

CSX Transportation, Inc.

**Hazardous Waste Management
Permit
For Corrective Action**

EPA ID No.: VAD003121977

September 2010



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

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Hazardous Waste Management Permit for Corrective Action

Permittee: **CSX Transportation, Inc.**
2401 Charles City Road
Richmond, Virginia

EPA I.D. No.: **VAD003121977**

Pursuant to Chapter 14, Section 10.1-1426 Code of Virginia (1950), as amended and regulations promulgated thereunder by the Department of Environmental Quality ("DEQ"), a Permit is issued to CSX Transportation Inc. (hereinafter referred to as the Permittee or CSXT), to conduct Corrective Action ("CA"), as necessary to protect human health and the environment, for all releases of hazardous waste or hazardous constituents from any solid waste management unit ("SWMU") or Area of Concern ("AOC"). The facility being permitted is located in Henrico County with an address of 2401 Charles City Road, Richmond, Virginia 23294 at latitude 37° 30' 15.0" north and longitude 077° 21' 30.0" west.

The Permittee shall comply with all terms and conditions set forth in this Permit including Permit Attachments. If the Permit and the Permit Attachments conflict, then the wording of the Permit shall prevail. The Permittee shall also comply with all applicable regulations contained in the Virginia Hazardous Waste Management Regulations ("VHWMR") as codified in Title 9 of the Virginia Administrative Code, Agency 20, Chapter 60 (9 VAC 20-60) and regulations implementing the Resource Conservation and Recovery Act ("RCRA") set forth in 40 CFR Parts 124, 260, 261, 262, 264, 265, 268, and 270, as adopted by reference in the VHWMR. (For convenience, wherever the RCRA regulations are adopted by reference are cited in this Permit and the Permit Attachments, the regulatory citations will be only those from 40 CFR).

The Commonwealth of Virginia has received authorization for its hazardous waste program under Section 3006(b) of the RCRA, 42 U.S.C. § 6926(b), to administer and enforce the RCRA under the

VHWMR in lieu of the federal hazardous waste management program. Applicable regulations are those under the VHWMR under (9 VAC 20-60) and the RCRA which are in effect on the date of final administrative action on this Permit and as well as any self implementing statutory provisions and related regulations which are automatically applicable to the Permittee's hazardous waste management activities, notwithstanding the conditions of this Permit.

This Permit is based on the administrative record and the assumption that the information submitted by the Permittee and contained in the administrative record is complete and accurate. The Permittee's failure in the application or during the Permit issuance process to fully disclose all relevant facts, or the Permittee's misrepresentation of any relevant facts at any time, shall be grounds for the modification or termination of this Permit pursuant to 40 CFR § 124.5, § 270.41, and § 270.43, and shall also be grounds for initiation of an enforcement action. The Permittee shall inform the Department of any deviations from permit conditions or changes from information provided in the application. In particular, the Permittee shall inform the Department of any proposed changes that might affect the ability of the Permittee to comply with applicable regulations and/or permit conditions, or which alter any of the conditions of the Permit in any way.

This Permit is effective as of September 16, 2010 and shall remain in effect until September 16, 2020 unless revoked and reissued in accordance with 40 CFR § 124.5 and § 270.41, or terminated in accordance with 40 CFR § 270.43, or continued in accordance with VHWMR 9 VAC 20-60-270.B.5.

August 17 2010
Date Signed

Leslie A. Romanchik
Leslie A. Romanchik
Hazardous Waste Program Manager
Office of Waste Permitting and Compliance

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LIST OF ATTACHMENTS

The following Attachments are incorporated, in their entirety, by reference into this Permit. These incorporated attachments are enforceable conditions of this Permit. The Department has, as deemed necessary, modified specific language from the permit application. Additional modifications are prescribed in the Permit conditions (Parts I and II), and thereby supersede the language of the Attachments to the extent that there is a direct conflict between the Attachments and Parts I and II of the Permit.

Attachment A	Facility Description and List and Description of SWMUs, HWMUs, and AOCs
Attachment B	Corrective Measures Study
Attachment C	Corrective Measures Implementation Scope of Work Requirements

DEFINITIONS

For the purposes of this Permit, the following definitions shall apply:

- a. The term "Permit" shall mean the Permit issued by the Virginia Department of Environmental Quality, pursuant to Chapter 14, Article 4, Title 10.1, Code of Virginia (1950), as amended, and the Virginia Hazardous Waste Management Regulations ("VHWMR") as codified in Title 9 of the Virginia Administrative Code, Agency 20, Chapter 60 (9 VAC 20 60).
- b. The term "Director" shall mean the Director of the Virginia Department of Environmental Quality or his designated representative.
- c. The term "Department" shall mean the Virginia Department of Environmental Quality ("DEQ") (with the address as specified in Permit Condition I.I.).
- d. The terms "facility" or "site" shall mean all contiguous land, and structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous waste. For the purpose of implementing corrective action under 40 CFR § 264.101, "facility" means all contiguous property under the control of the owner or operator seeking a permit under Subtitle C of RCRA.
- e. The term "hazardous waste management unit" is a contiguous area of land on or in which hazardous waste is placed, or the largest area in which there is significant likelihood of mixing hazardous waste constituents in the same area. Examples of hazardous waste management units include a surface impoundment, a waste pile, a land treatment area, a landfill cell, an incinerator, a tank and its associated piping and underlying containment system and a container storage area. A container alone does not constitute a unit; the unit includes containers and the land or pad upon which they are placed.
- f. The term "release" shall mean any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substance, pollutant, or contaminant), unless otherwise excluded pursuant to 40 CFR § 302.3 and CERCLA § 101(22).
- g. The term "Area of Concern" shall mean an area at the facility or an off-site area, which is not at this time known to be a solid waste management unit, where hazardous waste and/or hazardous constituents are present or are suspected to be present as a result of a release from the facility.

- h. The term “Hazardous Constituent” shall mean a constituent that is listed in 40 CFR Part 261, Appendix VIII.
- i. The term “Permittee” shall mean the owner/operator of the facility to which the Permit is issued.
- j. The term “EPA” shall mean United States Environmental Protection Agency.
- k. The term “Solid Waste Management Unit” shall mean any discernable unit at the facility from which hazardous constituents might migrate, irrespective of whether the unit was intended for the management of solid and/or hazardous wastes. Such a unit includes any area at a facility where solid wastes have been routinely and systematically released. The term “unit” refers to containers, container storage areas, tanks, surface impoundments, waste piles, land treatment units, landfills, incinerators, underground injection wells, and other physical, chemical, and biological units or treatment units.
- l. The term “Days” shall mean calendar days except as otherwise provided herein.
- m. All definitions contained in 40 CFR Sections 124.2, 260.10, 270.2, 264.141, 264.1031, 264.1051, 264.1081, and 9 VAC 20-60 are hereby incorporated, in their entirety, by reference into this Permit. Any of the definitions used above, (a) through (l), shall supersede any definition of the same term given in 40 CFR §§ 124.2, 260.10, 270.2, 264.141, 264.1031, 264.1051, 264.1081, and 9 VAC 20-60. Where terms are not defined in the regulations or the Permit, the meaning associated with such terms shall be defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.
- n. Throughout the Permit, all references to 40 CFR Parts 261-266, 268, 270, 273, 279, are as adopted by reference in the Virginia Hazardous Waste Management Regulations, 9 VAC 20-60.
- o. The EPA/DEQ Project Coordinators will be the primary designated representatives for ongoing activities. To the maximum extent possible, all communications between the Permittee and EPA/DEQ, and all documents, reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Permit shall be directed through the Project Coordinators.

MODULE I STANDARD CONDITIONS

A. EFFECT OF PERMIT

1. This Permit, issued by the Director pursuant to 40 CFR § 270.1(c)(4), authorizes only the management of hazardous waste under corrective action (CA) expressly described in this Permit and in accordance with the conditions of this Permit and with the applicable provisions of the VHWMR under 9 VAC 20-60. Any management of hazardous waste by the Permittee which is not authorized by this Permit or 9 VAC 20-60, and for which a permit is required under Chapter 14, Article 4, Title 10.1, Code of Virginia (1950), as amended, is prohibited. (40 CFR §§ 270.30(g) and 270.4(b) and (c)). Compliance with this Permit generally constitutes compliance, for the purposes of enforcement, with Chapter 14, Article 4, Title 10.1-1426, Code of Virginia (1950), as amended. This Permit does not convey any property rights of any sort, or any exclusive privilege. Possession of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of Commonwealth of Virginia or local laws or regulations. Compliance with the terms of this Permit may not constitute a defense to any action brought under Chapter 14, Article 8, Code of Virginia (1950), as amended, or any other Commonwealth law governing protection of the public health or the environment.
2. The Permittee is obligated to complete facility-wide CA under the conditions of a RCRA Permit regardless of the operational status of the facility. The Permittee must submit an application for a new Permit at least 180 days before this Permit expires pursuant to 40 CFR § 270.10(h), unless the Permit has been modified to terminate the CA schedule of compliance and the Permittee has been released from the requirements for financial assurance for corrective action.

B. PERMIT ACTIONS

1. This Permit may be modified, revoked and reissued, or terminated for cause as specified in 40 CFR §§ 124.5, 270.30(f), 270.41, 270.42, and 270.43. The filing of a request by the Permittee for a Permit modification, revocation and reissuance, or termination, or the notification of planned changes or anticipated noncompliance does not stay the applicability or enforceability of any Permit Condition (40 CFR § 270.30(f)).
2. Permit modifications at the request of the Permittee shall be done as specified by 40 CFR § 270.42.

3. This Permit may be renewed as specified in 9 VAC 20-60-270.10 and 40 CFR § 270.109(h), and Permit Condition I.D.2. Review of any application for a Permit renewal shall consider improvements in the state of control and measurement technology, as well as changes in applicable regulations.

C. SEVERABILITY

1. The provisions of this Permit are severable, and if any provision of this Permit or the application of any provision of this Permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this Permit shall not be affected thereby (40 CFR § 124.16(a)(2)). Invalidation of any Commonwealth or federal statutory or regulatory provision which forms the basis for any condition of this Permit does not affect the validity of any other Commonwealth or federal statutory or regulatory basis for said condition.
2. In the event that a condition of this Permit is stayed for any reason, the Permittee shall continue to comply with the related applicable and relevant interim status standards in 40 CFR § 270.10(e) if not otherwise stayed until final resolution of the stayed condition unless the Director determines compliance with the related applicable and relevant interim status standards would be technologically incompatible with compliance with other conditions of this Permit which have not been stayed.

D. DUTY AND REQUIREMENTS

1. Duty to Comply
The Permittee shall comply with all conditions of this Permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit (see 40 CFR § 270.61). Any other noncompliance with the Permit constitutes a violation of Title 10.1, Code of Virginia (1950), as amended, and regulations promulgated thereunder and is grounds for enforcement action, Permit termination, revocation and reissuance, modification, or denial of a Permit renewal application (40 CFR § 270.30(a)).
2. Duty to Reapply
If the Permittee wishes to or is required to continue an activity regulated by this Permit after the expiration date of this Permit, the Permittee shall apply for and obtain a new Permit as specified below.
 - a. The Permittee shall submit a new and complete application for a new Permit at least 180 days before the Permit expires, unless a later date has been approved by the Director.

- b. The Director shall not grant permission for an application to be submitted later than the existing Permit's expiration date pursuant to 40 CFR § 270.10(h)(1) (40 CFR § 270.30(b)).
3. Need to Halt or Reduce Activity Not a Defense
It shall not be a defense in an enforcement action to argue that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Permit (40 CFR § 270.30(c)).
4. Duty to Mitigate
In the event of noncompliance with the Permit, the Permittee shall take all reasonable steps to minimize releases to the environment and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment (40 CFR § 270.30(d)).
5. Proper Operation and Maintenance
The Permittee shall at all times properly operate and maintain all facilities and systems of the treatment and controls (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this Permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls; including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the Permit (40 CFR § 270.30(e)).
6. Duty to Provide Information
The Permittee shall furnish to the Director within a reasonable time, any relevant information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Permit, or to determine compliance with this Permit. The Permittee shall also furnish to the Director, upon request, copies of records required to be kept by this Permit (40 CFR § 270.30(h)).
7. Inspection and Entry
The Permittee shall allow the Director or an authorized representative, upon the presentation of credentials and other documents as may be required by law to:
 - a. Enter at reasonable times upon the Permittee's premise where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this Permit;
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Permit;

- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and
 - d. Sample or monitor, at reasonable times, for the purpose of assuring Permit compliance or as otherwise authorized by VHWMR, any substance or parameters at any location (40 CFR § 270.30(i)).
8. Reporting Planned Changes
The Permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility (40 CFR § 270.30(1)(1)). This notice shall include a description of all incidents of noncompliance reasonably expected to result from the proposed changes.
9. Anticipated Noncompliance
The Permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with the Permit requirements (40 CFR § 270.30(1)(2)).
10. New and Modified Portions of Any Waste Management Unit
The Permittee shall not store or treat hazardous waste in any new or modified portion of the facility, except as provided in 40 CFR § 270.42, until the Permittee has submitted to the Director, by certified mail or hand delivery, a letter signed by the Permittee and a professional engineer registered by the Commonwealth stating that the facility has been constructed or modified in compliance with the Permit; and:
 - a. The Director has inspected the modified or newly constructed facility and finds it is in compliance with the conditions of the Permit; or
 - b. Within 15 days of the date of submission of the letter required pursuant to Permit Condition I.D.10, if the Permittee has not received notice from the Director of his intent to inspect, prior inspection is waived and the Permittee may commence treatment, storage, or disposal of hazardous waste (40 CFR § 270.30(1)(2)).
11. Twenty-four Hour Reporting
The Permittee shall report to the Director any non-compliance which may endanger human health or the environment. Information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances.

Information specified (a, b, and c) shall be reported orally within 24 hours:

- a. Information concerning the release of any hazardous waste that may cause an endangerment to public drinking water supplies.
- b. Any information of a release or discharge of hazardous waste, or of a fire or explosion at the facility, which could threaten the environment or human health outside the facility.
- c. The description of the occurrence and its cause shall include at least the following:
 - i. Name, address, and telephone number of owner or operator;
 - ii. Facility name, address, and telephone number;
 - iii. Date, time, and type of incident;
 - iv. Name and quantity of material(s) involved;
 - v. The extent of injuries, if any;
 - vi. An assessment of actual or potential hazard to human health and the environment outside the facility where this is applicable; and
 - vii. Estimated quantity and disposition of recovered material that resulted from the incident (40 CFR § 270.30 (l)(6)).
- d. A written submission shall also be provided to the Director within five (5) days of the time the Permittee becomes aware of the circumstances. The written submission shall contain the following:
 - i. A description of the noncompliance and its cause;
 - ii. The period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated duration of the noncompliance; and
 - iii. The steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The Permittee need not comply with the 5-day written notice requirement if the Director waives that requirement following verbal notification (Permit Section I.G.11.) and the Permittee submits a written report within fifteen (15) days of the time the Permittee becomes aware of the circumstances (40 CFR § 270.30(l)(6)(iii)).

12. Other Noncompliance
The Permittee shall report all instances of noncompliance not otherwise required to be reported above, at the time monitoring reports are submitted. The reports shall contain the information listed in Permit Section I.G.11 (40 CFR § 270.30(I)(10)).
13. Other Information
Whenever the Permittee becomes aware that it failed to submit any relevant facts in the Permit application, or submitted incorrect information in a Permit application or in any report to the Director, the Permittee shall promptly submit such facts or information to the Director (40 CFR § 270.30(I)(11)).

E. MONITORING AND RECORDS

1. Monitoring Reports
Monitoring shall be performed and results shall be reported at the intervals specified in the Permit.
2. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity (40 CFR § 270.30(j)(1)). The method used to obtain a representative sample of the waste to be analyzed must be the appropriate method specified in 40 CFR Part 261, Appendix I, or an equivalent method approved by the EPA. Laboratory methods must be those specified in *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846* (3rd ed.; November, 1986, as updated), *Standard Methods of Wastewater Analysis* (16th ed.; 1985, as updated), or an equivalent method approved by the EPA.
3. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records, and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Permit, all certifications required by 40 CFR § 264.73(b)(9), and records of all data used to complete the application for this Permit, for a period of at least 3 years (or longer if specified elsewhere in this Permit) from the date of the sample collection, measurement, report, certification, or application. These retention periods may be extended by the request of the Director at any time and are automatically extended during the course of any unresolved enforcement actions regarding this facility. The Permittee shall maintain records from all ground-water monitoring wells and associated ground-water surface elevations, for the active life of the facility, and for disposal facilities for the post-closure care period as well.

Records of monitoring information shall include:

- a. The date, exact place, and time of sampling or measurements;

- b. The individual(s) who performed the sampling or measurements;
- c. The date(s) analyses were performed;
- d. The individual(s) who performed the analyses;
- e. The analytical techniques or test methods used; and
- f. The results of such analyses (40 CFR § 270.30(j)(2)).

F. COMPLIANCE NOT CONSTITUTING DEFENSE

Compliance with the terms of this Permit does not constitute a defense to any action brought under Chapter 14, Article 8 of Title 10.1, Code of Virginia (1950) as amended or any other Commonwealth law governing protection of the public or the environment.

G. TRANSFER OF PERMITS

This Permit is not transferable to any person except after notice to the Director (40 CFR § 270.30(l)(3)). This Permit may be transferred by the Permittee to a new owner or operator only if the Permit has been modified or revoked and reissued under 40 CFR § 270.40(b) or § 270.41(b)(2) to identify the new Permittee and to incorporate such other requirements as may be necessary under RCRA (40 CFR § 270.40). Before transferring ownership or operation of the facility during its operating life, the Permittee shall notify the new owner or operator in writing of the requirements of 9 VAC 20-60-264 and 40 CFR Parts 264 and 270 and at the same time shall send a copy of such notice to the Director (40 CFR § 264.12(c)).

H. PERMIT EXPIRATION AND CONTINUATION

Pursuant to 9 VAC 20-60-270 B 15, this Permit will remain in force until the effective date of a new Permit if the Permittee has submitted a timely, complete application pursuant to Permit Condition I.D.2.a., and through no fault of the Permittee, the Director has not issued a new Permit with an effective date on or before the expiration date of this Permit. All conditions of the continued Permit shall remain fully effective and enforceable (40 CFR § 270.51).

I. REPORTS NOTIFICATIONS AND SUBMISSIONS TO THE DEPARTMENT

1. Biennial Report

The Permittees shall submit a biennial report to the Department which covers facility activities during odd numbered calendar years, if required by the applicable regulations. At a minimum this report will include:

- a. The generator biennial report pursuant to 40 CFR § 262.41; and
- b. The hazardous waste management facility biennial report pursuant to 40 CFR § 270.30(l)(9) and § 264.75.
- c. A biennial review report on the effectiveness of the institutional controls in meeting the human health and environmental protection objectives including, but not limited to,
 - i. Review of CSXT's compliance with the declaration of restrictive covenants for the facility;
 - ii. Groundwater and land uses within 0.5 mile of the facility;
 - iii. Zoning maps or planning documents that may affect future land use in the impacted area.

Additionally, CSXT will be required to submit five (5)-year review reports on the progress of the remedial measures and of meeting the cleanup standards or Remedial Goals. The Henrico Health Department will be provided with CSXT's biennial review reports and five (5)-year review reports.

2. Duty to Submit Certified Documents

All work plans, reports, notifications or other submissions which are required by this Permit to be sent or given to the Director shall be sent certified mail, sent by certified carrier (including overnight commercial delivery services), sent via electronic mail, or be hand-delivered to:

**Department of Environmental Quality
Attention Mrs. Jutta Schneider
Groundwater/Corrective Action Program Manager
Office of Remediation Programs
P.O. Box 1105
Richmond, VA 23218**

(804) 698-4099

**Street address:
629 East Main Street
Richmond, VA 23219**

and one (1) copy of all such correspondence, reports, and submissions shall also be sent to:

**Director, Piedmont Regional Office
Department of Environmental Quality
4949-A Cox Road
Glen Allen, VA 23060
(804) 527-5020**

**Associate Director, Office of Remediation
Environmental Protection Agency, Region III
1650 Arch Street
Philadelphia, PA 19103-2029
(3LC20)**

3. Signatory Requirements
All applications, work plans, reports, and other information submitted shall be signed and certified as specified by 40 CFR § 270.11.

J. DOCUMENTS TO BE MAINTAINED AT THE FACILITY SITE

1. Current copies of the following documents, as amended, revised, and modified, shall be maintained at the Permittee's Bryan Park Terminal, 1 CSX Road, Richmond, Virginia 23230 rather than the facility because the facility is closed. These documents shall be maintained until closure and corrective action is completed and certified by the Permittee and by an independent, Virginia-registered professional engineer, unless a lesser time is specified in the Permit.
- a. The Permit, including all attachments;
 - b. All Part A and B Permit Applications supporting the Permit;
 - c. The facility operating record required by 40 CFR § 264.73, to the extent applicable;
 - d. Inspection schedules and logs required by 40 CFR § 264.15(b)(2) and § 264.15(d), as applicable;

- e. Personnel training documents and records required by 40 CFR § 264.16 and this Permit, as applicable;
- f. Closure Plans, as required by 40 CFR § 264.112(a), as applicable;
- g. Post-Closure Plans, as required by 40 CFR § 264.118(a), as applicable;
- h. Groundwater sampling and analysis plan required by 40 CFR § 264.101 and this Permit as described in the Operations and Maintenance Plan;
- i. Groundwater monitoring results required by 40 CFR § 264.73(b)(6) and this Permit;
- j. Corrective Action Work Plans, Reports, and other information and submissions regarding corrective action, as applicable under this Permit.

K. APPROVAL/DISAPPROVAL OF SUBMISSIONS

1. The DEQ will review the plans, reports, schedules and other documents (hereinafter collectively referred to as "submissions") submitted by the Permittee which require the Director's approval. The DEQ will notify the Permittee in writing of the DEQ's approval, conditional approval, or disapproval of each submission.
2. Each submission required by this Permit, upon approval by the Director, is incorporated into this Permit. Any noncompliance with a DEQ-approved submission shall be deemed as noncompliance with this Permit. A conditionally approved submission, including any terms of such conditional approval set forth in DEQ's decision, shall constitute the DEQ-approved submission and shall be incorporated into this Permit.
3. In the event of the DEQ's conditional approval of submission, the Director shall specify in writing any deficiencies in the submission and the terms upon which approval of the submission is conditioned. If the Permittee disputes any term upon which approval of the submission was conditioned, the Permittee may initiate Dispute Resolution pursuant to Permit Condition I.L.
4. In the event of the DEQ's disapproval of a submission, the Director or the DEQ shall specify the deficiencies in writing. The Permittee shall address the specified deficiencies within a reasonable time period established by the Director or the DEQ taking into account the tasks to be performed, and submit the revised submission, as necessary, to the DEQ for approval.

5. If the revised submission is disapproved, the Director or the DEQ will notify the Permittee of the deficiencies in writing and specify a schedule for the Permittee to address the deficiencies and resubmit the submission to DEQ. The Permittee shall address the deficiencies identified by DEQ, and forward the revised submission within the time period specified by DEQ. In the event the Permittee disagrees with the DEQ's disapproval of the revised submission, the Permittee shall notify the DEQ in writing and the disagreement shall be resolved in accordance with the Dispute Resolution provision in Permit Condition I.L. of this Permit.

L. DISPUTE RESOLUTION

1. Except as otherwise provided in this Permit, in the event that the Permittee disagrees, in whole or in part, with Department disapproval of any submission required by this Permit, the Permittee shall notify the Department in writing of its objections, and the basis thereof, within fourteen (14) days after receipt of the Department's written disapproval. Such notice shall set forth the specific matters in dispute, the position(s) the Permittee asserts which should be adopted as consistent with the requirements of the Permit, the basis for the Permittee's position, and supporting documentation considered necessary for the Department's determination.
2. The Department and the Permittee shall have an additional fourteen (14) days from the Department's receipt of the notification to meet or confer to resolve any disagreement or dispute. In the event agreement is reached, the Permittee shall submit the revised submission and implement the same in accordance with such agreement.
3. In the event the Permittee and the DEQ are not able to reach an agreement on the dispute items within the additional 14-day period, the Department will notify the Permittee in writing of its decision on the dispute and the Permittee shall comply with the terms and conditions of the Department's decision in the dispute, subject to Permittee's appeal rights as described in Permit Condition I.L.4, below, and as otherwise may exist. The Permittee does not waive and fully reserves its rights to assert any and all available defenses in a proceeding to enforce this Permit.
4. In the event the Permittee disagrees with DEQ's disapproval of a submission or revised submission and the DEQ's written decision regarding dispute items, the Permittee may file an appeal with the Director within 30 days of the disapproval (as provided for in Rule 2A:2 of the Supreme Court of Virginia).

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MODULE II FACILITY-WIDE CORRECTIVE ACTION

A. CORRECTIVE ACTION FOR CONTINUING RELEASES; PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

1. Section 3004(u) of RCRA, 42 U.S.C. § 6924(u), and regulations codified at 40 CFR § 264.101, provide that all permits issued after November 8, 1984, must require corrective action as necessary to protect human health and the environment for all releases of hazardous waste or hazardous constituents from any solid waste management unit (“SWMU”) at the facility, regardless of when waste was placed in the unit.
2. Under Section 3004(v) of RCRA, 42 U.S.C. § 6924(v), and 40 CFR § 264.101(c), the Department may require that corrective action at a permitted facility be taken beyond the facility boundary where necessary to protect human health and the environment, unless the owner or operator of the facility concerned demonstrates to the satisfaction of the Department that, despite the owner or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such action.
3. Section 3005(c)(3) of RCRA, 42 U.S.C. § 6925(c)(3), and 40 CFR § 270.32(b) provide that each RCRA permit shall contain such terms and conditions as the Department determines necessary to protect human health and the environment.

B. CORRECTIVE MEASURES IMPLEMENTATION

Beazer East, Inc. (Beazer) entered into an Administrative Order on Consent (the “Consent Order”) with EPA on April 24, 1991 pursuant to Section 3008(h) of RCRA to address corrective action requirements under RCRA applicable to the Site. The Consent Order required Beazer to implement certain interim measures, to complete a RCRA Facility Investigation (“RFI”) and to complete a Corrective Measures Study (“CMS”) in connection with the Site. CSX Transportation Inc. (“CSXT”) subsequently acquired the Site from Beazer on March 21, 1997. The obligations of the Order were transferred from Beazer to CSXT effective April 22, 1998. Based on the findings reported in the RFI, EPA concluded that past operations at the facility resulted in soil, sediment and groundwater contamination. The final remedy for the Site is described in the Final Decision and Response to Comments (“FDRTC”) document issued by EPA on December 21, 2009.

The activities required in this Permit provide for the installation, operation and maintenance

of the remedy described in the FDRTC and the Statement of Basis issued by EPA on July 29, 2009. The Permittee shall include a preliminary schedule for the completion of those activities in the Corrective Measures Implementation Work Plan that is to be submitted to DEQ/EPA for review and approval. The Permittee shall complete the activities in accordance with the DEQ/EPA approved schedule and any modifications thereto.

The goal of the remedy for facility-wide corrective action is to ensure the overall protection of human health and the environment. The details of the facility-wide corrective action are summarized below and will be described in detail in Corrective Measures Implementation Work Plans required by this Permit and Attachment C. Minor modifications in the activities, studies, techniques, procedures, designs or schedules utilized in carrying out the requirements of this Permit and necessary for the completion of the remedy may be made by written agreement of the Project Coordinators.

1. Demolition of buildings in areas where active remediation is required to facilitate construction of the corrective measures;
2. Installation of a slurry wall to contain the source area and control groundwater migration away from the source area. The source area consists of the former treatment area: (Area of Concern (“AOC”) 1 – Closed Surface Impoundment; AOC 2A – Creosote Unloading Area and Treatment Area; northern part of AOC 2B – Drip Tracks; AOC 2C – Former Tanks; AOC 3 – Container Storage Areas; northern part of AOC 4 – Temporary Drum Storage Areas; and AOC 6 – Water Supply Pond);
3. Excavation of targeted surface soils, subsurface soils and sediments outside the slurry wall containment area and consolidation of the excavated material inside the slurry wall containment area beneath an engineered cap to preclude future potential exposure to the excavated material by receptors.
4. Restoration of excavated areas including backfilling with clean soil and establishing vegetative cover, and restoration of the Eastern Drainage Ditch (“EDD”) area;
5. Recovery of free product using recovery wells installed in the treatment area (AOC 2A) and northern portion of the drip track area (AOC 2B) to the extent practicable;
6. Treatment of groundwater outside of the slurry wall containment area using a combination of targeted in situ chemical oxidation to the extent practicable, oxidative bioremediation, and natural intrinsic attenuation processes. Groundwater monitoring will be conducted to evaluate the effectiveness and progress of treatment and natural attenuation processes;
7. Dewatering, backfilling and capping of the former water supply pond (AOC 6);

8. Abandoning the water former water supply well (PW-1) in the former pump house;
9. Long-term monitoring and operation and maintenance (“O&M”) including: monitoring the performance of the containment system, inspection and maintenance of the cap and other site areas, free product recovery operations, monitored natural attenuation of groundwater, and monitoring and maintenance of institutional controls; and,
10. Implementation of institutional and engineering controls to prohibit activities that may interfere with the engineered remedy and restrict or prevent activities that may result in unacceptable risk to human health and the environment. The following institutional controls will be used to ensure the short and long-term reliability of the remedy. Institutional controls to be utilized at the Site will:
 - a. prohibit the use of the Site for residential purposes (including single family homes, multiple family dwellings, schools, day care centers, child care centers, apartment buildings, dormitories, other residential-style facilities, hospitals, and in-patient health care facilities);
 - b. prohibit the use of groundwater from beneath the Site;
 - c. restrict subsurface soil excavation at the Site except in conformance with an appropriate soil management plan;
 - d. restrict activities that would interfere with or adversely impact the integrity of the cap or slurry wall; and
 - e. require that the cap over the containment area be periodically inspected and maintained.

Institutional controls will be implemented at the Site through the following mechanisms:

1. Within 90 days after the approval of the final CMI Report, the Permittee shall prepare a declaration of restrictive covenants or similar instrument consistent with applicable requirements under the laws of the Commonwealth of Virginia. The declaration of restrictive covenants or similar instrument will be recorded with the real property records for the Site such that prospective purchasers of the Site will have constructive notice of land use restrictions. The declaration of restrictive covenants or similar instrument will contain the land use controls described above and will be recorded with the land records in the office of the clerk of the circuit court for the jurisdiction in which the Site is located within ninety (90) days of executing the declaration of restrictive covenants or similar instrument. The current owner and future owners of the Site will be obligated to comply with the recorded

declaration of restrictive covenants or similar instrument because the activity and use restrictions will run with the land.

2. A notification to prohibit well drilling under Virginia's Private Well Regulations, 12VAC 5-630-380, will be provided by the Permittee to the local health district (Henrico Health Department) in writing describing the nature and extent, including a map, survey description, and geographic coordinates of the facility-related contaminated groundwater located at the Site and offsite. The notice will be updated every two (2) years or such longer interval as may be approved by DEQ to reflect the latest contaminated groundwater plume boundary. A copy of the notification will be provided to DEQ/EPA.

C. EVALUATION OF THE SELECTED REMEDY

Commencing one year from the submittal date of the final CMI Report, the Permittee shall submit an annual progress report on the remedy performance. If the Department determines that the selected remedy will not comply with the media clean-up requirements, the Department may require the Permittee to perform additional studies and/or perform modifications to the existing remedy. If necessary, the Department or the Permittee may seek modification of this Permit pursuant to 40 CFR § 270.41 or § 270.42 and § 124.5 to implement modifications to the existing remedy.

D. EMERGENCY RESPONSE; RELEASE REPORTING

1. Emergencies

If, at any time during the term of this Permit, the Permittee discovers that a release of hazardous waste or hazardous constituents at or from the Facility is presenting or may present an imminent and substantial endangerment to human health or the environment, the Permittee shall:

- a. Notify the Department as soon as practicable of the source, nature, extent, location and amount of such release, the endangerment posed by such release and the actions taken and/or to be taken, to the extent known, to address such release. Such notification shall be confirmed in writing within five (5) days after discovery of such release.
- b. Unless otherwise directed by the Department, immediately take such actions as are necessary and appropriate to address such release.

2. Releases

The Permittee shall notify the Department in writing of the nature, source, extent,

location of a release of hazardous waste or hazardous constituents at or from the Facility within five (5) days after discovery of such release provided that:

- a. The release is not being addressed by corrective measures at the time of such discovery.
 - b. The release is not being addressed pursuant to Permit Conditions II.D.1., Emergency Response.
3. If, based on the information submitted in Permit Condition II.D.2, a release has not been adequately remediated to be protective of human health and the environment, the Department may require the SWMU and/or AOC to be included in a RCRA Facility Investigation or may require Interim Measures (see Permit Section II.F.2).
 4. Nothing in this Permit shall limit the Department's authority to undertake or require any person to undertake response action or corrective action under any law, including but not limited to, Sections 104 or 106 of CERCLA, 42 USC § 9604 or 9606, and Section 7003 of RCRA, 42 USC § 6973. Nothing in this Permit shall relieve the Permittee of any obligation it may have under any law, including, but not limited to, Section 103 of CERCLA, to report releases of hazardous waste, hazardous constituents or hazardous substances to, at or from the facility.

E. GUIDANCE DOCUMENTS

Any corrective action performed at the facility shall be in general accordance with applicable EPA RCRA corrective action guidance available at http://www.epa.gov/reg3wcmd/ca/ca_resources.htm.

F. SOLID WASTE MANAGEMENT UNIT (SWMU) ASSESSMENT

1. The Permittee shall notify the Department and the EPA Region 3, in writing, of any newly identified SWMU at the facility, no later than thirty (30) days after the date of discovery. The notification shall include the following information, if known:
 - a. A description of the SWMU's type, function, dates of operation, location (including a map), design criteria, dimensions, materials of construction, capacity, ancillary systems (e.g., piping), release controls, alterations made to the unit, engineering drawings, and all closure and post-closure information available, particularly whether wastes were left in place.
 - b. A description of the composition and quantities of solid wastes processed by the unit with emphasis on hazardous wastes and hazardous constituents.

- c. A description of any release (or suspected release) of hazardous waste or hazardous constituents originating from the unit. Include information on the date of release, type of hazardous waste or hazardous constituents, quantity released, nature of the release, extent of release migration, and cause of release (e.g., overflow, broken pipe, tank leak, etc.). Also, provide any available data that quantifies the nature and extent of environmental contamination, including the results of soil and/or groundwater sampling and analysis efforts. Likewise, submit any existing monitoring information that indicates that a release of hazardous waste or hazardous constituents has not occurred or is not occurring. The Permittee may refer to information regarding releases previously submitted to the Department under Permit Condition II.D.
 - d. A discussion of the need for and feasibility of implementing interim measures immediately, (see Permit Condition II.E. for the use of guidance concerning the implementation of Interim Measures).
 2. Upon receipt of the notification of any newly identified SWMU, the Department will determine the need for corrective action at such SWMU. If corrective action is necessary to protect human health or the environment, the Department will determine whether a RCRA Facility Investigation will be performed and the need for and scope of any Interim Measures.
 3. Within sixty (60) days after receipt of the Director's determination that a RCRA Facility Investigation or Interim Measure is necessary, the Permittee shall submit a RCRA Facility Investigation Work Plan or Interim Measures Work Plan for the newly identified SWMU. The Department's determination shall either specify the media and/or parameters to be investigated or shall require the Permittee to propose and justify the selection of media and/or parameters.
 4. Within the time specified in the approved RCRA Facility Investigation ("RFI") or Interim Measures ("IM") Work Plan, the Permittee shall submit the RFI or IM Report. The RFI or IM Report will provide all data necessary for the Department to determine whether a Corrective Measures Study ("CMS") or additional IM Work Plan is required.
 5. In lieu of a separate RCRA Facility Investigation, the Permittee may propose either to incorporate any newly identified SWMU into an ongoing RCRA Facility Investigation or to submit a proposal for the performance of corrective measures at such newly identified SWMU in accordance with the selected remedy for the Site.

Any such proposal shall be submitted to the Department along with notification of the discovery of the SWMU(s).

6. If, on the basis of the RFI or IM Report, and any other relevant information, the Department determines that additional remediation is necessary for those releases from the newly discovered SWMU which threaten human health and the environment, the Permittee will be required to conduct a CMS or submit an additional IM Work Plan.
7. Within sixty (60) days after receipt of the Director's determination that a CMS is necessary, the Permittee shall submit to the Department for approval a CMS Work Plan. The CMS Work Plan shall include a schedule for expeditious performance of the study. The plan must be approved by the Department in accordance with Permit Condition I.K.
8. Within 90 days of receipt of the Director's written approval of the CMS Work Plan, the Permittee shall begin implementation of the approved CMS Work Plan. In accordance with the terms and schedules in the approved CMS Work Plan, the Permittee shall submit to the Department for the Director's approval, a CMS Report which recommends a Corrective Measure(s) for the newly discovered SWMU.

G. FINANCIAL ASSURANCE

1. Cost Estimate Updates
The cost estimate for completing the approved remedy(ies) shall be updated pursuant to the development of more detailed information (e.g., Corrective Measure Design) and any modifications to the approved remedy(ies).
2. Financial Assurance Demonstration
Within thirty (30) calendar days of approval of the initial cost estimate for financial assurance, the Permittee shall demonstrate compliance with financial assurance to the Department in accordance through the use of applicable mechanisms provided in 40 CFR § 264.145 for completing the approved remedies in accordance with 40 CFR § 264.101(b). Within thirty (30) calendar days of approval of any revised cost estimate (see Permit Condition II.G.1.), the Permittee shall demonstrate to the Department financial assurance for the updated cost estimates.

H. RECORDKEEPING

Upon completion of closure of any current or future SWMU, the Permittee shall maintain in the facility operating record, documentation of the closure measures taken.

I. ACCESS FOR CORRECTIVE ACTION OVERSIGHT

The Department and EPA and their authorized representatives shall have access to the Site in accordance with Permit Condition I.D.7 at all reasonable times for the purpose of monitoring compliance with the provisions of this Permit and overseeing the implementation of the selected remedy. The Permittee shall use its best efforts to obtain access to property beyond the boundaries of the facility at which corrective action is required by this Permit (see Section 3004(v) of RCRA, 42 USC § 6924(v) and 40 CFR § 264.101(c)); (1) for itself and any contractor of the Permittee for the purpose of taking corrective action required by this Permit, and (2) for the Department and EPA and their authorized representatives for the purposes described in this paragraph. (See Section 3004(v) of RCRA, 42 USC § 6924(v) and 40 CFR § 264.101(c)).

J. COMPLETION OF REMEDY

Within ten (10) days after receipt of notification by the Department that the remedy is complete, the Permittee shall submit a written certification to the Department, stating that the remedy has been completed in accordance with the requirements of this Permit. The certification must be signed by the Permittee and by an independent registered professional engineer registered in the Commonwealth of Virginia. In cases where no other Permit Conditions remain, the Permit may be modified not only to reflect the completion determination, but also to change the expiration date of the Permit to allow earlier expiration of the Permit in accordance with 40 CFR Part 124, and 40 CFR §§ 270.41 and 270.42, as applicable.

K. ATTACHMENTS TO PERMIT MODULE II

All activities, workplans, reports, and/or other deliverables required by Permit Module II, shall be conducted, and/or prepared in accordance with the applicable parts of Permit Attachment C. The Permittee may propose to the Director for approval, alternatives to Attachment C pursuant to 40 CFR § 270.41 or § 270.42 and § 124.5, as applicable.

ATTACHMENT A

**FACILITY DESCRIPTION AND DESCRIPTION OF KNOWN
SOLID WASTE MANAGEMENT UNITS,
HAZARD WASTE MANAGEMENT UNITS,
AND AREA'S OF CONCERN**

*Virginia Department of Environmental Quality
CSX Transportation, Inc. - Hazardous Waste Management Permit*

*Permit No.: VAD003121977
Effective September 16, 2010*

ATTACHMENT A

Facility Description

The facility (“Site”) is located in the eastern part of Henrico County, Virginia approximately 2.5 miles east of the City of Richmond, Virginia (**Figure A-1**). The Site comprises approximately 52 acres and is within a general industrial zone between Charles City Road and a double track rail line owned by CSX Transportation, Inc. (“CSXT”). (**Figure A-2**).

The Site was owned by Chesapeake and Ohio Railroad until it was purchased by Koppers Company, Inc. (“Koppers”) in 1948. Koppers initiated production of creosote-treated railroad ties at the Site in 1949. Wood ties were pressure treated with creosote to retard decay of the wood. Other wood treating methods were not used at the Site. Operations at the Site ceased in 1983, and the plant was decommissioned and equipment was removed thereafter. Koppers continued to own the Site after the wood treating facility was closed.

On June 20, 1988, BNS Acquisitions, Inc. (“BNS Acquisitions”), a Delaware corporation and a wholly-owned subsidiary of Beazer PLC, acquired more than 90 percent of the outstanding common stock of Koppers. BNS Acquisitions acquired the balance of the common shares of Koppers on November 14, 1988. On January 20, 1989, BNS Acquisitions merged with Koppers, and on January 26, 1989, Koppers Company, Inc. was renamed Beazer Materials and Services, Inc. (“BMS”). BMS subsequently changed its name to Beazer East, Inc. (“Beazer”) on April 16, 1990. On March 21, 1997, Beazer transferred title to the Site to CSXT.

The physical address and facility contact information is provided below:

Facility Address

CSX Transportation Inc.
2401 Charles City Road
Richmond, VA 23294

Facility Contact

Mr. Keith Brinker
CSX Transportation, Inc.
500 Water Street – J275
Jacksonville, Florida 32202
Phone: (904) 359-2228

Summary of Corrective Actions

Beazer entered into an Administrative Order on Consent (the “Consent Order”) with the United States Environmental Protection Agency (“EPA”) on April 24, 1991 pursuant to Section 3008(h) of RCRA to address corrective action requirements under RCRA applicable to the Site. The Consent Order required Beazer to implement certain interim measures, to complete a RCRA Facility Investigation (“RFI”) and to complete a Corrective Measures Study (“CMS”) in connection with the Site. After CSXT acquired the Site from Beazer on March 21, 1997, the obligations of the Consent

Order were transferred from Beazer to CSXT effective April 22, 1998. CSXT thereafter assumed responsibility for implementing the requirements of the Consent Order.

In compliance with the Consent Order, a Final RFI Report was submitted to EPA on October 29, 1996 (Dames & Moore, 1996) and combined the contents of the Phase I and II RFI Reports that had been previously submitted to EPA in 1994 and 1995, respectively. EPA approved the RFI Report in a letter dated January 27, 1997. Thereafter, a Human Health Risk Assessment Report was submitted to EPA on or about July 1, 1998, and a revised version of that document was submitted to EPA on July 19, 1999. An Ecological Assessment Report was also submitted to EPA on or about August 5, 1999. A Revised Baseline Ecological Risk Assessment Report was submitted to EPA on May 26, 2004. A proposed CMS Report was submitted to EPA on March 12, 2001, and remained under review by EPA and VADEQ until early 2006.

RFI Investigations

A RCRA Facility Assessment (“RFA”) was conducted at the Site by VADEQ. The RFA identified the following eight solid waste management units (“SWMUs”) at the Site designated as follows:

- The Closed Surface Impoundment;
- The Landfill;
- The Landfarm;
- The Drip Tracks ("Kickback Area")
- The Creosote Unloading Area;
- Container Storage Area No. 1;
- Container Storage Area No. 2; and
- Temporary Drum Storage Areas.

In addition to these SWMUs, four potential areas of concern (“AOCs”) were identified by EPA after the RFA was completed. The potential AOCs were designated as follows:

- The Water Supply Pond;
- The Treated Wood Storage Areas;
- The Treatment Area; and
- Two Former Underground Storage Tanks (“USTs”) and One Former Aboveground Fuel Tank.

The SWMUs and potential AOCs listed above were grouped for purposes of the RFI to form new AOCs based on conditions at the Site, media and constituents of interest, and proximity of the units. Using these criteria, the following AOCs were identified for study in the RFI.

- AOC 1 – Closed Surface Impoundment;
- AOC 2 – Creosote Unloading Area and Treatment Area (2A), Drip Tracks (2B), and Former Tanks (2C);
- AOC 3 – Container Storage Areas No. 1 (3A) and No. 2 (3B);
- AOC 4 – Temporary Drum Storage Areas;
- AOC 5 – Landfill (5A) and Landfarm (5B);
- AOC 6 – Water Supply Pond; and
- AOC 7 – Treated Wood Storage Areas.

AOC 1 – Closed Surface Impoundment

AOC 1 is the former surface impoundment which was closed as a RCRA regulated land-based unit. The closed surface impoundment is located in the northeastern portion of the Site just south of Charles City Road. The surface impoundment was in operation at the Site from 1948 to 1983. It had an estimated design capacity of 5,000 gallons and an approximate diameter of 180 feet (based on a closure survey). The former surface impoundment is estimated to have been six to eight feet deep at its deepest point based on currently available information. A dike of soil surrounded the surface impoundment and three aboveground tanks were located on an island in the center of the surface impoundment. During periods of operation, the area surrounding the tanks was filled with varying amounts of wastewater.

The surface impoundment was used as a spray-evaporation impoundment to complete the separation of the oil phase and the water phase during operation of the wastewater treatment system at the Site. Hazardous waste classified as K001 waste was generated and accumulated at the bottom of the surface impoundment during its operation. It was estimated that operation of the unit resulted in the disposal of 1,000 pounds of K001 waste each year. The actual amount of sludge that was produced varied with the level of production of treated wood at the Site.

As part of closure activities, sludge remaining in the surface impoundment plus one foot of soil liner material was removed for appropriate offsite disposal. Dike materials were then placed within the surface impoundment. A RCRA multi-layer landfill cap with a geosynthetic liner was placed over the unit, and the area was graded and seeded to minimize run-on, infiltration, and erosion. Closure of the surface impoundment was completed and approved by VBWM on 16 July 1985.

The closed surface impoundment is surrounded by a 6-foot high, 11-gauge wire fence with a 10-foot wide gate. The fenced enclosure encompasses an area approximately 0.69 acres in size. The closed surface impoundment is currently under post-closure care, which includes inspections, maintenance of the cover and fence, and semi-annual groundwater monitoring under the post-closure permit issued by the Virginia Department of Environmental Quality (“VADEQ”) in 2000.

AOC 2A – Creosote Unloading Area and Treatment Area

AOC 2A is located in the northwestern portion of the Site and consists of a former creosote unloading area, control building, and treatment area. The former control building is situated between the former unloading area to the west and the former treatment area to the east. In the creosote unloading area, creosote-containing preservative products were pumped from rail cars into three vertical holding tanks located within a bermed area on the west side of the control building. The creosote unloading area was approximately 100 feet by 70 feet in size. This area was used during the active life of the plant from 1948 through 1983. The rail line leading to this area was removed following the termination of wood treating operations and decommissioning of the plant.

In the treatment area, wood was treated in two cylinders using creosote preservation products. The elongated treatment cylinders sat on saddles within a concrete basin. The cylinders and basin were not covered by a roof or other structure. Piping leading to and from, and between treatment cylinders was present within the concrete basin. Creosote was transferred to the cylinders through a series of pipes operated from the control building. Wastewater generated during the treatment process was discharged into the surface impoundment. The holding tanks, equipment, piping, and pressure treating cylinders were removed during decommissioning of the plant; however, the concrete basin was not removed.

As described in the Consent Order, spillage reportedly occurred in the creosote unloading area during the unloading of creosote-containing preservative products from rail tank cars. Interim measures were conducted in the creosote unloading area in 1984 under the oversight of VADEQ and included excavation of approximately 400 cubic yards (“CY”) of creosote impacted soil from AOC 2A at the time of closure of the surface impoundment (AOC 1). Impacted soil was excavated from an area approximately 60 feet by 50 feet in size to a depth of 3 to 4 feet below ground surface (“bgs”) and properly disposed of offsite. This area was capped with clean backfill and re-vegetated with grass. Currently, the area is relatively flat and the grass cover is regularly maintained.

The control building was demolished as part of building demolition activities that took place at the Site during October and November 2009 in accordance with the Building Demolition Work Plan as approved by EPA on 13 July 2009.

AOC 2B – Drip Tracks

AOC 2B consists of former drip tracks that are located directly south of the treatment area (AOC 2A) and extend approximately 1,850 feet south from the treatment area. After treatment in the pressure cylinders, the treated wood was placed on small rail cars that were moved along the tracks that led south from the pressure cylinders. Excess preservative remaining on the surface of the wood

likely dripped off and onto the ground along the length of the tracks, forming "drip tracks." The railroad lines comprising the drip tracks were removed during decommissioning of the plant.

AOC 2C – Former Tanks

AOC 2C consists of two former, 10,000-gallon USTs located in the creosote unloading area and treatment area (AOC 2A) and one small aboveground storage tank ("AST") located at the former pump house. The USTs were reportedly used to supply heating fuel to the adjacent "boiler house" building. The USTs were excavated and the area backfilled after wood treating operations ceased in 1983. Following excavation, holes were cut into the tanks in anticipation of disposal but the tanks remained at the Site until 1995 when they were disposed of by Beazer East, Inc.

The AST consisted of a 50-gallon aboveground fuel storage tank that was mounted to the outside south wall of the pump house approximately four feet above the ground surface. The AST was emptied during decommissioning of the plant. The AST was removed and properly disposed of off-site when the pump house was demolished as part of demolition activities in October and November 2009 conducted in accordance with the approved Building Demolition Work Plan.

AOC 3A – Container Storage Area No. 1

AOC 3A consists of an area where a cinder block building approximately 20 feet by 20 feet in size was located in the northern portion of the Site, south of the former creosote unloading area and treatment area (AOC 2A), and southwest of the boiler house and container storage area no. 2 (AOC 3B). The cinder block building was constructed at approximately the same time that wood treating operations at the Site commenced. As described in the Consent Order, the cinder block building was used to store drums containing K001 waste, K001 impacted soils, and creosote materials. The building was demolished as part of demolition activities in October and November 2009 conducted in accordance with the approved Building Demolition Work Plan.

AOC 3B – Container Storage Area No. 2

AOC 3B consists of an area where containers were stored in the southern half of the former boiler house building. AOC 3B is located in the northern portion of the Site adjacent to and south of the creosote unloading area and treatment area (AOC 2A). The former boiler house building was constructed of concrete block, was approximately 25 feet by 40 feet in size, and included two entrances. The primary entrance was a garage door, oversized for truck access, located on the western side of the building. Secondary access was provided through an internal doorway within the boiler room along the east-west partition wall. Boiler room access was provided through openings along both the western and eastern sides of the building. The floor of the building was constructed of concrete with an internal, small inclined ramp located at the garage door entrance. The building was demolished as part of demolition activities in October and November 2009 conducted in accordance with the approved Building Demolition Work Plan.

AOC 4 – Temporary Drum Storage Areas

AOC 4 consists of two gravel-covered areas approximately 350 feet by 40 feet each in size that were used for temporary storage of drums containing sludge, soil, and water generated during closure of

the former surface impoundment (AOC 1). AOC 4 is located adjacent to and south of the closed surface impoundment (AOC 1). Prior to use for temporary drum storage, the area comprising AOC 4 contained roadways that were used to provide access to untreated wood storage areas.

AOC 5 – Landfill and Landfarm Areas

AOC 5 consists of landfill (AOC 5A) and landfarm (AOC 5B) areas located adjacent to each other at the southwestern corner of the Site. These areas were reportedly used for placement and land farming of sludge from wastewater treatment that took place in connection with wood treating operations. Debris, yard, and track cleanup materials also may have been placed in the landfill area. The landfill and landfarm areas are shown in Figure A-2 and are estimated collectively to be approximately 4 acres in size.

AOC 6 – Water Supply Pond

AOC 6 is an earthen pond located directly north of the former treatment area (AOC 2A) and the closed surface impoundment (AOC 1). The pond is approximately 130 feet by 80 feet in size, with an estimated depth of 4 feet. Water is present in the pond year round. An earthen berm and a security fence surround the pond.

When large volumes of water were required for the wood treatment process, water would be pumped from the water supply pond to the treatment area. Water from the onsite production well was used to maintain water supplies in the pond. Historical aerial photographs show that the pond was present at the Site prior to 1953.

AOC 7 – Treated Wood Storage Areas

AOC 7 consists of three areas located in the central and southern portions of the Site that were used to store treated and untreated wood. The wood storage areas encompassed three sets of rail tracks along the western boundary of the Site that continued through to the south end of the Site.

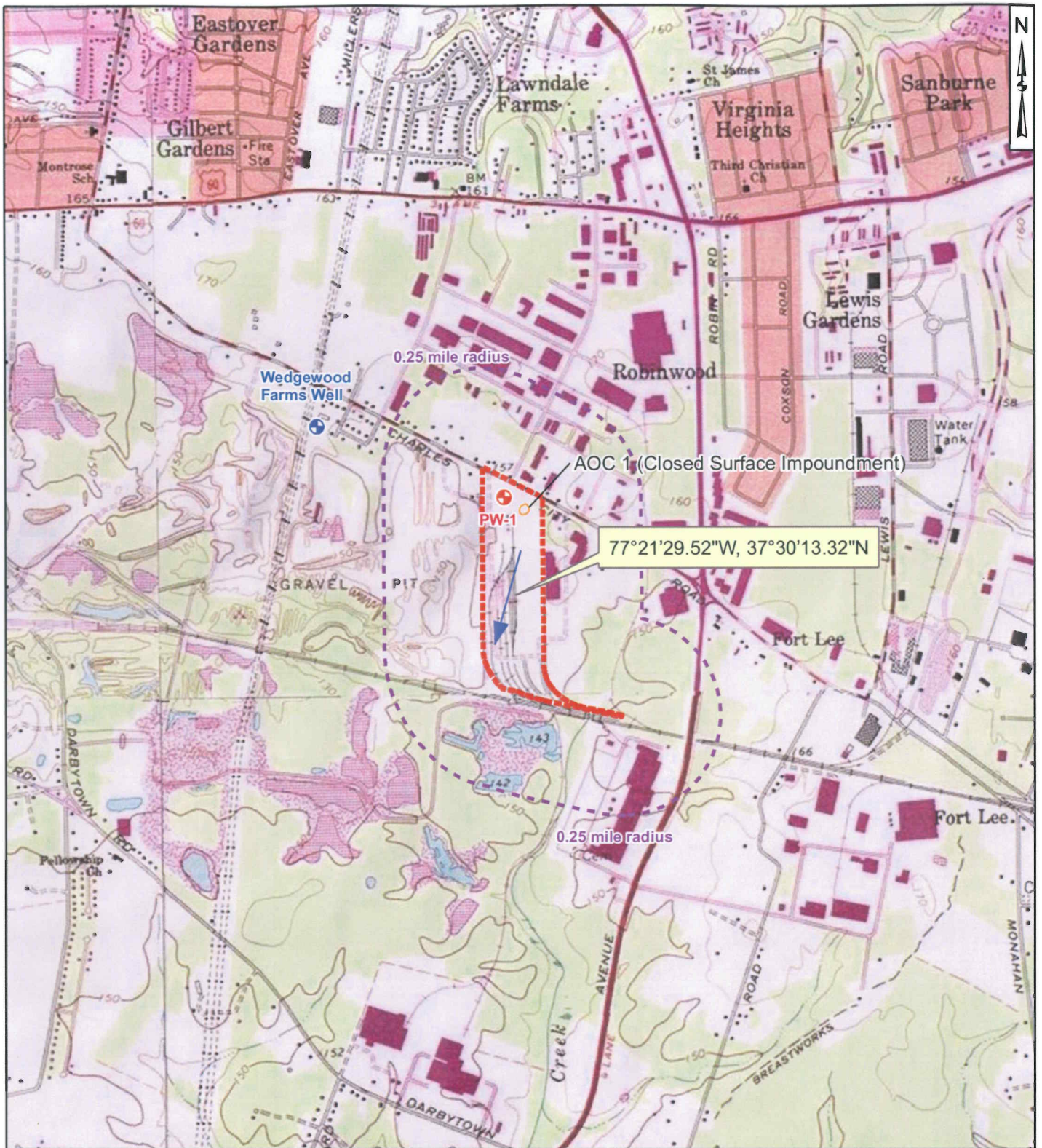
A review of historical aerial photographs during the development of the RFI Work Plan revealed that treated wood was stored in AOC 7 West and AOC 7 South while untreated wood was stored in AOC 7 East. AOC 7 South is co-located with AOC 5B (landfarm). The areas comprising AOC 7 are flat and currently covered with gravel, trees and other types of vegetation. The rail tracks no longer exist.

The locations of these seven AOCs are shown in Figure A-2. The AOCs have been investigated as described in the RFI Report that has been approved by EPA.

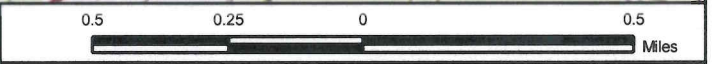
Figure A-1
SITE LOCATION MAP

*Virginia Department of Environmental Quality
CSX Transportation - Hazardous Waste Management Permit*

*Permit No.: VAD003121977
Effective September 16, 2010*



- ⊕ Former Production Well
- ⊕ Drinking Water Well
- 0.25 Mile Radius
- Area of Concern (AOC) 1
- Property Boundary
- ← Generalized groundwater flow direction



Site Location Map
 2401 Charles City Road
 Richmond, Virginia 23231

Note: The closest offsite water supply is located greater than 1/4 mile northwest of the site. Data is based on August 16, 2006 Environmental Data Resources Report.
 Source: ESRI USA Topo. Maps, 2008 and Henrico County, Virginia GIS Dept., 2008

Geosyntec
 consultants
 Kennesaw, GA

[CSX]
 29-OCT-2009

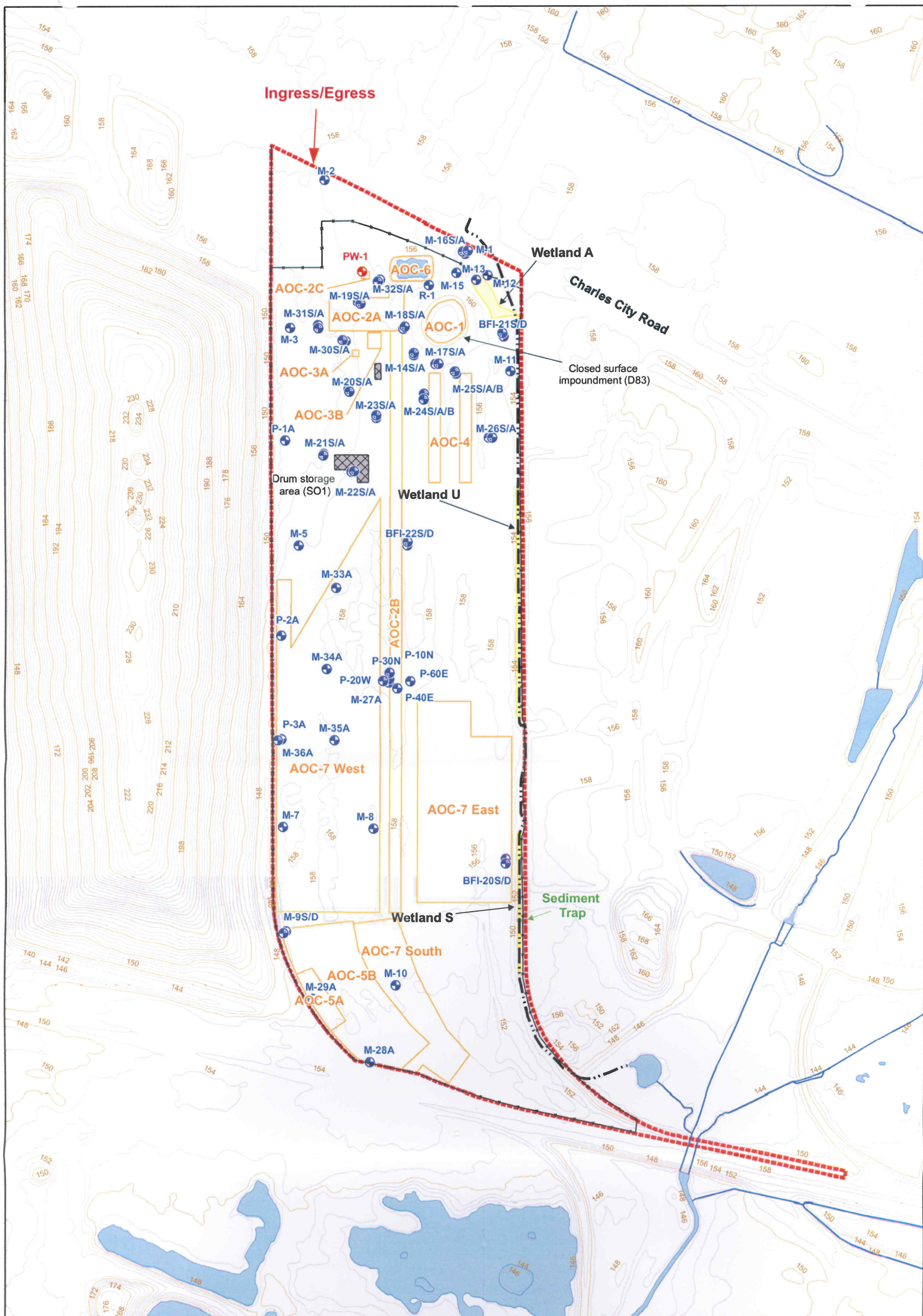
Figure
A-1

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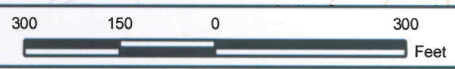
Figure A-2
SITE PLAN WITH
AOC LOCATIONS

*Virginia Department of Environmental Quality
CSX Transportation - Hazardous Waste Management Permit*

*Permit No.: VAD003121977
Effective September 16, 2010*



- Eastern Drainage Ditch (EDD)
 - - - Approximate Fence Line
 - ▣ Concrete Pad
 - ▣ Sediment Trap
 - ▣ Property Boundary
 - ▣ Jurisdictional Wetlands
 - ▣ Areas of Concern (AOC)
- Wells**
 - ⊕ Existing Monitoring Wells
 - ⊕ Former Production Well
- Topographic Contour (ft MSL; Contour Interval = 2 ft)**
- Major Contours
 - Minor Contours



Site Plan with AOC Locations
 2401 Charles City Road
 Richmond, Virginia 23231

Geosyntec
 consultants



Figure
J-1

Kennesaw, GA

29-OCT-2009

Source: ESRI World Imagery and County of Henrico, VA

N:\CSX\BIRMINGHAM\GIS\MAPS\FIG-J-1\FIG-J-1-01-09

ATTACHMENT B
CORRECTIVE MEASURES STUDY

*Virginia Department of Environmental Quality
CSX Transportation - Hazardous Waste Management Permit*

*Permit No.: VAD003121977
Effective September 16, 2010*

ATTACHMENT B CORRECTIVE MEASURES STUDY

Following receipt of comments regarding the proposed CMS Report, representatives of CSXT met with representatives of EPA and VADEQ in May 2006 to discuss an overall approach for addressing environmental conditions at the Site. In accordance with the process developed at that meeting, a series of interim deliverables were prepared and submitted to EPA and DEQ for review, ultimately culminating in the submission to EPA and DEQ of the final CMS Report for the Site on June 19, 2009. The final CMS Report was approved by EPA by letter dated July 13, 2009. A Statement of Basis summarizing the proposed corrective measures for the Site selected by EPA was issued by EPA for public comment on July 29, 2009. The Final Decision and Response to Comments was issued by the EPA on December 21, 2009.

The closed surface impoundment is situated among other SWMUs and AOCs at the Site. Both the closed surface impoundment and the other SWMUs and AOCs at the Site are likely to have contributed to the releases identified at the Site. The site-wide corrective measures addresses releases from the closed surface impoundment together with releases from the AOCs and SWMUs that have been investigated under the Consent Order. The remedy for the Site is described in the approved CMS Report dated 19 June 2009 and associated Responses to EPA Comments dated 9 March 2009 and 10 June 2009. The remedy for the Site is also summarized in the Statement of Basis issued on 29 July 2009 by EPA. A CMI Plan will be prepared and submitted to DEQ/EPA to further establish the details and requirements for the implementation of the selected remedy and based on Attachment C.

Seven corrective measures alternatives were developed for the CMS, presented in Section 5.0 and evaluated in Section 6.0 of the June 2009 CMS Report. The seven measures were assessed using a comparative analysis and a numerical ranking system. The alternatives were compared and assigned a relative ranking according to their effectiveness, implementability, and cost (Section 6.0, CMS Report). Additionally, the selected remedy was designed to meet the following objectives:

- To mitigate identified potential future human health and environmental risks to soil and sediment through a combination of soil excavation, consolidation, capping, containment, institutional controls, and engineering controls;
- To eliminate the source of COCs in the EDD area by removal of soil and sediment with COC concentrations above RGs;
- To effectively contain media in the treatment area using a slurry wall and cap where restoration of groundwater for its most beneficial use (i.e., drinking water) is considered impractical due to site conditions;

- To provide for targeted treatment and restoration of groundwater outside of the containment area to achieve remedial goals using a combination of intrinsic treatment processes (natural attenuation processes), targeted *in situ* treatment of groundwater by chemical oxidation and oxidative bioremediation, and monitored natural attenuation; and,
- To remove the free product to the extent practical using recovery wells.

The selected remedy for the Site includes the following components:

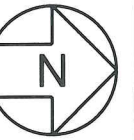
- Installation of a slurry wall to contain areas of highly impacted soils and groundwater and any areas of free product. The location of the slurry wall and the source area is shown in **Figure B-1**. The source area consists of the former treatment area (AOC 1, AOC 2A, the northern part of AOC 2B, AOC 2C, AOC 3, the northern part of AOC 4 and AOC 6);
- Excavation of targeted surface soils (0-1 ft bgs), subsurface soils (greater than 1 ft bgs) and sediments outside the slurry wall containment area and consolidation of the excavated material inside the slurry wall containment area beneath an engineered cap to preclude future potential exposure to the excavated material by receptors. Targeted excavation areas are shown in **Figure B-2**. The purpose of the surface soil excavation activities outside the slurry wall containment area is to reduce surface soil exposure to levels below the RGs. Additionally, subsurface soil within AOC 5, drainage ditch F, isolated wetland area X, isolated wetland area AA, and the EDD (soil and/or sediment), which contain COCs at concentrations above RGs, will be excavated and consolidated within the containment area. Subsurface soil will be excavated up to a maximum depth of 4 feet bgs in AOC 5, up a maximum depth of 2 feet bgs in the isolated drainage ditch/wetland areas, and up to a maximum depth of 2.5 feet in the EDD.
- Restoration of excavated areas including backfilling with clean soil and establishing vegetative cover, and restoration of the EDD area;
- Recovery of free product using recovery wells installed in the treatment area (AOC 2A) and the northern portion of the drip track area (AOC 2B) to the extent practical;
- Dewatering, backfilling and capping of the former water supply pond (AOC 6);
- Abandoning the former water supply well (PW-1) in the former pump house;

- Treatment of groundwater outside the slurry wall containment area using a combination of targeted in situ chemical oxidation and oxidative bioremediation, and natural intrinsic attenuation processes. The areas targeted for in situ chemical oxidation as shown on **Figure B-3**. Groundwater monitoring will be conducted to evaluate the effectiveness and progress of treatment and natural attenuation processes;
- Implementation of institutional and engineering controls to prohibit activities that may interfere with the engineered remedy and restrict or prevent activities that may result in unacceptable risk to human health and the environment; and
- Long-term monitoring and O&M including: monitoring the performance of the containment system, inspection/maintenance of cap and other site areas, free product recovery operations, monitored natural attenuation of groundwater, and monitoring/maintenance of institutional controls.
- The perimeter constituting the legal boundary of the former manufacturing facility will be surveyed. In addition, best efforts shall be made to define and survey the horizontal extent of the entire contaminated groundwater plume. These two geographic areas represent separate polygons which shall be described and provided to EPA and VDEQ in the following ways:
 - i. Survey description (metes & bounds) and
 - ii. Longitude/latitude of vertices of each polygon (in decimal degrees to at least seven decimal places, using a World Geodetic System (WGS) 1984 datum, and indicating west longitude as a negative number).

Figure B-1
SLURRY WALL CONTAINMENT AREA

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LEGEND

- M-32A ● Existing monitoring well for groundwater monitoring well network
- No chemicals of potential concern exceed the screening action level shown in Attachment B.1-Table 9A
- One or more chemicals of potential concern exceeds screening action level shown in Attachment B.1-Table 9A
- Exceedance limited to one or more dissolved metals with a concentration below EPA primary maximum contaminant level
- Proposed slurry wall for treatment area
- Approximate corrective measures area where both "S" Zone and "A" Zone groundwater exceed remedial goal outside containment area

AREAS OF CONCERN	
AOC 1	CLOSED SURFACE IMPOUNDMENT
AOC 2A	CREOSOTE UNLOADING AND TREATMENT AREA
AOC 2B	DRIP TRACKS
AOC 2C	FUEL TANK LOCATION
AOC 3	CONTAINER STORAGE AREA
AOC 4	TEMPORARY DRUM STORAGE AREA
AOC 5A	LANDFILL AREA
AOC 5B	LANDFARM AREA
AOC 6	WATER SUPPLY POND
AOC 7	TREATED WOOD STORAGE AREAS

**SLURRY WALL CONTAINMENT AREA
CSX TRANSPORTATION, INC. SITE
RICHMOND, VA**



DATE:	OCT-09	SCALE:	1"=100'
PROJECT NO.	GR4199.01	FILE NO.	FIG_J-6
DOCUMENT NO.	-	FIGURE NO.	J-6



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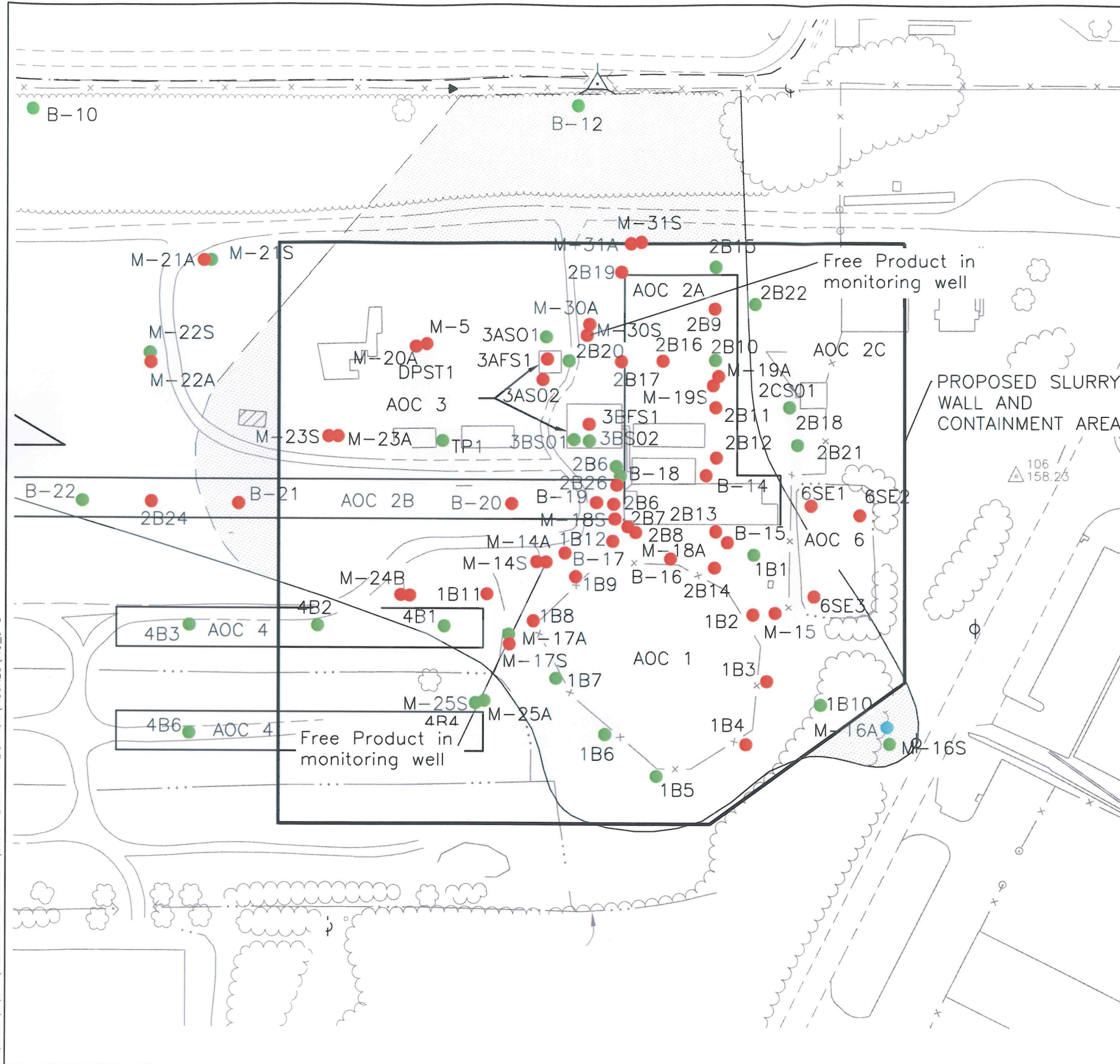
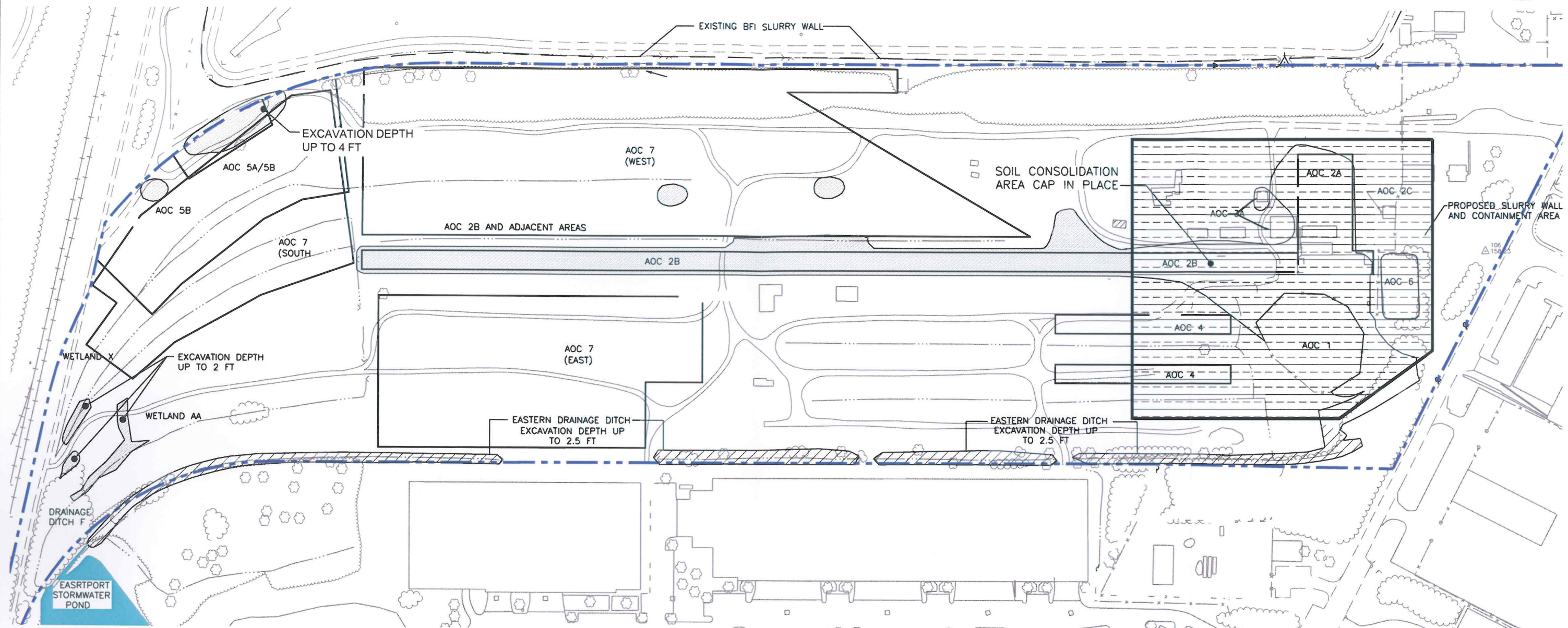


Figure B-2
CORRECTIVE MEASURES AREA
FOR SOIL AND SEDIMENT

*Virginia Department of Environmental Quality
CSX Transportation, Inc. - Hazardous Waste Management Permit*

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LEGEND

- Site Boundary AND approximate fenceline
- Excavation Area (0 to 1 feet unless otherwise noted)
- Drainage Ditch Excavation Area
- Proposed Slurry Wall for Treatment area

AREAS OF CONCERN	
AOC 1	CLOSED SURFACE IMPOUNDMENT
AOC 2A	CREOSOTE UNLOADING AND TREATMENT AREA
AOC 2B	DRIP TRACKS
AOC 2C	FUEL TANK LOCATION
AOC 3	CONTAINER STORAGE AREA
AOC 4	TEMPORARY DRUM STORAGE AREA
AOC 5A	LANDFILL AREA
AOC 5B	LANDFARM AREA
AOC 6	WATER SUPPLY POND
AOC 7	TREATED WOOD STORAGE AREAS

**CORRECTIVE MEASURES AREAS FOR SOIL AND SEDIMENT
CSX TRANSPORTATION, INC. SITE
RICHMOND, VA**



DATE:	OCT-09	SCALE:	1"=200'
PROJECT NO.	GR4199.01	FILE NO.	FIG_J-5
DOCUMENT NO.	-	FIGURE NO.	J-5

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Figure B-3
GROUNDWATER ABOVE
REMEDIAL GOALS

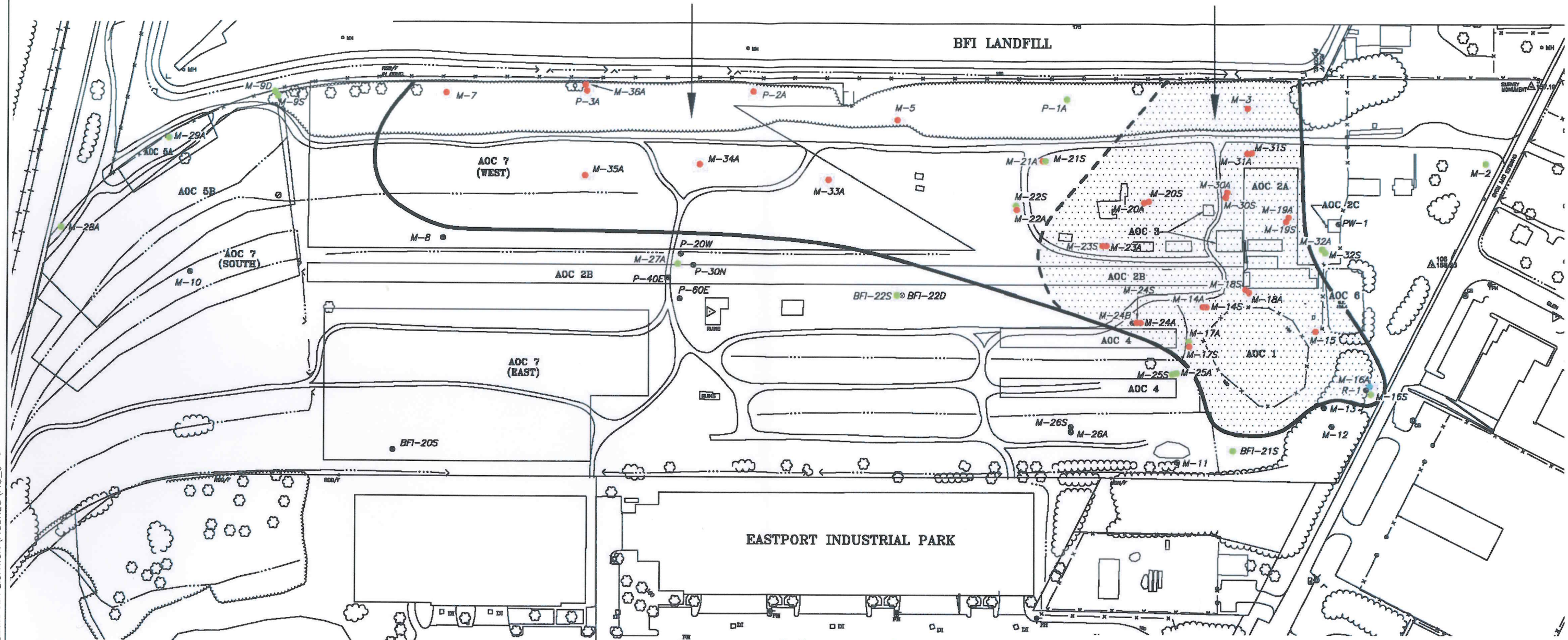
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Area for Corrective Measures Consideration "A" Zone Groundwater

Area for Corrective Measures Consideration for both "S" Zone and "A" Zone Groundwater



NOTES: REMEDIAL GOAL USED IS LOWEST GROUNDWATER REMEDIAL GOAL FOR COMMERCIAL/INDUSTRIAL WORKER, LIFETIME, CHILD RESIDENT, AND ADULT RESIDENT RECEPTORS

LEGEND:

- One or more chemicals of concern exceed remedial goal shown in Attachment B.1 - Table 9B
- No chemicals of concern exceed remedial goal shown in Attachment B.1 - Table 9B
- Exceedance limited to one dissolved metal above remedial goal
- Approximate limit for groundwater remedial area (17.7 acres)
- Approximate remedial area where both "S" Zone and "A" Zone groundwater exceed remedial goal

- M-32A ● Monitoring Well
- 106 ▲ Survey Benchmark
- 158.23 ▲ Survey Benchmark
- x - Fence
- 158.9 x x Surveyed Point Elevation (Feet msl)
- "S" Zone 0 to 20 feet depth interval
- "A" Zone 20 to 40 feet depth interval

AREAS OF CONCERN	
AOC 1	CLOSED SURFACE IMPOUNDMENT
AOC 2A	CREOSOTE UNLOADING AND TREATMENT AREA
AOC 2B	DRIP TRACKS
AOC 2C	FUEL TANK LOCATION
AOC 3	CONTAINER STORAGE AREA
AOC 4	TEMPORARY DRUM STORAGE AREAS
AOC 5A	LANDFILL AREA
AOC 5B	LANDFARM AREA
AOC 6	WATER SUPPLY POND
AOC 7	TREATED WOOD STORAGE AREAS

**GROUNDWATER ABOVE REMEDIAL GOALS
CSX TRANSPORTATION INC. SITE
RICHMOND, VA**



DATE:	OCT-09	SCALE:	1"=200'
PROJECT NO.	GR4199.03	FILE NO.	FIG_J-4
DOCUMENT NO.	-	FIGURE NO.	J-4



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ATTACHMENT C

**CORRECTIVE MEASURES IMPLEMENTATION
SCOPE OF WORK REQUIREMENTS**

*Virginia Department of Environmental Quality
CSX Transportation, Inc. - Hazardous Waste Management Permit*

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ATTACHMENT C
CORRECTIVE MEASURES IMPLEMENTATION
SCOPE OF WORK REQUIREMENTS

PURPOSE

This Scope of Work (SOW) requirements for the Corrective Measures Implementation (CMI) sets forth the requirements for the implementation of the design, construction, operation, maintenance, and monitoring of the corrective measures implementation in accordance with Permit Module II F. The CMI is required if the Department determines that corrective measures for releases of hazardous waste or hazardous constituents are necessary to protect human health and the environment. The Department will advise the Permittee of a determination that corrective measures for releases of hazardous waste or hazardous constituents are necessary on the basis of the RFI or any other information and the reasons, in writing and any amendments thereto.

If Corrective Measures are deemed necessary to protect human health and the environment, the Permittee will perform work in accordance with the requirements specified in this SOW to implement the corrective measures that have been selected by the Department in the Final Decision and Response to Comments (FDRTC), and any amendments thereto. The Permittee will furnish all personnel, materials, and services necessary for the implementation of the corrective measure or measures.

SCOPE OF WORK

The Corrective Measure Implementation SOW consists of four tasks:

1. **Task I – Corrective Measure Implementation Work Plan:**
 - A. Management Plan.
 - B. Community Relations Plan.
 - C. Sampling and Analysis Plan.
 - D. Corrective Measures Permitting Plan.
 - E. Supplemental Field Investigation Work Plan.

2. **Task II – Corrective Measure Design:**
 - A. Design Plans and Specifications.
 - B. Operation and Maintenance Plan.
 - C. Cost Estimate.

- D. Construction Quality Assurance Objectives.
 - E. Health and Safety Plan.
 - F. Sampling and Analysis Plan Revision.
 - G. Design Phases.
3. **Task III – Corrective Measure Construction:**
- A. Preconstruction Inspection and Meeting.
 - B. Inspections.
 - C. CMI Report.
4. **Task IV – Reports:**
- A. Quarterly Progress Reports.
 - B. Annual Progress Reports.
 - C. CMI Work Plan.
 - D. CMI 30% Design Report.
 - E. CMI 90% Design Report.
 - F. CMI 100% Design Report.
 - G. CMI Report.

Further specifications of the work outlined in this SOW will be provided in the Corrective Measures Implementation Work Plan and subsequent plans to be approved by the Department. Variations from the SOW will be made, if necessary, to fulfill the objectives of the Corrective Measures set forth in the FDRTC and any amendments thereto.

Additional studies may be needed as part of the Corrective Measures Implementation to supplement the available data. At the direction of VDEQ for any such studies required, the Respondent shall furnish all services, including field work, materials, supplies, plant, labor, equipment, investigations, and superintendence. Sufficient sampling, QA/QC procedures, testing and analysis shall be performed to optimize the required treatment and/or disposal operations system.

TASK I - CORRECTIVE MEASURE IMPLEMENTATION WORK PLAN

The Permittee shall prepare a Corrective Measure Implementation (CMI) Work Plan. The Permittee shall submit a CMI Work Plan to the Department for approval. A copy of the CMI Plan shall also be sent to the EPA Region 3.

The CMI Work Plan shall outline the design, construction, operation, maintenance and monitoring

of all actions taken to implement the Corrective Measures as defined in the Order and the FDRTC and any amendments thereto. This CMI Work Plan will include the development and implementation of several plans, which require concurrent preparation. It may be necessary to revise plans as necessary during the performance of this Order. The CMI Work Plan includes the following:

A. Management Plan

The Permittee shall prepare a Management Plan which will include:

1. Documentation of the overall management strategy for performing the design, construction, operation, maintenance, and monitoring of corrective measure(s).
2. Description of the responsibility and authority of all organizations and key personnel involved with the implementation.
3. Description of the qualifications of key personnel directing the CMI, including contractor personnel.
4. Conceptual design of the treatment and/or disposal system or any corrective measures to be installed as set forth in the requirements of the FDRTC.
5. An outline of proposed field activities necessary to complete the CMI Design.
6. Proposed locations of groundwater monitoring wells and a detailed well development plan.
7. Proposed discharge options for treated groundwater, with a proposed option upon which the CMI Design will be based.
8. Proposed detailed performance criteria for groundwater treatment.
9. A description of how the conceptual design is expected to meet the technical requirements of the FDRTC and any amendments thereto.
10. Flow chart and schedule of work to be performed during the CMI.

B. Community Relations Plan

The Permittee shall prepare a Community Relations Plan for the CMI. The Permittee shall

submit the Community Relations Plan for the CMI to the Department for approval. A copy of the Community Relations Plan shall also be sent to the EPA Region 3. The Permittee shall submit and/or revise the Community Relations Plan to include any material changes in the level of concern or information needs of the community during design and construction activities.

Specific activities which must be conducted during the design stage are the following:

1. The facility Community Relations Plan is to reflect knowledge of citizen concerns and involvement at this stage of the process.
2. Prepare and distribute a public notice and an updated fact sheet at the completion of engineering design.

C. Sampling and Analysis Plan

The Permittee shall prepare a Sampling and Analysis Plan. The Permittee shall submit the Sampling and Analysis Plan to the Department for approval. A copy of the Sampling and Analysis Plan shall also be sent to the EPA Region 3. The Permittee shall submit and/or revise the Sampling and Analysis Plan describing work to be performed during Corrective Measures Design, which shall be comprised of:

1. Data quality objectives for design phase activities.
2. A Quality Assurance Plan (QAP).
3. A Field Sampling Plan.
4. Data Management Plan describing the steps to be followed in compiling, organizing, and reviewing data collected in accordance with the Sampling and Analysis Plan and identifying the frequency of periodic data reviews and evaluations.

The Sampling and Analysis Plan will include the existing soil and well sampling and analysis program, with appropriate revisions as necessary.

D. Corrective Measures Permitting Plan

The Permittee shall prepare a Corrective Measures Permitting Plan. The Permittee shall submit the Corrective Measures Permitting Plan to Department for approval. A copy of the

Corrective Measures Permitting Plan shall also be sent to the EPA Region 3.

The Corrective Measures Permitting Plan shall identify all federal, state, interstate and local permits and approvals required for the implementation of the Corrective Measures required by this Permit, and for the implementation of any institutional controls required by this Permit. The plan shall also identify all agreements or other arrangements with adjoining landowners, if any, known by Permittee to be necessary for the implementation of the Corrective Measures, including, but not limited to, site access and easement agreements. The plan shall include a schedule indicating the time needed to obtain all such approvals and permits and to enter into such agreements and arrangements (this may be integrated with the design/implementation schedule items).

E. Supplemental Field Investigation Work Plan

If any additional hydrogeologic investigations or other field work is necessary for the proper design any proposed remediation system, the Permittee shall prepare and submit to the Department a Supplemental Field Investigation Work Plan setting forth the protocols and methodologies for any additional hydrogeologic investigations or other field work. The Permittee shall submit the Supplemental Field Investigation Work Plan to the Department for approval. A copy of the Supplemental Field Investigation Work Plan shall also be sent to the EPA Region 3. The work plan shall include an expeditious schedule for the completion of any such supplemental fieldwork.

TASK II - CORRECTIVE MEASURE DESIGN

The Permittee shall prepare design plans and specifications to implement construction for the corrective measure at the facility as defined in the Corrective Measures set forth in the FDRTC and any amendments thereto.

The Permittee shall submit the comprehensive design plans and specifications to the Department for approval. A copy of the comprehensive design plans and specifications shall also be sent to the EPA Region 3.

A. Design Plans and Specifications

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

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

- a. Compliance with all applicable or relevant environmental and public health standards.
 - b. Minimization of environmental and public health impacts.
 - c. Update schedules, if necessary, from commencement through completion of construction of the CMI.
2. Discussion of the technical factors of importance including:
 - a. Use of currently accepted environmental control measures and technology.
 - b. The feasibility of constructing the design.
 - c. Use of currently acceptable construction practices and techniques.
 3. Description of assumptions made and detailed justification of these assumptions.
 4. Discussion of the possible sources of error and references to possible operation and maintenance problems.
 5. Detailed drawings of the proposed design including:
 - a. Qualitative flow sheets.
 - b. Quantitative flow sheets.
 6. Tables listing equipment and specifications.
 7. Tables giving material and energy balances.
 8. Appendices including:
 - a. Sample calculations (one example presented and explained clearly for significant or unique design calculations).
 - b. Derivation of equations essential to understanding the report.
 - c. Results of laboratory or field tests.

B. Operation and Maintenance Plan

The Permittee shall prepare or revise the Operation and Maintenance (O&M) Plan to cover both implementation and long term maintenance of the corrective measure. The O&M Plan is to identify the processes to occur, submissions during O&M, and schedule for O&M activities consistent with remedial objectives set forth in the FDRTC and any amendments thereto.

The Permittee shall submit the O&M Plan to the Department for approval. A copy of the O&M Plan shall also be sent to the EPA Region 3. An initial O&M Plan shall be submitted simultaneously with the Preliminary Design document submissions, and the Final O&M Plan with the Final Design documents. The plan shall be composed of the following elements:

1. Description of normal O&M:
 - a. Description of tasks for operation.
 - b. Description of tasks for maintenance.
 - c. Description of prescribed treatment or operation conditions.
 - d. Schedule showing frequency of each O&M task, also to be included in the Management Plan.
2. Description of potential operating problems:
 - a. Description and analysis of potential operation problems.
 - b. Sources of information regarding problems.
 - c. Common and/or anticipated remedies.
3. Description of routine monitoring and laboratory testing:
 - a. Description of monitoring tasks.
 - b. Description of required laboratory tests and their interpretation.
 - c. Required QA/QC.

- d. Schedule of monitoring frequency and date, if appropriate, when monitoring may cease.
4. Description of alternate O&M:
 - a. Should systems fail, alternate procedures to prevent undue hazard.
 - b. Analysis of vulnerability and additional resource requirements should a failure occur.
5. Safety plan:
 - a. Description of precautions, of necessary equipment, etc., for site personnel.
 - b. Safety tasks required in event of systems failure.
6. Description of equipment:
 - a. Equipment identification.
 - b. Installation of monitoring components.
 - c. Maintenance of site equipment.
 - d. Replacement schedule for equipment and installed components.
7. Records and reporting mechanisms required:
 - a. Daily operating logs.
 - b. Laboratory records.
 - c. Records for operating and maintenance costs.
 - d. Mechanism for reporting emergencies.
 - e. Personnel and maintenance records.

- f. Contents of periodic progress reports described in Task IV.A and providing details on how Task IV.A. requirements will be met.
- g. Monthly/annual reports to State agencies.

C. Cost Estimate

The Permittee shall develop cost estimates of the Corrective Measures for the purpose of assuring that the Respondent has the financial resources necessary to construct and implement the corrective measure. The cost estimate developed in the Corrective Measure Study shall be refined to reflect the more detailed/accurate design plans and specifications being developed. The cost estimate shall include both capital and operation and maintenance costs. The Permittee shall submit the cost estimates of the Corrective Measures to the Department for approval. A copy of the cost estimates of the Corrective Measures shall also be sent to the EPA Region 3.

D. Construction Quality Assurance Plan

The Permittee shall prepare and submit a Construction Quality Assurance (CQA) Plan to the Department for approval. A copy of the CQA Plan shall also be sent to the EPA Region 3. The CQA Plan shall identify and document the objectives and framework for the development of a construction quality assurance program including, but not limited to the following: responsibility and authority; personnel qualifications; inspection activities; sampling requirements, and documentation. The CQA Plan shall be based upon CQA requirements as specified under 40 CFR §264.19, Construction quality assurance program, and other EPA guidance for such CQA activities.

E. Health and Safety Plan

The Permittee shall prepare a Health and Safety Plan or modify the Health and Safety Plan developed for the RCRA Facility Investigation to address the activities to be performed at the facility to implement the corrective measures. The Health and Safety Plan shall be in accordance with the requirements specified in Attachment H of this Permit. The Permittee shall prepare and submit a Health and Safety Plan to the Department and to the EPA Region 3.

Compliance with the OSHA Regulations is not under the jurisdiction of the Department. Therefore, the Health and Safety Plan submittal to the Department and the EPA Region 3 is for the administrative record only and the submittal will not receive approval or disapproval by the Department. In the Commonwealth of Virginia, compliance and enforcement of the

OSHA regulations under 29 C.F.R. 1910.120, falls under the authority of the Virginia Office of Safety and Health, the Virginia Department of Labor and Industry.

F. Sampling and Analysis Plan Revision

The Permittee shall update the Sampling and Analysis Plan, including the QAPP, during each phase of Design, as appropriate, to reflect changes in the following: responsibility and authority, personnel qualifications, inspection activities, sampling requirements, documentation, and other changes to the sampling and analysis program. The updated Sampling and Analysis Plan, including the QAPP, shall be submitted to the Department for approval. A copy of the updated Sampling and Analysis Plan, including the QAPP, shall also be sent to the EPA Region 3.

G. Design Phases

The design of the corrective measure should include the phases outlined below:

1. Preliminary (30%) CMI Design
 - a. The Permittee shall submit the 30% CMI Design Report when the design effort is approximately 30% complete. At this stage the Permittee shall have field verified the existing conditions of the facility. The 30% design shall reflect a level of effort such that the specifications may be reviewed to determine if the final design will provide effective, operable and usable corrective measures. Supporting data and documentation shall be provided with the design documents defining the functional aspects of the program. The 30% construction drawings shall reflect organization and clarity. The Permittee shall include with the 30% design submission, calculations reflecting the same percentage of completion as the designs they support.
 - b. Correlating plans and specifications. The project specifications to be included in the 30% CMI Design Report shall demonstrate that the Permittee has:
 - i. Coordinated and crosschecked the specifications and drawings.
 - ii. Completed the proofing of the edited specifications and required crosschecking of all drawings and specifications.
 - c. Equipment start-up and operator training.

The Permittee shall prepare, and include in the technical specifications governing treatment and or disposal systems; contractor requirements for providing: appropriate service visits by experienced personnel to supervise the installation, training covering appropriate operational procedures once the startup has been successfully accomplished.

2. Final (90% and 100%) CMI Design

The Permittee shall execute the required revisions and submit the final documents as draft Final (90% complete) CMI Design Report and Final (100% complete) CMI Design Report with reproducible drawings and specifications.

The Final CMI Design submittal shall consist of the Final Design Plans and Specifications (100% complete), the Permittee's Final Cost Estimate, the Final Draft Operation and Maintenance Plan, Final Quality Assurance Plan, Final Project Schedule, and Final Health and Safety Plan specifications. The quality of the design documents should be such that the Permittee would be able to include them in a bid package and invite contractors to submit bids for the construction project.

TASK III - CORRECTIVE MEASURE CONSTRUCTION

Following the Department's approval of the Final CMI Design Report, the Permittee shall develop and implement construction in accordance with procedures, specifications, and schedules in the Department's approved Final CMI Design Report and the Department's approved CMI Work Plan. During the Construction Phase, Permittee will continue to submit periodic progress reports. The Permittee shall also implement the elements of the approved O&M plan.

The Permittee shall update the Sampling and Analysis Plan, including the QAPP, during the construction phase, as appropriate, to reflect changes in the following: responsibility and authority, personnel qualification, construction quality assurance, inspection activities, documentation, and other changes affecting quality assurance.

The updated Sampling and Analysis Plan, including the QAPP, shall be submitted to the Department and to the EPA Region 3. DEQ approval of the updated Sampling and Analysis Plan, including the QAPP, during the construction phase, is not required prior to implementation; however, the Department and the EPA must be notified of the updated changes by correspondence prior to implementation of such changes.

If the Department does not concur with changes to the Sampling and Analysis Plan, including the QAPP, then the DEQ will notify the Permittee and their representative of such non-concurrence and construction will be suspended until the Department formally approves of further changes to the Sampling and Analysis Plan, including the QAP.

The Permittee shall conduct the following activities during construction:

A. Preconstruction Inspection and Meeting

The Permittee shall conduct a preconstruction inspection and meeting to:

1. Review methods for documenting and reporting inspection data.
2. Review methods for distributing and storing documents and reports.
3. Review work area security and safety protocol.
4. Discuss any appropriate modifications of the construction quality assurance plan to ensure that site-specific considerations are addressed.
5. Conduct a site walk-around to verify that the design criteria, plans, and specifications are understood and to review material and equipment storage locations.

The preconstruction inspection and meeting shall be documented by a designated person of the Permittee or their representative and the minutes of the preconstruction inspection and meeting shall be transmitted to all parties in attendance and/or which request the minutes.

B. Inspections

1. The Permittee will conduct inspections to monitor the construction and/or installation of components of the corrective measure. Inspections shall verify compliance with all environmental requirements and the Construction Quality Assurance Plan and include, but not limited to, review of air quality and emissions monitoring records, waste disposal records (e.g. RCRA transportation manifests), etc, as applicable. Inspections will also ensure compliance with all health and safety procedures. Treatment and/or disposal equipment will be operationally tested by the Permittee. The Permittee will certify that the equipment has performed to meet the purposes and intent of the specifications. Retesting will be completed where deficiencies are revealed.

2. When all construction is complete, the Permittee shall notify VADEQ for the purposes of conducting a final inspection. The final inspection will consist of a walk through inspection of the project site. The inspection is to determine whether the project is complete and consistent with contract documents and the VADEQ approved corrective measures. Any outstanding construction items will be identified and noted. If necessary, Permittee shall notify VADEQ upon completion of any outstanding construction items and another final inspection consisting of a walk-through inspection of the project site to confirm all outstanding items have been resolved.

C. CMI Report

Upon completion of construction and also an initial period of performance monitoring after starting, and in accordance with the schedule included in the Management Plan, the Permittee will prepare and submit a CMI Report to the Department for approval. A copy of the CMI Report shall also be sent to the EPA Region 3.

TASK IV- REPORTS

The Permittee shall prepare plans, specifications, and reports as set forth in Tasks I through III to document the design, construction, operation, maintenance, and monitoring of the corrective measure. The documentation shall include, but not be limited to the following:

A. Quarterly Progress Reports

The Permittee shall provide the Department and the EPA Region 3 with signed, periodic progress reports, as defined by the approved workplan, containing:

1. A description of the work performed during the preceding monitoring interval and estimate of the percentage of the CMI completed.
2. Summaries of all findings.
3. Summaries of all changes made in the CMI during the reporting period.
4. Summaries of all contacts with representative of the local community, public interest groups, or State government during the reporting period.

5. Summaries of system performance during the reporting period including a summary of all problems or potential problems encountered or anticipated during the reporting period.
6. Actions being taken to rectify problems.
7. Changes in personnel during the reporting period.
8. Projected work for the next reporting period.
9. Copies of daily reports, inspection reports, laboratory/monitoring data, and other information pertinent to the remediation or remediation systems.

B. Annual Progress Reports

The Permittee shall provide the Department and the EPA Region 3 with signed Annual Progress Reports. However, Annual Progress Report shall not be required for any year in which the Permittee is required to submit a Corrective Measures Five Year Assessment Report. The Annual Progress Report shall contain:

1. A narrative summary of principal activities conducted during the reporting period.
2. Graphical or tabular presentations of monitoring data, including but not limited to average monthly system pumping rates and throughput, efficiency, groundwater levels and flow direction, and groundwater quality.
3. A schedule of sampling and field activities to be performed in the following year.
4. An O&M Evaluation.

O&M Evaluation shall assess performance of the corrective measure over time and provide one basis for the Department's five-year Evaluation of the corrective measure. Annual O&M Evaluation shall include:

- a. Summarized data representing corrective measure performance during respective two-year intervals.
- b. Any proposed changes to the corrective measure and summary of changes that have been previously made.

- c. Isoconcentration maps for each contaminant of concern listed in the Permit.
- d. Statistical assessment of the progress of the corrective measure towards achievement of media clean-up standards.
- e. When appropriate notification that corrective action media clean-up standards have been achieved.

C. CMI Work Plan

The Permittee shall submit a CMI Work Plan as outlined in Task I. The QAPP, included with the CMI Work Plan, will be revised, as appropriate, throughout the CMI.

D. The 30% CMI Design Report

The 30% CMI Design Report shall include:

1. Draft Design Plans and Specifications reflecting 30% of design work to be completed.
2. A draft O&M Plan.
3. A preliminary cost estimate.
4. A revised project schedule, also to be included in a revised CMI Management Plan.

E. The 90% CMI Design Report

The 90% CMI Design Report shall include:

1. A summary of activities performed and data generated during Corrective Measure Design, including results and interpretation of treatability studies.
2. Draft detailed Corrective Measure Design Plans and Specifications reflecting 90% of design work to be completed.
3. Final performance criteria for the corrective measures, consistent with comments to have been provided by VADEQ on the Conceptual Design proposed in the Management Plan.

4. Proposal of means to evaluate system performance against media cleanup standards listed in the FDRTC and any amendments thereto.
5. A Final O&M Plan.
6. A revised Cost Estimate.
7. Revision to the Sampling and Analysis Plan, including the QAPP, to address sampling activities to be performed during the Corrective Measures Construction Phase, including the sampling activities, sample size, sample locations, frequency of testing, acceptance and rejection criteria, and plans for correcting problems as addressed in the project specification.
8. Sampling and construction activities to be performed during the Corrective Measure Construction Phase.
9. Proposed changes to the Project Schedule, if appropriate, with emphasis on short-term Construction schedule. These proposed changes in the schedule also will be included in the revised Management Plan.

F. Final (100%) CMI Design Report

The Permittee shall submit a Final (100%) CMI Design Report as outlined in Task II to this SOW to the Department and the EPA Region 3.

G. CMI Report

The Permittee shall submit the CMI Reports as outlined in Task III of this SOW to the Department and the EPA Region 3. The CMI Report shall describe activities performed during construction, provide actual specifications of implemented remedy, and provide a preliminary assessment of CMI performance. The CMI Report shall include, but not be limited to, the following elements:

1. Synopsis of the corrective measure and certification of the design and construction.
2. Explanation of any modifications to the Department's approved construction and/or design plans and why these were necessary for the project.
3. Listing of the criteria, established in the Department's approved CMI Work Plan, for judging whether the corrective measure is functioning properly, and also explaining

any modification to these criteria.

4. Certification by registered professional engineer, registered in the Commonwealth of Virginia, that the construction is complete, consistent with contract documents, and the Department's approved corrective measure, and that the equipment performs to meet the intent of the specifications.
5. Results of Facility monitoring, assessing the likelihood that the Corrective Measure will meet or exceed the media clean-up standards set forth in the FDRTC and any amendment thereto.

The CMI Report should include all of the daily inspection summary reports, inspection summary reports, inspection data sheets, problem identification and corrective measure reports, block evaluation reports, photographic reporting data sheets, design engineers' acceptance reports, deviations from design and material specifications (with justifying documentation), and as-built drawings.