TN ... 1CIS5869132 9/9/03

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

IN THE MATTER OF:	)	
	)	**Proceeding under Sections 104,**
Illinois Central Railroad Company's	)	**122(a) and 122(d)(3) of the**
Johnston Yard Superfund Site,	)	**Comprehensive Environmental**
	)	**Response, Compensation**
	)	**and Liability Act of 1980, as amended,**
2921 Horn Lake Road, Memphis,	)	**42 U.S.C. §§ 9604 and 9622.**
Shelby County, Tennessee	)	
	)	
Illinois Central Railroad Company,	)	**EPA Docket No.:** CER-04-2003-3525
	)	
Respondent	)	
	)	

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 Illinois Central Railroad Company, a corporation incorporated under the laws of the State of Illinois (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 by Regional Delegation 14-14-C through the Director, Waste Management Division, to the Chief of the North Superfund Remedial Branch.

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) at the Site described more particularly hereinafter. Respondent consents to, and will not contest, EPA's jurisdiction regarding this Order.

Respondent's consent to this Consent Order is not an admission of liability, nor of EPA's

Findings of Fact or Conclusions of Law or Determinations.

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. 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 Respondent shall alter its responsibilities under this Consent Order.

Respondent shall provide a copy of this Consent Order to any subsequent owners or successors before ownership rights are transferred. Respondent shall provide a copy of this Consent Order to all contractors, subcontractors, laboratories, and consultants it has retained to conduct any work to be performed under this Consent Order no later than fourteen (14) days after the effective date of this Consent Order or the date any such party agrees to perform any such services, whichever is later. 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) to proceed with work on this Site pursuant to EPA's Superfund Alternative Sites program although EPA reserves the right to remove the Site from this program at any time and for any reason; (B) 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; (C) 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; (D) to recover response and oversight costs incurred by EPA with respect to this Consent Order. Prior to the effective date of this Order, Respondent conducted investigations and studies of environmental conditions at the Site that it initiated for its own use, without any coordination with EPA and that were not overseen and have not as yet been evaluated, approved, or adopted by EPA as scientifically valid investigations and studies. Accordingly, to the maximum extent feasible, the RI and FS undertaken pursuant to this Order will supplement and expand on Respondent's prior investigations and studies. In particular, any utilization of the prior investigations and studies by EPA assumes that they meet the Quality Assurance requirements provided in Section X of this 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. Activities conducted in compliance with this Consent Order shall be deemed to be in compliance with the NCP.

EPA may utilize information and data collected under the RI in any consideration of the listing of the Site on the National Priorities List. EPA also intends to utilize this information in its future decision-making regarding this site, including the formal issuance of a Record of Decision (ROD) based on the data that is developed pursuant to this Consent Order.

IV. FINDINGS OF FACT

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

A. The Site is an active railroad facility located at 2921 Horn Lake Road, in the southwestern portion of Memphis, Shelby County, Tennessee, at latitude 35°04'08" north and longitude 90°04'11" west. The Site is sometimes referred to as the Illinois Central Johnston Yard and sometimes simply as the Johnston Yard. The Site is bordered to the south by a residential neighborhood, to the east and northwest by light industry, and to the north and west by an undeveloped, wooded area. It encompasses approximately 288 acres including several large buildings used for locomotive repair and equipment maintenance. An intermodal compound is located on the northwestern side of the Site. A hopper car wash area is located in the south-central portion of the Site. Mechanical facilities, including a roundhouse and a car shop, where workers repair locomotives and railcars, is in the east-central portion of Site.

The Site is located in the western part of Tennessee, within the Gulf Coastal Plain physiographic province, and is near the axis of the Mississippi embayment syncline, which runs southward, at a gradient of approximately 10 feet per mile, and generally follows the course of the Mississippi River. The topography of the area is moderately to gently rolling, with elevations ranging from 240 feet to 310 feet above mean sea level. The Site is located at approximately 240 feet above mean sea level.

The east central portion of the Site has been leveled with fill material. As a result, in this area of the Site, a shallow perched groundwater flow system overlies the natural ground surface. Beneath the fill material, natural alluvium and terrace deposits comprise the surficial aquifer, which is approximately 50 to 75 feet thick in the area of the Site. The water in the surficial aquifer is below land surface, except at seeps and springs, and generally conforms to the topography. Infiltration of precipitation provides the primary recharge to the surficial aquifer.

Beneath the alluvium and terrace deposits lies the Jackson-Upper Claiborne confining unit, which separates the surficial aquifer from the Memphis Sand aquifer, a confined aquifer located between the Jackson-Upper Claiborne confining unit and the Flour Island confining unit. According to USGS studies, over 100 feet of the Jackson-Upper Claiborne confining unit is located beneath the Site. There is a possibility that there may be breaks in the Jackson-Upper Claiborne confining unit that could permit contamination in the surficial aquifer to infiltrate the

Memphis Sands aquifer.

The Memphis Sand aquifer supplies approximately 95 percent of the water used in the Memphis area for municipal and industrial purposes. The nearest public water supply well drawing water from the Memphis Sand aquifer is approximately 2 miles from the Site. In the Memphis area, groundwater flow in the Memphis Sand aquifer is influenced by localized cones of depression created by surrounding well fields, and horizontal flow is toward the center of the nearest depression. Recharge to the aquifer is generally by precipitation along the outcrop or subcrop belt where the surface of the aquifer is at or near ground surface, or where the Jackson-Upper Claiborn confining unit is thin or absent, thereby allowing downward infiltration. Where the Memphis Sand aquifer is confined and head differences are favorable, a recharge component locally enters the Memphis Sand aquifer by downward leakage from the surficial aquifer or the Jackson-Upper Claiborne confining unit.

EPA conducted a Site Inspection (SI) conducted in April 1991 and an Expanded Site Investigation (ESI) in October 2001. Analysis of sampling data obtained from, and adjacent to, the Site during these investigations indicates that elevated concentrations of a number of organic and inorganic contaminants in surface soil, subsurface soil, surface water, sediment, and shallow groundwater located on the Site. Maximum contaminant levels (MCLs) for two organic compounds and five inorganic constituents were exceeded in groundwater samples taken at the Site during the SI. No MCL was exceeded in any groundwater sample collected during the ESI. It is EPA's best professional judgment that the analytical data obtained from the SI and ESI establish the need to conduct the Remedial Investigation provided for in this Consent Order.

B. Respondent is both the current owner and the current operator of the Site and is the sole owner of the Site at this time. However, CSX currently leases a portion of the intermodal area. In addition, Respondent has owned and operated a railroad facility at the Site since at least 1900. Currently, Respondent uses the Site for locomotive fueling, car repair, hopper car cleaning, and as an intermodal facility for the bulk loading and unloading of semi-trailers onto and off of railroad carrier cars. Portions of the intermodal function have been leased to independent trucking companies for their piggyback operations.

C. (i) EPA believes that Respondent has been both owner and operator of the Site, either directly or through its predecessors-in- interest, at all times when hazardous substances were disposed of on the Site. No information to the contrary has been provided to EPA.

(ii) EPA believes that Respondent and its predecessors-in-interest were operators of the Site at the time all contaminants of concern came to be present at the Site.

D. EPA and the State of Tennessee (the State) have conducted the following response activities at the Site in the past:

A preliminary assessment (PA) of the Site was conducted by the State in January 1984. The State claims that an individual assumed to be an employee of Respondent was interviewed during

the PA. The State claims that he stated that Respondent was registered with the United States Department of Transportation (USDOT) for loading and unloading hazardous raw materials. He emphasized that the facility did not handle hazardous waste, and asserted that no major spills or on-site disposal activities had occurred at the Site. The facility was granted and currently has a USDOT permit for transporting hazardous materials by rail.

As a result of public concern regarding the transport of hazardous raw materials through the Site and the potential for spills of hazardous materials during past operations, EPA conducted a site inspection (SI) in October 1991. During the SI, EPA collected a total of 20 environmental samples. Analysis of samples collected during the SI revealed the presence of elevated concentrations of a number of organic and inorganic contaminants in surface soil, subsurface soil, surface water, sediment, and groundwater on the Site. Maximum contaminant levels (MCL) for two organic compounds and five inorganic compounds were exceeded in groundwater samples taken at the Site during the SI. Because of the diversity of the materials handled at the facility, EPA believes that all of the contaminants detected during the SI may be attributable to facility operations. Based on the results of the field investigation, the SI Report recommended that the Site be evaluated using the Hazard Ranking System (HRS).

In March 2000, the Respondent completed a Phase I environmental site assessment (ESA) at the Site. The ESA generated some evidence of minor spills at the yard in addition to previous spills in the railroad ballast area. The ESA Phase I findings recommended that Phase II ESA activities be conducted to further assess the nature and extent of any contamination at the Site.

In September 2000, EPA completed a site reassessment (SA). This led EPA to believe that there was a need for further investigation, and led to an Expanded Site Inspection (ESI) by an EPA contractor that was completed during the spring of 2002.

Analytical results obtained from on-site surface soil, surface water and groundwater samples, collected during the ESI, revealed that concentrations of hazardous substances, including, but not limited to, arsenic, lead, mercury, chromium, solvents, pesticides, and petroleum products at lower levels, are present in various media on the Site.

Source areas identified during this ESI are an unknown volume of contaminated soil and two wastewater treatment ponds. The area of contaminated soil on the Site is unknown, but clearly is less than the entire 288 acres comprising the Site The two wastewater treatment ponds cover an area approximately 0.50 acre in size.

E. EPA believes that the principal public health concern identified to date arising from the contamination of this Site is the potential for contaminant migration to the underground drinking water source of the City of Memphis and the surrounding area. EPA also believes that there is a potential for surface contaminant runoff during storm events to enter surface water bodies off-site, in particular a wetlands area nearby.

V. CONCLUSIONS OF LAW

Based on the Findings of Fact in Section IV above, and the administrative record in this matter, EPA has determined that:

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

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

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

D. Contaminants found on 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 endangerment 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 above have been released into the environment and their 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 Respondent is qualified to conduct such work.

VII. WORK TO BE PERFORMED

A. The purpose of the RI/FS is to supplement investigations and studies previously conducted by Respondent on its own initiative, to insure that Respondent's previous

investigations and studies were scientifically sound and sufficient to support Respondent's contentions regarding environmental conditions at the Site, and to further investigate the nature and extent of contamination at the Site, as needed, and to develop and evaluate potential remedial alternatives, including the Baseline Risk Assessment and the Ecological Risk Assessment. The RI and FS are interactive and may be conducted concurrently so that the data collected in the RI influences the development of remedial alternatives in the FS, which in turn affects the data needs and the scope of treatability studies.

The major components of the Baseline Risk Assessment include contaminant identification, exposure assessment, toxicity assessment, and human health and ecological risk characterization. The Baseline Risk Assessment and the Ecological Risk Assessment shall provide sufficient information concerning the human health and ecological risks at the Site to enable Respondent to prepare a comprehensive Feasibility Study Report acceptable to EPA. Respondent shall also prepare a Baseline Risk Assessment Report and an Ecological Risk Assessment Report based on the data collected during Site Characterization. EPA will include the findings of the Baseline Risk Assessment and Ecological Risk Assessment Report in its Record of Decision (ROD) for this Site.

B. 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, 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 Respondent of its approval or disapproval in writing.

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. 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.

C. Respondent shall conduct this RI/FS and produce draft RI and FS reports that are in accordance with this Consent Order, the *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (U.S. EPA, Office of Emergency and Remedial Response, October 1988)*, and any other guidance that EPA uses in conducting an RI/FS (A list of the primary guidance is attached and incorporated herein as if fully set forth herein.), as well as other requirements in this Consent Order. The RI/FS Guidance describes the report format and the required report content. Respondent will furnish all necessary personnel, materials, and services needed, or incidental to, performing the RI/FS, except as otherwise specified in this Consent Order.

Upon the completion of the RI/FS, EPA will be responsible for the selection of a site remedy, if one is determined to be needed, and will document this selection in a Record of Decision (ROD). The remedial action alternative selected by EPA will meet the cleanup standards specified in CERCLA Section 121, 42 U.S.C.§ 9621. That is, the selected remedial action will be protective of human health and the environment, will be in compliance with, or include a waiver of, applicable or relevant and appropriate requirements (ARARs) of other laws, 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 final RI/FS report, as adopted by EPA, and the EPA-approved Baseline Risk Assessment(BRA), along with the Administrative Record (AR), will form the basis for selection of any Remedial Action (RA) to be performed at the Site and will provide the information needed to develop the Record of Decision (ROD).

D. As specified in CERCLA Section 104(a)(1), 42 U.S.C.§ 9604(a)(1), EPA will oversee the Respondent's activities throughout the RI/FS. Respondent will support EPA's initiation and management of activities related to the implementation of oversight activities.

E. Attached hereto and incorporated herein as if fully set forth *in haec verba* is a Scope of Work (SOW), which provides in substantially greater detail the expectations that EPA has with respect to Respondent's performance of the work to be performed pursuant to this Consent Order. In the event any actual or arguable inconsistency is discovered between the terms and conditions of the SOW and this Consent Order, the Consent Order will be deemed to contain the controlling language.

More particularly, and within the time period provided in Attachment C to the Scope of Work, Respondent shall prepare and submit to EPA a Remedial Investigation and Feasibility Study Work Plan (RI/FS Work Plan). The RI/FS Work Plan shall include: (a) a comprehensive description of the work to be performed; (b) a sampling and analysis plan for the media to be investigated (i.e., surface and subsurface soils, groundwater, sediments, surface water, air, etc.); (c) the methodologies to be employed; (d) the rationale for the selection of each methodology, (e) a comprehensive schedule for completion of each major activity required by this Consent Order and for the submission of each required deliverable; and (f) a Health and Safety Plan. Each Plan may be delivered under separate cover, as provided in Attachment C to the Scope of Work. All plans shall be developed in accordance with the National Contingency Plan (NCP), 42 C.F.R.

Part 300, and appropriate EPA Guidance regarding RI/FS activities conducted under CERCLA.

The schedule for completion of major activities required by this Consent Order contained in the RI/FS Work Plan upon approval by EPA shall become an enforceable component of this Consent Order. However, modifications to the RI/FS project schedule may be made with mutual consent between the EPA Project Coordinator and Respondent's Project Coordinator designated pursuant to Section IX of this Consent Order. This authority to modify the RI/FS activity completion schedule is an exception to the limitation on the authority of the Project Coordinators to amend this Consent Order orally as set forth in Section XXIII hereinbelow, provided, however, that any such oral modification must be documented by a memorandum signed by the EPA Project Coordinator no later than three (3) business days following the oral modification or the oral modification shall be deemed to be void.

F. 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 sampling frequency, sampling equipment and procedures, and sample handling and analysis requirements. 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.

G. The RI/FS Work Plan shall include a site-specific Health and Safety Plan that conforms with the Respondent's health and safety program and OSHA regulations and protocols.

H. Respondent shall perform a Human Health Baseline Risk Assessment using data generated during implementation of the RI/FS Work Plan. The Human Health Baseline Risk Assessment shall be prepared in accordance with established EPA protocols delineated in EPA's *Risk Assessment Guidance for Superfund* and other appropriate supplements or addenda thereto.

I. Respondent shall perform an Ecological Baseline Risk Assessment using data generated during implementation of the RI/FS Work Plan and other supplemental field characterization activities. The Ecological Baseline Risk Assessment shall be prepared in accordance with established EPA protocols delineated in the EPA policy document entitled *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments, (EPA 540-R-97-006)* and other appropriate EPA Guidance regarding the performance of an ecological risk assessment under CERCLA.

J. No later than thirty (30) calendar days following EPA's approval of the RI/FS

Work Plan, Respondent shall mobilize to the Site to commence sample collection activities.

K. Respondent shall submit to EPA written monthly progress reports which: (a) describe the actions which have been taken toward achieving compliance with this Consent Order during the previous month; (b) include all results of sampling and analysis and all other data received by Respondent during the reporting period; (c) report all action steps required by the RI/FS Work Plan that were completed during the previous month; (d) 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 (e) include current information regarding (1) percentage of completion, (2) unresolved delays, both encountered or anticipated, that may affect compliance with the schedule for further implementation of the RI/FS Work Plan, and (3) a description of efforts made to mitigate those delays or anticipated delays. A monthly progress report for each calendar month following the effective date of this Consent Order is to be submitted to EPA by the fifth day of the following month until the final RI/FS has been approved by EPA as both complete and satisfactory.

L. EPA will compile all documents generated pursuant to this Order and other site-specific information in an Administrative Record for the Site. The Administrative Record shall contain all information EPA will use in compiling a proposed cleanup plan (Proposed Plan) for the Site in conjunction with issuing a Record Of Decision (ROD) for this Site. As required, the Proposed Plan will be made available to the affected public for public review and comment, and a public hearing will be held concerning its contents. EPA will respond to all significant comments received on the Proposed Plan during the formal public comment period in the Responsiveness Summary of the ROD, as required by law.

M. The indicated number of copies of each deliverable required pursuant to this Consent Order, including reports, plans, plus any other relevant correspondence or materials shall be submitted by regular certified mail, express mail, or overnight delivery to the following persons at the following addresses, or to such other persons and addresses as the EPA hereafter may designate in writing.

The number of copies to be submitted to EPA for each deliverable is identified in the Statement of Work. Copies shall be submitted to the EPA Project Manager currently designated as:

Ms. Beth Walden
Remedial Project Manager
U.S. EPA Region 4
Sam Nunn Atlanta Federal Center
WD-NSMB-11th Floor
61 Forsyth Street, SW
Atlanta, GA 30303-8960

Two (2) copies shall be sent to the Tennessee Department of Environment and Conservation (TDEC)'s representative, currently designated as:

Jordan English, Superfund Manager
Memphis Environmental Assistance Center
Tennessee Department of Environment and Conservation
Perimeter Park
2510 Mt. Moriah, Suite E-645
Memphis, TN 38115-1511

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

Mr. Bob Strong
Illinois Central Railroad Company
2151 North Mill Street
Jackson, Mississippi 39207

N. EPA will prepare a community relations plan, in accordance with EPA guidance and the NCP. Respondent shall provide any requested information needed to support EPA's community relations programs.

Within thirty (30) days following receipt of a written request from EPA, Respondent also shall provide EPA with a Technical Assistance Plan (TAP) for providing and administering up to $50,000 of Respondent's funds to be used by a qualified community group to hire independent technical advisors in accordance with EPA guidelines to provide community input regarding Section VII (Work To Be Performed) of this Consent Order as required by CERCLA in connection with EPA's Superfund Alternative Sites program. The TAP shall also state that Respondent will provide and administer up to $50,000 in additional funds above its initial provision of $50,000 noted above if EPA, in its unreviewable discretion, determines that the selected community group has demonstrated a need for such additional funds pursuant to 40 C.F.R. §35.4065 prior to EPA's issuance of the ROD contemplated by this Consent Order. If EPA disapproves of, or requires revisions to, the TAP, in whole or in part, Respondent shall amend and submit to EPA a revised TAP that is responsive to EPA's comments, within thirty (30) days of its receipt of EPA's comments, or submit the matter for dispute resolution as provided in Section XIV hereof.

O. 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. 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.

P. Any interim removal or remedial measures (Interim Measures) conducted by Respondent during the implementation of this Consent Order, including the removal of any soil debris or other material or substance from the Site, 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 shall be approved by EPA before Respondent begins implementation of the proposed Interim Measures.

With respect to any Interim Measures proposed by Respondent under this Consent Order, Respondent shall also provide EPA (as a provision of the initial RI/FS Work Plan or in the form of an amendment to the RI/FS Work Plan) with a proposal for Site control to be instituted upon completion of the measures. The proposal for Site control shall be consistent with Section 300.415(k) of the National Contingency Plan and OSWER Directive 9360.2-02. Upon EPA approval, Respondent shall implement such Site 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 Respondent that EPA will modify the submission to cure the deficiencies; or (2) direct Respondent to modify the submission to cure the deficiencies. Initial submission by Respondent of a deliverable that is not approved by EPA pursuant to this subparagraph "A" does not constitute a violation under this Consent Order.

B. Upon receipt of a notice of disapproval and notification directing modification of the submission, Respondent shall, within thirty (30) days, or such other shorter period that EPA reasonably deems appropriate under the circumstances, 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 non-deficient 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 by EPA. Following EPA approval or modification of a submittal or portion thereof, Respondent shall not thereafter alter or amend such submittal or portion thereof unless directed by EPA to so do.

D. If, upon re-submission, the plan, report, or item is not approved, Respondent shall be permitted fourteen (14) days within which to satisfy EPA's concerns without being in violation of this Consent Order and subject to Stipulated Penalties for non-compliance therewith. If any issues pertaining to such re-submission, the plan, report, or item are not resolved within

this fourteen (14) calendar day window, Respondent must initiate a dispute resolution proceeding pursuant to Section XIV herein in order to avoid liability for stipulated penalties for noncompliance. In the event of a ruling favoring EPA, 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. 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.

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 the *Environmental Investigations Standard Operating Procedures and Quality Assurance Manual*, May 1996 (including 1997 revisions) 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 and its 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 without limitation 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 its authorized representatives, 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, 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 during "normal business hours" to the Site and to any other 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.

The term "normal business hours " shall be deemed to be between the hours of 6:00 a.m. and 6:00 p.m. Monday through Friday of each calendar week excepting only legal federal holidays.

Due to the fact that the Site is an operating rail yard, EPA's employees and contractors, including representatives of the State of Tennessee, consult with Respondent and use their best efforts to comply with Respondent's safety rules while on the Respondent's property. However, EPA specifically reserves all of its legal access rights in the event they are required in order to protect public health and the environment.

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 or, as applicable, the salaries of Government legal personnel and other costs incurred by the United States in the course of obtaining such needed 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 not less than 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 Respondent objects to any EPA notice of disapproval or decision made pursuant to this Consent Order, Respondent shall notify EPA's Project Coordinator in writing of its objections within 14 calendar days after receipt of the notice of disapproval or 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 Respondent then have an additional fourteen (14) calendar days to resolve the dispute informally by agreement. If agreement cannot be reached within that fourteen (14) calendar day period, the EPA Waste Management Division Director shall review the matter and provide Respondent a written decision that shall include the reasons supporting that decision. The Division Director's determination shall be 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 of the costs of the work 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 this 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, weather conditions that are not unusual in the area of the Site for the time of year in question, 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 anyone acting under 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 4. 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 its 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, 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. timely submittal of the RI/FS Work Plan, Sampling and Analysis Plan, draft RI Report and draft FS Report required under this Consent Order;

2. timely submittal of 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. timely submittal of 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 30th day	$ 250
31st through 60th day	$ 750
61st day and beyond	$1500

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 $100 per violation for each day during which Respondent fails to submit and, if necessary, to modify its monthly reports.

C. Respondent shall be liable to EPA for stipulated penalties in the amount of $200 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 thirty (30) 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 day period, at the rate established by the Department of Treasury under 31 U.S.C. § 3717. The check and transmittal 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 mailed to:

U. S. Environmental Protection Agency
Region 4
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 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. EPA may at its sole, nonreviewable discretion waive or reduce any stipulated penalty that accrues pursuant to this Consent Order.

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, TDEC, or their authorized representatives in oversight of Respondent's performance of work under the Consent Order. Respondent also agrees to pay all unreimbursed response costs incurred by EPA and TDEC prior to the effective date of this Consent Order.

At the end of each fiscal year, 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. TDEC will provide EPA with a statement of its costs incurred. EPA will include these costs in its accounting documentation, as these are received.

EPA's Agency Financial Management System summary data (SCORPIOS Reports) 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 sixty (60) calendar days of receipt of each accounting, remit a corporate 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 Illinois Central Gulf Railroad Company/Johnston Yard Superfund Site; EPA Region 4; Site/Spill ID Number A48J; and the EPA docket number for this action. The check shall be sent to:

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

A copy of the transmittal letter should be sent simultaneously to the EPA Project Coordinator.

At the time of payment, Respondent shall send notice that such payment has been made to:

Ms. Paula V. Bachelor
Environmental Specialist
U.S. EPA, Region 4
CERCLA Program Services Branch
61 Forsyth Street, S.W.
Atlanta, Georgia 30303-3104

Any disputes concerning costs shall be limited to issues of whether an accounting error has occurred, or whether a cost item is inconsistent with the NCP or otherwise beyond the scope of this Consent Order. Respondent shall have fourteen (14) calendar days from its receipt of a statement of oversight costs owed in which to seek clarification without the necessity of initiating a dispute resolution proceeding in order to avoid potential liability for failure to make timely payments of oversight costs. Respondent shall identify any contested costs and the basis of their objection in writing at the time it initiates a dispute resolution proceeding regarding disputed costs pursuant to Section XIV hereof. All undisputed costs shall be remitted by Respondent in accordance with the schedule set out above. The burden of establishing that EPA has made an accounting error or billed Respondent for costs inconsistent with the NCP or beyond the scope of this Consent Order shall be on Respondent. Stipulated penalties shall not accrue during the pendency of a dispute resolution proceeding under this Consent Order or of judicial review of a final agency action.

EPA reserves the right to bring an action against 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, 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 discharged its liability to EPA for the performance of the RI/FS that is the subject of this Order. However, Respondent will not be released from liability, if any, for any actions taken beyond the terms of this Consent Order regarding removals, other operable units, remedial design/remedial action (RD/RA), or activities arising pursuant to Section 121(c) of CERCLA, 42 U.S.C. § 9621(c).

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 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 lll(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 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 representatives, from any and all claims or causes of action arising from or on account of acts or omissions of Respondent, its officers, employees, contractors, 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, 40 C.F.R. Part 300. 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 shall 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 or to modify its term orally.

Any reports, plans, specifications, schedules, and attachments required by this Consent Order are, upon approval by EPA, incorporated into this Consent Order as if fully set forth herein. Any noncompliance with such EPA approved reports, plans, specifications, schedules, and attachments will be considered a failure to satisfy the requirements of this Consent Order and will subject 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 from EPA to the extent required by this Consent Order.

XXIV. NOTICE TO THE STATE

EPA has notified the State of Tennessee 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 Tennessee before determining the appropriate remedial action to be taken at the Site.

XXV. TERMINATION AND SATISFACTION

This Consent Order shall terminate when 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 Respondent. Each signing 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 of Respondent pertaining to this Site, that is, an executive line officer, not a legal or staff officer.

IT IS SO AGREED:

Illinois Central Railroad Company

By: _____ 09/04/03
Gordon Trafton Date
Vice President
Illinois Central Railroad Company

IT IS SO AGREED AND ORDERED:

By: _____ 9/19/03
for Franklin Hill, Chief Date
North Superfund Remedial Branch.
Waste Management Division
U.S. Environmental Protection Agency, Region 4

ILLINOIS CENTRAL GULF RAILROAD COMPANY
JOHNSTON YARD SITE

RI/FS SCOPE OF WORK

U.S. Environmental Protection Agency
Region 4

SCOPE OF WORK FOR THE REMEDIAL INVESTIGATION AND FEASIBILITY STUDY AT THE ILLINOIS CENTRAL RAILROAD COMPANY'S JOHNSTON YARD SITE

INTRODUCTION

The purpose of this Remedial Investigation/Feasibility Study (RI/FS) is to supplement investigations and studies conducted by the Respondent on a voluntary basis and subject to EPA approval in order to further investigate the nature and extent of contamination at the Illinois Central Railroad Company's Johnston Yard Site, TND073540783 (the "Site"), assess the current and potential risk to public health, welfare, and the environment, and to develop and evaluate potential Remedial Action Alternatives. The Site has been the subject of previous investigations and studies, undertaken voluntarily by the Respondent, including Phase I, II and III Environmental Site Assessments and a Treatability Study focusing on the recovery of subsurface free-phase hydrocarbon. The RI and FS are interactive and shall be conducted concurrently so that the data collected in the RI influences the development of Remedial Action Alternatives in the FS, which in turn affects the data needs and the scope of Treatability Studies.

The Respondent shall conduct the RI/FS and produce an RI/FS Report, a Baseline Human Health Risk Assessment Report, and Ecological Risk Assessment Report that is in accordance with this Scope of Work, the *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, (Interim Final)* (U.S. EPA Office of Emergency and Remedial Response, October 1988) (the "RI/FS Guidance"), the *National Oil and Hazardous Substances Pollution Contingency Plan* (March 8, 1990) and other guidances used by EPA in conducting an RI/FS (the primary guidances are listed in Attachment A), as well as any additional requirements in the Administrative Order. The RI/FS Guidance describes the report format 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 Administrative Order.

At the completion of the RI/FS, EPA shall be responsible for the selection of a remedy to be implemented for the Site. The Remedial Action Alternative selected by EPA will meet the cleanup standards specified in §121 of SARA. That is, the selected remedial action 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 Remedial Investigation and Feasibility Study Report(s), as adopted by EPA,

and Baseline Risk Assessment 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 Record of Decision (ROD) which will document the selection of a remedy.

As specified in §104(a)(1) of CERCLA, as amended by SARA, EPA must provide oversight of the Respondent's activities throughout the RI/FS. The Respondent shall support EPA's initiation and conduct of activities related to the implementation of oversight activities. However, the primary responsibility for conducting an adequate RI/FS to enable and support the selection of a remedy shall lie with the Respondent. EPA review and approval of deliverables are tools to assist this process and to satisfy, in part, EPA's responsibility to provide effective protection of public health, welfare, and the environment. EPA approval of a task or deliverable shall not be a guarantee as to the ultimate adequacy of such task or deliverable. A summary of the major deliverables that the Respondent shall submit for the RI/FS is attached (Attachment B). All deliverables will be in an electronic format compatible with EPA software. In addition, a general schedule of RI/FS activities is also attached (Attachment C).

TASK 1 - SCOPING

Scoping is the initial planning process of the RI/FS and has been initiated by EPA and Respondent to determine the site-specific objectives of the RI/FS. 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 and the Respondent have 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 during the RI/FS to satisfy the objectives of the study.

The Site Objectives for 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 from local, State and Federal agencies, court records, information from local businesses such as local well drillers and waste haulers and generators, facility records, and information from facility owners and employees and nearby citizens.

2. Review of relevant guidance (see attached references) to understand the remedial process. 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. Determination of the nature and extent of contamination originating from Site operations (waste types, concentrations and distributions) for all affected media including air, ground water, soil, surface water, and sediment, etc.

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

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

7. Assembly of technologies into Remedial Action Alternatives and screening of alternatives.

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

9. Detailed analysis of Remedial Action Alternatives.

The Site Management Strategy for the Site includes the following:

1. A complete investigation of pathways at the Site including any and all off-site contamination which may have been caused by contaminants originating from the Site.

2. Use of the RI to identify any other Potentially Responsible Parties that may be involved.

3. Evaluation of the Site as a whole, i.e., it is not anticipated at this time that the Site will be partitioned into separate operable units. It is anticipated that only one Record of Decision (ROD) will be prepared for the Site.

4. An expectation that no interim remedial measures are required.

5. EPA oversight of the Respondent's conduct of the work (i.e., the RI/FS and any response action) to ensure compliance with applicable laws, regulations and guidances and to ensure that the work proceeds in a timely fashion.

6. Respondent preparation of the Baseline Risk Assessment.

7. EPA management of the Remedy Selection and Record of Decision phase with input from State Agencies, Natural Resource Trustees and the Public (including the Respondent).

When scoping the specific aspects of a project, the Respondent may meet with EPA to discuss all

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

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.

Collect and Analyze Existing Data and Document the Need for Additional Data

Before planning RI/FS activities, all 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. This compilation and review shall also include results from any previous sampling or other investigations 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. 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.

Conduct Site Visit

Should the EPA request, the Respondent will conduct a visit to the Site with the EPA Remedial Project Manager (RPM) during the project scoping phase to assist in developing a conceptual understanding of 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 resource, ecological and cultural features. This information shall be utilized to better scope the project and to determine the extent of additional data necessary to characterize the Site, better define potential ARARs, and narrow the range of preliminarily identified Remedial Action Alternatives.

b. Project Planning

Once the Respondent has collected and analyzed existing data and conducted a visit to the Site, if required, 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 and before the drafting of the scoping deliverables.

Refine the Site Objectives and Develop Preliminary Remedial Action Objectives and Alternatives

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 potential Remedial Action Alternatives and associated technologies. The range 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.

Document the Need for Treatability Studies

If remedial actions involving treatment have been identified by the Respondent or EPA, Treatability Studies shall be required except where the Respondent can demonstrate to EPA's satisfaction that they are not needed. Where Treatability Studies are needed, identification of possible 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 Tasks 3 and 4).

Begin Preliminary Identification of Potential ARARs

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 contaminants at the Site and Remedial Action Alternatives are better defined.

c. Scoping Deliverables

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 reviewed by EPA prior to the initiation of field activities.

RI/FS Work Plan

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. The Work Plan shall include a comprehensive description of the work to be performed, the medias 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 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 physiography, hydrology, geology, demographics, and the ecological, cultural, 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;

- A summary of the existing 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 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. This preliminary identification shall reflect coordination with Treatability Study requirements (see Tasks 1 and 4).

- A process for identifying Federal and State ARARs (chemical-specific, location-specific, and action-specific).

- A statement recognizing Respondent's preparation of the Baseline Risk Assessment.

- A detailed description of the tasks to be performed, information needed for each task and for Respondent's Baseline Risk Assessment, information to be produced during and

at the conclusion of each task, and a description of the work products that shall be submitted to EPA. This description must also include 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, and meetings and presentations to EPA at the conclusion of each major phase of the RI/FS.

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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 is responsible for fulfilling additional data and analysis needs identified by EPA consistent with the general scope and objectives of this RI/FS and the Administrative Order.

Sampling and Analysis Plan

The 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 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 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 proposed National Contingency Plan, pages 51425-26 and 51433 (December 21, 1988). 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

Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM), Enforcement and Investigations Branch US-EPA, Region 4, SESD, November 2001 (revised periodically). 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 program. The Respondent shall provide assurances that EPA has access to laboratory personnel, equipment and records for sample collection, transportation, and analysis. 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. In addition, if the laboratory is not in the CLP program, a laboratory QA program must be submitted for EPA review and that approval granted prior to the shipment of Site samples to that laboratory for analysis.

Health and Safety Plan

A Health and Safety Plan shall be prepared in conformance with the Respondent's 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's 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 AND TECHNICAL ASSISTANCE.

The development and implementation of community relations activities are the responsibility of

EPA. The critical community relations planning steps performed by EPA include conducting community interviews and developing a community relations plan. Although implementation of the community relations plan is the responsibility of EPA, the Respondent, if directed by EPA, shall assist by providing information regarding the site's history, participating in public meetings, or by preparing fact sheets for distribution to the general public. In addition, the Respondent may be directed by EPA to establish a community information repository, at or near the site, to house one copy of the administrative record. The extent of PRP involvement in community relations is left to the discretion of EPA. The Respondent's community relations responsibilities, if any, are specified in the community relations plan. All PRP-conducted community relations activities will be subject to oversight by EPA.

In addition to the community relations activities, and if requested by the EPA, the Respondent shall prepare a plan, hereinafter referred to as the Technical Assistance Plan or TAP, for providing and administering an amount that should not exceed $50,000 of Repondent's funds for a qualified community group to hire technical advisors, independent from the Respondent, to help interpret and comment on Site-related documents developed under this SOW and through EPA's issuance of the Record of Decision (ROD) to be issued based upon the RI/FS conducted pursuant to this SOW. The Respondent shall submit to EPA its Technical Assistance Plan for Agency approval, within thirty (30) days after the request is formally made.

As part of the Technical Assistance Plan, the Respondent shall propose a method, including an application process, minimum eligibility requirements, and selection criteria for awarding and administering the funds above. Any eligible community group shall be: 1) a group of people who may be affected by a release or threatened release at the Site; 2) incorporated as a nonprofit organization for the purposes of the Site or otherwise established as a charitable organization that operates within the geographical range of the Site and is already incorporated as a nonprofit organization; and 3) able to demonstrate its capability to adequately and responsibly manage any funds awarded. Any group is ineligible if it is: 1) a potentially responsible party (PRP) at the Site or represents such a PRP or is a group whose ability to represent the interests of the affected individuals might be limited as a result of receiving money or services from a PRP; 2) affiliated with a national organization; 3) an academic institution; 4) a political subdivision; or 5) a group established or presently sustained by government entities, a PRP, or any ineligible entity. Selection criteria should be consistent with 40 CFR §35.4155. Funds may be awarded to only one qualified group at a time for purposes of this Consent Order and Statement of Work.

Also as part of the TAP, Respondent shall include a proposed plan for documenting the eligibility of the selected community group, and informing the group and EPA if it believes any individual member is ineligible (consistent with 40 CFR §35.4030) to participate in the group. Respondent shall also include a plan for informing the selected group of the activities that it can and cannot be undertaken with Respondent's funds. The lists of eligible and ineligible activities should be consistent with 40 CFR §35.4070 and §35.4075, respectively. The TAP shall also include a proposal for offering and, if accepted, transferring up to $5,000 to the selected group to cover its estimated need for funds for an initial start-up period.

TASK 3 - SITE CHARACTERIZATION

As part of the RI, the Respondent shall perform the activities described in this task, including the preparation of 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 the sources of contamination and define the nature, extent, and volume of the sources of contamination, including their physical and chemical constituents as well as their concentrations at incremental locations in the affected media. The 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 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 meet 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 a monthly progress report and participate in meetings with EPA at major points in the RI/FS.

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:

Implementing and Documenting Field Support Activities

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.

Investigating and Defining Site Physical and Biological Characteristics

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.

Defining Sources of Contamination

The Respondent shall locate each source of contamination originating from Site operations. 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. Sources of contamination shall be analyzed for the potential of contaminant release (e.g., long term leaching from soil), contaminant mobility and persistence, and characteristics important for evaluating remedial actions, including information necessary to evaluate treatment technologies.

Describing the Nature and Extent of Contamination

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. Respondent shall use this information to help to determine aspects of the appropriate Remedial Action Alternatives to be evaluated.

b. Data Analyses

Evaluate Site Characteristics

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 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.

c. Data Management Procedures

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:

Documenting Field Activities

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. If requested by EPA, supporting documentation described as the "CLP Data Package" must be provided with the sample analysis for all samples split or duplicated with EPA.

Maintaining Sample Management and Tracking

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

The Respondent shall prepare the Remedial Investigation Report.

Remedial Investigation (RI) Report

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, sources of contamination, nature and extent of contamination, and the fate and transport of contaminants. 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 RISK ASSESSMENT

Respondent shall develop the Baseline Risk Assessment in order to determine whether site contaminants pose a current or potential risk to human health and the environment in the absence of any remedial action. The Respondent shall address the contaminant identification, exposure assessment, toxicity assessment, and risk characterization. The Risk Assessment will be used to determine whether remediation is necessary at the Site, provide justification for performing remedial action, and determine what exposure pathways need to be remediated.

a. Human Health Risk Assessment.

The Respondent shall evaluate and assess the risk to human health posed by site contaminants and shall prepare a draft Human Health Risk Assessment Report that addresses the following:

(1) Hazard Identification. The Respondent shall review available information on the hazardous substances present at the site and identify the major contaminants of concern.

(2) Dose-Response Assessment. Contaminants of concern should be selected based on their intrinsic toxicological properties.

(3) Conceptual Exposure/Pathway Analysis. Critical exposure pathways (e.g., drinking water) shall be identified and analyzed. The proximity of contaminants to exposure pathways and their potential to migrate into critical exposure pathways shall be assessed.

(4) Characterization of Site and Potential Receptors. The contractor shall identify and characterize human populations in the exposure pathways.

(5) Exposure Assessment. The exposure assessment will identify the magnitude of actual or potential human exposures, the frequency and duration of these exposures, and the routes by which receptors are exposed. The exposure assessment shall include an evaluation of the likelihood of such exposures occurring and shall provide the basis for the development of acceptable exposure levels. In developing the exposure assessment, the Respondent shall develop reasonable maximum estimates of exposure for both current land use conditions

and potential land use conditions at the site.

(6) Risk Characterization. During risk characterization, chemical-specific toxicity information, combined with quantitative and qualitative information from the exposure assessment, shall be compared to measured levels of contaminant exposure levels and the levels predicted through environmental fate and transport modeling. These comparisons shall determine whether concentrations of contaminants at or near the site are affecting or could potentially affect human health.

(7) Identification of Limitations/Uncertainties. The contractor shall identify critical assumptions (e.g., background concentrations and conditions) and uncertainties in the report.

(8) Site Conceptual Model. Based on contaminant identification, exposure assessment, toxicity assessment, and risk characterization, the Respondent shall develop a conceptual model of the site.

Final Human Health Risk Assessment Report.

After the draft Human Health Risk Assessment Report has been reviewed and commented on by EPA, the Respondent will incorporate EPA comments and submit the final Human Health Risk Assessment Report.

b. Ecological Risk Assessment.

The Respondent shall evaluate and assess the risk to the environment posed by Site contaminants. The Respondent shall utilize the *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (EPA 540-R-97-006)* and Region 4's Regional Guidance in evaluating the Site. This document outlines an 8-step process, including numerous scientific/management decision points (SMDPs), for evaluating potential risks to potential receptors. The purpose of the SMDP is to conduct a meeting between EPA and the risk assessment team to evaluate and approve or redirect the work up to the point.

The screening level ecological risk assessment (steps 1 and 2) is a streamlined version of the complete process, and is intended to allow a rapid determination that the Site either poses no ecological risks, or to identify which contaminants and exposure pathways require further evaluation. If no risks are estimated during the screening level evaluation using conservative assumptions, the ecological risk assessment process stops at that point. If the screening level evaluation predicts risks to ecological receptors, then further evaluation is required.

The 8 steps, including the SMDPs, are composed of the following:

1. Screening-Level Preliminary Problem Formulation and Ecological Effects Evaluation. The Respondent shall review the: (1) existing information and address the environmental setting and contaminants known or suspected to exist at the Site and the maximum concentration present for each medium, contaminant fate and transport mechanisms that might exit at the Site; (2) the mechanisms of

ecotoxicity associated with contaminants and likely categories of receptors that could be affected; (3) the complete exposure pathways that exist at the Site from contaminant sources to receptors that could be affected; and (4) develop screening ecotoxicity values equivalent to chronic NOELs based on appropriate conservative assumptions.

2. Screening-Level Preliminary Exposure Estimate and Risk Calculation. The Respondent shall develop exposure estimates based upon appropriate conservative assumptions and maximum concentrations present and calculate hazard quotients (or hazard indices, if appropriate) indicating which, if any, contaminants and exposure pathways might pose ecological threats. The document containing these first two steps of the Ecological Risk Assessment process will be submitted to EPA for review and approval as provided in Attachment C. If the screening assessment demonstrates the potential for unacceptable risks to ecological receptors, then the Ecological Risk Assessment process will continue with the following steps. (SMDP)

3. Baseline Ecological Risk Assessment Problem Formulation. The Respondent shall develop the problem formulation by refining the ecological chemicals of preliminary concern, further characterizing ecological effects of contaminants; reviewing and refining information on contaminant fate and transport, complete exposure pathways, and ecosystems potentially at risk; selecting assessment endpoints; and developing a conceptual model with working hypotheses or questions that the Site investigation will address. The document containing this step will be submitted to EPA for review and approval as provided in Attachment C. (SMDP)

4. Study Design and Data Quality Objective Process. The Respondent shall develop a study design defining the measurement endpoints, data quality objectives and statistical considerations, methods of analysis; and a work plan and sampling and analysis plan for the ecological investigation outlining the data that will be collected during the remedial investigation and the risk assessment methods which will be used in interpreting the data. This document should be submitted to EPA for review and approval. (SMDP)

5. Field Verification of Sampling Design. The Respondent shall verify the field collection methods to assure the implementability of the sampling plan. A document describing this verification procedure and any suggested modifications of the study design, work plan, or sampling and analysis plan shall be submitted to EPA for review and approval. (SMDP)

6. Site Investigation and Analysis Phase. The Respondent shall conduct the Site investigation to collect the data to be used in the analysis phase as described in the work plan and the sampling and analysis plan. Any deviation from the work plan should be documented and submitted to EPA for review and approval. (SMDP)

7. Risk Characterization. The Respondent shall develop the Risk Characterization integrating the results of the exposure profile and exposure-response analyses. 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 should be submitted as part of the Draft Ecological Assessment Report to EPA for review and approval. Following Agency review of the Draft Ecological Assessment Report, the Respondent shall incorporate EPA's comments into the Final Ecological Assessment Report.

8. Risk Management. This step in the process is distinctly different from risk assessment. The risk assessment establishes whether a risk is present and defines a range or magnitude of the risk. The risk-management decision is the responsibility of EPA. EPA will evaluate the potential adverse effects posed by residual levels of site contaminants and posed by the remedial actions themselves in order to understand the balance the ecological costs and benefits of the available remedial options. Understanding the uncertainties associated with the risk assessment also is critical to evaluating the overall protectiveness of any remedy. The Respondent will provide technical support to EPA in the interpretation and communication of risk assessment results, and in evaluating the potential effects of proposed remedial options. (SMDP)

TASK 5 - TREATABILITY STUDIES

As previously discussed with the EPA, the Respondent has voluntarily initiated Treatability Studies at the Site and to the extent possible will use ongoing study results, subject to EPA review and approval, and operating conditions to assist 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

The Respondent shall identify in a technical memorandum, subject to EPA review and comment, candidate technologies for a Treatability Studies program during project planning (Task 1). The listing of candidate technologies shall cover the range of technologies required for alternatives analysis (Task 5a). The specific data requirements for the Treatability Studies program shall be determined and refined during Site Characterization and the development and screening of Remedial Action Alternatives (Tasks 3 and 4, respectively).

Conduct Literature Survey and Determine the Need for Treatability Studies

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.

Evaluate Treatability Studies

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

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.

Treatability Study Work Plan

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.

Treatability Study Sampling and Analysis Plan

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.

Treatability Study Health and Safety Plan

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.

Treatability Study Evaluation Report

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 a sensitivity analysis identifying the key parameters affecting full-scale operation.

TASK 6 - DEVELOPMENT AND SCREENING OF REMEDIAL ACTION ALTERNATIVES

The development and screening of Remedial Action Alternatives is performed to select an appropriate range of waste management 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 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. 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

The Respondent shall begin to develop and evaluate, concurrent with the RI Site Characterization task, a range of appropriate waste management options that, at a minimum, ensure protection of human health and the environment and comply with all ARARs.

Refine and Document Remedial Action Objectives

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).

Develop General Response Actions

The Respondent shall develop general response actions for each medium of interest defining containment, treatment, excavation, pumping, or other actions, individually or in combination, to satisfy the remedial action objectives.

Identify Areas and Volumes of Media

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 remedial action objectives. The chemical and physical characterization of the Site and the Baseline Risk Assessment and remediation goals shall also be taken into account.

Identify, Screen, and Document Remedial Technologies

The Respondent shall identify and evaluate technologies applicable to each general response action to eliminate those that cannot be implemented at the Site. 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.

Assemble and Document Alternatives

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 either the Site or the operable unit as a whole. 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.

Refine Alternatives

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 Respondent's Baseline Risk Assessment Report. Additionally, action-specific ARARs shall be updated as the Remedial Action Alternatives are refined.

Conduct and Document Screening Evaluation of Each Alternative

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

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 6 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 - DETAILED ANALYSIS OF REMEDIAL ACTION ALTERNATIVES

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

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.

Apply Nine Criteria and Document Analysis

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.

Compare Alternatives Against Each Other and Document the Comparison of Alternatives

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 Respondent as the preferred alternative in the Feasibility Study. Identification and selection of the preferred alternative is conducted by EPA.

b. Detailed Analysis Deliverables

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 (revised) National Contingency Plan
2. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, U.S. 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, Volume I U.S. EPA, Office of Waste Programs Enforcement, July 1, 1991, OSWER Directive No. 9835.1(c).
5. Guidance on Oversight of Potentially Responsible Party Remedial Investigations and Feasibility Studies, Volume II U.S. EPA, Office of Waste Programs Enforcement, July 1, 1991, OSWER Directive No. 9835.1(d).
6. 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.
7. Guidance for the Data Quality Objectives Process (QA-G-4), (EPA/600/R-96/055, August 2000).
8. Guidance for the Data Quality Objectives Process for Hazardous Waste Sites (QA/G-4HW), (EPA/600/R-00/007, January 2000).
9. Guidance for the Preparation of Standard Operating Procedures (QA-G-6), (EPA/240/B-01/004, March 2001).
10. EPA Requirements for Quality Management Plans (QA/R-2), (EPA/240/B-01/002, March 2001).
11. EPA Requirements for Quality Assurance Project Plans (QA/R-5) (EPA/240/B-01/003, March 2001).
12. Guidance for Quality Assurance Project Plans (QA/G-5) (EPA 600/R-98/018, Febraruy 1998).
13. User's Guide to the EPA Contract Laboratory, U.S. EPA,Sample Management Office, January 1991, OSWER Directive No. 9240.0-01D.
14. 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.
15. Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites, U.S. U.S. EPA, Office of Emergency and Remedial Response, (draft), OSWER Directive No. 9283.1-2.
16. Draft Guidance on Superfund Decision Documents, U.S. EPA, Office of Emergency and Remedial Response, March 1988, OSWER Directive No. 9355.-02.

17. InterimRisk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual (Part A), EPA/540/1-89/002.
18. Interim Risk Assessment Guidance for Superfund: Volume 1 - Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals) OERR Publication 9285.7-01B, December 1991.
19. Interim Risk Assessment Guidance for Superfund: Volume 1 -Human Health Evaluation (Part C, Risk Evaluation of Remedial Alternatives), EPA/540/R-92/004, December 1991.
20. Interim Risk Assessment Guidance for Superfund: Volume 1 - Human Health Evaluation Manual (Part D, Standardizing Planning, Reporting, and Review of Superfund Risk Assessments), EPA 540-R-97-033, January 1998.
21. Ecological Risk Assessment Guidance for Superfund: Process for Designing & Conducting Ecological Risk Assessments, U.S. EPA, OSWER Directive, No. 9285.7-25, February 1997.
22. Guidance for Data Useability in Risk Assessment, October, 1990, EPA/540/G-90/008
23. Performance of Risk Assessments in Remedial Investigation/Feasibility Studies (RI/FSs) Conducted by Potentially Responsible Parties (PRPs), August 28, 1990, OSWER Directive No.9835.15.
24. Supplemental Guidance on Performing Risk Assessments in Remedial Investigation Feasibility Studies (RI/FSs) Conducted by Potentially Responsible Parties (PRPs), July 2, 1991, OSWER Directive No. 9835.15(a).
25. Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions, April 22, 1991, OSWER Directive No. 9355.0-30.
26. Health and Safety Requirements of Employed in Field Activities, U.S. EPA, Office of Emergency and Remedial Response, Jul;y 12, 1981, EPA Order No. 1440.2.
27. OSHA Regulations in 29 CFR 1910.120 (Federal Register 45654, December 19, 1986).
28. Interim Guidance on Administrative Records for Selection of CERCLA Response Actions, U.S. EPA, Office of Waste Programs Enforcement, March ,1989, OSWER Directive No. 9833.3A.
29. Community Relations in Superfund: A Handbook, U.S. EPA, Office of Emergency and Remedial Response, January 1992, OSWER Directive No. 9230.0-3C.
30. 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.
31. Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM), Enforcement and Investigations Branch US-EPA, Region 4, SESD, November 2001 (revised periodically).
32. USEPA Contract Laboratory Program Statement of Work for Organics Analysis, U.S. EPA, Office of Emergency and Remedial Response, February 1988.
33. USEPA Contract Laboratory Program Statement of Work for Inorganics Analysis, U.S. EPA, Office of Emergency and Remedial Response, July 1988.

ATTACHMENT B
SUMMARY OF THE MAJOR DELIVERABLES FOR THE REMEDIAL INVESTIGATION AND FEASIBILITY STUDY AT THE ILLINOIS CENTRAL RAILROAD COMPANY'S JOHNSTON YARD SITE

TASK	DELIVERABLE	EPA RESPONSE
TASK 1	**SCOPING**	
	Compilation of Existing Data Technical Memorandum (if appropriate) (5)	Review and Approve
	RI/FS Work Plan (5)	Review and Approve
	Field Sampling and Analysis Plan (5)	Review and Approve
	Quality Assurance Project Plan (3)	Review and Approve
	Site Health and Safety Plan (3)	Review and Comment
TASK 3	**SITE CHARACTERIZATION**	
	Technical Memorandum on Contaminant Fate and Transport Modeling (where appropriate) (5)	Review and Approve
	Draft Remedial Investigation Report (5)	Review and Comment
	Final Remedial Investigation Report (5)	Review and Approve
TASK 4	**BASELINE RISK ASSESSMENT**	
	Draft Human Health Risk Assessment Report (5)	Review and Comment
	Final Human Health Risk Assessment Report (5)	Review and Approve
	Screening Level Problem Formulation and Effects Evaluation; and Screening-level exposure estimate and risk calculation (steps 1 & 2) (5)	Review and Approve

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TASK	DELIVERABLE	EPA RESPONSE
	Baseline Ecological Risk Assessment Problem Formulation (step 3) (if required) (5)	Review and Approve

TASK	DELIVERABLE	EPA RESPONSE
	Study Design and DQO Process (step 4) (if required) (5)	Review and Approve
	Field Verification of Sampling Design (step 5) (if required) (5)	Review and Approve
	Draft Ecological Risk Assessment Report (step 7) (if required) (5)	Review and Comment
	Final Ecological Risk Assessment Report (step 7) (if required) (5)	Review and Approve
TASK 5	**TREATABILITY STUDIES** (if required)	
	Technical Memorandum Identifying Candidate Technologies (5)	Review and Comment
	Treatability Study Work Plan (or amendment to original Work Plan) (5)	Review and Approve
	Treatability Study SAP (or amendment to original SAP) (5)	Review and Approve
	Treatability Study Evaluation Report (5)	Review and Approve
TASK 6	**DEVELOPMENT AND SCREENING OF REMEDIAL ACTION ALTERNATIVES**	
	Technical Memorandum Documenting Revised Remedial Action Objectives (5)	Review and Approve

ATTACHMENT B
SUMMARY OF THE MAJOR DELIVERABLES FOR THE REMEDIAL INVESTIGATION AND FEASIBILITY STUDY AT THE ILLINOIS CENTRAL RAILROAD COMPANY'S JOHNSTON YARD SITE

Technical Memorandum on Remedial Technologies, Alternatives, and Screening (5)	Review and Comment

TASK 7 DETAILED ANALYSIS OF REMEDIAL ACTION ALTERNATIVES

Draft Feasibility Study Report (5)	Review and Comment
Final Feasibility Study Report (5)	Review and Approve

Note: The number in parenthesis indicates the number of copies to be submitted by Respondent. One copy shall be unbound, the remainder shall be bound. Also, 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 AND FEASIBILITY STUDY ACTIVITIES
AT THE ILLINOIS CENTRAL RAILROAD COMPANY'S JOHNSTON YARD SITE

ACTIVITY	SCHEDULE DATE (DAYS)
Effective Date of AOC	X
Supervising Contractor Selected	X+15
Compilation of Existing Data Technical Memorandum	X+60
Technical Memorandum Identifying Candidate Technologies	X+60
Draft RI/FS Workplan, Field Sampling and Analysis Plan, Quality Assurance Project Plan and Site Health and Safety Plan	X+75 [(a)]
Ecological Screening-Level Problem Formulation and Screening-Level Exposure Estimate	X+75
Ecological Risk Assessment Problem Formulation (if required)	X+75
Draft Treatability Study Work Plan And Sampling and Analysis Plan Submitted (if required)	X+75 [(a)]
Final RI/FS Workplan and Associated Documents Submitted	X+150 [(a)]

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

Final Treatability Study Work Plan And Treatability Study Sampling and Analysis Plan Submitted (if required)	X+150 [(a)]
Initiate Fieldwork	X+180
Fieldwork Complete	X+240

ATTACHMENT C
GENERAL SCHEDULE FOR THE MAJOR
REMEDIAL INVESTIGATION AND FEASIBILITY STUDY ACTIVITIES
AT THE ILLINOIS CENTRAL RAILROAD COMPANY'S JOHNSTON YARD SITE

Submit Draft Remedial Investigation Report	X+300 [(a)]
Draft Treatability Study	X+300 [(a)]
Technical Memorandum on Remedial Technologies, Alternatives, and Screening	X+300
Final Treatability Study	X+360 [(a)]
Draft Feasibility Study, Human Health Risk Assessment, Ecological Risk Assessment Reports	X+360 [(a)]
Submit Final Remedial Investigation Report	X+390 [(a)]
Final Feasibility Study, Human Health Risk Assessment, Ecological Risk Assessment Reports	X+420 [(a)]

(a) assumes a maximum of 30 days for EPA review of associated draft documents.

Note: Other deliverables listed in Attachment B shall also be incorporated into the schedule to be submitted as part of the RI/FS Work Plan.