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UNITED STATES
ENVIRONMENTAL PROTECTION AGEN
REGION 4

IN THE MATTER OF:
LCP-Holtrachem Superfund Site
Riegelwood, Columbus County,
North Carolina

Honeywell International Inc.,
Respondent

ADMINISTRATIVE ORDER ON
CONSENT FOR REMOVAL ACTION

U.S. EPA Region 4
CERCLA Docket No. CER-04-2004-3781

Proceeding Under Sections 104, 106(a), 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9604, 9606(a), 9607 and 9622

I. JURISDICTION AND GENERAL PROVISIONS

This Administrative Order on Consent ("Order") is entered into voluntarily by the United States Environmental Protection Agency ("EPA") and Honeywell International, Inc. ("Respondent"). This Order provides for the performance of a removal action by Respondent and the reimbursement of response costs incurred by the United States in connection with the 26 acre property located at 1 Industrial Drive in Riegelwood, Columbus County, North Carolina, approximately 18 miles northwest of the City of Wilmington, NC. (the "LCP-Holtrachem Site" or the "Site"). This Order requires Respondent to conduct the removal action described herein to investigate and abate a release or threat of release of hazardous substances, pollutants or contaminants at or from the Site which may present an imminent and substantial danger to the public health or welfare or the environment.

This Order is issued pursuant to the authority vested in the President of the United States by Sections 104, 106(a), 107, and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9604, 9606(a), 9607, and 9622, as amended ("CERCLA"), and delegated to the Administrator of EPA by Executive Order No. 12580, January 23, 1987, 52 Federal Register 2923, and further delegated to the EPA Regional Administrators by EPA Delegation Nos. 14-14-A, 14-14-C and 14-14-D, and through the Director, Waste Management Division, to the Chief, North Superfund Remedial Branch by EPA Region IV Delegation No. 14-14-C.

EPA has notified the State of North Carolina of this action pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

Respondent's participation in this Order shall not constitute or be construed as an admission of liability or of EPA's findings or determinations contained in this Order. Respondent agrees to comply with and be bound by the terms of this Order. Respondent further agrees that it will not contest the basis or validity of this Order or its terms in a proceeding by EPA to enforce this Order.

II. PARTIES BOUND

This Order applies to and is binding upon EPA and upon Respondent. Any change in ownership or corporate status of Respondent including, but not limited to, any transfer of assets or real or personal property shall not alter Respondent's responsibilities under this Order.

Respondent shall ensure that its contractors, subcontractors, and representatives receive a copy of this Order and comply with this Order. Respondent shall be responsible for any noncompliance with this Order.

III. DEFINITIONS

Unless otherwise expressly provided herein, terms used in this Order which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to

them in CERCLA or in such regulations. Whenever terms listed below are used in this Order or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

"CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601, *et seq.*

"Order" shall mean this Administrative Order on Consent and the attached Scope of Work.

"Day" shall mean a calendar day unless expressly stated to be a business day. "Business day" shall mean a day other than a Saturday, Sunday, or Federal holiday. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next business day.

"Effective Date" shall be the effective date of this Order as provided in Section XXII.

"EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

"Future Response Costs" shall mean all costs not inconsistent with the NCP, including, but not limited to, direct and indirect costs, that the United States incurs in reviewing or developing plans, reports and other items pursuant to this Order, verifying the Work, or otherwise implementing, overseeing, or enforcing this Order, including, but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, the costs incurred pursuant to Sections VI (including, but not limited to, the cost of attorney time and any monies paid to secure access and/or to secure or implement institutional controls including, but not limited to, the amount of just compensation), VII, VIII, IX, XV, XIX, and XX.

"Interest," shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year.

"National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

"NC DENR" shall mean the North Carolina Department of Environment and Natural Resources and any predecessor or successor departments or agencies of the State.

"Parties" shall mean the United States and the Respondent.

"Project Coordinator" shall mean the person designated by Respondent (and approved by EPA pursuant to Section VI.1) to be responsible for administration of all Respondent's actions required by this Order.

"Respondent" shall mean Honeywell International, Inc., and its successors.

"Section" shall mean a portion of this Order identified by a Roman numeral.

"Site" shall mean the LCP-Holtrachem Superfund Site, encompassing approximately 26 acres located at One Industrial Drive, Riegelwood, Columbus County, North Carolina, including the Holtrachem manufacturing facility and Holtrachem property, and all areas where hazardous substances, pollutants or contaminants released from the facility, or released as a result of operations thereof, have come to be located.

"State" shall mean the State of North Carolina.

"United States" shall mean the United States of America.

"Work" shall mean all activities Respondent is required to perform under this Order, except those required by Section VI.4 (Record Retention, Documentation, Availability of Information).

IV. FINDINGS OF FACT

For the purposes of this Order, EPA finds that:

1. Respondent, Honeywell International, Inc., is a Delaware corporation with headquarters in Morristown, New Jersey.

2. Honeywell International, Inc. is the successor to Honeywell, Inc. and AlliedSignal by merger of Honeywell, Inc. and AlliedSignal in 1999.

3. AlliedSignal, formerly Allied-Chemical, owned and operated the Site facility from 1963 to 1979.

4. The Site is a former chlor-alkali manufacturing facility that produced chlorine, sodium hydroxide, sodium hypochlorite and hydrochloric acid using the mercury cell process. The facility was constructed in 1963 and operated until 2000. The facility is located on a property of approximately 26 acres, situated in an industrial setting at One Industrial Drive, Riegelwood, Columbus County, North Carolina. The Site property is adjacent to the International Paper Company (IP), which borders the facility property on all sides except the north-northeast, which is bordered by the Cape Fear River.

5. The Site is located in the Atlantic Coastal Plain region. Groundwater has been measured from 3.5-feet to 7.8-feet below ground surface. Shallow groundwater flow is northerly toward the Cape Fear River, at a rate of approximately 1.5-feet per year. Surface seeps have been observed in ravines near the northern site boundary.

6. The Site contains two retention basins, which collect stormwater runoff from the Site and portions of the adjacent industrial facilities. The Site contains three Solid Waste Management Units identified as the North, South and Roberts Ponds. The North and South Ponds were closed in 1987 under the RCRA program and required post-closure monitoring. Roberts Pond has not completed final closure and will be addressed through this EE/CA.

7. Hurricane Floyd and associated flooding caused an overtopping/breach in one retention basin in September 1999. Surface soil sampling results in June 2001 performed by NC DENR detected mercury in surface soils adjacent to the retention basin.

8. After sampling events in 2001 by NC DENR, NC DENR referred the Site to the EPA Emergency Response and Removal Branch (ERRB) in January, 2002.

9. NC DENR investigated soil, sediment, surface water and groundwater during an integrated Expanded Site Inspection/Removal Assessment (iESI/RA) in April 2002.

Soil constituents with concentrations exceeding the lower of the two EPA residential soil exposure benchmarks, Reference Dose Screening Concentration or Cancer Risk Screening Concentration, as found in the Superfund Chemical Data Matrix - Data Manager User's Guide (EPA/540/R-96/029) included:

- mercury
- hexachlorobenzene
- PCB-1254
- 2,3,4,7,8-Pentachlorodibenzofuran
- 1,2,3,4,6,7,8-Heptachlorodibenzofuran

Sediment from areas adjacent to the Cape Fear River with concentrations that exceeded three times background concentrations or detection limits when the background was non-detect included:

- cadmium
- calcium
- mercury
- sodium
- 1,2,3,5,6,7,8 - Hexachlorodibenzofuran
- 1,2,3,4,6,7,8 - Heptachlorodibenzofuran
- Octachlorodibenzofuran

Groundwater constituents with concentrations that exceeded the Safe Drinking Water Act Maximum Contaminant Levels and North Carolina Administrative Code, Subchapter 2L, Maximum Contaminant Levels included:

- arsenic
- mercury

10. A Time Critical Removal Action began in January 2003. This EE/CA will address all items left after the Time Critical Removal Action is completed. That action is scheduled to be completed by December 2004.

V.CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the Findings of Fact set forth above, and the Administrative Record supporting this removal action, EPA has determined that:

1. The Site is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

2. The contaminants found at the Site, as identified in the Findings of Fact above, include "hazardous substance(s)" as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

3. Respondent is a "person" as defined by Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

4. Respondent may be liable under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

5. The conditions described in the Findings of Fact above constitute an actual or threatened "release" of a hazardous substance from the Site as defined by Sections 101(22) of CERCLA, 42 U.S.C. § 9601(22).

6. The conditions present at the Site present a threat to public health or welfare or the environment. Factors that may be considered are set forth in Section 300.415(b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan, as amended, 40 CFR Part 300 ("NCP").

7. The actual or threatened release of hazardous substances at or from the Site may present an imminent and substantial endangerment to the public health, welfare, or the environment within the meaning of Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

8. The removal actions required by this Order are necessary to protect the public health, welfare, or the environment, and are not inconsistent with the NCP or CERCLA.

VI. ORDER

Based upon the foregoing Findings of Fact, Conclusions of Law and Determinations, and the Administrative Record for this Site, it is hereby ordered and agreed that Respondent shall comply with the following provisions, including but not limited to the Scope of Work attached to this

Order, and all documents incorporated by reference into this Order, and perform the following actions:

1. Designation of Contractor, Project Coordinator, and Remedial Project Manager

Respondent shall perform the removal action required by this Order itself or retain a contractor(s) to perform the removal action. Respondent shall notify EPA of Respondent's qualifications or the name and qualifications of such contractor(s) within thirty (30) days of the effective date of this Order. Respondent shall also notify EPA of the name(s) and qualifications of any other contractor(s) or subcontractor(s) retained to perform the removal action under this Order at least five (5) days prior to commencement of such removal action. EPA retains the right to disapprove of any, or all, of the contractors and/or subcontractors retained by the Respondent, or of Respondent's choice of itself to do the removal action. If EPA disapproves of a selected contractor or the Respondent, Respondent shall retain a different contractor or notify EPA that it will perform the removal action itself within thirty (30) days following EPA's disapproval and shall notify EPA of that contractor's name or Respondent and qualifications within thirty (30) days of EPA's disapproval.

Within fourteen (14) days after the effective date of this Order, Respondent shall designate a Project Coordinator who shall be responsible for administration of all the Respondent's actions required by the Order. Respondent shall submit the designated coordinator's name, address, telephone number, and qualifications to EPA. To the greatest extent possible, the Project Coordinator shall be present on Site or readily available during Site Work. EPA retains the right to disapprove of any Project Coordinator named by Respondent. If EPA disapproves of a selected Project Coordinator, Respondent shall retain a different Project Coordinator and shall notify EPA of that person's name, address, telephone number, and qualifications within fourteen (14) days following EPA's disapproval. Receipt by Respondent's Project Coordinator of any notice or communication from EPA relating to this Order shall constitute receipt by Respondent.

EPA has designated Samantha Urquhart-Foster of the EPA, Region 4, North Site Management Branch as its Remedial Project Manager ("RPM"). Respondent shall direct all submissions required by this Order to the RPM at 61 Forsyth Street, S.W., Atlanta, Georgia 30303-8960. EPA and Respondent shall have the right, subject to the immediately proceeding paragraph, to change their designated RPM or Project Coordinator. Respondent shall notify EPA, seven (7) days before such a change is made. The initial notification may be orally made but it shall be promptly followed by a written notice.

2.0 Work to be Performed

Respondent shall conduct an Engineering Evaluation/Cost Analysis (EE/CA) that is consistent with 40 C.F.R. Part 300.415(b)(4) of the NCP and the attached Scope of Work, is in accordance with reference document *EPA/540-R-93-057, OSWER Directive 9360.0-32, August 1993: Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA*, and which shall include, at a minimum, the following activities:

2.1 Work Plan and Implementation

A. Within forty-five (45) days after the effective date of this Order, Respondent shall submit to EPA for approval a draft Work Plan for performing the Engineering Evaluation/Cost Analysis (the "EE/CA Work Plan"). The EE/CA Work Plan shall be developed and submitted in conjunction with a proposed schedule for implementing the EE/CA Work Plan, a Sampling and Analysis program, and Health and Safety Plan. These plans shall be developed in accordance with the National Contingency Plan, the "Guidance on Conducting Non-Time-Critical Removal Actions under CERCLA" (EPA/540-R-93-057, August 1993), and the attached Scope of Work (SOW).

Respondent may propose in its draft EE/CA Work Plan, additional removal actions not included in the previously-executed removal order for the Site (EPA Region 4 CERCLA Docket No. CER-04-2002-3771) nor the EE/CA Scope of Work attached hereto. If approved as part of the final EE/CA Work Plan, such response actions shall be part of the Work required under this Order and subject to all provisions of this Order, including, but not limited to, Section VIII (Reimbursement of Response Costs). Respondent shall conduct all removal actions in accordance with the approved schedule contained in the EE/CA Work Plan.

EPA may approve, disapprove, require revisions to, or modify the draft EE/CA Work Plan. If EPA requires revisions, Respondent shall submit a revised draft EE/CA Work Plan within thirty (30) days of receipt of EPA's notification of the required revisions. Respondent shall implement the EE/CA Work Plan as finally approved in writing by EPA in accordance with the schedule approved by EPA as part of the EE/CA Work Plan. Once approved, or approved with modifications, the EE/CA Work Plan, the schedule, and any subsequent modifications shall be fully enforceable under this Order.

B. Deliverables, including reports, plans or other correspondence to be submitted pursuant to this Order, shall be sent by regular certified mail, express mail or overnight delivery to the following address or to such other addresses as EPA may subsequently designate in writing.

Samantha Urquhart-Foster
Remedial Project Manager
US EPA-Region 4
North Site Management Branch
61 Forsyth Street, S.W.
Atlanta, GA 30303-8960

One copy of all deliverables shall also be sent to the State of North Carolina's representative:

Mr. David Mattison
NC DENR Superfund Section
401 Oberlin Road, Suite 150
Raleigh, NC 27605

C. EPA may approve, disapprove, require revisions to, or modify the deliverables to be submitted pursuant to this Order. If EPA requires such changes, Respondent shall submit a revised deliverable within thirty (30) days of receipt of EPA's notification of the required changes or within a time frame agreed to in writing by the RPM. Respondent shall implement actions set forth in the deliverable as finally approved in writing by EPA in accordance with the schedule approved by EPA. Once approved such deliverables shall be fully enforceable under this Order.

2.2 Health and Safety Plan

Within forty-five (45) days after the effective date of this Order, the Respondent shall submit for EPA review and comment a plan that ensures the protection of the public health and safety during performance of on-Site work under this Order. This plan shall be prepared in accordance with EPA's current Standard Operating Safety Guide. In addition, the plan shall comply with all current applicable Occupational Safety and Health Administration (OSHA) regulations found at 29 CFR Part 1910. Respondent shall incorporate all changes to the plan recommended by EPA, and implement the plan during the pendency of the removal action.

2.4 Quality Assurance and Sampling

All sampling and analyses performed pursuant to this Order shall conform to EPA direction, approval, and guidance regarding sampling, quality assurance/quality control (QA/QC), data validation, and chain of custody procedures. Respondent shall ensure that the laboratory used to perform the analyses participates in a QA/QC program that complies with the appropriate EPA guidance. Respondent shall follow the following documents, as appropriate, as guidance for QA/QC and sampling: "EPA Guidance for Quality Assurance Project Plans (QA/G-5)"(EPA/600/R-98/018, February 1998), "EPA Requirements for Quality Assurance Project Plans (QA/R-5)" (EPA 240/B-01/003, March 2001), and EPA Region 4 Science and Ecosystems Support Division, "Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM)" (November 2001).

Upon request by EPA, Respondent shall allow EPA or its authorized representatives to take split and/or duplicate samples of any samples collected by Respondent while performing work under this Order. EPA shall have the right to take any additional samples that it deems necessary.

2.5 Post-Removal Site Control

In accordance with the Work Plan schedule, or as otherwise directed by EPA, Respondent shall submit a proposal for post-removal site control consistent with Section 300.415(l) of the NCP and OSWER Directive 9360.2-02, to the extent feasible, recognizing that Respondent does not own the real property or facilities at the Site. Upon EPA approval, Respondent shall implement such controls and shall provide EPA with documentation of all post-removal site control arrangements.

2.6 Reporting

Respondent shall submit to EPA and NC DENR written monthly progress reports which: (1) describe the actions which have been taken toward achieving compliance with this Order during the previous month; (2) include all results of sampling and tests and all other data received by Respondent during the course of the work; (3) include all plans and procedures completed under the Work Plan during the previous month; (4) describe all actions, data, and plans which are scheduled for the next month, and provide other information relating to the progress of the work as deemed necessary by EPA; and (5) include information regarding percentage of completion, unresolved delays, encountered or anticipated, that may affect the future schedule for implementation of the Scope of Work and Work Plans, and a description of efforts made to mitigate those delays or anticipated delays. These progress reports are to be submitted to EPA and NC DENR by the tenth day of every month following the effective date of this Order.

2.7 EE/CA Final Report

Following completion of the EE/CA field characterization efforts, Respondent shall submit the draft EE/CA Report for EPA's review and technical comment. NC DENR shall also have opportunity to review and comment on the draft EE/CA Report. The draft EE/CA Report shall summarize available analytical data to spatially evaluate the nature/extent of contaminant(s) present in the media of concern, and to identify potential source(s) of such contaminant(s). The draft EE/CA Report shall include a streamlined risk assessment to evaluate potential risks posed to human health and the environment under the assumption that no response action(s) would be taken at the Site. The streamlined risk assessment should focus on the specific Removal Action Objectives and should be consistent with established EPA protocols delineated in the EPA guidance document *Risk Assessment Guidance for Superfund* and other appropriate supplements or addenda thereto. The results of the streamlined risk assessment will be utilized by EPA to determine whether a CERCLA response action is warranted at the Site, what exposures need to be addressed by the response action, and define appropriate cleanup goals. The draft EE/CA Report shall identify and analyze removal action alternatives based on the response action evaluation criteria of effectiveness, implementability, and cost. Subsequent to a comparative analysis of identified removal action alternatives, the draft EE/CA Report shall conclude with a refined conceptual description of the recommended removal action alternative.

EPA may determine, based on review of the draft EE/CA Report, that other tasks related to the final EE/CA Work Plan, including supplemental investigatory work and/or engineering evaluation are necessary as part of the EE/CA process that are in addition to approved tasks and deliverables, including reports which may have been completed pursuant to this Order and the Final EE/CA Work Plan. Respondent shall implement any additional tasks not inconsistent with the NCP which EPA determines are necessary to sufficiently complete the EE/CA and to select a response action that is adequately protective of human health and the environment. The additional tasks, if any, shall be completed in accordance with the standards, specifications and schedule determined or approved by EPA.

If EPA determines, based on review of the draft EE/CA Report or information gathered during the performance of the EE/CA, that a removal action will not fully address the threat posed by the release, and the release may require remedial action, EPA may seek to ensure an orderly transition from removal to remedial response activities.

EPA will compile all documents generated pursuant to this Consent Order and other site-specific information in an Administrative Record for the Site. Upon approval of the Final EE/CA Report, EPA will publish a public notice of availability of the Administrative Record. Pursuant to NCP requirements, a 30-day public comment period will be held on EPA's recommended removal action alternative and other supporting documentation in the Administrative Record. EPA will respond to all significant comments received during the formal comment period and include a written response to comments received in the Administrative Record. EPA will prepare the Action Memorandum for the Site which will substantiate the need for a removal action, identify the selected removal action alternative, and explain the rationale for the removal action selected. Issuance of the Action Memorandum by EPA will complete the EE/CA process required under this Consent Order.

3. Access to Property and Information

Respondent shall provide, and/or obtain access to the Site and off-Site areas to which access is necessary to implement this Order, and provide access to all records and documentation related to the conditions at the Site and the actions conducted pursuant to this Order. Such access shall be provided to EPA employees, contractors, agents, consultants, designees, representatives, and State of North Carolina representatives. Such access provided and/or obtained by Respondent shall permit these individuals to move freely on-Site and at appropriate off-Site areas in order to conduct actions which EPA determines to be necessary. Respondent shall submit to EPA, upon receipt, the results of all sampling or tests and all other data generated by Respondent or its contractor(s), or on the Respondent's behalf during implementation of this Order.

Where action under this Order is to be performed in areas owned by or in possession of someone other than Respondent, Respondent shall use its best efforts to obtain all necessary access agreements within thirty (30) days after the Effective Date of this Order, or as otherwise specified in writing by the RPM. Respondent shall immediately notify EPA if after using its best efforts it is unable to obtain such agreements. Respondent shall describe in writing its efforts to obtain access. EPA may then assist Respondent in gaining access, to the extent necessary to effectuate

the response actions described herein, using such means as EPA deems appropriate. Respondent shall reimburse EPA for all costs and attorneys' fees incurred by the United States in obtaining such access.

4. Record Retention, Documentation, Availability of Information

Respondent shall preserve all data, compilations of data and documents relating to the collection of data and submissions made to EPA relating to work performed under this Order, or relating to the hazardous substances found on or released from the Site, for ten years following completion of the removal actions required by this Order; provided, however, that no privileged document or documents not contained in the above description are required to be preserved by this Section. Respondent agrees that all sampling data and information relating to the collection of sampling data shall not be considered to be privileged. At the end of this ten year-period and thirty (30) days before any document or information is destroyed, Respondent shall notify EPA that such documents and information are available to EPA for inspection, and upon request, shall provide the originals or copies of such documents and information to EPA. In addition, Respondent shall provide documents and information retained under this section at any time before expiration of the ten year- period at the written request of EPA.

Respondent may assert a business confidentiality claim pursuant to 40 CFR § 2.203(b) with respect to part or all of any information submitted to EPA pursuant to this Order, provided such claim is allowed by Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7). Analytical and other data specified in Section 104(e)(7)(F) of CERCLA shall not be claimed as confidential by the Respondent. EPA shall disclose information covered by a business confidentiality claim only to the extent permitted by, and by means of the procedures set forth at, 40 CFR Part 2, Subpart B. If no such claim accompanies the information when it is received by EPA, EPA may make it available to the public without further notice to Respondent.

5. Off-Site Shipments

All hazardous substances, pollutants, or contaminants removed off-Site pursuant to this Order for treatment, storage, or disposal shall be treated, stored, or disposed of at a facility in compliance, as determined by EPA, pursuant to Section 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3), and the off-site rule at 40 CFR 300.440. EPA will provide information on the acceptability of a facility under Section 121(d)(3) of CERCLA and 40 CFR 300.440.

6. Compliance With Other Laws

Respondent shall perform all actions required pursuant to this Order in accordance with all applicable local, state, and federal laws and regulations except as provided in CERCLA Section 121(e) and 40 CFR Section 300.415(i). In accordance with 40 CFR Section 300.415(i), all on-Site actions required pursuant to this Order shall, as determined by EPA, attain applicable or relevant and appropriate requirements ("ARARs") under federal environmental or state environmental or facility siting laws. (See "The Superfund Removal Procedures: Guidance on

the Consideration of ARARs During Removal Actions," OSWER Directive No. 9360.3-02, August 1991). Respondent shall identify ARARs in the Work Plan subject to EPA approval.

7. Emergency Response and Notification of Releases

If any incident, or change in Site conditions, during the actions conducted pursuant to this Order causes or threatens to cause an additional release of hazardous substances from the Site or an endangerment to the public health, welfare, or the environment, Respondent shall immediately take all appropriate action. Respondent shall take these actions in accordance with all applicable provisions of this Order, including, but not limited to the Health and Safety Plan, in order to prevent, abate or minimize such release or endangerment caused or threatened by the release. Respondent shall also immediately notify the RPM at 404-562-8760 or, in the event of his unavailability, shall notify the EPA Hotline at (800) 424-8802 of the incident or Site conditions. If Respondent fails to respond, EPA may respond to the release or endangerment and reserve the right to pursue cost recovery.

In addition, in the event of any release of a hazardous substance from the Site, Respondent shall immediately notify EPA's RPM and the National Response Center at telephone number (800) 424-8802. Respondent shall submit a written report to EPA within seven (7) days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, not in lieu of, reporting under CERCLA Section 103(c) and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. §§ 11001 et seq.

VII. AUTHORITY OF THE EPA REMEDIAL PROJECT MANAGER

The RPM shall be responsible for overseeing the Respondent's implementation of this Order. The RPM shall have the authority vested by the NCP, including the authority to halt, conduct, or direct any work required by this Order, or to direct any other removal action undertaken at the Site. Absence of the RPM from the Site shall not be cause for stoppage of work unless specifically directed by the RPM.

VIII. REIMBURSEMENT OF COSTS

On a periodic basis, EPA shall submit to Respondent a bill for Future Response Costs that includes a SCORPIOS cost summary report. Respondent shall, within forty-five (45) days of receipt of the bill, remit a cashier's or certified check for the amount of the bill made payable to the "Hazardous Substance Superfund," to the following address:

U. S. Environmental Protection Agency, Region 4
Superfund Accounting
Attn: Superfund Collection Officer
P. O. Box 100142
Atlanta, GA 30384

Respondent shall simultaneously transmit a copy of the check to:

Ms. Paula V. Batchelor
U. S. Environmental Protection Agency, Region 4
CERCLA Program Services Branch, 11th floor
Waste Management Division
61 Forsyth St., S.W.
Atlanta, GA 30303

Payments shall be designated as "(Response Costs) - LCP-Holtrachem Site" and shall reference the payor's name and address, the EPA site identification number A47J, and the docket number of this Order.

In the event that the payment for Future Response Costs is not made within forty-five (45) days of Respondent's receipt of the bill, Respondent shall pay interest on the unpaid balance. Interest is established at the rate specified in Section 107(a) of CERCLA. The interest to be paid for Respondent's failure to make timely payments on Future Response Costs shall begin to accrue on the date of Respondent's receipt of the bill. Interest shall accrue at the rate specified through the date of the payment. Payments of interest made under this paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Respondent's failure to make timely payments under this Section.

Respondent may dispute all or part of a bill for Future Response Costs submitted under this Order, if Respondent alleges that EPA has made an accounting error, or if Respondent alleges that a cost item is inconsistent with the NCP. Failure by EPA to bill Respondent on an annual basis shall not limit the authority of EPA to bill Respondent at a later date, nor shall it relieve Respondent of its obligations to pay such amounts.

If any dispute over costs is resolved before payment is due, the amount due will be adjusted as necessary. If the dispute is not resolved before payment is due, Respondent shall pay the full amount of the uncontested costs into the Hazardous Substance Fund as specified above on or before the due date. Within the same time period, Respondent shall pay the full amount of the contested costs into an interest-bearing escrow account. Respondent shall simultaneously transmit a copy of both checks to Ms. Batchelor. Respondent shall ensure that the prevailing party or parties in the dispute shall receive the amount upon which they prevailed from the escrow funds plus interest within seven (7) days after the dispute is resolved.

IX. DISPUTE RESOLUTION

The parties to this Order shall attempt to resolve, expeditiously and informally, any disagreements concerning this Order.

If the Respondent objects to any EPA action taken pursuant to this Order, including billings for future response costs, the Respondent shall notify EPA in writing of its objection(s) within thirty

(30) days of receipt of notice of such action, unless the objection(s) has/have been informally resolved.

EPA and Respondent shall within fourteen (14) days from EPA's receipt of the Respondent's written objection(s) attempt to resolve the dispute through formal negotiations (Negotiation Period). The negotiation period may be extended at the sole discretion of EPA. EPA's decision regarding an extension of the Negotiation Period shall not constitute an EPA action subject to dispute resolution or a final agency action giving rise to judicial review.

Any agreement reached by the parties pursuant to this section shall be in writing, signed by both parties, and shall upon the signature by both parties be incorporated into and become an enforceable element of this Order. If the parties are unable to reach an agreement within the Negotiation Period, an EPA management official at the Division Director level or higher will issue a written decision on the dispute to the Respondent. The decision of EPA shall be incorporated into and become an enforceable element of this Order upon Respondent's receipt of the EPA decision regarding the dispute. Respondent's obligations under this Order shall not be tolled by submission of any objection for dispute resolution under this section.

Following resolution of the dispute, as provided by this section, Respondent shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with EPA's decision, whichever occurs. No EPA decision made pursuant to this section shall constitute a final agency action giving rise to judicial review prior to a judicial action brought by the United States to enforce the decision.

X. FORCE MAJEURE

Respondent agrees to perform all requirements under this Order within the time limits established under this Order, unless the performance is delayed by a force majeure. For purposes of this Order, a force majeure is defined as any event arising from causes beyond the control of Respondent or of any entity controlled by Respondent, including but not limited to its contractors and subcontractors, that delays or prevents performance of any obligation under this Order despite Respondent's best efforts to fulfill the obligation. Force majeure does not include financial inability to complete the work or increased cost of performance.

Respondent shall notify EPA orally within seventy-two (72) hours after the event, and in writing within seven (7) days after Respondent becomes or should have become aware of events which constitute a force majeure. Such notice shall: identify the event causing the delay or anticipated delay; estimate the anticipated length of delay, including necessary demobilization and re-mobilization; state the measures taken or to be taken to minimize the delay; and estimate the timetable for implementation of the measures. Respondent shall take all reasonable measures to avoid and minimize the delay. Failure to comply with the notice provision of this section shall waive any claim of force majeure by the Respondent.

If EPA determines a delay in performance of a requirement under this Order is or was attributable to a force majeure, the time period for performance of that requirement shall be

extended as deemed necessary by EPA. Such an extension shall not alter Respondent's obligation to perform or complete other tasks required by the Order which are not directly affected by the force majeure.

XI. STIPULATED AND STATUTORY PENALTIES

For each day, or portion thereof, that Respondent fails to perform, fully, any requirement of this Order in accordance with the schedule established pursuant to this Order, Respondent shall be subject to stipulated penalties as follows:

Days of Non-Compliance	Penalty ($/day)
Days 1-7	$500
Days 8-14	$1,000
Days 15-45	$3,000
Days 45 and beyond	$7,500

Upon receipt of written demand by EPA, Respondent shall make payment to EPA within thirty (30) days. Interest shall accrue on late payments as of the date the payment is due which is the date of the violation or act of non-compliance triggering the stipulated penalties.

Even if violations are simultaneous, separate penalties shall accrue for separate violations of this Order. Penalties accrue and are assessed per violation per day. Penalties shall accrue regardless of whether EPA has notified Respondent of a violation or act of noncompliance. The payment of penalties shall not alter in any way Respondent's obligation to complete the performance of the work required under this Order.

Violation of any provision of this Order may subject Respondent to civil penalties of up to twenty-seven thousand five-hundred dollars ($27,500) per violation per day, as provided in Section 106(b)(1) of CERCLA, 42 U.S.C. § 9606(b)(1). Respondent may also be subject to punitive damages in an amount up to three times the amount of any cost incurred by the United States as a result of such violation, as provided in Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3). Should Respondent violate this Order or any portion hereof, EPA may carry out the required actions unilaterally, pursuant to Section 104 of CERCLA, 42 U.S.C. § 9604, and/or may seek judicial enforcement of this Order pursuant to Section 106 of CERCLA, 42 U.S.C. § 9606.

XII. RESERVATION OF RIGHTS

Except as specifically provided in this Order, nothing herein shall limit the power and authority of EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing herein shall prevent EPA from seeking legal or equitable relief to enforce the terms of this Order, from taking other legal or equitable action as it deems appropriate and necessary, or from requiring the Respondent in the future to perform additional activities

pursuant to CERCLA or any other applicable law. EPA reserves the right to bring an action against Respondent under Section 107 of CERCLA, 42 U.S.C. § 9607, for recovery of any response costs incurred by the United States related to this Order or the Site and not reimbursed by Respondent.

XIII. OTHER CLAIMS

By issuance of this Order, the United States and EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondent. Neither the United States nor EPA shall be deemed a party to any contract entered into by the Respondent or its directors, officers, employees, agents, successors, representatives, assigns, contractors, or consultants in carrying out actions pursuant to this Order.

Except as expressly provided in Section XIV - Covenant Not To Sue, nothing in this Order constitutes a satisfaction of or release from any claim or cause of action against the Respondent or any person not a party to this Order, for any liability such person may have under CERCLA, other statutes, or the common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106(a) and 107(a) of CERCLA, 42 U.S.C. §§ 9606(a) and 9607(a).

This Order does not constitute a preauthorization of funds under Section 111(a)(2) of CERCLA, 42 U.S.C. § 9611(a)(2). The Respondent waives any claim to payment under Sections 106(b), 111, and 112 of CERCLA, 42 U.S.C. §§ 9606(b), 9611, and 9612, against the United States or the Hazardous Substance Superfund arising out of any action performed under this Order.

No action or decision by EPA pursuant to this Order shall give rise to any right to judicial review except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

Respondent agrees not to, directly or indirectly through a third party, seek judicial review of a decision to list the Site on the NPL, at any time after the Effective Date of this Order based on a claim that changed site conditions that result from the performance of the Work in any way affected the basis for listing the Site.

XIV. COVENANT NOT TO SUE

Except as otherwise specifically provided in this Order, upon issuance of the EPA notice referred to in Section XX - Notice of Completion, EPA covenants not to sue Respondent for judicial imposition of damages or civil penalties or to take administrative action against Respondent for any failure to perform removal actions agreed to in this Order except as otherwise reserved herein.

Except as otherwise specifically provided in this Order, in consideration and upon Respondent's payment of the response costs specified in Section VIII of this Order, EPA covenants not to sue or to take administrative action against Respondent under Section 107(a) of CERCLA for recovery of Future Response Costs incurred by the United States in connection with this removal

action or this Order. This covenant not to sue shall take effect upon the receipt by EPA of the payments required by Section VIII - Reimbursement of Costs.

These covenants not to sue are conditioned upon the complete and satisfactory performance by Respondent of its obligations under this Order. These covenants not to sue extend only to the Respondent and do not extend to any other person.

XV. CONTRIBUTION PROTECTION

With regard to claims for contribution against Respondent for matters addressed in this Order, the Parties hereto agree that the Respondent is entitled to protection from contribution actions or claims to the extent provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4). Nothing in this Order precludes the United States or the Respondent from asserting any claims, causes of action or demands against any persons not parties to this Order for indemnification, contribution, or cost recovery.

XVI. INDEMNIFICATION

Respondent agrees to indemnify, save and hold harmless the United States, its officials, agents, contractors, subcontractors, employees and representatives from any and all claims or causes of action: (A) arising from, or on account of, acts or omissions of Respondent, Respondent's officers, heirs, directors, employees, agents, contractors, subcontractors, receivers, trustees, successors or assigns, in carrying out actions pursuant to this Order; and (B) for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between Respondent, and any persons for performance of work on or relating to the Site, including claims on account of construction delays. In addition, Respondent agrees to pay the United States all costs incurred by the United States, including litigation costs arising from or on account of claims made against the United States based on any of the acts or omissions referred to in the preceding paragraph.

Respondent waives all claims against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between Respondent and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays.

XVII. INSURANCE

At least seven (7) days prior to commencing any on-Site work under this Order, Respondent shall secure, and shall maintain for the duration of this Order, comprehensive general liability insurance and automobile insurance with limits of one million dollars, combined single limit. Within the same time period, Respondent shall provide EPA with certificates of such insurance and a copy of each insurance policy. If Respondent demonstrates by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering some or all of the same risks but in an equal or lesser amount, then

Respondent need provide only that portion of the insurance described above which is not maintained by such contractor or subcontractor.

XVIII. FINANCIAL ASSURANCE

Within thirty (30) days after the effective date of this Order and every year thereafter until notice of completion of work under Section XX, the Respondent shall demonstrate to EPA that it meets one of the financial assurance mechanisms specified in 40 CFR Section 264.143 for the sufficient estimated costs of work to be performed by the Respondent under this Order.

Respondent shall send all documents guaranteeing financial assurance directly to the Superfund Records Program Manager at:

Superfund Records Program Manager
U. S. Environmental Protection Agency, Region 4
61 Forsyth St., S.W.
Atlanta, GA 30303

Such documents must contain notification or a cover letter identifying the particular site which is the subject of the financial guarantee and the docket number of this Agreement. A copy of the document and transmittal letter shall also be sent to the Site attorney at the above address.

XIX. MODIFICATIONS

Modifications to any plan or schedule or Scope of Work may be made in writing by the RPM or at the RPM's oral direction. If the RPM makes an oral modification, it will be memorialized in writing within seven (7) days; provided, however, that the effective date of the modification shall be the date of the RPM's oral direction. Any other requirements of the Order may be modified in writing by mutual agreement of the parties. Any modification made shall be consistent with the NCP.

If Respondent seeks permission to deviate from any approved Work Plan or schedule, Respondent's Project Coordinator shall submit a written request to EPA for approval outlining the proposed Work Plan modification and its basis.

No informal advice, guidance, suggestion, or comment by EPA regarding reports, plans, specifications, schedules, or any other writing submitted by Respondent shall relieve Respondent of its obligation to obtain such formal approval as may be required by this Order, and to comply with all requirements of this Order unless it is formally modified.

XX. NOTICE OF COMPLETION

When EPA determines, after EPA's review of the Final Report, that all removal actions have been fully performed in accordance with this Order, with the exception of any continuing obligations required by this Order, including post-removal site control and record retention, EPA

will provide notice to the Respondent. If EPA determines that any removal actions have not been completed in accordance with this Order, EPA will notify Respondent, provide a list of the deficiencies, and require that Respondent modify the Work Plan if appropriate in order to correct such deficiencies. Respondent shall implement the modified and approved Work Plan and shall submit a modified Final Report in accordance with the EPA notice. Failure by Respondent to implement the approved modified Work Plan shall be a violation of this Order.

XXI. SEVERABILITY

If a court issues an order that invalidates any provision of this Order or finds that Respondent has sufficient cause not to comply with one or more provisions of this Order, Respondent shall remain bound to comply with all provisions of this Order not invalidated or determined to be subject to a sufficient cause defense by the court's order.

XXII. EFFECTIVE DATE

This Order may be executed in any number of counterparts, each of which, when executed and delivered to EPA, shall be deemed to be an original, but such counterparts shall together constitute one and the same document.

This Order shall be effective when the Order is signed by EPA, Region IV.

Honeywell International, Inc.

The undersigned representative of Respondent certifies that it is fully authorized to enter into the terms and conditions of this Order and to bind the party it represents to this document.

Agreed this 28 day of MAY, 2004.

By: David L Wickenhauser

Title: Director R.E.S

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Agreed this 28th day of May, 2004.

By: David L Wickenheiser

Title: Director - R.E.S.

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Title: Director R.E.S

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Honeywell International, Inc.

The undersigned representative of Respondent certifies that it is fully authorized to enter into the terms and conditions of this Order and to bind the party it represents to this document.

Agreed this 28th day of May, 2004.

By: David L Wickenhauer

Title: Director R.E.S.

United States Environmental Protection Agency, Region 4

It is so ORDERED and Agreed this 8th day of June, 2004.

By: Franklin Hill

Franklin Hill, Chief
North Site Management Branch
Waste Management Division
Region IV
U. S. Environmental Protection Agency

SCOPE OF WORK FOR THE
ENGINEERING EVALUATION/COST ANALYSIS
LCP-HOLTRACHEM SITE - REIGELWOOD, NORTH CAROLINA
May 2004

INTRODUCTION

The purpose of this Scope of Work (SOW) is to outline the work to be performed by Respondent for the Engineering Evaluation/Cost Analysis (EE/CA) at the LCP-HoltraChem Site, located in Riegelwood, North Carolina. The scope of this EE/CA includes the collection of the necessary data to determine the nature and extent of contamination for all media, fate and transport of Site contaminants, and streamlined human health and ecological risk assessments to support the selection of a final response action for each media of concern.

TASK 1: EE/CA PLANNING ACTIVITIES

A. EE/CA Work Plan

Respondent shall submit to the United States Environmental Protection Agency (EPA) a Work Plan to conduct the components of an Engineering Evaluation/Cost Analysis as outlined in tasks 2 through 8 in this SOW, and further detailed in the EPA 1993 Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA. The Work Plan shall be developed in conjunction with a Sampling and Analysis Plan and Health and Safety Plan, although each plan may be delivered under separate cover. Up to five copies of the Work Plan and associated documents shall be delivered to EPA (consult with EPA Remedial Project Manager (RPM) for the exact number).

The Work Plan shall include a comprehensive description of the work to be performed, the media to be investigated (i.e., air, ground water, surface water, surface and subsurface soils, and sediments, etc.), the methodologies to be utilized, and the rationale for the selection of each methodology. A schedule for completion of each major activity and submission of each deliverable (reports, documents etc.) shall also be included.

B. Sampling and Analysis Plan

Respondent shall prepare a Sampling and Analysis Plan (SAP) to ensure that sample collection and analytical activities are conducted in accordance with technically acceptable protocols and that the data generated will meet the Data Quality Objectives (DQOs) established. The DQO process is a systematic planning process developed by EPA to ensure that sufficient data are collected to support EPA decision making. A full discussion of the DQO process is provided in *Data Quality Objectives for Superfund: Interim Final Guidance* (U.S. EPA, 1993) and the *Guidance for the Data Quality Objectives Process* (U.S. EPA, 1994). The SAP provides a mechanism for planning field activities and consists of a Field Sampling and Analysis Plan (FSAP) and a Quality Assurance Project Plan (QAPP).

The FSAP shall define in detail the sampling and data-gathering methods that shall be used during the project. It shall include sampling objectives, sample location (horizontal and vertical) and frequency, sampling equipment and procedures, and sample handling and analysis. The QAPP shall describe the project objectives and organization, functional activities, and quality assurance and quality control (QA/QC) protocols that shall be used to achieve the desired DQOs. The QAPP shall be prepared in accordance with "EPA Requirements for Quality Assurance Project Plans (QA/R-5)" (EPA/240/B-01/003, March 2001) and "EPA Guidance for Quality Assurance Project Plans (QA/G-5)" (EPA/600/R-98/018, February 1998). In addition, the QAPP shall address personnel qualifications, sampling procedures, sample custody, analytical procedures, and data reduction, validation, and reporting. These procedures must be consistent with the EPA Region 4 Science and Ecosystems Support Division, "Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM)" (November 2001).

C. Health and Safety Plan

A Health and Safety Plan shall be prepared in conformance with Respondent's health and safety program, and in compliance with OSHA regulations and protocols.

TASK 2: SITE CHARACTERIZATION

As part of the EE/CA, the Respondent shall perform the activities described in this task. The overall objective of Site Characterization is to use existing data and collect additional data to describe areas of the Site that may pose a threat to human health or the environment. This objective is accomplished by first documenting Site location, meteorology, history, surrounding land use and populations, ecosystems, and determining the physiography, geology, and hydrology of the Site. Respondent shall then identify the sources of contamination and define the nature, extent, and volume of the sources of contamination, including their physical and chemical constituents and concentrations in the affected media. All areas identified in Attachment DD of the November 1999 Hazardous Waste Management Permit for the facility must be addressed (see Attachment B of this SOW). Surface and subsurface pathways of migration shall also be defined. Respondent shall also investigate the extent of migration of this contamination as well as its volume and any changes in its physical or chemical characteristics. This investigation will provide for a comprehensive understanding of the nature and extent of contamination at the Site. Using this information, contaminant fate and transport shall be determined and projected.

During the Site characterization phase, the Work Plan, SAP, and Health and Safety Plan shall be implemented. Field data shall be collected and analyzed to provide the information required to accomplish the objectives of the study. Respondent shall notify EPA at least two weeks in advance of any field data collection activities (i.e., sampling, drilling, etc) conducted as part of this EE/CA. Respondent shall demonstrate that the laboratory and type of laboratory analyses that will be utilized during Site Characterization meets the specific QA/QC requirements and the Data Quality Objectives (DQOs) as specified in the SAP.

A. Field Investigation

The field investigation includes the gathering of data to define physical characteristics, sources of contamination, and the nature and extent of contamination at the Site. These activities shall be performed by the Respondent in accordance with the Work Plan and SAP. At a minimum, this investigation shall include the following activities:

1. Investigating and Defining Site Physical Characteristics

The Respondent shall collect data on the physical characteristics of the Site and its surrounding areas including, but not limited to, the physiography, geology, and hydrology, and specific physical characteristics identified in the Work Plan. This information shall be ascertained through a combination of physical measurements, observations, and sampling efforts and shall be utilized to define potential transport pathways and receptor populations. In defining the physical characteristics of the Site, Respondent shall also obtain sufficient engineering data (such as pumping characteristics, soil particle size, permeability, etc.) for the projection of contaminant fate and transport and the development and evaluation of the response action alternatives for each media of concern.

2. Defining Sources of Contamination

The Respondent shall locate each source of contamination. For each location, the lateral and vertical extent of contamination shall be determined by sampling at incremental depths on a sampling grid or in another organized fashion approved by EPA. The physical characteristics and chemical constituents and their concentrations shall be determined for all known and discovered sources of contamination. The Respondent shall conduct sufficient sampling to define the boundaries of the contaminant sources to the level established in the QA/QC plan and DQOs. Sources of contamination shall be analyzed for the potential of contaminant release (e.g., long term leaching from soil into groundwater, runoff into nearby surface water bodies (including drainage creeks), airborne transport to on- and off-site locations), contaminant mobility and persistence, and characteristics important for evaluating response actions, including information necessary to evaluate treatment technologies.

3. Determining the Nature and Extent of Contamination

Respondent shall gather information to describe and determine the nature and extent of contamination in each media of concern during the field investigation. Respondent shall utilize existing information on Site physical characteristics and sources of contamination to identify data gaps. To the extent that data gaps are identified, Respondent shall obtain additional or confirmatory data using analytical techniques sufficient to detect and quantify the concentration of contaminants. Respondent shall determine and describe migration pathways of contaminants through the various media at the Site. In addition, Respondent shall gather data for calculations of contaminant fate and transport. The

Respondent shall determine the lateral and vertical extent of contamination to the contaminant concentrations consistent with the established DQOs set forth in the QAPP. Respondent shall use this information to develop the risk evaluation contemplated by Task 3 and to determine aspects of the appropriate response action alternatives.

During the ecological risk assessment, in addition to on-site areas being evaluated, a portion of the Cape Fear River shall also be evaluated. This will be limited to known current and estimated historical drainage pathways from the Site to the River, a few upstream samples to reflect background conditions, depositional areas along the river that are adjacent to the Site, the first two depositional areas along the river from the Site drainage pathways, and up to three downgradient sample locations. This will not become a full river study. The objective is to assess if any contamination has migrated from the Site to the river and whether it is at concentrations which would adversely affect ecological receptors.

B. Data Analyses

Respondent shall analyze and evaluate the data to describe: (1) physical characteristics of the Site; (2) contaminant source characteristics; (3) nature and extent of contamination; and (4) contaminant fate and transport. The information on physical characteristics, source characteristics, and nature and extent of contamination shall be used in the analysis of contaminant fate and transport. The evaluation shall include the actual and potential magnitude of releases from the sources and lateral and vertical spread of contamination as well as mobility and persistence of contaminants. Where modeling is appropriate, such models shall be identified to EPA in a technical memorandum prior to their use. All data and programming, including any proprietary programs, shall be made available to EPA together with a sensitivity analysis. All models shall be approved by EPA prior to their use. The data shall be presented in a computer disk format utilizing Microsoft Excel, Lotus 1-2-3 or other equivalent commonly used computer software. Analyses of data collected for Site Characterization shall meet the DQOs developed in the QAPP.

C. Data Management Procedures

The Respondent shall consistently document the quality and validity of field and laboratory data compiled during the EE/CA. At a minimum, this documentation shall include the following activities:

1. Documenting Field Activities

Information gathered during characterization of the Site shall be consistently documented and adequately recorded by Respondent in well-maintained field logs and laboratory reports. The method(s) of documentation must be specified in the Work Plan and/or the SAP. Field logs must be utilized to document observations, calibrations, measurements, and significant events that have occurred during field activities. Laboratory reports must document sample custody, analytical responsibility, analytical results, adherence to

prescribed protocols, nonconformity events, corrective measures, and/or data deficiencies.

2. Maintaining Sample Management and Tracking

Respondent shall maintain field reports, sample shipment records, analytical results, and QA/QC reports to ensure that only validated analytical data and/or data accepted and utilized by EPA are reported and utilized in the development and evaluation of the Risk Assessment and Response Action Alternatives. Respondent shall submit to EPA results of all sampling or tests and all other data generated by Respondent or their contractor(s). Analytical results developed under this Work Plan shall not be included in any characterization reports for the Site unless accompanied by or cross-referenced to a corresponding QA/QC report. In addition, Respondent shall establish a data security system to safeguard chain-of-custody forms and other project records to prevent loss, damage, or alteration of project documentation.

TASK 3: BASELINE RISK ASSESSMENT

Respondent shall perform streamlined risk assessments to determine baseline risks to human health and the environment caused by the Site, and to establish cleanup level options. In general terms, the goal of the risk evaluation is to (1) provide an analysis of the baseline risks and help determine the need for a response action in each media of concern, (2) provide a basis for determining levels of chemicals that can remain onsite and still be adequately protective of public health and ecological receptors, (3) provide a basis for comparing potential health end ecological impacts of various response action alternatives, and (4) provide a consistent process for evaluating and documenting public health and ecological threats at the Site. A scoping meeting between Respondent and EPA RPM and risk assessor shall be held to discuss the format and scope of the risk evaluation. Reference 21 of this SOW is the baseline risk assessment portion of a standard Remedial Investigation / Feasibility Study (RI/FS) SOW. Reference 21 shall be used during the scoping meeting as the starting point of the discussions for the preparation of the Site specific risk assessment report.

The human health risk assessment shall be conducted in accordance with EPA's Risk Assessment Guidance for Superfund Volume 1- Human Health Evaluation Manual, and with Region 4 risk assessment policy. The Ecological portion of the risk assessment shall be conducted in accordance with the Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (S.D. Luftig, 1997, June 2 Memorandum, OSWER, EPA-540-R-97-006).

TASK 4: IDENTIFICATION OF RESPONSE ACTION SCOPE, GOALS, AND OBJECTIVES

The EE/CA shall contain a statement indicating that the objectives of any future response action at the Site are to address unacceptable risks posed by the Site. The objectives shall be further

detailed to take into consideration future land use at the Site and that the response action must comply with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), comply with Federal and State Applicable and Relevant and Appropriate Requirements (ARARs) and/or achieve risk-based cleanup levels. The EE/CA shall also include a general schedule for the response activities, which includes estimated start and completion dates.

TASK 5: IDENTIFICATION AND ANALYSIS OF RESPONSE ACTION ALTERNATIVES

Based on the analysis of the nature and extent of contamination and on the Response Action Objectives developed, Respondent shall identify and assess a limited number of alternatives appropriate for addressing the Response Action Objectives. The alternatives shall consist of a range of general response actions that address contamination at the Site. Treatability Studies shall be performed by Respondent on an as-needed basis to evaluate potential treatment technologies. If applicable, study results and operating conditions will later be used in the detailed design of the selected response technology. If a treatability study is needed, Respondent shall identify in a technical memorandum, subject to EPA review and comment, candidate technologies to be evaluated. Implementation of a treatability study shall be provided for in a Treatability Study Work Plan.

Each alternative shall be evaluated against the following list of criteria:

-Overall Protection of Public Health and the Environment
-Compliance with ARARs and Other Criteria, Advisories, and Guidance
-Long-Term Effectiveness and Permanence
-Reduction of Toxicity, Mobility, or Volume Through Treatment
-Short-Term Effectiveness
-Implementability
-Cost
-State Acceptance
-Community Acceptance

These criteria are described in greater detail in section 2.6, pages 35-45 of the EPA Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA (August 1993).

TASK 6: COMPARATIVE ANALYSIS OF RESPONSE ALTERNATIVES

A comparative analysis shall be conducted to evaluate the relative performance of each alternative in relation to each criteria under task 5. The purpose of the comparative analysis is to identify the advantages and disadvantages of each alternative relative to one another so that key tradeoffs that would affect the remedy selection can be identified.

TASK 7: REPORTING

A. Monthly Progress Reports

A monthly progress report shall be sent to the RPM by the 10th of each month beginning the month after the signature of the EE/CA AOC and ending upon EPA approval of the EE/CA Report. The format of the monthly report shall include the following:

- Major Activities for the previous month.

- Planned Activities for the present month.

- Problems Encountered.

- Data and Results obtained through field work.

- Updated schedule for remainder of work to be completed.

B. EE/CA Report

A Draft EE/CA Report shall be submitted for EPA's review and technical comment. An electronic version of the Draft report shall also be submitted on a computer disk or CD, in a common software format, such as Corel Word Perfect, Microsoft Word, Microsoft Excel, Lotus 1-2-3, or Adobe PDF. NC DENR shall also have opportunity to review and comment on the draft EE/CA Report. The draft EE/CA Report shall summarize available analytical data to spatially evaluate the nature/extent of contaminants present in the media of concern, and to identify potential sources of such contaminants. The draft EE/CA Report shall include a streamlined risk assessment to evaluate potential risks posed to human health and the environment under the assumption that no response action would be taken at the Site. The streamlined risk assessment should focus on the specific Removal Action Objectives and should be consistent with established EPA protocols delineated in EPA's *Risk Assessment Guidance for Superfund* and other appropriate supplements or addenda thereto. The results of the streamlined risk assessment will be utilized by EPA to determine whether a CERCLA response action is warranted at the Site, what exposures need to be addressed by the response action, and define appropriate cleanup goals. The draft EE/CA Report shall identify and analyze Removal Action Alternatives based on the response action evaluation criteria of effectiveness, implementability, and cost. Subsequent to a comparative analysis of identified Removal Action Alternatives, the draft EE/CA Report shall conclude with a refined conceptual description of the recommended Removal Action Alternative.

A Final EE/CA report shall be produced and submitted to EPA for approval. Up to five copies of the EE/CA report should be submitted (confer with EPA RPM for the exact number of copies). The report shall include in an organized fashion the information produced in accordance with tasks 2 through 6. In addition, the report shall contain an executive summary consisting of a

general overview of the contents of the EE/CA and a brief discussion of the Site and the current or potential threat posed by the Site. An electronic version of the Final report shall also be submitted on a computer disk or CD, in a common software format, such as Corel Word Perfect, Microsoft Word, Microsoft Excel, Lotus 1-2-3, or Adobe PDF.

TASK 8 - EPA SUPPORT

There are several activities integral to the EE/CA process that will be conducted by EPA. Respondent shall, on an as-needed basis, support the Agency with these activities.

A. Community Relations

The NCP and CERCLA direct EPA to implement the following activities to help discern the needs of the community associated with the Site. It is anticipated that EPA will perform the majority of these tasks, but some will be required of the Respondent.

-Designate a community relations spokesperson
-Perform community interviews
-Prepare a Community Relations Plan
-Establish an information repository
-Provide public notice of EE/CA availability
-Establish and make available an Administrative Record
-Hold a public comment period upon issuance of recommended response alternative (EPA may hold a public meeting during this period to aid in soliciting community input)
-Develop written responses to comments on the recommended response alternative

B. Determination of Recommended Response Action Alternative and preparation of the Action Memorandum

Upon submittal and approval of the EE/CA, EPA will generate a document outlining the recommended Response Action Alternative, if any, hold a public comment period and produce a final Action Memorandum, if necessary, that determines the Response Action to be implemented.

ATTACHMENT A

REFERENCES

The following list, although not comprehensive, comprises many of the regulations and guidance documents that apply to the EE/CA process:

1. The National Oil and Hazardous Substances Pollution Contingency Plan, March 8, 1990.

2. "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final" U.S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive No. 9355.3-01.

3. "A Compendium of Superfund Field Operations Methods," Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.

4. "EPA NEIC Policies and Procedures Manual," May 1978, revised November 1984, EPA-330/9-78-001-R.

5. "Data Quality Objectives for Remedial Response Activities," U.S. EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA/540/G-87/003, March 1987, OSWER Directive No. 9335.0-7B.

6. "Users Guide to the EPA Contract Laboratory Program," U.S. EPA, Sample Management Office, December 1986.

7. "Interim Guidance on Compliance with Applicable or Relevant and Appropriate Requirements," U.S. EPA, Office of Emergency and Remedial Response, July 9, 1987, OSWER Directive No. 9234.0-05.

8. "CERCLA Compliance with Other Laws Manual," Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (Draft), OSWER Directive No. 9234.1-01 and -02.

9. "Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites," U.S. EPA, Office of Emergency and Remedial Response, (Draft), OSWER Directive No. 9283.1-2.

10. "Risk Assessment Guidance for Superfund (RAGS) Volume I - Human Health Evaluation Manual (HHEM) (Part A, Baseline Risk Assessment)." Interim Final. EPA, Office of Emergency and Remedial Response, EPA/540/1-89/002, 1989.

11. Risk Assessment Guidance for Superfund (RAGS) Volume I - Human Health Evaluation Manual (HHEM) (Part B,Development of risk-based Preliminary Remediation Goals)" U.S. EPA, Office of Emergency and Remedial Response, EPA/540/R-92/003, 1991, OSWER Directive No. 9285.7-01b.

12. "Risk Assessment Guidance for Superfund (RAGS)Volume I - Human Health Evaluation Manual(HHEM)(Part C, Risk Evaluation of Remedial Alternatives)." Interim. U.S. EPA, Office of Emergency and Remedial Response, EPA/540/R-92/004,1991, OSWER Directive No. 9285.7-01C.

13. "Risk Assessment Guidance for Superfund (RAGS)Volume I - Human Health Evaluation Manual(HHEM)(Part D, Standardized Planning, Reporting, and Review of superfund Risk Assessments)." Interim. U.S. EPA, Office of Emergency and Remedial Response, EPA/540/R-92/004, January 1998, OSWER Directive No. 9285.7-01D.

14. "Superfund Exposure Assessment Manual," U.S. EPA, Office of Emergency and Remedial Response, EPA/540/1-88/001, April 1988, OSWER Directive No. 9285.5-1.

15. "Guidance for Data Usability in Risk Assessment," U.S. EPA, Office of Emergency and Remedial Response, EPA/540/G-90/008, October 1990, OSWER Directive No. 9285.7-05.

16. "Health and Safety Requirements of Employees Employed in Field Activities," U.S. EPA, Office of Emergency and Remedial Response, July 12, 1981, EPA Order No. 1440.2.

17. OSHA Regulations in 29 CFR 1910.120 (Federal Register 45654, December 19, 1986).

18. "Community Relations in Superfund: A Handbook," U.S. EPA, Office of Emergency and Remedial Response, June 1988, OSWER Directive No. 9230.0-3B.

19. "Community Relations During Enforcement Activities And Development of the Administrative Record," U.S. EPA, Office of Waste Programs Enforcement, November 1988, OSWER Directive No. 9836.0-1A.

20. "Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM) November 2001" U.S. EPA Region IV, Science and Ecosystems Support Division (revised periodically).

21. Baseline Risk Assessment portion of a RI\FS Statement of Work.

22. "Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA", U.S. EPA, office of Emergency and Remedial Response, August 1993, EPA/540-R-93-057, Publication No. 9360.0-32.

23. "USEPA Contract Laboratory Program Statement of Work for Organics Analysis," U.S. EPA, Office of Emergency and Remedial Response, February 1988.

24. "USEPA Contract Laboratory Program Statement of Work for Inorganics Analysis," U.S. EPA, Office of Emergency and Remedial Response, July 1988.

25. "Supplemental Guidance to RAGS, Region 4 Bulletin" www.epa.gov/region4/waste/oftecser/otsguide.htm

26. "EPA Requirements for Quality Assurance Project Plans (QA/R-5)" EPA/240/B-01/003, March 2001.

27. "EPA Guidance for Quality Assurance Project Plans (QA/G-5)" EPA/600/R-98/018, February 1998.

28. ANSI/ASQC E-4 1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" American National Standard, January 5, 1995.

29. "EPA Requirements for Quality Management Plans (QA/R-2)" EPA/240/B-01-002, March 2001.

30. "Guidance for the Data Quality Objectives Process" Quality Assurance Management Staff, Office of Research and Development, Washington, DC. EPA QA/G-4, 1994.

31. "Data Quality Objectives for Superfund: Interim Final Guidance". Publication 9255.9-01. Office of Emergency and Remedial Response, Washington, DC. EPA 540-R-93-071. NTIS PB94-963203, 1993.

32. "Guidelines for Performing Screening Level Ecological Risk Assessments for Department of Defense, National Priority List, and National Priority List Caliber Sites within the North Carolina Superfund Program." North Carolina Department of Environment and Natural Resources, Division of Waste Management, Superfund Section. November 2002.

33. "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments". EPA-540.R-97-006, OSWER Directive #9285.7-25. June 1997.

34. Ecological Risk Assessment Bulletins. EPA. http://www.epa.gov/region4/waste/ots/otsguid.htm

35. Threatened and Endangered Species in North Carolina http://nc-es.fws.gov/es/countyfr.html

36. Federally-protected species
http://ecos.fws.gov/tess_public/TESSWebpageVipListed?code=V&listings=0#B

37. "Human Health Toxicity Values in Superfund Risk Assessments" EPA. OSWER Directive 9285.7-53. December 5, 2003.
http://www.epa.gov/oerrpage/superfund/programs/risk/hhmemo.pdf

ATTACHMENT B

ATTACHMENT DD OF THE NOVEMBER 1999 HAZARDOUS WASTE MANAGEMENT PERMIT

HOLTRACHEM - NORTH CAROLINA
NCD911278631

ATTACHMENT DD

lid Waste Management Unit and Areas of Concern Summa

Solid Waste Management Unit and Areas of Concern Summary
NOTE: Numbers folrowing SWMU description correspo~d to RFA Repc
List of Solid Waste Management Units requiring an RFI:
SWMU No. DescriQtion
1. Wastewater Treatment Overflow Tank (#4)
2. Wastewater Treatment Clarifier (#5)
3. Drainage Ditch Originating at Collection Box (#11)
4. Rainwater Collection Pond (#13)
5. Pressure Filter (#18)
6. Retort Pad Sump (#21)
7. Mercury Elimination Sewer System Tanks and Sump(s)
8. Sand Filter and Nuchar Filter Area (#37)
9. Hazardous Waste Vault (#15)
10. Concrete Block Sump at Lift Station (#8)
11. Reinforced Concrete Circular Sump (#9)
12. Site Drainage Collection Box (#10)
13. Brine Saturation Pits (#19)
14. Retort Pad (#20)
15. Salvage Yard (#22)
16. Run-on Ditch and Sump (#24)
17. Sump Within Cell Building (#27)
18. Buried Waste Sewer Lines (#40)
19. Old Ash Basin (#42)
List of Solid Waste Management Units with no known releases:
SWMTJ No. DescriQtion
1. Wastewater Storage Tank (#1)
2. --Wastewater Tre,qtment Hydrochloric Acid Storage Tank
3. Wastewater Treatment Surge Tanks (#7)
4. Tank Car Wastewater Tank (#16)
5. Waste Oil Storage Area (#26)
6. Dumpster at Cell Building (#28)
7. Dumpster at Suprapurification System (#31)
8. Sand Filter for Suprapurification System (#32)
9. Clarifier for Suprapurification System (#35)
10. Solvent Storage Area (#25)

III. List of Solid Waste Management Units with a known release to groundwater regulated by State Permit:

SWMU No.	Description
1.	Roberts Pond (Pond #3)* (#17)
2.	South Treatment Pond (#12)
3.	North Hold Pond (#14)

IV. The following is an Area of Concern of contamination which must be evaluated to determine if any residual contamination remains that could pose a present or potential threat to human health environment:

Old Oil Spill Area.

* Clean closure of Roberts Pond has not been successfully demonstrated at the time of permit issuance. Releases have not been confirmed and any corrective measure necessary will be carried out through a modification to the RCRA permit.

REFERENCE 21

Baseline Risk Assessment (BRA) portion of a RI\FS Statement of Work (SOW)

TASK - BASELINE RISK ASSESSMENT

The Respondent will provide a Baseline Risk Assessment (BRA) to EPA for the site, consisting of a Human Health Risk Assessment and an Ecological Risk Assessment.

The Respondent shall prepare a BRA which identifies and characterizes the toxicity and effects of the hazardous substances present, describes contamination fate and transport, evaluates the potential for human exposure, and assesses the risk of potential impact or threats on human health. In addition, as a component of the BRA., the Respondent shall prepare an Ecological Assessment which assesses the risk of potential impacts or threats to the ecology (including both flora and fauna). The BRA will provide EPA a basis for determining wether or not remedial action is necessary, a justification for performing any remedial action that may be required, and risk basis for clean up goals.

The Respondent shall develop the human health portion of the BRA in accordance with the Environmental Protection Agency's (EPA's) Interim Final Risk Assessment Guidance for Superfund - Volume I - Human Health Evaluation Manual (Part A) (December 1989), *Development of Risk-Based Remediation Goals (Part B)* (December 1991), and Standardized Planning, Reporting, and Review of Superfund Risk Assessments (Part D) (December 1997). These documents describe and illustrate the process of gathering and assessing human health risk information in addition to developing remediation goals. Other resources that the Respondent should utilize when performing the BRA include: Exposure Factors Handbook(EPA/600/P-95/002Fa August 1997), Land Use in the CERCLA Remedy Selection Process., OSWER Directive NO. 9355.7-04, May 25, 1995; Soil Screening Guidance; Technical Background Document, 9355.4-17A, EPA/1501 R-95/128, May 1996, Soil Screening Guidance; User's Guide, 9355.4-3, April 1996; The Integrated Risk Information System (IRIS); the Health Effects Assessment Summary Tables (HEAST); the Supplemental Guidance to RAGS Region 4 Bulletins-Human Risk Assessment (November 1995) For preparing the ecological risk assessment, the respondents shall also utilize the Supplemental Guidance to RAGS; Region 4 Bulletins-Ecological Risk Assessment (November, 1995) and the ecological Risk Assessment Guidance for Superfund Process for Design and Conducting the Ecological Risk Assessment (June 1997) . EPA shall identify other guidance for human health and Ecological Assessment as necessary.

EPA has recently issued a Part D to the RAGS guidance titled Interim Risk Assessment Guidance for Superfund: Volume 1 - Human Health Evaluation Manual (Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments) hereafter referred to as RAGS Part D. This guidance document should be used in the development of the human health portion of the BRA. Even though the RAGS Part D guidance suggests that interim deliverables be provided before the draft BRA is delivered, this SOW does not require these interim deliverables.

The information that would be contained in these deliverables should be provided in the draft BRA.

A Draft Baseline Risk Assessment Report (for both Human Health and for Ecological Health) shall be submitted at the completion of Site Characterization. Following comment by EPA, the Respondent shall prepare a Final Baseline Risk Assessment Report.

1. Human Health Risk Assessment

The Human Health Risk Assessment process consists of the four components listed below. A scoping meeting shall be held between Respondent and EPA to discuss the format and scope of the BRA Report as well as any additional references to be utilized during the Human Health Risk Assessment.

A. Data Collection and Evaluation:

The Respondent shall review the information that is available on the hazardous substances present at the site and shall identify the chemicals of potential concern (COPCs). The process of identifying COPCs should follow the guidance provided in Region 4's guidance and RAGS Part D. The data shall be tabulated according to the guidance provided in RAGS Part D. This portion of the BRA shall include a discussion of the rationale for the identification of the COPCs.

B. Exposure Assessment and Documentation:

The Respondent shall identify actual and potential exposure points and pathways. Exposure assumptions must be supported with data and must be consistent with Agency policy. For each exposure point, the release source, the transport media (e.g., ground water, surface water, air, etc.) and the exposure route (oral, inhalation, dermal) must be clearly delineated in the Conceptual model. Both present and future risks at the Site must be developed and presented using reasonable maximum exposure (RME)scenarios . The Human Health Evaluation Manual, Part A and the supplemental guidance entitled Standard Default Exposure Factors, OSWER Directive 9285.6-03 should be consulted in development of exposure assumptions. EPA referenced default exposure assumptions or default assumptions from other approved sources should be used when site specific data are not available. The Respondent shall include, within the BRA, the exposure scenarios with a description of the assumptions made and the use of data and a figure showing the site conceptual model. If it is appropriate to use fate and transport models to estimate the exposure concentration at points spatially separate from monitoring points or media not sampled, these models shall be presented and discussed. Representative data must be utilized and the limitations and uncertainties associated with the models must be documented. The Exposure Assessment Section in the BRA shall contain exposure concentrations typically based on the 95 percent confidence limit on the arithmetic average. The exposure concentration shall be used with the exposure assumptions to determine chemical-specific intake levels for each exposure scenario.

C. Toxicity Assessment and Documentation:

The Respondent shall utilize the information in IRIS, HEAST, and if needed, other similar data bases and other information sources as discussed in the Region 4 guidance, to provide a toxicity assessment of the COPCs. Consult RAGS Part D and Region 4's guidance for specific guidance on what information is needed. This assessment shall include the types of adverse health and/or Ecological effects associated with chemical exposures (including potential carcinogenicity or the toxic effect observed in deriving the Reference Dose (RfD)), the relationships between magnitude of exposures and adverse effects, and the related uncertainties of contaminant toxicity (e.g., the weight of evidence for a chemical's carcinogenicity or the degree of confidence in the RfD).

D. Risk Characterization:

The Respondent shall integrate the information developed during the exposure and toxicity assessments, to characterize and quantify the current and potential risks to human health and the environment posed by the Site. The risk characterization must identify the uncertainties associated with contaminants, toxicities, and exposure assumptions and other guidance provided in the February 1995 Guidance for Risk Characterization from EPA's Science Policy Council.

The human health risk assessment should also include a "central tendency" analysis for the contaminants of concern (COCs) that are identified. This analysis can be used as information to provide perspective for the risk manager and compliance with Agency guidance. Any risk values other than those representing the RME (reasonable maximum exposure) exposure (i.e., central tendency) should be placed in the uncertainty sub-section of the risk characterization section of the BRA. The Supplemental Guidance to RAGS: Region 4 Bulletins (November, 1995) should be consulted for further guidance on central tendency issues.

2. Ecological Risk Assessment

The Respondent shall evaluate and assess the risk to the ecological receptors posed by site contaminants. Respondent shall utilize Agency program guidance, *Ecological Park Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (EPA 540-R-97-006),* and Region 4's Regional Guidance, *Supplemental Guidance to RAGS: Region 4 Bulletins, Ecological Risk Assessment, November 1995)* in evaluating the site. The Ecological Risk Assessment (ERA) Process is composed of the following steps:

A. Screening Level Ecological Risk Assessment

The Screening Level Ecological Risk Assessment (SLERA) is conducted using existing data to determine if the continuation of the Ecological Risk Assessment process is warranted. The SLERA (Steps 1 and 2 of the EPA process) contains a summary of existing information including the site history, description of the ecological setting, the

description of potentially complete pathway(s) and a comparison of the maximum concentrations of constituents of concern to Region 4 Ecological Screening Values (surface water, sediments, and soils) and Sample Quantification Limits ("SQLs") for non-detections. This comparison should result in a table which identifies those constituents of concern whose maximum detected values exceed screening values and those which lack Screening Values. Those constituents of concern which exceed screening value, and those detected constituents of concern which lack screening values are identified as Chemicals of Potential Concern (COPCs). The Risk characterization and Uncertainty sections complete the SLERA. The SLERA shall be submitted for review and approval. At the end of the SLERA a Scientific/Management Decision Point occurs to determine if the risk associated with the site is negligible, or whether there is a need to continue with the subsequent steps of the process.

B. Refinement of COPCs

If EPA determines that further work is needed after submission of the SLERA, Respondent shall proceed with a refinement of COPCs. The objective of the refinement step is to review the inclusion of constituents of concern based on conservative assumptions used in the SLERA. Additional information which may be considered in the refinement step includes magnitude and pattern of exceedances of screening values, pattern of detections, frequency of detections, comparison to background or referenced values, etc. The refinement of COPCs shall be submitted for Agency review and approval, prior to completion of the Problem Formulation portion of Step 3.

C. Problem Formulation

The third step of the ERA process includes compilation of ecotoxicological profiles for the COPCs to provide the information (including Toxicity Reference Values) used along with the fate and transport characteristics of the COPCs for selecting Assessment Endpoints (generally groupings of sensitive biota [sensitive in terms of inherent toxicity or through exposure] that share a common habitat and/or similar feeding strategies). Risk questions are developed for each assessment endpoint. At the conclusion of Step 3, there is a SMDP, which consists of agreement on four items: the assessment endpoints, the exposure pathways, the risk questions, and conceptual model integrating these components. The Problem Formulation Document shall be submitted for Agency review and approval.

D. Study Design and Data Quality Objective Process

Step 4 of the ERA process includes the designation of measurement endpoints to address the Risk Questions developed in Step 3 - Problem Formulation. A Work Plan for the ERA is developed identifying the data quality objectives for the ERA investigation. The methods to be used in Risk Characterization are identified including the assumptions and exposure parameters, statistical methods, etc. The Sampling and Analysis Plan consisting of the Field Sampling Plan, indicting the sampling methods, locations, equipment,

analysis, etc., and the Quality Assurance Project Plan. Both the ERA Work Plan (WP) and the Sampling and Analysis Plan (SAP) shall be submitted to the Agency for review and approval. The completion of the ERA WP and SAP should coincide with an SMDP. Within this SMDP, the ecological risk assessor and the ecological risk manager agree on: (1) selection of measurement endpoints; (2) selection of the site investigation methods; and (3) selection of data reduction and interpretation techniques.

E. Field Verification of Sampling Design

Step 5 of the ERA process is where the suitability and implementability of the Sampling and Analysis Plan is evaluated through field reconnaissance and demonstration of the sampling techniques. Documentation of field verification and/or necessary changes to the Study Design shall be submitted to the Agency for review and approval.

F. Site Investigation and Analysis Phase

Step 6 of the ERA process is the implementation of the Sampling and Analysis Plan. This implementation shall be part of the RI field activities. Any deviations from the approved plan shall be submitted to the Agency for review and approval.

G. Risk Characterization

In Step 7 of the ERA process, the data collected in the site investigation is analyzed according to the Work Plan for the ERA to make a statement concerning the risks posed to ecological receptors comprising the Assessment Endpoints. A weight-of-evidence approach is used to interpret the results of analyses and tests addressing risk questions associated with assessment endpoints. The risk characterization section should include a qualitative and quantitative presentation of the risk results and associated uncertainties. The result of this characterization will determine if there are unacceptable risks posed to ecological receptors by site-related contaminants. If there are unacceptable risks, contaminant levels protective of ecological receptors should be determined and reported as remedial goal options (RGOs). A document containing the Risk Characterization and the RGO development should be submitted to the Agency for review and approval.

DRAFT 03/11/03

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

IN THE MATTER OF:	)	
	)	**Proceeding under Sections 104,**
LCP–Holtrachem Superfund Site,	)	**122(a) and 122(d)(3) of the**
Riegelwood, Columbus County,	)	**Comprehensive Environmental**
North Carolina	)	**Response, Compensation**
	)	**and Liability Act of 1980,**
Honeywell International Inc.,	)	**as amended, 42 U.S.C.**
Respondent	)	**§§ 9604 and 9622.**
	)	
	)	**EPA Docket No.:**

ADMINISTRATIVE ORDER BY CONSENT FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY

I. JURISDICTION

This Administrative Order by Consent (Consent Order) is entered into by the United States Environmental Protection Agency (EPA) with Honeywell International, Inc. (Respondent), pursuant to the authority vested in the President of the United States by Sections 104, 122(a) and 122(d)(3) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended, 42 U.S.C. §§ 9604, 9622(a) and 9622(d)(3). This authority was delegated by the President to the Administrator of the EPA by Exec. Order No. 12580, dated January 23, 1987, 52 Fed. Reg. 2923 (Jan. 29, 1987), and was further delegated to the Regional Administrator of EPA Region 4 and redelegated to the Director, Waste Management Division.

Respondent agrees to undertake all actions required by the terms and conditions of this Consent Order for the conduct and implementation of the Remedial Investigation and Feasibility Study (RI/FS). The Respondent consents to and will not contest EPA jurisdiction regarding this Order.

II. PARTIES BOUND

This Consent Order shall apply to and be binding upon EPA and the Respondent, its agents, successors, assigns, officers, directors, and principals. Respondent is jointly and severally responsible for carrying out all actions required of it by this Consent Order. The signatories to

this Consent Order certify that they are authorized to execute and legally bind the parties they represent to this Consent Order. No change in the ownership or corporate status of the Respondent shall alter its responsibilities under this Consent Order.

The Respondent shall provide a copy of this Consent Order to any subsequent owners or successors before ownership rights are transferred. The Respondent shall provide a copy of this Consent Order to all contractors, subcontractors, laboratories, and consultants which are retained to conduct any work performed under this Consent Order, within fourteen (14) days after the effective date of this Consent Order or the date of retaining their services, whichever is later. Respondent shall condition any such contracts upon satisfactory compliance with this Consent Order. Notwithstanding the terms of any contract, Respondent is responsible for compliance with this Consent Order and for ensuring that its subsidiaries, employees, contractors, consultants, subcontractors and agents comply with this Consent Order.

III. STATEMENT OF PURPOSE

In entering into this Consent Order, the mutual objectives of EPA and Respondent are: (A) with respect to the Remedial Investigation (RI), to determine fully the nature and extent of the threat to the public health or welfare or the environment caused by the release or threatened release of hazardous substances, pollutants, or contaminants at or from the Site into the environment; and (B) with respect to the Feasibility Study (FS), to develop and evaluate alternatives for remedial action to prevent, mitigate or otherwise respond to the migration or the release or threatened release of hazardous substances, pollutants, or contaminants from the Site; and (C) to recover response and oversight costs incurred by EPA with respect to this consent order.

The activities conducted pursuant to this Consent Order will be consistent with the National Contingency Plan (NCP), 40 C.F.R. Part 300, et seq., and will be subject to the express EPA approvals as set forth below.

IV. FINDINGS OF FACTS

The following constitutes an outline of the facts upon which this Consent Order is based:

A. The Holtrachem facility is a former chlor-alkali manufacturing facility that produced chlorine, sodium hydroxide, sodium hypochlorite and hydrochloric acid using the mercury cell process. The facility was constructed in 1963 and operated until 2000. The facility is located on a property of approximately 26 acres, situated in an industrial setting at One Industrial Drive, Riegelwood, Columbus County, North Carolina. The Site property is adjacent to the International Paper Company (IP), which borders the facility property on all sides except the north-northeast, which is bordered by the Cape Fear River. The Site herein shall mean the Holtrachem facility and all areas where hazardous substances, pollutants or contaminants released from the facility, or released as a result of operations thereof, have come to be located.

B. The Site is located in the Atlantic Coastal Plain region, and is underlain by a 1000-foot thick sequence of unconsolidated sedimentary rocks resting on crystalline bedrock. The principal hydrogeologic unit beneath the site consists of sandy sediments of the Penholoway formation, which hosts the surficial aquifer. The underlying Peedee Formations consists of clay rich strata, and forms a regional aquiclude that isolates the surficial aquifer from other units. During the April 2002 sampling event, the surficial aquifer ranged from 3.5-feet to 7.8-feet below ground surface. Groundwater flow in the surficial aquifer is northerly toward the Cape Fear River, at a rate of approximately 1.5-feet per year. Groundwater in the surficial aquifer is likely to discharge either to surface seeps in ravines near the northern site boundary, or to discharge directly to the bed of the Cape Fear River. Depth to the deeper aquifer is estimated at 27-feet below ground surface.

C. Respondent, Honeywell International, Inc., is a Delaware corporation with headquarters in Morristown, New Jersey.

D. Honeywell International, Inc. is the successor to Honeywell, Inc. and AlliedSignal by merger of Honeywell, Inc. and AlliedSignal in 1999.

E. AlliedSignal, formerly Allied-Chemical, owned and operated the Site facility from 1963 to 1979.

F. The Site contains two rainwater ponds, which collect mercury contaminated rainwater runoff. The Site contains three waste lagoons identified as the North, South and Roberts Pond. The North and South Ponds were "closed dirty" in 1987 under the RCRA program. Roberts Pond has not completed final closure.

G. Hurricane Floyd and associated flooding caused an overtopping/breach in one rainwater collection pond in September, 1999. Surface soil sampling results in June 2001 performed by NCDENR indicated that mercury may have been transported out of the pond and into surface soils adjacent to the pond. After sampling events in 2001 by the North Carolina Department of Environment and Natural Resources indicated elevated levels of mercury, NCDENR referred the Site to the EPA Emergency Response and Removal Branch (ERRB) in January, 2002.

H. NCDENR investigated soil and groundwater during an integrated Expanded Site Inspection/Removal Assessment (iESI/RA) in April 2002. The investigation found onsite soil levels of mercury, hexachlorobenzene, PCB01254 2,3,4,7,8 -Pentachlorodibenzofuran, and 1,2,3,4,6,7,8 - Heptachlorodibenzofuran exceed residential soil exposure benchmarks. Also observed were releases of mercury, vanadium, and arsenic to groundwater above benchmarks. In addition, the following compounds were observed in the sediment of the adjacent Cape Fear River: cadmium, mercury, sodium, calcium, 1,2,3,56,7,8 - Hexachlorodibenzofuran, 1,2,3,4,6,7,8 - Heptachlorodibenzofuran, and Octachlorodibenzofuran.

I. In July 2002, Respondent entered into an administrative order on consent with EPA to perform of a time-critical removal action at the Site.

V. CONCLUSIONS OF LAW

A. The Site is a facility within the meaning of Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

B. The Respondent is a person as defined in Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

C. The Respondent is a responsible party under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

D. Contaminants found at the Site as described in Section IV above are hazardous substances within the meaning of Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), or constitute a pollutant or contaminant that may present an imminent and substantial danger to the public health or welfare under Section 104(a)(1) of CERCLA, 42 U.S.C. 9604(a)(1).

E. The hazardous substances described have been released into the environment and its potential migration pathways constitute both an actual release and threatened release within the meaning of Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

VI. DETERMINATIONS

Based on the Findings of Fact and Conclusions of Law set out above, EPA has determined that:

A. The actual and/or threatened release of hazardous substances from the Site may present an imminent and substantial endangerment to the public health or welfare or the environment.

B. The actions required by this Consent Order are necessary to protect the public health and/or welfare and/or the environment.

C. In accordance with Section 104(a)(1) of CERCLA, 42 U.S.C. § 9604(a)(1), EPA has determined that the work to be performed pursuant to this Consent Order, if performed according to the terms of this Order, will be done properly and promptly by the Respondent. EPA has also determined that the Respondent is qualified to conduct such work.

VII. WORK TO BE PERFORMED

All aspects of the Work to be performed by Respondent pursuant to this Consent Order shall be under the direction and supervision of a qualified contractor who shall be a qualified professional engineer or geologist with expertise in hazardous site cleanup, the selection of which shall be subject to approval by EPA. Within fifteen (15) days after the effective date of this Consent Order, Respondent shall submit to EPA in writing the name, title, and qualifications of any supervising contractor proposed to be used in carrying out the RI/FS to be performed pursuant to this Consent Order. With respect to any proposed contractor, the Respondent shall demonstrate

that the proposed contractor has a quality system which complies with ANSI/ASQC E4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs," (American National Standard, January 5, 1995), by submitting a copy of the proposed contractor's Quality Management Plan (QMP). The QMP should be prepared in accordance with "EPA Requirements for Quality Management Plans (QA/R-2)," (EPA/240/B-01/002, March 2001) or equivalent documentation as determined by EPA. EPA shall notify the Respondent of its approval or disapproval in writing, within twenty (20) calendar days of its receipt of this submission by the Respondent.

If EPA disapproves of the selection of any contractor, Respondent shall submit a list of alternate contractors to EPA within fifteen (15) days of receipt of EPA's disapproval of the contractor previously selected. EPA shall, within twenty (20) calendar days of receipt of the list, provide written notice of the names of the contractors that it approves. The Respondent may at its election select any one from that list. Respondent shall notify EPA of the name of the contractor selected within fifteen (15) calendar days of EPA's notice of the approved contractors.

If, at any time thereafter, Respondent proposes to change any contractor, Respondent shall give written notice to EPA and shall obtain approval from EPA before the new contractor performs any work under this Consent Order.

Based on the foregoing, it is hereby AGREED TO AND ORDERED that the following work will be performed:

A. Within forty-five (45) calendar days of the effective date of this Consent Order, Respondents shall submit to EPA a plan for a complete Remedial Investigation and Feasibility Study (RI/FS Work Plan). The RI/FS Work Plan shall be developed and submitted in conjunction with a Sampling and Analysis Plan and a Health and Safety Plan, although each plan may be delivered under separate cover. These plans shall be developed in accordance with the National Contingency Plan and the attached Scope of Work (SOW) (**Attachment 1**) which is hereby made a part of this Consent Order as if fully set forth herein. The RI/FS Work Plan shall include a comprehensive description of the work to be performed, the medias to be investigated (i.e., air, groundwater, surface water, surface and subsurface soils and sediments, etc.), the methodologies to be utilized, and the rationale for the selection of each methodology. A comprehensive schedule for completion of each major activity required by this Consent Order and the submission of each deliverable listed in the RI/FS Scope of Work shall also be included. Such schedule shall reflect submittal of the Draft Feasibility Study within the time provided in Attachment C to the SOW.

The Sampling and Analysis Plan (SAP) shall include procedures to ensure that sample collection and analytical activities are conducted in accordance with technically acceptable protocols, including, without limitation, "EPA Guidance for Quality Assurance Project Plans (QA/G-5)"(EPA/600/R-98/018, February 1998), and "EPA Requirements for Quality Assurance Project Plans (QA/R-5)" (EPA 240/B-01/003, March 2001), and that the data generated will meet the Data Quality Objectives (DQOs) established. The SAP provides a mechanism for planning field activities and consists of a Field Sampling and Analysis Plan (FSAP) and a Quality Assurance Project Plan (QAPP).

The FSAP shall define in detail the sampling and data-gathering methods that shall be used on the project. It shall include sample objectives, sample location (horizontal and vertical) and frequency, sampling equipment and procedures, and sample handling and analysis. The QAPP shall describe the project objectives and organization, functional activities, and quality assurance and quality control (QA/QC) protocols that shall be used to achieve the desired DQOs.

A Health and Safety Plan shall be prepared in conformance with the Respondent's health and safety program and OSHA regulations and protocols.

B. Within thirty (30) days of a request by EPA, Respondent shall provide EPA with a draft Technical Assistance Plan (TAP) for providing and administering $50,000 of Respondent's funds to be used by selected representatives of the community to hire independent technical advisors during the Work conducted pursuant to this Consent Order. The TAP shall state that Respondent will provide and administer any additional amounts needed if the selected community group demonstrates such a need, as determined by EPA, pursuant to the requirements set out in 40 C.F.R. 35.4065. EPA may approve, disapprove, require revisions to, or modify the draft TAP in whole or in part. If EPA requires revisions to the TAP, Respondent shall amend and submit to EPA a revised TAP that is responsive to EPA's comments, within twenty (20) days of receiving EPA's comments. Once approved, or approved with modifications, the TAP and any subsequent modifications shall be incorporated into and become fully enforceable under this Consent Decree. Respondent shall implement the TAP as approved in writing by EPA.

C. Respondent will perform the Baseline Risk Assessment. The major components of the Baseline Risk Assessment include contaminant identification, exposure assessment, toxicity assessment, and human health and ecological risk characterization.

Respondent will prepare and submit to EPA for comment and approval a Baseline Risk Assessment Report. EPA will release this Report to the public at the same time it releases the final RI Report. Both reports will be put into the administrative record for the Site.

EPA will respond to all significant comments on the Baseline Risk Assessment that are resubmitted during the formal comment period in the Responsiveness Summary of the Record of Decision.

D. Respondent will implement the RI/FS Work Plan approved by EPA. The EPA approved RI/FS Work Plan and any EPA approved amendments thereto will be attached to and incorporated in this Consent Order as **Attachment 2**. The RI/FS will be conducted in accordance with the schedule contained in the RI/FS Work Plan as approved by EPA.

E. Respondent shall submit to EPA written monthly progress reports which: (1) describe the actions which have been taken toward achieving compliance with this Consent Order during the previous month; (2) include all results of sampling and tests and all other data received by Respondent during the course of the work; (3) include all plans and procedures completed under the Work Plan during the previous month; (4) describe all actions, data, and plans which are scheduled for the next month, and provide other information relating to the

progress of the work as deemed necessary by EPA; and (5) include information regarding percentage of completion, unresolved delays, encountered or anticipated, that may affect the future schedule for implementation of the Scope of Work and/or RI/FS Work Plans, and a description of efforts made to mitigate those delays or anticipated delays. These progress reports are to be submitted to EPA by the fifth day of every month following the effective date of this Consent Order.

F. Deliverables, including reports, plans or other correspondence to be submitted pursuant to this Consent Order, shall be sent by regular certified mail, express mail or overnight delivery to the following addresses or to such other addresses as the EPA hereafter may designate in writing.

Samantha Urquhart-Foster
Remedial Project Manager
EPA - Region IV
Waste Management Division
61 Forsyth St., SW
Atlanta, Georgia 30303

The number of copies to be submitted to EPA for each deliverable is identified in the RI/FS Scope of Work. For informational purposes documents (two copies) shall be sent to:

David Mattison
NC DENR Superfund Section
401 Oberlin Road, Suite 150
Raleigh, NC 27605

Documents to be submitted to the Respondent's Project Coordinator should be sent to:

_____
_____
_____
_____
_____

G. EPA may determine that other tasks, including remedial investigatory work and/or engineering evaluation, are necessary as part of an RI/FS in addition to EPA-approved tasks and deliverables, including reports, which have been completed pursuant to this Consent Order. The Respondent shall implement any additional tasks which EPA determines are necessary as part of the RI/FS and which are in addition to the tasks detailed in the RI/FS Work Plan. The additional work shall be completed in accordance with the standards, specifications, and schedule determined or approved by EPA.

H. Any response actions conducted by Respondent outside the scope of the Administrative Order on Consent for Removal Action previously entered into between Respondent and EPA, EPA Docket No. CER-04-2002-3771 (the "Removal AOC"), during the

course of the implementation of this RI/FS AOC, including the removal of any soil, debris, or other material or substance from the Site (hereinafter "Interim Measures") shall be subject to EPA approval and oversight pursuant to the terms and conditions of this Consent Order. Such Interim Measures shall be set forth in the RI/FS Work Plan, or an appropriate amendment thereto, and such Work Plan or amendment thereto shall be approved by EPA before Respondent can begin implementation of the proposed Interim Measures.

With respect to any Interim Measures proposed by Respondent under this Consent Order, Respondent shall also provide EPA (in the Work Plan or an amendment thereto) with a proposal for Site control upon completion of the measures consistent with section 300.415(k) of the NCP and OSWER Directive 9360.2-02. Upon EPA approval, Respondent shall implement such control and shall provide EPA with documentation of all Site control arrangements.

VIII. SUBMISSIONS REQUIRING AGENCY APPROVAL

A. EPA reserves the right to comment on, modify and direct changes for all deliverables. Upon receipt of any plan, report or other item which is required to be submitted for approval pursuant to this Consent Order, EPA shall either: (1) approve the submission; or (2) disapprove the submission, notifying Respondent of deficiencies. If such submission is disapproved, EPA shall either: (1) notify the Respondent that EPA will modify the submission to cure the deficiencies; or (2) direct the Respondent to modify the submission to cure the deficiencies.

B. Upon receipt of a notice of disapproval and notification directing modification of the submission, Respondent shall, within thirty (30) days, cure the deficiencies and resubmit the plan, report, or other item for approval. Notwithstanding the notice of disapproval, Respondent shall proceed to take any action required by any nondeficient portion of the submission.

C. In the event of approval or modification of the submittal by EPA, Respondent shall proceed to take any action required by the plan, report, or other item, as approved or modified.

D. If, upon resubmission, the plan, report, or item is not approved, Respondent shall be deemed to be in violation of this Consent Order and stipulated penalties shall begin to accrue pursuant to Section XVI of this Consent Order. EPA retains the right to seek stipulated or statutory penalties, to require the amendment of the document, to perform additional studies, to conduct a complete RI/FS pursuant to its authority under CERCLA, and to take any other action, including, but not limited to, enforcement action to recover its costs pursuant to its authority under CERCLA.

E. Neither failure of EPA to expressly approve or disapprove of Respondent's deliverables within a specified time period, nor the absence of comments, shall be construed as approval by EPA. Respondent is responsible for preparing and submitting deliverables acceptable to EPA.

F. Respondent shall make presentations at, and participate in, meetings at the request of EPA during the initiation, conduct and completion of the RI/FS. In addition to the discussion

of the technical aspects of the RI/FS, topics will include anticipated problems or new issues. Meetings will be scheduled at EPA's discretion.

G. Within thirty (30) days after the completion of any Interim Measures the Respondent shall submit a final report summarizing the actions taken.

H. The provisions of this Consent Order shall govern all proceedings regarding the RI/FS work conducted pursuant to this Consent Order. In the event of any inconsistency between this Consent Order and any required deliverable submitted by Respondent, the inconsistency will be resolved in favor of this Consent Order and the SOW.

IX. DESIGNATED PROJECT COORDINATORS

A. On or before the effective date of this Consent Order, EPA and Respondent will each designate a Project Coordinator and an Alternate Project Coordinator. The "Project Coordinator" for EPA will be the Remedial Project Manager (RPM) responsible for this Site. Each Project Coordinator will be responsible for overseeing the implementation of this Consent Order. The EPA Project Coordinator will be EPA's designated representative at the Site. To the maximum extent possible, communications between Respondent and EPA, including all documents, reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Consent Order, will be directed through the Project Coordinators.

B. EPA and Respondent each have the right to change their respective Project Coordinator. Such a change will be accomplished by notifying the other party in writing at least five (5) calendar days prior to the change.

C. The EPA designated Project Coordinator will have the authority vested in an RPM or OSC by the National Contingency Plan, 40 C.F.R. Part 300, as amended. This includes the authority to halt, conduct, or direct any work required by this Consent Order, or any response actions or portions thereof when he or she determines that conditions may present an immediate risk to public health or welfare or the environment.

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

E. EPA shall arrange for a qualified person to assist in its oversight and review of the conduct of the RI/FS, as required by Section 104(a) of CERCLA, 42 U.S.C. 9604(a). The oversight assistant may observe work and make inquiries in the absence of EPA, but is not authorized to modify the work plan.

X. QUALITY ASSURANCE, SAMPLING AND DATA ANALYSIS

A. Respondent shall use quality assurance, quality control, and chain of custody procedures in accordance with EPA's "Interim Guidelines and Specifications For Preparing Quality Assurance Project Plans" (QAMS-005/80) and EPA Region 4 Science and Ecosystem

Support Division, Enforcement and Investigations Branch's "Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM) November 2001", and subsequent amendments to such guidelines. Prior to the commencement of any monitoring project under this Consent Order, Respondent shall submit for review, modification and/or approval by EPA, a Quality Assurance Project Plan ("QAPP") that is consistent with applicable guidelines. Sampling data generated consistent with the QAPP(s) shall be admissible as evidence, without objection, in any proceeding under Section XIV of this Consent Order. Respondent shall assure that EPA personnel or authorized representatives are allowed access to any laboratory utilized by Respondent in implementing this Consent Order.

B. Respondent shall make available to EPA the results of all sampling and/or tests or other data generated by Respondent with respect to the implementation of this Consent Order and shall submit these results in monthly progress reports as described in Section VII.E. of this Consent Order.

C. At the request of EPA, Respondent shall allow split or duplicate samples to be taken by EPA, and/or their authorized representative, of any samples collected by Respondent pursuant to the implementation of this Consent Order. Respondent shall notify EPA not less than fourteen (14) days in advance of any sample collection activity. In addition, EPA shall have the right to collect any additional samples that EPA deems necessary.

D. Respondent shall only use laboratories which have a documented quality system that complies with ANSI/ASQC E4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs," (American National Standard, January 5, 1995) and "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B-01/002, March 2001) or equivalent documentation as determined by EPA. EPA may consider laboratories accredited under the National Environmental Laboratory Accreditation Program (NELAP) to meet the quality system requirements. In addition, EPA may require submittal of data packages equivalent to those generated in the EPA Contract Laboratory Program (CLP) and may require laboratory analysis of performance samples (blank and/or spike samples) in sufficient number to determine the capabilities of the laboratory.

E. Notwithstanding any provision of this Consent Order, the EPA hereby retains all of its information gathering, inspection and enforcement authorities and rights under CERCLA, RCRA, and any other applicable statute or regulation.

XI. ACCESS

A. From the date of execution of this Consent Order until EPA provides written notice of satisfaction of the terms of the Order, the EPA and its authorized representatives and agents shall have access at all times to the Site and any property to which access is required for the implementation of this Consent Order, to the extent access to the property is controlled by or available to Respondent, for the purposes of conducting any activity authorized by or related to this Consent Order, including, but not limited to:

1. Monitoring the RI/FS work or any other activities taking place on the property.

2. Verifying any data or information submitted to the United States;

3. Conducting investigations relating to contamination at or near the Site;

4. Obtaining samples;

5. Evaluating the need for or planning and implementing additional remedial or response actions at or near the Site; and

6. Inspecting and copying records, operating logs, contracts, or other documents required to assess Respondent's compliance with this Consent Order.

B. To the extent that the Site or any other area where work is to be performed under this Consent Order is owned or controlled by persons other than Respondent, Respondent shall secure from such persons access for Respondent, as well as for EPA and authorized representatives or agents of EPA, as necessary to effectuate this Consent Order. Copies of such access agreements will be provided to EPA prior to Respondent's initiation of field activities. If access is not obtained within thirty (30) days of the effective date of this Consent Order, Respondent shall promptly notify the EPA. The United States may thereafter assist Respondent in obtaining access. Respondent shall, in accordance with Section XVII herein, reimburse the United States for all costs incurred by it in obtaining access, including but not limited to, attorneys' fees and the amount of just compensation and costs incurred by the United States in obtaining access.

C. Notwithstanding any provision of this Consent Order, the EPA retains all of its access authorities and rights under CERCLA, RCRA and any other applicable statute or regulations.

XII. CONFIDENTIALITY OF SUBMISSIONS

A. Respondent may assert a confidentiality claim, if appropriate, covering part or all of the information requested by this Consent Order pursuant to 40 C.F.R. § 2.203(b). Such an assertion will be adequately substantiated when the assertion is made. Analytical data will not be claimed as confidential by Respondent. Information determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no such claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA without further notice to Respondent.

B. Respondent waives any objection to the admissibility into evidence (without waiving any objection as to weight) of the results of any analyses of sampling conducted by or for them at the Site or of other data gathered pursuant to this Consent Order that has been verified by the quality assurance/quality control procedures established pursuant to Section X.

XIII. RECORD PRESERVATION

EPA and Respondent agree that each will preserve, during the pendency of this Consent Order and for a minimum of six (6) years after its termination, all records and documents in their possession or in the possession of their divisions, employees, agents, accountants, contractors, or attorneys which relate in any way to the Site, despite any document retention policy to the contrary. After this six year period, Respondent will notify EPA within ninety (90) calendar days prior to the destruction of any such documents. Upon request by EPA, Respondent will make available to EPA such records or copies of any such records. Additionally, if EPA requests that documents be preserved for a longer period of time, Respondent will comply with that request.

XIV. DISPUTE RESOLUTION

Any disputes arising under this Consent Order shall be resolved as follows: If the Respondent objects to any EPA notice of disapproval or decision made pursuant to this Consent Order, the Respondent shall notify EPA's Project Coordinator in writing of its objections within fourteen (14) calendar days after receipt of the decision. Respondent's written objections shall define the dispute, state the basis of Respondent's objections, and be sent certified mail, return receipt requested. EPA and the Respondent then have an additional fourteen (14) calendar days to reach agreement. If agreement cannot be reached within the fourteen (14) calendar day period, the EPA Waste Management Division Director shall provide a written statement of the decision and the reasons supporting that decision to Respondent. The Division Director's determination is EPA's final decision. If Respondent does not agree to perform or does not actually perform the task in dispute as determined by EPA's Division Director, EPA reserves the right to conduct the work itself, to seek reimbursement from the Respondent, and/or to seek other appropriate relief.

Respondent is not relieved of its obligations to perform and conduct any work required by this Consent Order while a matter is pending in dispute resolution.

XV. FORCE MAJEURE

A. "Force Majeure" is defined for the purposes of the Consent Order as an event arising from causes entirely beyond the control of Respondent and of any entity controlled by Respondent including its contractors and subcontractors, which could not have been overcome by due diligence which delays or prevents the performance of any obligation under this Consent Order. Examples of events which may constitute force majeure events include extraordinary weather events, natural disasters, and national emergencies. Examples of events that are not force majeure events include, but are not limited to, normal inclement weather, increased costs or expenses of the Work to be performed under this Consent Order, the financial difficulty of Respondent to perform such tasks, the failure of Respondent to satisfy its obligation under this Consent Order, acts or omissions not otherwise force majeure attributable to Respondent's contractors or representatives, and the failure of Respondent or Respondent's contractors or representatives to make complete and timely application for any required approval or permit.

B. When circumstances occur which may delay or prevent the completion of any phase of the Work Plan or access to the Site or to any property on which part of the Work Plan is to be

performed, whether or not caused by a force majeure event, Respondent shall notify the EPA Project Coordinator orally of the circumstances within forty-eight (48) hours of when Respondent first knew or should have known that the event might cause delay. If the EPA Project Coordinator is unavailable, Respondent shall notify the designated alternate or the Director of the Waste Management Division, EPA Region IV. Within seven (7) calendar days after Respondent first became aware of such circumstances, Respondent shall supply to EPA in writing: (1) the reasons for the delay; (2) the anticipated duration of the delay; (3) all actions taken or to be taken to prevent or minimize the delay; (4) a schedule for implementation of any measures to be taken to mitigate the effect of the delay; and (5) a statement as to whether, in the opinion of the Respondent, such event may cause or contribute to an endangerment to public health, welfare, or the environment. Respondent shall exercise best efforts to avoid or minimize any delay and any effects of a delay. Failure to comply with the above requirements shall preclude Respondent from asserting any claim of force majeure.

C. If EPA agrees that a delay is or was caused by a force majeure event, the time for performance of the obligations under this Consent Order that are directly affected by the force majeure event shall be extended by agreement of the parties, pursuant to Section XXIII, for a period of time not to exceed the actual duration of the delay caused by the force majeure event. An extension of the time for performance of the obligation directly affected by the force majeure event shall not necessarily justify an extension of time for performance of any subsequent obligation.

D. If EPA does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, or does not agree with Respondent on the length of the extension, the issue shall be subject to the dispute resolution procedures set forth in Section XIV of the Consent Order. In any such proceedings, to qualify for a force majeure defense, Respondent shall have the burden of proof that the delay or anticipated delay was or will be caused by a force majeure event, that the duration of the delay was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Respondent complied with the requirements of paragraph B of this Section. Should Respondent carry this burden, the delay at issue shall be deemed not to be a violation by Respondent of the affected obligation of the Consent Order.

XVI. STIPULATED PENALTIES

Unless excused under the provisions of Sections XIV or XV, the Respondent shall pay into the Hazardous Substance Superfund administered by EPA, the sums set forth below as stipulated penalties.

Stipulated penalties shall accrue as follows:

A. For each day during which Respondent fails to perform, in accordance with the schedules contained in this Consent Order and in the various plans and reports required under this Consent Order incorporated by reference herein, any of the following activities:

1. for failure to timely submit the RI/FS Work Plan, Sampling and Analysis Plan, draft RI Report and draft FS Report required under this Consent Order;

2. for failure to timely submit any modifications requested by EPA or its representatives to the RI/FS Work Plan, Sampling and Analysis Plan, draft RI Report and draft FS Report as required under this Consent Order; and

3. for failure to timely submit payment of oversight costs as provided in Section XVII.

Respondent shall be liable to EPA for stipulated penalties in the following amounts:

Period of Failure to Comply	Penalty Per Violation Per Day
1st through 14th day	$2,500
15th through 44th day	$5,000
45th day and beyond	$10,000

B. If Respondent fails to submit a monthly progress report by its due date, Respondent shall be liable to EPA for stipulated penalties in the amount of $1,000 per violation for each day during which Respondent fails to submit and, if necessary, modify monthly reports.

C. Respondent shall be liable to EPA for stipulated penalties in the amount of $1,000 per violation for each day during which Respondent fails to comply with all other requirements of this Consent Order including, but not limited to, any implementation schedule, payment requirement, notification requirement or completion deadline.

All stipulated penalties begin to accrue on the day the violation occurs or on the day following Respondent's failure to comply with any schedule or deadline or the terms, conditions, or requirements contained in this Consent Order and/or Work Plan. Stipulated penalties shall continue to accrue until Respondent's violation ends or until Respondent complies with the particular schedule or deadline.

Payment of stipulated penalties shall be due and owing within fifteen (15) days from the receipt of a written notice from EPA notifying Respondent that penalties have been assessed. Interest shall accrue on any unpaid amounts, beginning at the end of the fifteen (15) day period, at the rate established by the Department of Treasury under 31 U.S.C. § 3717. Respondent shall pay a handling charge of one percent to be assessed at the end of each thirty-one (31) day period, and a six percent per annum penalty charge, to be assessed if the penalty is not paid in full within ninety (90) days after it is due. The check and transmitted letter shall identify the Name of the Site, the Site identification number and the title of this Order. A copy of the transmittal letter should be sent simultaneously to the EPA Project Coordinator.

Payment shall be made to:

U. S. Environmental Protection Agency
Region IV

Superfund Accounting
P. O. Box 100142
Atlanta, Georgia 30384
ATTENTION: (Collection Officer for Superfund)

Respondent may dispute EPA's right to the stated amount of penalties by invoking the Dispute Resolution procedures under Section XIV of this Order. Penalties shall accrue but need not be paid during the dispute resolution period. If Respondent does not prevail upon resolution, all penalties shall be due to EPA within thirty (30) days of resolution of the dispute. If Respondent prevails upon resolution, no penalties shall be paid.

In the event that EPA provides for corrections to be reflected in the next deliverable and does not require resubmission of that deliverable, stipulated penalties for that interim deliverable shall cease to accrue on the date of such decision by EPA.

Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Consent Order.

The stipulated penalties set forth in this Section do not preclude EPA from electing to pursue any other remedies or sanctions which may be available to EPA by reason of the Respondent's failure to comply with any of the requirements of this Consent Order. Such remedies and sanctions may include a suit for statutory penalties up to the amount authorized by law, a federally-funded response action, and a suit for reimbursement of costs incurred by the United States.

XVII. REIMBURSEMENT OF OVERSIGHT AND RESPONSE COSTS

In accordance with Section 104(a)(1) of CERCLA, as amended, 42 U.S.C. § 9604(a)(1), Respondent agrees to reimburse the Hazardous Substance Superfund for all response and oversight costs incurred by EPA or its authorized representatives, including ATSDR, in oversight of Respondent's performance of work, including any Interim Measures, under the Consent Order.

On a periodic basis, EPA will submit to Respondent an accounting of all response and oversight costs incurred by the U.S. Government with respect to this Consent Order. Oversight costs shall include all direct and indirect costs of EPA's oversight arrangement for the RI/FS, including, but not limited to, time and travel costs of EPA personnel and associated indirect costs, contractor costs, compliance monitoring, including the collection and analysis of split samples, inspection of RI/FS activities, site visits, interpretation of Consent Order provisions, discussions regarding disputes that may arise as a result of this Consent Order, review and approval or disapproval of reports, the costs of redoing any of Respondent's tasks, and any assessed interest.

An Integrated Financial Management System summary data report, or a Superfund Cost Recovery Package Imaging and On-Line System (SCORPIOS) report, and any other necessary documents, shall serve as the basis for payment demands.

Failure to submit an accounting in one fiscal year does not prevent EPA from submitting an accounting for that year in a subsequent fiscal year. Respondent shall, within thirty (30) calendar

days of receipt of each accounting, remit a certified or cashiers check for the amount of those costs made payable to the Hazardous Substance Superfund. Interest shall begin to accrue on the unpaid balance from that date. Checks should specifically reference the identity of the Site and should be sent to:

U. S. Environmental Protection Agency
Region IV
Superfund Accounting
P. O. Box 100142
Atlanta, Georgia 30384
ATTENTION: Collection Officer for Superfund

Respondent shall simultaneously transmit a copy of the check and transmittal letter to:

Ms. Paula V. Batchelor
U. S. Environmental Protection Agency, Region 4
CERCLA Program Services Branch, 11th floor
Waste Management Division
61 Forsyth St., S.W.
Atlanta, GA 30303

Respondent agrees to limit any disputes concerning costs to accounting errors and the inclusion of costs outside the scope of this Consent Order. Respondent shall identify any contested costs and the basis of its objection. All undisputed costs shall be remitted by Respondent in accordance with the schedule set out above. Disputed costs shall be paid by Respondent into an escrow account while the dispute is pending. Respondent bears the burden of establishing an EPA accounting error and the inclusion of costs outside the scope of this Consent Order.

EPA reserves the right to bring an action against the Respondent pursuant to Section 107 of CERCLA to enforce the response and oversight cost reimbursement requirements of this Consent Order and to collect stipulated penalties assessed pursuant to section XVI of this Consent Order.

XVIII. RESERVATION OF RIGHTS

Notwithstanding compliance with the terms of this Consent Order, the Respondent is not released from liability, if any, for any actions beyond the terms of this Consent Order taken by EPA regarding this Site. EPA reserves the right to take any enforcement action pursuant to CERCLA or any other available legal authority, including the right to seek injunctive relief, monetary penalties, and punitive damages for any violation of law or this Consent Order.

Except as otherwise provided herein, EPA and Respondent expressly reserve all rights and defenses that they may have, including EPA's right both to disapprove of work performed by Respondent and to require that Respondent perform tasks in addition to those detailed in the RI/FS Work Plan, as provided in this Consent Order. In the event that Respondent declines to perform any additional or modified tasks, EPA will have the right to undertake any RI/FS work. In addition, EPA reserves the right to undertake removal actions and/or remedial actions at any

time. In either event, EPA reserves the right to seek reimbursement from Respondent thereafter for such costs which are incurred by the United States and Respondent reserves all rights to contest or defend against such claims or actions.

Following satisfaction of the requirements of this Consent Order, Respondent shall have resolved its liability to EPA for the performance of the RI/FS that is the subject of this Order. The Respondent is not released from liability, if any, for any actions taken beyond the terms of this Order regarding removals, other operable units, remedial design/remedial action (RD/RA), or activities arising pursuant to section 121(c) of CERCLA.

XIX. OTHER CLAIMS

Nothing in this Consent Order constitutes 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 substances, hazardous wastes, pollutants, or contaminants found at, taken to, or taken from the Site.

EPA reserves the right to bring an action against the Respondent pursuant to Section 107 of CERCLA for recovery of all response and oversight costs incurred by the United States related to this Consent Order and not reimbursed by Respondent, as well as any other past and future costs incurred by the United States in connection with response activities conducted pursuant to CERCLA at this site.

This Consent Order does not constitute a preauthorization of funds under Section 111(a)(2) of CERCLA, 42 U.S.C. § 9611(a)(2).

In entering into this Consent Order, Respondent waives any right to seek reimbursement under Section 106(b)(2) of CERCLA, 42 U.S.C. § 9606(b)(2), for any past costs associated with this Site, or any costs incurred in complying with this Order.

Respondent hereby agrees to toll any statute of limitations defense that may apply to any claim or cause of action by the United States for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments until three years following the date EPA certifies completion of the remedial action (excluding operation and maintenance activities).

Respondent agrees not to, directly or indirectly through a third party: (1) submit comments on a proposal to list the Site on the NPL and (2) seek judicial review of a decision to list the Site on the NPL, at any time after the Effective Date of this Consent Order based on a claim that changed site conditions that result from the performance of removal actions or Interim Measures in any way affect the basis for listing the Site.

Respondent shall bear its own costs and attorney fees.

XX. OTHER APPLICABLE LAWS

All actions required to be taken pursuant to this Consent Order will be undertaken in accordance with the requirements of all applicable local, state, and federal laws and regulations unless an exemption from such requirements is specifically provided in this Consent Order, or made a part of this Consent Order by being incorporated herein at some later date.

XXI. INDEMNIFICATION OF THE UNITED STATES GOVERNMENT

Respondent agrees to indemnify and save and hold harmless the United States, its agencies, departments, officials, agents, employees, contractors, or representative, from any and all claims or causes of action arising from or on account of acts or omissions of Respondent, its officers, employees, receivers, trustees, agents, or assigns, in carrying out the activities pursuant to this Consent Order. The United States Government or any agency or authorized representative thereof shall not be held to be a party to any contract involving Respondent at or relating to the Site.

XXII. PUBLIC COMMENT

Upon submittal to EPA of the Feasibility Study Final Report, EPA will make both the Remedial Investigation Final Report and the Feasibility Study Final Report and EPA's Proposed Plan available to the public for review and comment for, at a minimum, a thirty (30) day period, pursuant to EPA's Community Relations Plan and the NCP. Following the public review and comment period, EPA will notify Respondent of the remedial action alternative selected for the Site.

XXIII. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION

In consideration of the communications between Respondent and EPA prior to the issuance of this Consent Order concerning its terms, Respondent agrees that there is no need for a settlement conference prior to the effective date of this Consent Order. Therefore, the effective date of this Consent Order will be the date on which it is signed by EPA. This Consent Order may be amended by mutual agreement of EPA and Respondent. Such amendments will be in writing and will have, as the effective date, that date on which such amendments are signed by EPA. EPA Project Coordinators do not have the authority to sign amendments to the Consent Order.

Any reports, plans, specifications, schedules, and attachments required by this Consent Order are, upon approval by EPA, incorporated into this Consent Order. Any noncompliance with such EPA approved reports, plans, specifications, schedules, and attachments will be considered a failure to achieve the requirements of this Consent Order and will subject the Respondent to the provisions included in the "Force Majeure" and "Stipulated Penalties" sections (Sections XV and XVI) of this Consent Order.

No informal advice, guidance, suggestions, or comments by EPA regarding reports, plans, specifications, schedules, and any other writing submitted by Respondent will be construed as

relieving Respondent of its obligation to obtain such formal approval of EPA as may be required by this Consent Order.

XXIV. NOTICE TO THE STATE

EPA has notified the State of North Carolina regarding the requirements of this Consent Order.

Upon completion of the RI/FS, pursuant to the requirements of Section 104(c)(2) of CERCLA, 42 U.S.C. § 9604(c)(2), EPA will notify the State of North Carolina before determining the appropriate remedial action to be taken at the Site.

XXV. TERMINATION AND SATISFACTION

This Consent Order shall terminate when the Respondent demonstrates in writing and certifies to the satisfaction of EPA that all activities required under this Consent Order, including any additional work, payment of past costs, response and oversight costs, and any stipulated penalties demanded by EPA, have been performed and EPA has approved the certification. This notice shall not, however, terminate Respondent's obligation to comply with Sections XIII, XVII, and XVIII of this Consent Order.

The certification shall be signed by a responsible official representing each Respondent. Each representative shall make the following attestation: "I certify that the information contained in or accompanying this certification is true, accurate, and complete." For purposes of this Consent Order, a responsible official is a corporate official who is in charge of a principal business function.

IT IS SO AGREED:

Honeywell International, Inc.

The undersigned representative of Respondent certifies that it is fully authorized to enter into the terms and conditions of this Order and to bind the party it represents to this document.

Agreed this _____ day of _____, 2003.

By: _____

Title: _____

IT IS SO AGREED AND ORDERED:

BY: _____ _____

Winston Smith Date
Director
Waste Management Division
Region IV
U.S. Environmental Protection Agency

SCOPE OF WORK
FOR THE
REMEDIAL INVESTIGATION, FEASIBILITY STUDY
AND RISK ASSESSMENTS AT THE
LCP–HOLTRACHEM SUPERFUND SITE
RIEGELWOOD, COLUMBUS COUNTY, NORTH CAROLINA

MARCH 2003

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SCOPE OF WORK FOR THE REMEDIAL INVESTIGATION, FEASIBILITY STUDY AND RISK ASSESSMENTS AT THE LCP-HOLTRACHEM SUPERFUND SITE RIEGELWOOD, COLUMBUS COUNTY, NORTH CAROLINA

INTRODUCTION

The primary objectives of the Remedial Investigation/Feasibility Study are to investigate the nature and extent of all potential contamination at the LCP-Holtrachem Superfund Site (the "Site"), consistent with the requirements of the National Oil and Hazardous Substances Pollution Contingency Plan (March 8, 1990) (NCP) and the Administrative Order by Consent (AOC), to assess the current and potential risk to public health and welfare and the environment posed by such contamination, and to develop and evaluate potential Remedial Action Alternatives for the Remedial Action at the Site for this contamination. The Remedial Investigation (RI) and Feasibility Study (FS) are interactive and, to the degree possible and consistent with the NCP, shall be conducted as concurrently as possible so that the data collected in the RI supports the development of Remedial Action Alternatives in the FS, which in turn affects the data needs and the scope of Treatability Studies needed for implementation of the Remedial Action.

The Respondent shall conduct the RI/FS, and produce an RI Report, a Baseline Human Health Risk Assessment, an Ecological Risk Assessment, and an FS Report that are in accordance with this Scope of Work and the NCP. The work plans and deliverables shall be developed in accordance with appropriate aspects of the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, (Interim Final) (U.S. Environmental Protection Agency (EPA) Office of Emergency and Remedial Response, October 1988) (RI/FS Guidance), and other guidance used by EPA in conducting an RI/FS (the primary sources of guidance are listed in the Reference Section (Attachment A)), as well as any additional requirements in the AOC. The RI/FS Guidance describes the report formats and the required report content. Pertinent RI/FS Guidance section numbers are denoted in parenthesis throughout this Scope of Work. The Respondent shall furnish all necessary personnel, materials, and services needed, or incidental to, performing the RI/FS, except as otherwise specified in the AOC.

At the completion of the RI/FS, EPA shall be responsible for the selection of a remedy, if any, to be implemented for the Site. EPA will document this selection of a remedy in the Record of Decision (ROD).

Section 121 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9621, as amended by the Superfund Amendment Reauthorization Act of 1986 (SARA), P.L. 99-499, requires that the remedial alternative selected for the Site will be protective of human health and the environment, will be cost-effective, will utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the

maximum extent practicable, will be in compliance with, or include a waiver of, applicable or relevant and appropriate requirements of other laws or regulations, and will address the statutory preference for on-site treatment which permanently and significantly reduces the volume, toxicity, or mobility of the hazardous substances, pollutants, and contaminants as a principal element. The Final RI/FS Reports and Risk Assessments, as adopted by EPA, will, with the remainder of the Administrative Record, form the basis for the selection of the remedy to be implemented for the Site and will provide the information necessary to support the development of the ROD.

As specified in CERCLA Section 104(a)(1), 42 U.S.C. § 9604(a)(1), EPA must provide oversight of the Respondent's activities throughout the RI/FS. EPA shall initiate and conduct activities related to the implementation of oversight activities. However, the primary responsibility for conducting the RI/FS required by the AOC, in order to enable EPA to select and support a remedy, shall lie with the Respondent. EPA review and approval of deliverables is a tool to assist this process and to satisfy, in part, EPA's responsibility to provide effective protection of public health and welfare and the environment. A summary of the major deliverables that Respondent shall submit for the RI/FS is attached (Attachment B). In addition, a general schedule of RI/FS activities is also attached (Attachment C), which reflects obligations for the submission of deliverables.

TASK 1 - SCOPING (RI/FS Guidance, Chapter 2)

Scoping is the initial planning process of the RI/FS, and has been initiated by EPA to determine the site-specific objectives of the RI/FS prior to negotiations between the Respondent and EPA. Scoping is continued, repeated as necessary, and refined throughout the RI/FS process. In addition to developing the Site Objectives of the RI/FS, EPA has developed a Site Management Strategy. Consistent with the Site Management Strategy, the specific project scope shall be planned by the Respondent and EPA. The Respondent shall document the specific project scope in a Work Plan. Because the work required to perform an RI/FS is not fully known at the onset, and is phased in accordance with a Site's complexity and the amount of available information, it may be necessary to modify the Work Plan and associated time schedules, consistent with the AOC, during the RI/FS to satisfy the objectives of the study.

The primary objectives for conducting the RI/FS at the Site have been determined preliminarily, based on available information, to be the following:

1. Review of existing information pertaining to the Site. This review includes EPA Site Inspection Reports, reports and environmental data from local, State and Federal agencies, court records, information from local businesses such as local well drillers and waste haulers and generators, facility records, information from facility owners and employees and nearby citizens, and information from previous removal actions.

2. Review of relevant guidance (see attached references, Attachment A). This information shall be used in performing the RI/FS and preparing all deliverables under this SOW.

3. Identification of all Federal and State applicable or relevant and appropriate requirements (ARARs).

4. Characterization of the nature and extent of contamination (waste types, concentrations, and distributions) for affected media including air, ground water, soil, surface water, and sediment, etc., to the degree necessary to assess the level of risk presented by the Site and to evaluate the appropriate type(s) of remedial response.

5. Performance of a well survey within a three mile radius of the Site including determining water uses, well construction methods, the number and age of users, and the volume and rate of water usage.

6. Preparation of the Baseline Risk Assessment which shall consist of a Human Health Risk Assessment and an Ecological Risk Assessment.

7. Sample collection/data analysis of the information necessary for Respondent to conduct an Ecological Risk Assessment. These tasks are outlined in Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments.

8. Identification and screening of potential treatment technologies along with containment/disposal requirements for residuals or untreated wastes.

9. Assembly of technologies into Remedial Action Alternatives, followed by screening of those alternatives.

10. Performance of bench or pilot Treatability Studies as necessary.

11. Detailed analysis of those Remedial Action Alternatives which survive the screening process.

The Site Management Strategy for the Site includes the following:

1. A complete investigation of the Site, including any and all on Site contamination, as well as any and all off Site contamination which may have been caused by contaminants originating from on Site.

2. Use of the RI to identify any other Potentially Responsible Parties (PRPs) that

may be involved.

3. Preparation of a Work Plan which must incorporate any existing Site Data and describe plans for gathering subsequent data, to the extent necessary to meet the Site Objectives.

4. Site protective interim actions which may be (a) voluntarily proposed by Respondent or (b) required by EPA only to the extent that EPA's demand for such measures addresses conditions that would otherwise be subject to an order from EPA under 42 U.S.C. § 9606(a). By voluntarily proposing any such measures, Respondent neither admits any liability with respect to this Site or its conditions, nor does Respondent conceded that any such measures are necessary to protect human health or the environment.

5. EPA oversight of the Respondent's conduct of the work to ensure compliance with applicable laws, regulations and guidance, and to ensure that the work proceeds in a timely fashion.

6. Respondent's preparation of the Baseline Human Health Risk Assessment. The Baseline Human Health Risk Assessment shall include:

   - Data Collection and Evaluation
   - Exposure Assessment and Documentation
   - Determination of Actual and Potential Pathways and Receptors
   - Toxicity Assessment and Documentation
   - Risk Characterization including:
     * Carcinogenic Risks
     * Noncarcinogenic Risks

7. Respondent's preparation of the Ecological Risk Assessment. The Ecological Risk Assessment shall include:

   - Screening-Level Problem Formulation and Ecological Effects Evaluation
   - Screening-Level Exposure Estimate and Risk Calculation

and, if required:

   - Baseline Ecological Risk Assessment Problem Formulation
   - Ecological Study Design and Data Quality Objective Process
   - Field Verification of Sampling Design
   - Site Investigation and Analysis Plan
   - Ecological Risk Characterization

8. EPA management of the Remedy Selection and Record of Decision phase with input from State Agencies, Natural Resource Trustees, the Respondent and the public.

When scoping the specific aspects of this project, the Respondent must confer with EPA to discuss all significant project planning decisions and special concerns associated with the Site. The following activities shall be performed by the Respondent as a function of the project planning process.

A. Site Background (2.2)

The Respondent shall gather and analyze the existing background information regarding the Site, and shall conduct a visit to the Site to assist in planning the scope of the RI/FS.

1. Compile and Evaluate Existing Data and Document the Need for Additional Data (2.2.2; 2.2.6; 2.2.7)

Before planning RI/FS activities, all relevant existing Site data shall be thoroughly compiled and reviewed by the Respondent. Specifically, this compilation and review shall include currently available data relating to the varieties and quantities of hazardous substances at the Site and past disposal practices (what type of contaminants were disposed where, when, and by whom). This compilation and review shall also include results from any previous sampling or other investigations or removal actions that may have been conducted. The Respondent shall refer to Table 2-1 of the RI/FS Guidance for a comprehensive list of data collection information sources. This information shall be utilized in determining additional data needed for Site characterization, better defining potential applicable or relevant and appropriate requirements (ARARs), and developing a range of preliminarily identified Remedial Action Alternatives. Respondent shall submit to EPA a technical memorandum containing the compilation of existing data. EPA shall comment on the use of such data as provided in Attachment C to this SOW. Subject to EPA approval, Data Quality Objectives (DQOs) shall be established that specify the usefulness of existing data. Decisions on the necessary data and DQOs shall be made by EPA.

2. Conduct Site Visit

The Respondent shall conduct a visit to the Site with the EPA Remedial Project Manager (RPM) and EPA's oversight contractor during the project scoping phase to assist in developing a conceptual understanding of the sources and areas of contamination, as well as potential exposure pathways and receptors at the Site. During the visit to the Site, the Respondent shall observe the physiography, hydrology, geology, and demographics of the Site, as well as related natural resources, ecological and cultural features. This information shall be utilized to better scope the project, and to determine the data

collection needs for characterizing the Site, better defining potential ARARs, and developing a preliminary list of remedial action alternatives to be evaluated during the Feasibility Study.

B. Project Planning (2.2)

Once the Respondent has compiled and evaluated the existing data and conducted a Site visit, the specific project scope shall be planned. Project planning activities include those tasks described below, as well as the development of specific required deliverables as described in paragraph C. The Respondent shall meet with EPA regarding the following activities before the drafting of the scoping deliverables.

1. Refine the Site Objectives and Develop Preliminary Remedial Action Objectives and Alternatives (2.2.3)

Once existing information about the Site has been analyzed and a conceptual understanding of the potential risks posed by the Site has been obtained, the Respondent shall review and, if necessary, refine the Site Objectives and develop preliminary Remedial Action Objectives for each actually or potentially contaminated medium. Any revised Site Objectives shall be documented in a technical memorandum and are subject to EPA approval prior to development of the other scoping deliverables. The Respondent shall then identify a preliminary range of broadly defined Preliminary Remedial Action Alternatives and associated technologies. This range of options shall include, at a minimum, alternatives in which treatment is used to reduce the toxicity, mobility, or volume of the waste; alternatives that involve containment with little or no treatment; and a no-action alternative.

3. Document the Need for Treatability Studies (2.2.4)

If Remedial Action Alternatives involving treatment have been identified by the Respondent or EPA, Treatability Studies may be required unless the Respondent can demonstrate to EPA's satisfaction that they are not needed or that such treatment is commonly used and accepted treatment approach in similar conditions. Where Treatability Studies are needed, identification of technologies and screening shall be done and the results submitted with the RI/FS Work Plan. Initial Treatability Study activities (such as research and study design) shall be planned to occur concurrently with Site Characterization activities (see Task 3).

4. Begin Preliminary Identification of Potential ARARs (2.2.5)

The Respondent shall conduct a preliminary identification of potential State and Federal ARARs (chemical-specific, location-specific, and action-specific) to assist in the refinement of Remedial Action Objectives and the initial identification of Remedial

Action Alternatives and ARARs associated with particular actions. ARAR identification shall continue as conditions and constituents of concern at the Site and Remedial Action Alternatives are better defined.

5. Collection of Information on Historical Value

Respondent shall inquire of local historians, historical societies, or historical libraries as to whether the Site may have historical, cultural, or archeological value and shall document the results of its inquiry in the RI/FS Work Plan.

C. Scoping Deliverables (2.3)

At the conclusion of the project planning phase, the Respondent shall submit an RI/FS Work Plan, a Sampling and Analysis Plan, and a Health and Safety Plan. The RI/FS Work Plan and Sampling and Analysis Plan must be reviewed and approved, and the Health and Safety Plan must be reviewed by EPA prior to the initiation of field activities.

1. RI/FS Work Plan (2.3.1)

A Work Plan documenting the decisions and evaluations completed during the scoping process shall be submitted to EPA for review and approval. The Work Plan shall be developed in conjunction with the Sampling and Analysis Plan and the Health and Safety Plan, although each plan may be delivered under separate cover, all in accordance with Attachment C. The Work Plan shall include a comprehensive description of the work to be performed, the media to be investigated (i.e., air, ground water, surface water, surface and subsurface soils, sediments, biota, fauna, etc.), the methodologies to be utilized, and the rationale for the selection of each methodology. A comprehensive schedule for completion of each major activity and submission of each deliverable shall also be included. This schedule shall be consistent with Attachment C.

Specifically, the Work Plan shall present the following:

- A statement of the problem(s) and potential problem(s) posed by the Site and the objectives of the RI/FS.

- A background summary setting forth the following:

a description of the Site, including the geographic location, and, to the extent possible, a description of the topology, hydrology, and geology, demographics, and the ecological, and natural resource features of the Site;

a synopsis of the history of the Site, including a summary of past disposal practices and a description of previous responses that have been conducted by

local, State, Federal, or private parties at the Site; and

a summary of the existing Site data in terms of physical and chemical characteristics of the contaminants identified, and their distribution among the environmental media at the Site.

- A description of the Site Management Strategy developed by EPA and the Respondent during scoping, as discussed previously in this SOW, and as may be modified with EPA's approval;

- A preliminary identification of Remedial Action Alternatives and data needs for evaluation of Remedial Action Alternatives. Data Quality Objectives (DQOs) shall be developed for the data needs. This preliminary identification shall reflect coordination with the Treatability Study requirement, if Treatability Studies are needed.

- A detailed description of the tasks to be performed, information needed for each task, information to be produced during and at the conclusion of each task, and a description of the deliverables that shall be submitted to EPA for review. This description must also include a synopsis of the deliverables set forth in the remainder of this Scope of Work.

- A schedule for each of the required activities which is consistent with Attachment C and the RI/FS Guidance.

- A project management plan, including a data management plan (e.g., requirements for project management systems and software, minimum data requirements, data format, and backup data management), monthly reports to EPA (the frequency of these reports may be altered, upon the prior written consent of EPA), and meetings and presentations to EPA at the conclusion of each major phase of the RI/FS.

The Respondent shall refer to Appendix B of the RI/FS Guidance for a comprehensive description of the contents of the required Work Plan.

Because of the unknown nature of the Site and iterative nature of the RI/FS, additional data requirements may be identified throughout the RI/FS process. The Respondent shall submit a technical memorandum documenting any need for additional data along with the proposed DQOs whenever such requirements are identified. In any event, the Respondent are responsible for fulfilling additional data and analysis needs identified by EPA in writing consistent with the scope and objectives of this RI/FS and the Administrative Order. To the extent that additional data is required after initial implementation of the Work Plan to address issues identified in the Ecological Risk Assessment, EPA and Respondent agree to amend the schedule set forth in Attachment C to provide reasonable additional time to collect such data prior to submission of a draft RI report and Risk Assessment(s).

2. Sampling and Analysis Plan (2.3.2)

The Respondent shall prepare a Sampling and Analysis Plan (SAP) to ensure that sample collection and analytical activities are conducted in accordance with technically appropriate protocols and that the data generated will meet the DQOs established. The SAP provides a mechanism for planning field activities, and consists of a Field Sampling and Analysis Plan (FSAP) and a Quality Assurance Project Plan (QAPP).

The FSAP shall define in detail the sampling and data-gathering methods that shall be used during the RI. It shall include sampling objectives, sample location (horizontal and vertical) and frequency, sampling equipment and procedures, and sample handling and analysis. The QAPP shall describe the project objectives and organization, functional activities, and quality assurance and quality control (QA/QC) protocols that shall be used to achieve the desired DQOs. The QAPP will be prepared in accordance with "EPA Requirements for Quality Assurance Project Plans (QA/R-5)" (EPA/240/B-01/003, March 2001) and "EPA Guidance for Quality Assurance Project Plans (QA/G-5)" (EPA/600/R-98/018, February 1998). The DQOs will, at a minimum, reflect use of analytical methods for identifying contamination, and addressing contamination consistent with the levels for remedial action objectives identified in the NCP, pages 8845 and 8849-8853 (March 8, 1990). In addition, the QAPP shall address personnel qualifications, sampling procedures, sample custody, analytical procedures, and data reduction, validation, and reporting. These procedures must be consistent with the Region 4's "Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM)" (November 2001). Field personnel shall be available for EPA QA/QC training and orientation, as required.

The Respondent shall demonstrate, in advance and to EPA's satisfaction, that each laboratory it may use is qualified to conduct the proposed work. This demonstration must include use of methods and analytical protocols for the chemicals of concern (typically the Target Compound List (TCL) and the Target Analyte List (TAL)) in the media of interest within detection and quantification limits consistent with both QA/QC procedures and DQOs approved by EPA in the QAPP for the Site. The laboratory must have and follow an EPA-approved QA/QC program. The Respondent shall include as a condition in any agreement with any laboratory utilized by Respondent in implementing this SOW that EPA personnel or authorized representatives are allowed access to such laboratory. EPA may require that the Respondent submit detailed information to demonstrate that the laboratory is qualified to conduct the work, including information on personnel qualifications, equipment, and material specifications. In addition, EPA may require submittal of data packages equivalent to those generated in the EPA Contract Laboratory Program (CLP), and may require laboratory analysis of performance samples (blank and/or spike samples) in sufficient number to determine the capabilities of the laboratory. If a laboratory not currently participating in the CLP is selected, methods consistent with

CLP methods that would be used at this Site for the purposes proposed and QA/QC procedures approved by EPA, shall be used. The Respondent shall only use laboratories which have a documented Quality Assurance Program which complies with ANSI/ASQC E-4 1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" (American National Standard, January 5, 1995) and "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B-01-002, March 2001) or equivalent documentation as determined by EPA. If the laboratory is not in the CLP program, a laboratory QA program must be submitted for EPA review and approval prior to the shipment of Site samples to that laboratory for analysis.

3. Health and Safety Plan (2.3.3)

A Health and Safety Plan shall be prepared in conformance with the Respondent health and safety program, and in compliance with OSHA regulations and protocols. The Health and Safety Plan shall include the eleven elements described in the RI/FS Guidance, such as a health and safety risk analysis, a description of monitoring and personal protective equipment, medical monitoring, and site control. It should be noted that EPA does not "approve" the Respondent Health and Safety Plan, but rather EPA reviews it to ensure that all necessary elements are included, and that the plan provides for the protection of human health and the environment.

TASK 2 - COMMUNITY RELATIONS (2.3.4)

The development and implementation of community relations activities related to the RI/FS is the responsibility of EPA. The critical community relations planning steps performed by EPA include conducting community interviews and developing a community relations plan. EPA, or its Community Relations Coordinator, will give reasonable notice to Respondent prior to scheduling community relations activities to which Respondent are required to attend or preside. Although implementation of the community relations plan is the responsibility of EPA, the Respondent may be requested to assist by providing information regarding the history of the Site and participating in public meetings.

TASK 3 - SITE CHARACTERIZATION (RI/FS Guidance, Chapter 3)

As part of the RI, the Respondent shall perform the activities described in this task, including the preparation of a Site Characterization Briefing Document and a RI Report. The overall objective of Site Characterization is to describe areas of the Site that may pose a threat to human health or the environment. This objective is accomplished by first determining physiography, geology, and hydrology of the Site. Surface and subsurface pathways of migration shall also be defined. The Respondent shall identify each source of contamination and determine the nature and extent of the source of contamination, including their physical and chemical constituents and, if appropriate, their concentrations at incremental locations in the affected media. The Respondent

shall also investigate the extent of migration of this contamination and any changes in its physical or chemical characteristics. This investigation will provide for a comprehensive understanding of the nature and extent of contamination at the Site. Using this information, contaminant fate and transport shall be determined and projected.

During this phase of the RI/FS, the Work Plan, SAP, and Health and Safety Plan shall be implemented. Field data shall be collected and analyzed to provide the information required to accomplish the objectives of the study. The Respondent shall notify EPA at least two weeks in advance of the field work regarding the planned dates for field activities, including installation of monitoring wells, installation and calibration of equipment, pump tests, field lay out of any sampling grid, excavation, sampling and analysis activities, and other field investigation activities.

The Respondent shall demonstrate that the laboratory and type of laboratory analyses that will be utilized during Site Characterization meets the specific QA/QC requirements and the DQOs as specified in the SAP. In view of the unknown conditions at the Site, activities are often iterative, and to satisfy the objectives of the RI/FS, it may be necessary for the Respondent to supplement the work specified in the initial Work Plan. In addition to the deliverables below, the Respondent shall provide monthly progress reports (the frequency of these reports may be altered, upon the prior written consent of EPA), and participate in meetings with EPA at major points in the RI/FS.

A Field Investigation (3.2)

The field investigation includes the gathering of data to define physical characteristics, sources of contamination, and the nature and extent of contamination at the Site. These activities shall be performed by the Respondent in accordance with the Work Plan and SAP. At a minimum, this investigation shall include the following activities.

1. Implementing and Documenting Field Support Activities (3.2.1)

The Respondent shall initiate field support activities following approval of the Work Plan and SAP. Field support activities may include obtaining access to the Site, property surveys, scheduling, and procuring equipment, office space, laboratory services, utility services and/or contractors. The Respondent shall notify EPA at least two weeks prior to initiating field support activities so that EPA may adequately schedule oversight tasks. The Respondent shall also notify EPA in writing upon completion of field support activities.

2. Investigating and Defining Site Physical and Biological Characteristics (3.2.2)

The Respondent shall collect data on the physical and biological characteristics of the Site and its surrounding areas including the physiography, geology, and hydrology, and

specific physical characteristics identified in the Work Plan. This information shall be ascertained through a combination of physical measurements, observations, and sampling efforts, and shall be utilized to define potential transport pathways and receptor populations. In defining the physical characteristics of the Site, the Respondent shall also obtain sufficient engineering data (such as pumping characteristics, soil particle size, permeability, etc.) for the projection of contaminant fate and transport, and the development and screening of Remedial Action Alternatives, including information necessary to evaluate treatment technologies.

3. Defining Sources of Contamination (3.2.3)

The Respondent shall locate each source of contamination. For each location, the lateral and vertical extent of contamination shall be determined by sampling at incremental depths on a sampling grid or in another organized fashion approved by EPA. The physical characteristics and chemical constituents and their concentrations shall be determined for all known and discovered sources of contamination. The Respondent shall conduct sufficient sampling to define the boundaries of the contaminant sources to the level established in the QAPP and DQOs. Both on Site and off Site sources of contamination shall be analyzed for the potential of contaminant release (e.g., long term leaching from soil into groundwater, runoff into nearby surface water pathways, airborne transport to on- and off-site locations), contaminant mobility and persistence, and characteristics important for evaluating remedial actions, including information necessary to evaluate treatment technologies.

4. Describing the Nature and Extent of Contamination (3.2.4)

The Respondent shall gather information to describe the nature and extent of contamination as a final step during the field investigation. To describe the nature and extent of contamination, the Respondent shall utilize the information on Site physical characteristics and sources of contamination to give a preliminary estimate of the contaminants that may have migrated. The Respondent shall then implement an iterative monitoring program and any study program identified in the Work Plan or SAP such that, by using analytical techniques sufficient to detect and quantify the concentration of contaminants, the migration of contaminants through the various media at the Site can be determined. In addition, the Respondent shall gather data for calculations of contaminant fate and transport. This process is continued until the lateral and vertical extent of contamination has been determined to the contaminant concentrations consistent with the established DQOs set forth in the QAPP. EPA shall use the information on the nature and extent of contamination to determine the level of risk presented by the Site. The Respondent shall use this information to help to determine aspects of the appropriate Remedial Action Alternatives to be evaluated.

B. Data Analyses (3.4)

The Respondent shall analyze and evaluate the data to describe: (1) physical and biological characteristics of the Site; (2) contaminant source characteristics; (3) nature and extent of contamination; and (4) contaminant fate and transport. The information on physical and biological characteristics, source characteristics, and nature and extent of contamination shall be used in the analysis of contaminant fate and transport. The data evaluation shall include the actual and potential magnitude of releases from the sources and lateral and vertical extent of contamination, as well as mobility and persistence of contaminants. Data evaluation shall also provide information necessary for completion of the Baseline Risk Assessment, the development and evaluation of Remedial Action Alternatives, and the refinement and identification of ARARs. Analyses of data collected for Site Characterization shall meet the DQOs developed in the QAPP.

Where modeling is appropriate, such models shall be identified to EPA in the progress report. If a non-commercial model is proposed, all data and programming, including any proprietary programs, shall be made available to EPA together with a sensitivity analysis. Any models shall be accepted by EPA prior to their use.

The RI data shall be presented in a computer disk format utilizing Lotus 1-2-3 or other equivalent, commonly used computer software. To the extent that additional Field Activities not included in the initial Work Plan are required to address data gaps agreed upon by EPA and Respondent after completion of initial field activities, the schedule set forth in Attachment C shall be modified in writing to provide a reasonable time to complete such work.

C. Data Management Procedures (3.5)

The Respondent shall consistently document the quality and validity of field and laboratory data compiled during the RI. At a minimum, this documentation shall include the following activities:

1. Documenting Field Activities (3.5.1)

Information gathered during characterization of the Site shall be consistently documented and adequately recorded by the Respondent in well maintained field logs and laboratory reports. The method(s) of documentation must be specified in the Work Plan and/or the SAP. Field logs must be utilized to document observations, calibrations, measurements, and significant events that have occurred during field activities. Laboratory reports must document sample custody, analytical responsibility, analytical results, adherence to prescribed protocols, nonconformity events, corrective measures, and/or data deficiencies. Two copies of supporting documentation described as the "CLP Data Package" for all samples analyzed by the Respondent at the Site will be submitted with the Draft Remedial Investigation Report.

2. Maintaining Sample Management and Tracking (3.5.2; 3.5.3)

The Respondent shall maintain field reports, sample shipment records, analytical results, and QA/QC reports to ensure that only validated analytical data are reported and utilized in the development and evaluation of the Baseline Risk Assessment and Remedial Action Alternatives. Analytical results developed under the Work Plan shall not be included in any characterization reports for the Site unless accompanied by or cross-referenced to a corresponding QA/QC report. In addition, the Respondent shall establish a data security system to safeguard chain-of-custody forms and other project records to prevent loss, damage, or alteration of project documentation.

D. Site Characterization Deliverables (3.7)

The Respondent shall prepare the Preliminary Site Characterization Summary Briefing Document and the Remedial Investigation Report.

1. Preliminary Site Characterization Briefing Document (3.7.2)

After completing field sampling and analysis, the Respondent shall prepare a concise Site Characterization Briefing Document. This document shall review the investigative activities that have taken place, and briefly describe and display a summary of the data for the Site documenting the sources of contamination at the Site and the migration pathways. In addition, the document shall contain a preliminary identification of potential ARARS.

The Summary will also include a preliminary list of broadly defined potential Remedial Action Alternatives and associated technologies. The list of potential alternatives shall include, at a minimum, alternatives in which treatment is used to reduce the toxicity, mobility, or volume of the waste, but varying in the types of treatment, the amount treated, and the manner in which long-term residuals or untreated wastes are managed; alternatives that involve containment and treatment components; alternatives that involve containment with little or no treatment; and a no-action alternative.

2. Remedial Investigation (RI) Report (3.7.3)

The Respondent shall prepare and submit a Draft RI Report to EPA for review and approval. This report shall summarize results of field activities to characterize the Site , the sources of contamination at the Site, and the fate and transport of contaminants at the Site as provided in the approved Work Plan. The Respondent shall refer to the RI/FS Guidance for an outline of the report format and contents. Following comment by EPA, the Respondent shall prepare a Final RI Report which satisfactorily addresses EPA's comments.

TASK 4 - BASELINE HUMAN HEALTH RISK ASSESSMENT

The Respondent shall develop the Baseline Human Health Risk Assessment (BHHRA) to determine if Site contaminants pose a current or potential future risk to human health in the absence of any remedial action. The BHHRA shall identify and characterize toxicity and effects of constituents of concern present, describe their fate and transport, evaluate the potential for human exposure, and assess the risk of potential impact or threat on human health. The BHHRA and the Ecological Risk Assessment (Task 5), will provide EPA a basis for determining whether or not remedial action is necessary, a justification for performing any remedial action that may be required, and risk basis for clean up goals.

The Respondent shall develop the BHHRA in accordance with EPA's Interim Final Risk Assessment Guidance for Superfund (RAGS) - Volume I - Human Health Evaluation Manual (Part A) (December 1989), Development of Risk-Based Remediation Goals (Part B) (December 1991), and Standardized Planning, Reporting and Review of Superfund Risk Assessments (Part D) (December 1997). These documents describe and illustrate the process of gathering and assessing human health risks information in addition to developing remediation goals. Other resources that the Respondent should utilize when performing the BHHRA include: Exposure Factors Handbook (EPA/600/P-95002Fa, August 1997), Land Use in the CERCLA Remedy Selection Process (OSWER Directive No. 9355.7-04, May 25, 1995); Soil Screening Guidance; User's Guidance; Technical background document (0355.4-17A, EPA/1501 R-95/128, May 1996); Soil Screening Guidance; User's Guide (9355.4-3, April 1996); the Integrated Risk Information System (IRIS); the Health Effects Assessment Summary Tables (HEAST); Interim Risk Assessment Guidance for Superfund; Volume I - Human Health Evaluation Manual (Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments).

A Draft BHHRA shall be submitted consistent with the Schedule set forth in Attachment C. Following comment by EPA, the Respondent shall prepare a Final BHHRA which shall be submitted as set forth in Attachment C. The BHHRA process consists of the four components listed below.

A. Data Collection and Evaluation

The Respondent shall review the information that is available on the hazardous substances present at the Site and shall identify the chemicals of potential concern (COPCs). The process of identifying COPCs should follow the Supplemental Guidance to RAGS, Region 4 Bulletin ("Region 4 Guidance"). The data shall be tabulated according to the guidance provided in RAGS Part D. This portion of the BHHRA shall include a discussion of the rationale for the identification of the COPCs.

B. Exposure Assessment and Documentation

The Respondent shall identify actual and potential exposure points and pathways. Exposure assumptions must be supported with data and must be consistent with guidance documents identified in this Scope of Work. For each exposure point, the release source, the transport media (e.g. groundwater, surface water, air, etc.) and the exposure route (e.g. oral, inhalation, dermal) must be clearly delineated in a Site Conceptual model (*RI/FS Guidance* Figure 2-2). Both present and future risks at the Site must be developed and presented, using reasonable maximum exposure (RME) scenarios. The Human Health Evaluation Manual, Part A and the supplemental guidance entitled Standard Default Exposure Factors (OWSER Directive 9285.6-03) should be consulted in the development of exposure assumptions. EPA referenced default exposure assumptions or default assumptions from other approved sources should be used when site specific data are not available. The Respondent shall include, within the BHHRA, the exposure scenarios with a description of the assumptions made and the use of data and a figure showing the site conceptual model. If it is appropriate to use fate and transport models to estimate the exposure concentration at points spatially separate from monitoring points or media not sampled, these models shall be presented and discussed. Representative data must be utilized and the limitations and uncertainties associated with the models must be documented. Exposure concentration shall be used with the exposure assumptions to determine chemical-specific intake levels for each exposure scenario.

C. Toxicity Assessment and Documentation

the Respondent shall utilize the information in the IRIS, HEAST, and if needed, other similar databases and other information sources as discussed in Region 4 Guidance, to provide a toxicity assessment of the COPCs. Consult RAGS Part D and Region 4 Guidance for specific guidance on what information is needed. This assessment shall include the types of adverse health effects associated with chemical exposures (including potential carcinogenicity or the toxic effect observed in deriving the toxicity value), the relationships between magnitude of exposures and adverse effects, and the related uncertainties of constituent of concern toxicity (e.g., the weight of evidence for a chemical's carcinogenicity or the degree of confidence in the Reference Dose).

D. Risk Characterization

The Respondent shall integrate the information developed during the exposure and toxicity assessments, to characterize and quantify the current and potential risks to human health and the environment posed by the Site. The risk characterization must identify the uncertainties associated with constituents of concern, toxicities, and exposure assumptions based on guidance provided in the February 1995 Guidance for Risk Characterization from EPA's Science Policy. Consults RAGS Part D and Region 4 Guidance for specific guidance on what information is needed.

The BHHRA should also include a "central tendency" analysis for the contaminants of concern (COCs) that are identified. This analysis can be used as information to provide perspective for the risk manager and compliance with Agency guidance. The Supplemental Guidance to RAGS:

Region 4 Bulletins (November 1995) should be consulted for further guidance on central tendency issues.

TASK 5 - ECOLOGICAL RISK ASSESSMENT

The Respondent shall evaluate and assess the risk to the ecological receptors posed by site contaminants. Respondent shall utilize Agency program guidance, *Ecological Park Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (EPA 540-R-97-006)*, and Region 4's Regional Guidance, *Supplemental Guidance to RAGS: Region 4 Bulletins, Ecological Risk Assessment, November 1995)* in evaluating the site. The Ecological Risk Assessment (ERA) Process is composed of the following steps:

A. Screening Level Ecological Risk Assessment

The Screening Level Ecological Risk Assessment (SLERA) is conducted using existing data to determine if the continuation of the Ecological Risk Assessment process is warranted. The SLERA (Steps 1 and 2 of the EPA process) contains a summary of existing information including the site history, description of the ecological setting, the description of potentially complete pathway(s) and a comparison of the maximum concentrations of constituents of concern to Region 4 Ecological Screening Values (surface water, sediments, and soils) and Sample Quantification Limits ("SQLs") for non-detections. This comparison should result in a table which identifies those constituents of concern whose maximum detected values exceed screening values and those which lack Screening Values. Those constituents of concern which exceed screening value, and those detected constituents of concern which lack screening values are identified as Chemicals of Potential Concern (COPCs). The Risk characterization and Uncertainty sections complete the SLERA. The SLERA shall be submitted for review and approval. At the end of the SLERA a Scientific/Management Decision Point occurs to determine if the risk associated with the site is negligible, or whether there is a need to continue with the subsequent steps of the process.

B. Refinement of COPCs

If EPA determines that further work is needed after submission of the SLERA, Respondent shall proceed with a refinement of COPCs. The objective of the refinement step is to review the inclusion of constituents of concern based on conservative assumptions used in the SLERA. Additional information which may be considered in the refinement step includes magnitude and pattern of exceedances of screening values, pattern of detections, frequency of detections, comparison to background or referenced values, etc. The refinement of COPCs shall be submitted for Agency review and approval, prior to completion of the Problem Formulation portion of Step 3.

C. Problem Formulation

The third step of the ERA process includes compilation of ecotoxicological profiles for the COPCs to provide the information (including Toxicity Reference Values) used along with the fate and transport characteristics of the COPCs for selecting Assessment Endpoints (generally groupings of sensitive biota [sensitive in terms of inherent toxicity or through exposure] that share a common habitat and/or similar feeding strategies). Risk questions are developed for each assessment endpoint. At the conclusion of Step 3, there is a SMDP, which consists of agreement on four items: the assessment endpoints, the exposure pathways, the risk questions, and conceptual model integrating these components. The Problem Formulation Document shall be submitted for Agency review and approval.

D. Study Design and Data Quality Objective Process

Step 4 of the ERA process includes the designation of measurement endpoints to address the Risk Questions developed in Step 3 - Problem Formulation. A Work Plan for the ERA is developed identifying the data quality objectives for the ERA investigation. The methods to be used in Risk Characterization are identified including the assumptions and exposure parameters, statistical methods, etc. The Sampling and Analysis Plan consisting of the Field Sampling Plan, indicting the sampling methods, locations, equipment, analysis, etc., and the Quality Assurance Project Plan. Both the ERA Work Plan (WP) and the Sampling and Analysis Plan (SAP) shall be submitted to the Agency for review and approval. The completion of the ERA WP and SAP should coincide with an SMDP. Within this SMDP, the ecological risk assessor and the ecological risk manager agree on: (1) selection of measurement endpoints; (2) selection of the site investigation methods; and (3) selection of data reduction and interpretation techniques.

E. Field Verification of Sampling Design

Step 5 of the ERA process is where the suitability and implementability of the Sampling and Analysis Plan is evaluated through field reconnaissance and demonstration of the sampling techniques. Documentation of field verification and/or necessary changes to the Study Design shall be submitted to the Agency for review and approval.

F. Site Investigation and Analysis Phase

Step 6 of the ERA process is the implementation of the Sampling and Analysis Plan. This implementation shall be part of the RI field activities. Any deviations from the approved plan shall be submitted to the Agency for review and approval.

G. Risk Characterization

In Step 7 of the ERA process, the data collected in the site investigation is analyzed according to the Work Plan for the ERA to make a statement concerning the risks posed to ecological receptors comprising the Assessment Endpoints. A weight-of-evidence approach is used to interpret the results of analyses and tests addressing risk questions associated with assessment

endpoints. The risk characterization section should include a qualitative and quantitative presentation of the risk results and associated uncertainties. The result of this characterization will determine if there are unacceptable risks posed to ecological receptors by site-related contaminants. If there are unacceptable risks, contaminant levels protective of ecological receptors should be determined and reported as remedial goal options (RGOs). A document containing the Risk Characterization and the RGO development should be submitted to the Agency for review and approval.

TASK 6 - DEVELOPMENT AND SCREENING OF REMEDIAL ACTION ALTERNATIVES (RI/FS Guidance, Chapter 4)

The development and screening of Remedial Action Alternatives is performed to select an appropriate range of remedial options to be evaluated. This range of options shall include, at a minimum, alternatives in which treatment is used to reduce the toxicity, mobility, or volume of the contaminants, but varying in the types of treatment, the amount treated, and the manner in which long-term residuals or untreated contaminants are managed; alternatives that involve containment and treatment components; alternatives that involve containment with little or no treatment; and a no-action alternative. The following activities shall be performed by the Respondent as a function of the development and screening of Remedial Action Alternatives.

A. Development and Screening of Remedial Action Alternatives (4.2)

The Respondent shall initiate development and evaluation of a range of appropriate remedial options, concurrent with the RI Site Characterization Tasks. The range of remedial alternatives evaluated shall, at a minimum, ensure protection of human health and the environment, and comply with all ARARs.

1. Refine and Document Remedial Action Objectives (4.2.1)

The Respondent shall review and, if necessary, propose refinement to the Site Objectives and Preliminary Remedial Action Objectives that were established during the Scoping phase (Task 1). Any revised Site Objectives or revised Remedial Action Objectives shall be documented in a technical memorandum as discussed in Task 1b. These objectives shall specify the contaminants and media of interest, exposure pathways and receptors, and an acceptable contaminant level or range of levels (at particular locations for each exposure route).

2. Develop General Response Actions (4.2.2)

To satisfy the Preliminary Remedial Action Objectives, the Respondent shall develop general response actions for each medium of interest including no further action, containment, treatment, excavation, pumping, or other actions, individually or in

combination.

3. Identify Areas and Volumes of Media (4.2.3)

The Respondent shall identify areas and volumes of media to which general response actions may apply, taking into account requirements for protectiveness as identified in the Preliminary Remedial Action Objectives. The chemical and physical characterization of the Site, the Baseline Human Health Risk Assessment, the Ecological Risk Assessment and remediation goals shall also be taken into account.

4. Identify, Screen, and Document Remedial Technologies (4.2.4; 4.2.5)

The Respondent shall identify and evaluate technologies applicable to each general response action to eliminate those that cannot be implemented at the Site. "Technologies" shall mean the methods by which hazardous substances at the Site shall be remedied: e.g., "pump and treat," "soil excavation and removal," etc. General response actions shall be refined to specify remedial technology types. Technology process options for each of the technology types shall be identified either concurrent with the identification of technology types or following the screening of the considered technology types. Process options shall be evaluated on the basis of effectiveness, implementability, and cost factors to select and retain one or, if necessary, more representative processes for each technology type. The technology types and process options shall be summarized for inclusion in a technical memorandum. The reasons for eliminating alternatives must be specified.

5. Assemble and Document Alternatives (4.2.6)

The Respondent shall assemble selected representative technologies into alternatives for each affected medium or operable unit. Together, all of the alternatives shall represent a range of treatment and containment combinations that shall address the Site. A summary of the assembled alternatives and their related action-specific ARARs shall be prepared by the Respondent for inclusion in a technical memorandum. The reasons for eliminating alternatives during the preliminary screening process must be specified.

6. Refine Alternatives

Upon completion of the above-referenced subtasks under this task, the Respondent shall refine the Remedial Action Alternatives to identify contaminant volumes to be addressed by the proposed process and sizing of critical unit operations as necessary. Sufficient information shall be collected for an adequate comparison of alternatives. Remedial action objectives for each medium shall also be refined as necessary to incorporate any new risk assessment information presented in the Baseline Human Health Risk Assessment or the Ecological Risk Assessment. Additionally, action-specific ARARs

shall be updated as the Remedial Action Alternatives are refined.

7. Conduct and Document Screening Evaluation of Each Alternative (4.3)

The Respondent may perform a final screening process based on short and long term aspects of effectiveness, implementability, and relative cost. Note that the evaluation of effectiveness involves evaluating the long-term and short-term risks - among other factors - associated with a remedial alternative. Generally, this screening process is only necessary when there are many feasible alternatives available for detailed analysis. If necessary, the screening of alternatives shall be conducted to assure that only the alternatives with the most favorable composite evaluation of all factors are retained for further analysis.

As appropriate, the screening shall preserve the range of treatment and containment alternatives that was initially developed. The range of remaining alternatives shall include options that use treatment technologies and permanent solutions to the maximum extent practicable. The Respondent shall prepare a technical memorandum summarizing the results and reasoning employed in screening, arraying alternatives that remain after screening, and identifying the action-specific ARARs for the alternatives that remain after screening.

B. Alternatives Development and Screening Deliverables (4.5)

The Respondent shall prepare a technical memorandum summarizing the work performed and the results of each task above, including an alternatives array summary. This alternatives array shall be modified by the Respondent when conducting Task 5 if required by EPA's comments to assure identification of a complete and appropriate range of viable alternatives to be considered in the detailed analysis. This deliverable shall document the methods, rationale, and results of the alternatives screening process.

TASK 7 - TREATABILITY STUDIES (as necessary) (RI/FS Guidance, Chapter 5)

Treatability Studies shall be performed by the Respondent to assist in the detailed analysis of alternatives, in the event that EPA determines that these studies are necessary. If applicable, study results and operating conditions will later be used in the detailed design of the selected remedial technology. The following activities shall be performed by the Respondent.

A. Determination of Candidate Technologies and the Need for Treatability Studies (5.2; 5.4)

If necessary, the Respondent shall identify in a technical memorandum, subject to EPA review and comment, candidate technologies for a Treatability Studies program during the project

planning phase (Task 1). The listing of candidate technologies shall cover the range of technologies required for alternatives determined and refined during Site Characterization and the development and screening of Remedial Action Alternatives (Tasks 3 and __, respectively).

1. Conduct Literature Survey and Determine the Need for Treatability Studies (5.2)

The Respondent shall conduct a literature survey to gather information on performance, relative costs, applicability, removal efficiencies, operation and maintenance (O&M) requirements, and implementability of candidate technologies. If practical candidate technologies have not been sufficiently demonstrated, or cannot be adequately evaluated for the Site on the basis of available information, Treatability Studies shall be conducted. EPA shall determine whether Treatability Studies will be required.

2. Evaluate Treatability Studies (5.4)

Where EPA has determined that Treatability Studies are required, the Respondent and EPA shall decide on the type of Treatability Studies to use (e.g., bench versus pilot). Because of the time required to design, fabricate, and install pilot scale equipment as well as to perform testing for various operating conditions, the decision to perform pilot testing shall be made as early in the process as possible to minimize potential delays of the FS. To assure that a Treatability Study program is completed on time, and with accurate results, the Respondent shall either submit a separate Treatability Study Work Plan, or an amendment to the original RI/FS Work Plan for EPA review and approval.

B. Treatability Study Deliverables (5.5; 5.6; 5.8)

In addition to the memorandum identifying candidate technologies, the deliverables that are required when Treatability Studies are to be conducted include a Treatability Study Work Plan, a Treatability Study Sampling and Analysis Plan, and a Final Treatability Study Evaluation Report. EPA may also require a Treatability Study Health and Safety Plan, where appropriate.

1. Treatability Study Work Plan (5.5)

The Respondent shall prepare a Treatability Study Work Plan or amendment to the original RI/FS Work Plan for EPA review and approval. This Plan shall describe the background of the Site, remedial technologies to be tested, test objectives, experimental procedures, treatability conditions to be tested, measurements of performance, analytical methods, data management and analysis, health and safety, and residual waste management. The DQOs for Treatability Studies shall be documented as well. If pilot-scale Treatability Studies are to be performed, the Treatability Study Work Plan shall describe pilot plant installation and start-up, pilot plant operation and maintenance procedures, and operating conditions to be tested. If testing is to be performed off-site, permitting requirements must be addressed.

2. Treatability Study Sampling and Analysis Plan (5.5)

If the original QAPP or FSAP is not adequate for defining the activities to be performed during the Treatability Studies, a separate Treatability Study SAP or amendment to the original RI/FS SAP shall be prepared by the Respondent for EPA review and approval. It shall be designed to monitor pilot plant performance. Task 1c of this Scope of Work provides additional information on the requirements of the SAP.

3. Treatability Study Health and Safety Plan (5.5)

If the original RI/FS Health and Safety Plan is not adequate for defining the activities to be performed during the Treatability Studies, a separate or amended Health and Safety Plan shall be developed by the Respondent. Task 1c of this Scope of Work provides additional information on the requirements of the Health and Safety Plan. EPA does not "approve" the Treatability Study Health and Safety Plan.

4. Treatability Study Evaluation Report (5.6)

Following completion of Treatability Studies, the Respondent shall analyze and interpret the testing results in a technical report to EPA. Depending on the sequence of activities, this report may be a part of the RI/FS Report or a separate deliverable. The report shall evaluate each technology's effectiveness, implementability, cost, and actual results as compared with predicted results. The report shall also evaluate full-scale application of the technology, including sensitivity analysis identifying the key parameters affecting full-scale operation.

TASK 8 - DETAILED ANALYSIS OF REMEDIAL ACTION ALTERNATIVES (RI/FS Guidance, Chapter 6)

The detailed analysis shall be conducted by the Respondent to provide EPA with the information needed to allow for the selection of a remedy for the Site.

A. Detailed Analysis of Alternatives (6.2)

The Respondent shall conduct a detailed analysis of remaining alternatives. This analysis shall consist of an assessment of each option against a set of nine evaluation criteria, and a comparative review of all options using the same nine evaluation criteria as a basis for comparison.

1. Apply Nine Criteria and Document Analysis (6.2.1 - 6.2.4)

The Respondent shall apply nine evaluation criteria to the assembled Remedial Action Alternatives to ensure that the selected Remedial Action Alternative will be protective of human health and the environment; will be in compliance with, or include a waiver of, ARARs; will be cost-effective; will utilize permanent solutions and alternative treatment technologies, or resource recovery technologies, to the maximum extent practicable; and will address the statutory preference for treatment as a principal element.

The evaluation criteria include: (1) overall protection of human health and the environment; (2) compliance with ARARs; (3) long-term effectiveness and permanence; (4) reduction of toxicity, mobility, or volume; (5) short-term effectiveness; (6) implementability; (7) cost; (8) State acceptance; and (9) community acceptance. Criteria 8 and 9 are considered after the RI/FS Report has been released to the general public. For each alternative, the Respondent shall provide: (1) a description of the alternative that outlines the waste management strategy involved and identifies the key ARARs associated with each alternative; and (2) a discussion of the individual criterion assessment. Since the Respondent does not have direct input on criteria (8) State acceptance and (9) community acceptance, these two criteria will be addressed by EPA after completion of the Draft FS Report.

2. Compare Alternatives Against Each Other and Document the Comparison of Alternatives (6.2.5; 6.2.6)

The Respondent shall perform a comparative analysis among the Remedial Action Alternatives. That is, each alternative shall be compared against the others using the nine evaluation criteria as a basis of comparison. No alternative shall be identified by the Respondent as the preferred alternative in the Feasibility Study. Identification and selection of the preferred alternative is conducted by EPA.

B. Detailed Analysis Deliverables (6.5)

The Respondent shall prepare a Draft FS Report for EPA review and comment. This report, as ultimately adopted or amended by EPA, provides a basis for remedy selection by EPA and documents the development and analysis of Remedial Action Alternatives. The Respondent shall refer to the RI/FS Guidance for an outline of the report format and the required report content. The Respondent shall prepare a Final FS Report which satisfactorily addresses EPA's comments. Once EPA's comments have been addressed by the Respondent to EPA's satisfaction and EPA approval has been obtained or an amendment has been furnished by EPA, the Final FS Report may be bound with the Final RI Report.

ATTACHMENT A
REFERENCES

The following list, although not comprehensive, comprises many of the regulations and guidance documents that apply to the RI/FS process:

1. The National Oil and Hazardous Substances Pollution Contingency Plan, March 8, 1990.

2. "*Guidance for Conducting Remedial Investigations and Feasibility Studies Under* CERCLA, Interim Final" US. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive No. 9355.3-01.

3. "Interim Guidance on Potentially Responsible Party Participation in Remedial Investigation and Feasibility Studies," U.S. EPA, Office of Waste Programs Enforcement, Appendix A to OSWER Directive No. 9355.3-01.

4. "Guidance on Oversight of Potentially Responsible Party Remedial Investigations and Feasibility Studies," U.S. EPA, Office of Waste Programs Enforcement, OSWER Directive No. 9835.1(a) and (b).

5. "A Compendium of Superfund Field Operations Methods," Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.

6. "EPA NEIC Policies and Procedures Manual," May 1978, revised November 1984, EPA-330/9-78-001-R.

7. "Data Quality Objectives for Remedial Response Activities," U.S. EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA/540/G-87/003, March 1987, OSWER Directive No. 9335.0-7B.

8. "Guidelines and Specifications for Preparing Quality Assurance Project Plans," U.S. EPA, Office of Research and Development, Cincinnati, OH, QAMS-004/80, December 29, 1980.

9. "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans," *U.S. EPA, Office of Emergency and Remedial Response, QAMS-005/80,* December 1980.

10. "Users Guide to the EPA Contract Laboratory Program," U.S. EPA, Sample Management Office, December 1986.

11. "Interim Guidance on Compliance with Applicable or Relevant and Appropriate Requirements," U.S. EPA, Office of Emergency and Remedial Response, July 9, 1987, OSWER Directive No. 9234.0-05.

12. "CERCLA Compliance with Other Laws Manual," Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (Draft), OSWER Directive No. 9234.1-01 and -02.

13. "Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites," U.S. EPA, Office of Emergency and Remedial Response, (Draft), OSWER Directive No. 9283.1-2.

14. "Draft Guidance on Preparing Superfund Decision Documents," U.S. EPA, Office of Emergency and Remedial Response, March 1988, OSWER Directive No. 9355.3-02.

15. "Interim Final Risk Assessment Guidance for Superfund - Volume I - Human Health Evaluation Manual, Part A," U.S. EPA, Office of Emergency and Remedial Response, EPA/540/1-89/002A, December 1989, OSWER Directive No. 9285.7-0la.

16. "Interim Final Risk Assessment Guidance for Superfund - Volume I - Human Health Evaluation Manual, Part B," U.S. EPA, Office of Emergency and Remedial Response, EPA/540/1-89/002B, OSWER Directive No. 9285.7-0lb.

17. "Interim Final Risk Assessment Guidance for Superfund - Volume I - Human Health Evaluation Manual, Part C," U.S. EPA, Office of Emergency and Remedial Response, EPA/540/1-89/002C, OSWER Directive No. 9285.7-01c.

18. "Interim Final Risk Assessment Guidance for Superfund - Volume I - Human Health Evaluation Manual, Part D," U.S. EPA, Office of Emergency and Remedial Response, EPA 540-R-97033, OSWER Directive No. 9285.7-01d.

19. "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments," U.S. EPA, Office of Solid Waste and Emergency Response, EPA 540-R-97-006, June 1997, OSWER Directive No. 9285.7-25.

20. "Superfund Exposure Assessment Manual," U.S. EPA, Office of Emergency and Remedial Response, EPA/540/1-88/001, April 1988, OSWER Directive No. 9285.5-1.

21. "Guidance for Data Usability in Risk Assessment," U.S. EPA, Office of Emergency and Remedial Response, EPA/540/G-90/008, October 1990, OSWER Directive No. 9285.7-05.

22. "Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions," April 22, 1991, OSWER Directive No. 9355.0-30.

23. "Health and Safety Requirements of Employees Employed in Field Activities," U.S. EPA, Office of Emergency and Remedial Response, July 12, 1981, EPA Order No. 1440.2.

24. OSHA Regulations in 29 CFR 1910.120 (Federal Register 45654, December 19, 1986).

25. "Interim Guidance on Administrative Records for Selection of CERCLA Response Actions," U.S. EPA, Office of Waste Programs Enforcement, March 1, 1989, OSWER Directive No. 9833.3A.

26. "Community Relations in Superfund: A Handbook," U.S. EPA, Office of Emergency and Remedial Response, June 1988, OSWER Directive No. 9230.0-3B.

27. "Community Relations During Enforcement Activities And Development of the Administrative Record," U.S. EPA, Office of Waste Programs Enforcement, November 1988, OSWER Directive No. 9836.0-1A.

28. "Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM) November 2001" U.S. EPA Region IV, Science and Ecosystems Support Division (revised periodically).

29. "USEPA Contract Laboratory Program Statement of Work for Organics Analysis," U.S. EPA, Office of Emergency and Remedial Response, February 1988.

30. "USEPA Contract Laboratory Program Statement of Work for Inorganics Analysis," U.S. EPA, Office of Emergency and Remedial Response, July 1988.

31. "Supplemental Guidance to RAGS, Region 4 Bulletin" www.epa.gov/region4/waste/oftecser/otsguide.htm

32. "EPA Requirements for Quality Assurance Project Plans (QA/R-5)" EPA/240/B-01/003, March 2001.

33. "EPA Guidance for Quality Assurance Project Plans (QA/G-5)" EPA/600/R-98/018, February 1998.

34. ANSI/ASQC E-4 1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" American National Standard, January 5, 1995.

35. "EPA Requirements for Quality Management Plans (QA/R-2)" EPA/240/B-01-002, March 2001.

ATTACHMENT B

SUMMARY OF THE MAJOR DELIVERABLES FOR THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY AT THE LCP-HOLTRACHEM SUPERFUND SITE

TASK	DELIVERABLE	EPA RESPONSE
Undefined Task No.	**PROGRESS**	
	Monthly Progress Reports	Review and Comment
TASK 1	**SCOPING**	
	Compilation of Existing Data Technical Memorandum	Review and Approve
	RI/FS Work Plan	Review and Approve
	Field Sampling and Analysis Plan	Review and Approve
	Quality Assurance Project Plan	Review and Approve
	Site Health and Safety Plan	Review and Comment
TASK 2	**COMMUNITY RELATIONS**	
TASK 3	**SITE CHARACTERIZATION**	
	Preliminary Site Characterization Briefing Document	Review and Comment
	Draft RI Report	Review and Comment
	Final RI Report	Review and Approve
TASK 4	**BASELINE HUMAN HEALTH RISK ASSESSMENT**	
	Draft Baseline Human Health Risk Assessment Report	Review and Comment
	Final Baseline Human Health Risk Assessment Report	Review and Approve

TASK 5	**ECOLOGICAL RISK ASSESSMENT**	
	Screening Level Problem Formulation and Ecological Effects Evaluation; and Screening-Level Exposure Estimate and Risk Calculation (Steps 1 & 2)	Review and Approve
	Baseline Risk Assessment Problem Formulation (Step 3)	Review and Approve
	Study Design and DQO Process (Step 4) (if required)	Review and Approve
	Field Verification of Sampling Design (Step 5) (if required)	Review and Approve
	Draft Ecological Risk Assessment Report (Risk Characterization-Step 7)	Review and Comment
	Final Ecological Risk Assessment Report	Review and Approve
TASK 6	**DEVELOPMENT AND SCREENING OF REMEDIAL ACTION ALTERNATIVES**	
	Technical Memorandum on Remedial Technologies, Alternatives, and Screening	Review and Comment
TASK 7	**TREATABILITY STUDIES**	Review and Approve, If Required
	Determination of Candidate Technologies and the Need for Treatability Studies Technical Memorandum	Review and Approve
	Treatability Study Work Plan (if appropriate) (or amendment to original Work Plan)	Review and Approve
	Treatability Study Sampling and Analysis Plan (if appropriate)	Review and Approve
	Treatability Study Site Health and Safety Plan (if appropriate)	Review and Comment

	Treatability Study Evaluation Report (if appropriate)	Review and Approve
TASK 8	**DETAILED ANALYSIS OF REMEDIAL ACTION ALTERNATIVES**	
	Draft FS Report	Review and Comment
	Final FS Report	Review and Approve

With the exception of the monthly progress report, for each deliverable, the Respondent shall submit 3 bound copies plus 1 unbound copy to EPA and 2 copies to NC DENR.

In addition, the Respondent shall submit to EPA one electronic copy of the Final RI Report, the Final Baseline Human Health Risk Assessment Report, the Final Ecological Risk Assessment Report, the Final Treatability Study Report (if required) and the Final Feasibility Study Report. The electronic version should be submitted in a common word processing format such as Microsoft Word/Excel, Corel WordPerfect, Lotus 1-2-3, or a .pdf file that can be read by common readers such as Adobe Acrobat.

Only two copies of the monthly progress report shall be submitted, 1 copy to EPA and 1 copy to NC DENR. See the Administrative Order on Consent for additional reporting requirements and further instructions on submittal and dispositions of deliverables.

ATTACHMENT C

GENERAL SCHEDULE FOR THE MAJOR REMEDIAL INVESTIGATION/ FEASIBILITY STUDY ACTIVITIES AND DELIVERABLES AT THE LCP-HOLTRACHEM SUPERFUND SITE

ACTIVITY/DELIVERABLE	SCHEDULE DATE (CALENDAR DAYS)
Effective Date of A.O.C.	A
Monthly Progress Reports	5th day of each month
Name of Supervising Contractor Submitted by Respondent	A+15
Supervising Contractor Approved by EPA	B
Compilation of Existing Data Technical Memorandum	B+30
Meeting to discuss the use of Existing Data	C
Ecological Screening Level Problem Formulation and Screening Level Exposure Estimate (steps 1 & 2)	C+30
EPA Approval of Ecological Screening Level Problem Formulation and Screening Level exposure estimate (steps 1 & 2)	D
Ecological Baseline Risk Assessment Problem Formulation (Step 3)	D+30
EPA Approval of Ecological Baseline Risk Assessment Problem Formulation (Step 3)	E
Draft RI/FS Work Plan and Schedule	E+30
Ecological Study Design and DQO Process (step 4) (if appropriate). Ecological Field Verification Sampling Plan (step 5) (if appropriate)	E+30
Draft Sampling & Analysis Plan (includes QAPP)(SAP) and Draft Site Health & Safety Plan (SHSP)	E+30
Receipt of EPA's Comments on Draft RI/FS Work Plan and Schedule	F

Receipt of EPA comments on Ecological Study Design and DQO Process (step 4) (if appropriate) and Ecological Field Verification Sampling Plan (step 5) (if appropriate)	F
Receipt of EPA comments on Draft Sampling and Analysis Plan (includes QAPP) (SAP) and Draft Site Health & Safety Plan (SHSP)	F
Final RI/FS Work Plan and Schedule, SAP and SHSP, and Ecological Assessment Plans 4 and 5 Submitted (if Ecological assessment steps 4 and 5 required)	F+30

Note: If Steps 4 and 5 of Ecological Assessment are required by EPA, the final RI/FS Work Plan is due at the same time as the final Ecological Assessment plans (steps 4 and 5) as outlined above.

EPA Approval of Final RI/FS Work Plans and Schedule, SAP and SHSP, and Ecological Risk Assessment Plans (Steps 4 and 5)	G

Note: All work plans will be approved prior to the initiation of Field Work.

Initiate Fieldwork	G+30
Fieldwork Complete	G+scheduled days
Receive Validated Data	H
Preliminary Site Characterization Briefing Document	H+30
Meeting to discuss Preliminary Site Characterization Briefing Document	I
Draft Candidate Technologies Technical Memorandum, and Treatability Study Determination Submitted[1]	I+30
Draft RI	I+30
Draft Human Health and Ecological Risk Assessment Reports	I+30

[1]In the event that EPA's comments on the Preliminary Site Characterization Briefing Document require additional data, this schedule shall be construed to be 30 days after the receipt of additional validated data.

Receipt of EPA's Comments on Draft RI, Draft Human Health and Ecological Risk Assessment Reports, Draft Candidate Technologies Technical Memorandum and notification of need to conduct Treatability Studies	J
Final RI Report, Human Health and Ecological Risk Assessment Reports, and Candidate Technologies Technical Memorandum Submitted	J+30
EPA's Approval of Final RI, Human Health and Ecological Risk Assessment Reports, and Candidate Technologies Technical Memorandum	K
Draft Treatability Study Work Plan and Schedule, Draft Treatability Sampling and Analysis Plan, and Draft Treatability Site Health and Safety Plan Submitted (if appropriate)	K+30
Receipt of EPA comments on Draft Treatability Study Work Plan and Schedule, Draft Treatability Sampling and Analysis Plan, and Draft Treatability Site Health and Safety Plan (if appropriate)	L
Finalize Treatability Study Work Plan and Schedule, Treatability Sampling and Analysis Plan, and Treatability Site Health and Safety Plan (if appropriate)	L+30
EPA approval of Final Treatability Study and Schedule, Treatability Sampling and Analysis Plan, and Treatability Site Health and Safety Plan (if appropriate)	M
Initiate Treatability Study (if appropriate)	M+30
Draft Treatability Study Report Submitted (if appropriate)	M+scheduled days
Receipt of EPA Comments on Draft Treatability Study Report (if appropriate)	N
Final Treatability Study Report Submitted (if appropriate)	N+30
EPA's Approval of Treatability Study Report (if appropriate)	O

Draft Remedial Technologies, Alternatives and Screening Technical Memorandum	K+45
Receipt of EPA's Comments on Draft Remedial Technologies, Alternatives and Screening Technical Memorandum	P
Final Remedial Technologies, Alternatives and Screening Technical Memorandum Submitted	P+30
EPA's Approval of Remedial Technologies, Alternatives and Screening Technical Memorandum	Q
Draft FS Submitted (if no Treatability Study conducted)	Q+30

Note: The RI will be approved prior to the submission of the Draft FS.

Draft FS Submitted (if Treatability Study conducted)	O+30
Receipt of EPA's comments on Draft FS	R
Final FS Submitted	R+30
EPA's Approval of Final FS	S

Note: If a Treatability Study is required, the FS submittal schedule becomes dependent on the schedule of approval of the Final Treatability study by EPA, otherwise, it remains linked to receipt of comments on the Draft RI report.

Note: *Other deliverables listed in Attachment B may also be incorporated into the schedule to be submitted as part of the RI/FS Work Plan. The above schedule may be revised by mutual agreement.*

Note: This schedule may be modified by the need to collect additional data, submit additional draft reports or technical memoranda, and/or conduct longer-term treatability studies, as approved by EPA and consistent with the AOC. The time required to receive EPA comments and approvals for major deliverables is not specified in the schedule but rather identified as milestone points in the RI/FS activities progress.