Exhibit D

EPA Form 2075-3

	United States Environmental Protection Agency Washington DC 20460 **Application for Preauthorization of a CERCLA Response Action**	Form Approved. OMB No. 2050-0106 Expiration Date 12-31-94

General Instructions: Complete all items in ink or by typewriter. If an item is not applicable to your preauthorization request, write "N/A" in the appropriate space. Attach typewritten sheets for additional information.

I. Introductory Material

A. Name, Title and Address of Applicant(s):	B. Name of Site:	C. Eligibility:
August Mack Environmental, Inc. ("AME") *1302 N. Meridian Street* *Indianapolis, IN 46202* *317-916-8000*	*Big John Salvage Site* *Fairmont, Marion County,* *West Virginia* *EPA ID: WVD054827944*	☐ Individual ☐ PRP ☒ Firm ☐ Other ☐ Foreign Applicant

D. Name, Title and Address or Agent (if any) Authorized to Represent Claimant:

Mr. Bradley R. Sugarman, Esq.
Krieg DeVault LLP
One Indiana Square, Suite 2800
Indianapolis, IN 46204-2079
Direct Line: 317-238-6265
Email: bsugarman@kdlegal.com

II. Relates to Actual or Threatened Release of a Hazardous Substance, Pollutant or Contaminant

A. Date/time (am/pm) of release (if known):	B. Location of the release:
Unknown	*Big John Salvage Site*

C. Is the release or threat of release at an NPL site? ☒ Yes ☐ No If yes, what is the site name on the NPL? *Big John Salvage - Hoult Road*

D. Provide a short description of the release or threat of release.

There was not a single identified release that led to the contamination at the site. The site's contamination resulted from the various industrial activities that took place at the site over the course of the last 100 years.
In its Action Memorandum, EPA characterized the release at the site as relating to contaminants in a "hotspot" of industrial wastes referred to as black semi-solid deposits ("BSDs") and contaminants in stained sediment deposits ("SSDs") closely associated with the toxic hotspot that is serving as a source of contamination to Monongahela River sediments. The BSDs and SSDs contain high levels of polycyclic aromatic hydrocarbons ("PAHs"). These PAHs include naphthalene and benzo(a)pyrene, both hazardous substances pursuant to section 102 of CERCLA. Further information on the release and EPA's assessment of it can be found in the Consent Decree attached to AME's Response Claim Letter dated January 6, 2017 as Exhibit A.

E. Did you contact the National Response Center? ☐ Yes If yes, provide the date and the manner of the notice:

☒ No If no, explain why not: *AME began work at the site after the release was identified and EPA, the State of West Virginia, and the PRPs entered into the Consent Decree. No subsequent releases occurred.*

III. Relates to Potentially Responsible Parties (PRPs)

A. Are you a person whom EPA previously identified as a PRP for the site in question? ☐ Yes ☒ No
If yes, provide date of notice letter

B. If you have not been identified as a PRP do you fall within one of the four categories of potentially liable parties set forth in section 107(a) of CERCLA? ☐ Yes ☒ No
If yes, describe why.

C. Is this application to be approved in the context of a consent order or decree? ☒ Yes ☐ No
If yes, provide information as to the status of the settlement negotiations, provide the name of the relevant EPA contact person, and attach the most recent draft of any settlement agreement.

A Consent Decree was entered on October 10, 2012 settling all relevant claims regarding the site. The EPA contact person is Eric Newman, Remedial Project Manager and Project Coordinator, Hazardous Site Cleanup Division, US Environmental Protection Agency, Region III. The Consent Decree is attached to AME's Response Claim Letter dated January 6, 2017 as Exhibit A.

D. Have you identified any PRPs for the release or threat of release in question? ☒ Yes ☐ No

If yes, attach a list of known PRPs and describe the results of any contacts with them.

AME has identified three PRPs at the Site. They include Vertellus Specialty Inc. ("Vertellus"), CBS Corp. ("CBS"), and Exxon Mobil Corp. ("Exxon"). Because there are only three PRPs, a listing has not been separately attached.
AME sought payment from CBS and Exxon by its letters dated August 30, 2016 and September 22, 2016, respectively. These requests were denied. Further, AME sent invoices to Vertellus for payment but was never paid (much less within the 60 day window provided by CERCLA before a claim can be filed). Any further requests to Vertellus would be futile given its current bankruptcy proceeding.

If no, describe efforts to identify PRPs.

IV. Relates to Proposed Response Action

A. Briefly summarize the proposed response action and attach a schedule of major response activities.

After conducting an Engineering Evaluation and Cost Analysis ("EE/CA"), EPA selected the following alternatives for the proposed response action: (1) River Sediment Alternative RS2: Excavation and Off-Site Treatment and/or Disposal – Option B (BSD and SSD); (2) Soil Alternative SO5: Capping/Containment of Contaminated Soil; (3) Upland Sediment Alternative OSS3: Excavation and On-Site Confinement of Sediment; (4) Groundwater Alternative GW4A: Expansion of the Existing Groundwater Containment System with Discharge to POTW. For more details regarding the response action, please see pages 27-30 of the Action Memorandum, which is attached as to AME's Response Claim Letter dated January 6, 2017 as Exhibit B.

A schedule of major response activities is included in the Action Memorandum attached as to AME's Response Claim Letter dated January 6, 2017 as Exhibit B.

B. Identify which provisions of the National Contingency Plan (NCP) are applicable for the proposed types of response activity (e.g., removal, RI/FS) and describe how the proposed action will be conducted in accordance with those provisions.

The response action forming the basis of this request is a Removal Action as that term is defined in the Consent Decree for the site. As part of its Remedial Design Work Plan (RDWP), AME submitted a Sampling and Analysis Plan which contained a Field Sampling Plan and a Quality Assurance Project Plan (QAPP), as required by the Consent Decree. These plans were reviewed and approved by EPA. By the terms of the Consent Decree, AME is required to conduct its work at the site in compliance with all of these plans and the Consent Decree generally. Actual compliance is assured by AME's reporting requirements and EPA oversight of the site.

C. Address how the proposed response action will be consistent with the NCP with regard to the following performance standards:

1. Worker training, health and safety, and the safety of the public.

AME submitted its Health and Safety Plan that was in compliance with applicable OSHA standards to EPA at the same time as its RDWP, as required by the Consent Decree. EPA approved this plan on June 25, 2013, and AME conducted the response action under the plan.

2. Community relations plan.

EPA sent out postcards to members of the community around the BJS Site in September 2013. In late 2014, AME worked alongside EPA and Vertellus to prepare a mailer for the site. Further, the Consent Decree, under which AME conducted all its work, was made available for public notice and comment.

3. Compliance with legally applicable, or relevant and appropriate, Federal and State environmental requirements (ARARs).

AME conducted its response action according to the terms of the Consent Decree and Action Memorandum. In the Action Memorandum, EPA provides that the removal action complied with all federal and state applicable or relevant and appropriate environmental and health requirements, to the extent practicable considering the exigencies of the situation. Thus, AME's response action was consistent with the NCP with regard to this performance standard.

V. Relates to Applicant's Capabilities

Describe your capabilities to carry out the proposed response actions.

Detailed information regarding AME's capabilities to carry out the proposed response actions (including financial and technical/scientific capabilities) was provided to EPA after Vertellus selected AME as the Supervising Contractor. Based on this information, EPA approved AME as the Supervising Contractor on November 6, 2012. Thus, EPA has already shown its satisfaction in AME's ability to carry out the response actions.

VI. Relates to State or Indian Tribe Consultation

Has a letter signed by the designated State or Indian Tribe official been attached? ☐ Yes ☒ No If no, explain.

The state of West Virginia was a party to the Consent Decree.
The Consent Decree is attached to AME's Response Claim Letter dated January 6, 2017 as Exhibit A.

VII. Relates to Long-Term Operations and Maintenance (O&M) (if applicable)

☐ **I will provide a bond or other financial assurance for O&M.** ☐ **The State has agreed to provide for O&M.**
Attach documentation to support your assertion.

N/A – Per the Consent Decree, the PRPs agreed to provide for O&M.

VIII. Relates to Projected Costs

A. Provide the projected costs for each response activity and attach an explanation of why each of these costs is "necessary."

1.	*River Removal Action Work*	**$***2,399,874.69*
2.	*Uplands Work*	**$** *261,276.29*
3.	_____	**$**_____
4.	_____	**$**_____
	TOTAL	**$***2,661,150.98*

Explanation of necessity of these costs – All these costs were deemed necessary by EPA's approval of the work in which these costs were incurred. As required by the Consent Decree, AME obtained EPA's approval for all work done prior to beginning the work. By approving the work to be done, EPA has already accepted the necessity of these costs.

B. Provide a proposed schedule for the submission of claims.
N/A – AME has completed its work at the site. No further work is anticipated so no additional claims will be submitted.

IX. Relates to Project Management

A. Describe the management structure to be put in place to implement the proposed project and to control financial matters.

AME submitted its RDWP to EPA which described the management structure to be put in place to implement the proposed project and to control financial matters. This RDWP was approved by EPA according to the terms of the Consent Decree. AME followed the terms of that approved plan in putting its management structure in place.

B. Describe your procedures for comprehensively documenting the work performed and the costs incurred for all phases of the proposed response action.

AME submitted its QAPP to EPA (as part of its RDWP) which described all sampling and analysis procedures to be followed to document the type and quality of data needed to satisfy the requirements of the Consent Decree and to provide the blueprint for collecting and assessing the data required to be collected by the Consent Decree.

Further, the Consent Decree required AME to submit a written progress report to EPA every 30 days. These reports described all significant developments during the prior 30 days, including the actions performed and any problems encountered, analytical data received during the reporting period, and developments anticipated during the next 30 days.

C. Describe your procedures for reporting to EPA on the progress of the proposed project and for EPA oversight.

The Consent Decree required AME to submit a written progress report to EPA every 30 days. These reports described all significant developments during the prior 30 days, including the actions performed and any problems encountered, analytical data received during the reporting period, and developments anticipated during the next 30 days.

Under the Consent Decree, EPA also had access to the site to conduct all oversight activities such as monitoring, sampling, and implementing work.

D. Describe your proposed procurement procedures.

All procurement was done in accordance with the terms of the RDWP submitted to and approved by EPA and the requirements of the Consent Decree.

Certification

I certify that all information herein is true to the best of my knowledge. I agree to supply additional information, as requested, in support of this application and access to the site for purpose of inspection.

Signature of Applicant signed on AME's behalf **Date** January 12, 2017

CERCLA Penalty for Presenting Fraudulent Claim

Any person who knowingly gives or causes to be given false information as a part of a claim against the Hazardous Substance Superfund may, upon conviction, be fined in accordance with the applicable provisions of Title 18 of the United States Code or imprisoned for not more than 3 years (or not more than 5 years in the case of a second or subsequent conviction) or both (42 USC 9612(b)(1))

Civil Penalty for Presenting Fraudulent Claim

The claimant is liable to the United States for a civil penalty of $2,000 and an amount equal to two times the amount of damages sustained by the Government because of acts of that person, including costs of the civil action

Criminal Penalty for Presenting Fraudulent Claim or Making False Statements

The claimant will be charged a maximum fine of not more than $10,000 or be imprisoned for a maximum of 5 years or both (*See* 62 Stat. 698, 749, 18 USC 287, 1001)

Exhibit E

EPA Form 2075-4

	United States Environmental Protection Agency **Washington DC 20460** **Claim for CERCLA Response Action**	**Form Approved. OMB No. 2050-0106** **Expiration Date 12-31-94**

General Instructions: Complete all items in ink or by typewriter. If an item is not applicable to your claim, write "N/A" in the appropriate space. Attach typewritten sheets for additional information.

I. Introductory Material

A. Name, Title and Address of Claimant(s):	**B. Name of Site:**	**C. Preauthorization Decision Document (PDD):**
August Mack Environmental, Inc. *1302 N. Meridian Street* *Indianapolis, IN 46202* *317-916-8000*	*Big John Salvage Site* *Fairmont, Marion County, West Virginia* *EPA ID: WVD054827994*	Number: Date: (Attach copy) *EPA indicated its preauthorization of the work completed by its approval of AME's Remedial Design Work Plan (RDWP). The RDWP is attached as Attachment I.C to this Exhibit E.* *EPA also indicated its preauthorization of the smaller portions of work AME completed on a piecemeal basis. Documentation of those approvals can be provided upon request.*

D. Name, Title and Address or Agent (if any) Authorized to Represent Claimant:

Mr. Bradley R. Sugarman, Esq.
Krieg DeVault LLP
One Indiana Square, Suite 2800
Indianapolis, IN 46204-2079
Direct Line: 317-238-6265
Email: bsugarman@kdlegal.com

II. Relates to Potentially Responsible Parties (PRPs)

A. Has the claimant made a reasonable effort to identify any PRPs (other than any who may be parties to this claim)? Describe those efforts.

Yes. AME has identified three PRPs at the Site. They include Vertellus Specialty Inc., Exxon Mobil Corp., and CBS Corp.

B. Has the claimant presented a request for reimbursement to known PRPs (other than any who may be parties to the claim)?

☒ Yes ☐ No

Attach names, addresses and dates of presentation. Describe any responses.

See Attachment II.B to this Exhibit E.

AME sought payment from CBS and Exxon by its letters dated August 30, 2016 and September 22, 2016, respectively. These requests were denied. Further, AME sent invoices to Vertellus for payment but was never paid (much less within the 60 day window provided by CERCLA before a claim can be filed). Any further requests to Vertellus would be futile given its current bankruptcy proceeding.

C. If a partial settlement was reached with PRPs after presentation of the claim as described in II.B. did EPA approve any release?

☐ Yes ☒ No If no, explain

No settlement was reached.

D. Is there an action pending in court regarding this site or response actions?

☐ Yes ☒ No If yes, explain

III. Relates to Claims for a Preauthorized Phase

A. Is this a claim for a preauthorized phase? ☐ Yes ☒ No

If no, provide the completion date of the subject response action and skip B,C,D and E.

The overall response action work is ongoing. However, AME has completed its work at the site. AME has no knowledge of the projected completion date of the remaining work.

B. How many claims are authorized in the PDD?	**C. For which preauthorized phase are you filing a claim at this time?**
N/A	*N/A*
D. Is the completion of the next preauthorized phase on schedule?	**E. Estimated date for submitting claim for the next preauthorized phase.**
☐ Yes ☐ No	*N/A*
N/A	

IV. Relates to Response Action

A. Was the response/preauthorized phase completed in accordance with the PDD? ☒ Yes ☐ No If yes, skip B

All work completed by AME was done in accordance with EPA's preauthorization as noted throughout this form and the letter to which this form is attached.

B. Was a modification to the preauthorization request submitted and approved by EPA?

☐ Yes - - Supply number and date _____

☐ No - - Explain how and why response differs from PDD.

Not Applicable.

C. Was the response completed in accordance with the Statement of Work and the Work Plan? ☒ Yes ☐ No If yes, skip D.

D. Explain how and why the response differs from the Statement of Work and/or the Work Plan.

N/A

E. Address how each of the PDD terms and conditions were met (in the order that they appear in the PDD). Provide documentation of such adherence in an appendix.

All terms and conditions included in the preauthorization were addressed in the RDWP and subsequent plans submitted to and approved by EPA. AME initiated Pre-Design Investigation (PDI) activities in order to implement the RDWP. Pursuant to the Consent Decree and RDWP, AME submitted a Field Sampling Plan to EPA for approval. It was amended according to all EPA conditions as they arose. EPA had final approval authority of this and all plans submitted and work completed. EPA has copies of all these documents showing adherence to all EPA terms and conditions since it had final approval authority. However, AME will provide copies to EPA upon request.

F. Provide the name and address of the location where all cost documentation and any other records relating to the claim will be maintained.

August Mack Environmental, Inc., 1302 N. Meridian Street, Suite 300, Indianapolis, IN 46202

V. Relates to Amount of Response Claim

A. Provide the following summary information:

Re Current Claim Submission	
Type of Response Activities Represented by Claim	*The response activities represented by this claim are all activities taken by AME at the Site pursuant to the Consent Decree, EPA's Action Memorandum, and EPA approval.*
Total Eligible Response Costs Represented by Claim	*$2,661,150.98*
Percentage of Claimed Costs to Total Response Costs	*100%*
Dollar Amount of Reimbursement Claimed	*$2,661,150.98*
Re Any Past Claim Awards Under the Subject PDD	
Number of Previous Claims	*N/A – no previous claims*
Total Sum of Previous Awards	*N/A – no previous claims*
Re PDD	
Reimbursement Cap Set For All Claim Submissions	*N/A – no reimbursement cap set*

B. Provide the following breakdown of the eligible response costs asserted in this claim submission

Labor	*N/A – see below*
Travel	*N/A – see below*
Equipment	*N/A – see below*
Materials and Supplies	*N/A – see below*
Contractual Services	*N/A – see below*
Other Direct Costs	*N/A – see below*
Indirect Costs	*N/A – see below*
TOTAL RESPONSE COSTS	*$2,661,150.98*

With the exception of contractual services, provide detailed summaries of the components of each of the above cost categories. Address how the costs incurred were required under the PDD and reasonable, allowable and allocable according to Federal cost principles. Specify which of the Federal cost principles were used and explain the basis that selection.

N/A – As noted throughout this form and the letter to which this form is attached, detailed cost information was provided to EPA before AME began its work and EPA had continuous supervisory authority while AME completed its work. EPA approval of all work shows that the work performed was required, reasonable, allowable and allocable according to Federal cost principles. All detailed information was submitted to EPA as part of the approval process mandated by the Consent Decree.

C. Provide a cost breakdown of all contractual services performed for this claim submission. Explain how the incurred costs were required under the PDD and reasonable, allowable and allocable according to Federal cost principles. Specify which of the Federal cost principles were used and explain the basis that selection.

N/A – As noted throughout this form and the letter to which this form is attached, detailed cost information was provided to EPA before AME began its work and EPA had continuous supervisory authority while AME completed its work. EPA approval of all work shows that the work performed was required, reasonable, allowable and allocable according to Federal cost principles. All detailed information was submitted to EPA as part of the approval process mandated by the Consent Decree.

Certification

I certify that all information herein is true to the best of my knowledge. I agree to supply additional information, as requested, in support of this application and access to the site for purpose of inspection.

Signature of Claimant	**Date**
signed on AME's behalf	January 12, 2017

CERCLA Penalty for Presenting Fraudulent Claim

Any person who knowingly gives or causes to be given false information as a part of a claim against the Hazardous Substance Superfund may, upon conviction, be fined in accordance with the applicable provisions of Title 18 of the United States Code or imprisoned for not more than 3 years (or not more than 5 years in the case of a second or subsequent conviction) or both (42 USC 9612(b)(1))

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The claimant will be charged a maximum fine of not more than $10,000 or be imprisoned for a maximum of 5 years or both (*See* 62 Stat. 698, 749, 18 USC 287, 1001)

Attachment I.C to Exhibit E

RDWP

MONONGAHELA RIVER
REMOVAL DESIGN WORK PLAN
BIG JOHN'S SALVAGE-HOULT ROAD
SUPERFUND SITE
FAIRMONT, WEST VIRGINIA

PREPARED FOR:

Mr. Eric Newman
Remedial Project Manager
Superfund Division
U.S. Environmental Protection Agency, Region 3
Hazardous Site Cleanup Division (3HS23)
1650 Arch Street
Philadelphia, PA 19103-2029

PREPARED BY:

August Mack Environmental, Inc.
1302 N. Meridian Street, Suite 300
Indianapolis, Indiana 46202

Anchor QEA, LLC
290 Elwood Davis Road, Suite 340
Liverpool, New York 13088

ISSUE DATE:

December 14, 2012

REVISED:
April 30, 2013
September 13, 2013

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1.0 INTRODUCTION

On October 10, 2012, a Consent Decree (CD) executed by Vertellus Specialties Inc. (VSI), Exxon Mobil Corporation (ExxonMobil), CBS Corporation (CBS), United States Environmental Protection Agency (USEPA), and West Virginia Department of Environmental Protection (WVDEP) was entered by the United States District Court for the Northern District of West Virginia. The CD requires the performance of Removal Actions (RAs) related to multiple media at the Big John's Salvage – Hoult Road Superfund Site (BJS Site). The BJS Site is located in Fairmont, Marion County, West Virginia on the east bank of the Monongahela River as shown on **Figure 1.**

ExxonMobil and CBS are defined as "Non-Performing Defendants" in the CD while VSI is designated as the "Performing Defendant". VSI has selected, with USEPA approval, August Mack Environmental, Inc. (August Mack) as the Supervising Contractor. This Removal Design Work Plan (RDWP) has been prepared pursuant to the CD by August Mack on behalf of VSI.

As defined in the CD, two (2) distinct areas are being addressed during the RA:
1) sediment, soil, surface water and groundwater within the boundaries of the BJS Site, excluding any portion of the Monongahela River (defined as the 'Uplands Area' in the CD), and 2) the sediment in the Monongahela River. This submittal represents the Removal Design Work Plan (RDWP) for the Monongahela River RA (River RA). The Uplands Area RA is addressed in a separate RDWP.

The River RA design will be guided by this RDWP and a stand-alone Sampling and Analysis Plan (SAP) consisting of a Field Sampling Plan (FSP), which governs the field sampling event(s) and communicates specific sampling procedures, and a Quality Assurance Project Plan (QAPP), which outlines procedures the monitoring project will use to ensure data collection and evaluation are of high enough quality to meet project objectives. A stand-alone health and safety plan (HASP) covering physical and chemical hazards that may be encountered at the Site during pre-design investigation activities has also been prepared and submitted under separate cover.

The sediment removal will be conducted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan as a Non-Time-Critical Removal

Action (NTCRA). Tetra Tech NUS, Inc. prepared an Engineering Evaluation/Cost Analysis (EE/CA - July 2009) for the USEPA which described and evaluated multiple removal actions. Based on the EE/CA, USEPA issued an Action Memorandum on September 10, 2010 (included as Attachment A of the CD), describing the selected RAs. This RDWP describes the process that will be employed to design the RA selected by the USEPA for Monongahela River sediments.

1.1 Monongahela River Background

The Monongahela River is formed by the confluence of the West Fork River and the Tygart Valley River in Fairmont, West Virginia. The river flows northward over 120 miles until it joins with the Allegany River to form the Ohio River. Due to the large amount of mining activity in the area, the river was historically an important means of transportation for coal mining activities. To facilitate coal barges, the River's depth is controlled by a series of dams managed by the United States Army Corps of Engineers (USACE). These dams maintain the River at a minimum depth of 9 feet, resulting in a fairly consistent stage and variable flow depending on fluctuations in precipitation.

A watershed assessment for the Monongahela River (USACE, 2011) indicates that mining activities in the area have contributed to water quality issues including high levels of total dissolved solids (TDS) and elevated concentrations of some metals. In addition, the river also receives discharges from combined sewer overflows (CSO). The CSO discharges have contributed to the amount of TDS and have caused fecal coliform concentrations to be an issue throughout the entire Monongahela River.

The BJS Site is located in the Opekiska pool of the Monongahela which stretches between mile marker 115.4 and mile marker 130. In the section near the BJS Site, the River reaches widths of over 350 feet and depths in excess of 15 feet. The banks of the River in this section are steep and wooded with very little to no flood plain on the East bank where the BJS Site is located. The confluence of Unnamed Tributary #1 and the Monongahela River is located at mile marker 125.25. The Fairmont waste water treatment plant discharge is located just upstream of the confluence and there is signage indicating the presence of a gas line crossing downstream from the BJS Site.

1.2 Removal Action Summary

As described in the above referenced CD, VSI and ExxonMobil have agreed to fund the BJS Site River Removal Action Work Trust, which will be utilized to remove and dispose of approximately 5,400 cubic yards (cy) of Monongahela River sediment.

Environmental investigations have documented black semi-solid deposits (BSD) of industrial wastes spread over a portion of the Monongahela River bottom extending from the Unnamed Tributary #1 confluence. The elliptical-shaped area ranges from 50-100 feet wide, extending approximately 25-50 feet upstream to approximately 350 feet downstream from the Unnamed Tributary #1 confluence (**Figure 2**). The thickness of the BSD was reported to typically be 3-6 inches with mounds up to 12 inches thick.

At its downstream extent, the BSD transitions from the asphaltic material to an oilier residue and then to visibly stained sediment deposits (SSD). The SSD occurs in the upper 12 inches, is approximately 30 feet wide and was observed to extend 800 feet (**Figure 2**). The intent of the RA is to remove the visual BSD and SSD from the Monongahela River, restore the dredged areas, and monitor the natural attenuation/natural recovery of the residual contaminants.

1.3 Anticipated Ra Work Activities

In the selected alternative, the BSD and SSD will be mechanically removed (dredging) from the river bottom. The Action Memorandum outlines the following tasks as part of the RA.

- Perform pre-design sampling and surveying (3-dimensional) in the BSD and SSD areas. Develop a dredging footprint which will refine the boundaries of the BSD/SSD and define the excavation area ("River Excavation Area") and the construction area, which will consist of the River Excavation Area as well as the transportation and off-loading areas of the river ("Construction Area").
- Isolate the River Excavation Area with turbidity curtains or other appropriate methods to reduce/prevent erosion and limit migration of re-suspended contaminants during removal activities. Measure upstream and downstream turbidity levels in the river during dredging/excavation to ensure that engineering controls are effective in minimizing the migration of residual contamination re-suspended by removal operations.
- Remove all BSD and SSD from the River Excavation Area using dredging/excavation techniques appropriate to the Site conditions. Employ methods to minimize re-suspension and residual materials.

- Dewater and stabilize excavated-wastes and sediments (i.e., BSD and SSD) with additives (i.e., polymers, kiln dust, etc.) as required to meet off-Site treatment or disposal facility acceptance criteria.
- Discharge water collected during the dewatering process in accordance with local POTW and State discharge limits.
- Sample excavated BSD/SSD for Resource Conservation and Recovery Act (RCRA) characteristics to determine appropriate treatment and/or disposal requirements. Preliminary waste characterization profiling and landfill approval will be completed to the extent practicable prior to excavation. As noted in the CD, none of the material to be removed is considered 'listed' hazardous waste.
- Transport dewatered BSD/SSD by truck or other means to an appropriately permitted facility for treatment and/or disposal.
- Dispose excavated BSD/SSD at an off-Site treatment and/or disposal facility operating in accordance with CERCLA 121 (d)(3) and 40 CFR 300.440.
- Conduct a post-excavation evaluation to verify the removal of BSD and assess the nature and extent of residual contamination.
- If the post-dredging assessment indicates that BSD remains, remove that BSD and dispose appropriately.
- Restore excavation area and isolate any remaining thin layer of residual SSD from the benthic and aquatic ecosystems by placing a layer of sand or other earthen materials above such stained areas.
    - The use of amendments to backfill material will be considered as part of Pre-Final Design.
    - Material selection shall be appropriate for the nature of contamination and permitting requirements. Post-removal elevations within the excavation and restoration area shall not be greater than pre-removal elevations (i.e., no net fill to river bottom).
- Conduct an environmental monitoring program to document post-removal conditions and continue for five (5) years to document the effectiveness of natural attenuation/natural recovery.
- Implement post-removal Site controls to preserve the integrity of the RA.

1.4 Overview Of The Removal Design Process

The overall design process will consist of the following four main stages:

- Pre-Design Investigation (PDI)
- Preliminary Design
- Pre-Final Design
- Final Design

The PDI stage primarily consists of collecting data necessary to support the RA design. PDI activities are described in Section 2.

The Preliminary Design will be the second stage of the design process and will consist of a 30 percent design based on the results of the PDI. The remaining portions of the design are anticipated to be put out to bid at this point and an implementation contractor will be selected to complete the Pre-Final Design and Final Design. The Pre-Final Design will consist of further refinement of the preliminary design. The Pre-Final Design is expected to represent a 70-80 percent complete design product (further described in Section 3). The Pre-Final Design will produce a complete set of drawings and specifications and be submitted to USEPA for review (further described in Section 3).

The Final Design will incorporate comments from USEPA and result in a complete design package ready for implementation of the RA (further described in Section 3).

1.5 Removal Objectives and Activities

The following Removal Action Objectives were specified for Alternative RS-2 in the EE/CA:

- Remove industrial wastes (i.e., BSD, tar materials, and any visible tar residuals and fragments) and stained sediments containing high concentrations of polycyclic aromatic hydrocarbons (PAHs) from the river bottom.

The following Preliminary Removal Goals were specified for Alternative RS-2 in the EE/CA:

- Complete removal of visual BSD.
- Complete removal of visual SSD.

The following Performance Removal Standards (Action Memorandum – Table 1) were established for Monongahela River Sediment:

- Black Semi-Solid Deposit – Complete Removal
- Visually Stained Sediments – Removal (complete removal or isolate post excavation residuals).

The objectives for the engineering design for the RA will be to implement the USEPA-selected alternative, consistent with the CD and the Action Memorandum, in order to achieve the project objectives outlined above, and to ensure that the River RA is implemented in a safe and environmentally effective manner.

Specific activities to accomplish these Removal Design Objectives are to:

- Work with USEPA, WVDEP, and community members to protect community health and safety during removal activities.
- Develop removal design deliverables to allow the timely execution of the RA. Collect and analyze laboratory and field data and other information necessary to support the removal design for the RA (Pre-Design Studies).
- Design a sediment removal program to remove identified BSD/SSD.
- Select and design a sediment and debris processing area that is cost effective; environmentally sound; minimizes impacts to the local community; complies with federal, state, and local regulations.
- Design the facilities for sediment processing to remove water from the sediment to meet disposal facilities' requirements for no free standing water on the sediment.
- Assess and provide air emission and odor controls during removal, if necessary, to manage chemical volatilization from the sediment at concentrations greater than regulatory limits, as discussed in Section 3.5.
- Design facilities for treatment and discharge of water generated during sediment and debris processing and decontamination.
- Design process for off-Site transport of sediment.
- Prepare construction specifications for treatment and disposal of sediment, and management and disposal of debris. Treatment and disposal of sediment includes on-Site stabilization and off-Site disposal at a landfill. Non-porous debris (e.g. tires, metal) would likely require decontamination and either disposal at a landfill or recycling. Porous debris (e.g. trees, root balls) would be tested and profiled for off-Site disposal at a landfill. Construction specifications will provide detail regarding proper management of these waste streams.
- Design the restoration of the River Excavation Area to meet performance standards.
- Develop a construction monitoring program to allow an assessment of the results of remedy implementation and conditions before and after remedy implementation relative to the performance standards and removal goals.

1.6 RDWP Organization

This RDWP includes (together with this Introduction) the following sections:

- *Section 2 – PDI Activities*: Provides details of PDI, such as sediment assessment, waste characterization, stabilization analysis and other PDI activities.
- *Section 3 – Engineering Design Process*: Presents the design process, including a description of the design stages, the various design components, the specific design activities to be completed, and the design quality assurance/quality control (QA/QC) requirements to be followed during the design process.

- *Section 4 – Deliverables, Communication, and Schedule*: Describes the deliverables to be prepared in support of the RA design, including PDI activities, design support deliverables, engineering design deliverables, and the overall project schedule.
- *Appendix A – Preliminary Implementation Schedule*: Preliminary schedule for design and implementation of the River RA.

2.0 PRE-DESIGN INVESTIGATION ACTIVITIES

This section describes the existing data needs and data acquisition for the PDI activities. This section discusses how the data collected during the PDI fits into each design element. The design elements are:

- Permitting/access
- Sediment removal
- Staging area
- Sediment handling and processing
- Air emissions and odor control
- Water treatment and discharge
- Off-Site transport, treatment, and discharge
- Restoration
- Natural Recovery Monitoring

2.1 Pre-Design Investigations

Data from the PDI will be used to ensure that the Final Design is capable of meeting the RA objectives. To provide information needed to complete the design, the following PDI will be performed:

- Permitting/Access Research
- Sediment assessment/bathymetry survey
- Treatability Study/Waste Characterization Evaluation
- Staging/stabilization areas survey

The PDI are discussed in more detail below.

2.1.1 Permitting/Access Research

Due to the nature of the River RA, permits from the USACE will need to be evaluated to determine which permits are relevant. Work will then be conducted in compliance with the requirements of the necessary permits, but it is not anticipated that actual permits will be obtained.

Access concerns (staging/stabilization area locations) will also be addressed early in the design process to avoid delays during implementation.

2.1.2 Sediment Assessment/Bathymetry Survey

Sediment cores are planned for collection to determine: 1) visual extent of BSD/SSD, which has not been completely defined; 2) the in-situ chemical and physical properties

of sediment within the River Excavation Area; and 3) establish baseline conditions for natural recovery monitoring including sediment toxicity evaluations and benthic community monitoring. The data obtained from the sediment will support the Preliminary and Pre-Final Design preparation, particularly removal, processing, and disposal aspects. In addition it will be used to develop procedures and controls to protect the safety of workers and the surrounding community during RA implementation.

Sediment cores will be collected from the river sediment within and on the perimeter of the identified BSD and SSD. Samples will be collected and analyzed in accordance with the SAP, which is the combination of the FSP and the QAPP.

The River Excavation Area bathymetry (river bottom topography) will also be determined during this investigation in order to determine pre-removal sediment elevations and water depths and post removal elevation details. The presence of utilities and debris within both the River Excavation Area and the Construction Area will also be determined.

2.1.3 Treatability Study/Waste Characterization Evaluation

Treatability studies are planned to provide data for the design of the sediment removal, sediment handling and processing, water treatment, and restoration. The treatability work will include evaluation of residual water quality, solidification requirements, identifying components of the processing system, and identifying components of the water treatment plant. Samples of BSD and SSD will also be evaluated to determine waste classification (characteristically hazardous vs. non-hazardous).

2.1.4 Staging Area Survey

Negotiations will commence with owners of the Marion Docks facility to assess the feasibility of placing the sediment staging area on that property. Alternative staging areas will also be identified and evaluated.

2.2 Relation Of Data Gaps To Design Components

This section presents each design component and discusses the related data gaps, if any, that need to be filled to complete the design. Data needs and a summary of the data acquisition method are presented. The relationship of the PDI data to design activities is presented in this section.

2.2.1 Permitting/Access

The River RA design includes reviewing permit requirements, establishing access to the River Excavation Area, and securing a staging area for transferring excavated materials to land for processing. Data is required to answer the following questions for design of the River RA:

- What are permit requirements for implementation of the River RA?
- Where will contractors access the River?
- Where will material be off-loaded from the River for processing?
- Where will materials for stabilization/restoration be staged?

2.2.2 Sediment Removal

Sediment excavation design for the River RA includes developing the elevations for removal. There currently is a lack of sufficient information to design the sediment removal area. There is insufficient chemical and physical data to understand treatability or waste characterization.

Data is required to answer the following questions for sediment excavation:

- Is mechanical dredging or hydraulic dredging more advantageous?
- What are the visual extents of the BSD/SSD targeted for removal?
- What are the excavation depths for the BSD/SSD?
- What are the engineering properties of the River Excavation Area sediment?
- What impact will removal of the BSD/SSD have on sediment toxicity to aquatic life?

2.2.3 Staging Area

The Supervising Contractor will be conducting a detailed evaluation and identification of locations for the land-based sediment processing/transfer facilities (for materials handling, dewatering, and water treatment). This evaluation will include access issues, such as whether the staging area is accessible by rail, barge, or truck. Depending on the selected location, there may be a need to collect additional data to design the water treatment and sediment processing facility. At this time, the only foreseen data needs would be data to determine if additional improvements to the selected location are necessary to carry the processing equipment and topographic survey for existing grades, existing Site features, and property and lot boundaries.

Data is anticipated to be needed to answer the following questions for the design of the sediment processing facility:

- Will foundation slabs be needed for the water treatment and sediment processing facility?
- Will paved surfaces be needed for the water treatment and sediment processing facility?
- What is the surface elevation for the Site, including survey of existing Site features, such as slabs and/or buildings, storm drains, Site boundaries, and waterfront structures?
- What is the current condition of the Site?

Subsequent to the staging area survey, August Mack will assess the need for additional data to design the sediment processing facility.

2.2.4 Sediment Handling and Processing

Sediment processing will include solids separation and sediment dewatering. Solids separation is needed to remove debris and other oversized solids from the sediment so that the dewatering process can function properly. Dewatering is necessary to meet treatment or disposal facility requirements for no free standing water (i.e., the sediment must pass the paint filter test to be accepted by the treatment or disposal facility).

Size separation test data will help evaluate different treatment and disposal options. Size separation may reduce the volume or mass of removed material requiring treatment prior to disposal. The separated fine and coarse fractions will be submitted for analytical testing to determine if separate disposal profiles can be generated for each fraction. There currently are insufficient data to design sediment handling and processing elements.

Data is required to answer the following questions for the processing:

- What are the engineering properties of the sediment that will be processed?
- What type of stabilization (i.e., polymers, kiln dust, etc.) is necessary to process sediment?
- Will dewatered sediment pass the paint filter test?
- Do the TCLP concentrations of benzene and cresols (typical coal tar constituents) in stabilized sediment exceed the hazardous waste criteria?

Data collected during PDI will be used to design the sediment handling and processing facility.

2.2.5 Air Emissions and Odor Control

The potential for air emissions and odors during sediment excavation and processing is present. Best management practices and site controls will be identified during design to reduce the potential impact of air emissions on workers and the community. Based on final processing design, air monitoring protocols and response actions will be developed in the design to respond to potential air emissions. Baseline air monitoring will be conducted prior to the RA and air monitoring will be summarized in the design documents and Construction Health and Safety Plan (CHASP). There currently are insufficient data to evaluate the potential for volatilization from exposed sediment.

Data is required to answer the following questions for the air emissions assessment:

- What technologies are available to address odors during the RA based on the design?
- What technologies are available to address dust particles from processing becoming airborne during the RA based on the design?

The evaluation of air emissions and odor control will be qualitative during the pre-design investigations. A quantitative evaluation may occur prior to the RA if the pre-design qualitative evaluation indicates a potential for regulatory exceedances and/or excessive nuisance odors. If a quantitative evaluation becomes necessary, it will be discussed in the Pre-Final Design.

2.2.6 Water Treatment and Discharge

Elutriate water collected from the various staging area operations will be treated, if necessary, as it is generated using a water treatment system.

There is currently insufficient data to design water treatment and discharge elements. To design the water treatment system, data is required to predict elutriate water quality and the effectiveness of and need for each of the potential water treatment processes. Data is required to answer the following questions for water treatment and discharge:

- What is the quality of the elutriate water?
- What is the expected effluent concentration of total suspended solids (TSS) and other chemical constituents following filtration?
- Is polymer needed for TSS removal? If yes, what type of polymer and how much polymer is needed?
- Is additional treatment of elutriate water necessary for discharge to POTW?

Data collected during PDI will be used to design the water treatment facility.

2.2.7 Off-Site Transport, Treatment, and Disposal

Treated sediment will be transported off-Site for disposal. The following possible waste streams may be generated for off-Site disposal: dewatered fine-grained sediment, dewatered coarse-grained sediment, debris (including over-sized, non-porous, and porous debris), and spent water treatment media. Material will be transported from the staging area to the treatment facility and disposal facility. There is currently insufficient data to design off-Site transport, treatment, and disposal.

Data is required to answer the following questions for off-Site transport, treatment, and disposal:

- Is the existing infrastructure adequate to meet transport needs?
- Can material be transported via barge or rail?

The off-Site transportation options cannot be adequately designed until a staging area is selected. Questions regarding waste streams are listed in sediment removal (Section 2.2.2) and sediment handling and processing (Section 2.2.4). Data collected during PDI will be used to design the off-Site transport, treatment, and disposal element.

2.2.8 Restoration

Restoration within the river includes the selection of suitable materials for restoration, development of the approach to sequencing the restoration, and determining the time allowed for material to settle within the containment structure before the sediment barriers are removed. Restoration for the staging/stabilization areas includes process equipment decommissioning and site housekeeping.

The following pre-design data will be used in the design of the restoration:

- Engineering and physical property data within the River Excavation Area (including bathymetry).
- Treatability tests to determine the physical properties of the material during placement and settling through the water column.
- Identification of stabilization operations required and potential decommissioning issues.

2.2.9 Natural Recovery Monitoring

Following completion of the sediment removal, up to five (5) years of natural recovery monitoring will be performed to determine post excavation sediment quality. There are currently insufficient data to design a monitoring program. The data collected from the PDI will delineate the excavation footprint and quantify the concentration of COCs

around the excavated area. This information will facilitate the creation of a recovery monitoring plan during design to evaluate the RA's effectiveness.

3.0 ENGINEERING DESIGN PROCESS

This section describes the engineering design process; it discusses the overall design process, design quality assurance and quality control, and the design process for each design element.

3.1 Overall Design Process

Following the Pre-Design Studies stage described in Section 2, three (3) design stages will be conducted:

- Preliminary Design
- Pre-Final Design
- Final Design

The overall sequence of these design stages and general work products, as well as the design schedule are shown on the River RA Schedule included as **Appendix A**. The design deliverables are summarized and the design schedule is presented in Section 4.

3.1.1 Preliminary Design and Pre-Final Design

The Preliminary Design is intended to present the PDI data and present preliminary design concepts and parameters for potential implementation contractors. The Pre-Final Design will be prepared in conjunction with an implementation contractor and be presented to the USEPA for review and comment.

Components of the RA activities that will undergo design include the following:

- Sediment Removal Design Analysis
- Staging Area Design Analysis
- Sediment Handling and Processing Design Analysis
- Air Emissions and Odor Control Design Analysis
- Water Treatment and Discharge Design Analysis
- Off-Site Transport, Treatment, and Disposal Design Analysis
- Restoration Design Analysis
- Natural Recovery Monitoring
- Post Removal Site Control

Information collected as part of the PDI will be utilized during this design stage. Pre-Final Design information developed during this stage of design will feed into and focus the Final Design activities as described below.

The Pre-Final Design will produce a complete set of drawings and specifications. The Pre-Final Design will be submitted for USEPA review. The only remaining step necessary to move the Pre-Final Design to Final Design is the incorporation of USEPA comments.

The Pre-Final Design will consist of the following deliverables:

- Pre-Final Design Drawings
- Pre-Final Design Specifications
- Construction Quality Assurance Project Plan (CQAPP)
- Environmental Monitoring Plan
- Construction HASP (CHASP)

3.1.2 Final Design

Following completion of the Pre-Final Design stage of the project, a Final Design will be completed. The Final Design will further incorporate comments from USEPA in a complete design package ready for implementation of the River RA.

3.1.3 Design Quality Assurance/Quality Control

From a design standpoint, quality control refers to the procedures used to control the quality of the design product. These procedures include providing clear directions; constant supervision by experienced individuals; review of completed work products for accuracy and completeness; approval and acceptance of work products by authorized personnel; and accurate documentation of decisions, assumptions, and recommendations. Quality assurance refers to the certainty that the design meets the requirements for quality. Essentially, quality assurance describes the process of verifying that quality control standards have been identified and met.

The project team will follow the Supervising Contractor's Quality Management Plan throughout the design process. Elements of this policy include the following:

- The Principal-in-Charge (PIC) (Bryan Petriko, P.E.) will have ultimate responsibility for the Removal Design; he will review design documents before submittal. Mr. Petriko will also have responsibility for the overall quality of the project and will sign and seal the Final Design documents.
- The River Senior Technical Advisor (John Verduin, P.E. – Anchor QEA) will have responsibility for the technical content of project; he will review design documents before submittal.
- The Senior Project Manager (Joel Ruselink), in association with the PIC, will have responsibility for the day-to-day management of the project; he will review design documents before submittal.

- The River Project Manager (Andrew Tennyson), in association with the Senior PM, will have responsibility for the day-to-day management of the River RA project; he will assist in preparation and preliminary review of design documents before submittal to the Senior Project Manager.
- Task Managers will be responsible for the quality of the individual design elements, including immediate checking of project calculations and formal verification of design data and recommended design criteria, prior to each project review milestone.
- Project personnel assigned to the design effort will be responsible for the quality of their individual work products.

Technical review of the design will be conducted throughout the design process and at the following project review milestones:

- Preliminary Design
- Pre-Final Design
- Final Design

At each project review milestone, the PIC, Senior Technical Advisor, Senior Project Manager, River Project Manager, and Task Managers will conduct a formal, documented review of the design documents. The design review process will verify that necessary design documents, including reports, drawings, specifications, and data sheets, are accurate and complete and approved by authorized personnel.

3.2 Sediment Removal

The sediment removal design will address the following major components of the Sediment Excavation Plan:

- Extent of the River Excavation Area based on visual delineation of BSD/SSD.
- Sediment removal approach using mechanical dredging/hydraulic dredging.
- Define performance standards for the removal, such as removal elevations, and visual boundaries.
- Integrate the sediment removal design element with the other design elements, such as the turbidity control structure and the sediment handling and processing.

3.2.1 Pre-Final Design

The following sediment removal design tasks will be conducted during the Pre-Final Design:

- Evaluate and select removal methods to implement the sediment RA.

- Evaluate and establish the process for stabilization/solidification (dewatering) of the BSD/SSD to aid in handling and disposal of the material.
- Evaluate post stabilization waste characteristics to develop a decision matrix for selecting a disposal method for the sediment.
- Define the extents of the River Excavation Area using information provided in the CD and the results of the Pre-Design Investigation, and define the removal elevations to be achieved during excavation.
- Calculate removal volumes based requirements identified in the design process.
- Design work flow layout and sediment transport methods based on sediment processing facility site and off-Site transportation design.
- The Pre-Final Design will consider means, methods, and logistical requirements to handle, manage, and dispose of debris. The Pre-Final Design analysis will also include minimum requirements for decontamination and testing of debris for transport and off-Site disposal.
- Design of the debris removal and handling portion of the sediment processing facility, including the footprint size and storm water management and erosion controls specific to the debris handling area. The debris handling design will also specify minimum requirements for handling, decontamination, storage, sorting, and processing of different types of debris, including wood, metal, concrete, and plastic.
- Decontamination of debris will be included in the design considerations, particularly for debris that may be difficult to decontaminate due to the material type, nature of the debris, and potential for sediment to be caught in debris recesses, holes, or grooves. The design will specify testing of debris to determine appropriate off-Site disposal. Potential for debris recycling will also be considered.
- Drawings and specifications for sediment removal will be developed and submitted with the Pre-Final Design.

3.2.2 Final Design

The Final Design will incorporate USEPA's comments on the Pre-Final Design.

3.3 Sediment Staging Area

The staging area identified for the site must provide suitable access and available land to facilitate transfer of excavated sediment to the sediment processing facility for debris separation, sediment processing, water treatment, and loading of dewatered sediment for transport to the appropriate treatment or disposal facility. The staging area also must provide clean materials staging, if needed, for those materials expected in larger quantities, such as restoration and stabilization materials.

3.3.1 Pre-Final Design

The following staging area design tasks will be conducted during the Pre–Final Design:

- Selection of suitable site based on preliminary screening of available land meeting minimum criteria related to proximity to the River Excavation Area, implications for handling and transfer of removed sediment to the sediment processing facility, size of the site, availability to alternative transport (rail or barge), compatibility with sediment processing, water treatment layout needs, and cost effectiveness.
- Final sizing and layout of sediment processing and water treatment components.
- Design of paved surfaces, slabs-on-grade, and required foundations for sediment processing components and water treatment components.
- Final Design of transloading facilities for transport off-Site, including journey management.
- Design of storm water runoff collection and treatment.
- Constructability considerations for design.
- Community contingency planning for the community in the vicinity of the staging area.

3.3.2 Final Design

The Final Design will incorporate USEPA's comments on the Pre-Final Design.

3.4 Sediment Handling and Processing

Sediment handling and processing for the River RA will include facilities for solids separation and sediment dewatering. Solids separation is needed to remove debris and other over-sized solids from the sediment so that the dewatering process can function properly. Solids separation will also consider the removal of sand-sized solids via hydrocyclone or similar equipment, which may be needed for mechanical dewatering to prevent clogging pipes or damaging mechanical dewatering equipment. Dewatering is necessary to meet treatment or disposal facility requirements for no free standing water (i.e., the sediment must pass the paint filter test to be accepted by the treatment or disposal facility). This will be accomplished through the addition of drying agents (i.e., polymers, kiln dust, etc.)

3.4.1 Pre-Final Design

The key design elements to be addressed during Pre-Final Design of the sediment handling and processing components include:

- Evaluate engineering properties and chemistry from the Pre-Design in-situ sediment investigations.

- Assess the potential for sediment segregation to optimize sediment processing, treatment, and disposal.
- Design solids separation (size separation), including expected volumes of fine sediment and coarse sediment waste streams.
- Select process options for solids separation and dewatering (drying agents).
- Design dewatering: mechanical press and polymer.
- Prepare solids separation and dewatering mass balance (with input from sediment excavation design).
- Select site for sediment handling and processing facilities (with input from predesign site evaluation study).
- Design staging area and conveyance and storage of sediment and dewatered sediment.
- Prepare Pre-Final Design for handling and processing facilities (design objectives, basis of design criteria, process flow chart, facility layout, drawings, and specifications).
- Evaluate treatability test results from the Pre-Design Treatability Studies.
- Constructability considerations for design.

3.4.2 Final Design

For the Final Design, the sediment handling/processing design documents will be revised and updated based on USEPA comments.

3.5 Air Emissions and Odor Control

Potential air emissions (volatilization) and odor from exposed sediment during sediment removal, handling, and processing will be assessed and appropriate controls will be developed during the design process of the River RA.

3.5.1 Pre-Final Design

The key design elements to be addressed during Pre-Final Design of the air emission and odor control components include:

- Evaluate engineering properties and chemistry from the Pre-Design sediment assessment investigation.
- Evaluate treatability test results from the Pre-Design Treatability Studies.
- Conduct air regulatory and risk based levels of concern analysis to determine applicable air regulations, regulatory limits, monitoring requirements, and other requirements related to air emissions.
- Evaluate air emission control alternatives.
- Evaluate feasibility of existing technology usage in relation to the processing design.

- Constructability considerations for design.
- Design air emission and odor controls for on-site processes, including sediment processing, water treatment, and debris handling and decontamination operations.
- Prepare Pre-Final Design for air emission and odor controls (design objectives, basis of design criteria, screening of controls, drawings, and specifications).

3.5.2 Final Design

For the Final Design, the air emission and odor control design documents will be revised and updated based on USEPA comments.

3.6 Water Treatment and Discharge

Elutriate water collected from the various staging area operations will be treated, if necessary, as it is generated.

3.6.1 Pre-Final Design

The key design elements to be addressed during Pre-Final Design of the water treatment and discharge component include:

- Conduct an effluent discharge regulatory analysis to determine the effluent objectives for water treatment.
- Evaluate treatability test results from the Pre-Design Treatability Studies.
- Evaluate engineering properties and chemistry from the Pre-Design sediment assessment investigation.
- Select process options for solids water treatment and discharge.
- Prepare water treatment and discharge mass balance (with input from sediment removal design and sediment handling and dewatering design).
- Select Site for water treatment facilities (with input from Pre-Design staging area evaluation).
- Design water treatment facilities, including expected volume of decant water from sediment dewatering process.
- Design water conveyance and discharge facilities.
- Design process control and instrumentation.
- Determine if treated water can be beneficially reused for on-site processes.
- Constructability considerations for design of the water treatment process in conjunction with other site processes.
- Compliance with treatment requirements associated with discharge.
- Prepare Pre-Final Design for water treatment and discharge facilities (design objectives, basis of design criteria, process flow chart, facility layout, drawings, and specifications).

3.6.2 Final Design

For the Final Design, the water treatment and discharge design documents will be revised and updated based on USEPA comments.

3.7 Off-Site Transport, Treatment, and Disposal

The removal design will address loading and unloading requirements at the selected land-based sediment processing/transfer facilities and the selected disposal sites, as well as disposal-related sampling and staging logistics.

However, until the locations of the sediment processing/transfer and disposal facilities are selected, only general requirements for transportation technologies can be provided.

The design of these facilities will consider the need for segregation and separate staging of dredged materials, based on disposal requirements (for both hazardous and non-hazardous waste and environmental media) following processing. Specifications for the staging of removed materials will be developed during the design.

The design process for off-Site transportation and disposal will include the following steps:

1. Identify potential transportation technologies available (rail, barge, truck).
2. Identify and request qualifications from waste management facilities that can treat or dispose the expected waste characteristics.
3. Complete bench-scale testing to determine if size segregation and other treatment technologies are viable as discussed in Section 2.1.
4. Identify the location of the sediment processing facility and acceptance criteria.
5. Identify and request statements of interest from waste handling companies (i.e., transportation contractors).
6. Evaluate transportation, treatment, and disposal companies.
7. Assess compliance status (both regulatory and PRP requirements) of disposal facilities.
8. Select transportation, treatment, and disposal companies and complete the offsite transport and disposal design.

3.7.1 Pre-Final Design

The design of the off-Site transport, treatment, and disposal design element is connected to the design of the sediment removal and sediment handling/processing facility. Since these other design elements will be in their development steps during the Pre-Final Design stage (i.e., until pre-design data are available and the sediment

handling/processing facility location is established), the off-Site transport, treatment, and disposal design element will initially focus on identifying key considerations and Site-specific data that will be required to complete the design.

For the Pre-Final Design stage, the initial concepts will be integrated with the other design elements in order to develop a technical approach that:

- Matches the output from the sediment handling process.
- Takes into account the time needed to meet required disposal characterization requirements.
- Is aligned with the available storage areas at the sediment handling/processing facility.
- Takes into account the options for transportation by rail, barge, or trucks, and considers the setting of the staging area in terms of off-site transportation of material, specifically with regards to nearby community stakeholders and traffic patterns.
- Matches the available throughput at the sediment treatment/disposal facility.
- Constructability considerations for design, including integration of the transportation and disposal design into other on-site elements.

During this stage of design, the selection of treatment and disposal facilities will be completed and coordinated with the most appropriate transportation mode for those facilities.

3.7.2 Final Design

For the Final Design, the off-Site transportation and disposal design documents will be revised and updated based on USEPA comments.

3.8 Restoration

The restoration design will address the following major components:

- Material grain size and gradation required, based on requirements identified in the design process.
- Volume of material required and staging requirements.
- Identification of material sources in the vicinity of the site and options for transporting the material from the source to the Site.
- Material placement methods.
- Required time for material to settle out of the water column after placement, to determine when sediment controls can be removed.

3.8.1 Pre-Final Design

The following restoration design tasks will be conducted during the Pre-Final Design:

- Determine the required material grain size and gradation based on physical properties testing from the sediment assessment.
- Calculate the required volume based on the sediment removal elevations.
- Design placement methods based on staging area location, supplier location, method of material transport, and material placement sequencing.
- Calculate required time for material to settle prior to sediment barrier removal, based on results of treatability testing.
- Evaluate and design the transport of the material to the Site.
- Constructability considerations for design, including coordination of the restoration design element with other design elements, such as the sheet pile containment structure installation and removal.
- Drawings and specifications for the restoration requirements and grades will be developed and submitted with the Pre-Final Design.

3.8.2 Final Design

The Final Design will incorporate USEPA's comments on the Pre-Final Design.

3.9 Natural Recovery Monitoring

The natural recovery monitoring design will address the following major components:

- Determine the need for post-removal sampling, if toxicity is addressed during removal.
- If necessary, establish a sampling and analysis plan for annual monitoring.
- Detail the Sediment Quality Triad (sediment, water, benthic) monitoring approach. The Sediment Quality Triad involves chemistry to evaluate contamination, bioassay to evaluate toxicity, and in-situ biological assessment to evaluate effects such as benthic community alteration. The combination of potential cause (chemistry) and effect (biology) measurements makes the Sediment Quality Triad a viable tool to determine the extent and significance of pollution-induced degradation.

3.9.1 Pre-Final Design

The following natural recovery monitoring design tasks will be conducted during the Pre-Final Design:

- Evaluate the PDI data and determine if monitoring is necessary.
- If necessary, determine appropriate locations for monitoring.
- Determine data requirements to evaluate natural recovery (Triad approach).
- Drawings and specifications for the monitoring program will be developed and submitted with the Pre-Final Design.

3.9.2 Final Design

The Final Design will incorporate USEPA's comments on the Pre-Final Design.

3.10 Post Removal Site Control

The post removal site control design will address the following major components:

- Establish a post removal site control plan.

3.10.1 Pre-Final Design

The following post removal site control design tasks will be conducted during the Pre-Final Design:

- Design post removal site control plan consistent with Section 300.415(l) of the NCP and OSWER Directive No. 9360-02.

3.10.2 Final Design

The Final Design will incorporate USEPA's comments on the Pre-Final Design.

4.0 DELIVERABLES, COMMUNICATION, AND SCHEDULE

This section describes the deliverables required to be prepared in support of the removal design, including Pre-Design Studies, design support deliverables, and engineering design deliverables. Project analytical data and/or pre-design investigation findings will be provided to USEPA when available (at a minimum during the monthly progress reports required by the CD) to provide real time project status, and to reduce the amount of review time required to comment on the Pre-Final Design Report. This section also describes the communication approach and presents the proposed design schedule. The list of deliverables includes those required plans listed in the CD.

4.1 Procurement/Contracting

Following completion of PDI activities and completion of a preliminary design, contractors will be solicited to bid on the design completion (Pre-Final and Final) and implementation of the River RA. The preliminary design will be made available for concurrent regulatory consideration.

4.2 Community Communication

VSI anticipates that, at a minimum, public meetings will be held prior to initiation of the PDI activities and prior to initiation of the construction activities.

4.3 Deliverables

4.3.1 Pre-Final Design Report, Plans, and Specifications

The Pre-Final Design will include:

- Pre-Final Design Report, including:
  - Results of Pre-Design Studies, including the treatability studies
  - Complete design analysis, including Final Design criteria and basis of design
  - Final Plans and Specifications for RA including:
    - Final removal areas and cut lines
    - Final removal and transport methods
    - Final staging area for both dewatered sediments and restoration material
    - Final sediments processing and water treatment facilities
    - Final means of transport for disposal and available treatment and disposal facility
    - Final restoration details and material sources.

  - Sampling and Analysis Plan to be used as a basis for environmental monitoring during construction activities, characterizing waste materials, and ascertaining whether Performance Standards have been met.
  - Preliminary Construction Quality Assurance Project Plan (CQAPP).
  - Preliminary Post Removal Site Control Plan.
  - Specifications for preparations of a health and safety plan for field activities.
  - Specifications for the decontamination of equipment and disposal of contaminated material.
  - A plan to acquire permits for off-site response actions and to meet the substantive requirements of all onsite activities which would otherwise require a permit.
  - A plan for complying with the Off-Site Rule (40 CFR S300.440).
  - A removal action contingency plan.
- Identification and specification of long-lead-time items.
- An updated construction schedule outlining the sequencing for sediment removal and restoration.
- Implementation Cost Estimates (used to make feasibility assessments)

4.3.2 Final Design Report, Plans, and Specifications

The Final Design will incorporate USEPA comments, if any, on the Pre-Final Design and include:

- Final Design Report final plans and specifications
- Final CQAPP
- Final HASP
- Final Post Removal Site Control Plan
- Final Removal Action Contingency Plan
- Final construction schedule
- Final Cost Estimates

4.3.3 Construction Quality Assurance Project Plan

The CQAPP will describe the methods and procedures of the quality assurance program that the selected contractor will use to confirm that the completed River RA meets design criteria, plans, and specifications. It will also describe the methods and procedures of the environmental monitoring program that will be used to confirm that the River RA meets environmental criteria. The CQAPP will contain the following elements:

- Responsibilities and authorities of quality assurance personnel.
- Identification of proposed CQAPP activities, including construction inspection, matrix sampling frequency, and sample size and analysis requirements.

- Methods and procedures for natural recovery monitoring, sampling, and analysis.
- Problem identification and corrective action procedures.
- Reporting requirements for CQAPP activities, evaluation and acceptance of reports, and final documentation, including the Final Report discussed in Section 4.3.5.

4.3.4 Health and Safety Plan

The HASP will apply to removal, processing, and transportation activities and will include the following elements:

- Introduction section listing the plan objective, site background, and site description.
- Summary description of the River RA and activities specified in the design that have the potential to impact the surrounding community.
- Actions to be conducted to minimize impacts to the surrounding community from the River RA activities.
- Project schedule and operations schedule.
- Description of potential hazards to the surrounding community associated with the River RA activities.
- Site Security Plan.
- Contingency Plan for spills and releases during River RA field activities.
- Section identifying site safety personnel and qualifications, responsibilities, and contact information. This information will be added once a contractor is selected.
- Emergency procedures, including emergency contact telephone numbers, hospital directions, medical and fire emergency procedures, and list emergency equipment located on site.
- Figures, including a location map, navigation map, a hospital location map, and other maps, as necessary.

4.3.5 Construction Completion Report

Following completion of the dredging and restoration portions of the River RA, a Construction Completion Report will be compiled and include: a statement of actual costs incurred in complying with the CD, a listing of quantities and types of materials removed off-site or handled on site, a discussion of removal and disposal methods for those materials, a listing of the ultimate destinations of those materials, a presentation of the analytical results of sampling and analyses performed, and accompanying appendices containing relevant documentation. The Construction Completion Report will be completed within 60 days of receiving 'Physical Construction Complete Approval' from the USEPA.

4.3.6 RA Completion Report

As outlined in the CD, a Final Report will be compiled after completion of the entire River RA (dredging and natural recovery monitoring). The Final Report will include an updated statement of actual costs incurred in complying with the CD, and incorporate the Construction Completion Report. The Final Report will be completed 60 days after completion of River RA.

4.4 Project Schedule

A schedule of the major tasks and approximate completion dates for the design and implementation of the River RA is included as **Appendix A**. Effective, open communications will be critical to achieving timely completion of the project. The status of ongoing efforts and issues that arise will be presented in monthly progress reports and schedule modifications, if necessary will be discussed and documented with the USEPA.

FIGURES

Figure 1 – Site Location Map
Figure 2 – Estimated Extents of BSD/SSD

1302 N. MERIDIAN ST., STE. 300
INDIANAPOLIS, INDIANA 46204
(317) 916-8000
(317) 916-8001 FAX
August Mack
ENVIRONMENTAL

BIG JOHN'S SALVAGE
HOULT ROAD SITE
FAIRMONT, WEST VIRGINIA

SITE PLAN

PROJECT No.:	FILENAME:	DATE:
JM1619.370	JM1619.370/Figures/Site Plan 11_30_12	11/30/12
DRAWN BY:	SCALE:	FIGURE:
ZWG	NTS	1

Extent of 2005 Investigation
(No observed SSD)

N

GATE

880 890

TOP_O

910

18" CMP

900

HAU

POND

36" CMP

CONFLUENCE OF UNNA
NO. 1 AND MONOGAHE
N: 363741.6
E: 1792155.0

LEGEND

- Estimated SSD Extent *
- Estimated Transition Zone*
- Estimated BSD Extent *
- Approximate Uplands Boundary
- Transects Walked by Divers (2005)
- \+ Spoon Samples Collected by Divers (2005)

SCALE

0 150 300 450

50 100

(IN FEET)

* = BSD/SSD EXTENTS BASED ON 2005 REILLY INVESTIGATION

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(317) 916-8001 FAX

August Mack ENVIRONMENTAL

BIG JOHN'S SALVAGE
HOULT ROAD SITE
FAIRMONT, WEST VIRGINIA

ESTIMATED EXTENTS OF BSD/SSD

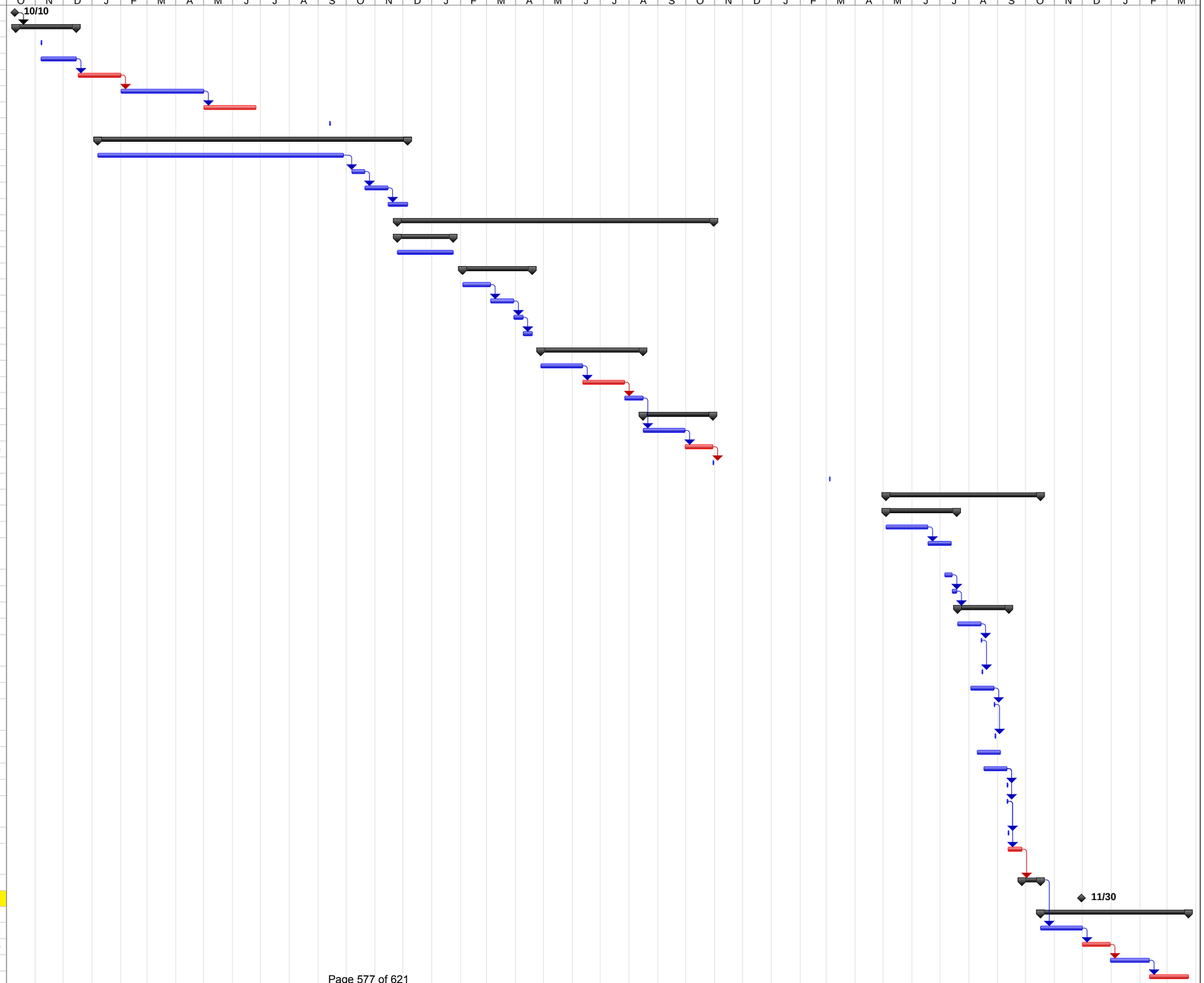
PROJECT No.:	FILENAME:	DATE:
JM1619.370	JM1619.370/Figures/RDWP Figures	12/4/12
DRAWN BY:	SCALE:	FIGURE:
ZWG	AS SHOWN	2

APPENDIX A

Preliminary Schedule

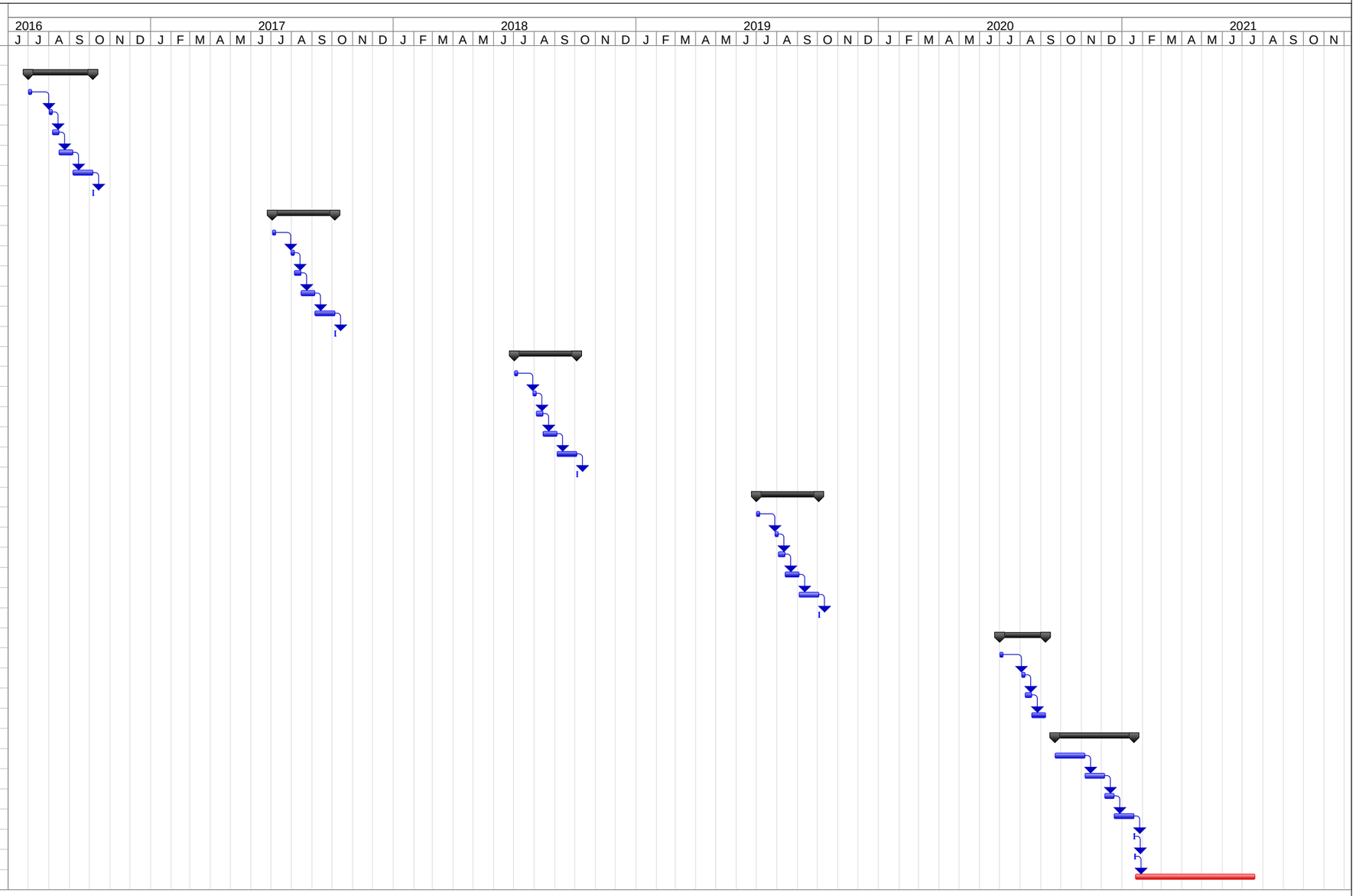
Monongahela River Removal Action Schedule

ID	Task Name	Duration	Start	Finish
1	**Consent Decree Lodged**	**1 day**	**Wed 10/10/12**	**Wed 10/10/12**
2	**Project Setup**	**65 days**	**Thu 10/11/12**	**Fri 12/14/12**
13	River Trust Payment Milestone	1 day	Wed 11/7/12	Wed 11/7/12
14	RDWP/Health and Safety Plan	38 days	Wed 11/7/12	Fri 12/14/12
15	**Agency Review of RDWP**	46 days	Mon 12/17/12	Thu 1/31/13
16	RDWP Revisions	89 days	Fri 2/1/13	Tue 4/30/13
17	**Agency Review and RDWP Approval**	56 days	Wed 5/1/13	Tue 6/25/13
18	**Final RDWP Submittal**	1 day	Fri 9/13/13	Fri 9/13/13
19	**Sediment Investigation**	**333 days**	**Mon 1/7/13**	**Thu 12/5/13**
20	Access/Permitting	264 days	Mon 1/7/13	Fri 9/27/13
21	Mobilization	14 days	Mon 10/7/13	Sun 10/20/13
22	Field Work	25 days	Mon 10/21/13	Thu 11/14/13
23	Analytical/Stabilization Testing	21 days	Fri 11/15/13	Thu 12/5/13
24	**Design/Procurement**	**340 days**	**Mon 11/25/13**	**Thu 10/30/14**
25	**Preliminary Design**	**60 days**	**Mon 11/25/13**	**Thu 1/23/14**
26	Preliminary Design Preparation	60 days	Mon 11/25/13	Thu 1/23/14
27	**Prepare Bid Package and Contract**	**75 days**	**Mon 2/3/14**	**Fri 4/18/14**
28	Prepare bid package	30 days	Mon 2/3/14	Tue 3/4/14
29	Contractors Bid Preparation	25 days	Wed 3/5/14	Sat 3/29/14
30	Bid review and selection	10 days	Sun 3/30/14	Tue 4/8/14
31	Contract Execution	10 days	Wed 4/9/14	Fri 4/18/14
32	**Pre-Final Design**	**110 days**	**Mon 4/28/14**	**Fri 8/15/14**
33	Pre-Final Design Preparation	45 days	Mon 4/28/14	Wed 6/11/14
34	**Agency Review**	45 days	Thu 6/12/14	Sat 7/26/14
35	EPA Comment Letter and Response	20 days	Sun 7/27/14	Fri 8/15/14
36	**Final Design**	**75 days**	**Sat 8/16/14**	**Wed 10/29/14**
37	Final Design Preparation	45 days	Sat 8/16/14	Mon 9/29/14
38	**Agency Approval**	30 days	Tue 9/30/14	Wed 10/29/14
39	River Trust Payment Milestone	1 day	Thu 10/30/14	Thu 10/30/14
40	**Public Meeting**	1 day	Wed 3/4/15	Wed 3/4/15
41	**Implementation**	**166 days**	**Mon 5/4/15**	**Fri 10/16/15**
42	Project Preparation/ Mobilization	76 days	Mon 5/4/15	Sat 7/18/15
43	Access/Permitting	45 days	Mon 5/4/15	Wed 6/17/15
44	Construct Sediment Processing Area	25 days	Thu 6/18/15	Sun 7/12/15
45	Mobilize Dredging Equipment	8 days	Mon 7/6/15	Mon 7/13/15
46	Install Sediment Controls	5 days	Tue 7/14/15	Sat 7/18/15
47	Project Execution	55 days	Mon 7/20/15	Sat 9/12/15
48	Dredging Material	25 days	Mon 7/20/15	Thu 8/13/15
49	Notice to EPA re:Completion of Dredging	1 day	Fri 8/14/15	Fri 8/14/15
50	River Trust Payment Milestone	1 day	Sat 8/15/15	Sat 8/15/15
51	Stabilization/Off Site Disposal	25 days	Mon 8/3/15	Thu 8/27/15
52	Notice to EPA re: Completion of Sediment Disposition	1 day	Fri 8/28/15	Fri 8/28/15
53	River Trust Payment Milestone	1 day	Sat 8/29/15	Sat 8/29/15
54	River Restoration	25 days	Mon 8/10/15	Thu 9/3/15
55	Attainment Sampling Study	25 days	Mon 8/17/15	Thu 9/10/15
56	River Trust Payment Milestone	1 day	Fri 9/11/15	Fri 9/11/15
57	Notification to EPA for Inspection	1 day	Fri 9/11/15	Fri 9/11/15
58	River Trust Payment Milestone	1 day	Sat 9/12/15	Sat 9/12/15
59	**Physical Construction Complete Notification and EPA Approval**	15 days	Sat 9/12/15	Sat 9/26/15
60	Project Demobilization	20 days	Sun 9/27/15	Fri 10/16/15
61	**End of River Construction Season**	**1 day**	**Mon 11/30/15**	**Mon 11/30/15**
62	**Dredging Completion Reporting**	135 days	Sat 10/17/15	Wed 3/23/16
63	Prepare Completion Report	45 days	Sat 10/17/15	Mon 11/30/15
64	**EPA Review**	30 days	Tue 12/1/15	Wed 12/30/15
65	EPA Comment Letter & Response	30 days	Thu 12/31/15	Wed 2/10/16
66	**EPA Approval**	30 days	Thu 2/11/16	Wed 3/23/16



Monongahela River Removal Action Post Removal Monitoring Schedule

ID	Task Name	Duration	Start	Finish
1	**Annual Sediment Monitoring**	**1709 days**	**Fri 7/1/16**	**Fri 3/5/21**
2	**2016 Monitoring and Reporting**	**97 days**	**Fri 7/1/16**	**Wed 10/5/16**
3	Notification/Scheduling	5 days	Fri 7/1/16	Tue 7/5/16
4	Mobilization	5 days	Mon 8/1/16	Fri 8/5/16
5	Field Work	10 days	Sat 8/6/16	Mon 8/15/16
6	Analytical Testing	21 days	Tue 8/16/16	Mon 9/5/16
7	Reporting	30 days	Tue 9/6/16	Wed 10/5/16
8	River Trust Payment Milestone	1 day	Thu 10/6/16	Thu 10/6/16
9	**2017 Monitoring and Reporting**	**94 days**	**Mon 7/3/17**	**Wed 10/4/17**
10	Notification/Scheduling	5 days	Mon 7/3/17	Fri 7/7/17
11	Mobilization	5 days	Mon 7/31/17	Fri 8/4/17
12	Field Work	10 days	Sat 8/5/17	Mon 8/14/17
13	Analytical Testing	21 days	Tue 8/15/17	Mon 9/4/17
14	Reporting	30 days	Tue 9/5/17	Wed 10/4/17
15	River Trust Payment Milestone	1 day	Thu 10/5/17	Thu 10/5/17
16	**2018 Monitoring and Reporting**	**94 days**	**Mon 7/2/18**	**Wed 10/3/18**
17	Notification/Scheduling	5 days	Mon 7/2/18	Fri 7/6/18
18	Mobilization	5 days	Mon 7/30/18	Fri 8/3/18
19	Field Work	10 days	Sat 8/4/18	Mon 8/13/18
20	Analytical Testing	21 days	Tue 8/14/18	Mon 9/3/18
21	Reporting	30 days	Tue 9/4/18	Wed 10/3/18
22	River Trust Payment Milestone	1 day	Thu 10/4/18	Thu 10/4/18
23	**2019 Monitoring and Reporting**	**94 days**	**Mon 7/1/19**	**Wed 10/2/19**
24	Notification/Scheduling	5 days	Mon 7/1/19	Fri 7/5/19
25	Mobilization	5 days	Mon 7/29/19	Fri 8/2/19
26	Field Work	10 days	Sat 8/3/19	Mon 8/12/19
27	Analytical Testing	21 days	Tue 8/13/19	Mon 9/2/19
28	Reporting	30 days	Tue 9/3/19	Wed 10/2/19
29	River Trust Payment Milestone	1 day	Thu 10/3/19	Thu 10/3/19
30	**2020 Monitoring and Reporting**	**69 days**	**Wed 7/1/20**	**Mon 9/7/20**
31	Notification/Scheduling	5 days	Wed 7/1/20	Sun 7/5/20
32	Mobilization	5 days	Mon 8/3/20	Fri 8/7/20
33	Field Work	10 days	Sat 8/8/20	Mon 8/17/20
34	Analytical Testing	21 days	Tue 8/18/20	Mon 9/7/20
35	Completion Reporting	119 days	Tue 9/22/20	Mon 1/18/21
36	Prepare Completion Report	45 days	Tue 9/22/20	Thu 11/5/20
37	EPA Review	30 days	Fri 11/6/20	Sat 12/5/20
38	EPA Comment Letter & Response	14 days	Sun 12/6/20	Sat 12/19/20
39	EPA Approval	30 days	Sun 12/20/20	Mon 1/18/21
40	Certificate of Completion	1 day	Tue 1/19/21	Tue 1/19/21
41	River Trust Payment Milestone	1 day	Wed 1/20/21	Wed 1/20/21
42	EPA ROD Preparation	180 days	Thu 1/21/21	Mon 7/19/21



UPLANDS AREA
REMOVAL DESIGN WORK PLAN
BIG JOHN'S SALVAGE-HOULT ROAD
SUPERFUND SITE
FAIRMONT, WEST VIRGINIA

PREPARED FOR:

Mr. Eric Newman
Remedial Project Manager
Superfund Division
U.S. Environmental Protection Agency, Region 3
Hazardous Site Cleanup Division (3HS23)
1650 Arch Street
Philadelphia, PA 19103-2029

PREPARED BY:

August Mack Environmental, Inc.
1302 N. Meridian Street, Suite 300
Indianapolis, Indiana 46202

ISSUE DATE:

December 14, 2012

REVISED:
April 30, 2013
September 13, 2013

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1.0 INTRODUCTION

On October 10, 2012, a Consent Decree (CD) executed by Vertellus Specialties Inc (VSI), Exxon Mobil Corporation (Exxon), CBS Corporation (CBS), United States Environmental Protection Agency (USEPA), and West Virginia Department of Environmental Protection (WVDEP) was entered by the United States District Court for the Northern District of West Virginia. The CD requires the performance of Removal Actions (RAs) related to multiple media at the Big John's Salvage – Hoult Road Superfund Site (BJS Site). The BJS Site is located in Fairmont, Marion County, West Virginia on the east bank of the Monongahela River as shown on **Figure 1.**

Exxon and CBS are defined as "Non-Performing Defendants" in the CD while VSI is designated as the "Performing Defendant". VSI has selected, with USEPA approval, August Mack Environmental, Inc. (August Mack) as the Supervising Contractor. This Removal Design Work Plan (RDWP) has been prepared pursuant to the CD by August Mack on behalf of VSI.

As defined in the CD, two (2) distinct areas are being addressed during the RA:
1) sediment, soil, surface water and groundwater within the boundaries of the BJS Site, excluding any portion of the Monongahela River (defined as the 'Uplands Area' in the CD), and 2) the sediment in the Monongahela River. This submittal represents the Removal Design Work Plan (RDWP) for the Uplands Area RA (Uplands RA). The Monongahela River RA is addressed in a separate RDWP.

The Uplands RA design will be guided by this RDWP and a stand-alone Sampling and Analysis Plan (SAP) consisting of a Field Sampling Plan (FSP), which governs the field sampling event(s) and communicates specific sampling procedures, and a Quality Assurance Project Plan (QAPP), which outlines procedures the project will use to ensure data collection and evaluation are of high enough quality to meet project objectives. A stand-alone health and safety plan (HASP) covering physical and chemical hazards that may be encountered at the Site during pre-design investigation activities has also been prepared and submitted under separate cover.

The sediment, soil, and groundwater removal will be conducted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan as a Non-Time-Critical Removal Action (NTCRA). Tetra Tech NUS, Inc. prepared an Engineering

Evaluation/Cost Analysis (EE/CA) for the USEPA which described and evaluated multiple removal actions. Based on the EE/CA, USEPA issued an Action Memorandum on September 10, 2010 (included as Attachment A of the CD), describing the selected RAs. This RDWP describes the process that will be employed to design the RAs selected by the USEPA for Upland Area sediments, soil, and groundwater.

1.1 Removal Action Summary

Environmental investigations of surface and subsurface soils have documented the presence of industrial wastes (coal tar) from historic operations at the site (**Figure 2**). The thickness of the coal tar was typically between 0.2 and 1.9 feet with inclusions and residues noted between ¼ inch and 7 feet in thickness. Over time, tar derived material (TDM) has been observed on the ground surface within the Site. Additionally, soil analytical data collected during the RI/FS and the Earth Sciences Consultants, Inc. (ESC) July 2001 report titled *Removal Action Plan Implementation – Glass Cullet Area – Big John Salvage – Hoult Road Site – Fairmont, West Virginia* reported impacted soils in non-operational areas with concentrations above Removal Performance Standards (**Figure 3**). The RA to address surface and/or subsurface soil concentrations exceeding the Removal Performance Standard is the installation of a Subtitle D landfill cap (Cap).

Sediment sampling conducted by the USEPA in April 2005 indicated the presence of polycyclic aromatic hydrocarbon (PAH) concentrations in sediments of the Unnamed Tributary #1 and Unnamed Tributary #2. A removal action was conducted within Unnamed Tributary #1 after the sediment data was collected and the spoils were stockpiled at the Site. The RA to address residual sediment impacts is removal and on-Site consolidation of approximately 3,300 cubic yards (cy) of material from Unnamed Tributary #1, Unnamed Tributary #2, and the West Tributary.

VSI has operated a groundwater containment system in the Middle and East Tributaries at the Site since 2001. Groundwater is collected and pumped through bag filters and granular activated carbon prior to discharge to the local Publicly Owned Treatment Works. Groundwater sampling conducted during the RI/FS indicated the presence of contaminants primarily in the overburden aquifer at the Site (**Figure 4**). Limited impacts were observed in the bedrock aquifer (largely inorganic, and likely naturally occurring), but as presented in the EE/CA, the bedrock aquifer will not be actively addressed as part of the RA. The RA for groundwater at the Site consists of upgrading the existing overburden groundwater containment system.

The intent of the Upland RA is to remove the potential exposure pathways associated with the waste material, control contaminant migration to groundwater and surrounding soils and to remove any direct contact and run-off migration pathways in Upland sediments. Removal Actions will be conducted to meet the "Removal Performance Standards" as listed in Table 1 of the Action Memorandum.

1.2 Anticipated RA Work Activities

In the selected alternative, the Site will be evaluated to determine where waste material has been deposited and if subsurface contaminants have migrated beyond the waste areas in exceedance of the Removal Performance Standards established in the Action Memorandum. Based on the results of the evaluation, an engineered cover system including a Subtitle D-type landfill cap supplemented by an enhanced groundwater containment system will be designed. Drainage way sediments will be consolidated under the cap or disposed off-site.

The USEPA Action Memorandum proposes the following tasks as part of the RA.

Soil

- Install a RCRA Subtitle D-type cap over the area of the Site where surface and/or subsurface soil concentrations exceed Removal Performance Standards and the slope of the land is less than 10 percent. Contaminated soil may be consolidated prior to installation of the Cap to minimize the area of the Cap.
- Consolidate contaminated soil which has eroded onto adjacent properties with on-Site contaminated soil prior to installation of the Cap.
- Construct a RCRA Subtitle D-type cap or implement an alternative equivalent containment technique in areas with a slope greater than 10 percent.
- Install and maintain an engineered surface water runoff and erosion control system in accordance with West Virginia storm water control regulations.
- Segregate obvious masses of tar derived materials encountered at the surface before and during earth work to the extent practical. Segregated material shall be sampled and transported and disposed or treated at an off-Site facility in accordance with CERCLA 121(d)(3) and 40 CFR 300.440.
- Conduct confirmation sampling to demonstrate that soils contaminated with hazardous substances greater than the performance standards have been contained beneath the Cap.
- Implement post-removal site controls to preserve the integrity of the removal action.

Upland Sediment

- Excavate surficial sediments in upland drainage ways exceeding performance standards. Consolidate such excavated sediments with on-Site soil prior to installation of the Cap described above.
- Conduct confirmation sampling to demonstrate that surficial sediments contaminated with hazardous substances greater than the performance standards have been removed from the drainage ways.
- If the confirmation sampling indicates that contaminated sediment remains, remove and consolidate the contaminated sediment under the Cap as described above.
- Restore excavated drainage ways to their respective functions. Restoration of Sharon Steel Run (Unnamed Tributary #1 as specified in Appendix B of the CD) shall include placement of clean sediment and/or root wads into select areas where established sediment deposits thicker than six (6)-inches were removed.

Groundwater

- Upgrade and maintain the existing French drains installed beneath the Middle and East Tributary, including the collection area around respective sumps, to prevent migration of water with concentrations of hazardous substances greater than the performance standard ("Contaminated Water") to or beneath Unnamed Tributary #1 and to provide for efficient evacuation of Contaminated Water and non-aqueous phase liquids ("NAPL").
- Augment the existing groundwater containment system with additional collection trenches to capture Contaminated Water closer to the upland source area and to prevent migration of Contaminated Water from the Waste Management Area to or beneath Unnamed Tributary #1 via the West Tributary or any other point.
- Operate the expanded groundwater containment system to contain Contaminated Water within the Waste Management Area so that groundwater performance standards are achieved and maintained in the Area of Attainment.
- Implement a groundwater and surface water monitoring program to demonstrate that Contaminated Water is contained within the Waste Management Area. Install additional groundwater monitoring wells, as necessary, to demonstrate such containment. Adequacy of the re-configured groundwater containment system will be measured by achieving performance standards for surface water and groundwater in the Area of Attainment.
- Conduct periodic evaluation of the performance and effectiveness of the containment system. Modify the groundwater collection system, as necessary, to achieve the performance standards in the Area of Attainment beyond the Waste Management Area.
- Convey contaminated water and NAPL from collection trenches and sumps to an on Site wastewater treatment facility.

- Replace or modify the existing water treatment plant as appropriate to accommodate the increased flow rate [estimated at 10 gallons per minute ("gpm")] and to provide automated controls and monitoring.
- Operate, maintain and monitor the on-Site water treatment plant to demonstrate treated water continues to achieve the City of Fairmont's influent pretreatment requirements.
- Discharge treated water to the City of Fairmont sewer system.
- Implement post-removal site controls to preserve the integrity of the response action.

1.3 Overview of the Removal Design Process

The overall design process will consist of the following four (4) main stages:

- Pre-Design Investigations
- Preliminary Design
- Pre-Final Design
- Final Design

The Pre-Design Studies stage primarily consists of collecting data necessary to support the removal design for the RA Work. Pre-design activities are described in Section 2.

The Preliminary Design will be the second stage of the actual design process. It will consist of Preliminary Design analysis. The Preliminary Design analysis will be based on the results of the Pre-Design Studies. The Preliminary Design is expected to represent a 30 to 50 percent complete design product (further described in Section 3).

The Pre-Final Design will supplement the Preliminary Design and incorporate additional detail to produce a technically complete (100 percent) design package. The Pre-Final Design will produce a complete set of drawings and specifications. The Pre-Final Design will be submitted to USEPA for review (further described in Section 3).

The Final Design will incorporate comments from USEPA and result in a complete design package ready for implementation of the RA (further described in Section 3).

1.4 Removal Objectives and Activities

The EE/CA lists the following Removal Action Objectives (RAOs) for the Uplands Area RA:

Sediment

- Prevent further migration of contaminated sediments to the Monongahela River.
- Prevent exposure of contaminated sediments to receptors.
- Restore the sediment quality to acceptable human/ecological risk levels and to promote ecological function in the waterway.

Soil

- Prevent current or future workers, future residents, and ecological receptors from adverse effects that may result from exposure (dermal, ingestion, and vapor inhalation) to contaminated soils.
- Minimize the infiltration of precipitation into the soil to reduce the potential for leaching of soil contaminants to groundwater.
- Prevent the continued migration of tar derived material (TDM) to the surface.
- Prevent erosion and surface water runoff to prevent migration of soil contaminants.

Surface Water (other than the River)

- Mitigate contaminated surface water discharge from the Site to meet water quality standards.
- Restore surface water quality to acceptable human/ecological risk levels.
- Restore surface water drainage quantity and ecological functions in and along the waterway.

Groundwater

- Prevent future exposure of workers and residents to contaminated groundwater.
- Prevent further migration of the contaminant plume.
- Prevent contaminated groundwater discharge to surface water.
- Restore groundwater quality in the overburden and bedrock aquifers.

The objectives for the engineering design for the RA will be to implement the USEPA-selected alternative, consistent with the CD and the Action Memorandum, and to determine that the removal action is implemented in a safe and environmentally effective manner.

Specific activities to accomplish these primary removal design objectives are to:

- Work with USEPA, WVDEP, and community members to discuss future land use and to protect community health and safety during removal activities.
- Develop removal design deliverables to allow the timely execution of the RA. Collect and analyze laboratory and field data and other information necessary to support the removal design for the RA (Pre-Design Studies).

- Assess and provide air emission and odor controls, if necessary, to prevent chemical volatilization from the Upland soils and drainage way sediments at concentrations greater than regulatory limits, as discussed in Section 3.6.
- Develop a construction monitoring program to allow an assessment of the results of remedy implementation and conditions before and after remedy implementation relative to the performance standards and removal goals.

Soil

- Design a Cap and soil cover strategy that is cost effective; environmentally sound; minimizes impacts to the local community; complies with federal, state, and local regulations; and encompasses all consolidated sediments and subsurface waste material to prevent direct contact.
- Design an engineered surface water runoff and erosion control system.
- Prepare surface grading specifications of the Cap Area to meet design standards.

Upland Sediment

- Design a sediment removal and or consolidation program to remove identified upland sediments in exceedence of the performance standards from drainage pathways and consolidate materials on-site or send off-site for disposal or treatment.
- Design sediment clean out of the Unnamed Tributary #2 discharge pipe located on the west adjoining property.
- Restore drainage ways to their respective functional use.

Surface Water

- Surface water RAOs will be achieved through the RAs for Upland Soils and Sediments.

Groundwater

- Design down-gradient groundwater treatment system upgrades to contain contaminated water in exceedence of the performance standards within the Waste Management Area of the Uplands Area and protect the Monongahela River from contaminant migration.

1.5 RDWP Organization

This RDWP includes (together with this Introduction) the following sections:

- *Section 2 – Pre-Design Activities*: Provides details regarding field investigations, such as sediment and soil contaminant delineation, extent of the soil cap, soil cover assessment, and groundwater assessment in the attainment area and other Pre-Design Studies.

- *Section 3 – Engineering Design Process*: Presents the engineering design process, including a description of the design stages, the various design components, the specific design activities to be completed, and the design quality assurance/quality control (QA/QC) requirements to be followed during the design process.
- *Section 4 – Deliverables, Communication, and Schedule*: Describes the deliverables to be prepared in support of the removal design, including Pre-Design Studies, design support deliverables, engineering design deliverables, and the overall project schedule.
- *Appendix A – Preliminary Implementation Schedule*: Preliminary schedule for design and implementation of the Uplands RA.

2.0 PRE-DESIGN ACTIVITIES

This section describes the existing data needs and data acquisition for the pre-design activities. This section discusses how the data collected in the pre-design activities fit into each design element. The design elements are:

- Permitting/Access/Future Land Use
- Sediment Removal
- Soil Cover
- Groundwater Treatment
- Air emissions and odor control
- Groundwater Monitoring

2.1 Pre-Design Investigations

To provide information needed to complete the design, the following Pre-Design Investigations (PDI) will be performed:

- Permitting/Access/Future Land Use
- Sediment Assessment
- Soil Assessment
- Groundwater Assessment

The PDI activities are discussed in more detail below.

2.1.1 Permitting/Access/Future Land Use

Due to the nature of the Uplands RA (specifically on-site sediment), permits from the Army Corps of Engineers (ACE) will need to be evaluated to determine which permits are relevant. Work will then be conducted in compliance with the requirements of the necessary permits, but it is not anticipated that actual permits will be obtained.

Since VSI does not own the Site, access agreements for the Site properties and the west adjoining property will be addressed early in the design process to obtain access in order to avoid delays during PDI implementation.

Communications have been initiated with the stakeholders of the Uplands RA to establish a reasonable consensus regarding the future use of the Uplands property.

2.1.2 Sediment Assessment

Sediment cores are planned for collection to define the extent of contaminants in exceedance of the Removal Performance Standards and support sediment and tributary restoration evaluations within Upland drainage ways and along the Unnamed

Tributary #2 located on the west adjoining property. The data obtained from the sediment analysis will be used to support the Pre-Final Design Plan. Removal, consolidation, and soil cover application decisions will be made based on those results. This study will also influence the development of measures to protect the safety of workers and the surrounding community during RA implementation.

Sediment cores will be collected at locations along the Unnamed Tributary #1, Unnamed Tributary #2, and the West Tributary to verify the presence and/or determine the extent of impacts. Samples will be collected and analyzed in accordance with the FSP and QAPP included under separate cover**.**

As previously mentioned, surface water RAOs will be addressed through the implementation of soil and sediment RAs, so a surface water assessment is not planned prior to RA implementation. However, surface water samples will be collected at the upgradient Site boundary to evaluate any potential contribution to surface water/sediment quality from the Fairmont Coke Works Superfund site and at other locations detailed in the FSP.

The pre-design sediment assessment will also include evaluation of natural stream channel design principles. These principles will be used along with other collected assessment data to develop sediment removal techniques.

2.1.3 Soil Assessment

Soil borings are planned for collection to 1) define the extent of waste material (i.e TDM) in Upland soils; and 2) define the extent of contaminants in exceedance of the Removal Performance Standards in Upland soils. The data obtained from the soil analysis will support the Pre-Final Design Plan, specifically the soil cover strategy, including soil consolidation, extent of the Cap, as well as the development of measures to protect the safety of workers and the surrounding community during RA implementation.

Soil borings will be collected at locations across four (4) areas of the Site to supplement RI/FS data and define waste material and impacted soils above Removal Performance Standards. Samples will be collected and analyzed in accordance with the SAP and QAPP**.**

2.1.4 Groundwater Assessment

Groundwater samples are planned for collection from the overburden aquifer to assess where groundwater concentrations exceed the Removal Performance Standards and will also support optimization of the groundwater monitoring program. The areas adjacent to the Waste Management Area where Removal Performance Standards are being met will be designated the Area of Attainment.

Conceptually, the Site is underlain by two (2) major geologic units—unconsolidated sediments and sedimentary bedrock. The native unconsolidated sediments are glacio-fluvial or lacustrine deposits with textures ranging from clay to sand. Most of these unconsolidated soils are silts and clays with relative low permeability. The maximum thickness of unconsolidated soils is approximately 40 feet near the center of the property but typical thickness is 20-25 feet across the Site. A sandy unit (i.e., sand and silty sand) up to 20 feet thick is found at the base of the unconsolidated sediments. The underlying bedrock includes beds of calcareous shale, shaley limestone and sandstone.

The saturated unconsolidated sediments form the overburden aquifer at the Site. The unconsolidated sediments predominantly consist of silts and clay, with minor sand lenses throughout the unit. There is also a basal sandy unit, which contains most of the groundwater within the unconsolidated sediments at the Site. The saturated thickness in the overburden ranges from 4 to 11 feet.

The overburden aquifer discharges primarily by gravity to the West Tributary, Middle Tributary, and East Tributary. Flow in these tributaries subsequently discharges to Unnamed Tributary #1. Groundwater discharge from both the overburden and bedrock aquifers (throughout the watersheds) appears to provide the base flow for this stream.

Perched water conditions are seen within the silt and clay portions of the overburden aquifer and can cause preferential flow paths. Groundwater horizontal flow in the overburden aquifer typically follows more permeable units (i.e., sand lenses) to lower gradient pathways in the subsurface. The existing groundwater recovery system at the Site (french drain type structures located in the Middle and East Tributaries) collects contaminated groundwater and tar discharging from the overburden aquifer.

The overburden aquifer is not likely providing much recharge to the bedrock aquifer in the central and eastern portions of the Site, as the bedrock aquifer potentiometric levels

measured in this area indicated a generally upward flow into the overburden aquifer. Consequently, based on the potentiometric surface interpretation, it is unlikely that contaminants in the overburden groundwater would substantially impact the underlying bedrock aquifer in the central and eastern areas.

The general flow direction in the overburden aquifer is variable, but is generally toward the south and east toward the main drainage tributaries (West, Middle, and East Tributaries). The existing groundwater collection system installed in the Middle and East Tributaries probably has an influence on the nature and direction of groundwater flow in the overburden aquifer in these areas, as these systems provide a preferred pathway for groundwater flow. The groundwater flow direction in the bedrock aquifer is complex with a general flow direction to the west/southwest.

Per the EE/CA and Action Memorandum, no RA is planned for the bedrock aquifer at the Site. The data obtained from the groundwater analysis will support the Pre-Final Design Plan describing, which is expected to include groundwater treatment system upgrades and enhancement of the groundwater collection system. Once the groundwater RA is designed, a long-term monitoring network will be designed to monitor the effectiveness of the groundwater RA.

Groundwater samples will be collected from temporary, overburden monitoring wells installed near the eastern, middle, and western tributaries at the Site. In addition, the existing overburden and bedrock monitoring well networks will be inventoried and inspected for well integrity. Based on data collected during the RI/FS, nine (9) of 10 overburden wells had reported impacts above Removal Performance Standards. However, only three (3) of these wells reported VOC and PAH concentrations, while the remaining six (6) wells had naturally occurring metals concentrations (primarily iron and manganese) reported above Removal Performance Standards.

Existing monitoring wells, both bedrock and overburden, with no compromised integrity will be sampled during the PDI. Additionally, if shallow saturated conditions are encountered during soil boring investigations, grab groundwater samples will be collected for analytical evaluation. Samples will be collected and analyzed in accordance with the FSP and QAPP.

2.2 Relation of Data Gaps to Design Components

This section presents each design component and discusses the related data gaps, if any, that need to be filled to complete the design. Data needs and a summary of the data acquisition method are presented. The relationship of the PDI to design activities is also presented in this section.

2.2.1 Permitting/Access

The Uplands RA design includes reviewing permit requirements, establishing access to the investigation areas, and securing a staging area for transferring excavated materials from drainage ways to the Uplands for consolidation. Data are required to answer the following questions for design of the Uplands RA:

- What permit equivalencies are required for implementation of the Uplands RA?
- Where will access be required for proposed investigation areas and RA implementation at off-site areas?
- Which parcels require environmental restrictions and covenants and what are the applicable environmental restrictions and covenants?

2.2.2 Sediment Removal

Sediment excavation design for the Upland RA includes delineating the extent of sediments in drainage ways for removal, determining the most efficient disposition of the material, and restoration. Currently, there is a lack of sufficient information to design the sediment removal area. There are insufficient analytical data to understand the nature and extent of contamination.

Data is required to answer the following questions for sediment excavation and consolidation:

- What is the horizontal and vertical extent of contaminants in drainage way sediments in exceedance of the Removal Performance Standards?
- What volume of material will be identified for removal?
- What is the best management procedure for excavated sediment (on-Site consolidation versus off-Site disposal?)
- What are the final restoration elevations?
- What data is required to evaluate recovery of drainage ways to functional use?

2.2.3 Soil Cover

Soil Cover design for the Upland RA requires developing the soil cover strategy; including consolidation/movement of material, the footprint of the Cap, and storm water features. There currently is a lack of sufficient information to design the Soil RA. There is insufficient analytical data to understand the nature and extent of

contamination in exceedance of the Removal Performance Standards, as well as insufficient documentation on the differentiation of impacted soil versus waste material (i.e. TDM) in the Upland Area. Impacted soil and sediment in exceedance of the Removal Performance Standard will likely be consolidated under the Cap unless an alternative capping strategy can be designed that meets RAOs and USEPA/WVDEP requirements. TDM encountered during earthwork associated with the Cap installation will be segregated and disposed or treated off-site.

Data is required to answer the following questions for soil consolidation and cover:

- What is the horizontal and vertical extent of waste materials present in subsurface soils of the Uplands Area?
- What is the horizontal and vertical extent of impacted soil in exceedance of the Removal Performance Standards?
- What are the exposure pathways for impacted soils (e.g. direct contact, migration to groundwater)?
- What volume of drainage way sediments, stockpile soil, and excavated subsurface soil will be consolidated under the soil cover?
- Is the current site topography consistent with existing surveys?
- What will be the final Site elevations?
- How will storm water be managed at the Site?

2.2.4 Groundwater Treatment

Groundwater Treatment design includes developing a treatment system that addresses overburden groundwater containing contaminants in exceedance of the Removal Performance Standards in the Uplands Area. There are insufficient analytical data to understand the nature and extent of overburden groundwater.

Data is required to answer the following questions for the groundwater system upgrades:

- What is the horizontal extent of contaminants in the overburden aquifer?
- What is the contaminant concentration in current groundwater collection sumps?
- What are the anticipated flow rates for a containment system?
- Where is the overburden groundwater/surface water interface (e.g. seeps, Unnamed Tributary #1)?
- Are there areas with overburden groundwater contaminant concentrations in exceedance of the Removal Performance Standards not currently addressed by the existing system?

- Are there areas with overburden groundwater contaminant concentrations in exceedance of the Removal Performance Standards that could effectively be treated in-situ?

Data collected during PDI will be used to design the final groundwater treatment system.

2.2.5 Air Emissions and Odor Control

The potential for air emissions, odors and dust during soil consolidation is present. Best management practices and site controls will be identified during design to reduce the potential impact of air emissions and dust on workers and the community. Based on final consolidation design, air monitoring protocols and response actions will be developed in the design to respond to potential air emissions. Baseline air monitoring will be conducted prior to the RA and air monitoring will be summarized in the design documents and Construction Health and Safety Plan (CHASP). There is currently insufficient data to evaluate the potential for emissions, odors, and dust from soils.

Data is required to answer the following questions for the air emissions assessment:

- What technologies are available to address odors during the RA based on the design?
- What technologies are available to address dust particles from processing becoming airborne during the RA based on the design?

The evaluation of air emissions, odor control, and dust will be qualitative during the pre-design investigations. A quantitative evaluation may occur prior to the RA if the pre-design qualitative evaluation indicates a potential for regulatory exceedances and/or excessive nuisance odors. If a quantitative evaluation becomes necessary, it will be discussed in the Pre-Final Design.

2.2.6 *Groundwater Monitoring*

Temporary monitoring wells will be installed during the PDI as described in the FSP. The temporary monitoring wells and the existing monitoring wells that pass the integrity testing as described in the FSP will be sampled to provide groundwater information for design of the Cap and the groundwater RA. Based upon the Cap placement and the groundwater treatment system design, a long-term monitoring well network will be identified for the Uplands in the design documents. The design will identify the need, if any, for additional monitoring points, and the abandonment of unnecessary monitoring points. There is currently insufficient data to design a

groundwater monitoring program. There is insufficient analytical data to understand the nature and extent of contamination in exceedance of the Removal Performance Standards in the overburden aquifer at the down-gradient portion of the Site.

Data is required to answer the following questions for groundwater monitoring:

- What are the overburden groundwater concentrations at the Waste Management Area boundary?
- Where should long-term monitoring points be located?
- What are the site-wide pre-RA baseline conditions?
- Are there flow direction or chemical concentration changes that have occurred since the RI/FS?

3.0 ENGINEERING DESIGN PROCESS

This section describes the engineering design process; it discusses the overall design process, design quality assurance and quality control, and the design process for each design element.

3.1 Overall Design Process

Following the Pre-Design Studies stage described in Section 2, three (3) design stages will be conducted:

- Preliminary Design
- Pre-Final Design
- Final Design

The overall sequence of these design stages and general work products, as well as the design schedule are shown on the Uplands RA Schedule included as **Attachment A**. The design deliverables are summarized and the design schedule is presented in Section 4.

3.1.1 Preliminary Design

The Preliminary Design period represents the initial design efforts through which approximately 30-50 percent of the Final Design will be completed.

Components of the RA activities that will undergo design include the following:

- Sediment Removal Design Analysis
- Soil Cover Design Analysis
- Groundwater System Design Analysis
- Air Emissions and Odor Control Design Analysis
- Groundwater Monitoring Design Analysis
- Post Removal Site Control
- Ongoing Covenants and Restrictions

Information collected as part of the Pre-Design Studies will be utilized during this design stage and will feed into and focus the Pre-Final Design activities as described below.

- Results of Pre-Design Studies.
- Preliminary design analysis, including Design criteria and basis of design for Cap and alternative covers.
- Preliminary Design drawings.
- Preliminary plans and specifications.

3.1.2 Pre-Final Design

Following completion of the Preliminary Design stage of the project, a Pre-Final Design will be completed. The Pre-Final Design will supplement the Preliminary Design with and incorporate additional detail to produce a technically complete (100 percent) design package. The Pre-Final Design will produce a complete set of drawings and specifications. The Pre-Final Design will be submitted for USEPA review. The only remaining step necessary to move the Pre-Final Design to Final Design is the further incorporation of USEPA comments.

The Pre-Final Design will consist of the following deliverables:

- Pre-Final Design Drawings
- Pre-Final Design Specifications
- Construction Quality Assurance Project Plan (CQAPP)
- HASP

3.1.3 Final Design

Following completion of the Pre-Final Design stage of the project, a Final Design will be completed. The Final Design will further incorporate comments from USEPA in a complete design package ready for implementation of the Uplands RA.

3.1.4 Design Quality Assurance/Quality Control

From a design standpoint, quality control refers to the procedures used to control the quality of the design product. These procedures include providing clear directions; constant supervision by experienced individuals; review of completed work products for accuracy and completeness; approval and acceptance of work products by authorized personnel; and accurate documentation of decisions, assumptions, and recommendations. Quality assurance refers to the certainty that the design meets the requirements for quality. Essentially, quality assurance describes the process of verifying that quality control standards have been identified and met.

The project team will follow the Supervising Contractor's Quality Management Plan throughout the design process. Elements of this policy include the following:

- The Principal-in-Charge (PIC) (Bryan Petriko, P.E.) will have ultimate responsibility for the Removal Design; he will review design documents before submittal. Mr. Petriko will also have responsibility for the overall quality of the project and will sign and seal the Final Design documents.
- The Senior Technical Advisor (Tim DeWitt, P.E.) will have responsibility for the technical content of project; he will review design documents before submittal.

- The Senior Project Manager (Joel Ruselink), in association with the PIC, will have responsibility for the day-to-day management of the project; he will review design documents before submittal.
- The Upland Project Manager (Andrew Tennyson), in association with the Senior PM, will have responsibility for the day-to-day management of the Upland RA project; he will assist in preparation and preliminary review of design documents before submittal to the Senior Project Manager.
- Task Managers will be responsible for the quality of the individual design elements, including immediate checking of project calculations and formal verification of design data and recommended design criteria, prior to each project review milestone.
- Project personnel assigned to the design effort will be responsible for the quality of their individual work products.

Technical review of the design will be conducted throughout the design process and at the following project review milestones:

- Preliminary Design
- Pre-Final Design
- Final Design

At each project review milestone, the PIC, Senior Technical Advisor, Project Manager, and Task Managers will conduct a formal, documented review of the design documents. The design review process will verify that necessary design documents, including reports, drawings, specifications, and data sheets, are accurate and complete and approved by authorized personnel.

3.2 Sediment Removal

The sediment removal design will address the following major components:

- Volume and location of sediment to be removed based on information obtained in the Pre-Design Investigation.
- Means of removing sediment from storm water pipe.
- Sediment excavation, removal, and disposition methods.
- Integrate the sediment removal design element with the other design elements.
- Restoration requirements.
- Recovery monitoring.

3.2.1 Preliminary Design

The following sediment removal design tasks will be conducted during the Preliminary Design:

- Evaluate whether on-Site consolidation or off-Site disposal or treatment of sediment is more advantageous. The chemical and physical data collected during the Pre-Design Investigation will be analyzed to evaluate potential scenarios.
- Evaluate removal technologies for sediment in storm water pipe.
- Define the extents of the Upland sediment excavation areas based on results of the Pre-Design Investigation, and define the removal elevations to be achieved during excavation.
- Design work flow layout and sediment disposition methods based on contaminated sediment locations.
- Design a post-removal recovery monitoring program.
- Drawings and specifications for sediment removal and consolidation will be developed and submitted with the Preliminary Design.

3.2.2 Pre-Final Design

The Pre-Final Design will incorporate USEPA's comments on the Preliminary Design.

3.2.3 Final Design

The Final Design will incorporate USEPA's comments on the Pre-Final Design.

3.3 Soil Cover

The soil cover design will address the following major components:

- Design soil cover strategy based on presence of waste material versus impacted soils.
- Design of the Cap including extent, membrane specifications, soil cover thickness, and storm water management.
- Design alternative covers to supplement the Cap.
- Soil movement and consolidation methods.
- Design final elevations and contours of Site.
- Design final Site security features (fencing).
- Develop O&M Plan for cover.

3.3.1 Preliminary Design

The following design tasks will be conducted during the Preliminary Design:

- Define the extents of waste material based on results of the RI/FS and Pre-Design Investigation.
- Define volume of material to be consolidated and design grading plan for implementation of Soil RA.
- Define areas for alternative covers to supplement the Cap.

- Discussions with stake holders to evaluate future land use and integrate cover requirements to allow future use into the preliminary design.
- Consideration of load bearing capacities, utility corridors, etc… based upon the future land use.
- Design Cap and alternative cover specifications.
- Define work flow layout for staging Cap materials.
- Develop O&M Plan.
- Drawings and specifications for Cap and alternative covers will be developed and submitted with the Preliminary Design

3.3.2 Pre-Final Design

The Pre-Final Design will incorporate USEPA's comments on the Preliminary Design.

3.3.3 Final Design

The Final Design will incorporate USEPA's comments on the Pre-Final Design.

3.4 Groundwater System

Groundwater treatment upgrades for the Uplands RA are expected to include installation of additional manhole sumps, piping and pumps, and down-gradient impoundment walls. Groundwater collected in the sumps will be pumped to the on-Site water treatment facility prior to being discharged. Location specific in-situ technologies will also be evaluated during design.

3.4.1 Preliminary Design

Preliminary groundwater treatment information as it exists at the time will be provided as part of the Uplands RA preliminary design.

3.4.2 Pre-Final Design

The key design elements to be addressed during Pre-Final Design of the groundwater treatment components include:

- Evaluate analytical data from the Pre-Design Investigations.
- Define extents of contaminant impacts and define the Waste Management Area.
- Evaluate migration of impacts.
- Design system to capture impacted overburden groundwater.
- Design staging area, conveyance and storage of system upgrade materials.
- Prepare Pre-Final Design for treatment system (design objectives, basis of design criteria, process flow chart, manhole network layout, drawings, and specifications).
- Constructability considerations for design.

- Develop O&M Plan for system.

3.4.3 Final Design

For the Final Design, the groundwater system design documents will be revised and updated based on USEPA comments.

3.5 Air Emissions and Odor Control

Potential air emissions, odor, and dust from exposed/disturbed soils during consolidation, handling, and grading will be assessed and appropriate controls will be developed for the Uplands RA.

3.5.1 Preliminary Design

No Preliminary Design is anticipated for the air emission, odor, and dust control portion of the Uplands RA.

3.5.2 Pre-Final Design

The key design elements to be addressed during Pre-Final Design of the air emission, odor, and dust control components include:

- Evaluate engineering properties and chemistry from the Pre-Design soil assessment investigation.
- Conduct air regulatory and risk based levels of concern analysis to determine applicable air regulations, regulatory limits, monitoring requirements, and other requirements related to air emissions.
- Evaluate air emission control alternatives.
- Evaluate feasibility of existing technology usage in relation to the design.
- Constructability considerations for design.
- Design air emission, odor, and dust controls for on-site processes, including soil and sediment excavation and consolidation.
- Prepare Pre-Final Design for air emission, odor, and dust controls (design objectives, basis of design criteria, screening of controls, drawings, and specifications).

3.5.3 Final Design

For the Final Design, the air emission, odor, and dust control design documents will be revised and updated based on USEPA comments.

3.6 Groundwater Monitoring

The groundwater monitoring design will address the following major components:

- Define Area of Attainment Boundary.
- Define well network to be sampled and applicable analyte list.
- Define wells to be abandoned.
- Establish a groundwater sampling and analysis plan for monitoring of the overburden aquifer.
- Select a capture zone analysis method to demonstrate capture or by-pass of the groundwater capture system.

3.6.1 Preliminary Design

No Preliminary Design is anticipated for the groundwater monitoring portion of the Uplands RA.

3.6.2 Pre-Final Design

The following groundwater monitoring design tasks will be conducted during the Pre-Final Design:

- Evaluate the Pre-Design Investigation data and determine appropriate locations for the groundwater monitoring well network.
- Develop a preliminary Long Term Monitoring Plan for groundwater monitoring.

3.6.3 Final Design

The Final Design will incorporate USEPA's comments on the Pre-Final Design.

3.7 Post Removal Site Control

The post removal site control design will address the following major components:

- Establish a post removal site control plan.

3.7.1 Preliminary Design

No Preliminary Design is anticipated for the post removal site control portion of the Uplands RA.

3.7.2 Pre-Final Design

The following post removal site control design tasks will be conducted during the Pre-Final Design:

- Design post removal site control plan consistent with Section 300.415(l) of the NCP and OSWER Directive No. 9360-02.

3.7.3 Final Design

The Final Design will incorporate USEPA's comments on the Pre-Final Design.

3.8 Ongoing Covenants and Restrictions

The ongoing covenants and restrictions design will address the following major components:

- Determine what covenants and restrictions are required following RA implementation.

3.8.1 Preliminary Design

No Preliminary Design is anticipated for the ongoing covenant and restrictions portion of the Uplands RA.

3.8.2 Pre-Final Design

The following ongoing covenants and restrictions design tasks will be conducted during the Pre-Final Design:

- Design a covenants and restrictions monitoring plan to ensure that ongoing covenants and restrictions are adhered to following removal action implementation.

3.8.3 Final Design

The Final Design will incorporate USEPA's comments on the Pre-Final Design.

4.0 DELIVERABLES, COMMUNICATION, AND SCHEDULE

This section describes the deliverables to be prepared in support of the removal design, including Pre-Design Studies, design support deliverables, and engineering design deliverables. This section also describes the communication approach and presents the proposed design schedule. The list of deliverables includes those required plans listed in the CD.

4.1 Community Communication

VSI anticipates that, at a minimum, public meetings will be held prior to initiation of the PDI activities and prior to initiation of the construction activities.

4.2 Deliverables

4.2.1 Preliminary Design Report, Plans, and Specifications

The Preliminary Design will include:

- Preliminary Design Report, including:
  - Results of Pre-Design Studies.
  - Preliminary design analysis, including Design criteria and basis of design for Cap and alternative covers.
  - Preliminary Design drawings.
  - Preliminary plans and specifications.
- Identification and specification of long-lead-time items.
- An updated construction schedule.

4.2.2 Pre-Final Design Report, Plans, and Specifications

The Pre-Final Design will incorporate USEPA comments, if any, on the Preliminary Design and include:

- Pre-Final Design Report, including:
  - Complete design analysis, including Final Design criteria and basis of design.
  - Final Plans and Specifications for the RA including:
    - Final site preparation requirements (grading).
    - Final removal methods (sediment).
    - Final cover strategy and construction.
    - Final groundwater containment system design.
    - Final storm water management design.
    - Final restoration details and material sources.
  - Sampling and Analysis Plan to be used as a basis for environmental monitoring during construction activities, characterizing waste materials, and ascertaining whether Performance Standards have been met.

  - Preliminary Construction Quality Assurance Project Plan (CQAPP).
  - Preliminary Post Removal Site Control Plan.
  - Specifications for preparations of a health and safety plan for field activities.
  - Specifications for the decontamination of equipment and disposal of contaminated material.
  - A plan to acquire permits for off-site response actions and to meet the substantive requirements of all onsite activities which would otherwise require a permit.
  - A plan for complying with the Off-Site Rule (40 CFR S300.440).
  - A removal action contingency plan.
- Identification and specification of long-lead-time items.
- An updated construction schedule outlining the sequencing for sediment removal and restoration.
- Implementation Cost Estimates (used to make feasibility assessments).

4.2.3 Final Design Report, Plans, and Specifications

The Final Design will incorporate USEPA comments, if any, on the Pre-Final Design and include:

- Final Design Report final plans and specifications.
- Final CQAPP.
- Final HASP.
- Final Post Removal Site Control Plan.
- Final Removal Action Contingency Plan.
- Final construction schedule.
- Final Cost Estimates (prior to contractor bids).

4.2.4 Construction Quality Assurance Project Plan

The CQAPP will describe the methods and procedures of the quality assurance program that the selected contractor will use to confirm that the completed Uplands RA meets design criteria, plans, and specifications. It will also describe the methods and procedures of the environmental monitoring program that will be used to confirm that the Uplands RA meets environmental criteria. The CQAPP will contain the following elements:

- Responsibilities and authorities of quality assurance personnel.
- Identification of proposed CQAPP activities, including construction inspection, matrix sampling frequency, and sample size and analysis requirements.
- Methods and procedures for monitoring, sampling, and analysis.
- Problem identification and corrective action procedures.

- Reporting requirements for CQAPP activities, evaluation and acceptance of reports, and final documentation, including the Final Report discussed in Section 4.2.6.

4.2.5 Health and Safety Plan

The HASP will apply to Upland RA activities and will include the following elements:

- Introduction section listing the plan objective, site background, and site description.
- Summary description of the Upland RA and activities specified in the design that have the potential to impact the surrounding community.
- Actions to be conducted to minimize impacts to the surrounding community from the Upland RA activities.
- Project schedule and operations schedule.
- Description of potential hazards to the surrounding community associated with the Upland RA activities.
- Site Security Plan.
- Contingency Plan for spills and releases during Upland RA field activities.
- Section identifying site safety personnel and qualifications, responsibilities, and contact information. This information will be added once a contractor is selected.
- Emergency procedures, including emergency contact telephone numbers, hospital directions, medical and fire emergency procedures, and list emergency equipment located on site.
- Figures, including a location map, navigation map, a hospital location map, and other maps, as necessary.

4.2.6 Construction Completion Reports

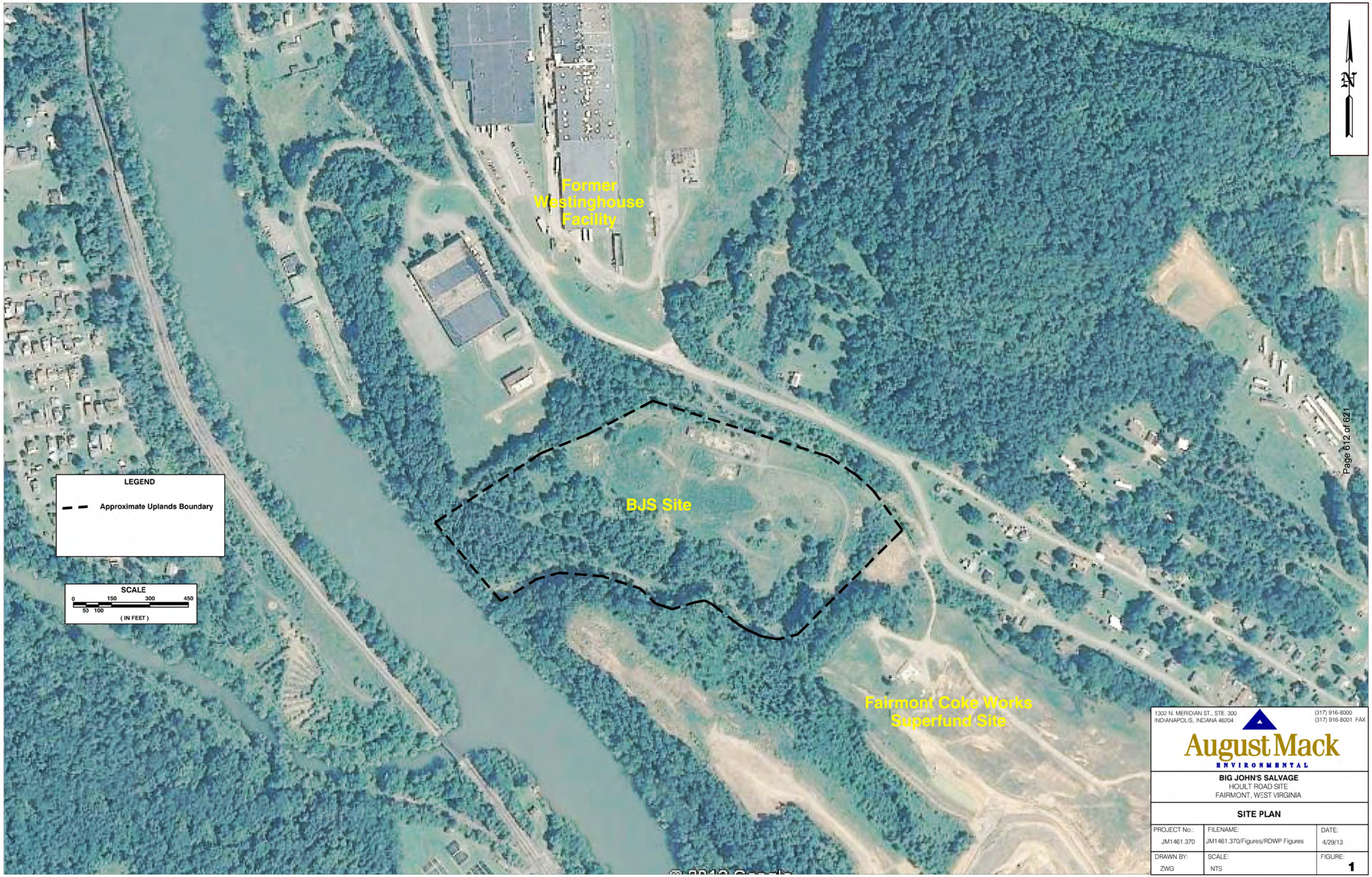
Following completion of all phases of the Uplands RA (soil, sediment, groundwater), a Construction Completion Report will be compiled and include: a statement of actual costs incurred in complying with the CD, a listing of quantities and types of materials removed off-Site or handled on Site, a discussion of construction methods, and as-built figures, a presentation of the analytical results of sampling and analyses performed, and accompanying appendices containing relevant documentation. The Construction Completion Report will be completed within 60 days of receiving 'Physical Construction Complete Approval' from the USEPA.

4.3 Project Schedule

A schedule of the major tasks and approximate completion dates for the design and implementation of the Upland RA is included as **Appendix A**. Effective, open

communications will be critical to achieving timely completion of the project. The status of ongoing efforts and issues that arise will be presented in monthly progress reports.

FIGURES



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BIG JOHN'S SALVAGE
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SITE PLAN

PROJECT No.:	FILENAME:	DATE:
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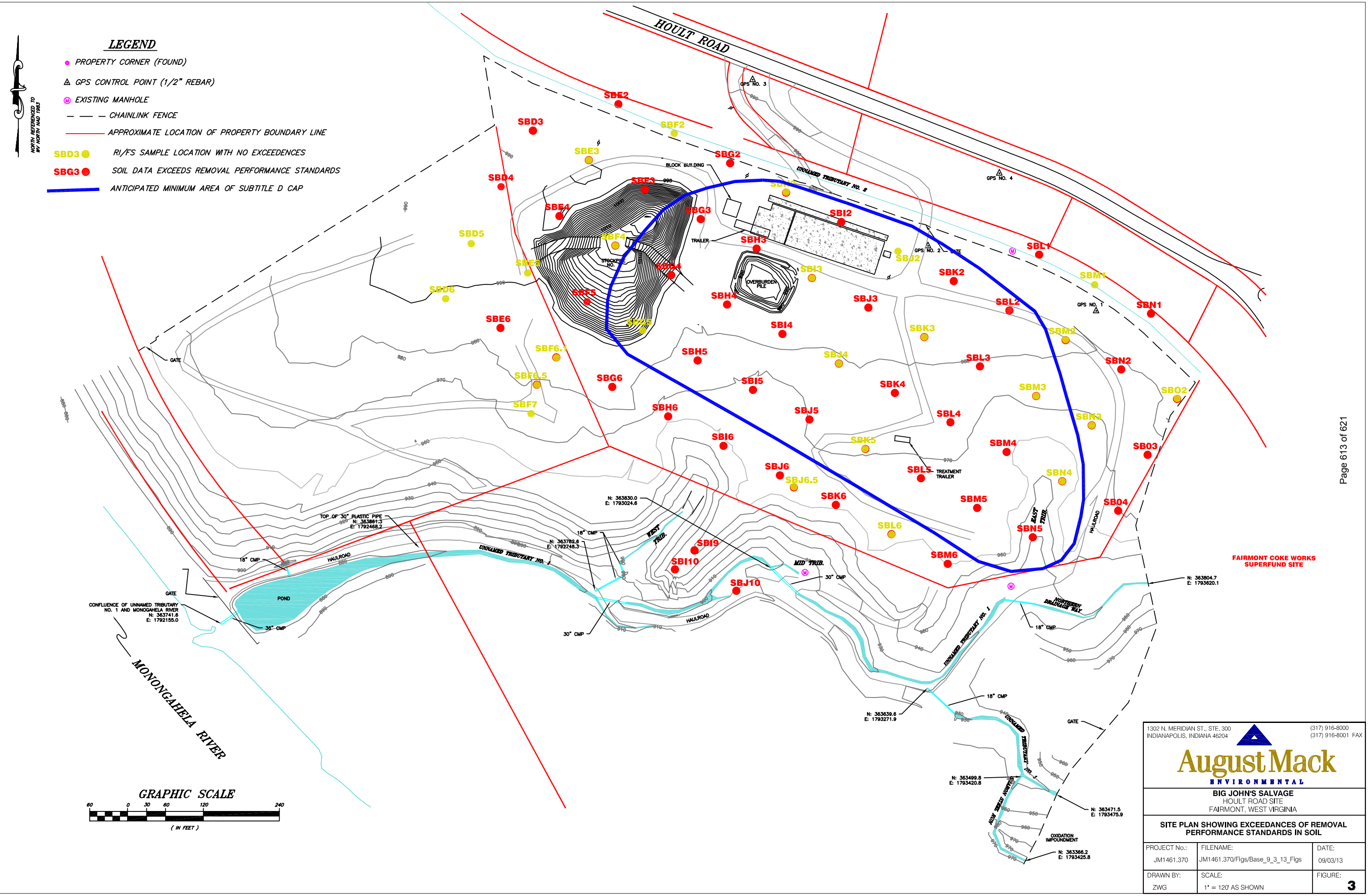
DRAWN BY:	SCALE:	FIGURE:
ZWG	NTS	1



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August Mack ENVIRONMENTAL

BIG JOHN'S SALVAGE
HOULT ROAD SITE
FAIRMONT, WEST VIRGINIA

SITE PLAN SHOWING EXCEEDANCES OF REMOVAL PERFORMANCE STANDARDS IN SOIL

PROJECT No.:	FILENAME:	DATE:
JM1461.370	JM1461.370/Figs/Base_9_3_13_Figs	09/03/13
DRAWN BY:	SCALE:	FIGURE:
ZWG	1" = 120' AS SHOWN	3

LEGEND

- EXISTING MANHOLE
- CHAINLINK FENCE
- APPROXIMATE LOCATION OF PROPERTY BOUNDARY LINE
- MW-14 B/C — WELLS WITH NO CONSTITUENTS DETECTED ABOVE PERFORMANCE REMOVAL STANDARDS
- MW-14 B/C — WELLS WITH CONSTITUENTS DETECTED ABOVE PERFORMANCE REMOVAL STANDARDS
- WS-2 — WATER SEEP LOCATIONS
- ANTICIPATED MINIMUM AREA OF SUBTITLE D CAP
- A1/A2 — OVERBURDEN WELL DESIGNATORS
- B/C — DEEP (BEDROCK) WELL DESIGNATORS
- TOPOGRAPHIC CONTOUR ELEVATIONS
- GENERAL GROUNDWATER FLOW DIRECTION
- PROPOSED OVERBURDEN TEMPORARY WELLS

HOULT ROAD

MW-16 B/C

GPS NO. 3

GPS NO. 4

GPS NO. 2

GPS NO. 1

Approximate Location of Clay Barrier Wall

UNNAMED TRIBUTARY NO. 2

BLOCK BUILDING

MW-1 A1/A2 (Fe, Mn, Tl)

MW-1 B/C (Fe, Mn)

MW-2 A (Fe, Mn)

MW-2 B/C

TRAILER

STOCKPILE NO. 1

OVERBURDEN PILE

MW-4 A (VOCs, PAHs, Fe, Mn, Tl)

MW-4 B

MW-4 C (Fe)

MW-3 A (As, Fe, Mn, Tl)

MW-3 B (Fe)

MW-3 C

MW-14 B/C

GATE

MW-13 B/C

MW-13 A (Mn)

MW-8 A (PAHS, Mn)

MW-8 B/C

MW-5 B/C

MW-5 A (VOCs, PAHs, As, Fe, Mn, Tl)

TREATMENT TRAILER

MW-17 B/C

MW-17 S/I

WS-2

MW-6 C

MW-6 A (Fe, Mn)

MW-6 B (VOCs, Fe, Mn)

EAST TRIB.

MW-15 (As, Fe, Mn)

MW-15 B (As, Fe)

HAULROAD

N: 363830.0
E: 1793024.6

TW-1

TW-2

TW-3

TW-4

TW-5

TW-6

TW-7

TW-8

TW-9

TW-10

18" CMP

WEST TRIB.

UNNAMED TRIBUTARY NO. 1

MID TRIB.

30" CMP

MW-9 B/C

MW-10 B/C

WS-1

WS-3

NORTHERN DRAINAGE WAY

SOUTHERN DRAINAGE WAY

SOUTHERN OFF-SITE DRAINAGE WAY NO. 1

MW-12 B/C

POND

36" CMP

MONONGAHELA RIVER

MW-11 B/C

Approximate Location of PRP Collection Systems

MW-7 C (Fe, Mn, TI, CYANIDE)

MW-7 B

FAIRMONT COKE WORKS (EXXON)

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)

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HOULT ROAD SITE
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SITE PLAN SHOWING EXCEEDANCES OF REMOVAL PERFORMANCE STANDARDS IN GROUNDWATER

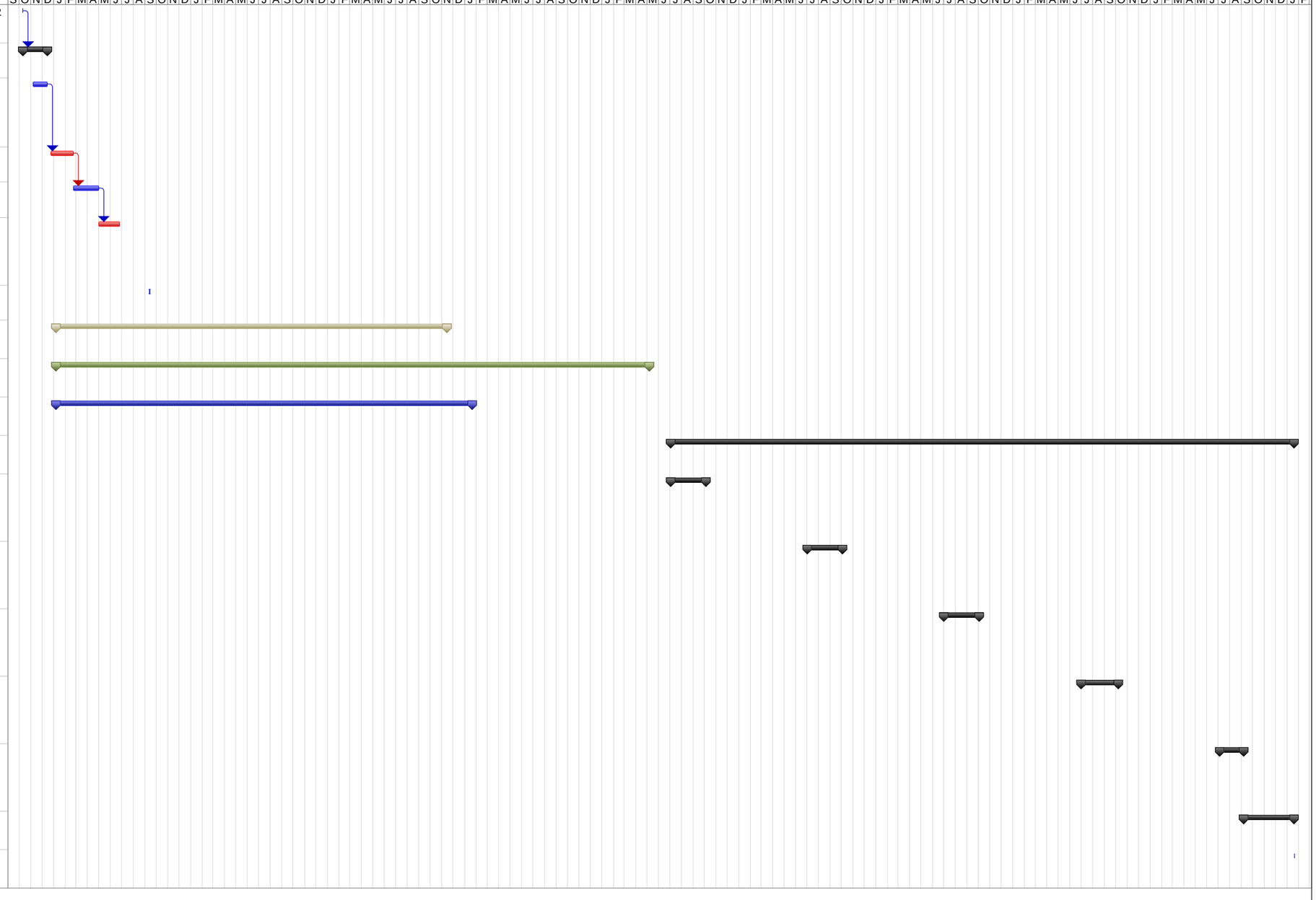
PROJECT No.:	FILENAME:	DATE:
JM1461.370	JM1461.370/Figs/Base_9_3_13 Figures	09/03/13
DRAWN BY:	SCALE:	FIGURE:
ZWG	1" = 120' AS SHOWN	4

APPENDIX A

Preliminary Schedule

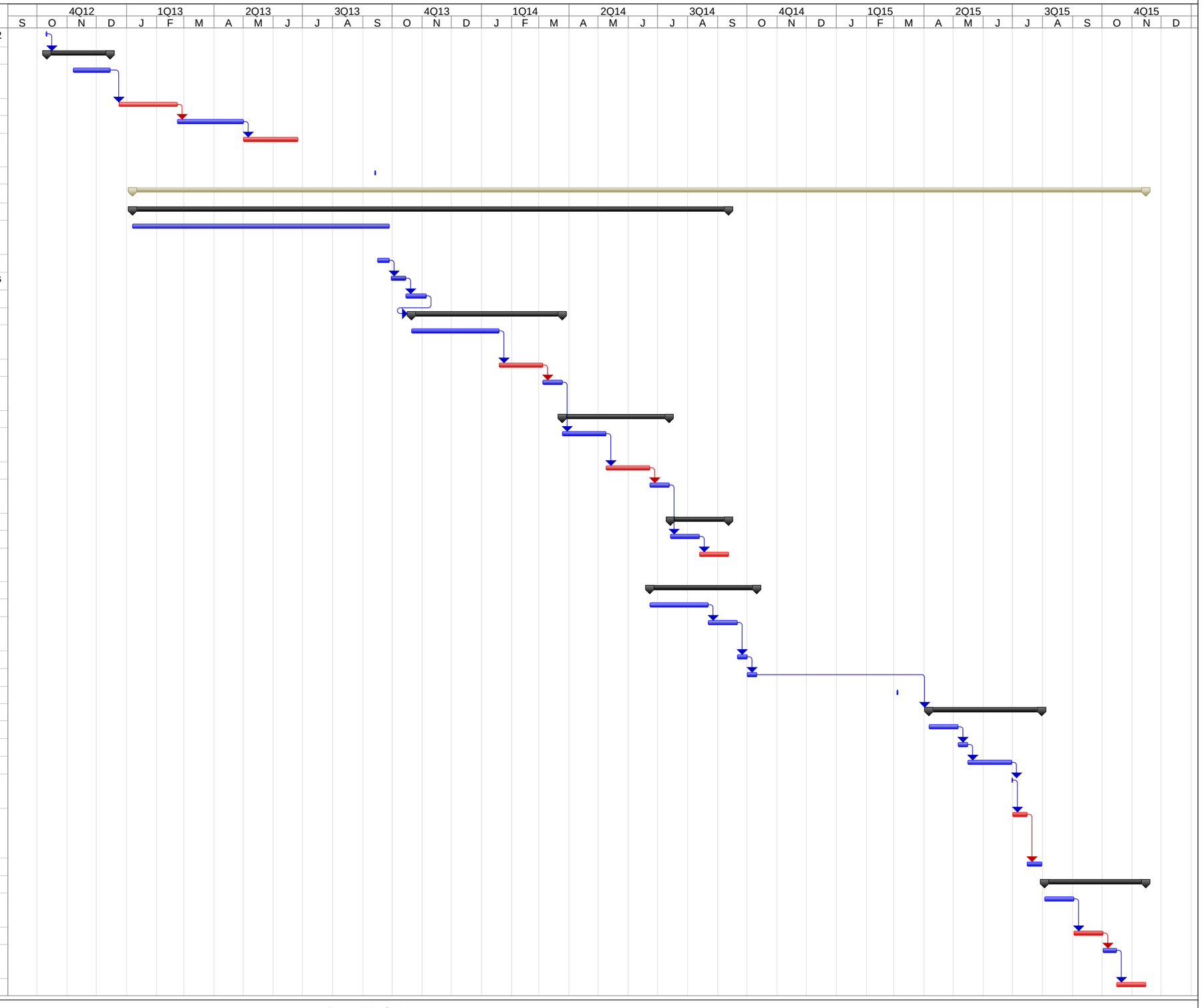
UPLANDS REMOVAL ACTION (ALL MEDIA)

ID	Task Name	Duration	Start	Finish
1	**Consent Decree Lodged**	1 day	Wed 10/10/12	Wed 10/10/12
2	**Project Set-Up**	**65 days**	**Thu 10/11/12**	**Fri 12/14/12**
13	Removal Design Work Plan/Health and Safety Plan	38 days	Wed 11/7/12	Fri 12/14/12
14	**Agency Review of RDWP**	60 days	Mon 12/24/12	Thu 2/21/13
15	RDWP Revisions	68 days	Fri 2/22/13	Tue 4/30/13
16	**Agency Review and RDWP Approval**	56 days	Wed 5/1/13	Tue 6/25/13
17	**Final RDWP Submittal**	**1 day**	**Fri 9/13/13**	**Fri 9/13/13**
18	**On-Site Sediment**	**1042 days**	**Mon 1/7/13**	**Sat 11/14/15**
53	**Soil**	**1581 days**	**Mon 1/7/13**	**Sat 5/6/17**
88	**Groundwater**	**1109 days**	**Mon 1/7/13**	**Wed 1/20/16**
120	**Restoration Monitoring**	**1661 days**	**Mon 7/3/17**	**Tue 1/18/22**
121	**2017 Monitoring and Reporting**	94 days	Mon 7/3/17	Wed 10/4/17
127	**2018 Monitoring and Reporting**	94 days	Mon 7/2/18	Wed 10/3/18
133	**2019 Monitoring and Reporting**	94 days	Mon 7/1/19	Wed 10/2/19
139	**2020 Monitoring and Reporting**	99 days	Wed 7/1/20	Wed 10/7/20
145	**2021 Monitoring and Reporting**	64 days	Mon 7/5/21	Mon 9/6/21
150	**Completion Reporting**	134 days	Tue 9/7/21	Tue 1/18/22
155	**Certificate of Completion**	1 day	Wed 1/19/22	Wed 1/19/22



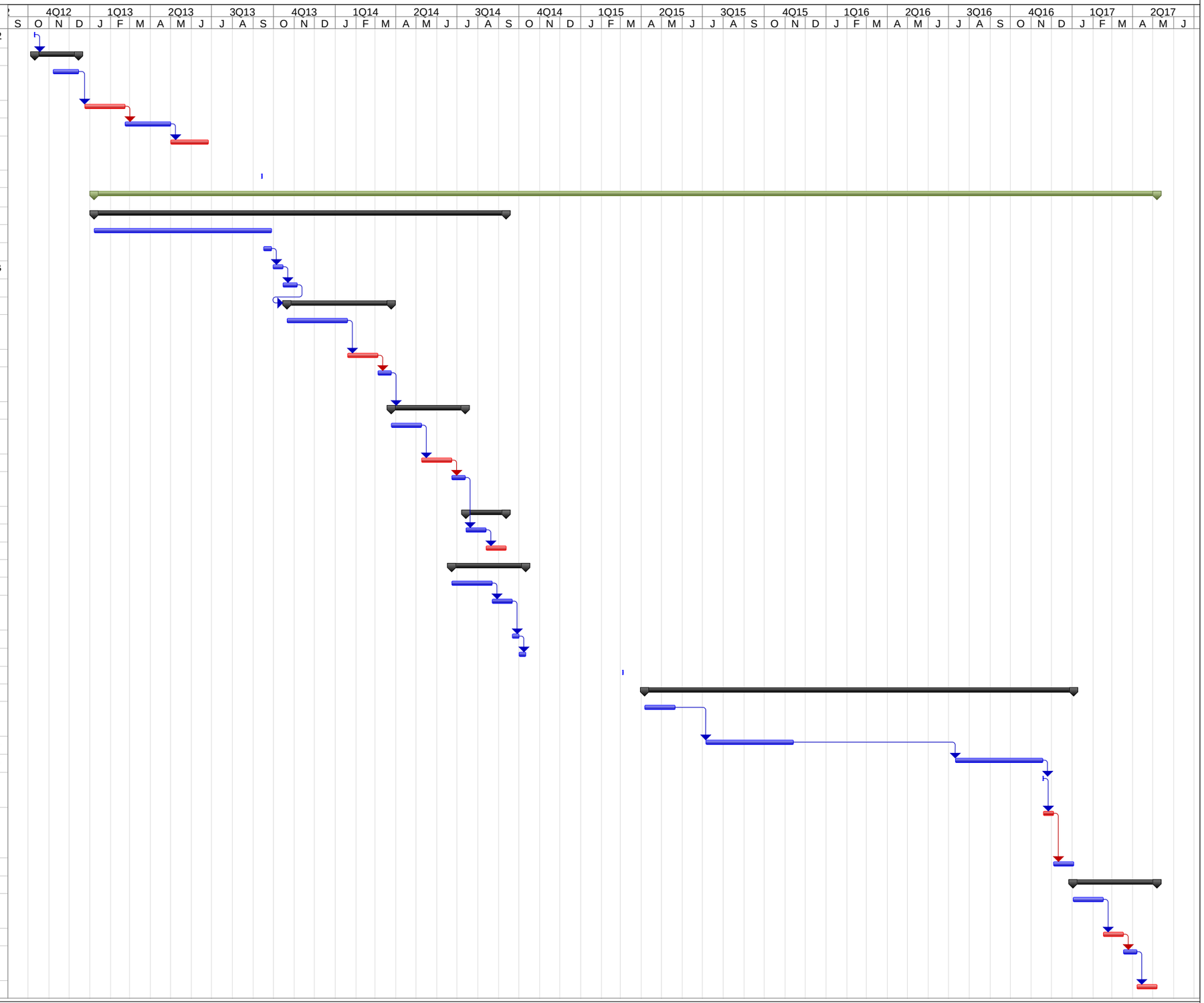
UPLANDS SEDIMENT REMOVAL ACTION

ID	Task Name	Duration	Start	Finish
1	**Consent Decree Lodged**	1 day	Wed 10/10/12	Wed 10/10/12
2	**Project Set-Up**	**65 days**	**Thu 10/11/12**	**Fri 12/14/12**
13	Removal Design Work Plan/Health and Safety Plan	38 days	Wed 11/7/12	Fri 12/14/12
14	**Agency Review of RDWP**	60 days	Mon 12/24/12	Thu 2/21/13
15	RDWP Revisions	68 days	Fri 2/22/13	Tue 4/30/13
16	**Agency Review and RDWP Approval**	56 days	Wed 5/1/13	Tue 6/25/13
17	**Final RDWP Submittal**	**1 day**	**Fri 9/13/13**	**Fri 9/13/13**
18	**On-Site Sediment**	**1042 days**	**Mon 1/7/13**	**Sat 11/14/15**
19	**Sediment Investigation**	**613 days**	**Mon 1/7/13**	**Thu 9/11/14**
20	Access Agreements/Permits	264 days	Mon 1/7/13	Fri 9/27/13
21	Mobilization	12 days	Mon 9/16/13	Fri 9/27/13
22	Field Work	15 days	Mon 9/30/13	Mon 10/14/13
23	Laboratory Testing	21 days	Tue 10/15/13	Mon 11/4/13
24	**Preliminary Design**	**155 days**	**Mon 10/21/13**	**Mon 3/24/14**
25	Preliminary Design Preparation	90 days	Mon 10/21/13	Sat 1/18/14
26	**Agency Review**	45 days	Sun 1/19/14	Tue 3/4/14
27	EPA Comment Letter and Response	20 days	Wed 3/5/14	Mon 3/24/14
28	**Pre-Final Design**	**110 days**	**Tue 3/25/14**	**Sat 7/12/14**
29	Pre-Final Design Preparation	45 days	Tue 3/25/14	Thu 5/8/14
30	**Agency Review**	45 days	Fri 5/9/14	Sun 6/22/14
31	EPA Comment Letter and Response	20 days	Mon 6/23/14	Sat 7/12/14
32	**Final Design**	**60 days**	**Mon 7/14/14**	**Thu 9/11/14**
33	Final Design Preparation	30 days	Mon 7/14/14	Tue 8/12/14
34	**Agency Review and Approval**	30 days	Wed 8/13/14	Thu 9/11/14
35	**Procurement Process**	**110 days**	**Mon 6/23/14**	**Fri 10/10/14**
36	Prepare bid package	60 days	Mon 6/23/14	Thu 8/21/14
37	Contractors Bid Preparation	30 days	Fri 8/22/14	Sat 9/20/14
38	Bid review and selection	10 days	Sun 9/21/14	Tue 9/30/14
39	Contract Execution	10 days	Wed 10/1/14	Fri 10/10/14
40	**Public Meeting**	**1 day**	**Wed 3/4/15**	**Wed 3/4/15**
41	**Implementation**	**116 days**	**Mon 4/6/15**	**Thu 7/30/15**
42	Project Preparation	30 days	Mon 4/6/15	Tue 5/5/15
43	Mobilization	10 days	Wed 5/6/15	Fri 5/15/15
44	Project Execution	45 days	Sat 5/16/15	Mon 6/29/15
45	Notification to EPA for Inspection	1 day	Tue 6/30/15	Tue 6/30/15
46	**Physical Construction Complete Notification and Agency Approval**	15 days	Wed 7/1/15	Wed 7/15/15
47	Project Demobilization	15 days	Thu 7/16/15	Thu 7/30/15
48	**Construction Reporting**	**104 days**	**Mon 8/3/15**	**Sat 11/14/15**
49	Prepare Construction Report	30 days	Mon 8/3/15	Tue 9/1/15
50	**Agency Review**	30 days	Wed 9/2/15	Thu 10/1/15
51	EPA Comment Letter and Response	14 days	Fri 10/2/15	Thu 10/15/15
52	**Agency Approval**	30 days	Fri 10/16/15	Sat 11/14/15



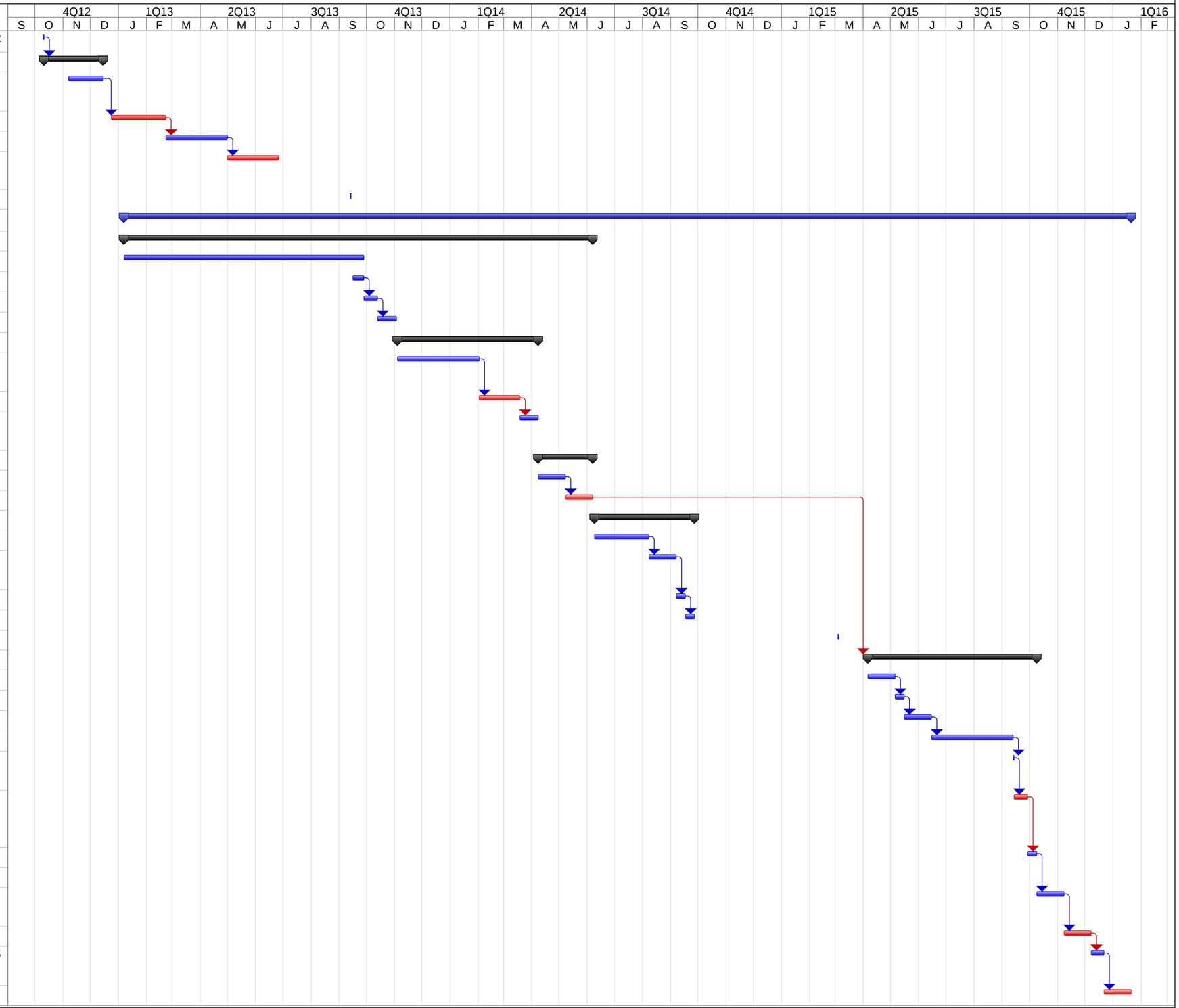
UPLANDS SOIL REMOVAL ACTION

ID	Task Name	Duration	Start	Finish
1	**Consent Decree Lodged**	1 day	Wed 10/10/12	Wed 10/10/12
2	**Project Set-Up**	**65 days**	**Thu 10/11/12**	**Fri 12/14/12**
13	Removal Design Work Plan/Health and Safety Plan	38 days	Wed 11/7/12	Fri 12/14/12
14	**Agency Review of RDWP**	60 days	Mon 12/24/12	Thu 2/21/13
15	RDWP Revisions	68 days	Fri 2/22/13	Tue 4/30/13
16	**Agency Review and RDWP Approval**	56 days	Wed 5/1/13	Tue 6/25/13
17	**Final RDWP Submittal**	**1 day**	**Fri 9/13/13**	**Fri 9/13/13**
18	**Soil**	**1581 days**	**Mon 1/7/13**	**Sat 5/6/17**
19	**Soil Investigation**	**613 days**	**Mon 1/7/13**	**Thu 9/11/14**
20	Project Preparation	264 days	Mon 1/7/13	Fri 9/27/13
21	Mobilization	12 days	Mon 9/16/13	Fri 9/27/13
22	Field Work	15 days	Mon 9/30/13	Mon 10/14/13
23	Laboratory Testing	21 days	Tue 10/15/13	Mon 11/4/13
24	**Preliminary Design**	**155 days**	**Mon 10/21/13**	**Mon 3/24/14**
25	Preliminary Design Preparation	90 days	Mon 10/21/13	Sat 1/18/14
26	**Agency Review**	45 days	Sun 1/19/14	Tue 3/4/14
27	EPA Comment Letter and Response	20 days	Wed 3/5/14	Mon 3/24/14
28	**Pre-Final Design**	**110 days**	**Tue 3/25/14**	**Sat 7/12/14**
29	Pre-Final Design Preparation	45 days	Tue 3/25/14	Thu 5/8/14
30	**Agency Review**	45 days	Fri 5/9/14	Sun 6/22/14
31	EPA Comment Letter and Response	20 days	Mon 6/23/14	Sat 7/12/14
32	**Final Design**	**60 days**	**Mon 7/14/14**	**Thu 9/11/14**
33	Final Design Preparation	30 days	Mon 7/14/14	Tue 8/12/14
34	**Agency Approval**	30 days	Wed 8/13/14	Thu 9/11/14
35	**Procurement Process**	**110 days**	**Mon 6/23/14**	**Fri 10/10/14**
36	Prepare bid package	60 days	Mon 6/23/14	Thu 8/21/14
37	Contractors Bid Preparation	30 days	Fri 8/22/14	Sat 9/20/14
38	Bid review and selection	10 days	Sun 9/21/14	Tue 9/30/14
39	Contract Execution	10 days	Wed 10/1/14	Fri 10/10/14
40	**Public Meeting**	**1 day**	**Wed 3/4/15**	**Wed 3/4/15**
41	**Implementation**	**638 days**	**Mon 4/6/15**	**Mon 1/2/17**
42	Project Preparation/ Mobilization	45 days	Mon 4/6/15	Wed 5/20/15
43	Project Execution (Season 1)	130 days	Mon 7/6/15	Thu 11/12/15
44	Project Execution (Season 2)	130 days	Mon 7/11/16	Thu 11/17/16
45	Notification to EPA for Inspection	1 day	Fri 11/18/16	Fri 11/18/16
46	**Physical Construction Complete Notification and Agency Approval**	15 days	Sat 11/19/16	Sat 12/3/16
47	Project Demobilization	30 days	Sun 12/4/16	Mon 1/2/17
48	**Construction Reporting**	**125 days**	**Mon 1/2/17**	**Sat 5/6/17**
49	Prepare Completion Report	45 days	Mon 1/2/17	Wed 2/15/17
50	**Agency Review**	30 days	Thu 2/16/17	Fri 3/17/17
51	EPA Comment Letter and Response	20 days	Sat 3/18/17	Thu 4/6/17
52	**Agency Approval**	30 days	Fri 4/7/17	Sat 5/6/17



UPLANDS GROUNDWATER REMOVAL ACTION

ID	Task Name	Duration	Start	Finish
1	**Consent Decree Lodged**	1 day	Wed 10/10/12	Wed 10/10/12
2	**Project Set-Up**	**65 days**	**Thu 10/11/12**	**Fri 12/14/12**
13	Removal Design Work Plan/Health and Safety Plan	38 days	Wed 11/7/12	Fri 12/14/12
14	**Agency Review of RDWP**	60 days	Mon 12/24/12	Thu 2/21/13
15	RDWP Revisions	68 days	Fri 2/22/13	Tue 4/30/13
16	**Agency Review and RDWP Approval**	56 days	Wed 5/1/13	Tue 6/25/13
17	**Final RDWP Submittal**	**1 day**	**Fri 9/13/13**	**Fri 9/13/13**
18	**Groundwater**	**1109 days**	**Mon 1/7/13**	**Wed 1/20/16**
19	**Groundwater Investigation**	**516 days**	**Mon 1/7/13**	**Fri 6/6/14**
20	Project Preparation	264 days	Mon 1/7/13	Fri 9/27/13
21	Mobilization	12 days	Mon 9/16/13	Fri 9/27/13
22	Field Work	15 days	Sat 9/28/13	Sat 10/12/13
23	Laboratory Testing	21 days	Sun 10/13/13	Sat 11/2/13
24	**Pre-Final Design**	**155 days**	**Mon 11/4/13**	**Mon 4/7/14**
25	Pre-Final Design Preparation	90 days	Mon 11/4/13	Sat 2/1/14
26	**Agency Review**	45 days	Sun 2/2/14	Tue 3/18/14
27	EPA Comment Letter and Response	20 days	Wed 3/19/14	Mon 4/7/14
28	**Final Design**	**60 days**	**Tue 4/8/14**	**Fri 6/6/14**
29	Final Design Preparation	30 days	Tue 4/8/14	Wed 5/7/14
30	**Agency Approval**	30 days	Thu 5/8/14	Fri 6/6/14
31	**Procurement Process**	**110 days**	**Mon 6/9/14**	**Fri 9/26/14**
32	Prepare bid package	60 days	Mon 6/9/14	Thu 8/7/14
33	Contractors Bid Preparation	30 days	Fri 8/8/14	Sat 9/6/14
34	Bid review and selection	10 days	Sun 9/7/14	Tue 9/16/14
35	Contract Execution	10 days	Wed 9/17/14	Fri 9/26/14
36	**Public Meeting**	**1 day**	**Wed 3/4/15**	**Wed 3/4/15**
37	**Implementation**	**186 days**	**Mon 4/6/15**	**Thu 10/8/15**
38	Project Preparation	30 days	Mon 4/6/15	Tue 5/5/15
39	Mobilization	10 days	Wed 5/6/15	Fri 5/15/15
40	Field Work	30 days	Sat 5/16/15	Sun 6/14/15
41	Monitoring	90 days	Mon 6/15/15	Sat 9/12/15
42	Notification to EPA for Inspection	1 day	Sun 9/13/15	Sun 9/13/15
43	**Physical Construction Complete Notification and Agency Approval**	15 days	Mon 9/14/15	Mon 9/28/15
44	Project Demobilization	10 days	Tue 9/29/15	Thu 10/8/15
45	**Construction Reporting**	**104 days**	**Fri 10/9/15**	**Wed 1/20/16**
46	Prepare Construction Report	30 days	Fri 10/9/15	Sat 11/7/15
47	**Agency Review**	30 days	Sun 11/8/15	Mon 12/7/15
48	EPA Comment Letter and Response	14 days	Tue 12/8/15	Mon 12/21/15
49	**Agency Approval**	30 days	Tue 12/22/15	Wed 1/20/16



Attachment II.B to Exhibit E

Names, Addresses, and Dates of Presentation

Names, addresses and dates of presentation

CBS Corporation

William D. Wall, Esq.
Vice President & Assistant General Counsel
CBS Corporation
10th Floor, 20 Stanwix Street
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Date of Presentation: August 30, 2016

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Date of Presentation: September 22, 2016