**GE SPECIALTY CHEMICALS, INC.**

RCRA 3008(h) CONSENT ORDER

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107



JUL 9 1990

*Office of Regional Counsel*

*Andrew S. Goldman*
*Direct Dial (215) 597-4940*

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**CERTIFIED MAIL**
**RETURN RECEIPT REQUESTED**

James M. Brede, Manager
Safety, Health & Environment
GE Specialty Chemicals, Inc.
Building 816
1000 DuPont Road
Morgantown, WV 26505

Re: **GE Specialty Chemicals, Inc.**
**RCRA § 3008(h) Consent Order**

Dear Mr. Brede:

Enclosed please find an EPA-executed copy of the above-referenced consent order. Please note that in accordance with Section XXIII therein, the consent order is effective upon receipt by GE Specialty Chemicals, Inc.

Respectfully,

ANDREW S. GOLDMAN
Assistant Regional Counsel

cc: Robert E. Lannan, Esquire
Robinson & McElwee
(via overnight mail)

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION III**

| | |
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| **IN THE MATTER OF:**<br><br>GE Specialty Chemicals, Inc.<br><br>RESPONDENT<br><br>ID Nos. WVD980552384<br>WVD061776977<br><br>Proceeding Under Section 3008(h) of the Resource Conservation and Recovery Act, 42 U.S.C. § 6928(h), as amended. | EPA Docket No.<br><br>RCRA-III-033CA |

## ADMINISTRATIVE ORDER ON CONSENT

THE PARTIES to this Administrative Order on Consent ["Consent Order"], the United States Environmental Protection Agency ["EPA"] and GE Specialty Chemicals, Inc. ["Respondent"], having agreed to entry of this Consent Order, it is therefore Ordered and Agreed that:

## I. JURISDICTION

A. This Consent Order is issued pursuant to the authority vested in the Administrator of EPA by section 3008(h) of the Solid Waste Disposal Act, as amended by the Hazardous and Solid Waste Amendments of 1984 [collectively referred to hereinafter as the "Resource Conservation and Recovery Act" or "RCRA"], 42 U.S.C. section 6928(h). The authority vested in the Administrator of EPA has been delegated to the Regional Administrators by EPA Delegation Nos. 8-31 and 8-32 (March 6, 1986).

B. Respondent consents to and agrees not to contest EPA's jurisdiction to issue this Consent Order and/or to enforce the terms of this Consent Order. Respondent further agrees not to contest EPA's jurisdiction to compel compliance with this Consent Order in any subsequent administrative or judicial enforcement proceedings, require full or interim compliance with the terms of this Consent Order, and/or impose sanctions for violations of this Consent Order.

C. On May 29, 1986 and pursuant to section 3006(b) of RCRA, 42 U.S.C. section 6926(b), EPA authorized the State of West Virginia to operate a hazardous waste program in lieu of the Federal program. The State of West Virginia does not, however, have authority to enforce section 3008(h) of RCRA.

## II. PARTIES BOUND

A. This Consent Order shall apply to and be binding upon EPA and upon Respondent GE Specialty Chemicals, Inc. and its successors and assigns.

B. No change in ownership or corporate or partnership status shall in any way alter or affect Respondent's responsibilities under this Consent Order.

C. Respondent shall provide a copy of this Consent Order, without attachments, to all supervisory personnel, contractors, subcontractors, laboratories, consultants, and other persons retained to conduct and/or monitor any portion of the work performed pursuant to this Consent Order. Copies of this Consent Order shall be provided to such persons within seven (7) calendar days of the effective date of this Consent Order or the date such persons are retained, whichever is later. All contracts, agreements, and other arrangements with supervisory personnel, contractors, subcontractors, laboratories, consultants, and other persons retained to perform any work required under this Consent Order shall require such persons to perform the work in accordance with the requirements of this Consent Order.

D. Respondent shall provide a copy of this Consent Order to any successor in interest of the Facilities, Laboratories, and Adjacent Parcel, as defined by this Consent Order, prior to transfer of ownership or control of such property, facility, or operation. Respondent shall additionally notify EPA at least thirty (30) calendar days prior to any such transfer of ownership or control.

## III. STATEMENT OF PURPOSE

In entering into this Consent Order, the mutual objectives of EPA and Respondents are: (1) to perform (if appropriate) Interim Measures to prevent or relieve threats to human health or the environment; (2) to perform a RCRA Facility Investigation ["RFI"] that is consistent with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ["CERCLA"], 42 U.S.C. § 9601-9657, and the National Oil and Hazardous Substances Pollution Contingency Plan ["NCP"], 40 C.F.R. Part 300, to fully determine the nature and extent of any release of hazardous wastes (as defined in section 1004(5) of RCRA, 42 U.S.C. § 6903(5)); hazardous constituents (as defined in 40 C.F.R. Parts 260 & 261); and/or hazardous substances, pollutants, and contaminants (as defined in section 101(14) & (33) of CERCLA, 42 U.S.C. § 9601(14) & (33)); and (3) to perform a Corrective Measure Study ["CMS"] that is consistent with the requirements of CERCLA and the NCP to identify and evaluate alternatives for corrective action necessary to prevent or mitigate any migration

or release of hazardous wastes, hazardous constituents, hazardous substances, pollutants, and/or contaminants at or from the facilities identified in this Consent Order.

## IV. FINDINGS OF FACT

A. Respondent is a corporation doing business in the State of West Virginia.

B. Respondent owns and operates industrial facilities known as the Westmar North Plant and Westmar South Plant [collectively referred to as "Facilities"] and certain laboratories ["Laboratories"], which Facilities and Laboratories are located near the Monongahela River in the Morgantown Industrial Park, Monongalia County, West Virginia. The Facilities are presently used in the manufacture of organophosphite chemicals and alkyl phenols.

C. Respondent is a successor in interest to, and has agreed to perform the obligations of, Borg-Warner Specialty Chemicals, Inc. pursuant to this Consent Order.

D. Ground water at the location of the Facilities flows toward the Monongahela River in an east-northeasterly direction. The Monongahela River is used as a source of drinking water by the City of Morgantown (population 31,000) and by the Morgantown Industrial Park. The drinking water intake for the City of Morgantown is located directly across the river from the Westmar North Plant and is approximately 3,000 feet downgradient from the Westmar South Plant. The Morgantown Industrial Park unfiltered drinking water intake is approximately 1,250 feet downgradient from the Westmar South Plant and approximately 1,000 feet upgradient from the Westmar North Plant.

E. Borg-Warner owned and/or operated the Facilities as hazardous waste management facilities on and after November 19, 1980, the applicable date which renders the Facilities subject to interim status requirements or the requirement to have a permit under sections 3004 & 3005 of RCRA, 42 U.S.C. sections 6924 & 6925.

F. On August 12, 1980, and pursuant to section 3010 of RCRA, 42 U.S.C. section 6930, Borg-Warner submitted to EPA a Notification of Hazardous Waste Activity ["Notification"] for the Westmar North Plant and for the Westmar South Plant. Borg-Warner identified itself as a generator and treater/storer/disposer of hazardous wastes at the Westmar North Plant and as a generator, treater/storer/disposer, and transporter of hazardous wastes at the Westmar South Plant. The Notifications indicate that spent solvents (F002, F005), ethylenediamine (P053), and phenol (U188) were handled at the Westmar North Plant and that phenol (U188) was handled at the

Westmar South Plant.

G. The Westmar North Plant and Westmar South Plant are identified by their EPA-assigned RCRA identification numbers as WVD980552384 and WVD061776977, respectively.

H. On November 11, 1980, Borg-Warner submitted a Part A Permit Application for the Westmar North Plant and Westmar South Plant in accordance with section 3005 of RCRA, 42 U.S.C. section 6925.

I. On May 21 and October 6, 1982, Borg-Warner submitted revisions to the Part A Permit Application for the Westmar North Plant. The October 6, 1982 revision indicated that Borg-Warner was engaged in on-site storage and treatment of hazardous wastes by means of storage in containers (S01); storage in tanks (S02); treatment in surface impoundments (T02); and treatment in an incinerator (T03).

J. In October 1985 and July 1984, Borg-Warner submitted Part B Permit Applications for the Westmar North Plant and Westmar South Plant, respectively.

K. On December 23, 1985 Borg-Warner submitted a revised Part A Application for the Westmar South Plant. The revised Part A Permit Application indicates that Borg-Warner engaged in on-site storage of corrosive hazardous wastes (D002) in surface impoundments (T02).

L. Respondent holds four air permits and two NPDES permits from the State of West Virginia covering the Facilities. EPA has not issued RCRA Part B permits for either plant.

M. On June 28, 1989, EPA completed a RCRA Facility Assessment ["RFA"] covering the Facilities. The RFA identified thirty-nine (39) Solid Waste Management Units ["SWMUs"] at the Westmar North Plant and ten (10) SWMUs at the Westmar South Plant. The SWMUs identified at the Facilities included tanks, containers, surface impoundments, landfills, recycling units, and wastewater treatment systems.

N. The RFA documents the presence of benzene, toluene, and phenol in samples extracted from ground water observation wells on January 29, 1986 in the following concentrations:

**ANALYTICAL RESULTS IN PARTS PER BILLION**

| LOCATION | Benzene[1] | Toluene[1] | Phenol[2] |
|---|---|---|---|
| [Westmar North Plant] | | | |
| Well 1 | BDL | 6,060 | BDL |
| Well 2 | 17 | 7,050 | BDL |
| Well 3 | BDL | 450 | BDL |
| Well 4 | BDL | 275 | BDL |
| [Westmar South Plant] | | | |
| Well 1 | BDL | 340 | 0.31 |
| Well 2 | BDL | 330 | BDL |
| Well 3 | * | * | * |
| Well 4 | BDL | 6,500 | 0.27 |

1 - Detection Limit = 10 ug/1
2 - Detection Limit = 0.1 ug/1
BDL - Below Detection Limit
* - Well destroyed before sampling event.

O. The substances which were found at the Facilities and identified in paragraph IV.N are hazardous wastes and/or hazardous constituents within the meaning of section 1004(5) of RCRA, 42 U.S.C. section 6903(5) and 40 C.F.R. Parts 260 & 261.

P. The health effects for the above-described hazardous wastes and hazardous constituents are described in the administrative record supporting issuance of this Consent Order.

Q. On the basis of a Remedial Investigation/Feasibility Study performed by EPA pursuant to CERCLA at the Ordnance Works Disposal Areas site (January 1988), EPA has determined that additional studies are necessary in areas outside the Facilities, Laboratories, and Adjacent Parcel in order to protect the public health and welfare and the environment. EPA intends to perform, or oversee the performance of, such studies in the future.

## V. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the Findings of Fact set forth in Section IV of this Consent Order, EPA has made the following conclusions of law and determinations:

A. Respondent is a "person" within the meaning of section 1004(15) of RCRA, 42 U.S.C. section 6903(15).

B. Respondent is the owner and operator of facilities authorized to operate under section 3005(e) of RCRA, 42 U.S.C. section 6925(e).

C. Certain wastes found at the Facilities are hazardous wastes, or hazardous constituents, within the meaning of section 1004(5) of RCRA, 42 U.S.C. section 6903(5), and 40 C.F.R. Parts 260 & 261.

D. There is, or has been, a release of hazardous wastes and/or hazardous constituents into the environment from the Facilities within the meaning of section 3008(h) of RCRA, 42 U.S.C. section 6928(h).

E. EPA has determined that the work to be performed pursuant to this Consent Order, if performed according to the terms of this Consent Order, will be done properly and promptly by Respondent and is consistent with the NCP. EPA has also determined that Respondent is qualified to conduct such work.

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

## VI. WORK TO BE PERFORMED

A. Respondent shall perform a RCRA Facility Investigation ["RFI"], Corrective Measures Study ["CMS"], and, if necessary, prepare and implement an Interim Measures ["IM"] workplan, which activities shall cover the Westmar North Plant, Westmar South Plant, Laboratories, and parcels of property adjacent to the Westmar North Plant ["Adjacent Parcel"], all of which are further described in Attachment D to this Consent Order, in accordance with the procedures, standards, and schedules established by this Consent Order and any guidance documents referenced herein.

B. All work performed pursuant to this Consent Order shall be performed in accordance with the terms of this Consent Order, the requirements of RCRA, its implementing regulations, and guidance documents which shall include, but not be limited to, the Scope of Work for Interim Measure(s) [Attachment A to this Consent Order]; the Scope of Work for a RCRA Facility Investigation [Attachment B to this Consent Order]; the Scope of Work for a

Corrective Measures Study [Attachment C to this Consent Order] and any other relevant EPA guidance documents which may include, but shall not be limited to, the "RCRA Facility Investigation (RFI) Guidance" [EPA 530/SW-87-001]; "RCRA Ground Water Monitoring Technical Enforcement Guidance Document" [OSWER Directive 9950.1 (September 1986)]; "Test Methods for Evaluating Solid Waste" [SW-846 (November 1986)]; and "Construction Quality Assurance for Hazardous Waste Land Disposal Facilities" [EPA 530/SW-85-031 (July 1986)]. All Scopes of Work and other attachments to this Consent Order are incorporated herein by reference. All work performed pursuant to this Consent Order shall be performed consistent with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ["CERCLA"]; the National Oil and Hazardous Substances Pollution Contingency Plan ["NCP"], 40 C.F.R. Part 300; and EPA's "Guidance for Conducting Remedial Investigation and Feasibility Studies Under CERCLA" [EPA/540/G-89/004 (October 1988)]. To the extent the requirements of RCRA, its implementing regulations, and guidance documents conflict with the requirements of CERCLA, the NCP, and relevant guidance documents, Respondent shall follow the latter (CERCLA) requirements.

C. All work performed pursuant to this Consent Order shall be under the direction and supervision of a professional engineer or geologist with expertise in hazardous waste site cleanup. Respondent has selected, subject to EPA approval, ERM-Midwest. Inc. (Charleston, West Virginia) as Respondent's contractor to perform, direct, and supervise work required by this Consent Order. Respondent has additionally selected, subject to EPA approval, Triad Engineering (Clarksburg, West Virginia) to perform work required by this Consent Order. EPA retains the right to disapprove at any time of the use of any professional engineer, geologist, contractor, and/or subcontractor EPA determines not be qualified to perform the work, or any portion thereof, required by this Consent Order. EPA shall notify Respondent in writing of any disapproval and shall state the basis for such disapproval. Within fifteen (15) calendar days of receipt of EPA's notice of disapproval, Respondent shall submit to EPA for approval the name, title, and qualifications of the personnel that will replace the disapproved personnel. In the event of a subsequent disapproval, EPA reserves the right to conduct the work required by this Consent Order and to seek reimbursement from Respondent. If at any time Respondent wishes to replace a contractor or subcontractor retained to perform work, Respondent shall notify EPA not less than fifteen (15) calendar days prior to such replacement.

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

E. Interim Measures ("IM")

1. In the event Respondent identifies

(a) an area containing a release or threatened release of a hazardous waste, hazardous substance, pollutant, or contaminant, and which area was not identified in the draft RFA as the location for such a release or threatened release, or

(b) a hazardous waste, hazardous substance, pollutant, or contaminant which is being released, or threatens to be released, and which was not identified in the draft RFA, or

(c) information not disclosed in the draft RFA or in any notification provided to EPA pursuant to this Consent Order concerning a threat, or potential threat, to human health or the environment presented by any release, or threatened release, of a hazardous waste, hazardous substance, pollutant, or contaminant,

Respondent shall orally notify EPA immediately and shall notify EPA in writing within two (2) business days of the date Respondent made such a discovery. Such oral and written notification shall summarize the nature and extent of the release and/or threatened release and the perceived immediacy and magnitude of the threat, or potential threat, to human health and the environment.

2. EPA may, at its discretion, require Respondent to submit to EPA for approval an IM Workplan that identifies Interim Measures which will prevent or mitigate the threat or potential threat to human health and the environment presented by the release or threatened release described in Respondent's notification. The Interim Measures identified in the IM Workplan shall be consistent with, and integrated into, any long-term remediation, if necessary, at the Facilities, Laboratories, and/or the Adjacent Parcel. The IM Workplan shall be submitted to EPA within ten (10) calendar days of Respondent's receipt of EPA's request to submit such a document.

3. The IM Workplan shall document the procedures to be used by Respondent for the implementation of Interim Measures, and shall be developed in accordance with the Scope of Work for Interim Measures appended hereto as Attachment A and shall include, but not be limited to, Interim Measures Objectives; a Health and Safety Plan; a Community Relations Plan; a Data Collection Quality Assurance Plan; a Data Management Plan; Design Plans and Specifications; an Operation and Maintenance Plan; a Project Schedule; an Interim Measure Construction Quality Assurance Plan; and Reporting Requirements.

4. The IM Workplan shall be subject to review and approval in accordance with the procedures established in Section VI.J of this Consent Order.

5. Upon receipt of approval of the IM Workplan, Respondent shall implement the EPA-approved Workplan in accordance with the requirements and schedules contained therein.

F. RCRA Facility Investigation ["RFI"]

1. Within sixty (60) calendar days of the effective date of this Consent Order, Respondent shall submit to EPA for approval a Description of Current Conditions ["Description"] covering the Facilities, Laboratories, and the Adjacent Parcel. Done The Description shall be developed in accordance with the RFI Scope of Work appended hereto as Attachment B. The Description shall be subject to review and approval in accordance with the procedures established in Section VI.J of this Consent Order.

2. Within ninety (90) calendar days of the effective date of this Consent Order, Respondent shall submit to EPA for approval a Pre-Investigation Evaluation of Corrective Measure Technologies ["Evaluation"] covering the Facilities, Laboratories, and the Adjacent Parcel. The Evaluation shall be developed in accordance with the RFI Scope of Work appended hereto as Attachment Done B; section 121 of CERCLA, 42 U.S.C. § 9621; and EPA's "Guidance for Conducting Remedial Investigation and Feasibility Studies Under CERCLA" [EPA/540/G-89/004 (October 1988)]. The Evaluation shall be subject to review and approval in accordance with the procedures established in Section VI.J of this Consent Order.

3. Within ninety (90) calendar days of the effective date of this Consent Order, Respondent shall submit to EPA for approval a Workplan for a RCRA Facility Investigation ["RFI Work-plan"] covering the Facilities, Laboratories, and the Adjacent Done Parcel. The RFI Workplan shall be subject to review and approval in accordance with the procedures established in Section VI.J of this Consent Order. In determining whether to approve the RFI Workplan, EPA shall consider, among other things, the impact which Respondent's methods for conducting the RFI/CMS may have on any other ongoing or proposed investigation(s) in the vicinity of the Facilities, Laboratories, and the Adjacent Parcel.

4. The RFI Workplan shall be designed to determine the presence, magnitude, extent, direction, and rate of movement of any hazardous wastes, hazardous constituents, hazardous substances, pollutants, or contaminants that have been released, and/or threaten to be released, from the Facilities, Laboratories, and the Adjacent Parcel. The RFI Workplan shall document the procedures Respondent shall use to conduct those investigations necessary to, among other things, characterize the potential pathways of contaminant migration; characterize the source(s) of contamination;

define the degree and extent of contamination; identify actual or potential receptors; and support the development of alternatives from which Corrective Measures will be selected by EPA. The RFI Workplan shall be developed in accordance with the RFI Scope of Work appended hereto as Attachment B; section 121 of CERCLA, 42 U.S.C. § 9621; and EPA's "Guidance for Conducting Remedial Investigation and Feasibility Studies Under CERCLA" [EPA/540/G-89/004 (October 1988)]. The RFI Workplan shall include, but not be limited to, a Project Management Plan; a Data Collection Quality Assurance Plan; a Data Management Plan; a Health and Safety Plan; and a Community Relations Plan; and a schedule for implementation of all activities to be performed pursuant to this Consent Order.

5. Upon receipt of approval of the RFI Workplan, Respondent shall implement the EPA-approved Workplan in accordance with the requirements and schedules contained therein. Approved

G. **Corrective Measures Study ["CMS"]**

Within ninety (90) calendar days of receipt of EPA approval of the RCRA Facility Investigation report, Respondent shall submit to EPA for approval a Corrective Measure Study Report ["CMS"] developed in accordance with the CMS Scope of Work appended hereto as Attachment C; section 121 of CERCLA, 42 U.S.C. § 9621; and EPA's "Guidance for Conducting Remedial Investigation and Feasibility Studies Under CERCLA" [EPA/540/G-89/004 (October 1988)]. The CMS shall be subject to review and approval in accordance with the procedures established in Section VI.J of this Consent Order.

H. **Public Comment and Participation**

1. Nothing in this Consent Order shall prevent EPA from exercising its authorities under CERCLA at any time to select and undertake, order, or oversee remedial action, as defined in section 101(24) of CERCLA, 42 U.S.C. § 9601(24), at the Facilities, Laboratories, and/or the Adjacent Parcel on the basis of the approved RCRA Facility Investigation and Corrective Measures Study. Decisions by EPA to exercise these authorities shall not be subject to the dispute resolution procedures set forth in Section XIV of this Consent Order.

2. Subject to Section VI.H.1 of this Consent Order, EPA may select corrective measure(s) for implementation at the Facilities, Laboratories, and/or the Adjacent Parcel following approval of Respondent's Corrective Measures Study. If EPA makes such a selection, EPA shall make the RCRA Facility Investigation Report (or a summary thereof); the Corrective Measures Study (or a summary thereof); and a summary of EPA's proposed corrective measure, together with EPA's justification for the proposed selection, available to the public for review and comment for at least twenty-one (21) calendar days. Following public review and

comment, EPA shall notify Respondent of the final corrective measure(s) selected by EPA for implementation at the Facilities, Laboratories, and/or the Adjacent Parcel. If the corrective measure recommended in Respondent's Corrective Measures Study Report is not the corrective measure selected by EPA for implementation after consideration of the public comments, EPA shall inform Respondent in writing of the reason for such a decision and Respondent shall modify the RFI/CMS reports within thirty (30) calendar days as directed by EPA.

I. **Corrective Measures Implementation**

1. Subject to Section VI.H.1 of this Consent Order, if Respondent has complied with the terms of this Consent Order, EPA shall provide a sixty (60) calendar day period for negotiation of an administrative order on consent (or a judicial consent decree) for implementation of of the corrective measure(s) selected by EPA. The sixty (60) calendar day period shall commence on the date Respondent receives EPA's notice of EPA's selected corrective measure(s).

2. If agreement is not reached during the sixty (60) calendar day negotiation period described in Section VI.I.1 of this Consent Order, EPA reserves all rights it may have to implement the corrective measure(s); undertake any response activities deemed appropriate; and/or exercise any legal authority EPA may have under RCRA, CERCLA, and/or other statutes enforced or administered by EPA, which authority may include issuance of unilateral administrative orders directing Respondent to implement the corrective measure(s) selected by EPA.

J. **Submission and EPA Approval of Documents**

1. Unless otherwise specified, reports, correspondence, approvals, notices, and other submissions by either party relating to or required under this Consent Order shall be in writing.

2. Any notice, report, certification, data presentation, plan, or other documents submitted by or on behalf of Respondent under or pursuant to this Consent Order which discusses, describes, demonstrates, supports any finding, or makes any representation concerning Respondent's compliance (or non-compliance) with any requirement of this Consent Order shall be certified by a responsible official of Respondent. A responsible official for purposes of this paragraph shall mean:

a. A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

b. The manager of one or more manufacturing, production, or operating facilities employing more than 250 person or having gross annual sales or expenditures exceeding $35 million (1987 dollars/Consumer Price Index of 345.3), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

The certification required by Section VI.J.2 of this Consent Order shall be in the following form:

"Except as provided below, I certify that the information contained in or accompanying this [type of submission] is true, accurate, and complete.

"As to [the/those] portion(s) of this [type of submission] for which I cannot personally verify [its/their] accuracy, I certify under the penalty of law that this [type of submission] 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.

"Signature: _____

"Title: _____"

3. All notices, reports, certifications, data presentations, plans, and other documents required to be submitted by Respondent to EPA pursuant to this Consent Order shall be hand delivered; sent certified mail, return receipt requested; or sent by overnight courier as follows:

a. Four (4) copies shall be forwarded to :

Kai Hon Shum (3HW61)
U.S. EPA, Region III
841 Chestnut Building
Philadelphia, PA 19107

b. One (1) copy shall be forwarded to:

Lucy Pontiveros
West Virginia Division of Waste Management
1260 Greenbrier Street
Charleston, WV 25311

4. EPA will review all documents submitted by Respondent which require EPA approval pursuant to the terms of this Consent Order and will notify Respondent in writing of EPA's approval or disapproval of such documents, or portions thereof. In the event of EPA disapproval, EPA shall specify any deficiencies in writing. Respondent may not invoke Section XIV of this Consent Order following an initial notice of EPA disapproval for each document submitted. EPA shall not unreasonably withhold approval of submitted documents.

5. Within thirty (30) calendar days of receipt of EPA disapproval of any document, Respondent shall submit to EPA, for approval, a revised document which responds to and/or remedies any deficiencies identified by EPA. Requests for extensions of time made by Respondent may be granted by EPA on a case-by-case basis, provided that EPA's grant, or failure to grant, any such extension is discretionary and shall not be subject to the dispute resolutions procedures of Section XIV of this Consent Order. In the event EPA disapproves of the revised document, Respondent may invoke Section XIV of this Consent Order. Under such circumstances, EPA reserves the right to prepare the disapproved document and to seek reimbursement from Respondent for the costs incurred thereby and to undertake any other actions authorized by law.

K. **Reporting Requirements**

Beginning sixty (60) calendar days following the effective date of this Consent Order, and by the tenth day of the month every two months thereafter during the pendency of this Consent Order, Respondent shall provide EPA with progress reports containing information described in the applicable Scope(s) of work.

L. **Additional Work**

EPA may determine that certain tasks and deliverables including, but not limited to, investigatory work or engineering evaluation require additional work. When new findings indicate that such additional work is necessary , EPA shall request, in writing, that Respondent perform the additional work and shall specify the basis and reasons for EPA's determination that additional work is necessary. Within fifteen (15) calendar days after the receipt of such request, Respondent shall have the opportunity to meet with EPA to discuss the additional work EPA has requested. In the event that Respondent agrees to perform the additional work, this Consent Order shall be modified in accordance

with the procedures established in Section XX of this Consent Order. Such additional work shall be performed in a manner consistent with this Consent Order. A decision by Respondent to decline EPA's request to perform such additional work shall not constitute a violation of this Consent Order and shall not subject Respondent to the stipulated penalties set forth in Section XIII of this Consent Order. EPA, however, reserves the right to order Respondent to perform such additional work; to perform such additional work itself and to seek to recover from Respondent all costs of performing such additional work; and to disapprove of the RFI Workplan and/or the RFI or CMS Reports in the event that Respondent does not perform such additional work.

## VII. QUALITY ASSURANCE

A. Throughout all sample collection and analysis activities performed pursuant to this Consent Order, Respondent shall use EPA-approved quality assurance, quality control, and chain-of-custody procedures specified in the applicable workplan(s). Respondent shall additionally:

1. Ensure that laboratories used by Respondent for analyses perform such analyses according to the EPA methods detailed in "Test Methods for Evaluating Solid Waste" [SW-846 (November 1986)] or other methods deemed satisfactory to EPA. If methods other than EPA methods are to be used, Respondent shall submit all protocols to be used for analyses to EPA for approval at least thirty (30) calendar days prior to the commencement of analytical activities.

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

B. In the event that Respondent fails to use EPA-approved quality assurance/quality control practices, EPA reserves the right to conduct a complete RFI and/or CMS, or any portion thereof, and to seek to recover the costs from Respondent.

## VIII. PUBLIC REVIEW OF ADMINISTRATIVE RECORD

The Administrative Record supporting the issuance of this Consent Order will be available for public inspection on Mondays through Fridays, from 9:00 AM to 5:00 PM. This record may be reviewed by contacting:

Kai Hon Shum
U.S. Environmental Protection Agency
841 Chestnut Building
Philadelphia, Pennsylvania 19107
Telephone No. (215) 597-0130

## IX. ON-SITE AND OFF-SITE ACCESS

A. During the pendency of this Consent Order, EPA and/or its authorized representatives shall have the authority to enter and freely move about all property at the Facilities, Laboratories, and other areas owned or controlled by Respondent and in which work is conducted for purposes including, but not limited to, monitoring the work conducted pursuant to this Consent Order and ensuring compliance with this Consent Order, interviewing Respondent's personnel and contractors upon reasonable notice to Respondent; inspecting records, operating logs, and contracts relating to the Facilities and Laboratories; reviewing the progress of Respondent in carrying out the terms of this Consent Order; conducting such tests, sampling, and/or monitoring as EPA or its Project Coordinator deems necessary; using cameras, sound recording, or other documentary-type equipment; and verifying reports and data submitted to EPA by Respondent. Respondent shall permit such persons to inspect and copy all records, files, photographs, documents, and other writings, including sampling and monitoring data, that pertain to work undertaken pursuant to this Consent Order. While on Respondent's property as provided for in this Section, EPA, Respondent, and their respective authorized representatives shall comply with all EPA-approved health and safety plans submitted pursuant to this Consent Order.

B. To the extent that work required by this Consent Order must be performed on property not owned or controlled by Respondent, Respondent shall use its best efforts to obtain access agreements from the present owner(s) and/or lessees of such property, as appropriate, within thirty (30) calendar days of receipt of EPA approval of any scope of work or workplan which requires work on property not owned or controlled by Respondent. Such agreements shall afford Respondent, EPA and their authorized representatives authority to conduct all activities described in Section IX.A of this Consent Order. Best efforts, as used in this paragraph, shall include, but not be limited to, a certified letter from Respondent to the present owner(s) and lessees of such property requesting access agreements to permit Respondent, EPA, and their authorized representatives to access such property. In the event access agreements are not obtained within thirty (30) calendar days as set forth in this paragraph, Respondent shall notify EPA, in writing within seven (7) calendar days after failure to obtain such agreements, of the measures undertaken to secure such access and the reasons for failing to obtain the agreements.

C. Nothing in this Consent Order shall be construed to limit or otherwise affect any right of access or entry EPA may have under applicable laws including, but not limited to, RCRA and CERCLA.

## X. SAMPLING AND DATA/DOCUMENT AVAILABILITY

A. Respondent shall submit to EPA the results of all sampling and/or tests or other data generated by, or on behalf of, Respondent pursuant to the requirements of this Consent Order.

B. Respondent shall notify EPA at least fourteen (14) calendar days before engaging in any field activities to be conducted pursuant to the requirements of this Consent Order including, but not limited to, well drilling, equipment installation, and or sampling. Respondent shall additionally notify EPA and obtain EPA approval no less than fourteen (14) days prior to performing any activities, including activites not undertaken pursuant to this Consent Order, which may affect ground water. Such activities shall include, without limitation, installation of ground water monitoring wells, ground water monitoring and sample collection activities, ground water elevation tests, and aquifer tests. All notifications made pursuant to this paragraph shall identify the activities Respondent will conduct and the anticipated start and completion date of such activities. At the request of EPA, Respondent shall provide or allow EPA or its authorized representatives to take split and/or duplicative samples of all samples collected by Respondent. At the request of Respondent, EPA shall allow Respondent or its authorized representatives to take split and/or duplicative samples of all samples collected by EPA under this Consent Order.

C. Respondent may assert a business confidentiality claim in the manner described in 40 C.F.R. section 2.203(b) covering all or part of any information submitted to or taken by EPA pursuant to this Consent Order. Any assertion of business confidentiality shall be adequately substantiated by Respondent when the assertion is made in accordance with 40 C.F.R. section 2.204(e)(4). Information determined to be confidential by EPA shall be disclosed only to the extent permitted by 40 C.F.R. Part 2, Subpart B. If no confidentiality claim accompanies information when submitted to EPA, such information may be made available to the public without further notice to Respondent. Respondent shall not assert a confidentiality claim covering any physical, sampling, monitoring, or analytical data to the extent that such data does not reveal any proprietary process information about any process streams or manufacturing processes sampled pursuant to this Consent Order.

## XI. RECORD PRESERVATION

Respondent agrees to preserve, during the pendency of this Consent Order and for a minimum of at least six (6) years following termination of this Consent Order, all data, records, and documents in its possession, or in the possession of its divisions, officers, directors, employees, agents, contractors, successors, and assigns, which relate in any way to the subject matter of this Consent Order or to hazardous waste management and/or disposal at the Facilities, Laboratories, and/or the Adjacent Parcel. Respondent shall notify EPA at least thirty (30) calendar days prior to the destruction of any such records, and shall provide EPA with the opportunity to inspect, copy, and/or take possession of any such records. The requirements of this paragraph shall not apply to draft documents for which subsequent or final versions are retained. Only one (1) copy of each document shall be retained.

## XII. PROJECT COORDINATORS

A. On or before the effective date of this Consent Order, EPA and Respondent shall each designate a Project Coordinator. Respondent shall notify EPA within five (5) calendar days of the date of its selection, in writing, of the identify of the Project Coordinator it has selected. Each Project Coordinator shall be responsible for overseeing the implementation of this Consent Order. To the maximum extent possible, all communications between EPA and Respondent, and all documents, reports, approvals, and other correspondence concerning activities performed and to be performed pursuant to this Consent Order, shall be directed through the Project Coordinators.

B. The absence of the EPA Project Coordinator from the Facilities, Laboratories, and/or the Adjacent Parcel shall not be the cause for the stoppage of work.

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

D. If EPA determines that activities conducted by Respondent at the Facilities, Laboratories, or the Adjacent Parcel have caused, or may cause a release or threatened release of hazardous wastes, hazardous constituents, hazardous substances, pollutants, and/or contaminants, which release or threatened release may pose a threat to the public health or welfare or to the environment, EPA may direct Respondent to stop further implementation of this Consent Order for such time as may be needed to abate any such release or threatened release and/or undertake any action which EPA deems necessary under the circumstances.

## XIII. DELAY IN PERFORMANCE/STIPULATED PENALTIES

A. Subject to Sections XIV, XV, and XX of this Consent Order, for each day Respondent fails to submit a report or document or otherwise fails to comply with the requirements of this Consent Order at the time and in the manner set forth herein, or in any scope(s) of work, workplan(s), or other applicable document, Respondent shall pay to EPA upon written demand the sums set forth below as stipulated penalties.

B. Stipulated penalties shall accrue as follows:

1. For failure to commence or complete work as prescribed in this Consent Order and/or applicable scope(s) of work or workplan(s): $1500 per day for the first seven (7) calendar days, or portion thereof, of delay, and $4000 per day for each calendar day, or portion thereof, thereafter;

2. For failure to submit any draft or final report or plan at the time and in the manner specified by this Consent Order and/or applicable scope(s) of work or workplan(s): $1500 per day for the first seven (7) calendar days, or portion thereof, of delay, and $3000 per day for each calendar day, or portion thereof, thereafter

3. For failure to submit progress reports at the time and in the manner specified in this Consent Order and/or applicable scope(s) of work or workplan(s): $500 per day for the first seven (7) calendar days, or portion thereof, of delay, and $1000 per day for each calendar day, or portion thereof, thereafter;

4. For failure to submit other deliverables required by this Consent Order at the time and in the manner specified in this Consent Order and/or applicable scope(s) of work or workplan(s): $500 per day for the first seven (7) calendar days, or portion thereof, of delay, and $1000 per day for each calendar day, or portion thereof, thereafter;

5. For failure to comply with any requirement of this Consent Order not specified in this Paragraph: $1000 per day for the first seven (7) calendar days, or portion thereof, and $3000 per day for each calendar day, or portion thereof, thereafter.

C. Stipulated penalties shall begin to accrue on the date that complete performance is due or a violation occurs, and shall continue to accrue through the final day or correction of the non-compliance. EPA shall provide to Respondent a written notification

of non-compliance describing each violation of the Consent Order as soon as is practicable under the circumstances; provided that a failure by EPA to furnish such notification shall not affect the accrual of stipulated penalties or EPA's right to demand payment of stipulated or statutory penalties in accordance with the terms of this Consent Order. Nothing herein shall prevent the simultaneous accrual of separate stipulated penalties for separate violations of this Consent Order.

D. Except as provided in Paragraph F of this Section, all stipulated penalties owed to EPA under this Section shall be due within thirty (30) calendar days of Respondent's receipt of written demand for stipulated penalties. Such written demand shall describe the non-compliance and shall indicate the amount of stipulated penalties due and owing. Interest shall begin to accrue on the unpaid balance at the end of the thirty (30) day period and shall accrue at the current United States Treasury Tax and Loan rate in accordance with 4 C.F.R. § 102.13. EPA may, in its discretion, forego collection of all or a portion of stipulated penalties for any violation of this Consent Order; provided that:

(1) the exercise of EPA's discretion to collect or forego such penalties shall not be subject to the dispute resolution procedures established in Section XIV of this Consent Order; and

(2) Respondent shall not challenge the exercise of EPA's discretion to collect or forego such penalties in any administrative or judicial proceeding brought to enforce this Consent Order.

Respondent reserves the right to invoke the dispute resolution procedures of Section XIV of this Consent Order on the issue whether a violation of this Consent Order has occurred.

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

Regional Hearing Clerk
U.S. EPA, Region III
Box 360515M
Pittsburgh, PA 15251

All payment checks shall reference the name of the facility, Respondent's name and address, and the EPA docket number found on this Consent Order. Copies of all payment checks and transmittal letters shall be sent simultaneously to the EPA Project Coordinator and to:

Regional Hearing Clerk (3RC00)
U.S. EPA, Region III
841 Chestnut Building
Philadelphia, PA 19107

F. Respondent may dispute the assessment of stipulated penalties upon demand of such penalties by EPA by invoking the procedures described in Section XIV of this Consent Order. To the extent Respondent does not prevail upon resolution of the dispute, Respondent shall submit to EPA within seven (7) calendar days of receipt of such resolution any outstanding stipulated penalty payment, including any accrued interest, in the manner specified in Section XIII.E of this Consent Order. To the extent Respondent prevails upon resolution of the dispute, the stipulated penalties which were the subject of the dispute shall not be payable for that delay or violation of the Consent Order.

G. Neither the invocation of the dispute resolution procedures nor the payment of stipulated penalties shall alter in any way Respondent's obligation to comply with the requirements of this Consent Order.

H. The stipulated penalties set forth in this section do not preclude EPA from pursuing any other remedies or sanctions which may be available to EPA by reason of Respondent's failure to comply with any of the requirements of this Consent Order. In the event that statutory penalties are imposed for a violation for which Respondent is concurrently liable for stipulated penalties pursuant to this Consent Order, Respondent shall be entitled to an offset to the total amount of statutory penalties assessed by the total amount of stipulated penalties paid for such violation.

## XIV. DISPUTE RESOLUTION

A. Except as otherwise provided in this Consent Order, if Respondent disagrees, in whole or in part, with any EPA disapproval, modification, or other decision or directive made by EPA pursuant to this Consent Order, Respondent shall notify EPA in writing of its objections, and the bases therefore, within fourteen (14) calendar days of receipt of EPA's disapproval, decision, or directive. Said notice ["Notification of Dispute"] shall set forth the specific points in dispute, the position which Respondent asserts should be adopted, the bases of Respondent's position, and any other matters that are relevant to the dispute.

B. EPA and Respondent will, within fourteen (14) calendar days from EPA's receipt of the Notification of Dispute, confer in person or by telephone to resolve the dispute. If agreement is reached within this fourteen (14) calendar day period, resolution of the dispute shall be committed to writing and signed by representatives of each party. In the event no agreement is

reached within this fourteen (14) calendar day period, EPA shall provide Respondent with its written decision on the pending dispute as soon as is practicable. Thereafter, Respondent may pursue whatever remedies it may have under law.

C. Invocation and use of the dispute resolution procedures set forth herein shall not excuse, toll, or suspend any obligation or deadline established by this Consent Order during the pendency of a dispute. EPA may, in its discretion, forego collection of all or a portion of stipulated penalties that have accrued during the pendency of a dispute; provided that:

(1) the exercise of EPA's discretion to collect or forego such penalties shall not be subject to the dispute resolution procedures established herein; and

(2) Respondent shall not challenge the exercise of EPA's discretion to collect or forego such penalties in any administrative or judicial proceeding brought to enforce this Consent Order.

Nothing in this paragraph shall limit Respondent's right to invoke dispute resolution on the issue whether a violation of this Consent Order has occurred.

D. Notwithstanding any other provision of this Consent Order, no action or decision by EPA including, but not limited to, decisions of the Regional Administrator, shall constitute final agency action giving rise to any rights to judicial review prior to EPA's initiation of judicial action to compel Respondent's compliance with this Consent Order.

## XV. FORCE MAJEURE

A. Respondent shall perform the requirements of this Consent Order in the manner, and within the time limits, established herein, unless performance is prevented or delayed by events which constitute a force majeure. A force majeure is defined as any event arising from causes not reasonably foreseeable and beyond the control of Respondent, which cannot be overcome by due diligence, and which delays or prevents performance in the manner and/or within the times required by this Consent Order. Force majeure shall include delays in obtaining any required approvals or permits from EPA or other entities, which delays result despite Respondent's complete submission of all information and documentation required for approval or applications for permits (and any supplemental information that may be requested) within a timeframe that would permit the work to proceed in a manner contemplated by the schedules contained in this Consent Order. Force majeure shall not include increased costs of performance, changed economic circumstances, reasonably foreseeable weather

conditions, or weather conditions the effects of which could have been overcome by due diligence. Respondent shall have the burden of proving such a force majeure.

B. Respondent shall notify EPA in writing within seven (7) calendar days after it becomes aware of any event which causes or may cause a delay in complying with any requirement of this Consent Order and any event which Respondent claims constitutes a force majeure. Such notice shall contain an estimate of the anticipated length of the delay, including the time necessary for demobilization and remobilization; the cause for the delay; and measures taken and to be taken to prevent or minimize the delay, together with an estimated timetable for implementation of such measures. Failure to comply with the notice requirements of this paragraph shall constitute a waiver of Respondent's right to assert a force majeure claim with respect to such event. Respondent shall take all reasonable actions to prevent or minimize any delay.

C. If EPA determines that the delay has been or will be caused by circumstances not reasonably foreseeable and beyond the control of Respondent, which cannot be overcome by due diligence, the time for performance for that requirement of this Consent Order may be extended, upon EPA approval, for a period up to the period of the delay resulting from such circumstances. If such an extension is approved, this Consent Order shall be modified in accordance with the procedures set forth in Section XX of this Consent Order. Approval of an extension shall not alter the schedule of performance or completion of any other tasks required by this Consent Order unless such tasks are specifically addressed in the modification of this Consent Order.

D. In the event that EPA and Respondent cannot agree that any delay or failure has been or will be caused by circumstances beyond the control of Respondent, which cannot be overcome by due diligence, or if there is no agreement on the length of the extension of time, Respondent may invoke the dispute resolution procedures detailed in Section XIV of this Consent Order.

## XVI. RESERVATION OF RIGHTS

A. EPA expressly reserves all rights and defenses that it may have, including the right to both disapprove of work performed by Respondent pursuant to this Consent Order and to request that Respondent perform tasks in addition to those described in this Consent Order and/or any applicable scope(s) of work or workplan(s).

B. EPA hereby reserves all of its statutory and regulatory powers, authorities, rights, and remedies, legal or equitable. EPA further reserves all statutory and regulatory powers,

authorities, rights, and remedies, legal or equitable, that may be available to EPA following a failure by Respondent to comply with the terms of this Consent Order including, without limitation, the authority to assess penalties under section 3008(h)(2) of RCRA, 42 U.S.C. section 6928(h)(2). Except as provided in Section XXV of this Consent Order, this Consent Order shall not be construed as a covenant not to sue, or as a release, waiver, or limitation of any rights, remedies, power, and/or authorities, civil or criminal, legal or equitable, which EPA has under RCRA, CERCLA, or any other statutory, regulatory, or common law authority.

C. Compliance by Respondent with the terms of this Consent Order shall not relieve Respondent of its obligation to comply with RCRA or any other applicable Federal, State, or local laws and regulations.

D. Neither the signing of this Consent Order nor Respondent's consent to comply shall limit or otherwise preclude EPA from taking additional enforcement action pursuant to section 3008(h) of RCRA, 42 U.S.C. section 6928(h), should EPA determine that such action is warranted.

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

F. EPA reserves the right to perform any portion of the work consented to herein if Respondent fails to satisfactorily complete such work and EPA gives Respondent written notice of its intent to perform such work prior to commencing such work. EPA also reserves the right to perform any additional site characterization, feasibility study, and/or response/corrective actions as EPA may deem necessary to protect the public health or welfare or the environment. EPA may exercise its authorities under RCRA, CERCLA, or any other statute or regulation to undertake removal actions or remedial actions at any time. In any such event, EPA reserves the right to seek reimbursement from Respondent for such additional costs incurred by the United States. Notwithstanding compliance with the terms of this Consent Order, and subject to Section XXV of this Consent Order, Respondent is not released from liability, if any, for the costs of any response actions undertaken by EPA.

G. Each party to this action shall bear its own costs and attorneys' fees.

## XVII. OTHER CLAIMS

Nothing in this Consent Order shall constitute or be construed as a release from any claim, cause of action, or demand in law or equity against any person, firm, partnership, or corporation for

any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous wastes, hazardous constituents, hazardous substances, pollutants, or contaminants found at, taken to, or taken from the Facilities, Laboratories, and/or the Adjacent Parcel.

## XVIII. OTHER APPLICABLE LAWS

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

## XIX. INDEMNIFICATION OF THE UNITED STATES

Respondent agrees to indemnify and save and hold harmless the United States Government, its agencies, departments, agents, and employees, from any all claims or causes of actions arising from or on account of acts or omissions of Respondent or its agents, independent contractors, receivers, trustees, and assigns in carrying out activities required by this Consent Order. This indemnification shall not be construed in any way as affecting or limiting the rights or obligations of Respondent or the United States under their various contracts.

## XX. SUBSEQUENT MODIFICATIONS

A. This Consent Order may be amended only by mutual agreement of EPA and Respondent. Any such amendment shall be in writing, shall be signed by both parties, shall have as its effective date the date on which a copy which has been signed by EPA is received by Respondent, and shall be incorporated into this Consent Order. Minor modifications to the requirements of the Workplan may be made by mutal agreement of the Project Coordinators. Such modifications shall be made by an exchange of letters by the Project Coordinators and shall have as their effective date the date on which the letter from EPA's Project Coordinator is received by Respondent.

B. Any reports, plans, specifications, schedules, or other submissions and attachments required by this Consent Order are, upon written approval by EPA, incorporated into this Consent Order. Any non-compliance with such EPA-approved reports, plans, specifications, schedules, and attachments shall be considered a violation of this Consent Order and shall subject Respondent to

the consequences of such violation which may include, without limitation, stipulated penalties.

C. No informal advice, guidance, suggestion, or comment by EPA regarding reports, plans, specifications, schedules, or any other writing submitted by Respondent shall be construed as relieving Respondent of its obligation to obtain written approvals required by this Consent Order.

## XXI. SEVERABILITY

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

## XXII. TERMINATION AND SATISFACTION

The provision of this Consent Order shall be deemed satisfied upon Respondent's receipt of written notice from EPA that Respondent has demonstrated, to the satisfaction of EPA, that the terms of this Consent Order, including any additional tasks determined by EPA to be required pursuant to this Consent Order, have been satisfactorily completed. This notice shall not, however, terminate or otherwise affect continuing obligations or rights described in sections relating to matters including, but not limited to, Record Preservation (Section XI of this Consent Order), Reservation of Rights (Section XVI of this Consent Order), and Indemnification (Section XIX of this Consent Order). EPA shall not unreasonably withhold such notification from Respondent.

## XXIII. EFFECTIVE DATE

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

## XXIV. ADMISSIONS

Nothing in this Consent Order is intended or shall be construed to be an admission as to fact or law, an estoppel, or a waiver of defenses by Respondent for any purpose other than enforcement of this Consent Order.

## XXV. COVENANT NOT TO SUE

A. Provided that the work to be performed pursuant to this Consent Order is performed by Respondent according to the terms, conditions, schedules, and other requirements of this Consent Order and any amendments or modifications hereto, EPA covenants not to sue or to bring administrative action against Respondent, its officers, directors, employees, or agents for Covered Matters. Covered Matters shall be limited to actions and proceedings under section 3008(h) of RCRA, 42 U.S.C. § 6928(h), for costs relating to, and performance of, the work required by this Consent Order.

**IT IS SO AGREED AND ORDERED:**

**FOR THE RESPONDENT GE SPECIALTY CHEMICALS, INC.:**

By: _____ June 13, 1990
Date

Title: General Manager

**FOR THE U.S. ENVIRONMENTAL PROTECTION AGENCY:**

BY: _____ 6/29/90
Date

Edwin B. Erickson
Regional Administrator
EPA, Region III

# Attachment A

## Scope of Work for Interim Measures

# INTERIM MEASURES
# SCOPE OF WORK

## PURPOSE

The purpose of Interim Measures are to identify and correct any actual or potential releases of hazardous waste or constituents from regulated units, solid waste management units, and other source areas at the facility which may present an endangerment to human health or the environment.

## SCOPE

Task I: Interim Measures Workplan

- A. Interim Measures Objectives
- B. Health and Safety Plan
- C. Community Relations Plan

Task II: Interim Measures Investigation Program

- A. Data Collection Quality Assurance Plan
- B. Data Management Plan

Task III: Interim Measures Design Program

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

Task IV: Interim Measures Construction Quality Assurance Plan

- A. Construction Quality Assurance Objectives
- B. Inspection Activities
- C. Sampling Requirements
- D. Documentation

Task V: Reports

- A. Progress
- B. Interim Measures Workplan
- C. Final Design Documents
- D. Draft Interim Measures Report
- E. Final Interim Measures Report

1. INTERIM MEASURES WORKPLAN

Respondent shall prepare an Interim Measures Workplan. The Workplan shall include the development of several plans which shall be prepared concurrently.

A. Interim Measures Objectives

The Workplan shall specify the objectives of the interim measures, demonstrate how the interim measures will abate releases and threatened releases, and, to the extent possible, be consistent and integrated with any long term solution at the facility. The Interim Measures Workplan will include a discussion of the technical approach, engineering design, engineering plans, schedules, budget, and personnel. The Workplan will also include a description of qualifications of personnel performing or directing the interim measures, including contractor personnel. This plan shall also document the overall management approach to the interim measures.

B. Health and Safety Plan

Respondent shall prepare a facility Health and Safety Plan.

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

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

b. Describe the known hazards and evaluate the risks associated with the incident and with each activity conducted, including, but not limited to on and off-site exposure to contaminants during the implementation of interim measures at the facility.

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

d. Delineate work area;

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

f. Establish procedures to control site access;

g. Describe decontamination procedures for personnel and equipment;

h. Establish site emergency procedures;

i. Address emergency medical care for injuries and toxicological problems;

j. Describe requirements for an environmental surveillance program;

k. Specify any routine and special training required for responders; 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 C.F.R. 1910 and 1926;

g. State and local regulations; and

h. Other EPA guidance as provided.

3. The Health and Safety Plan shall be revised to address the activities to be performed at the facility to implement the interim measures.

C. Community Relations Plan

Respondent shall prepare a plan, for the dissemination of information to the public regarding interim measure activities and results. These activities shall include the preparation and distribution of fact sheets and participation in public meetings.

## 2. INTERIM MEASURES INVESTIGATION PROGRAM

### A. Data Collection Quality Assurance Plan

The Respondent shall prepare a plan to document all monitoring procedures: sampling, field measurements and sample analysis performed during the investigation to characterize the source and contamination, so as to ensure that all information, data and resulting decisions are technically sound, statistically valid, and properly documented.

1. Data Collection Strategy

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

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

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

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

i) Environmental conditions at the time of sampling;

ii) Number of sampling points;

iii) Representativeness of selected media; and

iv) Representativeness of selected analytical parameters.

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

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

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

iii) Data generated by separate consultants or laboratories and

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

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

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

ii) Results of performance audits;

iii) Results of system audits;

iv) Significant quality assurance problems and recommended solutions and

v) Resolutions of previously stated problems.

2. Sampling and Field Measurements

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

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

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

c. Measuring all necessary ancillary data;

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

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

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

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

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

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

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

iii) Documentation of specific sample preservation method;

iv) Calibration of field devices;

v) Collection of replicate samples;

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

vii) Potential interferences present at the 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.

i. Selecting appropriate sample containers;

j. Sample preservation; and

k. Chain-of-custody, including:

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

ii) Pre-prepared sample labels containing all information necessary for effective sample tracking.

3. Sample Analysis

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

a. Chain-of-custody procedures, including:

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

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

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

b. Sample storage and holding times;

c. Sample preparation methods;

d. Analytical procedures including:

   i) Scope and application of the procedure;

   ii) Sample matrix;

   iii) Potential interferences;

   iv) Precision and accuracy of the methodology; and

   v) Method detection limits.

e. Calibration procedures and frequency;

f. Data reduction, validation and reporting;

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

   i) Method blank(s):

   ii) Laboratory control sample(s);

   iii) Calibration check sample(s);

   iv) Replicate sample(s);

   v) Matrix-spiked sample(s):

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

vii) Control charts;

viii) Surrogate samples;

ix) Zero and span gases; and

x) Reagent quality control checks.

A performance audit may be conducted by EPA on the laboratories selected by the Respondent.

h. Preventive maintenance procedures and schedules;

i. Corrective action (for laboratory problems); and

j. Turnaround time.

B. Data Management Plan

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

1. Data Record

The data record shall include the following:

a. Unique sample or field measurement code;

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

c. Sampling or field measurement raw data;

d. Laboratory analysis ID number;

e. Property or component measured; and

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

2. Tabular Displays

The following data shall be presented in tabular displays:

a. Unsorted (raw) data

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

c. Data reduction for numerical analysis;

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

e. Summary data.

3. Graphical Displays

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

a. Display sampling location and sampling grid;

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

c. Display levels of contamination at each sampling location;

d. Display geographical extent of contamination;

e. Display contamination levels, averages, and maxima;

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

g. Indicate features affecting intramedia transport and show potential receptors.

## 3. INTERIM MEASURES DESIGN PROGRAM

### A. Design Plans and Specifications

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

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

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

b. Minimization of environmental and public impacts.

2. Discussion of the technical factors of importance including:

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

   b. The constructability of the design; and

   c. Use of currently acceptable construction practices and techniques.

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

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

5. Detailed drawings of the proposed design including;

   a. Qualitative flow sheets; and

   b. Quantitative flow sheets.

   c. Facility Layout

   d. Utility Locations

6. Tables listing materials, equipment, and specifications;

7. Tables giving material balances;

8. Appendices including;

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

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

   c. Results of laboratory or field tests.

General correlation between drawings and technical specifications, is a basic requirement of any set of working construction plans and specifications. Before submitting the project specifications, Respondent shall coordinate and

cross-check the specifications and drawings and complete the proofing of the edited specifications and required cross-checking of all drawings and specifications.

B. Operation and Maintenance Plan

Respondent shall prepare an Operation and Maintenance Plan to cover both implementation and long term maintenance of the interim measure. The plan shall be composed of the following elements:

1. Equipment start-up and operator training

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

2. Description of normal operation and maintenance (O&M);

   a. Description of tasks for operation;

   b. Description of tasks for maintenance;

   c. Description of prescribed treatment or operation conditions; and

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

   e. Common and/or anticipated remedies.

3. Description of routine monitoring and laboratory testing;

   a. Description of monitoring tasks·

   b. Description of required laboratory tests and their interpretation;

   c. Required QA/QC: and

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

4. Description of equipment; and

   a. Equipment identification;

b. Installation of monitoring components;

c. Maintenance of site equipment; and

d. Replacement schedule for equipment and installed components.

5. Records and reporting mechanisms required.

a. Daily operating logs;

b. Laboratory records;

c. Mechanism for reporting emergencies;

d. Personnel and maintenance records; and

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

The Operation and Maintenance Plan shall be submitted with the Final Design Documents.

C. Project Schedule

Respondent shall develop a detailed Project Schedule for construction and implementation of the interim measure(s) which identifies timing for initiation and completion of all critical path tasks. Respondent shall specifically identify dates for completion of the project and major interim milestones which are enforceable terms of this order. A Project Schedule shall be submitted simultaneously with the Final Design Documents.

D. Final Design Documents

The Final Design Documents shall consist of the Final Design Plans and Specifications (100% complete), the Final Draft Operation and Maintenance Plan, and Project Schedule. Respondent shall submit the final documents 100% complete with reproducible drawings and specifications. The quality of the design documents should be such that Respondent would be able to include them in a bid package and invite contractors to submit bids for the construction project.

4. INTERIM MEASURE CONSTRUCTION QUALITY ASSURANCE PLAN

A. Construction Quality Assurance Objectives

In the CQA plan, Respondent shall identify and document the objectives and framework for the development of a construction quality assurance program including, but not limited to the following: responsibility and authority;

personnel qualifications; inspection activities; sampling requirements; and documentation. The responsibility and authority of all organizations (i.e., technical consultants, construction firms, etc.) and key personnel involved in the construction of the interim measure shall be described fully in the CQA plan. Respondent must identify a CQA officer and the necessary supporting inspection staff.

B. Inspection Activities

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

1. Preconstruction inspection and meeting

Respondent shall conduct a preconstruction inspection and meeting to:

a. Review methods for documenting and reporting inspection data;

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

c. Review work area security and safety protocol;

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

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

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

2. Prefinal inspection

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

3. Final inspection

Upon completion of any outstanding construction items, Respondent shall notify EPA for the purposes of conducting a final inspection. The final inspection will consist of a walk-through inspection of the project site. The prefinal inspection report will be used as a checklist with the final inspection focusing on the outstanding construction items identified in the prefinal inspection. Confirmation shall be made that outstanding items have been resolved.

4. Sampling and Testing Requirements

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

C. Documentation

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

5. REPORTS

A. Progress

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

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

2. Summaries of all findings;

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

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

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

6. Actions being taken to rectify problems;

7. Changes in personnel during the reporting period;

8. Projected work for the next reporting period; and

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

B. Interim Measures Workplan

Respondent shall submit an Interim Measures Workplan as described in this Attachment.

C. Final Design Documents

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

D. Draft Interim Measures Report

At the "completion" of the construction of the project (except for long term operation, maintenance, and monitoring), Respondent shall submit an Interim Measures Implementation Report to the Agency. The Report shall document that the project is consistent with the design specifications, and that the interim measures are performing adequately. The Report shall include, but not be limited to the following elements:

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

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

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

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

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

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

E. Final Interim Measures Report

Respondent shall finalize the Interim Measures Work Plan and the Interim Measures Implementation Report incorporating comments received on draft submissions.

# Attachment B

# Scope of Work for a RCRA Facility Investigation

# SCOPE OF WORK FOR A RCRA FACILITY INVESTIGATION

## PURPOSE

The purpose of this RCRA Facility Investigation is to determine the nature and extent of releases of hazardous waste or constituents from regulated units, solid waste management units, and other source areas at the facility and to gather all necessary data to support the Corrective Measures Study. The Respondent shall furnish all personnel, materials, and services necessary for, or incidental to, performing the RCRA remedial investigation at Cooper Industries, Inc.

## SCOPE

The RCRA Facility Investigation consists of seven tasks:

Task I: Description of Current Conditions

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

Task II: Pre-Investigation Evaluation of Corrective Measure Technologies

Task III: RFI Workplan Requirements

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

Task IV: Facility Investigation

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

Task V: Investigation Analysis

- A. Data Analysis
- B. Protection Standards

Task VI: Laboratory and Bench-Scale Studies

Task VII: Reports

- A. Task I Report and RFI Workplan
- B. Progress
- C. Draft and Final

TASK I: DESCRIPTION OF CURRENT CONDITIONS

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

A. Facility Background

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

1. Map(s) depicting the following:

   a. General geographic location;

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

   c. Topography (with a contour interval of [number] feet and a scale of 1 inch = 100 feet), waterways, all wetlands, floodplains, water features, drainage patterns;

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

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

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

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

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

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

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

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

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

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

B. Nature and Extent of Contamination

The Respondent shall prepare and submit for EPA approval a preliminary report describing the existing information on the nature and extent of contamination.

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

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

   b. Quantities of solid and hazardous wastes;

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

   d. Identification of areas where additional information is necessary.

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

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

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

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

C. Implementation of Interim Measures

The Respondent's report shall document interim measures which were or are being undertaken at the facility. This shall include:

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

2. Design, construction, operation, and maintenance requirements;

3. Schedules for design, construction, and monitoring; and

4. Schedule for progress reports.

## TASK II: PRE-INVESTIGATION EVALUATION OF CORRECTIVE MEASURE TECHNOLOGIES

Prior to starting the facility investigation, the Respondent shall submit to EPA a report that identifies the potential corrective measure technologies known to Respondent at the time of report submittal 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, laboratory, bench- or pilot-scale data that needs to be collected in the facility investigation to facilitate the evaluation and selection of the final corrective measure or measures (e.g., compatibility of waste and construction materials, information to evaluate effectiveness, treatability of wastes, etc.).

## TASK III: RFI WORKPLAN REQUIREMENTS

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

A. Project Management Plan

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

B. Data Collection Quality Assurance Plan

The Respondent shall prepare a plan to document all monitoring procedures: sampling, field measurements and sample analysis performed during the investigation to characterize the environmental setting, source, and contamination, so as to ensure that all information, data and resulting decisions are technically sound, statistically valid, and properly documented.

1. Data Collection Strategy

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

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

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

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

i) Environmental conditions at the time of sampling;

ii) Number of sampling points;

iii) Representativeness of selected media; and

iv) Representativeness of selected analytical parameters.

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

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

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

iii) Data generated by separate consultants or laboratories; and

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

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

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

ii) Results of performance audits;

iii) Results of system audits;

iv) Significant quality assurance problems and recommended solutions; and

v) Resolutions of previously stated problems.

**2. Sampling**

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

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

b. Providing a statistically sufficient number of sampling sites;

c. Measuring all necessary ancillary data;

d. Determining conditions under which sampling should be conducted;

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

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

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

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

i. Documenting field sampling operations and procedures, including;

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

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

iii) Documentation of specific sample preservation method;

iv) Calibration of field devices;

v) Collection of replicate samples;

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

vii) Potential interferences present at the facility;

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

ix) Field equipment listing and sample containers;

x) Sampling order; and

xi) Decontamination procedures.

j. Selecting appropriate sample containers;

k. Sample preservation; and

l. Chain-of-custody, including:

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

ii) Pre-prepared sample labels containing all information necessary for effective sample tracking.

3. Field Measurements

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

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

b. Providing a statistically sufficient number of field measurements;

c. Measuring all necessary ancillary data;

d. Determining conditions under which field measurement should be conducted;

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

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

g. Selecting the frequency of field measurement and length of field measurements period: and

h. Documenting field measurement operations and procedures, including:

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

ii) Calibration of field devices·

iii) Collection of replicate measurements;

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

v) Potential interferences present at the facility;

vi) Construction materials and techniques associated with monitoring wells and piezometers used to collect field data;

vii) Field equipment listing;

viii) Order in which field measurements were made; and

ix) Decontamination procedures.

4. Sample Analysis

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

a. Chain-of-custody procedures, including:

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

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

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

b. Sample storage;

c. Sample preparation methods;

d. Analytical procedures, including:

i) Scope and application of the procedure;

ii) Sample matrix·

iii) Potential interferences;

iv) Precision and accuracy of the methodology; and

v) Method detection limits.

e. Calibration procedures and frequency;

f. Data reduction, validation, and reporting;

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

i) Method blank(s);

ii) Laboratory control sample(s);

iii) Calibration check sample(s);

iv) Replicate sample(s);

v) Matrix-spiked sample(s);

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

vii) Control charts;

viii) Surrogate samples;

ix) Zero and span gases; and

x) Reagent quality control checks.

[A performance audit will be conducted by EPA on the laboratories selected by the Respondent. This audit must be completed and approved prior to the facility investigation.]

h. Preventive maintenance procedures and schedules;

i. Corrective action (for laboratory problems); and

j. Turnaround time.

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

The Respondent shall develop and initiate a Data Manage-

ment Plan to document and track investigation data and results. This plan shall identify and set up data documentation materials and procedures, project file requirements, and project-related progress reporting procedures and documents. The plan shall also provide the format to be used to present the raw data and conclusions of the investigation.

1. Data Record

   The data record shall include the following:

   a. Unique sample or field measurement code;

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

   c. Sampling or field measurement raw data;

   d. Laboratory analysis ID number;

   e. Property or component measured; and

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

2. Tabular Displays

   The following data shall be presented in tabular displays:

   a. Unsorted (raw) data;

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

   c. Data reduction for statistical analysis;

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

   e. Summary data.

3. Graphical Displays

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

a. Display sampling location and sampling grid;

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

c. Display levels of contamination at each sampling location;

d. Display geographical extent of contamination;

e. Display contamination levels, averages, and maxima;

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

g. Indicate features affecting intramedia transport and show potential receptors.

D. Health and Safety Plan

The Respondent shall prepare a facility Health and Safety Plan.

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

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

b. Description of the known hazards and evaluations of the risks associated with the incident and with each activity conducted;

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

d. Delineation of work area;

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

f. Establishment of procedures to control site access;

g. Description of decontamination procedures for personnel and equipment;

h. Establishment of site emergency procedures;

i. Emergency medical care for injuries and toxicological problems;

j. Description of requirements for an environmental surveillance program;

k. Routine and special training required for responders: and

l. Establishment of procedures for protecting workers from weather-related problems.

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

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

b. EPA Order 1440.1 - Respiratory Protection;

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

d. Facility Contingency Plan;

e. EPA Standard Operating Safety Guide (1984);

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

g. State and local regulations; and

h. Other EPA guidance as provided.

E. Community Relations Plan

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

TASK IV: FACILITY INVESTIGATION

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

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

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

A. Environmental Setting

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

1. Hydrogeology

The Respondent shall conduct a program to evaluate hydrogeologic conditions at the facility. This program shall provide the following information:

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

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

ii) Structural geology: description of local and regional structural features (e.g., folding, faulting, tilting, jointing, etc.);

iii) Depositional history;

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

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

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

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

c. Based on field data, tests, and cores, a representative, and accurate classification and description of the hydrogeologic units which may be part of the migration pathways at the facility (i.e., the aquifers and any intervening saturated and unsaturated units), including:

i) Hydraulic conductivity and porosity (total and effective);

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

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

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

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

i) Sand and gravel deposits in unconsolidated deposits;

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

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

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

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

e. Based on data obtained from ground water monitoring wells and 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 of the site, identifying:

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

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

2. Soils

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

a. Soil Conservation Service (SCS) soil classification;
b. Surface soil distribution;
c. Soil profile, including American Standard Test Method (ASTM) classification of soils;
d. Transects of soil stratigraphy;
e. Hydraulic conductivity (saturated and unsaturated);
f. Relative permeability;
g. Bulk density;
h. Porosity;
i. Soil sorptive capacity;
j. Cation exchange capacity (CEC);
k. Soil organic content;
l. Soil pH;

m. Particle size distribution;
n. Depth of water table;
o. Moisture content;
p. Effect of stratification on unsaturated flow;
q. Infiltration
r. Evapotranspiration;
s. Storage capacity;
t. Vertical flow rate; and
u. Mineral content.

3. Surface Water and Sediment

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

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

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

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

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

iv) Drainage patterns; and

v) Evapotranspiration.

b. Description of the chemistry of the natural surface water and sediments. This includes determining the pH, total dissolved solids, total suspended solids, biological oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients ($NH_3$, $NO_3^-/NO_2^-$, $PO_4^{-3}$), chemical oxygen demand, total organic carbon, specific contaminant concentrations, etc.

c. Description of sediment characteristics including:

i) Deposition area;

ii) Thickness profile; and

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

4. Air

The Respondent shall provide information characterizing the climate in the vicinity of the facility. Such information shall include, but not be limited to:

a. A description of the following parameters:

i) Annual and monthly rainfall averages;

ii) Monthly temperature averages and extremes;

iii) Wind speed and direction;

iv) Relative humidity/dew point;

v) Atmospheric pressure;

vi) Evaporation data;

vii) Development of inversions; and

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

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

i) Ridges, hills, or mountain areas;

ii) Canyons or valleys;

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

iv) Wind breaks and forests; and

v) Buildings.

B. <u>Source Characterization</u>

The Respondent shall collect analytic data to supple-

ment and update the description prepared pursuant to Task I.B. herein. The data shall completely characterize the wastes and the areas where wastes have been placed, including: type; quantity; physical form; disposition (containment or nature of deposits); and facility characteristics affecting release (e.g., facility security, and engineered barriers). This shall include quantification of the following specific characteristics at each source area:

1. Unit/Disposal Area Characteristics:

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

2. Waste Characteristics:

    a. Type of waste placed in the unit:

        i) Hazardous classification (e.g., flammable, reactive, corrosive, oxidizing, or reducing agent);
        ii) Quantity; and
        iii) Chemical composition.

    b. Physical and chemical characteristics:

        i) Physical form (solid, liquid, gas);
        ii) Physical description (e.g., powder, oily sludge);
        iii) Temperature;
        iv) pH;
        v) General chemical class (e.g., acid, base, solvent);
        vi) Molecular weight;
        vii) Density;
        viii) Boiling point;
        ix) Viscosity;
        x) Solubility in water;
        xi) Cohesiveness of the waste; and
        xii) Vapor pressure.

    c. Migration and dispersal characteristics of the waste:

i) Sorption;

ii) Biodegradability, biocentration, biotransformation;

iii) Photodegradation rates;

iv) Hydrolysis rates; and

v) Chemical transformations.

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

C. Contamination Characterization

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

1. Ground Water Contamination

The Respondent shall conduct a Ground Water Investigation to characterize any plumes of contamination at the facility. This investigation shall, at a minimum, provide the following information:

a. A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility;

b. The horizontal and vertical direction of contamination movement;

c. The velocity of contaminant movement;

d. The horizontal and vertical concentration profiles of "Appendix VIII constituents" (see 40 C.F.R. Part 261. App. VIII) in the plume(s);

e. An evaluation of factors influencing the plume movement: and

f. An extrapolation of future contaminant movement.

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

2. Soil Contamination

The Respondent shall conduct an investigation to characterize the contamination of the soil and rock units above the water table in the vicinity of the contaminant release. The investigation shall include the following information:

a. A description of the vertical and horizontal extent of contamination;

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

c. Specific contaminant concentrations;

d. The velocity and direction of contaminant movement; and

e. An extrapolation of future contaminant movement.

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

3. Surface Water and Sediment Contamination

The Respondent shall conduct a surface water investigation to characterize contamination in surface water bodies resulting from contaminant releases at the facility.

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

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

b. The horizontal and vertical direction of contaminant movement;

c. The contaminant velocity;

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

e. An extrapolation of future contaminant movement; and

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

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

4. Air Contamination

The Respondent shall conduct an investigation to characterize the participate and gaseous contaminants released into the atmosphere. This investigation shall provide the following information:

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

b. The rate and amount of the release; and

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

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

5. Subsurface Gas Contamination

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

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

b. The chemical composition of the gases being emitted;

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

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

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

D. Potential Receptors

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

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

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

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

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

   a. Domestic and municipal (e.g., potable and lawn/garden watering);
   b. Recreational (e.g., swimming, fishing);
   c. Agricultural;
   d. Industrial; and
   e. Environmental (e.g., fish and wildlife propagation).

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

   a. Recreation;
   b. Hunting;
   c. Residential;
   d. Commercial;
   e. Zoning; and
   f. Relationship between population locations and prevailing wind direction.

4. A description of the biota in surface water bodies on, adjacent to, or affected by the facility.

5. A description of the ecology overlying and adjacent to the facility.

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

7. A description of any endangered or threatened species near the facility.

TASK V: INVESTIGATION ANALYSIS

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

A. Data Analysis

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

B. Protection Standards [where applicable]

1. Ground Water Protection Standards

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

a. The Ground Water Protection Standards shall consist of:

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

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

iii) an EPA approved Alternate Concentration Limit (ACL).

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

c. Within [insert number] calendar days of receipt of any pro posed ACLs, the EPA shall notify the Respondent, in writing, of approval, disapproval or modifications. The EPA shall specify, in writing, the reason(s) for any disapproval or modification.

d. Within [insert number] calendar days of receipt of the EPA's notification of disapproval of any proposed ACLs, the Respondent shall amend and submit revisions to the EPA.

2. Other Relevant Protection Standards

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

TASK VI: LABORATORY AND BENCH-SCALE STUDIES

Based on the EPA approved report submitted pursuant to Task II of this order: the Respondent shall conduct laboratory and/or bench scale studies to determine the applicability of a corrective measure technology or technologies to facility conditions. The Respondent shall analyze the technologies, based on literature review, vendor contracts, and past experience to determine the testing requirements.

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

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

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

## TASK VII: REPORTS

### A. Preliminary(Task I) and RFI Workplan

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

### B. Progress

The Respondent shall, at a minimum, provide the EPA with signed, [monthly, bimonthly] progress reports containing:

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

2. Summaries of all findings;

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

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

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

6. Actions being taken to rectify problems;

7. Changes in personnel during the reporting period;

8. Projected work for the next reporting period; and

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

### C. Draft and Final

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

[number] copies of all reports, including the Task I report, Task II report, Task III workplan, Task VI report

and both the Draft and Final RCRA Facility Investigation Reports (Tasks IV-V) shall be provided by the Respondent to EPA.

# Attachment C

## Scope of Work for a Corrective Measures Study

# SCOPE OF WORK FOR A CORRECTIVE MEASURE STUDY

## 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 Respondent shall furnish the personnel, materials, and services necessary to prepare the corrective measure study, except as otherwise specified.

## SCOPE

The Corrective Measure Study consists of four tasks:

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

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

Task IX: Evaluation of the Corrective Measure Alternative or Alternatives

- A. Technical/Environmental/Human Health/Institutional
- B. Cost Estimate
- C. Waste Minimization Plan

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

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

Task XI: Reports

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

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

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

A. Description of Current Situation

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

B. Establishment of Corrective Action Objectives

The Respondent, in conjunction with the EPA, shall establish site specific objectives for the corrective action. These objectives shall be based on public health and environmental criteria, information gathered during the RCRA Facility Investigation, EPA guidance, and the requirements of any applicable Federal statutes. At a minimum, all corrective actions concerning ground water releases from regulated units must be consistent with, and as stringent as, those required under 40 C.F.R. 264.100.

C. Screening of Corrective Measure Technologies

The Respondent shall review the results of the RCRA Facility Investigation and reassess the technologies specified in the Task II report as approved by EPA and identify additional technologies which are applicable at the facility. The Respondent shall screen the preliminary corrective measure technologies identified in Task II of the RCRA Facility investigation and any supplemental technologies to eliminate those that may prove infeasible to implement, that rely on technologies unlikely to perform satisfactorily or reliably, or that

do not achieve the corrective measure objective within a reasonable time period. This screening process focuses on eliminating those technologies which have severe limitations for a given set of waste and site-specific conditions. The screening step may also eliminate technologies based on inherent technology limitations. Site, waste, and technology characteristics which are used to screen inapplicable technologies are described in more detail below:

1. Site Characteristics

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

2. Waste Characteristics

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

3. Technology Limitations

   During the screening process, the level of technological development, performance record, and inherent construction, operation, and maintenance problems should be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process. 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 Respondent shall develop the corrective measure alternative or alternatives based on the corrective action objectives and analysis of Preliminary Corrective Measure Technologies, as presented in Task II of the RCRA Facility investigation and as supplemented following the preparation of the RFI Report. The Respondent shall rely on engineering practice to determine which of the previously identified technologies appear most suitable for the site. Technologies can be combined to form the overall corrective action alternative or alternatives. The alternative or alternatives developed should represent a workable number of option(s) that each appear to adequately address all site problems and corrective action objectives. Each alternative may consist of an individual technology or a combination of technologies. The Respondent shall document the reasons for excluding technologies, identified in Task II, as supplemented in the development of the alternative or alternatives.

TASK IX: EVALUATION OF THE CORRECTIVE MEASURE ALTERNATIVE OR ALTERNATIVES

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

A. Technical/Environmental/Human Health/Institutional

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

1. Technical:

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

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

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

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

b. The Respondent shall provide information on the reliability of each corrective measure, including their operation and maintenance requirements and their demonstrated reliability:

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

ii) Demonstrated and expected reliability is a way of measuring the risk and effect of failure. The Respondent should evaluate whether the technologies have been used effectively under analogous conditions; whether the combination of technologies has been used effectively; whether failure of any one technology has an immediate impact on receptors; and whether the corrective measure has the flexibility to deal with uncontrolable

changes at the site.

c. The Respondent shall describe the implementability of each corrective measure, including the relative ease of installation (constructability) and the time required to achieve a given level of response:

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

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

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

2. Environmental:

The Respondent shall perform an Environmental Assessment for each alternative. The Environmental Assessment shall focus on the facility conditions and pathways of contamination actually addressed by each alternative. The Environmental Assessment for each alternative will include, at a minimum, an evaluation of: the short- and long-term beneficial and adverse effects of the response alternative; any adverse effects on environmentally sensitive areas; and an analysis of measures to mitigate adverse effects.

3. Human Health:

The Respondent shall assess each alternative in terms of the extent of 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 its reduction over time. For management of mitigation measures, the relative reduction of impact will be determined by comparing residual levels of each alternative with existing criteria, standards, or guidelines acceptable to EPA.

4. Institutional:

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

B. Cost Estimate

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

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

   a. Direct capital costs include:

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

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

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

      iv) Buildings and services costs: Costs of process and nonprocess buildings, utility

connections, purchased services, and disposal costs.

b. Indirect capital costs include:

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

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

iii) Startup and problem solving immediately following startup(skakedown) 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 Respondent shall consider the following operation and maintenance cost components:

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

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

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

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

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

f. Administrative costs: Costs associated with administration of corrective measure operation and

maintenance not included under other categories;

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

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

C. Waste Minimization Plan

(1) Respondent shall consider waste minimization options as parts of the evaluation of the Corrective Measure Alternatives ("CMAs"). Respondent shall provide for each CMA per year of operation: (a) an estimate and analysis of the quantity, volume, and/or toxicity of the waste generated, including but not limited to contaminated soil, sludge, ground water, etc.; (b) methods to minimize the quantity, volume, toxicity and/or mobility of the waste to be generated during the implementation of each CMA; (c) methods to reduce the quantity of waste which are treated, stored or disposed of offsite; (d) the economic cost and benefits; and (e) any other benefit, including but not limited to compliance benefits, liability benefits, safety benefits, etc.

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

The Respondent shall justify and recommend a corrective measure alternative using technical, human health, and environmental criteria. This recommendation shall include summary tables which allow the alternative or alternatives to be understood easily. Tradeoffs among health risks, environmental effects, and other pertinent factors among the alternatives evaluated shall be highlighted. The EPA will select the corrective measure alternative or alternatives to be implemented, based on the results of Tasks IX and X. At a minimum, the following criteria shall be used to justify the final corrective measure or measures.

A. Technical

1. Performance - corrective measure or measures which are most effective in performing the intended functions and maintaining the performance over extended periods of time shall be given preference;

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

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

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

B. Human Health

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

TASK XI: REPORTS

The Respondent shall prepare a Corrective Measure Study Report presenting the results of Tasks VIII through X and recommending a corrective measure alternative. Four (4) copies of the CMS Report shall be provided by the Respondent.

A. Progress

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

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

2. Summaries of all findings;

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

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

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

6. Actions being taken to rectify problems;

7. Changes in personnel during the reporting period;

8. Projected work for the next reporting period; and

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

B. Draft

The Report shall, at a minimum, include:

1. A description of the facility:

   a. Site topographic map and preliminary layouts.

2. A summary of the corrective measure or measures:

   a. Description of the corrective measure or measures and rationale for the selection(s);

   b. Performance expectations;

   c. Preliminary design criteria and rationale;

   d. General operation and maintenance requirements; and

   e. Long-term monitoring requirements.

3. A summary of the RCRA Facility Investigation and impact on the selected corrective measure or measures:

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

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

4. Design and Implementation Precautions:

   a. Special technical problems;

   b. Additional engineering data required;

   c. Permits and regulatory requirements;

   d. Access, easements, right-of-way;

   e. Health and safety requirements; and

f. Community relations activities.

5. Cost Estimates and Schedules:

a. Capital cost estimate;

b. Operation and maintenance cost estimate; and

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

Four (4) copies of the draft shall be provided by the Respondent to EPA.

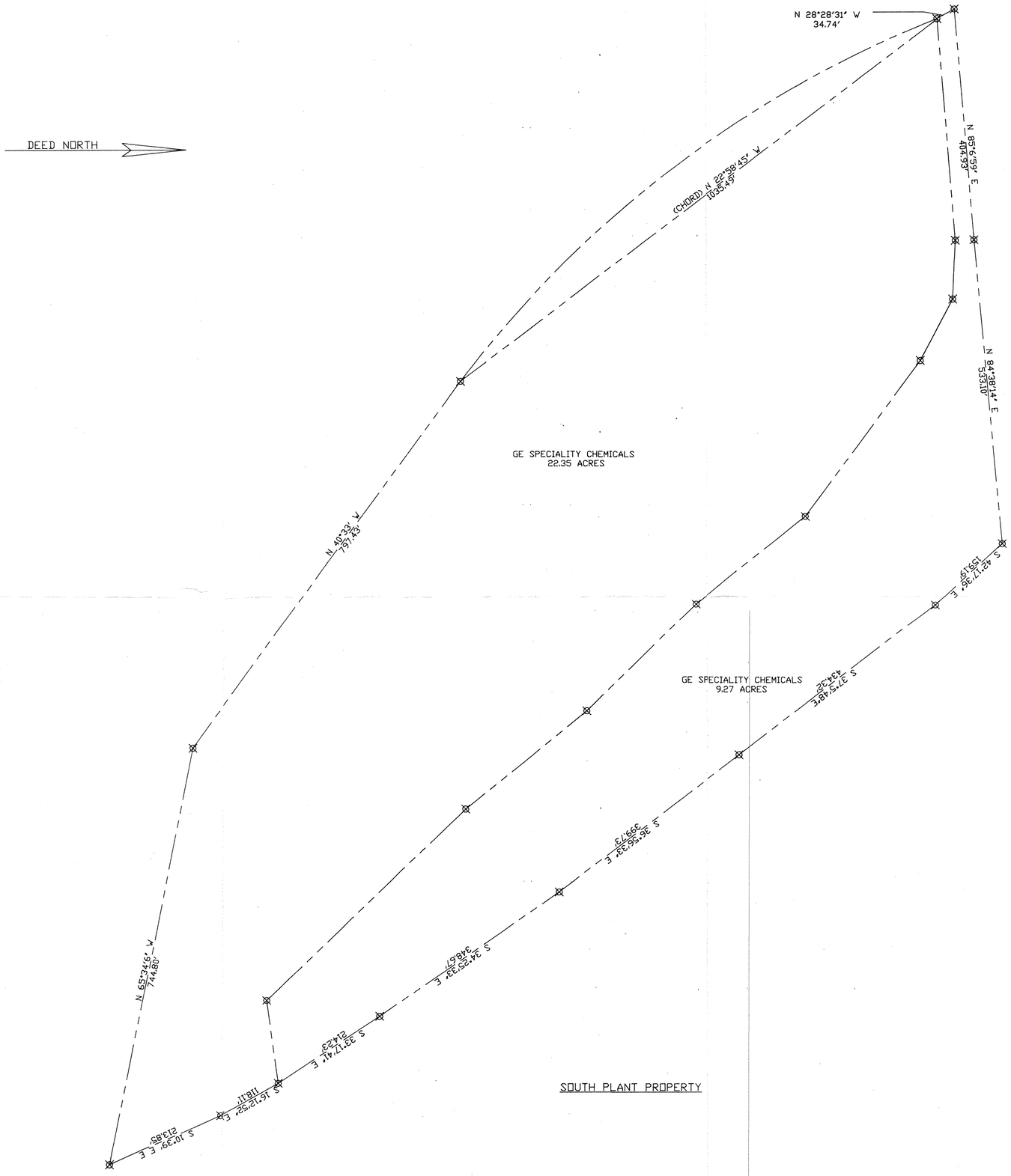
C. Final

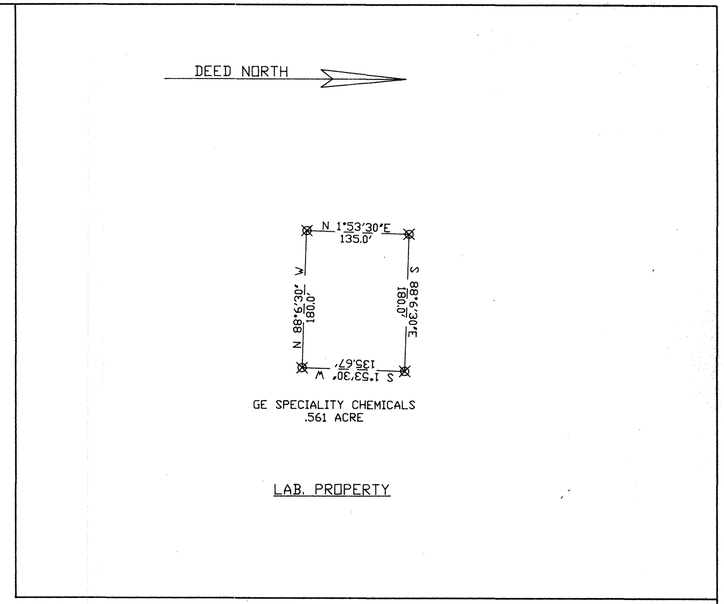
The Respondent shall finalize the Corrective Measure Study Report, incorporating comments received from EPA on the Draft Corrective Measure Study Report. .

Facility Submission Summary

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

| Facility Submission | Due Date |
|---|---|
| Draft CMS Report (Tasks VIII, IX, and X) | Sixty (60) calendar days after submittal of the Final RFI |
| Final CMS Report (Tasks VIII, IX, and X) | Thirty (30) calendar days after Public and EPA comment on the Draft CMS |
| Progress Reports on Tasks VIII, IX, and X | MONTHLY |




GE Specialty Chemicals — Westmar Site

| | |
|---|---|
| SCALE | 1"=100'-0" |
| DATE | 2-10-90 |
| DRN. R.M.B. | APP'D. |
| E.N NO. ---- | AREA S PLT |

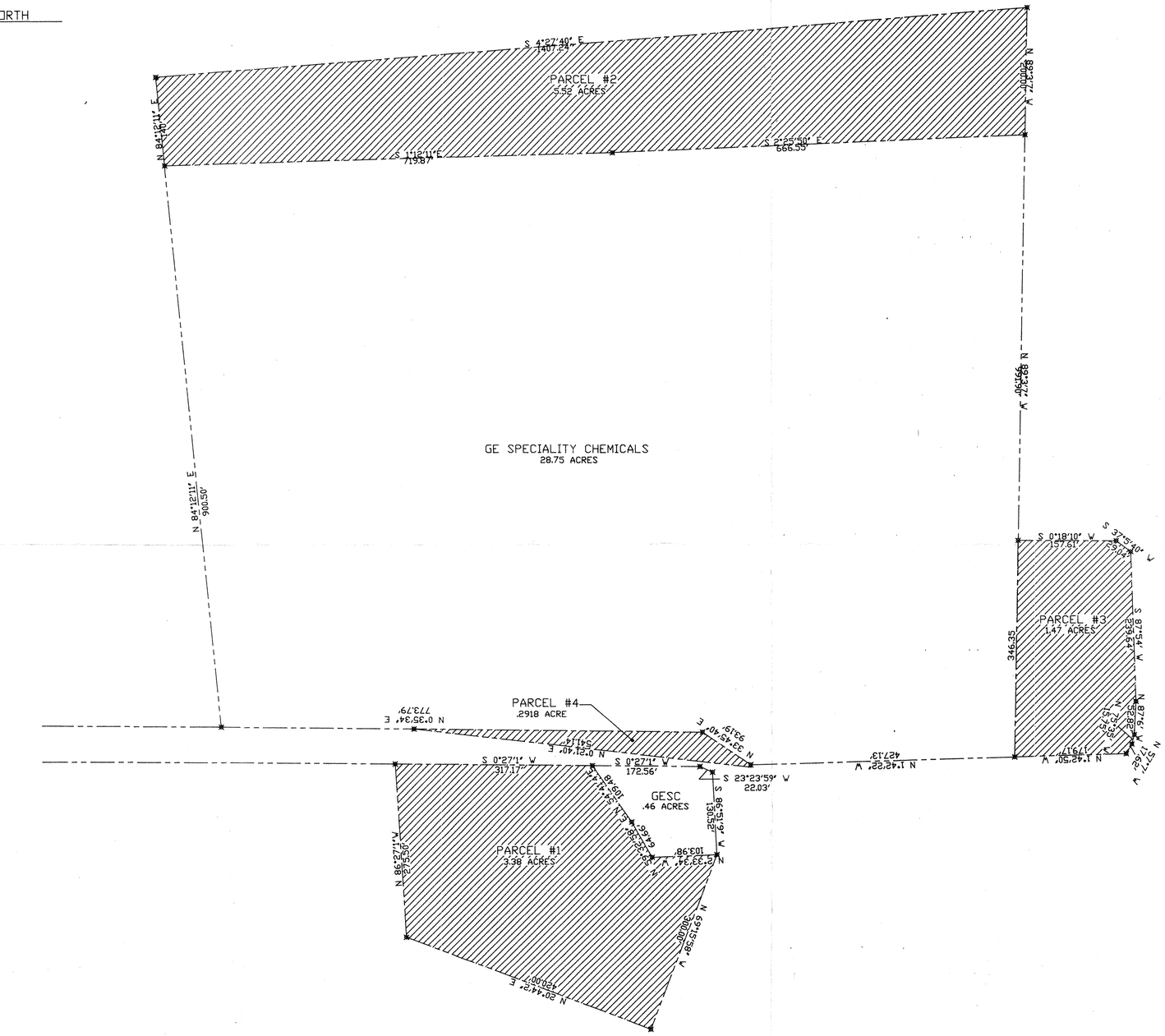
TITLE: PROPERTY MAP CONSENT ORDER, ATTACHMENT "D"

DWG. NO. D-617

SHEET 1 OF 2

REV.

DEED NORTH




## LEGEND

PROPERTY OWNED BY GE SPECIALITY CHEMICALS

ADJACENT PARCELS ADDRESSED UNDER ORDER.

| | | | |
|---|---|---|---|
| GE Specialty Chemicals — Vestmar Site | | SCALE | 1"=100'-0" |
| | | DATE | 2-7-90 |
| | | DRN. R.M.B. | APP'D. |
| | | E.N. NO. ----- | AREA N PLT |
| TITLE: PROPERTY MAP CONSENT ORDER, ATTACHMENT "D" | | DWG. NO. | D-617 |
| | | SHEET 2 OF 2 | |

REV.