ATTACHMENT A

STATEMENT OF WORK
REMEDIAL INVESTIGATION, FEASIBILITY STUDY AND BASELINE RISK ASSESSMENT
CTS OF ASHEVILLE, INC. SITE, ASHEVILLE, NORTH CAROLINA

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LIST OF ACRONYMS AND ABBREVIATIONS

AOC	Administrative Settlement Agreement and Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirements
BRA	Baseline Risk Assessment
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CLP	Contract Laboratory Program
CSAP	Confirmation Sampling and Analysis Plan
DQO	Data Quality Objectives
EDD	Electronic Data Deliverable
EPA	United States Environmental Protection Agency
FS	Feasibility Study
FSAP	Field Sampling and Analysis Plan
HASP	Health and Safety Plan
HHRA	Human Health Risk Assessment
HI	Hazard Index
HQ	Hazard Quotient
IRM	Interim Response Measure
NAPL	Non-Aqueous Phase Liquid
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
PRG	Preliminary Remediation Goal
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance and Quality Control
RGO	Remedial Goal Options
RI	Remedial Investigation
RI/FS	Remedial Investigation / Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments and Reauthorization Act
SOW	Statement of Work
TAL	Target Analyte List
TAP	Technical Assistance Plan
TCL	Target Compound List

INTRODUCTION

The United States Environmental Protection Agency (EPA), Region 4, Superfund remedial program plans to address the CTS of Asheville, Inc. Site (the Site) to expedite remediation of the Site in order of the highest priority. Releases of hazardous substances, pollutants or contaminants occurred at the property located at 235 Mills Gap Road in Asheville, North Carolina, which resulted in migration of contamination beyond the property boundaries. The Site includes the property at 235 Mills Gap Road, as well as locations where hazardous substances, pollutants or contaminants emanating from this property have come be located.

The purpose of this Remedial Investigation/Feasibility Study (RI/FS) and Baseline Risk Assessment (BRA) is to investigate the nature and extent of contamination, assess the current and potential risk to public health, welfare, and the environment, and to develop and evaluate potential Remedial Action Alternatives. The Remedial Investigation (RI) and Feasibility Study (FS) are interactive and shall be conducted concurrently so that the data compiled and collected in the RI influences the development of Remedial Action Alternatives in the FS, which in turn affects any data needs and the scope of any potential Treatability Studies. Historical data and data collected during the RI will influence the development of the BRA.

EPA has collected substantial information during the past few years of sampling drinking water wells and monitoring wells in the area. As of December 2011, EPA has conducted twelve quarterly drinking water well sampling events at over 100 homes. EPA also conducted other ground water investigation events to support the proposal of the Site to the National Priorities List. Respondent has performed limited ground water investigations.

However, the vertical and horizontal extent of ground water contamination has not been fully delineated. Until the completion of the RI/FS for the groundwater contamination, Respondent will either provide an Interim Response Measure (IRM) to mitigate potential risks associated with drinking ground water or conduct quarterly sampling and analysis of private wells located within a one mile radius of the former plant at the Site that relies on well or spring water as their drinking water source, in accordance with the terms of this SOW. If an IRM for drinking water is implemented by the Respondent, the frequency of quarterly well sampling requirements will be reduced. The frequency will be determined at a later date and will be based on the type of response action implemented. Respondent shall submit to EPA the sample results and draft letters to homeowners. EPA will transmit the data and letters to the homeowners.

Respondent will address the ground water that is discharging to the surface that is or may be contaminating surface water, sediment and air, as well as the vapor intrusion pathway. Respondent evaluated and implemented certain removal and treatment options for the springs during the removal activities under the 2004 AOC. However, the options have not been effective at significantly reducing the concentrations of volatile organic compounds (VOCs) being discharged from the ground water into the springs.

EPA conducted a vapor intrusion assessment as part of the removal activities a few years ago. However, because vapor concentrations vary from season to season, EPA believes that further assessment is needed as the ground water pathway is delineated. Accordingly, the RI/FS will address the contamination on the source property, as well as locations to which contamination has

migrated which will include, at a minimum, contaminated soil which was not completely remediated by the removal action and the contaminated ground water plume.

Respondent shall conduct an RI/FS, including a BRA, and shall produce an RI/FS Report that is in accordance with this SOW, the *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*[1], (*Interim Final*) (EPA Office of Solid Waste and Emergency Response (OSWER), October 1988) (the RI/FS Guidance), the *National Oil and Hazardous Substances Pollution Contingency Plan*[2] (March 8, 1990) and other guidance and regulations, and the requirements set forth in the Settlement Agreement. Respondent shall also produce a Human Health Risk Assessment Report (HHRA) and a Remedial Goal Options (RGO) Technical Memorandum. The following website includes links to many guidance and policy documents related to the RI/FS and BRA process:
http://www.epa.gov/superfund/policy/remedy/sfremedy/index.htm.

Guidance documents describe the report format and the required report content. Respondent shall furnish all necessary personnel, materials, and services needed, or incidental to, performing the RI/FS, Treatability Studies and BRA, except as otherwise specified in the Settlement Agreement.

The purpose of this SOW is to set forth the requirements for conducting an RI/FS and BRA and to aid EPA in the selection of a remedy to eliminate, reduce, or control risks to human health and the environment related to the Site. This SOW is designed to provide the framework for conducting the RI/FS and BRA activities. The goal is to engage the amount of data necessary to support the selection of an approach for remediation and then to use this data to create a well-supported Record of Decision (ROD) within two years of the approval of the RI/FS Work Plan, or such shorter or longer time as may be necessitated by Site-specific conditions, and as approved by EPA.

Respondent is expected develop an RI/FS Work Plan that builds on the Site characterization work conducted during previous Site investigations, quarterly drinking water well sampling, prior or subsequent removal actions, and data collected during facility operations.

At the completion of the RI/FS, EPA shall be responsible for the selection of a remedy. EPA will document this selection of a remedy in a ROD. The Remedial Action Alternative selected by EPA will meet the cleanup standards specified in Section 121 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). 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 (ARARs) of other laws or regulations, and will address the statutory preference for treatment which permanently and significantly reduces the volume, toxicity, or mobility of the hazardous substances, pollutants, and contaminants as a principal element. The Final RI/FS Report, as adopted by EPA, along with the Administrative Record, will

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[1] This document can be found on the Internet at:
http://www.epa.gov/superfundlpolicy/remedy/pdfs/540g-89004-s.pdf

[2] This regulation can be found on the Internet at:
http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title40/40cfr300_main_02.tpl

form the basis for the selection of the remedy to be implemented and will provide the information necessary to support the development of the ROD.

As specified in Section 104(a)(l) of CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA), EPA must provide oversight of Respondent's activities throughout the RI/FS. 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 potential selection of a remedy shall lie with Respondent. EPA review and approval of deliverables is a tool to assist this process and to satisfy, in part, EPA's responsibility to provide effective protection of public health, 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 Respondent shall submit for RI/FS and BRA are included within each Task description. Respondent shall incorporate those deliverables into a schedule of RI/FS and BRA activities and include the schedule in the RI/FS Work Plan.

1.0 TASK 1 – SCOPING

Scoping is the initial planning process of the RI/FS and has been initiated by EPA to determine the site-specific objectives of the RI/FS prior to negotiations between Respondent and EPA. Scoping is continued, repeated as necessary, and refined throughout the RI/FS process. In addition to developing the Objectives of the RI/FS, EPA has developed a Site Management Strategy. Consistent with the Site Management Strategy, the specific project scope shall be planned by Respondent and EPA. Respondent shall document the specific project scope in the RI/FS 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(s) during the RI/FS to satisfy the objectives of the study.

The Objectives have been determined preliminarily, based on available information, to be the following:

- Performance of the January 13, 2012 Soil Vapor Extraction Confirmation Sampling and Analysis Plan, Revision 7 ("CSAP"), as supplemented by an additional sampling and analysis plan for non-aqueous phase liquids in the saturated zone ("NAPL Plan").

- Review of existing information pertaining to the Site. This review includes, but is not limited to, EPA Site Inspection Reports, the EPA Hazardous Ranking System Scoring package, information obtained during the removal action, information obtained by EPA during quarterly sampling of drinking water wells, 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.

- Review of relevant guidance to understand the remedial process. This information shall be used in performing the RI/FS and preparing all deliverables under this SOW.

- Conduct sampling and analysis of drinking water wells within an approximate one mile radius of the former plant at the Site, an area that may be expanded or contracted depending upon the results of such well testing, installation of an Interim Response Measure, data produced in the RI and such other data or information as relevant to determine the necessity and efficacy of the water well sampling and analysis.

- Determination of the nature and lateral and vertical extent of contamination (waste types, concentrations and distributions) for all affected media including air, ground water, soil, surface water, and sediment, etc.

- Performance of a well survey between a one and three mile radius of the location of Respondent's former plant at the Site, based upon data collected during the RI regarding the actual location of ground water contamination at the Site attributable to Respondent. Such new groundwater information may require or allow Respondent to increase or decrease the radius for the well survey. Surveys shall include determining water uses, well construction methods used, the number and age of users and the volume and rate of water usage.

- Identification of all Federal and State ARARs

- Identification and screening of potential treatment technologies.

- Detailed analysis of Remedial Action Alternatives.

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

- Performance of bench or pilot Treatability Studies, if determined necessary.

The Site Management Strategy includes the following:

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

- Evaluation of the Site in order to expedite remediation of the Site in the order of highest priority.

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

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

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

1.1 Site Background

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

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

All existing Site data shall be thoroughly compiled and reviewed. Specifically, this compilation and review shall include currently available data relating to the varieties and quantities of hazardous substances at the Site that may be contributing to contamination of adjacent parcels and past disposal practices (what type of contaminants were dumped where, when, and by whom). This compilation and review shall also include results from any previous sampling or other investigations that may have been conducted. This information shall be utilized in determining additional data needed for the characterization of the nature and extent of contamination, better defining of potential 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.

1.1.2 Conduct Site Visit

Respondent shall 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 areas of contamination as well as potential exposure pathways and receptors at the Site. During the visit to the Site 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 contamination, better define potential ARARs, and narrow the range of preliminarily identified Remedial Action Alternatives.

1.2 Project Planning

Once Respondent has collected and analyzed existing data and conducted a visit to the Site, 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 1.3. Respondent shall meet with EPA, either in person or via conference call, regarding the following activities and before the drafting of the scoping deliverables.

1.2.1 Refine the 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, Respondent shall review and, if necessary, refine the Objectives and develop preliminary remedial action objectives. Any revised Objectives shall be

documented in a technical memorandum and are subject to EPA approval prior to development of the other scoping deliverables. 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. Institutional Controls shall also be evaluated as a remedy component.

1.2.2 Document the Need for Treatability Studies

If remedial actions involving treatment have been identified by Respondent or EPA, Treatability Studies shall be required only if EPA determines that they are 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 Characterization activities (see Tasks 3 and 4).

1.2.3 Begin Preliminary Identification of Potential ARARs

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.

1.3 Scoping Deliverables

Within fourteen (14) days after the Effective Date, Respondent shall submit the NAPL Work Plan and a Health and Safety Plan. Within thirty (30) days after the Effective Date, Respondent shall submit a Work Plan related to monitoring of private drinking water wells that are located within a one mile radius of the former plant at the Site. Within forty-five (45) days after the Effective Date, Respondent shall submit a Vapor Intrusion Assessment Work Plan. Within one hundred eighty (180) days after the Effective Date, Respondent shall submit a RI/FS Work Plan and a RI Sampling and Analysis Plan. The NAPL Work Plan, Work Plan for Monitoring of Drinking Water Wells, Vapor Intrusion Assessment Work Plan, RI/FS Work Plan and RI 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 related to the specific work plan. All Work Plans that involve sampling activities shall be consistent with the requirements found in section 1.3.6.

1.3.1 NAPL Work Plan

Within fourteen (14) days after the Effective Date, Respondent shall submit the NAPL Work Plan. Within thirty (30) days of EPA's approval of the NAPL Work Plan, Respondent shall commence implementation of the CSAP and the NAPL Work Plan as a combined, integrated Work Plan.

1.3.2 Health and Safety Plan

Within fourteen (14) days after the Effective Date, Respondent shall submit a Health and Safety Plan (HASP) that has been prepared in conformance with Respondent's health and safety program, and in compliance with Occupational Safety and Health Administration (OSHA) regulations and protocols. The HASP 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" Respondent's HASP, 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.

1.3.3 Work Plan for Monitoring of Drinking Water Wells

Within thirty (30) days after the Effective Date, Respondent shall submit to EPA a Work Plan for Monitoring of Drinking Water Wells. The Work Plan shall be consistent with the current quarterly monitoring program thus far conducted by EPA. The Work Plan shall include a description of activities to be performed, a schedule for completion of these activities, access agreement strategy, a sampling and analysis plan and the details for sampling set forth in Section 3.1.6 of this SOW. This Work Plan may be modified after EPA approval of an IRM that addresses drinking water issues at the Site or as supported by EPA approved analytical data.

1.3.4 Vapor Intrusion Assessment Work Plan

Within forty five (45) days after the Effective Date, Respondent shall submit to EPA a Vapor Intrusion (VI) Assessment Work Plan. Because the full extent of contamination has not yet been defined, EPA anticipates that this document will be modified as more information comes to light. The initial VI Assessment Work Plan shall evaluate vapor intrusion at homes that are immediately contiguous to the Site and proximate to the currently known contaminated ground water plume. As more information about the contaminated plume is identified, the VI Assessment Work Plan shall be modified to address evaluation of the extended areas.

1.3.5 RI/FS Work Plan

Within one hundred eighty (180) days after the Effective Date, Respondent shall submit a RI/FS Work Plan documenting the decisions and evaluations completed during the scoping process for EPA review and approval. The RI/FS Work Plan shall be developed in conjunction with the RI Sampling and Analysis Plan,

although each plan may be delivered under separate cover. The RI/FS Work Plan shall include a comprehensive description of the work to be performed, the media to be investigated, 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.

Specifically, the RI/FS 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 in ground water.

- 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 process for conducting the BRA.

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

- A schedule for each of the required activities which will result in a well-supported ROD within two years of the approval of the RI/FS Work Plan, or such shorter or longer time as may be necessitated by Site-specific conditions, and as approved by EPA.

- 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.

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. 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, 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 Settlement Agreement.

1.3.6 RI Sampling and Analysis Plan

Within one hundred eighty (180) days after the Effective Date, Respondent shall prepare a RI 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 established DQOs. 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 (QAJR-5)* (EPA/240/B-01/003, March 2001 or subsequently issued guidance) and *EPA Guidance for Quality Assurance Project Plans (QAJG-5)* (EPA/600/R-02/009, December 2002 or subsequently issued guidance). 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 National Contingency Plan. In addition, the QAPP shall address personnel qualifications, sampling procedures, sample custody, analytical procedures, and

data reduction, validation, and reporting. These procedures must be consistent with the Region 4 Field Branches Quality System and Technical Procedures[3] which supersede the *Environmental Investigations Standard Operating Procedures and Quality Assurance Manual, November 2001*, and the *Ecological Assessment Standard Operating Procedures and Quality Assurance Manual, January 2002.* Field personnel shall be available for EPA QA/QC training and orientation, as required.

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 Quality Assurance (QA) program. Respondent shall provide assurances that EPA has access to laboratory personnel, equipment and records for sample collection, transportation, and analysis. EPA may require that 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. Respondent shall only use laboratories which have a documented Quality Assurance Program 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 or subsequently issued guidance) and *EPA Requirements for Quality Management Plans (QA/R-2)* (EPA/240/fB-0l-002, March 2001 or subsequently issued guidance) 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 approval must be granted prior to the shipment of Site samples to that laboratory for analysis.

2.0 TASK 2 – COMMUNITY RELATIONS

To the extent required by EPA, Respondent shall provide community relations support to EPA during the planning and implementation of the community involvement program. EPA will take the lead in the planning and implementation of the program. The RPM will oversee and direct all community relations activities performed to ensure that they are in accordance with the outline of

[3] The Field Branches Quality System and Technical Procedures can be found at: http://www.epa.gov/region4/sesd/fbqstp/

activities contained in this document and that they fulfill the statutory requirements as defined in CERCLA as amended by SARA. Tasks for which EPA may request support are outlined below.

- Community Involvement Work Plan Preparation
- Community Interviews
- Community Relations Plan Preparation
- Fact Sheet Preparation
- Public Meeting Assistance
- Public Notice Preparation

Upon request by EPA, the Respondent 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 advisers during the work at the Site. The community group must meet the requirements set forth in applicable regulations and guidance to be eligible to receive these funds.

3.0 TASK 3 – SITE CHARACTERIZATION AND REUSE ASSESSMENT

As part of the RI, Respondent shall perform the activities described in this task, including the preparation of a RI Report. The overall objective of Characterization is to describe areas 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. Respondent shall define the nature, extent, and volume of contamination, including physical and chemical constituents as well as concentrations at incremental locations in the affected media. Using this information, contaminant fate and transport shall be determined and projected.

During this phase of the RI/FS, the Work Plans, SAP, and HASP shall be implemented. Field data shall be collected and analyzed to provide the information required to accomplish the objectives of the study. Respondent shall notify EPA at least twenty one (21) days 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, sampling and analysis activities, and other field investigation activities. Respondent shall demonstrate that the laboratory and type of laboratory analyses that will be utilized during Characterization meets the specific QA/QC requirements and the DQOs as specified in the SAP. In view of the unknown conditions at the Site, activities are often iterative and, to satisfy the objectives of the RI/FS, it may be necessary for Respondent to supplement the work specified in the Work Plans. In addition to the deliverables below, Respondent shall provide a monthly progress report and participate in meetings with EPA at major points in the RI/FS.

3.1 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 Respondent in accordance with the Work Plans and SAP. At a minimum, this investigation shall include the following activities:

3.1.1 Access

Respondent shall have the primary responsibility for obtaining access in support of field activities, including but not limited to staging of field activities, installation of monitoring wells, and the collection of samples. In the case of recalcitrant parties, EPA will provide the necessary enforcement support to secure access.

3.1.2 Implementing and Documenting Field Support Activities

Respondent shall initiate field support activities following approval of the Work Plans 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. Respondent shall notify EPA at least twenty one (21) days prior to initiating field support activities so that EPA may adequately schedule oversight tasks. Respondent shall also notify EPA in writing upon completion of field support activities.

3.1.3 Investigating and Defining Site Physical and Biological Characteristics

Respondent shall collect data on the physical and biological characteristics of the Site, including the physiography, geology, and hydrology, and specific physical characteristics identified in the Work Plans. This information shall be ascertained through a combination of physical measurements, observations, and sampling efforts and shall be utilized to define potential transport pathways and receptor populations. In defining the physical characteristics of the Site, Respondent shall also obtain sufficient engineering data to facilitate the objectives of the Site.

3.1.4 Defining Contamination

Respondent shall locate the lateral and vertical extent of contamination. For each location, the lateral and vertical extent of contamination shall be determined by sampling at incremental depths on a sampling grid or in another organized fashion approved by EPA. The physical characteristics and chemical constituents and concentrations shall be determined for the Site. Respondent shall conduct sufficient sampling to define the boundaries of the contaminated ground water 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.

3.1.5 Describing the Nature and Extent of Contamination

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, 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. Respondent shall then implement an iterative monitoring program and any study program identified in the Work Plans 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, 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 for the Site.

3.1.6 Drinking Water Well Monitoring

Respondent shall obtain samples from drinking water wells that are within an approximate one mile radius of the former plant at the Site that are at risk of being affected by contaminants associated with the Site. The constituents sampled, frequency of sampling, area and wells sampled shall initially be consistent with the current quarterly monitoring program thus far conducted by EPA. This sampling requirement may be expanded or contracted, as agreed to by EPA, depending upon the results of such well testing, installation of an Interim Response Measure, data produced in the RI and such other data or information as relevant to determine the necessity and efficacy of the water well sampling and analysis and performance monitoring, as outlined below.

Upon request by EPA, Respondent shall provide split samples to EPA or its designee. Respondent shall have the samples analyzed with a turnaround time of no greater than twenty one (21) days. If concentrations are detected that exceed maximum contaminant levels (MCL) established by the regulations under the Safe Drinking Water Act or exceed Removal Action Levels for contaminants that do not have a corresponding MCL, Respondent shall submit sample results to EPA within twenty four (24) hours of receipt and immediately provide the home(s) serviced by the affected well with bottled water and the Interim Remedial Measure, to the extent not previously offered and accepted or rejected by the homeowner.

The frequency, location of and constituents to be sampled will be reviewed on a quarterly basis by Respondent and EPA. The March 2012 sampling event will be conducted by EPA for the locations it has sampled in the preceding twelve sampling events. Beginning in June 2012, and quarterly thereafter, Respondent shall conduct drinking water well sampling until an IRM is installed, at which time,

sampling obligations will be decreased in accordance with the first paragraph of section 3.1.6.

3.1.7 Vapor Intrusion Assessment

The Respondent shall conduct a Vapor Intrusion (VI) Assessment. Because the full extent of contamination has not yet been defined, EPA anticipates that the assessment may include a phased approach as more information comes to light. The initial VI Assessment shall evaluate vapor intrusion at homes that are immediately contiguous to Respondent's former plant property at the Site and the currently known contaminated ground water plume. As more information about the contaminated plume is identified, the VI Assessment shall be expanded, as necessary, to evaluate additional areas. The Respondent shall conduct the assessment using relevant guidance regarding VI Assessments. The Respondent shall prepare report(s) submitting the findings of the VI Assessment(s) in accordance with the EPA approved Work Plan.

3.2 Data Analysis

3.2.1 Evaluate the Site Characteristics

Respondent shall analyze and evaluate the data to describe: (1) physical and biological characteristics of the Site; (2) contaminant characteristics; (3) nature and extent of contamination; and (4) contaminant fate and transport. The information on physical and biological characteristics, contaminant 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.

Respondent shall collect any data identified by EPA as necessary to fill data gaps that EPA determines are present during preparation of the Baseline Risk Assessment (see *Guidance for Data Usability in Risk Assessment, Final* [4], U.S. EPA, Office of Emergency and Remedial Response, April 1992, OSWER Directive No. 9285.7-09A). Also, this evaluation shall provide any information relevant to characteristics necessary for the development and evaluation of Remedial Action Alternatives and the refinement and identification of ARARs for the Site. Analyses of data collected for the Site Characterization shall meet the DQOs developed in the QAPP.

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[4] This document can be found on the Internet at: http://www.epa.gov/oswer/riskassessment/datause/parta.htm

3.3 Data Management Procedures

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:

3.3.1 Documenting Field Activities

Information gathered during characterization of the Site shall be consistently documented and adequately recorded by Respondent in well maintained field logs and laboratory reports. The methods of documentation must be specified in the Work Plans 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. Supporting documentation described as the "CLP Data Package" must be provided with the sample analysis for all samples split or duplicated with EPA.

3.3.2 Maintaining Sample Management and Tracking

Respondent shall maintain field reports, sample shipment records, analytical results, and QA/QC reports to ensure that only validated analytical data are reported and utilized in the development and evaluation of the BRA and Remedial Action Alternatives. Analytical results developed under the Work Plans shall not be included in any characterization reports for the Site unless accompanied by or cross-referenced to a corresponding QA/QC report. In addition, Respondent shall establish a data security system to safeguard chain-of-custody forms and other project records to prevent loss, damage, or alteration of project documentation. Respondent shall also establish a data security system to safeguard personal privacy information regarding samples collected on properties owned by others.

3.4 Site Characterization Deliverables

Respondent shall prepare the Preliminary Site Characterization Summary and the Remedial Investigation Report. In addition to reports, all data shall also be submitted electronically.

3.4.1 Electronic Data Deliverables

Respondent shall submit all sampling data as an Electronic Data Deliverable (EDD). Information about EDD can be found at:
http://www.epa.gov/region4/superfund/allresource/edd/edd.html.

3.4.2 Drinking Water Well Reports

Within three (3) days of receipt of analytical results from a drinking water well sampling event, the Respondent shall submit a copy of the results to EPA along

with a summary that identifies any sample results that exceed maximum contaminant levels as set forth in the Safe Drinking Water Act's regulations or exceed Removal Action Levels for contaminants that do not have a corresponding MCL.

Within thirty (30) days of receipt of analytical results from the drinking water well sampling event, Respondent shall submit a Drinking Water Well Monitoring Report.

3.4.3 Draft Letters to Property Owners and Tenants

Within fourteen (14) days of receipt of analytical results from a drinking water sampling event, the Respondent shall submit to EPA draft letters, for EPA signature, to property owners and tenants transmitting the results. Respondent shall prepare the letters in accordance with *Communicating Environmental Data to Property Owners and Tenants. Standard Operating Procedure, October 2010, EPA Region 4 Superfund, Interim Final* or its successor. The letters shall include enclosures of a tabulated historical summary for the property, and if requested by EPA, a copy of the analytical data sheets from the laboratory for the property.

3.4.4 Preliminary Site Characterization Summary

After completing field sampling and analysis, Respondent shall prepare a concise Site Characterization Summary. This summary shall review the investigative activities that have taken place and describe and display data for the Site documenting the location and characteristics of surface and subsurface features and contamination at the Site including the affected medium, location, types, physical state, and quantity and concentrations of contaminants. In addition, the location, dimensions, physical condition, and varying concentrations of each contaminant throughout each source and the extent of contaminant migration through each of the affected media shall be documented. The Site Characterization Summary shall provide EPA with a reference for the identification of any supplemental data requirements, identification of remediation goals, initial development and screening of Remedial Action Alternatives, and the refinement and identification of ARARs.

3.4.5 Remedial Investigation Report

Within sixty (60) days after EPA's approval of the Risk Assessment (Task 5), Respondent shall submit to EPA for review and approval pursuant to Section X of the Settlement Agreement (EPA Approval of Plans and Other Submissions), a Draft Remedial Investigation Report consistent with the SOW and Work Plans. The Draft RI Report shall also contain a summary of the Risk Assessments. This report shall summarize results of field activities to characterize the Site, nature and extent of contamination, and the fate and transport of contaminants. Respondent shall refer to the RI/FS Guidance for an outline of the report format and contents.

Within thirty days of receipt of EPA comments, Respondent shall submit a Final RI Report which satisfactorily addresses EPA's comments.

3.5 Reuse Assessment

Respondent will perform a Reuse Assessment in accordance with EPA guidance, including Reuse Assessments: *A Tool To Implement The Superfund Land Use Directive*[5], OSWER Directive 9355.7-06P, June 4, 2001, or subsequently issued guidance. The Reuse Assessment should provide sufficient information to develop realistic assumptions of the reasonably anticipated future uses for the Site.

4.0 TASK 4 – TREATABILITY STUDIES

If EPA determines that treatability testing is required, within thirty (30) days thereafter, Respondent shall submit a Treatability Testing Statement of Work ("TTSOW") to assist in the detailed analysis of alternatives. If applicable, study results and operating conditions will later be used in the detailed design of the selected remedial technology. The following activities shall be performed by Respondent if Treatability Studies are determined to be necessary.

4.1 Determination of Candidate Technologies and the need for Treatability Studies

Respondent shall submit within thirty (30) days of EPA approval of the Remedial Investigation Report, unless otherwise specified by EPA, a technical memorandum identifying 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 6.1). The specific data requirements for the Treatability Studies program shall be determined and refined during the Site Characterization and the development and screening of Remedial Action Alternatives (Tasks 3 and 6, respectively).

4.1.1 Conduct Literature Survey and Determine the need for Treatability Studies

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.

4.1.2 Evaluate Treatability Studies

Where EPA has determined that Treatability Studies are required, 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

[5] This document can be found on the Internet at: http://www.epa.gov/superfund/community/relocation/reusefinal.pdf

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, 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.

4.2 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 HASP, where appropriate.

4.2.1 Treatability Study Work Plan

Within thirty (30) days after submission of the TTSOW, Respondent shall submit a Treatability Study Work Plan, including a schedule. Respondent shall prepare a Treatability Study Work Plan or amendment to the 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 installation and start-up, operation and maintenance procedures, and operating conditions to be tested. If testing is to be performed off-site, permitting requirements must be addressed.

4.2.2 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 RI SAP shall be prepared by Respondent within thirty (30) days after the inadequacy is identified. This SAP shall be submitted to EPA for review and approval. It shall be designed to monitor pilot performance. Task 1.3.6 of this SOW provides additional information on the requirements of the SAP.

4.2.3 Treatability Study Health and Safety Plan

If the original HASP is not adequate for defining the activities to be performed during the Treatability Studies, a separate or amended HASP shall be developed by Respondent within thirty (30) days after the need is recognized. Task 1.3.2 of this SOW provides additional information on the requirements of the Health and Safety Plan. EPA reviews, but does not "approve", the Treatability Study Health and Safety Plan.

4.2.4 Treatability Study Evaluation Report

Following completion of Treatability Studies, 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.

5.0 TASK 5 - BASELINE RISK ASSESSMENT

Respondent will perform the Baseline Human Health Risk Assessment and Ecological Risk Assessment (Risk Assessments), utilizing existing data obtained by EPA where relevant, in accordance with the SOW, Work Plans, and applicable EPA guidance, including but not limited to: "Interim Final Risk Assessment Guidance for Superfund, Volume I - Human Health Evaluation Manual (Part A)," (RAGS, EPA-540-1-89-002, OSWER Directive 9285.7-01A, December 1989); "Interim Final Risk Assessment Guidance for Superfund, Volume I - Human Health Evaluation Manual (Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments)," (RAGS, EPA 540-R-97-033, OSWER Directive 9285.7-01D, January 1998); "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments" (ERAGS, EPA-540-R-97-006, OSWER Directive 9285.7-25, June 1997) or subsequently issued guidance.

Section 300.430(d)(4) of the National Contingency Plan states that a site-specific Baseline Risk Assessment (BRA) be conducted as part of the RI. The BRA is an analysis of the potential adverse health effects (current and future) caused by hazardous substance releases from a site in the absence of any actions to control or mitigate these releases (i.e., an assumption of no action). This analysis includes identifying and characterizing the toxicity and effects of hazardous substances present, describing contaminant fate and transport, evaluating the potential for human exposure, and assessing the risk of potential impacts or threats on human health. An additional component of the BRA is the Environmental Assessment which assesses the risk of potential impacts or threats to the ecological environment (including both flora and fauna). The BRA provides the basis for determining whether or not remedial action is necessary at a site and a justification for performing any remedial action that may be required. Respondent shall conduct the BRA and identify Remedial Goal Options developed from the risk assessments.

5.1 Risk Assessment Methodology

For the BRA, Respondent shall prepare a Human Health Risk Assessment Report, an Ecological Risk Assessment Report, and a Remedial Goal Options Technical Memorandum following the formats prescribed in current EPA risk assessment guidance. Risk assessment methodologies are constantly evolving. The following website is a resource of information regarding conducting risk assessments: http://www.epa.gov/osweririskassessment/risksuperfund.htm

5.2 Risk Assessment Deliverables

Respondent shall prepare the following deliverables for the Baseline Risk Assessment within the timeframes specified in the EPA approved RI/FS Work Plan.

5.2.1 Human Health Risk Assessment

Respondent shall prepare a Human Health Risk Assessment Report in accordance with current EPA guidance. Guidance documents can be found through links at the website identified under Task 5.1 of this SOW.

5.2.2 Ecological Risk Assessment

The Ecological Risk Assessment (ERA) shall be performed for the Site in accordance with *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments -Interim Final*[6], EPA-540-R-97-006, OSWER 9285.7-25, PB97-963211, June 1997. Additional guidance can be found through links at the website identified under Task 5.1 of this SOW. The ERA includes an eight step process. All eight steps may not be required for every Site. At each Scientific Management Decision Point, EPA will decide whether or not it is necessary for Respondent to proceed to the following step.

5.2.3 Remedial Goal Options

Respondent shall prepare a Technical Memorandum which outlines the Remedial Goal Options (RGOs) for the chemicals of concern and media of concern that are protective of human health, the ecology and ground water. This document should include both ARARs and health-based cleanup goals. This document should include a table with media cleanup levels for each chemical that contributes to a pathway that exceeds a 10^{-6} risk or a Hazard Index (HI) of 0.1, or exceeds a state or federal chemical-specific ARAR for each scenario evaluated in the BRA. Chemicals need not be included if their individual carcinogenic risk contribution to a pathway is less than 10^{-6}, or their noncarcinogenic Hazard Quotient (HQ) is less than 0.1. The table should include the 10^{-4}, 10^{-5}, and 10^{-6} risk levels for each chemical, media and scenario (land use) and the HQ 0.1, 1 and 10 levels, as well as any chemical-specific ARAR values. The values should be developed by combining the exposure levels to each chemical by a receptor from all appropriate routes of exposure (i.e., inhalation, ingestion and dermal) within a pathway and rearranging the site-specific average-dose equations used in the BRA to solve for the concentration term. The resulting table should present one set of RGOs for each land use (e.g., residential (child and adult) and industrial).

The purpose is to provide the RPM with the maximum risk-related concentration level options on which to develop remediation aspects of the Feasibility Study and Proposed Plan. These Site-specific RGOs replace the generic Preliminary

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[6] This document can be found at: http://www.epa.gov/oswer/riskassessment/ecorisk/ecorisk.htm

Remediation Goals (PRGs) in providing the final risk-based guidance for remedial action. The results of the Ecological Risk Assessment should be the identification of remediation goals for the ecological contaminants of concern that would be protective for the receptors. These RGOs should be presented for the relevant environmental media.

6.0 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. Institutional Controls shall also be evaluated as a remedy component. The following activities shall be performed by Respondent as a function of the development and screening of Remedial Action Alternatives for the Site.

6.1 Development and Screening of Remedial Action Alternatives

Respondent shall begin to develop and evaluate, concurrent with the RI Characterization task, a range of appropriate remedial action alternatives that, at a minimum, ensure protection of human health and the environment and comply with all ARARs.

6.1.1 Refine and Document Remedial Action Alternatives

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 1.2. These objectives shall specify the contaminants, exposure pathways and receptors, an acceptable contaminant level or range of levels for each exposure route, and options for Engineering Controls and Institutional Controls.

6.1.2 Develop General Response Actions

Respondent shall develop general response actions for the Site defining containment, treatment, excavation, pumping, or other actions, singly or in combination, to satisfy the remedial action objectives.

6.1.3 Identify Areas and Volumes of Media

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.

6.1.4 Identify, Screen, and Document Remedial Technologies

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.

6.1.5 Assemble and Document Alternatives

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

6.1.6 Refine Alternatives

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 shall also be refined as necessary to incorporate any new risk assessment information presented in Baseline Risk Assessment reports. Additionally, action-specific ARARs shall be updated as the Remedial Action Alternatives are refined.

6.1.7 Conduct and Document Screening Evaluation of Each Alternative

Respondent shall 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. 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.

The screening shall preserve the range of 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. 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.

6.2 Alternatives Development and Screening Deliverables

Respondent shall develop an appropriate range of options to address Site contamination including the threat of contamination from the Site in ground water wells or springs which are relied upon by properties and/or persons for their drinking water source, surface water, sediment, air and the vapor intrusion pathway, soils not fully remediated during the removal action, as well as remediation of ground water in the contaminated ground water plume.

Respondent shall prepare technical memoranda summarizing the work performed and the results of each task in section 6.1, including an alternatives array summary. This alternatives array shall be modified by Respondent when conducting Task 7 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. These deliverables shall document the methods, rationale, and results of the alternatives screening process.

The Site will be evaluated through the development and screening of alternatives, as provided in the RI/FS Work Plan. In accordance with the schedules or deadlines established in the Settlement Agreement, the SOW, and/or the EPA-approved RI/FS Work Plan, Respondent shall provide EPA with the following deliverables for review and approval pursuant to Section X of the Settlement Agreement (EPA Approval of Plans and Other Submissions):

6.2.1 Memorandum on Remedial Action Objectives

Within the timeframe specified in the EPA approved RI/FS Work Plan, Respondent shall submit a Memorandum on Remedial Action Objectives which shall include remedial action objectives for Engineering Controls as well as for Institutional Controls, where relevant.

6.2.2 Memorandum on Development and Screening of Alternatives

Within the timeframe specified in the EPA approved RI/FS Work Plan, Respondent shall submit a Memorandum on Development and Screening of Alternatives which shall summarize the development and screening of remedial alternatives.

7.0 TASK 7 – DETAILED ANALYSIS OF REMEDIAL ACTION ALTERNATIVES

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

7.1 Detailed Analysis of Alternatives

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. Respondent's analysis shall also include an assessment of the specific types of Institutional Controls being considered, including an evaluation of each option against the nine evaluation criteria.

7.1.1 Apply Nine Criteria and Document Analysis

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. For each alternative, Respondent shall provide: (1) a description of the alternative that also includes the key ARARs associated; and (2) a discussion of the individual criterion assessment.

Criteria 8 and 9 are considered after the RI/FS Report has been released to the general public. Since 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.

7.1.2 Compare Alternatives Against Each Other and Document the Comparison of Alternatives

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.

7.2 Detailed Analysis Deliverables

Respondent shall conduct a detailed analysis of remedial alternatives, as described in the SOW and RI/FS Work Plan. In accordance with the deadlines or schedules established in this Settlement Agreement, the SOW, and/or the EPA-approved RI/FS Work Plan, Respondent shall provide EPA with the following deliverables and presentation for review and approval pursuant to Section X (EPA Approval of Plans and Other Submissions):

7.2.1 Report on Comparative Analysis and Presentation to EPA

Within the timeframe specified in the EPA approved RI/FS Work Plan, Respondent will submit a report on comparative analysis to EPA. Within thirty (30) days of submitting the report on comparative analysis, Respondent will present to EPA a

summary of the findings of the remedial investigation and remedial action objectives, and present the results of the nine criteria evaluation and comparative analysis, as described in the SOW.

7.2.2 Alternatives Analysis for Institutional Controls and Screening

Within the timeframe specified in the EPA approved RI/FS Work Plan, Respondent shall submit a memorandum on the Institutional Controls identified in the Memorandum on Development and Screening of Alternatives as potential remedial actions. The Alternatives Analysis for Institutional Controls and Screening shall: (i) state the objectives (i.e., what will be accomplished) for the Institutional Controls; (ii) determine the specific types of Institutional Controls that can be used to meet the remedial action objectives; (iii) investigate when the Institutional Controls need to be implemented and/or secured and how long they must be in place; (iv) research, discuss, and document any agreement with the proper entities (e.g., state, local government entities, local landowners, conservation organizations, Respondent) on exactly who will be responsible for securing, maintaining, and enforcing the Institutional Controls. The Alternatives Analysis for Institutional Controls and Screening shall also evaluate the Institutional Controls identified in the Memorandum on Development and Screening of Alternatives against the nine evaluation criteria outlined in the NCP (40 C.F.R. § 300.430(e)(9)(iii)) for CERCLA cleanups, including but not limited to, costs to implement, monitor, and/or enforce the Institutional Controls. The Alternatives Analysis for Institutional Controls and Screening shall be submitted as an appendix to the Draft Feasibility Study Report.

7.2.3 Institutional Controls Implementation and Assurance Plan (ICIAP)

Within the timeframe specified in the approved RI/FS Work Plan, Respondent shall prepare an Institutional Controls Implementation and Assurance Plan (ICIAP). The ICIAP shall be prepared in accordance with EPA guidance regarding Institutional Controls, including, but not limited to *Institutional Controls: A Guide to Planning, Implementing, Maintaining and Enforcing Institutional Controls at Contaminated Sites.*[7]

7.2.4 Draft Feasibility Study Report

Within thirty (30) days after the presentation to EPA described in Task 7.2.1, Respondent shall submit to EPA a Draft Feasibility Study Report which reflects the findings in the Risk Assessments. Respondent shall refer to Table 6-5 of the RI/FS Guidance for report content and format. The report as amended, and the administrative record, shall provide the basis for the proposed plan under CERCLA Sections 113(k) and 117(a) by EPA, and shall document the development and analysis of remedial alternatives.

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[7] This guidance can be found at: http://www.epa.gov/superfundJpolicy/ic/pdfs/PIME-IC-Guidance-Interim.pdf

7.2.5 Final Feasibility Study Report

Within thirty (30) days of receipt of EPA comments on the Draft Feasibility Study Report, Respondent shall submit a Final FS Report which satisfactorily addresses EPA's comments. Once EPA's comments have been addressed by 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.