ground elevations and top of casing elevations and construction details included (these elevations and details may be included as an attachment).

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

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

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

4. A summary of past permits requested and/or received, any enforcement actions and their subsequent responses, and a list of documents and studies prepared for the facility.

B. <u>Nature and Extent of Contamination</u>

The Respondent shall prepare and submit for U.S. EPA approval, a Preliminary Report describing the existing information on the nature and extent of contamination.

1. The Respondent's report shall summarize all possible source areas of contamination. This, at a minimum, should include all regulated units, solid waste management units, spill areas, and other suspected source areas of contamination. For each area, the Respondent shall identify the following:

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

   b. Quantities of solid and hazardous wastes;

   c. Hazardous waste or constituents, to the extent known; and

   d. Identification of areas where additional information is necessary.

2. The Respondent's Report shall include an assessment and description of the existing degree and extent of contamination. This should include:

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

b. All potential migration pathways including information on geology, petrology, hydrogeology, physiography, hydrology, water quality, meteorology, and air quality; and

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

C. Implementation of Interim Measures

The Respondent'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, construction and monitoring; and

4. Schedule for progress reports.

TASK II: PRE-INVESTIGATION EVALUATION OF CORRECTIVE MEASURE TECHNOLOGIES

Prior to starting the facility investigation, the Respondent shall submit to 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 III: RFI WORKPLAN REQUIREMENTS

The Respondent shall prepare a RCRA Facility Investigation (RFI) Workplan. This RFI Workplan shall include the development of several plans which shall be prepared concurrently. During the RCRA Facility Investigation, it may be necessary to revise the RFI Workplan to increase or decrease the detail of information collected to accommodate the facility-specific situation. The RFI Workplan includes the following:

### A. Project Management Plan

The Respondent shall prepare a Project Management Plan which will include a discussion of the technical approach, schedules, budget, and personnel. The Project Management Plan will also include a description of the qualifications of personnel performing or directing the RFI, including contractor personnel. This plan shall also document the overall management approach to the RCRA Facility Investigation.

### B. Data Collection Quality Assurance Plan

The Respondent shall prepare a plan to document all monitoring procedures: sampling, field measurements, and sample analysis 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;

   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 Respondent over some time period;

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

iii) Data generated by separate consultants or laboratories; and

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

e. Details relating to the schedule and information to be provided in quality assurance reports. The reports 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; and

v) 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., ground water, 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 sample (e.g., composites vs. grabs) and number of samples to be collected;

i. Measures to be taken to prevent contamination of the sampling equipment and cross contamination between sampling points;

j. Documenting field sampling operations and procedures, including;

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

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

   iii) Documentation of specific sample preservation method;

   iv) Calibration of field devices;

   v) Collection of replicate samples;

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

   vii) Potential interferences present at the facility;

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

ix) Field equipment listing and sample containers;

x) Sampling order; and

xi) Decontamination procedures.

k. Selecting appropriate sample containers;

l. Sample preservation; and

m. Chain-of-custody, including:

i) Standardized field tracking reporting forms to establish sample custody in the field prior to and during shipment; 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 measurements should be conducted;

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

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

g. Selecting the frequency of field measurement and length of field measurements 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 dispersement for analysis.

b. Sample storage procedures and storage times;

c. Sample preparation methods;

d. Analytical procedures, including:

i) Scope and application of the procedure;

ii) Sample matrix;

iii) Potential interferences;

iv) Precision and accuracy of the methodology; and

v) Method detection limits.

e. Calibration procedures and frequency;

f. Data reduction, validation and reporting;

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

i) Method blank(s);

ii) Laboratory control sample(s);

iii) Calibration check sample(s);

iv) Replicate sample(s);

v) Matrix-spiked sample(s);

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

vii) Control charts;

viii) Surrogate samples;

ix) Zero and span gases; and

x) Reagent quality control checks.

h. Preventive maintenance procedures and schedules;

i. Corrective action (for laboratory problems); and

j. Turnaround time.

C. <u>Data Management Plan</u>

The Respondent 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 code;

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

   c. Sampling or field measurement raw data;

   d. Laboratory analysis ID number;

   e. Property or component measured; and

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

2. Tabular Displays

   The following data shall be 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. Display 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**

The Respondent shall prepare a facility Health and Safety Plan.

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

a. Facility description, including availability of resources such as roads, water supply, 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. Delineate work areas;

e. Describe levels of protection to be worn by personnel in work areas;

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; and

1. Establish procedures for protecting workers from weather-related problems.

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. EPA Order 1440.1 - Respiratory Protection;

   c. EPA Order 1440.3 - Health and Safety Requirements for Employees engaged in Field Activities;

   d. Facility Contingency Plan;

   e. EPA Standard Operating Safety Guide (1984);

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

   g. State, local, and other federal agency (e.g., DOD, DOE) regulations; and

   h. Other EPA guidance as provided.

E. Community Relations Plan

The Respondent shall prepare a plan, for the dissemination of information to the public regarding investigation activities and results.

## TASK IV: FACILITY INVESTIGATION

The Respondent shall conduct those investigations necessary to: characterize the facility (Environmental Setting); define the source(s) (Source Characterization); define the degree and extent of contamination (Contamination Characterization); and identify actual or potential receptors (Potential Receptors).

The investigations should result in data of adequate technical quality to support the development and evaluation of the corrective measure alternative or alternatives during the Corrective Measures Study, if one is determined to be necessary.

The site investigation activities shall follow the plans set forth in Task III. All sampling and analyses 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

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

1. Hydrogeology

   The Respondent 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 ground water flow beneath the facility, including:

      i) Regional and facility specific stratigraphy: description of strata including strike and dip, 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) Identification and characterization of areas and amounts of recharge and discharge;

v) Regional and facility specific ground water flow patterns; and

vi) Characterize seasonal variations in the ground water flow regime.

b. An analysis of any topographic features that might influence the ground water flow system. (Note: Stereographic analysis of aerial photographs may aid in this analysis.)

c. Based on field data, test, 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 mechanisms of the natural earth materials (e.g., ion exchange capacity, organic carbon content, mineral content etc.).

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

i) Sand and gravel deposits in unconsolidated deposits;

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

iii) Zones of higher permeability or lower permeability that might direct and restrict the flow of contaminants;

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

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

e. Based on data obtained from ground water monitoring wells and 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.

f. A description of manmade influences that may affect the hydrogeology of the site, identifying:

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

ii) Manmade hydraulic structures (pipelines, french drains, ditches, unlined ponds, septic tanks, NPDES outfalls, retention areas, etc.).

2. Soils

The Respondent 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

The Respondent 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, drains, swamps 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 ($NH_3$, $NO_3^-/NO_2^-$, $PO_4^{-3}$), chemical oxygen demand, total organic carbon, specific contaminant concentrations, etc.

c. Description of sediment characteristics including:

i) Deposition area;

ii) Thickness profile; and

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

4. Air

The Respondent shall provide information characterizing the climate in the vicinity of the 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) Evaporation data;

vii) Development of inversions; and

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

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

i) Ridges, hills or mountain areas;

ii) Canyons or valleys;

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

iv) Wind breaks and forests; and

v) Buildings.

B. Source Characterization

The Respondent shall collect analytical data to completely characterize the wastes and the areas where wastes have been placed, collected, or removed, 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 waste placed in the unit;

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

      ii) Quantity; and

      iii) Chemical composition.

   b. Physical and chemical characteristics;

      i) Physical form (solid, liquid, gas);

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

      iii) Temperature;

      iv) pH;

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

      vi) Molecular weight;

      vii) Density;

      viii) Boiling point;

      ix) Viscosity;

      x) Solubility in water;

      xi) Cohesiveness of the waste;

      xii) Vapor pressure.

      xiii) Flash point

   c. Migration and dispersal characteristics of the waste;

      i) Sorption;

      ii) Biodegradability, bioconcentration, biotransformation;

      iii) Photodegradation rates;

iv) Hydrolysis rates; and

v) Chemical transformations.

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

C. Contamination Characterization

The Respondent shall collect analytical data on ground water, soils, surface water, sediment, and subsurface gas contamination in the vicinity of the facility. This data shall be sufficient to define the extent, origin, direction, and rate of movement of contaminant plumes. Data shall include time and location of sampling, media sampled, concentrations found, conditions during sampling, and the identity of the individuals performing the sampling and analysis. The Respondent shall address the following types of contamination at the facility:

1. Ground Water Contamination

The Respondent shall conduct a Ground Water Investigation to characterize any 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 plume(s) originating from the facility;

b. The horizontal and vertical direction 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.

The Respondent shall document the procedures used in making the above determinations (e.g., well design, well construction, geophysics, modeling, etc.).

2. Soil Contamination

The Respondent shall conduct an investigation to characterize the contamination of the soil and rock

units above the water table in the vicinity of the contaminant release. 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, adsorption, 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.

e. An extrapolation of future contaminant movement.

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

3. Surface Water and Sediment Contamination

The Respondent shall conduct a surface water investigation to characterize contamination in surface water bodies 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 direction of contaminant movement;

c. The contaminant velocity;

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, specific contaminant concentrations, etc.;

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

4. Air Contamination

The Respondent 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 direction and velocity of contaminant movement;

b. The rate and amount of the release; and

c. The chemical and physical composition of the contaminants(s) released, including horizontal and vertical concentration profiles. The Respondent shall document the procedures used in making the above determinations.

5. Subsurface Gas Contamination

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

a. A description of the horizontal and vertical extent of subsurface gas mitigation;

b. The chemical composition of the gases being emitted;

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

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

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

D. Potential Receptors

The Respondent shall collect data 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 ground water:

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

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

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

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

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

   c. Agricultural;

   d. Industrial; and

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

3. Human use of or access to the facility and adjacent lands, including but not limited to:

   a. Recreation;

   b. Hunting;

   c. Residential;

   d. Commercial;

   e. Zoning; and

   f. 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 V: INVESTIGATION ANALYSIS

The Respondent 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, if one is determined to be necessary.

### A. Data Analysis

The Respondent shall analyze all facility investigation data outlined in Task IV 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 background levels indicative for the area.

### B. Protection Standards

1. Ground Water Protection Standards

   For regulated units, the Respondent shall provide information to support the Agency's selection/ development of Ground Water Protection Standards for all of the 40 C.F.R. Part 261 Appendix IX constituents found in the ground water during the Facility Investigation (Task IV).

   a. The Ground Water Protection Standards shall consist of:

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

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

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

   b. Information to support the Agency's subsequent selection of Alternate Concentration Limits (ACLs) shall be developed by the Respondent in accordance with U.S. EPA guidance. For any proposed ACLs, the Respondent shall include a justification based

upon the criteria set forth in 40 C.F.R. § 264.94(b).

c. After receipt and review of any proposed ACLs, the U.S. EPA shall notify the Respondent 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 sixty (60) days of receipt of the U.S. EPA's notification or disapproval of any proposed ACL, the Respondent shall withdraw the application or amend and submit revisions to the U.S. EPA.

2. For all other units or areas of contamination, the Respondent shall propose a ground water protection standard for each Appendix IX constituent found in the ground water and provide adequate information to support this proposal, including a justification based upon the criteria set forth in 40 C.F.R. § 264.94(b)..

a. The proposed ground water protection standard will be reviewed by EPA in accordance with U.S. EPA guidance for ACLs.

b. After receipt and review of any proposed ground water protection standards, the U.S. EPA shall notify the Respondent in writing of approval, disapproval or modifications. The U.S. EPA shall specify in writing the reason(s) for any disapproval or modification.

c. Within sixty (60) days of receipt of the U.S. EPA's notification or disapproval of any proposed ACL, the Respondent shall withdraw the proposal or amend and submit revisions to the U.S. EPA.

3. Other Relevant Protection Standards

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

TASK VI: LABORATORY AND BENCH-SCALE STUDIES

The Respondent shall conduct laboratory and/or bench scale studies to determine the applicability of a corrective measure technology or technologies to facility conditions. The Respondent shall analyze the technologies, based on literature review, vendor contracts, and past experience to determine the testing requirements.

The Respondent shall develop a testing plan identifying the types(s) and goal(s) of the study(ies), the level of effort needed, and the procedures to be used for data management and interpretation.

Upon completion of the testing, the Respondent shall evaluate the testing results to assess the technology or technologies with respect to the site-specific questions identified in the test plan.

The Respondent shall prepare a report summarizing the testing program and its results, both positive and negative.

## TASK VII: REPORTS

### A. Preliminary and Workplan

The Respondent shall submit to the EPA reports on Tasks I and II when it submits the RCRA Facility Investigation Workplan (Task III).

### B. Progress

The Respondent shall at a minimum provide the EPA with signed, quarterly progress reports containing:

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

2. Summaries of all findings;

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

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

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

6. Actions being taken to rectify problems;

7. Changes in personnel during the reporting period;

8. Projected work for the next reporting data, etc.

### C. Draft and Final

Upon EPA approval, the Respondent shall prepare a RCRA Facility Investigation Report to present Tasks IV-V. The RCRA Facility investigation Report shall be developed in draft form for U.S. EPA review. The RCRA Facility Investigation Report shall be developed in final format incorporating comments received on the Draft RCRA Facility Investigation Report. Task VI shall be submitted as a separate report when the Final RCRA Facility Investigation Report is submitted.

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

[NOTE: Due dates are calculated from the effective date of this Order, unless otherwise specified.]

| Facility Submission | Due Date |
|---|---|
| Description of Current Situation (Task I) | Sixty (60) days |
| Pre-Investigation Evaluation of Corrective Measure Technologies (Task II) | Sixty (60) days |
| RFI Workplan (Task III) | Sixty (60) days |
| Draft RFI Report (Tasks IV and V) | In accordance with approved schedule |
| Final RFI Report (Tasks IV and V) (Tasks IV and V) | Sixty (60) days after EPA comment on Draft RFI Report |
| Laboratory and Bench-Scale Studies (Task VI) | Concurrent with Final RFI Report |
| Progress Reports on Tasks I through VI | Quarterly |

ATTACHMENT II

SCOPE OF WORK FOR CORRECTIVE MEASURES STUDY
At
WESTERN NEW YORK SERVICE CENTER

CORRECTIVE MEASURE STUDY

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

Task IX: Evaluation of the Corrective Measure Alternative or Alternatives

Task X: Justification and Recommendation of the Corrective Measure or Measures

Task XI: Reports

# SCOPE OF WORK FOR A CORRECTIVE MEASURE STUDY AT WESTERN NEW YORK NUCLEAR SERVICE CENTER

## PURPOSE

The purpose of this Corrective Measure Study (CMS) is to develop and evaluate the corrective action alternative or alternatives and to recommend the corrective measure or measures to be taken at the Western New York Nuclear Service Center. The Respondent (the term Respondent whenever used in this Attachment shall include both the New York State Energy Research and Development Authority (EPA ID Number NYD986905545) and the United States Department of Energy (EPA ID Number NYD980779540) will furnish the personnel, materials, and services necessary to prepare the corrective measure study, except as otherwise specified.

## SCOPE

The Corrective Measure Study consists of four tasks:

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

- A. Description of Current Situation
- B. Establishment of Corrective Action Objectives
- C. Screening of Corrective Measures Technologies
- D. Identification of the Corrective Measure Alternative or Alternatives

Task IX: Evaluation of the Corrective Measure Alternative or Alternatives

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

Task X: Justification and Recommendation of the Corrective Measure or Measures

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

Task XI: Reports

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

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

Based on the results of the RCRA Facility Investigation and consideration of the identified Preliminary Corrective Measure Technologies (Task II), the Respondent shall identify, screen, and develop the alternative or alternatives for removal, containment, treatment, and/or other remediation of the contamination based on the objectives established for the corrective action.

### A. Description of Current Situation

The Respondent shall submit an update to the information describing the current situation at the combined facility and the known nature and extent of the contamination as documented by the RCRA Facility Investigation Report. The Respondent shall provide an update to information presented in Task I of the RFI to the Agency regarding previous response activities and any interim measures which have or are being implemented at the combined facility. The Respondent shall also make a facility-specific statement of the purpose for the response, based on the results of the RCRA Facility Investigation. 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

The Respondent, 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, EPA guidance, and the requirements of any applicable Federal statutes. At a minimum, all corrective actions concerning ground water releases from regulated units must be consistent with, and as stringent as, those required under 40 CFR § 264.100.

### C. Screening of Corrective Measure Technologies

The Respondent shall review the results of the RCRA Facility Investigation and reassess the technologies specified in Task II and identify additional technologies which are applicable at the combined facility. The Respondent shall screen the preliminary corrective measure technologies identified in Task II of the RCRA Facility Investigation and any supplemental technologies to eliminate those that may prove infeasible to implement, that rely on technologies unlikely to perform satisfactorily or reliably, or that do not achieve the corrective measure objective within a

reasonable time period. This screening process focuses on eliminating those technologies which have severe limitations for a given set of waste and site-specific conditions. The screening step may also eliminate technologies based on inherent technology limitations. Site, waste, and technology characteristics which are used to screen inapplicable technologies are described in more detail below:

1. Site Characteristics

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

2. 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 affect the feasibility of in-situ methods, direct treatment methods, and land disposal (on/off-site); and

3. 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.

D. <u>Identification of the Corrective Measure Alternative or Alternatives</u>

The Respondent 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 II of the RCRA Facility investigation and as supplemented following the preparation of the RFI Report. The Respondent shall rely on engineering practice 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 actior objectives. Each alternative may consist of an individual technology or a combination of technologies. The Respondent shall document the reasons for excluding technologies, identified in Task II, as supplemented in the development of the alternative or alternatives.

## TASK IX: EVALUATION OF THE CORRECTIVE MEASURE ALTERNATIVE OR ALTERNATIVES

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

### A. Technical/Environmental/Human Health/Institutional

The Respondent 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. The Respondent shall evaluate each alternative in the four following areas:

1. Technical;

   The Respondent shall evaluate each corrective measure alternative based on performance, reliability, implementability and safety.

   a. The Respondent shall evaluate performance based on the effectiveness and useful life of the corrective measure:

      i) Effectiveness shall be evaluated in terms of the ability to 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 characteristics 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. Resource availability in the future life of the technology, as well as appropriateness of the technologies, must be considered in estimating the useful life of the project.

b. The Respondent shall provide information on the reliability of each corrective measure including their 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 little or straightforward 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. The Respondent should evaluate whether the technologies have been used effectively under analogous conditions; whether the combination of technologies have been used together effectively; whether failure of any one technology has an immediate impact on receptors; and whether the corrective measure has the flexibility to deal with uncontrollable changes at the site.

c. The Respondent shall describe the implementability of each corrective 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 include 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). The Respondent shall evaluate what measures can be taken to facilitate construction under these conditions. External factors which

affect implementation include the need for special permits or agreements, equipment availability, and the location of suitable off-site treatment or disposal facilities; and

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. The Respondent shall evaluate each corrective measure alternative with regard to safety. This evaluation shall include threats to the safety of nearby communities and environments as well as those to workers during implementation. Factors to consider are fire, explosion, and exposure to hazardous substances.

2. Environmental;

The Respondent 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 alternative; any adverse effects on environmentally sensitive areas; and an analysis of measures to mitigate adverse effects.

3. Human Health; and

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

4. Institutional.

The Respondent shall assess relevant institutional needs for each alternative. Specifically, the effects of Federal, State and local environmental and public health standards, regulations, guidance, advisories, ordinances, or community relations on the design, operation, and timing of each alternative.

B. **Cost Estimate**

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

1. Capital costs consist of direct (construction) and indirect (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 services costs: Costs of process and non-process 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) Start-up and shakedown costs: Costs incurred during corrective measure start-up; 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 Respondent shall consider the following operation and maintenance cost components:

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

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

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

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

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

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

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

h. Maintenance reserve and contingency funds: Annual payments into escrow funds to cover (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 X: JUSTIFICATION AND RECOMMENDATION OF THE CORRECTIVE MEASURE OR MEASURES

The Respondent 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 understood easily. Tradeoffs among health risks, environmental effects, and other pertinent factors shall be highlighted. The U.S. EPA will select the corrective measure alternative or alternatives to be implemented based on the results of Tasks IX and X. 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 U.S. EPA criteria, standards, or 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 on the environment will be favored.

## TASK XI: REPORTS

The Respondent shall prepare a Corrective Measure Study Report presenting the results of Task VIII through X and recommending a corrective measure alternative.

### A. Progress

The Respondent shall, at a minimum, provide the U.S. EPA with signed, quarterly progress reports containing:

1. A description and estimate of the percentage of the CMS completed;
2. Summaries of all findings;
3. Summaries of all changes made in the CMS during the reporting period;
4. Summaries of all contacts with representatives of the local community, public interest groups or State government during the reporting period;
5. Summaries of all problems or potential problems encountered during the reporting period;
6. Actions being taken to rectify problems;
7. Changes in personnel during reporting period;
8. Projected work for the next reporting period; and
9. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

### B. Draft

The Report shall at a minimum include:

1. A description of the facility;
    a. Site topographic map & preliminary layouts.
2. A summary of the corrective measure or measures;
    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;

a. Field studies (ground water, surface water, soil, air); and

b. Laboratory studies (bench scale, pick scale).

4. Design and Implementation Precautions;

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;

a. Capital cost estimate;

b. Operation and maintenance cost estimate; and

c. Project schedule (design, construction, operation).

C. <u>Final</u>

The Respondent shall finalize the Corrective Measure Study Report incorporating comments received from EPA on the Draft Corrective Measure Study Report.

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

[NOTE: Due dates are calculated from the effective date of this Order, unless otherwise specified.]

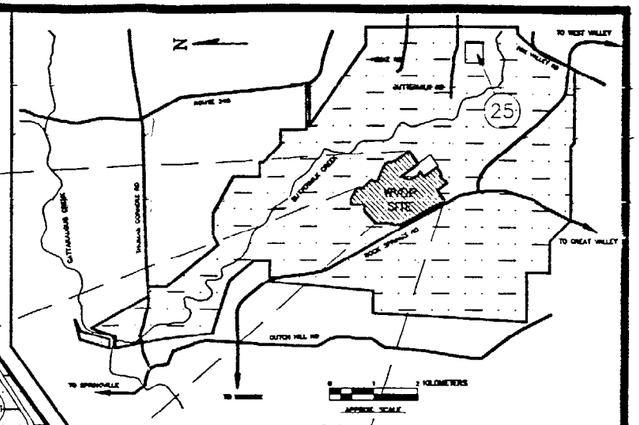
| Facility Submission | Due Date |
|---|---|
| Draft CMS Workplan | Ninety (90) days after EPA Notification |
| Final CMS Workplan | Sixty (60) days after EPA comments on Draft Workplan |
| Draft CMS Report (Tasks VIII, IX, and X) | As approved in Workplan |
| Final CMS Report | Sixty (60) days after Public and EPA comment on the Draft CMS |
| Progress Reports on Tasks VIII, IX, and X | Quarterly |

# MAP 3a
# WEST VALLEY DEMONSTRATION PROJECT
# SOLID WASTE MANAGEMENT UNITS

N

## LEGEND

- DOE RESPONSIBILITY per RCRA 3008(h) Order
- NYSERDA RESPONSIBILITY per RCRA 3008(h) Order
- WVDP BOUNDARY
- PARKING LOTS (DOE RESPONSIBILITY)




MAP 3b
WESTERN NEW YORK NUCLEAR SERVICE CENTER

NEW YORK STATE LICENSED DISPOSAL AREA (SDA)
SDA-1
SDA-2
SDA-3
SDA-4
SDA-5
NRC LICENSED DISPOSAL AREA (NDA)
PARKING LOT
PARKING LOT
01
02
03
04
05
06
07
08
09
09A
10
11
11A
12
12A
15
16
16A
17
18
21
22
23

METERS
0 100 200 300 400 500
APPROX. SCALE

| SWMU | DESCRIPTION | STATUS |
|---|---|---|
| 01 | CONSTRUCTION & DEMOLITION LANDFILL | NOT ACTIVE |
| 02 | NRC LICENSED DISPOSAL AREA | NOT ACTIVE |
| 03 | LAGOON #1 | NOT ACTIVE |
| 04 | LAGOONS #2, #3, #4, #5 | ACTIVE |
| 05 | SLUDGE PONDS (2) | ACTIVE |
| 06 | SOLVENT DIKE | NOT ACTIVE |
| 07 | EFFLUENT MIXING BASIN | ACTIVE |
| 08 | MAINTENANCE SHOP SANITARY LEACH FIELD | NOT ACTIVE |
| 09 | OLD HARDSTAND STORAGE AREA | NOT ACTIVE |
| 09A | NEW HARDSTAND STORAGE AREA | ACTIVE |
| 10 | INCINERATOR | NOT ACTIVE |
| 11 | NDA CONTAINER STORAGE | ACTIVE |
| 11A | STORAGE TANK USED IN TRENCH SYSTEM | ACTIVE |
| .. | VITRIFICATION FACILITY TEST TANKS | ACTIVE |
| .. | VITRIFICATION FACILITY TEST TANKS | ACTIVE |
| .. | HIGH LEVEL WASTE TANKS | ACTIVE |
| 14 | CHEMICAL PROCESS CELL HARDSTAND | ACTIVE |
| 15 | LAG STORAGE BUILDING | ACTIVE |
| 16 | LAG STORAGE (LSA 1 & 2) | ACTIVE |
| 16a | LAG STORAGE (LSA 3 & 4) | ACTIVE |
| .. | LOW LEVEL WASTE TREATMENT FACILITY | ACTIVE |
| .. | LIQUID WASTE TREATMENT SYSTEM | ACTIVE |
| .. | SUPERNATENT TREATMENT SYSTEM | ACTIVE |
| .. | VITRIFICATION FACILITY | ACTIVE |
| .. | RADWASTE TREATMENT SYSTEM DRUM CELL | ACTIVE |
| 22 | CEMENT SOLIDIFICATION SYSTEM | ACTIVE |
| 23 | TRENCH INTERCEPTOR PROJECT | ACTIVE |
| 24 | HAZARDOUS WASTE STORAGE LOCKERS | ACTIVE |
| 25 | BULK STORAGE W.H. SCRAP METAL LANDFILL | NOT ACTIVE |
| SDA-1 | 14 INACTIVE LLRW DISPOSAL TRENCHES | NOT ACTIVE |
| SDA-2 | INACTIVE LAGOON | NOT ACTIVE |
| SDA-3 | NORTHERN FILLED LAGOON | NOT ACTIVE |
| SDA-4 | SOUTHERN FILLED LAGOON | NOT ACTIVE |
| SDA-5 | TRENCH 14 TREATMENT FACILITY | ACTIVE |

NOTE: SWMU NN, XX, AND YY HAVE BEEN RENAMED TO 01, 03, AND 22 RESPECTIVELY.