

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Remedial Bureau E
625 Broadway, 12th Floor, Albany, NY 12233-7017
P: (518) 402-9813 | F: (518) 402-9819
www.dec.ny.gov

July 19, 2016

Mr. Steven Feinberg
Federal Project Director
US Department of Energy
SPRU Field Office, SP-23
2425 River Road
Niskayuna, New York 12309

RE: Request for Minor Modification, 6 NYCRR Part 373 Permit # 4-4224-00024/0055
(issued as # 4-4224-00024/0042, September 29, 2008)
Request Date: January 26, 2016

Dear Mr. Feinberg:

Modifications to the above-referenced permit requested by the US-DOE SPRU Field Office on January 26, 2016, which consist of changes to Module II and Appendix II-E, have been determined to be minor modifications.

Pursuant to 6NYCRR Part 373-1.7(c)(1)(vii), the proposed changes do not substantially alter permit conditions or reduce the capacity of the facility to protect human health or the environment. The Department has made modifications to your permit, as listed below, in the enclosures provided with this letter. All other terms and conditions of the permit remain as previously issued and/or modified. Please replace the appropriate sections in your copy of the permit with the modified sections enclosed, and in copies held in document repositories for this facility.

Page II-4, Module II, Condition A.3, Table II-1, Storage/Treatment Tanks – Added SPRU Fractionation Tanks 1 (SWMU-081) and SPRU Fractionation Tanks 2 (SWMU-082) as Items 9 and 10, respectively.

Page II-4, Module II, Condition A.3, Table II-1, Areas of Concern (AOCs) – Removed H1 Cooling Tower (AOC-007).

Page II-14, Module II, Condition E.1.(a) – Added references to December 2, 2011 notification and January 13, 2012 assessment.



Department of
Environmental
Conservation

Page II-17, Module II, Condition E.1.(a)(10) – Added Fractionation Tanks 1 (SWMU-081) and associated description.

Page II-18, Module II, Condition E.2.(a)(2) – Added language concerning transfer of H1 Cooling Tower (AOC-007) to KAPL-Knolls Hazardous Waste Management Permit.

Page II-27, Module II, Condition E.8.(a) – Removed reference to H1 Cooling Tower (AOC-007) and added reference to SPRU Fractionation Tanks 2 (SWMU-082).

Page E-4, Module II, Appendix II-E – Made changes to text reflecting transfer of H1 Cooling Tower (AOC-007) to KAPL-Knolls Hazardous Waste Management Permit and current status.

Page E-6, Module II, Appendix II-E – Added a new page concerning the SPRU Fractionation Tanks 2 (SWMU-082).

Please note, as above, that your permit number as recorded in the Department's tracking system has been changed. The Department will initiate a separate permit modification in the future to address this change.

Should you have any questions or comments regarding this modification, please contact Margaret Rogers at margaret.rogers@dec.ny.gov or at (518) 357-2353.

Sincerely,



Thomas J. Killeen, P. E.
Chief, RCRA Permits Section

Enclosures

ec: J. Hill, USDOE-NRLFO
D. Delwiche, USDOE-NRLFO
N. Azzam, USEPA, Region 2
A. Park, USEPA, Region 2
A. DeMarco, NYSDOH
W. Clarke, NYSDEC, Region 4
A. Marcuccio, NYSDEC, Region 4
J. Quinn, NYSDEC, Region 4, w/o enclosure

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION



DEC PERMIT NUMBER
#4-4224-00024/00042

FACILITY/PROGRAM NUMBER(S)
US DOE-EM Separations Process Research Unit
EPA.I.D.No: NYR 000 096 859

6NYCRR PART 373 PERMIT
Under the Environmental
Conservation Law

EFFECTIVE DATE
September 29, 2008

EXPIRATION DATE(S)
September 28, 2018

TYPE OF PERMIT : ☒ New ☐ Renewal ☐ Modification ☐ Permit to Construct ☐ Permit to Operate

- | | | |
|---|---|---|
| <input type="checkbox"/> Article 15, Title 5: Protection of Waters | <input type="checkbox"/> 6NYCRR 608: Water Quality Certification | <input type="checkbox"/> Article 27, Title 7; 6NYCRR 360: Solid Waste Management |
| <input type="checkbox"/> Article 15, Title 15: Water Supply | <input type="checkbox"/> Article 17, Titles 7, 8: SPDES | <input checked="" type="checkbox"/> Article 27, Title 9; 6NYCRR 373: Hazardous Waste Management |
| <input type="checkbox"/> Article 15, Title 15: Water Transport | <input type="checkbox"/> Article 19: Air Pollution Control | <input type="checkbox"/> Article 34: Coastal Erosion Management |
| <input type="checkbox"/> Article 15, Title 15: Long Island Wells | <input type="checkbox"/> Article 23, Title 27: Mined Land Reclamation | <input type="checkbox"/> Article 36: Floodplain Management |
| <input type="checkbox"/> Article 15, Title 27: Wild, Scenic and Recreational Rivers | <input type="checkbox"/> Article 24: Freshwater Wetlands | <input type="checkbox"/> Articles 1, 3, 17, 19, 27, 37; 6NYCRR 380: Radiation Control |
| | <input type="checkbox"/> Article 25: Tidal Wetlands | |

☐ Other:

PERMIT ISSUED TO United States Department of Energy - Environmental Management - Separations Process Research Unit (SPRU)		TELEPHONE NUMBER (518) 395-4580	
ADDRESS OF PERMITTEE 2425 River Road, Niskayuna, New York 12309-7100			
CONTACT PERSON FOR PERMITTED WORK Hugh Davis		TELEPHONE NUMBER (518) 395-4956	
NAME AND MAILING ADDRESS OF PROJECT/FACILITY US DOE-EM, SPRU Facility, 2425 River Road, Niskayuna, New York 12309-7100			
LOCATION OF PROJECT/FACILITY 2425 River Road, Niskayuna, New York 12309-7100			
COUNTY Schenectady	TOWN Niskayuna	WATERCOURSE	NYTM COORDINATES
<p>DESCRIPTION OF AUTHORIZED ACTIVITY:</p> <p>DOE-EM is authorized to conduct corrective action for the SWMUs and AOCs associated with the SPRU facility, that were previously handled under the US DOE-SNR KAPL Knolls permit #4-4224-00024/00001.</p>			

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, the General Conditions specified (see page 2) and any Special Conditions included as part of this permit.

DEPUTY PERMIT ADMINISTRATOR Nancy Baker	ADDRESS: NYSDEC Region 4 1130 North Westcott Road Schenectady, NY 12306-2014		
AUTHORIZED SIGNATURE <i>Nancy Baker</i>	DATE 9/29/08	Page 1 of 4	

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS**Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification**

The permittee expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, agents, and assigns for all claims, suits, actions, damages, and costs of every name and description, arising out of or resulting from the permittee's undertaking of activities or operation and maintenance of the facility or facilities authorized by the permit in compliance or non-compliance with the terms and conditions of the permit.

Item B: Permittee to Require its Contractors to Comply with Permit

The permittee shall require its independent contractors, employees, agents and assigns to comply with this permit, including all special conditions, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits

The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights

This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

GENERAL CONDITIONS**General Condition 1: Facility Inspection by the Department**

The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71-0301 and SAPA 401(3).

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when written or verbal notification is provided by the Department at least 24 hours prior to such inspection.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

General Condition 2: Relationship of this Permit to Other Department Orders and Determinations

Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

General Condition 3: Applications for Permit Renewals or Modifications

The permittee must submit a separate written application to the Department for renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing.

The permittee must submit a renewal application at least:

- a) 180 days before expiration of permits for State Pollutant Discharge Elimination System (SPDES), Hazardous Waste Management Facilities (HWMF), major Air Pollution Control (APC) and Solid Waste Management Facilities (SWMF); and
- b) 30 days before expiration of all other permit types.

Submission of applications for permit renewal or modification are to be submitted to:

NYSDEC Regional Permit Administrator, Region 4

Address: 1130 North Westcott Rd., Schenectady, NY 12306-2014, telephone: (518) 357-2456

General Condition 4: Permit Modifications, Suspensions and Revocations by the Department

The Department reserves the right to modify, suspend or revoke this permit when:

- a) the scope of the permitted activity is exceeded or a violation of any condition of the permit or provisions of the ECL and pertinent regulations is found;
- b) the permit was obtained by misrepresentation or failure to disclose relevant facts;
- c) new material information is discovered; or
- d) environmental conditions, relevant technology, or applicable law or regulation have materially changed since the permit was issued.

ADDITIONAL GENERAL CONDITIONS FOR ARTICLE 27 (TITLE 9-6 NYCRR PART 373 HAZARDOUS WASTE MANAGEMENT PERMIT)

All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or his agent as part of the permit application. Such approved plans were prepared by DOE-EM on September 30, 2004 and revised on February 27, 2008.

SPECIAL CONDITIONS

1. The permit is based on the information submitted in the permit application submitted by DOE EM on September 30, 2004 and subsequent updates from DOE-EM. The permit is based on the assumption that the information submitted by DOE-EM in the above documents is complete and accurate and the facility will be remediated and operated as specified in the above application. Any inaccuracies or incompleteness found in the information may be grounds for the termination or modification of this permit and potential enforcement action.
2. The permittee must comply with all terms and conditions of this permit. This permit consists of the conditions contained herein (including those in any attachments) and the applicable regulations contained in 6 NYCRR (Parts 370 through 373-2, 376, 621 and 624). The permittee must inform DEC of any deviation from or changes in the information contained in the application which would affect the permittee's ability to comply with the regulations or permit conditions.
3. The Permittee is responsible for verifying that the Quality Control/Assurance Program (QA/QC) followed by laboratories used by the Permittee to carry out analysis of the waste streams, conform to the QA/QC procedures approved in the permit and thus ensure the validity of the analytical data provided by the laboratories.
4. As required by ECL 03-0119, any laboratory (Permittee or contract) used by the Permittee to perform analysis pursuant to this Permit must be certified by the New York State Department of Health Environmental Laboratory Approval Program (ELAP) in the appropriate categories of analysis, if ELAP issues certifications in such categories. If the Permittee uses a contract laboratory to perform analysis required by this Permit, then the Permittee shall inform the laboratory in writing that it must operate under the waste analysis and quality assurance provisions of this Permit.

DEC Permit No:
#4-4224-00024/00042

DEPUTY PERMIT ADMINISTRATOR
Nancy Baker

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SPECIAL CONDITIONS
FOR ARTICLE 27, Title 9 (Hazardous Waste Management)

5. The Permittee must operate the facility in strict accordance with the modules to this permit and the permit application as specified below:

MODULES

Module I	General Conditions
Module II	Corrective Action Requirements

ATTACHMENTS

Attachment I	Hazardous Waste Permit Information Forms
Attachment II	Facility Map
Attachment III	Certification
Attachment IV	NYCRR Part 370 through 374 and 376 (Effective 09/05/2006)

DEC Permit No:
 #4-4224-00024/00042

DEPUTY PERMIT ADMINISTRATOR
 Nancy Baker

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PART 373 PERMIT
MAJOR/MINOR MODIFICATION

Us Department of Energy
Environmental Management
Separations Process Research Unit
NYR000096859

The permit may be modified for causes as allowed under 6 NYCRR 373-1, 7 and 621.14. Modification shall be requested in writing as required by 6 NYCRR 621.13 and 621.14. Requests for modifications shall be submitted to the Regional Permit Administrator for approval and modification of the permit.

PERMIT MODIFICATION LOG

The name of the specific document being modified (sections, and/or attachments)	Modified page numbers		Date of Revised pages	The nature of the modification
	Old	New		
Attachment I	3/4, 1/6, 5/6, 6/6,	3/4 1/6 5/6 6/6	11/19/12	Modification made to reflect operator working on site and anticipated RCRA wastes to be generated during the remainder of SPRU remedial activities
Attachment III	1,	1	11/19/12	Updated certification
Module I, Condition J	I-8 to I-9, I-8 to I-9		11/19/12	NYSDEC provided replacement Condition J with 11/19/12 Approval Letter
Permit Table of Contents	Un-numbered		11/19/12	NYSDEC provided replacement Table of Contents with 11/19/12 Approval Letter; replacement Table includes new page numbers for Module 1 as a result of modifying Module I, Condition J
Module II, A.3	II-4,	II-4		Add SWMU-081 and SWMU-082 to Table II-1; remove AOC-007 from Table II-1
Module II, E-1.(a)	II-17,	II-17		Add SWMU-081 to list in E.1.(a) of SWMUs with "No Action Requirement"
Module II, E.2(a)(2)	II-17	----		Add statement that AOC-007 is transferred to the KAPL permit
Module II, E.8(a)	II-27,	II-27		Add SWMU-082; remove AOC-007
Appendix II-E	E-4,	E-4		Indicate that AOC-007 is transferred to KAPL permit; update next steps towards corrective action
Appendix II-E	----	E6 to E7		Add information pages on SWMU-081 and SWMU-082

6 NYCRR PART 373 HAZARDOUS WASTE MANAGEMENT PERMIT

US Department of Energy
Environmental Management
Separations Process Research Unit

Niskayuna, New York
Schenectady County

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Appendix II-D - Compliance Schedule

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ATTACHMENTS

Attachment I	Hazardous Waste Permit Information Forms
Attachment II	Facility Map & Description
Attachment III	Certification
Attachment IV	NYCRR Part 370 through 374 and 376 (Effective 09/05/2006)

US Department of Energy
Environmental Management
Separations Process Research Unit
NYR000096859

Niskayuna, New York
Schenectady County

MODULE I - Regulatory Provisions

A. **EFFECT OF PERMIT**

The Permittee must comply with all terms and conditions of this permit. This permit consists of the conditions contained herein; sections of the Completed Permit Application referenced herein, including any subsequent Department approved changes to the referenced sections of that application; and the applicable regulations cited herein. Pursuant to 6NYCRR 373-1.6(c)(4), the applicable regulations or requirements are those which are in effect prior to final issuance of this permit. The exceptions are those requirements which become effective by statute, which become effective due to changes in 6NYCRR 376, and which become effective due to changes in 6NYCRR 373-1.6.

The Permittee is authorized to conduct corrective action in accordance with the conditions of this permit. All regulatory requirements previously under the US DOE Naval Reactors Laboratory Field Office (NRLFO) Knolls Atomic Power Laboratory (KAPL) Part 373 Hazardous Waste Permit (NYSDEC Permit #4-4224-00024/00001) related to the Separations Process Research Unit (SPRU) Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) referred to in this Permit are now primarily the responsibility of DOE Environmental Management (DOE-EM). DOE-NRLFO will retain liability in the event of default by DOE-EM and will be responsible under the DOE-NRLFO permit to satisfy all DOE-EM and DOE-NRLFO permit requirements at the time DOE-EM defaulted. The Department will inform DOE-NRLFO in writing of the default and their obligations to continue the corrective action activities previously required by DOE-EM. This RCRA Corrective Action permit includes the SWMUs and AOCs for the SPRU facility, formerly contained in the DOE-NRLFO KAPL Part 373 Hazardous Waste Permit.

Corrective action activities at the SPRU facility have been performed by several different offices within DOE during the history of the site. The more recent work has been performed by DOE-EM, NNSA, DOE-Oakland and/or DOE-NRLFO. Work performed by DOE-NRLFO was completed under the DOE-NRLFO KAPL Part 373 Hazardous Waste Permit.

B. **PERMIT ACTIONS**

This permit may be modified, revoked, or suspended for cause as specified in 6 NYCRR 621.14. The filing of a request for a permit modification, revocation and reissuance, or suspension; or the notification of planned changes or anticipated noncompliance on the part of the Permittee does not stay the applicability or enforceability of any permit condition.

C. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

D. DUTIES AND REQUIREMENTS

- (1) Duty to Comply. This Permittee shall comply with any and all statutes, regulations and conditions of this permit. Any permit noncompliance constitutes a violation of the Environmental Conservation Law (ECL) Article 27, Title 9 and is grounds for enforcement action; permit suspension, revocation, or modification; or denial of a permit renewal application.
- (2) Duty to Reapply. If the Permittee wishes to continue an activity allowed by this permit after the expiration date of this Permit, the Permittee shall submit a complete application for a new permit at least 180 days before this permit expires and shall obtain a new permit.
- (3) Need to Halt or Reduce Activity Not a Defense. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- (4) Duty to Mitigate. The Permittee shall take all steps to minimize or correct any adverse impact on human health or the environment resulting from noncompliance with this permit.
- (5) Proper Operation and Maintenance. The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes, but is not limited to, effective performance, adequate funding, adequate operator staffing and training, and adequate process and laboratory controls, including appropriate quality assurance/quality control procedures. This provision requires the operation of back-up or auxiliary facilities or similar

systems only when necessary to achieve compliance with the conditions of this permit.

- (6) Inspection and Entry. The Permittee shall allow the Commissioner, or an authorized representative, including authorized EPA representatives, upon the presentation of credentials and other documents as may be required by law to:
- (a) Enter at reasonable times upon the Permittee's premises where a regulated activity is located or conducted or areas subject to corrective action pursuant to Module II of this permit, or where records must be kept under the conditions of this permit;
 - (b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit, including any and all confidential data (see Module I, Permit Condition F);
 - (c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
 - (d) Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the ECL, any substances or parameters at any location.
 - (e) As the SPRU areas are contained within the DOE-NRLFO KAPL - Knolls facility (EPA ID #NY6890008992), access shall be conducted in accordance with the DOE-NRLFO KAPL Permit #4-4224-00024/00001, including established DOE Security clearances and compliance with all posted notices and warning signs.
- (7) Duty to Provide Information. The Permittee shall furnish to the Commissioner, within a reasonable time, any relevant information which the Commissioner may request to determine whether cause exists for modifying, revoking and reissuing, or suspending this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Commissioner, upon request, copies of records required to be kept by this permit.
- (8) Twenty-four Hour Reporting. The Permittee shall report to the Commissioner any non-compliance which may endanger human health or the environment. Any such information shall be reported orally within 24 hours from the time the Permittee becomes aware of the circumstances. This report shall include the following:

- (a) Information concerning the release of any hazardous waste/mixed waste or hazardous constituent which may cause endangerment to public drinking water supplies.
- (b) Any information of a release or discharge of hazardous waste/mixed waste or of a fire or explosion at the facility, which could threaten the environment or human health.
- (c)
 - (i) Name, address, and telephone number of the operator;
 - (ii) Name, address, and telephone number of the facility;
 - (iii) Date, time, and type of incident;
 - (iv) Name and quantity of materials involved;
 - (v) The extent of injuries, if any;
 - (vi) An assessment of actual or potential hazards to the environment and human health inside and outside the facility, where this is applicable; and
 - (vii) Estimated quantity and disposition of recovered material that resulted from the incident.

A written submission shall also be provided to the Commissioner within five days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the periods of noncompliance (including exact dates and times); whether the noncompliance has been corrected; and if not, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance (See Permit Condition D.(4) of Module I). The Permittee need not comply with the five day written notice requirement if the Commissioner waives the requirement and the Permittee submits a written report within 15 days of the time the Permittee becomes aware of the circumstances.

The oral reports required above may be made by contacting the National Response Center 24-hour toll free number at (800) 424-8802 and the New York State 24-hour oil and hazardous material spill notification number, (800) 457-7362, or any designated telephone number which may subsequently replace the ones listed above.

- (9) Unmanifested Waste Report. Not applicable because facility is not permitted to receive wastes from off-site.

- (10) Manifest Discrepancy Report. Not applicable because facility is not permitted to receive wastes from off-site.
- (11) Additional Noncompliance Reporting. The Permittee shall report all instances of noncompliance (including release of hazardous waste/mixed waste, fire or explosion) not required to be reported under Module I, Condition D.(8) or (18) which have the potential to impact or have impacted the environment. For noncompliance, which is required to be documented elsewhere in this permit (e.g., weekly inspections), this reporting procedure is not required. Noncompliances, which are minor in nature (loose cap, labeling deficiencies, etc.), are not intended to be reported under this Module Condition. Noncompliance reported under this Module Condition shall be reported at the time monitoring reports are submitted. The reports shall contain the information listed in Module I, Condition D.(8)(c)(i-vii).
- (12) Anticipated Noncompliance. The Permittee shall give advance notice to the Commissioner of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. Compliance with Permit Condition D.(3) of Module I is still effective in this situation.
- (13) Other Information. Whenever the Permittee becomes aware that he failed to submit any relevant facts in the permit application, or submitted incorrect information in a permit application or in any report to the Commissioner, the Permittee shall immediately submit such facts or information.
- (14) Compliance Schedules. The Permittee must comply with the compliance schedules in this permit. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements (other than submission of specific documents) shall be submitted no later than 14 days following each schedule date.
- (15) Annual Report. The Permittee shall submit an annual report covering facility activities during the calendar year in accordance with the requirements of 6 NYCRR 373-2.5(e).
- (16) Monitoring and Records.
- (a) Samples and measurements taken for the purpose of monitoring and/or as required by any approved work plan shall be representative of the corrective action activity. The methods used to obtain a representative sample of the waste to be analyzed must be the appropriate method from Appendix 19 and Appendix 35 of 6 NYCRR Parts 371 and 376 respectively or an equivalent method approved by the Department. Laboratory Methods must be those specified in Test Methods for Evaluating Solid Waste: Physical & Chemical Methods, EPA Publication

SW-846, Third Edition, First Update 1990 or later approved revisions, or an equivalent method, as approved by the Department.

- (b) The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original chart recordings for continuous monitoring instrumentation, copies of all reports and records required by this permit, certification required by 6 NYCRR 373-2.5(c)(2)(ix), and records of all data used to complete the application for this permit until RCRA Correction Action is completed at the facility and all Correction Action activities are approved by the Department. For land disposal facilities ¹, the monitoring data required under 6 NYCRR 373-2.6 must be kept throughout the post-closure care period.
 - (c) Records of monitoring information shall specify:
 - (i) The dates, exact place, and times of sampling or measurements;
 - (ii) The individuals who performed the sampling or measurements;
 - (iii) The dates analyses were performed;
 - (iv) The individual(s) who performed the analyses;
 - (v) The sampling techniques or methods used;
 - (vi) The analytical techniques or methods used; and
 - (vii) The results of such analyses.
 - (d) The Permittee shall conduct a quality assurance program to ensure that the monitoring data are technically accurate and statistically valid. The quality assurance program shall be in accordance with Chapter One and applicable subsections of Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, EPA Publication SW-846, Third Edition, First Update, 1990 or later approved revisions, or equivalent methods approved by the Department.
- (17) Availability, Retention and Disposition of Records. All records, including plans, must be made available to the DEC in accordance with 6 NYCRR 373-2.5(d)(1). The retention period for all records is extended automatically during any unresolved enforcement action regarding the facility or as requested by the

¹

Not applicable. The DOE-EM Site does not have any regulated units that require any monitoring under this permit.

Commissioner. A copy of records of waste disposal locations and quantities under 6 NYCRR 373-2.5(c)(2) must be submitted to the Commissioner and local land authority upon closure of the facility as required by 6 NYCRR 373-2.5(d)(3).

- (18) Monitoring Reports. Monitoring results must be reported at the intervals specified elsewhere in this permit.
- (19) Reporting Planned Changes. The Permittee shall give notice to the Commissioner as soon as possible of any planned physical alterations or additions to the permitted facility. See Module I, Condition I.
- (20) Certification of Construction or Modification.
Not Applicable
- (21) Transfer of Permits. This permit may be transferred to a new owner or operator only if it is modified or revoked and reissued pursuant to 6 NYCRR 373-1.6(a)(12)(iii) and 6 NYCRR 373-1.7(a). Before transferring ownership or operation of the facility during its corrective action activities, the Permittee shall notify the new owner or operator in writing of the requirements of 6 NYCRR Part 373.

E. SIGNATORY REQUIREMENT

All reports or other information requested by the Commissioner shall be signed and certified as required by 6 NYCRR 373-1.4(a)(5).

F. CONFIDENTIAL INFORMATION

The Permittee may claim confidential any information required to be submitted by this permit in accordance with 6 NYCRR 370.1(b). All documentation which the Permittee believes justifies its claim of confidentiality must be submitted in accordance with 6 NYCRR Part 616 with any such claim of confidentiality.

Access to restricted data, national security information or other sensitive military information protected under federal law or regulation shall be in accordance with applicable DOE information security requirements.

G. DOCUMENTS TO BE SUBMITTED PRIOR TO OPERATION

Not Applicable

H. DOCUMENTS TO BE MAINTAINED AT THE FACILITY

The Permittee shall maintain at the facility, until Corrective Action activities are complete and approved by the Department, a copy of this permit and the following documents, amendments, revisions and modifications to these documents as may be necessary at any time due to changes in generator status (from Small Quantity Generator to Large Quantity Generator):

- (1) Waste Analysis Plan as required by 6 NYCRR 373-2.2(e);
- (2) Personnel training documents and records as required by 6 NYCRR 373-2.2(h)(4);
- (3) Contingency plan as required by 6 NYCRR 373-2.4(d);
- (4) Closure plan as required by 6 NYCRR 373-2.7(c); ²
- (5) Annually adjusted cost estimate for facility closure as required by 6 NYCRR 373-2.8(c). ²
- (6) Operating record as required by 6 NYCRR 373-2.5(c);
- (7) Inspection schedules as required by 6 NYCRR 373-2.2(g)(2); ²

I. PERMIT MODIFICATIONS

The permit may be modified for cause as allowed under 6 NYCRR 373-1.7 and 621.14. Modifications shall be requested in writing as required by 6 NYCRR 621.13 and 621.14. Requests for modifications shall be submitted to the Regional Permit Administrator for approval and permit modification.

The Permittee must provide and maintain a log of all modifications made to this Permit, including modifications made to the Permit Application documents that are made part of this Permit. The Permittee shall place the log at the beginning of this Permit along with a copy of the Department's approval letter(s), when applicable. Upon receipt of a Permit modification issued by the Department, the Permittee must update the log and replace the pages, sections, and/or attachments in the Permit and Permit Application with the modified pages, sections and/or attachments in the permit copy maintained by the Permittee.

J. ALL REPORTS AND SUBMITTALS

- (1) All submittals required by the Permit must be submitted to the addresses listed below, in the quantities and form(s) specified (i.e. either hard copy or electronic

² Not Applicable at this time.

copy). All electronic submittals shall be made according to Department requirements for the submittal of electronic documents.

- a) One (1) electronic copy of all reports and submittals required by the Permit to:

Chief, RCRA Permitting Section
Remedial Bureau E
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7017

with one (1) hard copy and one (1) electronic copy to:

Regional Engineer
New York State Department of Environmental Conservation
Region 4 Office
1130 North Westcott Road
Schenectady, New York 12306
Attn.: RCRA Project Manager

and one (1) electronic copy, transmitted via e-mail, to:

Chief, RCRA Programs Branch
U.S. EPA Region II
c/o everett.adolph@epa.gov

- b) One (1) hard copy of Applications to renew or modify this Permit must be submitted to the following to both:

Regional Permit Administrator
NYS Department of Environmental Conservation
Region 4 Office
1130 North Westcott Road
Schenectady, New York 12306

Regional Engineer

New York State Department of Environmental Conservation
Region 4 Office
1130 North Westcott Road
Schenectady, New York 12306
Attn.: RCRA Project Manager

and one (1) electronic copy, transmitted via e-mail, to:

Chief, RCRA Programs Branch
U.S. EPA Region II
c/o everett.adolph@epa.gov

- c) One (1) electronic copy of all other submittals to both:

Chief, RCRA Permitting Section
Remedial Bureau E
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7017

Regional Engineer
New York State Department of Environmental Conservation
Region 4 Office
1130 North Westcott Road
Schenectady, New York 12306
Attn.: RCRA Project Manager

and one (1) electronic copy, transmitted via e-mail, to:

Chief, RCRA Programs Branch
U.S. EPA Region II
c/o everett.adolph@epa.gov

- d) Where additional Department staff are copied on the above submittals, the Permittee shall submit these copies electronically. In addition, the Permittee shall provide hard copies of any of the above submittal(s) when specifically requested by the Department.

- (2) All plans, reports, and schedules required by the terms of this Permit are, upon approval by the Department, incorporated by reference into this Permit. Upon incorporation, the provisions of each such document shall be binding upon Permittee and have the same legal force and effect as the requirements of this Permit.
- (3) Permittee shall submit plans and reports required by this Permit to the Department for review and comment. If the Department determines that any plan or report required by this Permit is deficient (in whole or in part), Permittee shall either promptly respond to the comments or make revisions to the submission consistent with the Department's comments. Within a reasonable time frame specified by the Department, a final plan, report, specification schedule or respective amendment shall be submitted to the Department for approval. Extensions of the due date for submittals may be granted by the Department based on the Permittee's documentation that sufficient justification for the extensions exists.

K. DESIGN AND OPERATION OF FACILITY

The Permittee shall maintain and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste/mixed waste or hazardous waste constituents to air, soil, or surface water.

DOE-EM, SPRU Field Office (EPA ID No. NYR000096859) and their subcontractors, as designated on the most recent Department approved Part A submission, are authorized to transfer small amounts of mixed wastes generated during Separations Process Research Unit related characterization efforts to the permitted DOE-NRLFO KAPL Knolls Site (EPA ID No. NY6890008992). Compatible liquid and non-liquid wastes including lab-packs generated during investigations of SPRU operations may be received and stored in KAPL Knolls permitted units until shipment off-site by DOE-EM in accordance with the DOE- NRLFO KAPL Federal Facility Compliance Act Site Treatment Plan (FFCA STP), if required. Storage duration in DOE-NRLFO KAPL Knolls container storage units will be dependent on the provisions of the DOE-EM FFCA STP, as approved by the Department. No physical mixing of any DOE-EM wastes with KAPL Knolls wastes will be performed. When wastes are shipped off-site, they must be shipped under the DOE-EM's EPA ID No. NYR000096859 and not DOE-NRLFO's EPA ID No. NY6890008992.

L. DEFINITIONS

For the purpose of this permit, terms used herein shall have the same meaning as those in 6 NYCRR Parts 370 through 374, 376 and the following list of terms, unless specifically stated otherwise below. Where terms are not otherwise defined, the meaning associated

with such terms shall be as defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

- (1) Action Levels. For purposes of this Permit, action levels are hazardous constituent concentrations for a specific environmental medium which if exceeded indicate a potential threat to human health or the environment. Exceeding the action levels may trigger further investigations, studies, and corrective measures. Where available, action levels are based on appropriate promulgated standards established for a specific environmental medium. When such promulgated standards are not available, action levels shall be media specific hazardous constituent concentrations derived from either non-promulgated human health-based levels or non-promulgated environmental health-based levels being protective of aquatic life or wildlife. An action level may be set at the background level for a hazardous constituent for which data are inadequate to set a human health or environmental health-based level.
- (2) Areas of Concern (AOC). Pursuant to the authority granted by 6 NYCRR 373-1.6(c)(2), an area of concern has been defined for purposes of this Permit to mean an area at the facility, or an off-site area, which is not at this time known to be a solid waste management unit (SWMU), where hazardous waste and/or hazardous constituents are present, or are suspected to be present as a result of a release from the facility. The term shall include areas of potential or suspected contamination as well as actual contamination. Such area(s) may require study and a determination of what, if any, Corrective Action may be necessary. All permit references to and conditions for SWMUs shall apply to areas of concern.
- (3) Commissioner. For purposes of this Permit "Commissioner" shall mean the Commissioner of the New York State Department of Environmental Conservation (Department), his designee or authorized representative.
- (4) Corrective Action. For the purposes of this permit "corrective action" is a process that includes all activities related to the investigation, characterization and cleanup of a release of hazardous wastes or hazardous constituents from a solid waste management unit (SWMU) at a permitted or interim status treatment, storage and disposal facility (TSDF) to any environmental medium (including ground water).
As DOE-EM will be assuming responsibility of the SPRU SWMUs from the permitted DOE-NRLFO Facility, DOE-EM has the same responsibilities in regards to corrective action at the SPRU SWMUs as any permitted facility. See Module II for a more in-depth discussion of the corrective action process.
- (5) Environment. Pursuant to ECL Article 27, Title 9, Section 27.0901, environment means any water, water vapor, and land including land surface or subsurface, air, fish, wildlife, biota and all the natural resources.

- (6) Federal Facility Compliance Act of 1992 (FFCA). The FFCA, which became effective October 6, 1992, subjects federal facilities to administrative enforcement actions in the same manner and under the same circumstances as an action would be initiated against another person. In addition, the FFCA required the Department of Energy (DOE) to prepare plans for developing treatment capacity and technologies for any site at which the DOE generates or stores mixed waste. The plans were needed because DOE does not currently have adequate capacity for treating all of its mixed waste to standards required by the Land Disposal Restriction regulations of the Resource Conservation and Recovery Act.
- (7) Facility. All contiguous land, structures, other appurtenances, and improvements on the land used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operation units (e.g., one or more landfills, surface impoundments or combination of them). For the purpose of implementing corrective action, "facility" means all contiguous property under the control of the owner or operator seeking a 6 NYCRR Part 373 permit.
- (8) Hazardous Constituents. Those constituents listed in Appendix 23 to 6 NYCRR Part 371 or any constituent listed in Appendix 33 to 6 NYCRR Subpart 373-2.
- (9) Hazardous Waste. Pursuant to ECL Article 27, Title 9, Section 27.0901, hazardous waste means a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may: cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.
- (10) Mixed waste. Mixed waste is waste that contains both hazardous waste and radioactive material (source, special nuclear, or by-product material regulated by the Atomic Energy Act of 1954 [42 U.S.C. 2011 et seq.])³.
- (11) Release. For purposes of this Permit release includes, but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing into the environment of any hazardous waste, including hazardous constituents, unless expressly authorized under the terms of this Permit or otherwise permitted under law (e.g., SPDES permitted discharges).
- (12) Site Treatment Plan (STP). Prepared pursuant to the FFCA to describe the treatment capacities and technologies for treating mixed waste. The STP

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The Department of Energy has regulatory authority for radioactivity pertaining to all their Programs. This authority is granted pursuant to the Atomic Energy Act of 1954.

identifies specific treatment facilities for treating each of the Permittee's mixed waste streams and identifies schedules for treatment.

- (13) Solid Waste Management Unit (SWMU). For purposes of this permit includes any discernible waste management unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of hazardous or solid wastes as those terms are defined in 6 NYCRR Part 371 and Subpart 373-2. These units include, but are not limited to: landfills, surface impoundments, waste piles, land treatment units, tanks, elementary neutralization units, transfer stations, container storage areas, incinerators, injection wells, recycling units, and closed and abandoned units. Certain areas associated with production processes which have become contaminated as a result of routine and systematic releases of wastes or hazardous constituents from wastes, are also considered SWMUs.

US Department of Energy
Environmental Management
Separations Process Research Unit
NYR000096859

Niskayuna, New York
Schenectady County

**MODULE II - CORRECTIVE ACTION REQUIREMENTS
FOR SOLID WASTE MANAGEMENT UNITS AND
AREAS OF CONCERN**

A. APPLICABILITY

1. **Statute and Regulations.** Article 27, Title 9, Section 27-0913, and 6NYCRR 373-2.6(l) require corrective action, including Corrective Action beyond the facility boundary where necessary to protect human health and the environment, for all releases of hazardous and/or mixed wastes, including hazardous constituents, from any solid waste management unit (SWMU), regardless of the time at which waste was placed in such unit. Pursuant to 6NYCRR 373-1.6(c)(2), the Commissioner may impose permit conditions as the Commissioner determines necessary to protect human health and the environment (i.e., Areas of Concern (AOCs)).
2. **Summary of Corrective Action Process.** Corrective action implementation authorized by 6NYCRR 373-2.6 includes: (a) the RCRA Facility Assessment ("RFA"); (b) the RCRA Facility Investigation ("RFI"); and (c) Corrective Measures ("CM"). The RFA is a three phase process that includes: a Preliminary Review ("PR"); a Visual Site Inspection ("VSI"); and a Sampling Visit ("SV"). The PR is a review of all available information on the individual SWMUs and AOCs. During the PR, and in subsequent phases of the RFA, all of the media (i.e., soil, groundwater, surface water/sediment, air and subsurface gas) that could potentially be impacted by release(s) of hazardous and/or mixed waste, including hazardous constituents, are evaluated. Based on this evaluation, the SWMU(s)/AOC(s) will be characterized as to release potentials.

Following the PR, a VSI is conducted during which all of the SWMUs/AOCs either previously or newly discovered, are observed. While performing this reconnaissance, any signs of spills or leakage, stained soil, stressed vegetation, unit deterioration, or any other conditions that may be indicative of a release are assessed. By means of these observations and the findings of the PR, the Commissioner may require the facility to conduct a Sampling Visit (SV) at the unit(s)/area(s) where the release(s) would be suspected.

The SV can involve any or all of the previously described media at any given SWMU and/or AOC. For those units/areas where releases are clearly demonstrated in the PR and/or VSI, the SV can be avoided leaving the unit(s)/area(s) to be addressed in the RFI.

The RFA includes preparing the RFA report. This report includes the findings of the various RFA activities and recommendations for further action at those units and areas with demonstrated releases of hazardous and/or mixed wastes, including hazardous constituents. In some cases, where an immediate threat to human health or the environment exists, interim corrective measures (ICMs) may be required. When there is no immediate threat, ICMs may also be used to expedite the Corrective Action process.

If the RFA concludes that there is a need for further investigative work the Permittee shall be required to pursue phase two of corrective action, an RFI. The RFI may address a single SWMU/AOC or combination thereof. The purpose of the RFI is to determine the nature, extent, direction and rate of migration of hazardous and/or mixed wastes, including hazardous constituents, in soils, groundwater, surface water/sediment, subsurface gas and/or air. From these multimedia analyses, the types and concentrations of contaminants present, the boundaries of any contamination (e.g., plumes), and the rate and direction of contaminant movement should be determined in each of the impacted media. Sufficient data shall be generated during the RFI to allow proper assessment of corrective measure alternatives, including implementation of ICMs. This may require bench and/or pilot studies to be implemented as part of the RFI. Once all analyses are reviewed, a RFI report is prepared that provides a summation of the data and recommendations for any needed corrective measures.

The culmination of the Corrective Action Program is Corrective Measures ("CM"). The initial stage of the corrective measures phase is the preparation of a Corrective Measures Study ("CMS"). A CMS may be required if concentrations of hazardous constituents in an aquifer, in surface water/sediment, in soils, or in air exceed their corresponding action levels. Such a study may also be required if individual concentrations of hazardous constituents are at or below their action levels, but they still may pose a threat to human health or the environment due to site-specific exposure conditions. The CMS may address a single SWMU/AOC or a combination thereof. The CMS will address alternative corrective measure strategies that are technologically feasible and reliable and which effectively mitigate and minimize damage to, and provides adequate protection of human health and the environment. The Permittee will develop the site-specific CMS using target clean-up levels chosen by the Commissioner to be protective of human health and the environment. Where available, promulgated standards must be used. Where promulgated standards are not available, the Commissioner may use health-based levels, based on Risk-Specific Doses ("RSD") for carcinogens

and Reference Doses ("RFD") for systemic toxicants, or concentration levels protective of the environment, that have undergone scientific review. The CMS report should discuss the alternative corrective measure strategies studied, addressing technical, institutional, public health, and environmental issues, and develop the conceptual engineering for the alternative action proposed by the facility. The CMS may not require extensive evaluation of a number of remedial alternatives where a solution is straightforward or only a few solutions exist. Such situations could require the Permittee to submit a highly focused CMS.

Following completion of the CMS, the Commissioner will select the corrective measure(s) from the corrective measure alternatives evaluated in the CMS. The Commissioner will then initiate a permit modification for the selected corrective measure(s).

Permit modification for the approved corrective measure(s) will initiate the final stage of corrective measures, Corrective Measures Implementation ("CMI"). The CMI will address the final design, construction, operation, maintenance, and monitoring of the corrective measure or measures selected.

3. Solid Waste Management Units and Areas of Concern. The conditions of this Module apply to:

- (a) All the SWMUs and AOCs listed in this Module individually or in combinations;
- (b) Any additional SWMUs and AOCs identified during the course of groundwater monitoring, field investigations, environmental audits or other means as described in Module II Condition C. below; and
- (c) The following known SWMUs and AOCs located on-site and/or off-site:

Table II-1
Solid Waste Management Units/Areas of Concern
(SWMUs)

I. Container Storage Areas

- 1. Former Slurry Drum Storage Area (SWMU-035) - Inactive
- 2. Former K6 Storage Pad (SWMU-036) - Inactive
- 3. Former K7 Storage Pad (SWMU-037) - Inactive
- 4. Railroad Staging Area (SWMU-038) - Inactive

II. Storage/Treatment Tanks

- 1. H2 Tank Farm (SWMU-031) - Inactive

2. SPRU Tank 527 (SWMU-058) - Inactive
3. SPRU Tank 531 (SWMU-059) - Inactive
4. SPRU Tank 532 (SWMU-060) - Inactive
5. SPRU Tank 534 (SWMU-061) - Inactive
6. SPRU Tank 551 (SWMU-062) - Inactive
7. SPRU Tank 536 (SWMU-063) - Inactive
8. SPRU Tank 316 (SWMU-064) – Inactive
9. SPRU Fractionation Tanks 1 (SWMU-081) – Active
10. SPRU Fractionation Tanks 2 (SWMU-082) - Active

III. Miscellaneous

1. Pipe Tunnels (SWMU-057) - Inactive
2. H2 Processing Facility (SWMU-030) - Active
3. K5 Retention Basin (SWMU-040) - Inactive

Areas of Concern (AOCs)

1. Lower Level Parking Lot (AOC-003) – Inactive
2. Red Pines Area (AOC-006) – Inactive

B. **STANDARD CONDITIONS FOR CORRECTIVE ACTION**

1. Work Plans. All work plans submitted pursuant to this Module shall include:
 - (a) Quality Assurance/Quality Control protocols to ensure that data generated is valid and supported by documented procedures;
 - (b) Other plans, specifications and protocols, as applicable;
 - (c) A schedule for starting specific tasks, completing the work and submitting progress and final reports; and
 - (d) Plans for the treatment, storage, discharge or disposal of wastes to be generated by activities described therein.
2. Quality Assurance/Quality Control
 - (a) Any laboratory to be used pursuant to such work plans required by this Module must be approved by the Commissioner prior to work plan implementation. Certification by the New York State Department of Health Environmental Laboratory Approval Program in the relevant analytical services is required.

- (b) The minimum Quality Assurance/Quality Control data and information, that shall be delivered with all sample analyses required by this Module, are tabulated in Appendix II-A of this Permit Module.
- 3. Health/Safety Plans. The Permittee shall develop, according to applicable Federal, State and local requirements, and submit to the Commissioner, health and safety plans that will be implemented to ensure that the health and safety of project personnel, plant personnel and the general public are protected. These plans are not subject to approval by the Commissioner.
- 4. Guidance Documents. When preparing the submissions described in this Permit Module, the Permittee shall take account of applicable guidance documents issued by the U.S. Environmental Protection Agency and the New York State Department of Environmental Conservation in a manner reflecting reasonable technical considerations.
- 5. Prior Submittals. The Permittee may have already submitted portions of information, plans, or reports required by this Permit Module and its Appendices to the Commissioner pursuant to the terms of previous applications, consent orders, or plans. For those items the Permittee contends were submitted to the Commissioner, the Permittee may cite the specific document(s) and page(s) it believes adequately addresses each of the individual items requested by this Permit Module and its Appendices. The references, by document(s) and page(s), shall be placed in the appropriate sections of the submittals that require the referenced information and data. If the Commissioner, after a file search, determines that the Department does not possess any of the referenced information, plans, or reports that the Permittee claims were previously submitted, the Commissioner will notify the Permittee and the Permittee shall submit the referenced documents within the time frame specified within the notification.
- 6. Compliance Schedule For Interim Corrective Measures.
 - (a) If at any time it is determined by the Commissioner that a release or, based on site-specific circumstances, a threatened release of hazardous and/or mixed wastes, including hazardous constituents from a SWMU, a combination of SWMUs, or an AOC poses a threat to human health or the environment, or that such condition jeopardizes the Permittee's ability to comply with any governmental permit, a schedule for the preparation of a draft Interim Corrective Measures Study shall be submitted to the Commissioner for approval within thirty (30) calendar days of notice of such a determination. All such work shall proceed in accordance with the approved schedule. The Interim Corrective Measures Study shall include an Implementation Schedule. If, however, the Commissioner determines that the submitted schedule for the preparation of the Interim Corrective

Measures Study and the Implementation Schedule are not acceptable, the Permittee shall be required to make modifications consistent with specific deficiencies to be identified in a notice, within a time period to be determined by the Commissioner. The Commissioner shall have final approval of the Interim Corrective Measures Study preparation schedule and the Implementation Schedule.

The Interim Corrective Measures Study shall consider, among other relevant factors, the character, the extent, direction, the rate of release, the proximity to population, the exposure pathways, the effects of delayed action, and the evaluations of appropriate interim corrective measures. Upon approval of the study by the Commissioner, the Permittee shall implement the required interim corrective measures as specified by the Commissioner. Nothing herein shall preclude the Permittee from taking immediate action to address the conditions described herein and promptly notifying the Commissioner.

- (b) In the event the Permittee discovers, a release or, based on site-specific circumstances, a threatened release of hazardous and/or mixed waste, including hazardous constituents, from a SWMU, or a combination of SWMUs, that poses a threat to human health or the environment, the Permittee shall identify interim corrective measures to mitigate this threat. The Permittee shall immediately summarize the nature and magnitude of the actual or potential threat and nature of the interim measures being considered and notify the Commissioner. Within thirty (30) calendar days of notifying the Commissioner, the Permittee shall submit to the Commissioner, for approval, a schedule for the preparation of an Interim Corrective Measures Work Plan for the interim measures. All such work shall proceed in accordance with the approved schedule. The Interim Corrective Measures Work Plan shall include an Implementation Schedule. If, however, the Commissioner determines that the submitted schedule for the preparation of the Interim Corrective Measures Work Plan and the Implementation Schedule are not acceptable, the Permittee shall be required to make modifications consistent with specific deficiencies to be identified in a notice, within a time period to be determined by the Commissioner. The Commissioner shall have final approval of the Interim Corrective Measures Work Plan preparation schedule and the Implementation Schedule.

The Permittee shall implement the measures specified by the Commissioner. Nothing herein shall preclude the Permittee from taking immediate action to address the conditions described herein and promptly notifying the Commissioner.

- (c) The following factors may be considered by the Commissioner or the Permittee in determining the need for interim corrective measures:
 - (i) Time required to develop and implement a final corrective measure;
 - (ii) Actual and potential exposure of human and environmental receptors;
 - (iii) Actual and potential contamination of drinking water supplies and sensitive ecosystems;
 - (iv) The potential for further degradation of any impacted medium;
 - (v) Presence of hazardous and/or mixed waste, including hazardous constituents, in containers that may pose a threat of release;
 - (vi) Presence and concentration of hazardous and/or mixed waste, including hazardous constituents, in soils that have the potential to migrate to groundwater or surface water;
 - (vii) Weather conditions that may affect the current levels of contamination;
 - (viii) Risks of fire, explosion, or potential for exposure to hazardous and/or mixed wastes, including hazardous constituents, as a result of an accident or failure of container or handling system; and
 - (ix) Other situations that may pose threats to human health and the environment.
- (d) The Permittee may propose Interim Corrective Measures for releases from SWMUs/AOCs, which do not pose an immediate threat, based upon the results of a RCRA Facility Assessment (RFA)-Sampling Visit or RCRA Facility Investigation. The RFA-Sampling Visit Report (Module II Condition E.4) or the RCRA Facility Investigation Report (Module II Condition E.7) may contain Interim Corrective Measure recommendations. Within thirty (30) calendar days of the Commissioner's approval of the Interim Corrective Measure recommendation, the Permittee shall submit for the Commissioner's approval a schedule for the preparation and implementation of an Interim Corrective Measures Work Plan.

7. Determination of No Further Action.

- (a) Based on the results of an RFI for a particular SWMU, or combination of SWMUs, and/or AOC, and other relevant information, the Permittee may submit an application to the Commissioner for a permit modification under 6NYCRR 373-1.7(b) and 621.13 to terminate the subsequent corrective action requirements of this Module. This permit modification application must contain information demonstrating that no release(s) of hazardous and/or mixed wastes, including hazardous constituents, from the SWMUs and/or AOCs have occurred that pose a threat to human health or the environment, as well as information required in 6NYCRR 373-1 and 621.4(n), which incorporates by reference 6NYCRR 373-1 and 373-2.

If, based upon review of the Permittee's request for a permit modification, the results of the RFI, and other information, including comments received during the forty-five (45) calendar day public comment period required for permit modifications, the Commissioner determines that the release(s) or the suspected release(s) investigated either are non-existent or do not pose a threat to human health or the environment, the Commissioner may grant the requested modification.

- (b) A determination of no further action shall not preclude the Commissioner from implementing the following actions:
 - (i) Modifying this Permit at a later date to require the Permittee to perform such investigations as necessary to comply with the requirements of this Permit Module and its Appendices if new information or subsequent analysis indicates that there are, or are likely to be, releases from SWMUs/AOCs that may pose a threat to human health or the environment; and
 - (ii) Requiring continual or periodic monitoring of air, soil, groundwater, or surface water/sediment or subsurface gas, if necessary, to protect human health and the environment, when site-specific circumstances indicate the release(s) of hazardous and/or mixed waste, including hazardous constituents, are likely to occur from any SWMUs and/or AOCs.

8. Compliance Schedule For Reporting.

- (a) The Permittee shall submit, to the Commissioner, signed progress reports, as specified in approved work plans pursuant to this Permit, of all activities (i.e., SWMU Assessment, Interim Measures, RCRA Facility Investigation, Corrective Measures Study) conducted pursuant to the provisions of the Corrective Action Compliance Schedules of this Permit Module, beginning no later than thirty (30) calendar days after the

Permittee is first required to begin implementation of any requirement herein. These reports shall contain:

- (i) A description of the work completed during the reporting periods;
 - (ii) Summaries of all findings made during the reporting period, including summaries of laboratory data;
 - (iii) Summaries of all changes made during the reporting period;
 - (iv) Summaries of all contacts made with representatives of the local community and public interest groups during the reporting period;
 - (v) Summaries of all problems or potential problems encountered during the reporting period and actions taken to rectify problems;
 - (vi) Changes in personnel conducting or managing the corrective action activities during the reporting period;
 - (vii) Projected work for the next reporting period; and
 - (viii) Copies of daily reports, inspection reports, laboratory/monitoring data, etc., generated during the reporting period.
- (b) Upon request, copies of other relevant reports and data not identified in Module II Condition B.8.(a) shall be made available to the Commissioner.
- (c) The Commissioner may require the Permittee to conduct new or more extensive assessments, investigations, or studies, based upon information provided in the progress reports referred to in Module II Condition B.8(a) above, or upon other supporting information.
- (d) All plans and schedules required by the conditions of this Permit Module and Appendix II-D are upon approval of the Commissioner, incorporated into this Permit by reference and become an enforceable part of this Permit. Any noncompliance with such approved plans and schedules shall constitute noncompliance with this Permit. Extensions of the due dates for submittals may be granted by the Commissioner in accordance with the permit modification processes stipulated in Module II Condition E.14. of this Permit Module.

9. Compliance with Governmental Requirements. During investigative activities, interim corrective measures, and final corrective measures, (including, but not limited to, equipment decommissioning, excavation and unit demolition) required under this Module, the Permittee shall ensure that the transportation, treatment,

storage, discharge, and disposal of all contaminated materials generated as a result of such activities (including, but not limited to, soils, sediments, liquids, tanks, pipes, pumps, rubble, debris, and structural materials) are performed in an environmentally sound manner pursuant to all applicable Federal, State and local requirements and that is protective of public health and the environment. Nothing in this Module shall be construed to require the Permittee to proceed in a manner which is in violation of any such requirements.

10. Notifications.

- (a) Notification of groundwater contamination. If at any time the Permittee discovers that hazardous constituents in groundwater that may have been released from a solid waste management unit or area of concern at the facility have migrated beyond the facility boundary in concentrations that exceed action levels, the Permittee shall, within fifteen (15) calendar days of discovery, provide written notice to the Commissioner and any person who owns or resides on the land which overlies the contaminated groundwater.
- (b) Notification of air contamination. If at any time the Permittee discovers that hazardous constituents in air that may have been released from a solid waste management unit or area of concern at the facility have or are migrating to areas beyond the facility boundary in concentrations that exceed action levels, and that residences or other places at which continuous, long-term exposure to such constituents might occur are located within such areas, the Permittee shall, within fifteen (15) calendar days of such discovery;
 - (i) Provide written notification to the Commissioner, and
 - (ii) Initiate any actions that may be necessary to provide notice to all individuals who have or may have been subject to such exposure.
- (c) Notification of residual contamination. If hazardous and/or mixed wastes or hazardous constituents in solid waste management units or areas of concern, or which have been released from solid waste management units or areas of concern, will remain in or on the land, including groundwater, after the term of the permit has expired, the Commissioner may require the Permittee to record, in accordance with State law, a notation in the deed to the facility property or in some other instrument which is normally examined during title search that will, in perpetuity, notify any potential purchaser of the property of the types, concentrations, and locations of such hazardous wastes or hazardous constituents. The Commissioner may require such notice as part of the corrective measures selection process.

C. COMPLIANCE SCHEDULE FOR ASSESSMENT OF NEWLY IDENTIFIED SWMUS AND AOCs.

DOE-EM is required to notify the Department and perform the required assessment for any newly-discovered release(s) at SWMUs/AOCs within the original footprint of the SPRU SWMUs/AOCs as defined in Attachment II. Any change to this footprint must be placed in the operating record. If DOE-EM determines based on their assessment that the newly-discovered release(s) at the SWMU/AOC is not SPRU related and the Department concurs, DOE-NRLFO will be notified in writing by the Department of their obligations regarding the DOE-EM newly-discovered release(s) at the SWMU/AOC. Conversely, if DOE-NRLFO determines that any newly-discovered release(s) at the SWMU/AOC they have assessed is SPRU related then DOE-EM will be notified in writing by the Department of their obligations for the DOE-NRLFO newly-discovered release(s) at the SWMU/AOC.

1. Notification of Assessment. The Permittee shall notify the Commissioner, in writing, of any additional SWMUs and/or AOCs not listed in this Module, which are identified during the course of groundwater monitoring, field investigations, environmental audits, or other means within fifteen (15) calendar days after discovery of an unknown SWMU/AOC, or for a newly installed unit prior to placement in service.
2. SWMU/AOC Assessment Report. Within forty-five (45) calendar days after notifying the Commissioner, the Permittee shall submit a SWMU/AOC Assessment Report. This Report must provide, at a minimum, the following information for each newly identified SWMU/AOC:
 - (a) Type of unit/area;
 - (b) Location of each unit/area on a topographic map of appropriate scale;
 - (c) Dimensions, capacities, and structural descriptions of the unit/area (supply available engineering drawings);
 - (d) Function of unit/area;
 - (e) Dates that the unit/area was operated;
 - (f) Description of the wastes that were placed or spilled at the unit/area;
 - (g) Description of any known releases from the unit/area (to include groundwater data, soil analyses, air monitoring data, and/or surface water/sediment data);

- (h) The results of any sampling and analysis required for the purpose of determining whether releases of hazardous and/or mixed wastes, including hazardous constituents, have occurred, are occurring, or are likely to occur from the unit/area; and
 - (i) Whether this unit/areas, individually or in combination with other units/areas described in Module II Condition A.3. is a significant source of contaminant release.
- 3. SWMU/AOC Sampling and Analysis Plan. Within thirty (30) calendar days after submittal of the SWMU/AOC Assessment Report required in Module II Condition C.2., the Permittee shall submit to the Commissioner for approval a schedule for the preparation of a SWMU/AOC Sampling and Analysis Plan, and all such work shall proceed in accordance with the approved schedule. The SWMU/AOC Sampling and Analysis Plan shall include an Implementation Schedule. If, however, the Commissioner determines that the submitted schedule for the preparation of the Sampling and Analysis Plan and the Implementation Schedule are not acceptable, the Permittee shall be required to make modifications consistent with specific deficiencies to be identified in a notice, within a time period to be determined by the Commissioner. The Commissioner shall have final approval of the SWMU/AOC Sampling and Analysis Plan preparation schedule and the Implementation Schedule.

The SWMU/AOC Sampling and Analysis Plan shall be in accordance with the most recent version of the NYS RCRA Quality Assurance Project Plan Guidance, for any sampling and analysis of groundwater, land surface and subsurface strata, surface water/sediment or air, as necessary to determine whether a release of hazardous and/or mixed waste, including hazardous constituents, from such unit(s) and/or area(s) has occurred, is likely to have occurred, or is likely to occur. The SWMU/AOC Sampling and Analysis Plan must demonstrate that the sampling and analyses program, if applicable, is capable of yielding representative samples and must include parameters sufficient to identify migration of hazardous waste, including hazardous constituents, from the newly-discovered SWMUs and/or AOCs to the environment.

- 4. Subsequent Assessment Actions. Following submission of the SWMU/AOC Assessment Sampling and Analysis Plan set forth in Module II Condition C.3., subsequent activities for the Plan shall proceed in accordance with the following schedule:
 - (a) Meeting between the Permittee, the U.S. Environmental Protection Agency (Agency) and the New York State Department of Environmental Conservation (Department) to discuss Plan comments, as appropriate; and

- (b) Submission of a revised Plan to the Commissioner for approval within thirty (30) calendar days of the above-described meeting or in accordance with the approved Sampling and Analysis Plan Schedule of Condition C.3. (If the above referenced meeting is determined not to be necessary, the Permittee shall submit a revised Plan to the Commissioner, according to a schedule specified by the Department, not to exceed forty-five (45) calendar days after Permittee's receipt of Plan comments from the Commissioner, or in accordance with the approved Sampling and Analysis Plan Schedule of Condition C.3.); and
 - (c) Begin implementation of the SWMU/AOC Sampling and Analysis Plan in accordance with the time period provided in the approved Implementation Schedule of Condition C.3.
- 5. SWMU/AOC Sampling and Analysis Report. In accordance with the time period provided in the approved Implementation Schedule of Condition C.3., the Permittee shall follow reporting requirements in the approved Plan and submit a SWMU/AOC Sampling and Analysis Report to the Commissioner. The Report shall describe all results, of the validated analytical data generated under the approved SWMU/AOC Sampling and Analysis Plan, obtained from the implementation of the approved Plan.
- 6. Assessment Conclusions. Based on the results of the SWMU/AOC Sampling and Analysis Report, the Commissioner shall determine the need for further investigations at the specific unit(s) covered in the SWMU/AOC Assessment Report. If the Commissioner determines that such investigations are needed, the Commissioner shall, by written notification, require the Permittee to prepare and submit for approval a RCRA Facility Investigation Work Plan in accordance with Module II Condition E.5. et. seq..

D. COMPLIANCE SCHEDULE AND NOTIFICATION REQUIREMENTS FOR NEWLY-DISCOVERED RELEASES AT SWMUS AND AOCS.

The Permittee shall notify the Commissioner, in writing, of any release(s) of hazardous and/or mixed wastes, including hazardous constituents, discovered during the course of groundwater monitoring, field investigation, environmental auditing, or other activities no later than fifteen (15) calendar days after discovery. Such newly-discovered release(s) may be from the newly-identified unit(s)/area(s), from the unit(s)/area(s) for which, based on the findings of the RFA, the Commissioner had previously determined that no further investigation was necessary, or from the unit(s)/area(s) investigated as part of an RFI. Based on the information provided in the notification, the Commissioner shall determine the need for further investigation of the release(s). If the Commissioner determines that such investigations are needed, the Commissioner shall, by written notification, require the Permittee to prepare a RCRA Facility Investigation Work Plan in accordance with Module II Condition E.5. et. seq..

DOE-EM is required to notify the Department and perform the required assessment for any newly-discovered release(s) at the SWMUs/AOCs within the original footprint of the SPRU SWMUs/AOCs as defined in Attachment II. Any change to this footprint must be placed in the operating record. If DOE-EM determines based on their assessment that the newly-discovered release(s) at the SWMU/AOC is not SPRU related and the Department concurs, DOE-NRLFO will be notified in writing by the Department of their obligations regarding the DOE-EM newly-discovered release(s) at the SWMU/AOC. Conversely, if DOE-NRLFO determines that any newly-discovered release(s) at the SWMU/AOC they have assessed is SPRU related then DOE-EM will be notified in writing by the Department of their obligations for the DOE-NRLFO newly-discovered release(s) at the SWMU/AOC.

E. CORRECTIVE ACTION REQUIREMENTS.

1. No Action Requirement.

- (a) On the basis of the RCRA Facility Assessment Preliminary Review Visual Site Inspection Report, dated July 20, 1998 and information and data presented and evaluated under the associated Knolls Atomic Power Laboratory RCRA Permit #4-4224-00024/00001, dated July 20, 1998, the RFA – Sampling Visit dated February 2002, and notifications/assessments provided by DOE-EM on December 2, 2011 and January 13, 2012, the Commissioner has determined that there is no evidence at this time of the release(s) of hazardous and/or mixed waste(s) and/or constituent(s) that threaten human health or the environment from the following SWMUs and/or AOCs identified in Module II Condition A.3:

1. SPRU Tank 527 (SWMU-058) - The stainless steel, cylindrical tank measured three feet in diameter and four feet high. It had a 200 gallon capacity and was located in Cell 3 of Building G2. The tank formerly accumulated aqueous waste generated from the SPRU operations from 1950 to 1953. When a significant quantity of waste was accumulated, it was transferred to Building H2 for processing. Immediately subsequent to SPRU operations, the tank was drained, flushed with a dilute nitric acid solution, and rinsed with water. There was no evidence of release to environmental media, due to containment structures, and a determination was made that no further corrective action activities are required.
2. SPRU Tank 531 (SWMU-059) - The stainless steel, cylindrical tank measured four feet in diameter and five feet high. It had a 500 gallon capacity and was located in the East Bay of Cell 5 of Building G2. The tank formerly accumulated spent organic solvent generated from the SPRU operations from 1950 to 1953.

When a significant amount of spent solvent was accumulated, it was transferred to SPRU Tank 316 for reclamation. Immediately subsequent to SPRU operations, the tank was drained, flushed with a dilute nitric acid solution, and rinsed with water. There was no evidence of release to environmental media, due to containment structures, and a determination was made that no further corrective action activities are required.

3. SPRU Tank 532 (SWMU-060) - The stainless steel, cylindrical tank measured four feet in diameter and four feet high. It had a 400 gallon capacity and was located in the East Bay of Cell 5 of Building G2. The tank formerly accumulated aqueous waste generated from the SPRU operations from 1950 to 1953. When a significant quantity of waste was accumulated, it was transferred to Building H2 for processing. Immediately subsequent to SPRU operations, the tank was drained, flushed with a dilute nitric acid solution, and rinsed with water. There was no evidence of release to environmental media, due to containment structures, and a determination was made that no further corrective action activities are required.
4. SPRU Tank 534 (SWMU-061) - The stainless steel, cylindrical tank measured four and one-half feet in diameter and six feet high. It had a 750 gallon capacity and was located in the East Bay of Cell 5 of Building G2. The tank formerly accumulated spent organic solvent generated from the SPRU operations from 1950 to 1953. When a significant amount of spent solvent was accumulated, it was transferred to SPRU Tank 316 for reclamation. Immediately subsequent to SPRU operations, the tank was drained, flushed with a dilute nitric acid solution, and rinsed with water. There was no evidence of release to environmental media, due to containment structures, and a determination was made that no further corrective action activities are required.
5. SPRU Tank 551 (SWMU-062) - The stainless steel, cylindrical tank measured two feet in diameter and three and one-half feet high. It had a 75 gallon capacity and was located in the East Bay of Cell 5 of Building G2. The tank formerly accumulated aqueous waste generated from the SPRU operations from 1950 to 1953. When a significant quantity of waste was accumulated, it was transferred to Building H2 for processing. Immediately subsequent to SPRU operations, the tank was drained, flushed with a dilute nitric acid solution, and rinsed with water. There was no evidence of release to environmental media, due to containment structures, and a determination was made that no further corrective

action activities are required.

6. SPRU Tank 536 (SWMU-063) - The stainless steel, cylindrical tank measured two and one-half feet in diameter and three feet high. It had a 100 gallon capacity and was located in the East Bay of Cell 5 of Building G2. The tank formerly accumulated spent organic solvent generated from the SPRU operations from 1950 to 1953. When a significant amount of spent solvent was accumulated, it was transferred to SPRU Tank 316 for reclamation. Immediately subsequent to SPRU operations, the tank was drained, flushed with a dilute nitric acid solution, and rinsed with water. There was no evidence of release to environmental media, due to containment structures, and a determination was made that no further corrective action activities are required.
7. SPRU Tank 316 (SWMU-064) - The stainless steel, cylindrical tank measured five feet in diameter and seven feet high. It had a 1,000 gallon capacity and was located in the East Bay of Cell 5 of Building G2. During the early 1950's, spent solvent was transferred to this tank, where the solvent underwent a three step wash cycle. The solvent was first washed with water, then a caustic solution, and last with nitric acid. It would then be reused as a process ingredient. There was no evidence of release to environmental media, due to containment structures, and a determination was made that no further corrective action activities are required.
8. Former K6 Storage Pad (SWMU-036) - This unit was a 23 foot wide by 48 foot long concrete-shielded concrete storage pad which was used to store containerized solid waste potentially containing hazardous constituents. With the exception of the pad's southern wall, the shielding walls measured eight feet high and were over two and one-half feet thick. The southern wall was an eight inch thick retaining wall. An earthen embankment abutted this wall. In 1987, a roof was installed over the unit, the above-grade structural components were cleaned up, the unit's floor was removed, and soil adjacent to the unit was excavated and placed within the unit. Radioactivity detected in soils indicated a potential release from this unit. An RFA-SV was conducted and an RFA-SV report was submitted, dated February 2002, consisting of unbiased soil sampling, designed to detect potential contaminant release from the unit. The results of the RFA-SV were used to determine that no further corrective action activities are required. In 2005, the K6 structure was demolished and removed, the area was backfilled, and ground cover was re-established.

9. Former K7 Storage Pad (SWMU-037) - This former unit was located west of the K6 Storage Pad, and consisted of a fenced concrete pad. It was used to stage solid waste prior to off-site disposal shipment. Wastes were generally containerized in four-foot-square wooden boxes. Radioactivity detected in adjacent soils indicates a potential release at this unit. An RFA-SV was conducted and an RFA-SV report, dated February 2002, was submitted. The results of the RFA-SV were used to determine that no further corrective action activities are required.
 10. Fractionation Tanks 1 (SWMU-081) – This unit consists of two water treatment units (since removed), twelve carbon steel fractionation tanks, a carbon steel resin tank (since removed) and connecting lines. This system is used to manage groundwater and stormwater associated with SWMU-030 and SWMU-031. SWMU-081 was determined as “no further action” by the Department on July 30, 2012, based on all known information at that time.
- (b) The Permittee need not undertake corrective action at any aforementioned SWMU(s) and/or AOC(s) identified in Module II Condition E.1.(a) as long as there is no evidence of the release(s) of hazardous and/or mixed waste(s) or constituent(s) from the SWMUs and/or AOCs threatening human health or the environment. This permit condition does not apply to any other stipulation specified in other Modules or Conditions of this Permit.
 - (c) A determination of no further action shall not preclude the Commissioner from modifying this Permit at a later date to require further investigations, studies, monitoring, or corrective measures, if new information or subsequent analysis indicates the release(s) or likelihood of release(s) from SWMUs and/or AOCs identified in Module II Condition E.1.(a) that could pose a threat to human health or the environment.
2. Compliance Schedule For RCRA Facility Assessment ("RFA") Sampling Visit Work Plan .
 - (a) On the basis of the RCRA Facility Assessment Preliminary Review Visual Site Inspection Report, dated July 20, 1998 and information and data presented and evaluated under the associated Knolls Atomic Power Laboratory RCRA Permit #4-4224-00024/00001, dated July 20, 1998, the Commissioner has determined that there is the potential for the release(s) of hazardous and/or mixed waste(s) and/or constituents to have occurred

from the following SWMUs and/or AOCs identified in Module II Condition A.3. that require implementation of a RFA Sampling Visit:

1. Red Pines Area (AOC-006) - An RFA was completed and a revised RFA-SV report was submitted in November 2006.
2. H1 Cooling Tower (AOC-007) - An RFA was completed and an RFA-SV report was submitted in February 2007. Responsibility for AOC-007 has been transferred to the Knolls Atomic Power Laboratory 6NYCRR Part 373 Hazardous Waste Management Permit (# 4-4224-00024/00001).
3. K5 Retention Basin (SWMU-040) - An RFA was completed and an RFA-SV report was submitted on June 2007.

- (b) Within thirty (30) calendar days after the effective date of this Permit, the Permittee shall submit to the Commissioner for approval a schedule for the preparation of a RCRA Facility Assessment-Sampling Visit ("RFA-SV") Work Plan for the SWMUs/AOCs identified in Module II Condition E.2.(a)., and all such work shall proceed in accordance with the approved schedule. The RCRA Facility Assessment Sampling Visit ("RFA-SV") Work Plan shall include an Implementation Schedule. If, however, the Commissioner determines that the submitted schedule for the preparation of the RFA-SV and the Implementation Schedule are not acceptable, the Permittee shall be required to make modifications consistent with specific deficiencies to be identified in a notice, within a time period to be determined by the Commissioner. The Commissioner shall have final approval of the RCRA Facility Assessment-Sampling Visit Work Plan preparation schedule and the Implementation Schedule.

The Permittee shall develop the RFA-SV Work Plan in accordance with the RCRA Sampling Visit Work Plan Outline (specified in Appendix II-E of this Permit Module) and the most recent version of the RCRA Quality Assurance Project Plan Guidance.

Not applicable at this time.

Note: At the time of issuance of this permit, the Permittee may choose to perform remediation of the units identified in Section E.2.(a) through an approved ICM. Based on required confirmatory sampling, as part of the ICM, the Commissioner will determine if further corrective action activities and/or an RFI for the contaminated soils and/or groundwater are necessary for the units

Section E.2.(a).

- (c) Following submission of the RFA-SV Work Plan set forth in Module II Condition E.2.(b) for the SWMU(s) and/or AOC(s) identified in Module II Condition E.2.(a), subsequent activities for the Plan shall proceed in accordance with the following schedule:
 - (i) Meeting between the Permittee and the Department to discuss Plan comments, as appropriate; and
 - (ii) Submission of a revised Plan to the Commissioner for approval within forty-five (45) calendar days of the above-described meeting, or in accordance with the approved RFA-SV Work Plan Schedule of Condition E.2.(b). (If the above-referenced meeting is determined not to be necessary, the Permittee shall submit a revised Plan to the Commissioner, according to a schedule specified by the Department, not to exceed forty-five (45) calendar days after Permittee's receipt of Plan comments from the Commissioner, or in accordance with the approved RFA-SV Work Plan Schedule of Condition E.2.(b).)
- (d) On the basis of the RCRA Facility Assessment Preliminary Review Visual Site Inspection Report, dated July 20, 1998 and information and data presented and evaluated under the associated Knolls Atomic Power Laboratory RCRA Permit #4-4224-00024/00001, dated July 20, 1998, the Commissioner has determined that there is a potential for release of hazardous and/or mixed waste and/or constituents from the following inaccessible SWMUs and/or AOCs identified in Module II Condition A.3.:

Not applicable at this time.

For the foregoing areas, the Permittee shall submit to the Commissioner for approval a schedule for the preparation of a RCRA Facility Assessment-Sampling Visit ("RFA-SV") Work Plan, no later than one-hundred and eighty (180) calendar days prior to the date when the SWMUs become accessible for such an investigation. Accessibility to the SWMUs shall be considered achievable when the impediment to the SV (e.g. buildings, utilities) is demolished, abandoned, or is altered in a manner that would allow access to the SWMUs. All such work shall proceed in accordance with the approved schedule. The RCRA Facility Assessment-Sampling Visit Work Plan shall include an Implementation Schedule. If, however, the Commissioner determines that the submitted schedule for the preparation of the RFA-SV and Implementation Schedule are not acceptable, the Permittee shall be required to make modifications

consistent with specific deficiencies to be identified in a notice, within a time period to be determined by the Commissioner. The Commissioner shall have final approval of the RCRA Facility Assessment-Sampling Visit Work Plan preparation schedule and the Implementation Schedule.

The Permittee shall develop the RFA-SV Work Plan in accordance with the RCRA Sampling Visit Work Plan Outline (specified in Appendix II-E of this Permit Module), and the most recent version of the RCRA Quality Assurance Project Plan Guidance.

Following submission of the RFA-SV Work Plan set forth in this Module II Condition, subsequent activities for the Plan shall proceed in accordance with the following schedule:

- (i) Meeting between the Permittee and the Department to discuss Plan comments, as appropriate; and
- (ii) Submission of a revised Plan to the Commissioner for approval within forty-five (45) calendar days of the above-described meeting, or in accordance with the approved RFA-SV Work Plan Schedule. (If the above-referenced meeting is determined not to be necessary, the Permittee shall submit a revised Plan to the Commissioner, according to a schedule specified by the Department, not to exceed forty-five (45) calendar days after Permittee's receipt of Plan comments from the Commissioner, or in accordance with the approved RFA-SV Work Plan Schedule.

3. Compliance Schedule For RFA-SV Work Plan Implementation.

Begin implementation of the RFA-SV Work Plan for the SWMUs and/or AOCs identified in Module II Conditions E.2.(a) and E.2.(d) in accordance with the time period provided in the approved Implementation Schedules of Conditions E.2.(b) and E.2.(d), respectively.

Not applicable at this time.

4. Compliance Schedule For RFA-Sampling Visit Report.

- (a) In accordance with the time period provided in the approved Implementation Schedule of Conditions E.2.(b) and E.2.(d), the Permittee shall submit a final report to the Commissioner on the SV for the SWMUs and/or AOCs identified in Module II Condition E.2.(a) and E.2.(d), respectively. The report shall follow reporting requirements in the approved work plan and describe all results, of validated analytical data

generated under the approved RFA-SV Plan, obtained from the implementation of the approved Plan.

- (b) Based on the results of the RCRA Facility Assessment-Sampling Visit Report submitted pursuant to Module II Condition E.4.(a), the Commissioner shall determine the need for further investigations at specific unit(s) and/or area(s) covered in the RFA-SV Report. If the Commissioner determines that such investigations are needed, the Commissioner shall, by written notification, require the Permittee to prepare and submit for approval a RCRA Facility Investigation Work Plan in accordance with Module II Condition E.5. et. seq..

Not applicable at this time.

5. Compliance Schedule For RCRA Facility Investigation ("RFI") Work Plan.

- (a) On the basis of the RCRA Facility Assessment-Sampling Visit Report submitted pursuant to Module II Condition E.4.(a), the Commissioner may determine that there has been a release of hazardous and/or mixed waste and/or constituents from the following SWMUs, or combination of SWMUs, and/or AOCs identified in Module II Condition A.3. that require the implementation of an RFI:

An RFI was completed and submitted in November 2006 for the following SWMUs and AOC:

1. H2 Processing Facility (SWMU-030)
2. H2 Tank Farm (SWMU-031)
3. Railroad Staging Area (SWMU-038)
4. Pipe Tunnels (SWMU-057)
5. Lower Level Parking Lot (AOC-003)

An RFI will be conducted by DOE-NRLFO/KAPL Inc. for the following SWMU:

1. Former Slurry Drum Storage Area (SWMU-035) – DOE-NRLFO/KAPL Inc. will conduct an RFI under KAPL Knolls Part 373 Hazardous Waste Management Permit (Permit No. 4-4224-00024/00001) which will include chemical sampling in this SWMU as recommended in the RCRA Facility Assessment Sampling Visit Report for the Knolls Site Land Disposal Area, September, 2006. If, based on the data contained in the RFI Report, further corrective action activities are required for this SWMU, a determination of responsibility for the SWMU must be included in said report.

- (b) On the basis of the RCRA Facility Assessment-Sampling Visit Report submitted pursuant to Module II Condition E.4.(a), the Commissioner may determine that there has been a previous release of hazardous and/or mixed waste and/or constituents from the following inaccessible AOC identified in Module II Condition A.3.:

Not applicable at this time.

- (c) For the areas identified in Module II Condition E.5.(b), the Permittee shall submit to the Commissioner, for approval, a Report which evaluates previous Corrective Measures, in terms of the final remedial goals specified in Module II Condition A.2, sixth paragraph, and others as provided by the Commissioner, no later than one-hundred and eighty (180) calendar days prior to the date when the SWMUs and/or AOCs become accessible for investigation. Accessibility to the SWMUs and/or AOCs shall be considered achievable when the impediment to further investigation (e.g. building, utilities) is demolished, abandoned, or is altered in a manner that would allow access to the SWMU or AOC. The Commissioner may, at any point prior to that time, require additional investigations and/or monitoring should it become apparent that residual contamination at the SWMU or AOC may impact human health and/or the environment. As a result of the above-referenced Evaluation Report, the Commissioner may require performance of a Corrective Measures Study (CMS) for the SWMU or AOC, as per Module II Condition E.9 and according to the schedules therein and in Appendix II-D of this Permit Module, and according to the protocols detailed in Appendix II-C of this Permit Module.
- (d) Within sixty (60) calendar days after the effective date of this Permit for the SWMUs and/or AOCs identified in Module II Condition E.5.(a), the Permittee shall submit to the Commissioner for approval a schedule for the preparation of a RCRA Facility Investigation Task I Report on Current Conditions required by the RFI Scope of Work included in Appendix II-B and its Attachment B-1 of this Permit Module, and all such work shall proceed in accordance with the approved schedule. A schedule for the preparation of a Task I Report shall be submitted for approval within sixty (60) calendar days after the written notification by the Commissioner that an RFI is required pursuant to Module II Conditions C.6., D. and/or E.4(b), and all such work shall proceed in accordance with the approved schedule. If, however, the Commissioner determines that the submitted schedule for the preparation of a RCRA Facility Investigation Task I Report is not acceptable, the Permittee shall be required to make modifications consistent with specific deficiencies to be identified in a

notice, within a time period to be determined by the Commissioner. The Commissioner shall have final approval of the RCRA Facility Investigation Task I Report Schedule.

Not applicable at this time.

- (e) Within sixty (60) calendar days of the effective date of this Permit for the SWMUs and/or AOCs identified in Module II Condition E.5.(a), the Permittee shall submit to the Commissioner for approval a schedule for the preparation of a RCRA Facility Investigation Task II Report on the Pre-Investigation Evaluation of Corrective Measures Technologies required by the RFI Scope of Work included in Appendix II-B of this Permit Module, and all such work shall proceed in accordance with the approved schedule. A schedule for the preparation of a Task II Report shall be submitted for approval within ninety (90) calendar days after the written notification by the Commissioner that an RFI is required pursuant to Module II Conditions C.6, D. and/or E.4.(b), and all such work shall proceed in accordance with the approved schedule. If, however, the Commissioner determines that the submitted schedule for the preparation of a RCRA Facility Investigation Task II Report is not acceptable, the Permittee shall be required to make modifications consistent with specific deficiencies to be identified in a notice, within a time period to be determined by the Commissioner. The Commissioner shall have final approval of the RCRA Facility Investigation Task II Report Schedule.

Not applicable at this time.

- (f) Within one-hundred and twenty (120) calendar days of the effective date of this Permit for the SWMUs and/or AOCs identified in Module II Condition E.5.(a), the Permittee shall submit for approval a schedule for the preparation of a RFI Work Plan, inclusive of an Implementation Schedule, to the Commissioner to address those units, releases of hazardous and/or mixed waste, including hazardous constituents, and media of concern which require the further investigations. All such work shall proceed in accordance with the approved schedule. A schedule for the preparation of a RFI Work Plan shall be submitted within sixty (60) calendar days after written notification by the Commissioner that an RFI is required pursuant to Module II Conditions C.6., D., and/or E.4.(b). All such work shall proceed in accordance with the approved schedule. If, however, the Commissioner determines that the submitted schedule for the preparation of the RFI Work Plan and the Implementation Schedule are not acceptable, the Permittee shall be required to make modifications consistent with specific deficiencies to be identified in a notice, within a time period to be determined by the Commissioner. The Commissioner

shall have final approval of the Work Plan preparation schedule and the Implementation Schedule.

- (i) The Work Plan shall describe the objectives of the investigation and the overall technical and analytical approach to completing all actions necessary to characterize the nature, direction, rate, movement, and concentration of releases of hazardous and/or mixed waste, including hazardous constituents, from specific units or groups of units and areas, and their actual or potential receptors. The Work Plan shall detail all proposed activities and procedures to be conducted at the facility and/or off-site, the schedule for implementing and completing such investigations, the qualifications of personnel performing or directing the investigations, including contractor personnel, and the overall management of the RFI.
- (ii) The Work Plan shall discuss sampling and data collection quality assurance and data management procedures, including formats for documenting and tracking data and other results of investigations, and health and safety procedures.
- (iii) The Work Plan must, at a minimum, address all necessary activities or include descriptions to meet the requirements specified in Tasks III through V of the Scope of Work for a RCRA Facility Investigation included in Appendix II-B and its attachments to this Permit Module.
- (iv) The Permittee may determine that any of the items required by Tasks III through V of the Scope of Work in Appendix II-B of this Permit Module have already been submitted or completed, and therefore, the resubmittal of those items are not necessary for completing the RFI of this Permit. The Permittee shall request, within thirty (30) calendar days of the effective date of this Permit, and/or within sixty (60) calendar days of any notification by the Commissioner that an RFI is required that the Commissioner review for approval the Permittee's determination. At the time of the request, the Permittee must provide the following information: (1) description of the items and/or summary of findings; (2) description of investigations addressing the items, documents/reports of the investigations with dates, and summary of the findings; and (3) copies of the documents/reports.

Upon the Commissioner's approval of any previously performed items, the Permittee may delete these from the RFI Work Plan.

However, upon disapproval of items, all activities necessary for the items must be included in the RFI Work Plan.

Not applicable at this time.

- (g) Following submission of the RFI Work Plan set forth in Module II Condition E.5.(f), subsequent activities for the Plan shall proceed in accordance with the following schedule:
 - (i) Meeting between the Permittee and the Department to discuss Plan comments, as appropriate; and
 - (ii) Submission of a revised Plan to the Commissioner for approval within forty-five (45) calendar days of the above-described meeting, or in accordance with the approved RFI Work Plan Schedule of Condition E.5.(f). (If the above-referenced meeting is determined not to be necessary, the Permittee shall submit a revised Plan to the Commissioner, according to a schedule specified by the Department, not to exceed forty-five (45) calendar days after Permittee's receipt of Plan comments from the Commissioner, or in accordance with the approved RFI Work Plan Schedule of Condition E.5.(f).)

Not applicable at this time.

- (h) The Commissioner shall review, for approval as part of the RFI Work Plan, any plans developed pursuant to Module II Condition C.6, addressing further investigations of newly-identified SWMUs and/or AOCs, or Module II Condition D, addressing newly discovered releases from units and/or areas. The Commissioner shall modify the Compliance Schedule of this Permit Module according to the permit modification procedures stipulated in Module II Condition E.14. of this Permit Module to incorporate these units and areas and releases into the RFI Work Plan.

Not applicable at this time.

- 6. Compliance Schedule For RCRA Facility Investigation Work Plan Implementation In accordance with the time period provided in the approved Implementation Schedule of Condition E.5.(f), the Permittee shall begin implementation of the RFI according to the schedules specified in the RFI Work Plan. The RFI shall be conducted in accordance with the approved RFI Work Plan.

Not applicable at this time.

7. Compliance Schedule For RCRA Facility Investigation Final Report And Summary Report

- (a) In accordance with the time period provided in the approved Implementation Schedule of Condition E.5.(f), the Permittee shall submit to the Commissioner for approval the RFI Final and Summary Reports (Task VII of the Scope of Work for an RFI in Appendix II-B of this Permit Module). The RFI Final Report must contain adequate information to support further corrective action decisions at the facility and/or off-site, should such actions be necessary. The RFI Final Report shall describe the procedures, methods, and results of all facility investigations of SWMUs and AOCs and their releases, including information on the type and extent of contamination at the facility and/or off-site, sources and migration pathways, and actual or potential receptors. It shall present all information gathered under the approved RFI Work Plan, including validated analytical data. The RFI final report will include a comparison of media specific hazardous constituents with their corresponding action levels. The Summary Report shall describe more briefly the procedures, methods, and results of the RFI.

Not applicable at this time.

- (b) Following submission of the Reports set forth in Module II Condition E.7.(a), subsequent activities for the Report shall proceed in accordance with the following schedule:
- (i) Meeting between the Permittee and the Department to discuss Report comments, as appropriate; and
 - (ii) Submission of a revised RFI Final Report to the Commissioner for approval within forty-five (45) calendar days of the above-described meeting, or in accordance with the approved RFI Implementation Schedule of Condition E.5.(f). (If the above-referenced meeting is determined not to be necessary, the Permittee shall submit a revised Report to the Commissioner, according to a schedule specified by the Department, not to exceed forty-five (45) calendar days after Permittee's receipt of Report comments from the Commissioner, or in accordance with the approved RFI Implementation Schedule of Condition E.5.(f).)

The Permittee submitted an RFI Report for Groundwater for the Upper and Lower Levels in November 2006. This includes the SWMUs/AOC listed in Section E.5.(a). The Permittee must satisfactorily address the Department's comments on this Report.

- (c) After the Commissioner approves the RFI Final Report and Summary Report, the Permittee shall mail the approved Summary Report to all individuals on the facility mailing list established by the Permittee, within thirty (30) calendar days of receipt of approval.
- (d) A report summarizing the testing program required by Task VI of the Scope of Work for RFI in Appendix II-B of this Permit Module shall be submitted, as a separate document, at the same time as the RFI Final Report.

8. Compliance Schedule For Current Interim Corrective Measures

- (a) The Commissioner has identified the following ICM(s) to be implemented by the Permittee:

Removal of soils and media (e.g., fill) contaminated by releases from the SPRU SWMUs and AOCs. This ICM will be conducted in two phases, one addressing the Lower Level SWMUs/AOC and one addressing the Upper Level SWMUs and AOC. The Lower Level SWMUs and AOC are: Former K6 Storage Pad (SWMU-036), Former K7 Storage Pad (SWMU-037), Railroad Staging Area (SWMU-038), K5 Retention Basin (SWMU-040), Lower Level Parking Lot (AOC-003). The Upper Level SWMUs are: H2 Tank Farm (SWMU-031); H2 Processing Facility (SWMU-030); Pipe Tunnels (SWMU-057); and SPRU Fractionation Tanks 2 (SWMU-082). The Land Area SWMU and AOC, Former Slurry Drum Storage Area (SWMU-035) and Red Pines Area (AOC-006), will be addressed, as necessary, in a subsequent remedial action. The purpose of the ICM is to assure that any remaining contaminated soils and/or media are below cleanup objectives established for the site.

Upon conclusion of the ICM for the Lower Level and Upper Level SWMUs and AOCs, the Commissioner will determine whether additional remediation and/or monitoring will be necessary, and will inform the Permittee. The Permittee will submit to the Commissioner for approval an Implementation Schedule for the performance of any additional work specified by the Commissioner.

- (b) The Permittee shall submit to the Commissioner for approval, within thirty (30) calendar days after permit issuance, the design and construction implementation schedule for the ICM(s) identified in Module Condition E.8(a).
- (c) The Permittee must submit to the Commissioner thirty (30) calendar days after the ICM Design Plan approval, documents establishing financial assurance for conducting the interim measures. The Permittee must

continue to demonstrate financial assurance unless otherwise notified by the Commissioner.

Financial assurance is not applicable to federal facilities.

9. Compliance Schedule For Corrective Measures Study ("CMS") Scope of Work.

- (a) Should a CMS be required, the Commissioner shall notify the Permittee in writing. This notice shall identify the hazardous constituent(s) which have exceeded the action level(s) as well as those which have been determined to threaten human health and the environment given site-specific exposure conditions or due to additive exposure risk. The notification shall specify target cleanup levels for hazardous constituents detected in each medium of concern, and may also specify corrective measure alternatives to be evaluated by the Permittee during the CMS.

Not applicable at this time.

- (b) The Commissioner may require a Corrective Measures Study ("CMS") under the following conditions:
 - (i) If the concentrations of hazardous constituents in groundwater, surface water/sediment, soil, or air exceed their corresponding individual action levels; or
 - (ii) If the concentrations of hazardous constituents in groundwater, surface water/sediment, soil, or air do not exceed their corresponding individual action levels, but additive exposure risk due to the presence of multiple constituents is not protective of human health; or
 - (iii) If the concentrations of hazardous constituents in groundwater, surface water/sediment, soil, or air do not exceed corresponding individual action levels, but still pose a threat to human health or the environment, given site-specific exposure conditions.

Not applicable at this time.

- (c) Corrective Measures Study - Not required at the time of issuance of the permit.
- (d) The CMS will be considered complete upon completion of Tasks I through IV required by the CMS Scope of Work included in Appendix II-C of this Permit Module. Within forty-five (45) calendar days after a notification required by Module II Condition E.9.(a), the Permittee shall

submit a schedule for the preparation of Task I to the Commissioner for approval, and all such work shall proceed in accordance with the approved schedule. If, however, the Commissioner determines that the schedule for the preparation of the Task I Report is not acceptable, the Permittee shall be required to make modifications consistent with specific deficiencies to be identified in a notice, within a time period to be determined by the Commissioner. The Commissioner shall have final approval of the Task I Report Schedule. The Permittee shall submit to the Commissioner a Task I report and documents, if any, relevant to other Tasks.

Not applicable at this time.

- (e) The Permittee shall submit for approval a schedule for the preparation of a CMS Plan to the Commissioner within forty-five (45) calendar days after a notification required by Module II Condition E.9.(a), and all such work shall proceed in accordance with the approved schedule. If, however, the Commissioner determines that the schedule for the preparation of the CMS Plan is not acceptable, the Permittee shall be required to make modifications consistent with specific deficiencies to be identified in a notice, within a time period to be determined by the Commissioner. The Commissioner shall have final approval of the CMS Plan Schedule.

- (i) The CMS Plan shall provide:

- (1) A description of the general approach to investigating and evaluating potential corrective measure;
 - (2) A definition of the overall objectives of the study;
 - (3) The specific plans for evaluating corrective measure to ensure compliance with corrective measure standards;
 - (4) The schedules for conducting the study; and
 - (5) The proposed format for the presentation of information.

- (ii) The CMS Plan must address, at a minimum, all necessary activities to complete Tasks II and III required by the CMS Scope of Work included in Appendix II-C of this Permit Module.

Not applicable at this time.

- (f) Following submission of the CMS Plan set forth in Module II Condition E.9.(e), subsequent activities for the Plan shall proceed in accordance with the following schedule:

- (i) Meeting between the Permittee and the Department to discuss Plan comments, as appropriate; and
- (ii) Submission of a revised Plan to the Commissioner for approval within thirty (30) calendar days of the above-described meeting, or in accordance with the approved CMS Plan Schedule of Condition E.9.(e). (If the above-referenced meeting is determined not to be necessary, the Permittee shall submit a revised Plan to the Commissioner, according to a schedule specified by the Department, not to exceed forty-five (45) calendar days after Permittee's receipt of Plan comments from the Commissioner, or in accordance with the approved CMS Plan Schedule of Condition E.9.(e).)

Not applicable at this time.

10. Compliance Schedule For Corrective Measures Study Implementation. No later than thirty (30) calendar days after the Permittee has received written approval from the Commissioner for the CMS Plan, the Permittee shall begin to implement the CMS according to the schedules specified in the CMS Plan. The CMS shall be conducted in accordance with the approved Plan submitted pursuant to Module II Condition E.9..

Not applicable at this time.

11. Compliance Schedule For Corrective Measures Study Final Report.

- (a) In accordance with the approved CMS Implementation Schedule of Condition E.10, the Permittee shall submit for approval a CMS Final Report (Task IV) to the Commissioner. The CMS Final Report shall:
 - (i) Summarize the results of the investigations and, if applicable, of any bench-scale or pilot tests conducted;
 - (ii) Provide a detailed description of the corrective measures evaluated and include an evaluation of how each corrective measure alternative meets the standards set forth in Module II Condition E.12(a).
 - (iii) Present all information gathered under the approved CMS Plan; and
 - (iv) Contain any additional information to support the Commissioner in the corrective measure selection decision-making process, described under Module II Condition E.12.

Not applicable at this time.

- (b) The CMS Final Report (Task IV) must address, at a minimum, all items necessary to demonstrate completion of Tasks II and III required by the CMS Scope of Work included in Appendix II-C of this Permit Module.

Not applicable at this time.

- (c) Following submission of the CMS Report set forth in Module II Condition E.11(a), subsequent activities for the Report shall proceed in accordance with the following schedule:
 - (i) Meeting between the Permittee and the Department to discuss the Report comments, as appropriate; and
 - (ii) Submission of a revised Report to the Commissioner for approval within forty-five (45) calendar days of the above-described meeting, or in accordance with the approved CMS Implementation Schedule of Condition E.10. (If the above referenced meeting is determined not to be necessary the Permittee shall submit a revised Report to the Commissioner, according to a schedule specified by the Department, not to exceed forty-five (45) calendar days after Permittee's receipt of Report comments from the Commissioner, or in accordance with the approved CMS Implementation Schedule of Condition E.10.)

Not applicable at this time.

- (c) As specified under Module II Condition E.9.(a), based on preliminary results and the CMS Final Report, the Commissioner may require the Permittee to evaluate additional corrective measures or particular elements of one or more proposed corrective measures.

Not applicable at this time.

12. Corrective Measure(s) Selection.

- (a) Based on the results of the documents submitted under Module II Condition E.7. for the RFI, under Module II Condition E.11. for the CMS, and any further evaluations of additional corrective measures under this study, the Commissioner shall select the corrective measure(s) that at a minimum will meet the following standards:
 - (i) Be protective of human health and the environment;

- (ii) Attain media cleanup standards selected by the Commissioner during the corrective measures selection process;
- (iii) Control the source(s) of release(s) so as to reduce or eliminate, to the maximum extent practicable, further releases of hazardous and/or mixed waste, including hazardous constituents, that might pose a threat to human health and the environment; and
- (iv) Meet all applicable waste management requirements.

Not applicable at this time.

- (b) In selecting the corrective measure(s) which meets the standards for corrective measures established under Module II Condition E.12.(a), the Commissioner shall consider the following evaluation factors, as appropriate:

- (i) Long-term reliability and effectiveness. Any potential corrective measure(s) may be assessed for the long-term reliability and effectiveness it affords, along with the degree of certainty that the corrective measure(s) will prove successful. Factors that shall be considered in this evaluation include:
 - (1) Magnitude of residual risks in terms of amounts and concentrations of hazardous and/or mixed waste, including hazardous constituents, remaining following implementation of the corrective measure(s), considering the persistence, toxicity, mobility and propensity to bioaccumulate of such hazardous and/or mixed wastes, including hazardous constituents;
 - (2) The type and degree of long-term management required, including monitoring and operation and maintenance;
 - (3) Potential for exposure of humans and environmental receptors to remaining hazardous and/or mixed wastes, including hazardous constituents, considering the potential threat to human health and the environment associated with excavation, transportation, redisposal or containment;
 - (4) Long-term reliability of the engineering and institutional controls, including uncertainties associated with land disposal of untreated hazardous and/or mixed wastes,

including hazardous constituents, and their residuals;
and

- (5) Potential need for replacement of the corrective measure(s).
- (ii) Reduction of toxicity, mobility or volume. A potential corrective measure(s) may be assessed as to the degree to which it employs treatment that reduces toxicity, mobility or volume of hazardous and/or mixed wastes, including hazardous constituents. Factors that shall be considered in such assessments include:
- (1) The treatment processes the corrective measure(s) employs and materials it would treat;
 - (2) The amount of hazardous and/or mixed wastes, including hazardous constituents, that would be destroyed or treated;
 - (3) The degree to which the treatment is irreversible;
 - (4) The residuals that will remain following treatment, considering the persistence, toxicity, mobility and propensity to bioaccumulate of such hazardous and/or mixed wastes, including hazardous constituents; and
 - (5) All concentration levels of hazardous and/or mixed waste, including hazardous constituents, in each medium that the corrective measure(s) must achieve to be protective of human health and the environment.
- (iii) The short-term effectiveness of a potential corrective measure(s) may be assessed considering the following:
- (1) Magnitude of reduction of existing risks;
 - (2) Short-term risks that might be posed to the community, workers, or the environment during implementation of such a corrective measure(s), including potential threats to human health and the environment associated with excavation, transportation, and redisposal or containment; and
 - (3) Time until full protection is achieved.

(iv) Implementability. The ease or difficulty of implementing a potential corrective measure(s) may be assessed by considering the following types of factors:

- (1) Degree of difficulty associated with constructing the technology;
- (2) Expected operational reliability of the technologies;
- (3) Need to coordinate with and obtain necessary approvals and permits from other agencies;
- (4) Availability of necessary equipment and specialists;
- (5) Available capacity and location of needed treatment, storage and disposal services; and
- (6) Requirements for removal, decontamination, closure, or post-closure of units, equipment, devices or structures that will be used to implement the corrective measure(s).

(v) Cost. The types of costs that may be assessed include the following:

- (1) Capital costs;
- (2) Operation and maintenance costs;
- (3) Net present value of capital and operation and maintenance costs; and
- (4) Potential future corrective measure costs.

13. Permit Modification for Corrective Measure(s).

(a) Based on information the Permittee submits in the RFI and Summary Reports, under Module II Condition E.7, the CMS Final Report under Module II Condition E.11., and other information, the Commissioner will select the corrective measure(s) and initiate a permit modification to this Permit, pursuant to 6NYCRR 373-1.7(b) and 6NYCRR 621.14. The modification will specify the selected corrective measure(s) and include, at a minimum the following:

- (i) Description of all technical features of the corrective measure(s) that are necessary for achieving the standards for corrective

measures established under Module II Condition E.12.(a), including length of time for which compliance must be demonstrated at specified points of compliance;

- (ii) All media cleanup standards for hazardous constituents, selected by the Commissioner, that the corrective measure(s) must achieve to be protective of human health and the environment;
- (iii) All requirements for achieving compliance with these cleanup standards;
- (iv) All requirements for complying with the standards for management of wastes;
- (v) Requirements for removal, decontamination, closure or post-closure of units, equipment, devices or structures that will be used to implement the corrective measure(s);
- (vi) A schedule for initiating and completing all major technical features and milestones of the corrective measure(s); and
- (vii) Requirements for submission of reports and other information.

Not applicable at this time.

- (b) Financial assurance for Corrective Measures is not applicable to federal facilities.

14. Modification of the Compliance Schedules.

- (a) If at any time the Permittee determines that modification of any Compliance Schedule of this Permit Module, including Appendix II-D, is necessary because such schedules cannot be met, the Permittee must:
 - (i) Notify the Commissioner in writing within fifteen (15) calendar days of such determination; and
 - (ii) Provide an explanation why the current schedule cannot be met.
- (b) The Commissioner shall notify the Permittee in writing of the final decision regarding the Permittee's proposed modification to the Compliance Schedule.
- (c) Compliance Schedule modifications finalized by the Commissioner according to this procedure shall not be subject to administrative appeal.

- (d) Modifications to the Compliance Schedule pursuant to their procedure does not constitute a reissuance of this Permit.
- (e) All other modifications to this Permit Module must be made in accordance with Module I, Condition I, of this Permit.

15. Corrective Action Through Post-Closure.

Not applicable at this time.

16. Corrective Action Through Closure

Not applicable at this time.

17. Corrective Action Through Orders-on-Consent

Not applicable at this time.

373 Appendix II-A

COMPONENTS REQUIRED FOR RCRA ANALYTICAL DATA SUBMITTED TO
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION*

US Department of Energy
Environmental Management
Separations Process Research Unit
NYR000096859

A data deliverables package is to be supplied with all analytical data, as specified in the approved Quality Assurance Project Plan (QAPP) or work plan. Category B or CLP data deliverables, as specified in the latest version of the NYSDEC Analytical Services Protocol (ASP), are required unless otherwise specified in an approved QAPP or work plan. The category B and CLP data deliverables packages are specified in Exhibit B of the NYSDEC ASP. Copies of the ASP, on CD, are available from the Standards and Analytical Support Section in the Bureau of Water Assessment and Management in the Division of Water. The data package shall be provided to the Department on a CD in ASP format as a PDF or other read only document. In addition, the laboratory must be certified by NYSDOH ELAP for the category and parameters of interest as per 6 NYCRR 370.1(f). A list of commercial laboratories can be found at <http://www.wadsworth.org/labcert/elap/comm.html>.

Category B or CLP data deliverables are generally expected for corrective action sampling, characterization groundwater monitoring and closures. For long term groundwater monitoring, an abbreviated data package may suffice, with prior Department quality assurance approval, since the variability of the data with time can be used as a quality control check. A facility may request a change to the data deliverables package, and may propose modifications to the QAPP accordingly. Modifications to the data deliverables criteria must be approved by the Department prior to implementation.

373 Appendix II-B

Scope of Work For A
RCRA Facility Investigation

US Department of Energy
Environmental Management
Separations Process Research Unit
NYR000096859

I. INTRODUCTION

The Permittee shall undertake a RCRA Facility Investigation ("RFI") that should include the development of several component plans and supporting reports relevant to the specific investigations to be undertaken pursuant to this Permit. Component plans and reports must be prepared and submitted in accordance with the Compliance Schedules in Module II Condition E and Appendix II-D of this Permit Module.

The purpose of this RFI is to characterize the nature, extent, direction, rate, movement and concentration of releases of hazardous and/or mixed waste, including hazardous constituents, from Solid Waste Management Units and Areas of Concern at the facility including areas off-site impacted by the release(s) from the facility and to gather all necessary data to support the Corrective Measures Study. The Permittee shall furnish all personnel, materials, and services necessary for, or incidental to, performing the RCRA Facility Investigation.

The RFI Scope of Work includes several tasks:

- Task I: A report on the Description of Current Conditions.
- Task II: A report on the Pre-Investigation Evaluation of Corrective Measures.
- Task III: RFI Management Plans including:
- A. The Project Management Plan;
 - B. The Data Management Plan;
 - C. The Quality Assurance Project Plan;
 - D. The Health and Safety Plan; and
 - E. The Community Relations Plan.
- Task IV: The Facility Investigation.

Task V: Investigative Analysis.

Task VI: Laboratory, Bench Scale, and Pilot Studies.

Task VII: Reports.

The report on Description of Current Conditions should comprise all available and relevant information and data on the facility's background, SWMU(s) and AOC(s) characterization, nature and extent of contamination, potential receptors, and prevailing corrective action implementation. Data and information gathered during any previous investigations, remediations, or inspections and other relevant data should be included in the submittal. That information and data may then be used to focus subsequent field investigations and development of the respective work plans for the SWMU(s) and AOC(s) to be investigated as part of this Permit. If the Permittee maintains that relevant information and data has been submitted, the Permittee should cite such submittal(s). The Permittee shall refer to Module II Condition B.5. on addressing prior submittals.

The report on Pre-Investigation Evaluation of Corrective Measures will identify potential technologies that may be considered by the Permittee for subsequent implementation. These alternative technologies will focus the RFI to collect the necessary data for their proper evaluation.

The RFI Management Plans shall provide the necessary information that will assure that the following objectives are met:

- ° Proper management of all aspects of the RFI project including tracking of project milestones. Schedules and tracking methods shall be established for RFI tasks and report submittals (Project Management Plan);
- ° Satisfactory presentation of data and results developed by the RFI. Data management procedures shall be established to effectively process data such that relevant data descriptions are readily accessible and accurately maintained (Data Management Plan);
- ° Generation of valid data during the RFI investigation. QA/QC procedures shall be established to describe and document data quality (Quality Assurance Project Plan);
- ° Implementation of appropriate health and safety measures during the RFI. Health and safety procedures shall be established to ensure the health and safety of the investigative team(s) and the general public during the RFI (Health and Safety Plan); and
- ° Provision for informing the community of the results of the RFI (Community Relations Plan).

The Facility Investigation shall focus on procedures and techniques that will be utilized during field investigations to characterize the environmental setting and the contaminant release(s) from the SWMU(s) and AOC(s). Characterization of the environmental setting will be necessary to determine monitoring locations and to aid in defining the boundaries of the contaminated unit(s) and area(s). The Permittee shall characterize each environmental medium, as deemed necessary by the Department, to provide information that can be used to determine the rate and extent of the contaminant release(s). Characterization of the contaminant release(s) from the SWMU(s) and AOC(s) will be necessary to determine the nature, extent, direction, rate, movement and concentration of the contaminant plume(s).

Since a potentially broad spectrum of situations involving information on a specific release(s) may exist at the beginning of the RFI, a flexible, phased approach for the release investigation may be necessary. The Permittee may begin with an evaluation of existing data and propose the collection of additional data as necessary to characterize the release. The Permittee may consider incorporating appropriate screening techniques, i.e., soil gas, geophysical methods, as the initial phase of field investigation for the RFI.

Based on existing data and/or data collected by appropriate screening techniques, the Permittee may develop a conceptual model of the release. This model may then be used to plan and develop subsequent investigations. The Permittee shall then develop work plans for the subsequent investigative program(s), as deemed necessary by the Department, utilizing conventional monitoring techniques capable of release(s) verification and/or characterization.

An Investigative Analysis shall be carried-out on the data generated by the Facility Investigation. The analysis shall focus on the quality of data generated and on establishing the nature, extent, direction, rate, movement and concentration of contamination.

Laboratory and/or Bench Scale Studies shall be performed to assess corrective measure technologies that may be applicable for remediating the SWMU(s), the AOC(s), and the environmental contamination investigated by the Permittee. The information gathered from such studies will assist the Permittee in selecting the alternative technologies for evaluation during the Corrective Measures Study.

Progress reports on the Facility Investigation and Laboratory Bench Scale Studies shall be submitted quarterly in addition to a final RFI Report and Summary Report.

II. TASK I: DESCRIPTION OF CURRENT CONDITIONS

The Permittee shall submit a report for Task I containing available and relevant information and data on the facility's background, SWMU(s), AOC(s), contamination, receptors, and remediation undertaken pertinent to the specific SWMU(s) and AOC(s) to be investigated as part of this Permit.

A. Facility Background

The Permittee shall summarize the regional location, pertinent boundary features, general facility physiography, geology, hydrogeology, and historical use of the facility for the treatment, storage or disposal of solid and hazardous waste. The information 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 depicting all waterways, wetlands, floodplains, water features, drainage patterns, and surface-water containment areas;
- (d) All above and underground tanks, buildings, utilities, paved areas, easements, rights-of-way, and other features;
- (e) All known past and present solid or hazardous waste treatment, storage or disposal areas;
- (f) All process sewers;
- (g) Surrounding land uses (residential, commercial, agricultural, recreational); and
- (h) The locations of all production, withdrawal, and groundwater monitoring wells at the facility and within the vicinity of the facility. These wells shall be clearly labeled and ground 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 6NYCRR Subpart 373-1.5(a)(2)(xix) 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 and description of past product, raw material, 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.

B. SWMU and AOC Characterization

The Permittee shall submit available and relevant information that will characterize the wastes, the SWMU(s) and the AOC(s) where wastes have been placed, collected or removed including: type; quantity; physical state; disposition (containment or nature of deposits); and facility characteristics affecting the release(s) (e.g., facility security, and engineered barriers). The information should include:

1. SWMU and AOC Characteristics:

- (a) Location of unit/area (located on facility map);
- (b) Type of unit/area;
- (c) Design features;
- (d) Operating practices (past and present);
- (e) Period of operation;
- (f) Age of unit/area; and
- (g) General physical conditions.

2. Waste Characteristics:

- (a) Type of waste placed in the unit/area:
 - (i) Hazardous classification (e.g., flammable, reactive, corrosive, oxidizing or reducing agent);
 - (ii) Quantity; and
 - (iii) Chemical composition (e.g., Appendix VIII hazardous constituents).
- (b) Physical and chemical characteristics of waste and its constituents:
 - (i) Physical state (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; and
 - (xiv) Other relevant properties.
- (c) Migration and dispersal characteristics of the waste constituents and procedures used in making the determination:
- (i) Sorption;
 - (ii) Biodegradability, bioconcentration, biotransformation;
 - (iii) Photodegradation rates;
 - (iv) Hydrolysis rates;
 - (v) Chemical transformations; and
 - (vi) Volatilization rates.

C. Nature, Extent, Direction, Rate, Movement and Concentration of Contamination

The Permittee shall submit available and relevant information on the nature, extent, direction, rate, movement and concentration of the release(s) from the SWMU(s) and the AOC(s). This information and data should include:

1. Summary of available monitoring data and qualitative information on locations and levels of contamination at the facility and within the vicinity of the facility if contamination has migrated off-site.
2. Summary of all potential contaminant migration pathways including available information on geology, hydrogeology, physiography, hydrology, water quality, meteorology, and air quality.

D. Potential Receptors

The Permittee shall submit available and relevant information describing the human

populations and environmental systems that are susceptible to exposure by the contaminant release(s) from the SWMU(s) and the AOC(s). Data on observable effects or bioassays for ecosystems should accompany this submittal if available. The information shall include:

1. Local uses and possible future uses of groundwater:
 - (a) Type of use (e.g., drinking water source: municipal or residential, agricultural, domestic/non-potable, and industrial);
 - (b) Location of groundwater users including wells and discharge areas (identify on a map); and
 - (c) The well(s) pump rate(s) and the well(s) depth(s).
2. Local uses and possible future uses of surface waters draining from the facility:
 - (a) Domestic and municipal (e.g. potable and lawn/gardening watering);
 - (b) Recreational (e.g. swimming, fishing);
 - (c) Agricultural;
 - (d) Industrial; and
 - (e) Environmental (e.g. fish and wildlife propagation).
3. Human use 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.

E. Corrective Action Implementation

The Permittee shall submit documentation on corrective measures (remedial measures) undertaken on-site or off-site at the facility. Remedial actions should include any interim corrective measures, RCRA closures, State or Federal Superfund activities. This documentation shall include:

1. Objectives of the remediation and how it 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.

III. TASK II: PRE-INVESTIGATION EVALUATION OF CORRECTIVE MEASURES

The Permittee shall submit a report for Task II 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.).

IV. TASK III: RFI MANAGEMENT PLANS

The Permittee shall submit RFI Management Plans as part of the RFI Work Plan. The Plans shall address the methods and procedures necessary to manage the RFI, to describe data developed by the RFI, to gather and ensure valid RFI data, to protect the health and safety of investigators and the general public, and to keep the community informed about the RFI.

A. Project Management Plan

The Permittee shall prepare a Project Management Plan that shall include a discussion of the management approach, schedules, and personnel utilized during the RFI. That Plan shall include a description of qualifications of personnel performing or directing the RFI, including contractor personnel. This Plan shall also document the overall management approach to the RCRA Facility Investigation that will assure

adherence to tasks and reporting schedules. The schedule for completing the RFI should reflect the schedules set forth in Module II Condition E, and Appendix II-D. The schedule shall reflect dates for submittal of various RFI Work Plan components, dates for starting and accomplishing specific tasks associated with the RFI, and dates for reporting information from specific tasks to the Department.

B. Data Management Plan

The Permittee shall prepare 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, but not be limited to 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) Indicated 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.

C. Quality Assurance Project Plan (QAPjP)

The Permittee shall prepare a QAPjP to document each phase of investigative work and all sampling and monitoring procedures to be implemented during the RFI. The following activities shall be covered in the QAPjP: sampling, field measurements and sample analysis performed during the investigations. This Plan shall ensure that all information, data, and resulting decisions are technically sound, statistically valid, and properly documented. The QAPjP(s) shall be developed in accordance with the following guidance documents, "RCRA Quality Assurance Project Plan Guidance" or an approved Department equivalent guidance document (e.g. "Uniform Federal Policy for Quality Assurance Projects Plans - Evaluating, Assessing, and Documenting Environmental Data Collection and Use Programs"); "SW-846;" and "Technical Enforcement Guidance Document". The Plan shall address all of the sixteen (16) essential QA/QC elements stipulated in the "RCRA Quality Assurance Project Plan Guidance." A summary of the QA/QC elements that shall be in the Plan is found in the subsequent paragraphs.

1. Data Quality Objectives

The QAPjP 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; and
- (d) Description of the measures to be taken to assure that data sets can be compared to each other.

2. Sampling and Field Measurements

The QAPjP shall include, but not be limited to the following:

- (a) Sampling and field measurement locations, depths, etc.;
- (b) Collecting all necessary ancillary data;
- (c) Conditions under which sampling and field measurements should be conducted;
- (d) Media to be sampled and addressed by field measurements (e.g., groundwater, air, soil, sediment, etc.);
- (e) Parameters to be measured and where;
- (f) The frequency of sampling and field measurements and length of sampling period;
- (g) The types of sample (e.g., composites vs. grabs) and number of samples to be collected;
- (h) Measures to be taken to prevent contamination of the sampling equipment and cross contamination between sampling points;
- (i) Documenting field sampling and measurement operations and procedures, including;
 - (i) Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters, and adsorbing reagents);
 - (ii) Procedures and forms for recording raw data and the exact location, time, and specific considerations associated with sample and data acquisition;

- (iii) Documentation of specific sample preservation method;
- (iv) Calibration of field devices;
- (v) Collection of replicate samples and measurements;
- (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 and field measurement order; and
- (xi) Decontamination procedures.
- (j) Selecting appropriate sample containers;
- (k) Sample preservation; and
- (l) Chain-of-Custody, including:
 - (i) Standardized field tracking reporting forms to establish sample custody in the field prior to and during shipment; and
 - (ii) Pre-prepared sample labels containing all information necessary for effective sample tracking.

3. Sample Analysis

The QAPJP shall include, but not be limited to 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 disbursement 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-spikes 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.

D. Health and Safety Plan

The Permittee shall prepare a Health and Safety Plan for the protection of the investigative team(s), workers, and general public which may be exposed to hazards.

1. The Health and Safety Plan shall include, but not be limited to the following:

- (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
- (l) 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 CFR §§ 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 Permittee shall prepare a plan on disseminating information to the public regarding investigation activities and results. The plan should identify who will be notified and will receive summary RFI reports.

V. TASK IV: THE FACILITY INVESTIGATION

- The Permittee shall submit a workplan that shall address the techniques and procedures necessary to characterize the environmental setting at and within the vicinity of the facility and the media-specific contamination resulting from the release(s) by the SWMU(s) and the AOC(s). The part of the workplan that addresses field sampling and measurement activities shall meet the sampling plan requirements stipulated in the "RCRA Quality Assurance Project Plan Guidance."

A. Environmental Setting

The Permittee shall submit an appropriate plan on collecting information to supplement existing information on the environmental setting at the facility and in the vicinity of the facility. Sufficient information shall be collected by the Permittee to characterize only those environmental media impacted by the release(s) from the SWMU(s) and the AOC(s):

1. Hydrogeology

The Permittee shall conduct a program to characterize the hydrogeologic conditions at the facility and the off-site areas where contamination has migrated. The program shall provide relevant information on geology and hydrogeology that should include, but not be limited to the following facts:

- (a) A description of the regional and facility specific geologic and hydrogeologic characteristics which affect groundwater flow both beneath and within the vicinity of the facility, including:

- (i) Regional and facility specific geomorphology and stratigraphy: description of strata including strike and dip, identification of stratigraphic contacts;
 - (ii) Structural geology: description of local and regional structural features (e.g., folds, faults, joints, and fractures);
 - (iii) Identification and characterization of areas and amounts of recharge and discharge;
 - (iv) Regional and facility specific groundwater flow patterns; and
 - (v) Characterize seasonal variations in the groundwater flow regime.
- (b) An analysis of any topographic features that might influence the groundwater flow system.
- (c) Based on field data, tests, and cores, a representative and accurate classification and description of the hydrogeologic units which may be part of the migration pathways (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, a description of the extent (depth, thickness, lateral extent) of hydrogeologic units which may be part of the migration pathways, including:
 - (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 low 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 groundwater to wells or springs; and
 - (v) Water-bearing zones above the first confining layer that may serve as a pathway for contaminant migration including perched zones of saturation.
- (e) Based on data obtained from groundwater monitoring wells and piezometers installed upgradient and downgradient of the potential contaminant source, a representative description of water level or fluid pressure monitoring including:
 - (i) Water-level contour and/or potentiometric maps;
 - (ii) Hydrologic cross sections showing vertical gradients;
 - (iii) The flow system, including the vertical and horizontal components of flow; and
 - (iv) Any temporal changes in hydraulic gradients, for example, due to tidal or seasonal influences.
- (f) A description of man-made influences that may affect the hydrogeology, identifying:
 - (i) Active and inactive local water-supply and production wells with an approximate schedule of pumping; and
 - (ii) Man-made hydraulic structures (sewers, pipelines, French drains, ditches, unlined ponds, septic tanks, outfalls, retention areas, etc.).

2. Soils

The Permittee shall conduct a program to characterize the soil and rock units above the water table in the vicinity of the contaminant release(s). The program shall provide relevant information on soil characterization that should include, but not be limited to the following facts:

- (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; and
- (t) Mineral content.

3. Surface Water and Sediment

The Permittee shall conduct a program to characterize the surface-water bodies in the vicinity of the contaminant release(s). The program shall provide relevant information on surface water and sediment characterization that should include, but not be limited to the following facts:

- (a) Description of the temporal and permanent surface-water bodies including:
 - (i) For lakes and estuaries: location, elevation, surface area, inflow-outflow characteristics, depth, temperature stratification, and volume;
 - (ii) For impoundments: location, elevation, surface area, depth, volume, inflow-outflow characteristics, freeboard, and purpose of impoundment;
 - (iii) For rivers, streams, ditches, drains, swamps and channels: location, elevation, flow, velocity, depth, width, inflow-outflow characteristics, seasonal fluctuations, and flooding tendencies (i.e., 100 year event);
 - (iv) Drainage patterns; and
 - (v) Evapotranspiration.
- (b) Description of the chemistry of the surface water. This includes determining the pH, total dissolved solids, total suspended solids, biological oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients (NH_3 , $\text{NO}_3^-/\text{NO}_2^-$, PO_4^{3-}), chemical oxygen demand, total organic carbon, and specific contaminant concentrations.

- (c) Description of sediment characteristics including:
 - (i) Deposition area;
 - (ii) Thickness profile; and
 - (iii) Physical and chemical parameters (e.g., grain size, density, organic carbon content, ion exchange capacity, and pH).

4. Air

The Permittee shall conduct a program to characterize the climate at the facility and in the vicinity of the facility when contamination migrates off-site. The program shall provide relevant information on climatic conditions that should include, but not be limited to the following facts:

- (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 man-made 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;

- (v) Buildings; and
- (vi) Existing man-made air emission sources (e.g., industrial processes, residences, etc.).

B. Contamination Characterization Plan

The Permittee shall submit a workplan on collecting analytical data to supplement existing data on groundwater, soils, surface water, sediment, air and subsurface gas contamination. This data shall be sufficient to define the nature, extent, origin, direction, and rate of movement of contaminant plume(s) in the environmental medium impacted by the release(s) from the SWMU(s) and AOC(s).

1. Groundwater Contamination

The Permittee shall conduct a program to characterize any plume(s) of contamination at the facility and any plume(s) that have migrated off-site. The program shall provide relevant information on groundwater contamination that should include, but not be limited to the following facts:

- (a) A description of the horizontal and vertical extent of any immiscible or dissolved plume(s);
- (b) The horizontal and vertical direction of contamination movement;
- (c) The velocity of contaminant movement;
- (d) The horizontal and vertical concentration profiles of contaminant constituents in the plume(s);
- (e) An evaluation of factors influencing the plume movement, specific contaminant movement, and specific contaminant transformation (e.g., physical, chemical, biological, etc.); and
- (f) An extrapolation of future contaminant movement.

2. Soil Contamination

The Permittee shall conduct a program to characterize the contamination of the soil and rock units above the water table in the vicinity of the contaminant release(s). The program shall provide relevant information on soil contamination that should include, but not be limited to the following facts:

- (a) A description of the vertical and horizontal extent of contamination.
- (b) A description of relevant contaminant 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.

3. Surface-Water and Sediment Contamination

The Permittee shall conduct a program to characterize the contamination in surface-water bodies resulting from the contaminant release(s) at the facility. The program shall provide relevant information on surface water and sediment contamination that shall include, but not be limited to the following facts:

- (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) The toxicity of the sediment and adjacent water column to aquatic life.

4. Air Contamination

The Permittee shall conduct a program to characterize the particulate and gaseous contaminants released into the atmosphere. The program shall provide relevant information on air emissions that should include, but not be limited to the following facts:

- (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 contaminant(s) released, including horizontal and vertical concentration profiles.

5. Subsurface Gas Contamination

The Permittee shall conduct a program to characterize subsurface gas contamination in the soil. The program shall provide relevant information on subsurface gas contamination that should include, but not be limited to the following facts:

- (a) A description of the horizontal and vertical extent of subsurface gas migration;
- (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.

VI. TASK V: INVESTIGATION ANALYSIS

The Permittee 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, rate, and extent of contamination, potential threat to human health and/or the environment, and to support the Corrective Measures Study.

A. Data Analysis

The Permittee shall analyze all facility investigation data outlined in Task IV and prepare a report on the nature, rate, and extent of contamination at the facility including sources and migration pathways. The report shall describe the nature and extent of contamination (qualitative/ quantitative) in relation to background levels indicative for the area.

B. Protection Standards

The Permittee shall identify all relevant and applicable standards and action levels (e.g., health based guidance values) for the protection of human health and the environment.

VII. TASK VI: LABORATORY AND BENCH SCALE STUDIES

The Permittee shall conduct laboratory and/or bench scale studies to determine the applicability of a corrective measure technology or technologies to facility conditions.

The Permittee shall analyze the technologies, based on literature review, vendor contracts, and past experience to determine the testing requirements.

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

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

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

VIII. TASK VII: REPORTS

A. Progress Reports

The Permittee shall provide signed progress reports as required by Condition B.8.(a) of Module II of this Permit.

B. Draft and Final Reports

The Permittee shall prepare a RCRA Facility Investigation ("RFI") Report as required by Condition E.7 of Module II of this Permit. The RFI Report shall present all information gathered under the approved RFI Workplan.

373 Appendix II-B, Attachment B-1
RCRA Facility Investigation Work Plan Outline

US Department of Energy
Environmental Management
Separations Process Research Unit
NYR000096859

The RCRA Facility Investigation (RFI) Work Plan Outline presented as follows is specific to those SWMUs and AOCs identified by Condition E.5.(a) of Permit Module II. A RFI Work Plan may be written for an individual SWMU/AOC or a combination thereof. Work Plan scopes can be variable and contain various Appendix II-B elements, as appropriate, subject to NYSDEC approval. The purpose of this outline is to provide details for the development of adequate RFI Work Plans which are to be used to determine the extent and nature of releases of hazardous constituents to environmental media at the referenced SWMUs/AOCs.

Required analytical detection levels for any laboratory analyses prescribed by the RFI Work Plan are to include the following:

- a. The actual expected detection level for each analyte shall be specified in the Work Plan;
- b. The detection level for each analyte shall be as close as possible to the analytical method detection limit specified in SW-846 (current edition) and;
- c. The detection levels for the individual analytes must be submitted by the Permittee. For those parameters which are both systemic toxicants and carcinogens, the detection level shall be based upon the lower of the two.

SWMU-030

H2 Processing Facility

Unit Description:

Building H2 was constructed to house liquid waste processing equipment for waste generated by the Separation Process Research Unit (SPRU) and SPRU-support facilities. The building resides on a 2-3 foot thick concrete foundation slab and is constructed of concrete walls over 2 feet thick. The building consists of approximately 27,900 square feet of floor space on three main floors, with nearly 70% of this space being located below grade. The majority of liquid processing equipment is fabricated of stainless steel and resides on the two lower levels.

During the early 1950s, chemical wastes were processed in Building H2. The waste was transferred via stainless steel drain lines to one of five stainless steel neutralizers. The neutralizer bottoms were transferred to the Tank Farm for storage, the organic distillate was collected and containerized, and excess water was processed with other wastewaters prior to discharge.

SPRU and SPRU-support facility wastewaters were accumulated in one of three stainless steel 10,000-gallon storage tanks. Accumulated wastewater was transferred to one of two evaporators where it was concentrated 400-fold. Distillate from the evaporators was collected in a receiver tank from where it was ultimately discharged to the Mohawk River via the K5 Retention Basin and/or storm water drain system. Evaporator bottoms were either dried in one of two drum driers and containerized in 55-gallon drums or were directly containerized. The containerized waste ("slurry waste") was staged adjacent to Building H2 prior to being placed in storage at the Slurry Drum Storage Area, the K6 Storage Pad, or the Railroad Staging Area.

From 1950 until 1964, the evaporative wastewater processing technique was employed. Subsequent to 1964, wastewater was processed via filtration and ion exchange prior to discharge. Discharge of treated wastewater ceased in 1977 when a water reuse system was installed.

In addition to liquid waste processing, solid wastes have been compacted in Building H2 since 1972.

Radioactivity detected in adjacent soil and footing drains indicate a potential release from this unit.

Status:

Inactive

Approximate Period of
Operation:

Late 1940s to present

Types of Waste:

Corrosive chemical waste and heavy metal-bearing wastewater

Constituents: Heavy metals, methyl isobutyl ketone and/or organic diluents

Method of Containment: Radioactivity discovered in adjacent soils indicates impaired containment.

Media of Concern: Soil, groundwater

Site Investigation Plan
with Sampling and Next
Step(s) Toward Corrective
Action:

A RCRA Facility Assessment - Site Visit (RFA-SV) was conducted and an RFA-SV report was submitted, dated February 2002, that included soils in the vicinity of the unit to determine if contaminant releases occurred. An examination of potential or likely release points, as well as a review of the location of previously detected radioactivity in soils, was used in designing the RFA sampling program. The results of the RFA-SV were used to determine that a RCRA Facility Investigation (RFI) was necessary for the unit.

Groundwater contamination in the vicinity of the unit was characterized in a separate RFI and the RFI report was submitted in November 2006.

Per Module II of this permit, the Permittee may choose to perform remediation of the unit through an approved Interim Corrective Measure (ICM). Based on required confirmatory sampling, as part of the ICM, the Commissioner will determine if further corrective action activities and/or an RFI for the contaminated soils and/or groundwater are necessary for the unit.

Analysis will be conducted for 6 NYCRR Subpart 373-2, Appendix 33 parameters, unless data exists to justify development of a SWMU-specific parameter list. Establishment of such a list will be subject to NYSDEC approval.

SWMU-031

H2 Tank Farm

Unit Description:

This unit consists of one 5,000-gallon and six 10,000-gallon stainless steel storage tanks located in seven underground concrete vaults. The vaults are arranged in a north-south row on the east side of the H2 Processing Facility. The floors and walls of these vaults are constructed of concrete ranging from two to eight feet thick. Processed separations material and waste was accumulated within the various tanks from 1950 until 1954. Materials and waste remained in storage until the mid-1960s when it was removed, processed via evaporation, and transported off-site for disposal. Subsequent to SPRU operations, several tanks were used to accumulate and store liquid waste from materials and chemistry laboratories. During 1978, all tanks were drained and taken out of service. Tank heels remain in place. Radioactivity detected in footing drains indicates a potential release from this unit.

Status:

Inactive

Approximate Period of Operation:

1950 to 1978

Types of Waste:

Corrosive liquid waste

Constituents:

Methyl isobutyl ketone, organic diluents, and/or heavy metals (arsenic, cadmium, chromium, lead, selenium, silver, mercury)

Method of Containment:

Secondary

Media of Concern:

Soil, groundwater

Site Investigation Plan with Sampling and Next Step(s) Toward Corrective Action:

An RFA-SV was conducted and an RFA-SV report was submitted, dated February 2002, that included soils in the vicinity of the unit to determine if contaminant releases occurred. An examination of potential or likely release points, as well as a review of the location of previously detected radioactivity in soils, was used in designing the RFA sampling program. The results of the RFA-SV were used to determine that an RFI was necessary for the unit.

Groundwater contamination in the vicinity of the unit was characterized in a separate RFI and the RFI report was submitted in November 2006.

Per Module II of this permit, the Permittee may choose to perform remediation of the unit through an approved ICM. Based on required confirmatory sampling, as part of the ICM, the Commissioner will determine

if further corrective action activities and/or an RFI for the contaminated soils and/or groundwater are necessary for the unit.

Analysis will be conducted for 6 NYCRR Subpart 373-2, Appendix 33 parameters, unless data exists to justify development of a SWMU-specific parameter list. Establishment of such a list will be subject to NYSDEC approval.

SWMU-035

Former Slurry Drum Storage Area

Unit Description:

This unit consisted of an approximate 900 square foot, earthen-bermed area located outside and east of the site's upper level security area. During the early 1950s, slurry waste generated from wastewater processing activities in Building H2 was staged at this unit prior to off-site disposal transport. The earthen berm was bulldozed and graded in the mid-1950s. Clean-up efforts were initiated in the early 1960s and again in the late 1970s. Approximately 1,000 cubic yards of soil have been removed. No visible evidence of the unit exists today. Radioactivity detected in adjacent soil indicates a potential release from this unit.

Status:

Inactive

Approximate Period of Operation:

Mid-1950s

Types of Waste:

"Slurry waste" from Building H2 operations, filters and equipment
(See description for SWMU-030)

Constituents:

Heavy metals, other constituents unknown

Method of Containment:

None

Media of Concern:

Soil, groundwater

Site Investigation Plan
with Sampling and Next
Step(s) Toward Corrective
Action:

An RFA-SV was conducted and an RFA-SV report was submitted, dated February 2002, that includes soils in the vicinity of the unit to determine if contaminant releases occurred. The results of the RFA were used to determine that further sampling was required. Additional sampling was performed and results were reported by DOE-NRLFO/KAPL Inc. in the RCRA Facility Assessment Sampling Visit Report for the Knolls Site Land Disposal Area, September 2006. An RFI will be conducted by DOE-NRLFO/Kapl, Inc. in the Land Disposal Area, and will include areas associated with this unit as recommended for further action in the September 2006 report. This RFI will be conducted by DOE-NRLFO under KAPL Knolls Part 373 Hazardous Waste Management Permit (Permit No. 4-4224-00024/00001).

Analysis will be conducted for 6 NYCRR Subpart 373-2, Appendix 33 parameters, unless data exists to justify development of a SWMU-specific parameter list. Establishment of such a list will be subject to NYSDEC approval.

SWMU-038

Railroad Staging Area

Unit Description:

This unit consists of the land area located adjacent to and south of the Site's former rail bed. Four foot square wooden boxes and 55-gallon drums of solid waste, including "slurry waste" from Building H2 operations, were staged at this unit prior to off-site disposal transport. Radioactivity detected in soils indicates a potential release from this unit.

Status:

Inactive

Approximate Period of Operation:

Early 1950s to late 1960s

Types of Waste:

"Slurry waste" from Building H2 operations, filters and equipment
(See description for SWMU-030)

Constituents:

Heavy metals, other constituents unknown

Method of Containment:

Radioactivity in soils indicates impaired containment.

Media of Concern:

Soil, groundwater

Site Investigation Plan
with Sampling and Next
Step(s) Toward Corrective
Action:

An RFA-SV was conducted and an RFA-SV report was submitted, dated February 2002, consisting of unbiased soil sampling (e.g. grid pattern and/or at regular intervals) designed to detect contaminant release from the unit. The results of the soil sampling program was used to determine that an RFI was necessary for the unit. Groundwater contamination in the vicinity of the unit was characterized in a separate RFI and the RFI report was submitted in November 2006.

Per Module II of this permit, the Permittee may choose to perform remediation of the unit through an approved ICM. Based on required confirmatory sampling, as part of the ICM, the Commissioner will determine if further corrective action activities and/or an RFI for the contaminated soils and/or groundwater are necessary for the unit.

Analysis will be conducted for 6 NYCRR Subpart 373-2, Appendix 33 parameters, unless data exists to justify development of a SWMU-specific parameter list. Establishment of such a list will be subject to NYSDEC approval.

SWMU-057

Pipe Tunnels

Unit Description:

This unit consists of tunnels located in and connecting the basements of Building G2 and H2. The tunnels are over five feet wide and eight feet high. They were constructed to house industrial and wastewater drain lines from operations in Buildings G2, G1, and E1. Wastewater was allegedly accumulated within these tunnels on occasion. Tunnel walls, floors, and ceilings are constructed of concrete over six inches thick. A waterproof sealant was applied to the unit's walls and floor during construction. Copper water stops were also installed at all construction joints. During a 1989 inspection, groundwater intrusion was observed at an expansion joint located at the north end of Building G2. High water marks and stains were also observed on tunnel walls and floors. Radioactivity detected in the Building H2 footing drains indicates a potential release.

Status:

Inactive

Approximate Period of
Operation:

1950 to 1953

Types of Waste:

Wastewater potentially containing heavy metals

Constituents:

Specific constituents undetermined

Method of Containment:

Primary

Media of Concern:

Soil, groundwater

Site Investigation Plan
with Sampling and Next
Step(s) Toward Corrective
Action:

An RFA-SV was conducted and an RFA-SV report was submitted, dated February 2002, that included soils in the vicinity of the unit to determine if contaminant releases occurred. An examination of potential or likely release points, as well as a review of the location of previously detected radioactivity in soils, was used in designing the RFA sampling program. The results of the RFA-SV were used to determine that an RFI was necessary for the unit. Groundwater contamination in the vicinity of the unit was characterized in a separate RFI and the RFI report was submitted in November 2006.

Per Module II of this permit, the Permittee may choose to perform remediation of the unit through an approved ICM. Based on required confirmatory sampling, as part of the ICM, the Commissioner will determine if further corrective action activities and/or an RFI for the contaminated soils and/or groundwater are necessary for the unit.

Analysis will be conducted for 6 NYCRR Subpart 373-2, Appendix 33 parameters, unless data exists to justify development of a SWMU-specific parameter list. Establishment of such a list will be subject to NYSDEC approval.

AOC-003

Lower Level Parking Lot

Unit Description:

This AOC consists of the fill material located below and adjacent to a 250-foot square lower level parking lot. Fill material obtained from former waste management areas was used to expand the lot during August, 1962. The fill was obtained from an area between Storage Pads K6 and K7 as well as the Railroad Staging Area (SWMU-038). Radioactivity has been detected in the fill material, indicating a historic release.

Status:

Inactive

Approximate Period of Operation:

1962

Types of Waste:

Fill material possibly containing "slurry waste" from Building H2 operations (See description for SWMU-030)

Constituents:

Heavy metals, other constituents unknown

Method of Containment:

None

Media of Concern:

Soil, groundwater, surface water and sediment (via potential for runoff to Mohawk River, West Boundary Stream)

Site Investigation Plan with Sampling and Next Step(s) Toward Corrective Action:

An RFA-SV was conducted and an RFA-SV report was submitted, dated February 2002, consisting of unbiased soil sampling (e.g. grid pattern and/or at regular intervals) designed to detect potential contaminant release from the unit. The results of the soil sampling were used to determine that an RFI was necessary for the unit. Groundwater contamination in the vicinity of the unit was characterized in a separate RFI and the RFI report was submitted in November 2006.

Per Module II of this permit, the Permittee may choose to perform remediation of the unit through an approved ICM. Based on required confirmatory sampling, as part of the ICM, the Commissioner will determine if further corrective action activities and/or an RFI for the contaminated soils and/or groundwater are necessary for the unit.

Analysis will be conducted for 6 NYCRR Subpart 373-2, Appendix 33 parameters, unless data exists to justify development of a SWMU-specific parameter list. Establishment of such a list will be subject to NYSDEC approval.

SCOPE OF WORK FOR A CORRECTIVE MEASURE STUDY

US Department of Energy
Environmental Management
Separations Process Research Unit
NYR000096859

I. 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. The Permittee will furnish the personnel, materials, and services necessary to prepare the corrective measure study, except as otherwise specified.

II. SCOPE

The Corrective Measure Study consists of four tasks:

Task I: 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 II: Evaluation of the Corrective Measure Alternative or Alternatives

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

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

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

Task IV: Reports

- A. Progress
- B. Final

III. TASK I: 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 of Appendix II-B), the Permittee 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 Permittee shall submit an update to the information describing the current situation at the facility and the known nature and extent of the contamination as documented by the RCRA Facility Investigation Report. The Permittee shall provide an update to information presented in Task I of the RFI to the Commissioner regarding previous response activities and any interim measures which have or are being implemented at the facility. The Permittee shall also make a facility-specific statement of the purpose for the response, based on the results of the RCRA Facility Investigation ("RFI"). The statement of purpose should identify the actual or potential exposure pathways that should be addressed by corrective measures.

B. Establishment of Corrective Action Objectives

The Permittee, in conjunction with the Department, shall establish site specific objectives for the corrective action. These objectives shall be based on public health and environmental criteria, information gathered during the RFI, EPA and New York State guidance, and the requirements of any applicable federal and state statutes. At a minimum, all corrective actions concerning groundwater releases from regulated units must be consistent with, and as stringent as, those required under 6NYCRR 373-2.6.

C. Screening of Corrective Measure Technologies

The Permittee shall review the results of the RFI and reassess the technologies specified in Task II and identify additional technologies which are applicable at the facility. The Permittee shall screen the preliminary corrective measure technologies identified in Task II of the RFI and any supplemental technologies to eliminate those that may prove infeasible to implement, that rely on technologies unlikely to perform satisfactorily or reliably, or that do not achieve the corrective measure objective within a reasonable time period. This screening process focuses on eliminating those technologies which have 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. Identification of the Corrective Measure Alternative or Alternatives

The Permittee shall develop the corrective measure alternative or alternatives based on the corrective action objectives and analysis of the Preliminary Corrective Measure Technologies, as presented in Task II of the RFI and as supplemented following the preparation of the RFI Final Report. The Permittee shall rely on engineering practice to determine which of the previously identified technologies appear most suitable. 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 problems and corrective action objectives. Each alternative may consist of an individual technology or a combination of technologies. The Permittee shall document the reasons for excluding technologies, identified in Task II, as supplemented in the development of the alternative or alternatives.

IV. TASK II: EVALUATION OF THE CORRECTIVE MEASURE ALTERNATIVE OR ALTERNATIVES

The Permittee shall describe each corrective measure alternative that passes through the Initial Screening in Task I of Appendix II-C and evaluate each corrective measure alternative and its components. The evaluation shall be based on technical,

environmental, human health and institutional concerns. The Permittee shall also develop cost estimates of each corrective measure.

A. Technical/Environmental/Human Health/Institutional

The Permittee 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 Permittee shall evaluate each alternative in the four following areas:

1. Technical

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

(a) The Permittee 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 Permittee 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 straight forward 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 Permittee 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.
- (c) The Permittee 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 of water table, heterogeneity of subsurface materials, and location of the facility (i.e., remote location vs. a congested urban area). The Permittee 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: (1) the time it takes to implement a corrective measure; and (2) 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 Permittee 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. Among the factors to consider are fire, explosion, and exposure to hazardous substances.

2. Environmental

The Permittee 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

The Permittee shall assess each alternative in terms of the extent to which it mitigates short and long term potential exposure to any residual contamination and protects human health both during and after implementation of the corrective measure. 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.

4. Institutional

The Permittee 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 Permittee 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, operation and maintenance costs.

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

(a) Direct capital costs include:

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

- (ii) Equipment costs: Costs of treatment, containment, disposal and/or service equipment necessary to implement the action; 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 nonprocess buildings, utility connections, purchased services, and disposal costs.
- (b) Indirect capital costs include:
 - (i) Engineering expenses: Costs of administration, design, construction supervision, drafting, and testing of corrective measure alternatives;
 - (ii) Legal fees and license or permit costs: Administrative and technical costs necessary to obtain licenses and permits for installation and operation;
 - (iii) Startup and shakedown costs: Costs incurred during corrective measure startup; and
 - (iv) Contingency allowances: Funds to cover costs resulting from unforeseen circumstances, such as adverse weather conditions, strikes, and inadequate facility characterization.
- 2. Operation and maintenance costs are post-construction costs necessary to ensure continued effectiveness of a corrective measure. The Permittee 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.

V. TASK III: JUSTIFICATION AND RECOMMENDATION OF THE CORRECTIVE MEASURE OR MEASURES

The Permittee 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 Commissioner will select the corrective measure alternative or alternatives to be implemented based on the results of Tasks II and III of Appendix II-C. 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 EPA and/or State 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.

VI. TASK IV: REPORTS

A. Progress Reports

The Permittee shall provide the Commissioner with signed progress reports as required by Condition B.8.(a) of Module II of this Permit.

B. Corrective Measures Study ("CMS") Final Report

The Permittee shall prepare a CMS Final Report as required by Condition E.11. of Module II of this Permit. The CMS Final Report shall include all information gathered under the approved CMS Workplan. The CMS Final Report shall at a minimum include:

1. A description of the facility;
 - (a) Site topographic map and 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 (groundwater, surface-water, soil, air); and
 - (b) Laboratory studies (bench scale, pilot 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).

373 Appendix II-D
Compliance Schedule

US Department of Energy
Environmental Management
Separations Process Research Unit
NYR000096859

- I. Compliance Schedule For Interim Corrective Measures.
 - A. Pursuant to Module II Condition B.6.(a), Permittee shall submit for approval an interim corrective measures study in accordance with the procedures outlined in this Condition.
 - B. Pursuant to Module II Condition B.6.(b), Permittee shall submit for approval an ICM work plan in accordance with the procedures outlined in this Condition.
- II. Compliance Schedule For Reporting.
 - A. Pursuant to Module II Condition B.8.(a), Permittee shall submit signed progress reports as specified in approved work plans of all activities conducted in accordance with the provisions of this Permit Module, beginning no later than thirty (30) calendar days after the Permittee is first required to begin implementation of any such requirement.
- III. Compliance Schedule for Notification
 - A. Pursuant to Module II Condition B.10.(a), Permittee within fifteen (15) calendar days; after discovering facility releases of hazardous constituents in groundwater have migrated off-site, shall notify the Commissioner and off-site owners or residents on land overlying such contamination.
 - B. Pursuant to Module II Condition B.10.(b), Permittee within fifteen (15) calendar days; after discovering facility releases of hazardous constituents in air have or are migrated off-site, exceeding action levels, shall notify the Commissioner and off-site individuals subject to such long-term exposure.
- IV. Compliance Schedule For Assessment of Newly Identified SWMUs and AOCs.

- A. Pursuant to Module II Condition C.1., Permittee shall notify the Commissioner, in writing, of any additional SWMU(s) and/or AOC(s) within fifteen (15) calendar days after discovery.
 - B. Pursuant to Module II Condition C.2., Permittee shall submit a SWMU/AOC Assessment Report within forty-five (45) calendar days after notifying the Commissioner of any additional SWMU(s) and/or AOC(s).
 - C. Pursuant to Module II Condition C.3., Permittee shall submit for approval a SWMU/AOC Sampling and Analysis Plan in accordance with the procedures outlined in this Condition.
 - D. Pursuant to Module II Condition C.4.(b), Permittee shall submit for approval revisions of the SWMU/AOC Sampling and Analysis Plan within thirty (30) calendar days after meeting with the Department to discuss Plan comments or in accordance with the procedures outlined in this Condition.
 - E. Pursuant to Module II Condition C.4.(c), Permittee shall begin to implement the SWMU/AOC Sampling and Analysis Plan in accordance with the procedures outlined in this Condition.
 - F. Pursuant to Module II Condition C.5., Permittee shall submit a SWMU/AOC Sampling and Analysis Report in accordance with the procedures outlined in this Condition.
- V. Compliance Schedule And Notification Requirements For Newly-Discovered Releases At SWMUs and AOCs.
- A. Pursuant to Module II Condition D., Permittee shall notify the Commissioner, in writing, of any newly-discovered releases at SWMUs and/or AOCs, no later than fifteen (15) calendar days after such discovery.
- VI. Compliance Schedule For RFA-Sampling Visit (SV) Work Plan.
- A. Pursuant to Module II Condition E.2.(b), Permittee shall submit for approval a RFA-Sampling Visit Work Plan for the SWMU(s) and/or AOCs identified in Module Condition E.2.(a) in accordance with the procedures outlined in this Condition.
 - B. Pursuant to Module II Condition E.2.(c)(ii), Permittee shall submit for approval revisions to the RFA-SV Work Plan within forty-five (45) calendar days after meeting with the Department to discuss Plan comments, or in accordance with the procedures outlined in this Condition.
- VII. Compliance Schedule For RFA-SV Work Plan Implementation.

- A. Pursuant to Module II Condition E.3., Permittee shall begin to implement the RFA-SV Work Plan in accordance with the procedures outlined in this Condition.

VIII. Compliance Schedule For RFA-SV Report.

- A. Pursuant to Module II Condition E.4.(a)., Permittee shall submit a report on the SV in accordance with the procedures outlined in this Condition.

IX. Compliance Schedule For RCRA Facility Investigation ("RFI") Work Plan.

- A. Pursuant to Module II Condition E.5.(c)., Permittee shall submit for approval a RFI Task I and II reports and a Work Plan for the inaccessible SWMU(s) identified in Module II Condition E.5.(b) and/or Module II Condition C.6. no later than one-hundred and eighty (180) calendar days prior to the date when the SWMU(s) become accessible for such an investigation.
- B. Pursuant to Module II Condition E.5.(d)., Permittee shall submit for approval a RFI Task I Report for the SWMU(s) identified in Module II Condition E.5.(a) in accordance with the procedures outlined in this Condition.
- C. Pursuant to Module II Condition E.5.(e)., Permittee shall submit for approval a RFI Task II Report for the SWMU(s) identified in Module II Condition E.5.(a) in accordance with the procedures outlined in this Condition.
- D. Pursuant to Module II Condition E.5.(f)., Permittee shall submit for approval a RFI Work Plan in Module II Condition E.5.(a) in accordance with the procedures outlined in this Condition.
- E. Pursuant to Module II Condition E.5.(f)(iv), if the Permittee determines any items of Tasks III through V of the RFI Scope of Work have been submitted, the Permittee shall request within thirty (30) calendar days of the effective date of the Permit, and/or within sixty (60) calendar days of notification by the Commissioner, that the Commissioner review for approval the Permittee's determination.
- F. Pursuant to Module II Condition E.5.(g)(ii)., Permittee shall submit for approval revisions to the RFI Work Plan within forty-five (45) calendar days after meeting with the Department to discuss Plan comments, or in accordance with the procedures outlined in this Condition

X. Compliance Schedule For RFI Work Plan Implementation.

- A. Pursuant to Module II Condition E.6., Permittee shall begin to implement the RFI Work Plan in accordance with the procedures outlined in this Condition.

XI. Compliance Schedule For RFI Final Report And Summary Report.

- A. Pursuant to Module II Condition E.7.(a), Permittee shall submit for approval the RFI Final and Summary Reports in accordance with the approved procedures outlined in this Condition.
- B. Pursuant to Module II Condition E.7.(b)(ii), Permittee shall submit for approval revisions to the RFI Final and Summary Reports within forty-five (45) calendar days after meeting with the Department to discuss Report comments, or in accordance with the procedures outlined in this Condition.
- C. Pursuant to Module II Condition E.7.(c), Permittee shall mail the approved Summary Report to all individuals on the facility mailing list within thirty (30) calendar days of receipt of Report approval.

XII. Compliance Schedule For Current Interim Corrective Measures.

- A. Not Applicable
- B. Not Applicable

XIII. Compliance Schedule For Corrective Measures Study ("CMS") Scope of Work.

- A. Pursuant to Module II Condition E.9.(d), Permittee shall submit a Task I Report and documents in accordance with the procedures outlined in this Condition.
- B. Pursuant to Module II Condition E.9.(e), Permittee shall submit for approval a CMS Plan in accordance with the procedures outlined in this Condition.
- C. Pursuant to Module II Condition E.9.(f)(ii), Permittee shall submit for approval revisions to the CMS Plan within thirty (30) calendar days after meeting with the Department to discuss Plan comments, or in accordance with the procedures outlined in this Condition.

XIV. Compliance Schedule For CMS Implementation.

- A. Pursuant to Module II Condition E.10., Permittee shall begin to implement the CMS Plan, in accordance with the schedules specified in the Plan, within thirty (30) calendar days following written approval of the Plan.

XV. Compliance Schedule For CMS Final Report.

- A. Pursuant to Module II Condition E.11.(a), Permittee shall submit for approval a CMS Final Report in accordance with the procedures outlined in this Condition.
- B. Pursuant to Module II Condition E.11.(c)(ii), Permittee shall submit for approval revisions to the CMS Final Report within forty-five (45) calendar days after meeting with the Department to discuss Report comments, or in accordance with the procedures outlined in this Condition.

XVI. Compliance Schedule For Financial Assurance for Corrective Measure(s)

- A. Not applicable

XVII. Modification of the Compliance Schedules

- A. Pursuant to Module II Condition E.14.(a)(i), Permittee shall submit proposed modification of any Compliance Schedule within fifteen (15) calendar days of determining that a schedule cannot be met.

†

†

373 Appendix II-E
Sampling Visit Work Plan Outline

US Department of Energy
Environmental Management
Separations Process Research Unit
NYR000096859

The RCRA Facility Assessment - Sampling Visit (RFA-SV) Work Plan Outline presented as follows is specific to those SWMUs and AOCs identified by Conditions E.2.(a) and E.2.(d) of Permit Module II. The purpose of this outline is to provide details for the development of an adequate RFA-SV Work Plan which is to be used to determine whether or not the identified SWMUs and AOCs are releasing or have released hazardous constituents to environmental media.

Required analytical detection levels for any laboratory analyses prescribed by the RFA-SV Work Plan are to include the following:

- a. The actual expected detection level for each analyte shall be specified in the Work Plan;
- b. The detection level for each analyte shall be as close as possible to the analytical method detection limit specified in SW-846 (current edition) and;
- c. The detection levels for the individual analytes must be submitted by the Permittee. For those parameters which are both systemic toxicants and carcinogens, the detection level shall be based upon the lower of the two.

SWMU-040

K5 Retention Basin

Unit Description:

This unit is an in-ground, open-top concrete basin measuring approximately 22 feet wide by 43 feet long by 11 feet deep, and is constructed of one-foot thick concrete walls. The unit is equally divided into two 30,000-gallon holding basins. Non-hazardous wastewater from processing in Building H2 (and potentially containing hazardous constituents), and laundry wastewater was accumulated in the basin prior to storm water drain discharge. A roof was installed over the basin subsequent to its operational life. Radioactivity detected in adjacent soil indicates a potential release from this unit. In 2006, the K5 Facility was removed and a RCRA Facility Assessment Report prepared and submitted in May 2007.

Status:

Inactive

Approximate Period of Operation:

1950 to late 1960s

Types of Waste:

Non-hazardous wastewater potentially containing hazardous constituents, laundry wastewater

Constituents:

Potential heavy metals, other constituents undetermined

Method of Containment:

Radioactivity in soils indicates impaired containment.

Media of Concern:

Soil, groundwater

Site Investigation Plan with Sampling and Next Step(s) Toward Corrective Action:

An RFA-SV was conducted and an RFA-SV Report was submitted, dated June 7, 2007, consisting of unbiased soil sampling (e.g. grid pattern and/or at regular intervals) designed to detect potential contaminant release from the unit. Per Module II of this permit, the Permittee may choose to perform remediation of the unit through an approved Interim Corrective Measure (ICM). Based on required confirmatory sampling, as part of the ICM, the Commissioner will determine if further corrective action activities and/or an RFI for the contaminated soils and/or groundwater are necessary for the unit. Groundwater contamination in the vicinity of the unit was characterized in a separate RFI and the RFI report was submitted in November 2006.

Analysis will be for 6 NYCRR Subpart 373-2, Appendix 33 parameters, unless data exists to justify development of a SWMU-specific parameter list. Establishment of such a list will be subject to NYSDEC approval.

AOC-006

Red Pines Area

Unit Description:

The unit is a 3.5 acre wooded area in the northeastern portion of the Land Area. The area is heavily wooded with Red Pine trees approximately 35 years old. The radiologically impacted area is on a gently sloping surface that is bounded to the east by a steep slope that descends to the Mohawk River and to the southwest by an east-flowing ephemeral drainage. There is no operational information available to determine the source of the radioactivity in this area. There is also no evidence of excavation. However, remnants of a haul road through the wooded area are evident, indicating potential transportation or soil disposal activities. No evidence of subsurface debris or other buried materials was found during the investigations. There is the potential that the radioactivity in soils for this unit was impacted by activities associated with the Former Slurry Drum Storage Area (SWMU-035)¹.

Status:

Inactive

Approximate Period of Operation:

Unknown

Types of Waste:

Potentially linked with activities associated with the Former Slurry Drum Storage Area, which handled "Slurry Waste" from Building H2 operations, filters and equipment. (See description for SWMU-030)

Constituents:

Radiological, heavy metals and other unknown constituents

Method of Containment:

None

Media of Concern:

Soil

Site Investigation Plan with Sampling and Next Step(s) Toward Corrective Action:

The Permittee conducted radiological walkover surveys (Fall 2002 and Spring 2003); submitted Sampling Visit Work Plan amendments in 2004 and 2005; and submitted the RFA-SV addendum for the Red Pines Area in November 2006. The results of the soil sampling programs will be reviewed by the Department and used to determine if further corrective action activities are required.

Analysis will be conducted for 6 NYCRR Subpart 373-2, Appendix 33 parameters, unless data exists to justify development of a SWMU-specific parameter list. Establishment of such a list will be subject to NYSDEC approval.

¹ The Former Slurry Drum Storage Area (SWMU-035) is included in the KAPL Knolls permit .

AOC-007

H1 Cooling Tower

[Transferred to KAPL-Knolls Permit # 4-4224-00024/00001]

Unit Description:

H1 was constructed in 1950 to support operations of SPRU and after the SPRU shutdown in 1953, continued to support KAPL operations through 1992. H1 consisted of a two-stack, forced circulation non-contact cooling tower and attached Pump House that contained a pumping system to circulate cooled water throughout the KAPL facility. The Cooling Tower was constructed of redwood with PVC corrugated siding. It was approximately 26 feet wide, 48 feet long, and extended 31 feet above grade. The concrete basin and footers extended to approximately 6 feet below grade. The Pump House was constructed of concrete and asbestos corrugated siding. The structure was approximately 22 feet wide, 27 feet long, and extended 14 feet above grade. The concrete sump and footers extended about 14 feet below grade. Demolition of H1 was performed as a part of the SPRU Remediation Program to remove the unused SPRU facilities. Post-demolition sampling at H1 discovered elevated chromium in soils and further evaluation was performed.

Status:

Inactive

Approximate Period of Operation:

1950s - 1992

Types of Waste:

Hazardous wastes from SPRU operations were not known to have entered the Cooling Tower or Pump House cooling system or structures.

Constituents:

Chromium

Method of Containment:

None

Media of Concern:

Soil

Site Investigation Plan with Sampling and Next Step(s) Toward Corrective Action:

The Permittee conducted post-demolition characterization and identified elevated chromium levels in soils around H1. The Permittee then proceeded to characterize the extent of elevated chromium through soil and groundwater sampling. A report was submitted in February 2007 discussing the sampling results. A Characterization Work Plan and Quality Assurance Project Plan were approved by the Department in March 2013. Subsequently, the RFI implementation strategy was revised; field work was rescheduled to occur following dismantlement of Building H2 by DOE-EM. As a result, Permit Corrective Action responsibilities for the Area of Concern were transferred to the KAPL-Knolls permit in 2016.

Analysis will be conducted for 6 NYCRR Subpart 373-2, Appendix 33 parameters, unless data exists to justify development of a SWMU-specific parameter list. Establishment of such a list will be subject to NYSDEC approval.

SWMU-082

SPRU Fractionation Tanks 2

Unit Description:

This SWMU consists of three carbon steel fractionation tanks (THDS-1, T4, A1274) and connecting lines. The overall system was used to manage SPRU Upper Level ground/storm water associated with the H2 Processing Facility (SWMU-030) or the H2 Tank Farm (SWMU-031). The tanks are located on the Upper Level, north of Building H2. Fractionation tank capacities range from 20,000 to 21,000 gallons. A volatile organic compound release associated with THDS-1 was the subject of a U.S. Department of Energy – Environmental Management (DOE-EM) November 16, 2010 release notification and assessment to the Department. March 2 and March 20, 2011 spills from T4 and A1274, respectively, were subject to a December 2, 2011 newly identified solid waste management unit notification and a January 13, 2012 assessment report to the Department.

Status:

Active

Approximate Period of Operation:

2010 to present

Types of Waste:

Wastewater from Upper Level storm and groundwater collection systems

Constituents:

Volatile organic compounds, metals

Method of Containment:

Primary

Media of Concern:

Soil, groundwater

Site Investigation Plan with Sampling and Next Step(s) Toward Corrective Action:

Characterization/confirmation soil sampling associated with THDS-1 will be conducted in accordance with the approved and final version of the RCRA Interim Corrective Measures Work Plan, Upper Level SWMUs, originally transmitted to the Department on November 30, 2011 by DOE-EM, as well as Department guidance. Further action will be based on the results of this sampling, as determined by the Department.

Analysis will be conducted for 6 NYCRR Subpart 373-2, Appendix 33 parameters, unless data exists to justify development of a SWMU-specific parameter list. Establishment of such a list will be subject to NYSDEC approval, and shall be described in the ICM Work Plan.

DOE-EM SPRU
2425 River Road
Niskayuna, NY 12309-7100

EPA I.D. #NYR000096859

6NYCRR PART 373 PERMIT
ATTACHMENT I
HAZARDOUS WASTE PERMIT
INFORMATION FORM

SEND COMPLETED FORM TO: The Appropriate State or EPA Regional Office.	United States Environmental Protection Agency RCRA SUBTITLE C SITE IDENTIFICATION FORM	
1. Reason for Submittal (See Instructions on page 14.) MARK ALL BOX(ES) THAT APPLY	Reason for Submittal: Corrective Action Only Permit <input type="checkbox"/> To provide Initial Notification of Regulated Waste Activity (to obtain an EPA ID Number for hazardous waste, universal waste, or used oil activities) <input type="checkbox"/> To provide Subsequent Notification of Regulated Waste Activity (to update site identification information) <input type="checkbox"/> As a component of a First RCRA Hazardous Waste Part A Permit Application <input checked="" type="checkbox"/> As a component of a Revised RCRA Hazardous Waste Part A Permit Application <input type="checkbox"/> As a component of the Hazardous Waste Report	
2. Site EPA ID Number (page 15)	EPA ID Number : NYR 000 096 859	
3. Site Name (page 15)	Name: USDOE Separations Process Research Unit (SPRU)	
4. Site Location	Street Address: 2425 River Road	
5. Site Land Type (page 15)	City, Town, or Village: Niskayuna	State: New York
	County Name: Schenectady	Zip Code: 12309-7100
	Site Land Type: <input type="checkbox"/> Private <input type="checkbox"/> County <input type="checkbox"/> District <input checked="" type="checkbox"/> Federal <input type="checkbox"/> Indian <input type="checkbox"/> Municipal <input type="checkbox"/> State <input type="checkbox"/> Other	
6. North American Industry Classification System (NAICS) Code(s) for the Site (page 15)	A. 56291	B. 562211
	C. 562219	D. 92411
7. Site Mailing Address (page 16)	Street or P. O. Box: 2425 River Road	
	City, Town, or Village: Niskayuna	
	State: New York	
	Country: USA	Zip Code: 12309-7100
8. Site Contact Person (page 16)	First Name: Hugh	MI: R. Last Name: Davis
	Phone Number: Extension: (518) 395-4956	
9. Operator and Legal Owner of the Site (pages 16 and 17)	A. Name of Site's Operator: URS Energy & Construction, Inc.	
	Operator Type: <input checked="" type="checkbox"/> Private <input type="checkbox"/> County <input type="checkbox"/> District <input type="checkbox"/> Federal <input type="checkbox"/> Indian <input type="checkbox"/> Municipal <input type="checkbox"/> State <input type="checkbox"/> Other	
	B. Name of Site's Legal Owner: USDOE, as administered by USDOE-EM	
	Date Became Owner (mm/dd/yyyy): USDOE, 05/10/1949 USDOE-EM, 02/01/2004	

□
EPA ID NO: NYR 000 096 859

9. Legal Owner (Continued) Address	Street or P. O. Box: Assistant Secretary for Environmental Management, EM-1; 1000 Independence Ave. SW	
	City, Town, or Village: Washington	
	State: District of Columbia	
	Country: USA	Zip Code: 20585

10. Type of Regulated Waste Activity Mark —Yes or —No for all activities; complete any additional boxes as instructed. (See instructions on pages 18 to 21.)

A. Hazardous Waste Activities

Complete all parts for 1 through 6.

Y ☒ N ☐ 1. Generator of Hazardous Waste

If —Yes—, choose only one of the following - a, b, or c.

☐ a. LQG: Greater than 1,000 kg/mo (2,200 lbs./mo.)
of non-acute hazardous waste; or

☒ b. SQG: 100 to 1,000 kg/mo (220 - 2,200 lbs./mo.)
of non-acute hazardous waste; or

☐ c. CESQG: Less than 100 kg/mo (220 lbs./mo.)
of non-acute hazardous waste

In addition, indicate other generator activities.

Y ☐ N ☒ d. United States Importer of Hazardous Waste

Y ☒ N ☐ e. Mixed Waste (hazardous and radioactive) Generator

Y ☐ N ☒ 2. Transporter of Hazardous Waste

Y ☐ N ☒ 3. Treater, Storer, or Disposer of Hazardous Waste (at your site) Note: A hazardous waste permit is required for this activity.

Y ☐ N ☒ 4. Recycler of Hazardous Waste (at your site)

Y ☐ N ☒ 5. Exempt Boiler and/or Industrial Furnace
If —Yes—, mark each that applies.

a. Small Quantity On-site Burner Exemption

b. Smelting, Melting, and Refining Furnace Exemption

Y ☐ N ☒ 6. Underground Injection Control

B. Universal Waste Activities

Y ☐ N ☒ 1. Large Quantity Handler of Universal Waste (accumulate 5,000 kg or more) [refer to your State regulations to determine what is regulated]. Indicate types of universal waste generated and/or accumulated at your site. If —Yes—, mark all boxes that apply:

	Generate	Accumulate
a. Batteries	<input type="checkbox"/>	<input type="checkbox"/>
b. Pesticides	<input type="checkbox"/>	<input type="checkbox"/>
c. Thermostats	<input type="checkbox"/>	<input type="checkbox"/>
d. Lamps	<input type="checkbox"/>	<input type="checkbox"/>
e. Other (specify) _____	<input type="checkbox"/>	<input type="checkbox"/>
f. Other (specify) _____	<input type="checkbox"/>	<input type="checkbox"/>
g. Other (specify) _____	<input type="checkbox"/>	<input type="checkbox"/>

Y ☐ N ☒ 2. Destination Facility for Universal Waste Note: A hazardous waste permit may be required for this activity.

C. Used Oil Activities

Mark all boxes that apply.

Y ☐ N ☒ 1. Used Oil Transporter

If —Yes—, mark each that applies.

☐ a. Transporter

☐ b. Transfer Facility

Y ☐ N ☒ 2. Used Oil Processor and/or Re-refiner

If —Yes—, mark each that applies.

☐ a. Processor

☐ b. Re-refiner

Y ☐ N ☒ 3. Off-Specification Used Oil Burner

Y ☐ N ☒ 4. Used Oil Fuel Marketer

If —Yes—, mark each that applies.

☐ a. Marketer Who Directs Shipment of Off-Specification Used Oil to Off-Specification Used Oil Burner

☐ b. Marketer Who First Claims the Used Oil Meets the Specifications

11. Description of Hazardous Wastes (See instructions on page 22.)

A. Waste Codes for Federally Regulated Hazardous Wastes. Please list the waste codes of the Federal hazardous wastes handled at your site. List them in the order they are presented in the regulations (e.g., D001, D003, F007, U112). Use an additional page if more spaces are needed.

D001	D002	D006	D007	D008	D009	D011
D018						

B. Waste Codes for State-Regulated (i.e., non-Federal) Hazardous Wastes. Please list the waste codes of the State-regulated hazardous wastes handled at your site. List them in the order they are presented in the regulations. Use an additional page if more spaces are needed for waste codes.

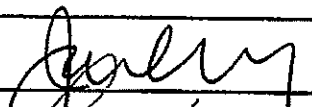
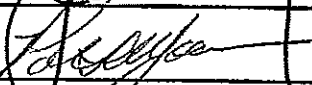
B007						

12. Comments (See instructions on page 22.)

The Separations Process Research Unit (SPRU) Project will be generating remediation wastes as a result of site cleanup under a RCRA Corrective Action Program and from decontamination and decommissioning activities. Based upon the sampling completed to date, the bulk remediation waste streams, soil, water and demolition debris are not likely to be hazardous wastes. RCRA characteristic waste will be generated as a result of remedial activities, removing radioactively contaminated lead that is difficult to separate from equipment during remediation, from aerosol cans, and from sampling and analysis. Some of the radioactively contaminated lead from decontamination and decommissioning activities has been re-used. Non-radioactively contaminated lead has also been reused.

URS Energy & Construction, Inc., formerly known as Washington Group International, Inc., or WGI, is the operator responsible for the demolition and remediation of the upper level SPRU buildings (G-2 Building, H-2 Processing Facility (SWMU-030), H-2 Tank Farm (SWMU-031) and Pipe Tunnel (SWMU 057)) and associated contaminated soils. URS Energy and Construction, Inc. is also responsible for conducting investigations associated with the former H1 Cooling Tower area (AOC-007), which is also subject to corrective action. URS Energy and Construction, Inc. manages contaminated water from the SPRU project that is not a hazardous waste in two solid waste management units (Frac Tanks 1 and Frac Tanks 2).

13. Certification. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. For the RCRA Hazardous Waste Part A Permit Application, all operator(s) and owner(s) must sign (see 40 CFR 270.10 (b) and 270.11). (See instructions on page 22.)

Signature of operator, owner, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)
	Jack Craig, USDOE, Office of Environmental Management	10/16/12
	Pat Yocum, Project Manager, URS Energy & Construction, Inc.	08/21/2012

United States Environmental Protection Agency
HAZARDOUS WASTE PERMIT INFORMATION FORM

1. Facility Permit Contact (See instructions on page 23)						First Name: Hugh								MI: R.		Last Name: Davis									
						Phone Number: (518) 395-4956										Phone Number Extension:									
2. Facility Permit Address (See instructions on page 23)						Street or P.O. Box: 2425 River Road, SP-23																			
						City, Town, or Village: Niskayuna																			
						State: New York																			
						Country: USA										Zip Code: 12309-7100									
3. Operator Mailing Address and Telephone Number (See instructions on page 23)						Street or P.O. Box: P.O. Box 9147																			
						City, Town, or Village: Niskayuna																			
						State: New York																			
						Country: USA										Zip Code: 12309-0147				Phone Number: (518) 395-2502					
4. Legal Owner Mailing Address and Telephone Number (See instructions on page 23)						Street or P.O. Box: Assistant Secretary for Environmental Management, EMI-I; 1000 Independence Ave. SW																			
						City, Town, or Village: Washington																			
						State: District of Columbia																			
						Country: USA										Zip Code: 20585				Phone Number (202) 586-7709					
5. Facility Existence Date (See instructions on page 24)						Facility Existence Date (mm/dd/yyyy): 02/01/2004																			
6. Other Environmental Permits (See instructions on page 24)																									
A. Permit Type (Enter code)						B. Permit Number												C. Description							
E						K	A	P	L	S	P	R	U	G	2	0	0	1	State NPDES permit for construction activities						
E						K	A	P	L	S	P	R	U	H	2	0	0	1	EPA Radiological NESHAP permit						
E						K	A	P	L	S	P	R	U	P	V	U	0	0	1	EPA Radiological NESHAP permit					
E						K	A	P	L	S	P	R	U	P	V	U	0	0	1	EPA Radiological NESHAP permit. Note complete permit number is KAPLSRPVU001					
7. Nature of Business (Provide a brief description; see instructions on page 24)																									

8. Process Codes and Design Capacities (See Instructions on page 24) - Enter information in the Sections on Form Page 3.

A. PROCESS CODE - Enter the code from the list of process codes in the table below that best describes each process to be used at the facility. Fifteen lines are provided for entering codes. If more lines are needed, attach a separate sheet of paper with the additional information. For "other" processes (i.e., D99, S99, T04 and X99), enter the process information in Item 9 (including a description).

B. PROCESS DESIGN CAPACITY - For each code entered in Section A, enter the capacity of the process.

- 1. AMOUNT** - Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement action) enter the total amount of waste for that process.
- 2. UNIT OF MEASURE** - For each amount entered in Section B(1), enter the code in Section B(2) from the list of unit of measure codes below that describes the unit of measure used. Select only from the units of measure in this list.

C. PROCESS TOTAL NUMBER OF UNITS - Enter the total number of units for each corresponding process code.

PROCESS CODE	PROCESS	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY	PROCESS CODE	PROCESS	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
	<u>Disposal:</u>			<u>Treatment (continued):</u>	
D79	Underground Injection Well Disposal	Gallons; Liters; Gallons Per Day; or Liters Per Day	T81	Cement Kiln	For T81-T93:
D80	Landfill	Acre-feet; Hectare-meter; Acres; Cubic Meters; Hectares; Cubic Yards	T82	Lime Kiln	
D81	Land Treatment	Acres or Hectares	T83	Aggregate Kiln	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric
D82	Ocean Disposal	Gallons Per Day or Liters Per Day	T84	Phosphate Kiln	Tons Per Day; Metric
D83	Surface Impoundment Disposal	Gallons; Liters; Cubic Meters; or Cubic Yards	T85	Coke Oven	Tons Per Hour; Short Tons Per Day; Btu Per Hour; Liters Per Hour; Kilograms Per
D99	Other Disposal Storage:	Any Unit of Measure in Code Table Below	T86	Blast Furnace	
S01	Container	Gallons; Liters; Cubic Meters; or Cubic Yards	T87	Smelting, Refining, or Refining Furnace	Hour; or Million Btu Per Hour
S02	Tank Storage	Gallons; Liters; Cubic Meters; or Cubic Yards	T88	Titanium Dioxide Chloride Oxidation Reactor	
S03	Waste Pile	Cubic Yards or Cubic Meters	T89	Methane Reforming Furnace	
S04	Surface Impoundment Storage	Gallons; Liters; Cubic Meters; or Cubic Yards	T90	Pulping Liquor Recovery Furnace	
S05	Drip Pad	Gallons; Liters; Acres; Cubic Meters; Hectares; or Cubic Yards	T91	Combustion Device Used in the Recovery of Sulfur Values From Spent Sulfuric Acid	
S06	Containment Building Storage	Cubic Yards or Cubic Meters	T92	Halogen Acid Furnaces	
S99	Other Storage	Any Unit of Measure in Code Table Below	T93	Other Industrial Furnaces Listed in 40 CFR §260.10	
	<u>Treatment:</u>		T94	Containment Building - Treatment	Cubic Yards; Cubic Meters; Short Tons Per Hour; Gallons Per Hour; Liters Per Hour; Btu Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Metric Tons Per Day; Gallons Per Day; Liters Per Day; Metric Tons Per Hour; or Million Btu Per Hour
T01	Tank Treatment	Gallons Per Day; Liters Per Day		<u>Miscellaneous (Subpart X):</u>	
T02	Surface Impoundment Treatment	Gallons Per Day; Liters Per Day	X01	Open Burning/Open Detonation	Any Unit of Measure in Code Table Below
T03	Incinerator	Short Tons Per Hour; Metric Tons Per Hour; Gallons Per Hour; Liters Per Hour; Btu Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Gallons Per Day; Liters Per Day; Metric Tons Per Hour; or Million Btu Per Hour	X02	Mechanical Processing	Short Tons Per Hour; Metric Tons Per Hour; Short Tons Per Day; Metric Tons Per Day; Pounds Per Hour; Kilograms Per Hour; Gallons Per Hour; Liters Per Hour; or Gallons Per Day
T04	Other Treatment	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; Btu Per Hour; Gallons Per Day; Liters Per Hour; or Million Btu Per Hour	X03	Thermal Unit	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; Btu Per Hour; or Million Btu Per Hour
T80	Boiler	Gallons; Liters; Gallons Per Hour; Liters Per Hour; Btu Per Hour; or Million Btu Per Hour	X04	Geologic Repository	Cubic Yards; Cubic Meters; Acre-feet; Hectare-meter; Gallons; or Liters
			X99	Other Subpart X	Any Unit of Measure Listed Below

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
Gallons.....	G	Short Tons Per Hour.....	D	Cubic Yards.....	Y
Gallons Per Hour.....	E	Metric Tons Per Hour.....	W	Cubic Meters.....	C
Gallons Per Day.....	U	Short Tons Per Day.....	N	Acres.....	B
Liters.....	L	Metric Tons Per Day.....	S	Acre-feet.....	A
Liters Per Hour.....	H	Pounds Per Hour.....	J	Hectares.....	Q
Liters Per Day.....	V	Kilograms Per Hour.....	R	Hectare-meter.....	F
		Million Btu Per Hour.....	X	Btu Per Hour.....	I

[illegible]

10. Description of Hazardous Wastes (See instructions on page 25) - Enter information in the Sections on Form Page 5.

- A. EPA HAZARDOUS WASTE NUMBER** - Enter the four-digit number from 40 CFR, Part 261 Subpart D of each listed hazardous waste you will handle. For hazardous wastes which are not listed in 40 CFR, Part 261 Subpart D, enter the four-digit number(s) from 40 CFR Part 261, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.
- B. ESTIMATED ANNUAL QUANTITY** - For each listed waste entered in Section A, estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in Section A, estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.
- C. UNIT OF MEASURE** - For each quantity entered in Section B, enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure, taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES**1. PROCESS CODES:**

For listed hazardous waste: For each listed hazardous waste entered in Section A, select the code(s) from the list of process codes contained in Items 8A and 9A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the listed hazardous wastes. For non-listed hazardous waste: For each characteristic or toxic contaminant entered in Section A, select the code(s) from the list of process codes contained in Items 8A and 9A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED:

1. Enter the first two as described above.
2. Enter "000" in the extreme right box of Item 10.D(1).
3. Use additional sheet, enter line number from previous sheet, and enter additional code(s) in Item 10.E.

- 2. PROCESS DESCRIPTION:** If a code is not listed for a process that will be used, describe the process in Item 10.D(2) or in Item 10.E(2).
- NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER** - Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:
1. Select one of the EPA Hazardous Waste Numbers and enter it in Section A. On the same line complete Sections B, C and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
 2. In Section A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In Section D(2) on that line enter "Included with above" and make no other entries on that line.
 3. Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING Item 10 (shown in line numbers X-1, X-2, X-3, and X-4 below) - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operations. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES										
								(1) PROCESS CODES (Enter code)										(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
X	1	K	0	5	4	900	P	T	0	3	D	8	0					
X	2	D	0	0	2	400	P	T	0	3	D	8	0					
X	3	D	0	0	1	100	P	T	0	3	D	8	0					
X	4	D	0	0	2													
EPA Form 8700-23 (Revised 3/2005)																	Included With Above	

10. Description of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)																	
Line Number	A. EPA Hazardous Waste No. (Enter code)					B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
	(1) PROCESS CODES (Enter code)										(2) PROCESS DESCRIPTION (If a code is not entered in D(1))						
	1	D	0	0	6	300	P	NA*									Lead plugs, valves, piping, brass/bronze, circuit boards, light bulbs
	2	D	0	0	9	1	P	NA*									Mercury ampoules
	3	D	0	0	2	15	P	NA*									Remediation waste
	4	D	0	0	1	100	P	NA*									Aerosol cans
	5	D	0	1	8	20	P	NA*									Petroleum spill cleanup
	6	B	0	0	7	15	P	NA*									PCB ballasts
	7																
	8																
	9																
1	0																
1	1																
1	2																
1	3																
1	4																
1	5																
1	6																
1	7																
1	8																
1	9																
2	0																
2	1																
2	2																
2	3																
2	4																
2	5																
2	6																
2	7																
2	8																
2	9																
3	0																

* The SPRU Facility will not be storing, treating, or disposing of hazardous waste on-site.

11. Map (See Instructions on pages 25 and 26)
<i>Attach to this application a topographic map, or other equivalent map, of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in this map area. See instructions for precise requirements.</i>
12. Facility Drawing (See Instructions on page 26)
<i>All existing facilities must include a scale drawing of the facility (see instructions for more detail).</i>
13. Photographs (See Instructions on page 26)
<i>All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see instructions for more detail).</i>
14. Comments (See Instructions on page 26)

This application is intended to satisfy the information required for a RCRA Corrective Action Only Permit. This application encompasses Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) associated with operation of the SPRU facilities.

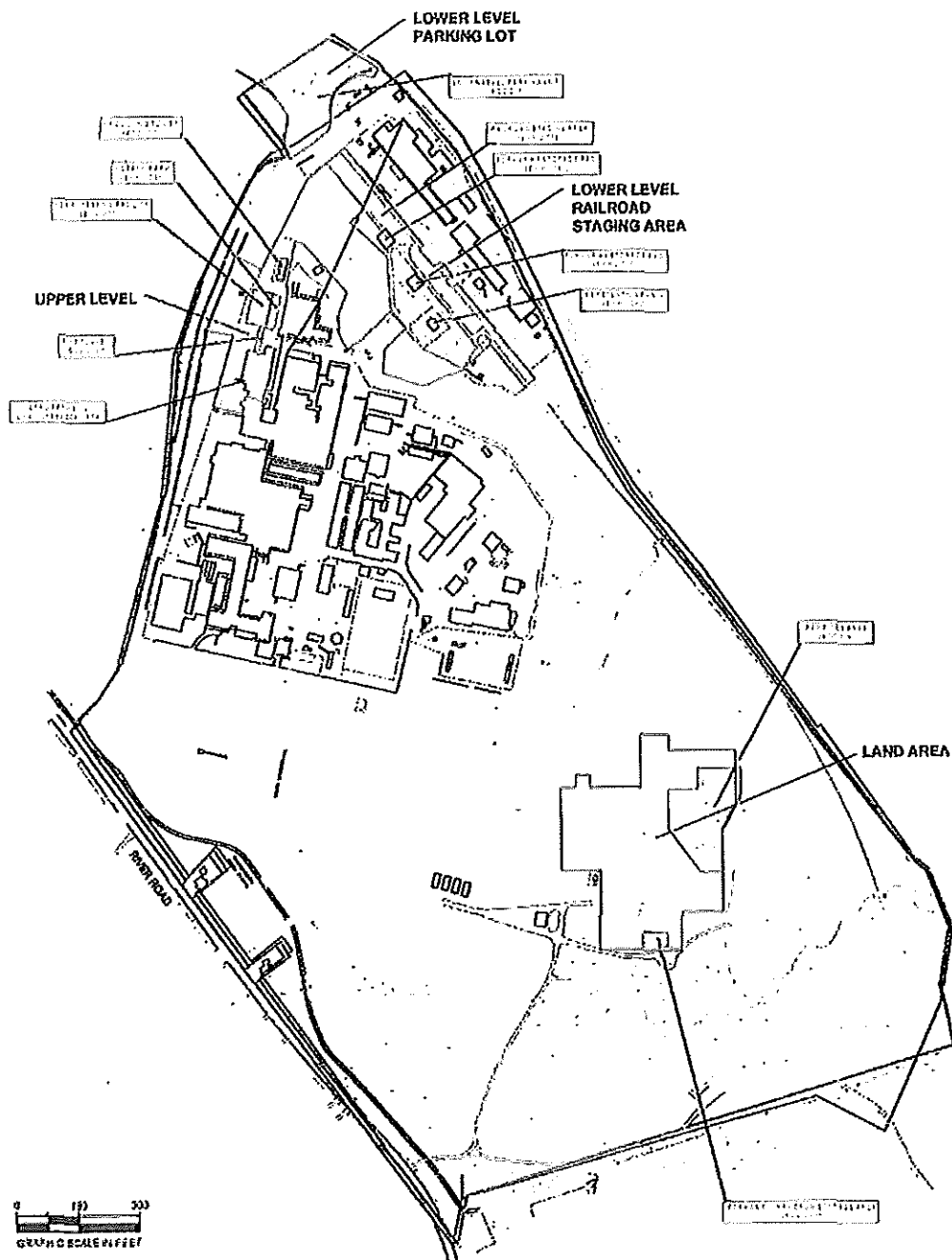
Remaining waste generated during the corrective actions process may contain detectable chemicals and radioactivity. Wastes will be evaluated to determine if they are RCRA hazardous. Chemical constituents associated with soils remaining in place will be evaluated using 6 NYCRR 375-6.8(b) soil cleanup objectives. Remediation wastes that may be RCRA hazardous consist of mercury ampoules, waste lead, aerosol cans, brass/bronze, valves, piping, circuit boards, light bulbs and PCB ballasts. Small amounts of RCRA hazardous wastes from sample analysis, contaminated job control wastes (paper, plastics, and personal protective equipment) may be generated during remedial activities. Soil and demolition debris will be temporarily managed in waste piles and containers within the vicinity of the SWMU where the material originated. A separate area onsite may be used to consolidate the location of bulk containers of remediation waste in preparation for shipment to an offsite disposal facility. The consolidation will allow for decontamination of containers, will reduce the time workers need to spend in contaminated zones, and will simplify security measures. Water generated from building basements is planned to continue to be shipped offsite for disposal. Water from the hillside sump is currently shipped offsite for disposal. Water from the hillside sump and excavations is planned to be treated and discharged through the on-site permitted discharge system, pending NYSDEC approval of a discharge permit modification request.

Remediation wastes from SWMU-031 (Tank Farm Vault) are low-level radioactive waste managed by USDOE, and do not exhibit the RCRA hazardous characteristics, although they contain chemical constituents. All remediation waste from the Tank Farm Vault (SWMU-031) will be shipped off-site for disposal. Remediation waste from SWMU-031 may be treated offsite, or treated in the Tank Farm Vault or the H2 Processing Facility (SWMU-030) prior to shipping offsite for disposal. Contaminated soil from remediation of the H-1 Cooling Tower (AOC-001) is not expected to exhibit RCRA hazardous characteristics, and will be shipped offsite for disposal.

DOE-EM SPRU
2425 River Road
Niskayuna, NY 12309-7100

EPA I.D. #NYR000096859

6NYCRR PART 373 PERMIT
ATTACHMENT II
FACILITY MAP



LEGEND

Property Boundary

Fence

Building

Streams or Drainage

Pavement

Topographic Contours (10 foot interval)



SPRU Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) (DOE EM Responsibility)



SPRU-Controlled Areas

NOTES

Base Map Reference Drawing: G&E Engineering, Inc., File No.: 10130-21331-001, Sept. 1999.

Title: LOCATIONS OF SPRU SWMUs AND AOC SPRU AREAS OF RESPONSIBILITY

Location: U.S. DEPARTMENT OF ENERGY ENVIRONMENTAL MANAGEMENT SEPARATIONS PROCESS RESEARCH UNIT

URS

URS Corporation
23 Corporate Office, Suite 200
Clifton Park, New York 12065

Drafted D&D	Date: July 2005
Dwg. Size: 17 x 22	Job No.: 38394435.00.X00

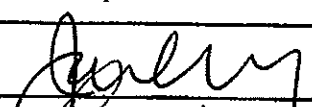
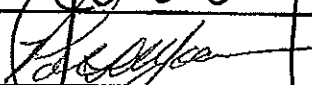
FIGURE 1

DOE-EM SPRU
2425 River Road
Niskayuna, NY 12309-7100

EPA I.D. #NYR000096859

6NYCRR PART 373 PERMIT
ATTACHMENT III
CERTIFICATION

13. Certification. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. For the RCRA Hazardous Waste Part A Permit Application, all operator(s) and owner(s) must sign (see 40 CFR 270.10 (b) and 270.11). (See instructions on page 22.)

Signature of operator, owner, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)
	Jack Craig, USDOE, Office of Environmental Management	10/16/12
	Pat Yocum, Project Manager, URS Energy & Construction, Inc.	08/21/2012

DOE-EM SPRU
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6NYCRR PART 373 PERMIT
ATTACHMENT IV
NYCRR PART 370 – 374, 376
(Effective 09/05/2006)