

Virginia Department of Environmental Quality

**Hazardous Waste Management
Corrective Action Permit**

**Federal-Mogul Powertrain LLC
Blacksburg, Virginia**

EPA ID No: VAD054039961

**Effective Date
September 19, 2016**

**Modification Date
August 7, 2018**



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

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Hazardous Waste Management Corrective Action Permit

Permittee: Federal-Mogul Powertrain LLC
300 Industrial Park Road
Blacksburg, Montgomery County, Virginia 24060
EPA ID No.: VAD054039961

Pursuant to Chapter 14, Section 10.1-1426, Code of Virginia (1950), as amended and regulations promulgated thereunder by the Virginia Department of Environmental Quality (VDEQ), a Hazardous Waste Management Permit is issued to Federal-Mogul Powertrain LLC, (hereinafter referred to as the Permittee), located in Blacksburg, Virginia to conduct site-wide 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 Montgomery County, at latitude 37°11'32" North and longitude 80°23'52" West.

The Permittee shall comply with all terms and conditions set forth in this Permit including Permit Attachments A through D. If the Permit and the Permit Attachments conflict, the Permit conditions 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 and are cited in this Permit and the Permit Attachments, the regulatory citations will only be 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 (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 on the assumption that the information submitted in the permit application 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, § 270.42, and § 270.43, and shall also be grounds for initiation of an enforcement action. The Permittee shall

inform the VDEQ of any deviation from permit conditions or changes in the information provided in the application. In particular, the Permittee shall inform the VDEQ 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 19, 2016 and shall remain in effect until September 19, 2026 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.15.

September 19, 2016

Date Signed



Leslie A. Romanchik
Hazardous Waste Program Manager
Office of Financial Responsibility and Waste Programs

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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 VDEQ has, as deemed necessary, modified specific language from the permit application. Additional modifications are prescribed in the Permit conditions (Modules I and II), and thereby supersede the language of the Attachments to the extent that there is a direct conflict between the Attachments and Modules I and II of the Permit.

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DEFINITIONS

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 below, (a) through (l), shall supersede any definition of the same term given in 40 CFR Sections 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.

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.

- 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.2**).
- d. The terms “**Facility**” or “**site**” shall mean all contiguous portions of the Federal-Mogul Powertrain LLC, located in Blacksburg, Virginia, as identified in the physical description of the property (including structures, appurtenances, and improvements).
- 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 of any hazardous waste or hazardous constituents.
- 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 discernible 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 waste. Such units include any area at a facility at which solid wastes have been routinely and systematically released.

- l. 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.
- m. The term “**Days**” shall mean calendar days except as otherwise provided herein.

MODULE I - STANDARD CONDITIONS

I.A EFFECT OF PERMIT

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 with the applicable provisions of Title 9 of the Virginia Administrative Code, Agency 20, Chapter 60 (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. Compliance with this permit generally constitutes compliance, for the purposes of enforcement, with Chapter 14, Section 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 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 of Title 10.1, Code of Virginia (1950), as amended, or any other law governing protection of the public health or the environment.

I.A.1 Permit Actions

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.

I.B PERMIT MODIFICATIONS

Permit modifications at the request of the Permittee shall be accomplished as specified by 40 CFR § 270.42.

I.B.1 Renewal

This Permit may be renewed as specified in 40 CFR 270.10(h) and 9 VAC 20-60270.B.6., 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.

I.C SEVERABILITY

I.C.1 Provisions

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. 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 (40 CFR 124.16(a)(2)).

I.C.2 Permit is Stayed

In the event that a condition of this Permit is stayed for any reason, the Permittee shall continue to comply with conditions of the existing permit which correspond to the stayed conditions until final resolution of the stayed condition unless the Director determines compliance with the related applicable and relevant permit standards would be technologically incompatible with compliance with other conditions of the Permit which have not been stayed (40 CFR 124.16(c)(2)).

I.D DUTIES AND REQUIREMENTS

I.D.1 Duty to Comply

The Permittee shall comply with all conditions of this Permit, except that the Permittee need not comply with the conditions of this Permit to the extent and for the duration such noncompliance is authorized by an emergency permit under 40 § CFR 270.61. Any permit noncompliance, except under the terms of an emergency permit, constitutes a violation of Title 10.1 Code of Virginia (1950), as amended, and regulations promulgated there under and grounds for enforcement action; for Permit termination, revocation and reissuance, or modification; or for denial of a Permit renewal application.

I.D.2 Duty to Reapply

If the Permittee wishes 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. The Permittee shall submit a new and complete permit application at least 180 days before the expiration date of the Permit, unless a later date has been granted by the Director.

- a. Pursuant to 40 CFR 270.10(h), the Director shall not grant permission for an application to be submitted later than the expiration date of the existing permit (40 CFR § 270.30(b)).

I.D.3 Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for the Permittee 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)).

I.D.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)).

I.D.5 Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (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 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 this Permit (40 CFR § 270.30(e)).

I.D.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)).

I.D.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 premises 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 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 purposes of assuring permit compliance or as otherwise authorized by VHWMR, any substances or parameters at any location (40 CFR § 270.30(i)).

I.D.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(l)(1)). This notice shall include a description of all incidents of noncompliance reasonably expected to result from the proposed changes.

I.D.9 Anticipated Noncompliance

The Permittee shall give advance written notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements (40 CFR § 270.30(l)(2)).

I.D.10 Twenty-four Hour Reporting

The Permittee shall report any noncompliance which may endanger health or the environment to the Director. Information shall be provided orally within twenty-four (24) hours from the time the Permittee becomes aware of the circumstances. The information specified in "a" and "b" below shall be included as information which 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 supply sources shall be reported.
- 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, shall be reported.
- c. The description of the occurrence and its cause shall include:

- i Name, address, and telephone number of the owner or operator;
 - ii Name, address, and telephone number of the facility;
 - iii Date, time, and type of incident;
 - iv Names and quantities of material(s) involved;
 - v The extent of injuries, if any;
 - vi An assessment of actual or potential hazards to the environment and human health outside the facility, where this is applicable; and
 - vii Estimated quantity and disposition of recovered material that resulted from the incident.
- 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 a description of the noncompliance and its cause; the periods of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and 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 only if the Director waives that requirement following verbal notification and the Permittee submits a written report within (15) days of the time the Permittee becomes aware of the circumstances (40 CFR § 270.30(l)(6)(iii)).

I.D.11 Other Noncompliance

The Permittee shall report all other instances of noncompliance not otherwise reported pursuant to **Permit Conditions I.D.10, I.D.12, and I.E.1** at the time monitoring reports are submitted. The reports shall contain the information listed in **Permit Condition I.D.10** (40 CFR § 270.30(l)(10)).

I.D.12 Other Information

Whenever the Permittee becomes aware that he 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(l)(11)).

I.E MONITORING AND RECORDS

I.E.1 Monitoring Reports

Monitoring shall be performed and results shall be reported at the intervals specified in the Permit and in work plans, monitoring and implementation plans required by the Permit.

I.E.2 Samples and Measurements

Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the waste to be analyzed must be the appropriate method specified in Appendix I of 40 § CFR 261 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. Additionally, the

laboratory must be accredited for the analytical method, matrix and target analyte (where applicable) by the Virginia Environmental Laboratory Accreditation Program (VELAP).

I.E.3 Records of All Monitoring Information

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, 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.

a. Records of monitoring information shall include at a minimum:

- i The date, exact place, and time of sampling or measurements;
- ii The individual(s) who performed the sampling or measurements;
- iii The date(s) analyses were performed;
- iv The individual(s) who performed the analyses;
- v The analytical techniques or methods used; and
- vi The results of such analyses. (40 CFR § 270.30(j))

I.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.

I.G TRANSFER OF PERMITS

This Permit is not transferable to any person, except after notice to the Director. The Director may require modification or revocation and reissuance pursuant to 40 CFR 124.5, 270.40, 270.41, 270.42, and 270.43 to change the name of the Permittee and incorporate such other requirements as may be necessary. 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 40 CFR Part 264 and 40 CFR Part 270 and at the same time shall send a copy of such notice to the Director (40 CFR § 264.12(c)).

I.H PERMIT EXPIRATION AND CONTINUATION

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.

I.I REPORTS, NOTIFICATIONS AND SUBMISSIONS TO THE DEPARTMENT

I.I.1 Annual Report

The permittee shall submit an annual Corrective Measure(s) Remedy Performance Report, as described in **Permit Condition II.C**, which includes groundwater monitoring no later than March 1st of each calendar year, unless an alternate frequency has been approved by

the Department, containing, at minimum, annual groundwater monitoring data, system O&M data, and evaluation of remedial effectiveness.

I.I.2 Biennial Report

The Permittee shall submit biennial report to the Department, which covers facility activities during the previous calendar year.

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(1)(9).

I.I.3 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 electronically, postal mailing or hand-delivered to:

For Corrective Action and Groundwater

Department of Environmental Quality
Groundwater/Corrective Action Program Team Leader
P.O. Box 1105
Richmond, VA 23218

For Permit Modifications

Department of Environmental Quality
Hazardous Waste Program Manager
Office of Financial Responsibility and Waste Programs
PO Box 1105
Richmond, Virginia 23218

Street Address:

1111 East Main Street, 1400
Richmond, VA 23219

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

Land Program Manager, Blue Ridge Regional Office

Department of Environmental Quality
3019 Peters Creek Road
Roanoke, VA 24019

Associate Director, Office of Remediation

Environmental Protection Agency, Region III
1650 Arch Street
Philadelphia, PA 19103-2029
Mail Code: (3LC20)

I.I.4 Signatory Requirements

All applications, reports, or information submitted to the Director shall be signed and certified as specified by 40 CFR § 270.11.

I.J DOCUMENTS TO BE MAINTAINED AT THE FACILITY SITE

I.J.1 Documents

Current copies of the following documents, as amended, revised, and modified, shall be maintained at the facility (or other location approved by the Director). These documents shall be maintained during the term of this Permit, including any reissued permit, unless a lesser time is specified in the Permit.

- a. The Permit including all attachments, revisions and modifications;
- b. The Part A and Part B Permit Applications;
- c. The facility's operating record required by 40 CFR 264.73 and this Permit.
- d. Inspection schedules and logs required by 40 CFR 264.15(b)(2) and 264.15(d);
- e. Personnel training documents and records required by 40 CFR 264.16;
- 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 264.100 and this permit.
- i. Groundwater monitoring results required by 40 CFR 264.73(b)(6) and this permit.
- j. All other documents as required by Permit Conditions I.D.8 through 12 and I.E.
- k. Corrective Action Work Plans, Reports, and other information and submissions regarding corrective action, as applicable under this permit.

I.K APPROVAL/DISAPPROVAL OF SUBMISSIONS

I.K.1 Review

The Department will review the plans, reports, schedules and other documents (hereinafter collectively referred to as "submission") submitted which require the Director or Department approval. The Department will notify the Permittee in writing of the Department's approval, conditional approval or disapproval of each submission.

I.K.2 Approval

Each submission required by this Permit is, upon approval by the Director, incorporated into this Permit. Any noncompliance with such Department- approved submission shall be deemed noncompliance with this Permit. A conditionally approved submission, including any terms of such conditional approval set forth in Department's decision, shall constitute the Department-approved submission and shall be incorporated into this Permit.

I.K.3 Conditional Approval

In the event of Department'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 file an appeal with the Director within 30 days of the approval (as provided for in Rule 2A:2 of the Supreme Court of Virginia).

I.K.4 Disapproval

In the event of Department disapproval of a submission, the Director shall specify the deficiencies in writing. The Permittee shall modify the submission to correct/address the specified deficiencies within a reasonable time period established by the Director taking

into account the tasks to be performed, and submit the revised submission to Department for approval.

I.K.5 Revision Disapproval

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

I.L DISPUTE RESOLUTION

I.L.1 Disagreement with Department's Determination

Except as otherwise provided in this Permit, in the event 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 of receipt of the Department's 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.

I.L.2 Resolution

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/dispute. In the event agreement is reached, the Permittee shall submit the revised submission and implement the same in accordance with such agreement.

I.L.3 Agreement Not Met

In the event the Permittee and the Department 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. The Permittee does not waive its right to assert any and all available defenses in a proceeding to enforce this Permit.

I.L.4 Appeal

In the event the Permittee disagrees with the Department's disapproval of a submission or revised submission and the Department'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).

MODULE II - SITE-WIDE CORRECTIVE ACTION

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

II.A.1 Required Corrective Action

Section 3004(u) of RCRA, 42 United States Code (USC) § 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), regardless of when waste was placed in the unit.

II.A.2 CA Boundary

Under Section 3004(v) of RCRA, 42 USC § 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.

II.A.3 Terms and Conditions

Section 3005(c)(3) of RCRA, 42 USC § 6925(c)(3), and 40 CFR § 270.32(b) provide that each permit shall contain such terms and conditions as the Department determines necessary to protect human health and the environment.

II.B CORRECTIVE MEASURES IMPLEMENTATION

II.B.1 Background

The Permittee was issued a Post-Closure Permit in 1994 for two closed hazardous waste management units (HWMUs). In 1998, the Post-Closure Permit was modified to implement a Base Corrective Action Program for groundwater at the Facility to address concentrations of trichloroethene (TCE) above the groundwater protection standard (GPS). In 2001, the VDEQ issued a Hazardous and Solid Waste Amendments (1984) Corrective Action Permit (HSWA Permit) for facility-wide corrective action at solid waste management units (SWMUs) and areas of concern (AOCs) identified at the Facility by the EPA. The HSWA Permit required the Permittee to complete a RCRA Facility Investigation (RFI), implement interim measures as necessary, and complete a Corrective Measures Study (CMS). This permit was superseded in 2006 by a Hazardous Waste Management Post-Closure Permit (Permit) issued by the VDEQ, which included the Base Corrective Action Program for the two (2) closed hazardous waste management units (HWMUs) and facility-wide corrective action for 39 SWMUs, two (2) HWMUs, and six (6) AOCs identified in the Facility's 2004 post-closure permit application. The RFI for all known units has been effectively completed, and the Final RFI dated March, 2004 was submitted to the Department. The Department approved the RFI in June, 2006. The CMS has been effectively completed, and the Final CMS was submitted to the Department in June, 2010. In April, 2010, a full scale soil vapor extraction (SVE) pilot test was initiated for the CMS using 18 extraction wells and 16 vapor monitoring points. In June, 2012 an addendum to the CMS was submitted to the Department to address additional constituents of concern

(COCs) and the CMS was approved by the Department in June, 2012. The post-closure period for the two closed HWMUs ended on June 13, 2013.

II.B.2 Final Remedy Selection

Based on the findings of the RFI and CMS, VDEQ concluded that past operations at the Facility resulted in soil and groundwater contamination. COCs in soil and groundwater above clean up targets include the volatile organic constituents (VOCs) TCE and cis-1, 2-dichloroethene. Additional COCs in soil above clean up targets include metals, Polycyclic Aromatic Hydrocarbons (PAHs), and PCB-1254.

The Permittee implemented a Base Corrective Action Program in 1998 to treat COCs in groundwater. A full scale SVE pilot study was implemented the Site in April, 2010 to treat VOCs in soil in and around the identified source areas located between exterior HWMUs 9 and 3. The Final CMS evaluated the pilot study results. Documentation for completion of site-wide investigation reports and studies has been compiled by the Department, entitled Administrative Record. Based on the CMS results and the Administrative Record, the final remedy for the facility was developed and is described in the Statement of Basis dated July 7, 2012. The requirements of this Permit provide for the operation and maintenance of the remedy described in the Statement of Basis.

II.B.3 Remedy Controls

The goal of the remedy for site-wide corrective action is to ensure protection of human health and the environment. The final remedy for the Site consists of active remediation, long term groundwater monitoring, and implementing Institutional Controls and Engineering Controls. Institutional Controls (ICs) are generally non-engineered mechanisms such as administrative and/or legal controls that minimize the potential for human exposure to contamination and/or protect the integrity of a remedy. Engineering Controls (ECs) are generally engineered mechanisms such as a landfill cap.

II.B.4 Final Remedy Actions

The details of the final remedy are summarized below and are described in more detail in the site specific Corrective Measures Implementation (CMI) Work Plan required by this Permit. Minor modifications in the activities, studies, techniques, procedures, and designs or schedules utilized in carrying out the requirements of this Permit and necessary for the operation and maintenance (O&M) and/or completion of the remedy may be made by written agreement of the Project Coordinators. Remedial goals and clean up targets are contained in **Permit Attachment D**.

- a. Continued operation of the existing onsite groundwater pump and treat system until groundwater remedial goals and clean up targets are achieved.
- b. Continued long-term performance monitoring of groundwater to verify the effectiveness and progress of the groundwater remedy in achieving remedial goals and clean up targets.
- c. Continued operation of the existing SVE system until soil remedial goals and clean up targets are achieved for VOCs.
- d. Implementation and maintenance of ICs and ECs including property use restrictions for soil and groundwater in accordance with Permit Section II.B.3 below until soil and groundwater remedial goals and clean up targets are achieved.

II.B.5 Final Remedy Implementation

The Permittee submitted to the VDEQ for approval a CMI Work Plan dated December, 2012 for operation and maintenance of both the SVE system and the groundwater pump and treat system, long-term groundwater monitoring, remedial effectiveness monitoring for soil and groundwater, and implementation of ICs, ECs, and additional property use restrictions. The CMI Work Plan was approved by the Department in March, 2013. IC implementation was completed in September, 2013 and the Soil Management Plan was approved by the Department in August, 2014. ICs, ECs, and additional restrictions used at the Site shall;

- a. Notify prospective buyers of the property of the environmental conditions at the Site and of VDEQ's selected corrective measures as part of the final remedy under RCRA Corrective Action;
- b. Prohibit use of the property for residential purposes (including single family homes, multiple family dwellings, schools, day care facilities, child care centers, apartment buildings, dormitories, other residential style facilities, hospitals, and in-patient health care facilities) until soil remedial goals and clean up targets are achieved;
- c. Prohibit the use of groundwater beneath the property except for non-contact cooling water and purposes to support selected corrective measures. No new wells will be installed on Facility property unless it is demonstrated to VDEQ that such wells are necessary to implement the final remedy and VDEQ provides prior written approval to install such wells;
- d. Require vapor barriers be utilized in or beneath new, totally enclosed structures designed for occupation within the foot print of the VOC soil remediation area;
- e. Restrict subsurface soil excavation within the footprint of the VOC soil remediation area, the footprint of the soil management area identified in the CMS, and within any areas with contaminants in soil above residential levels except in conformance with an appropriate soil management plan that has been approved by VDEQ. All earth moving activities, including excavation, drilling and construction activities, in the areas at the Facility where any contaminants remain in soils above EPA's Screening levels for residential use or groundwater above Federal MCLs/Tap Water RBCs, shall be prohibited unless it is demonstrated to VDEQ that such activity will not pose a threat to human health or the environment or adversely affect or interfere with the selected remedy, and VDEQ provides prior written approval for such use;
 - i Maintain any current soil cover (concrete floor, asphalt, etc.) in the soil management area identified in the CMS;
 - ii Continue to administer and maintain off-site institutional and engineering controls specified in the Statement of Basis;
 - iii Owner agrees to provide VDEQ with a "Certified, True and Correct Copy" of any instrument that conveys any interest in the Facility property or any portion thereof; and
 - iv Restrict activities that would interfere with or adversely impact the remedy.
 - v The Permittee shall, at a minimum, include notice of the property use restrictions in the deed for the property and notify the local health authority utilizing mechanisms specified in the Statement of Basis, and shall notify the VDEQ in writing of any proposed changes in the use of the property or proposals for any site work that affects the contamination or its disposition on the property.

- vi The Permittee shall, at a minimum, provide coordinate surveys for applicable property use restrictions that meet the following requirements:
 - 1. Define the boundary of each use restriction as a polygon
 - 2. Establish the longitude and latitude of each polygon vertex as follows
 - a) Decimal degrees format
 - b) At least seven decimal places
 - c) Negative sign for west longitude
 - d) WGS 1984 datum

II.C EVALUATION OF THE SELECTED REMEDY

The Permittee shall submit an annual progress report on the corrective measure(s) remedy performance by March 1st of each year along with the annual groundwater monitoring and remedial measures reports until remedial goals and clean up requirements have been met. If the Department determines that the selected corrective measure(s) 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 corrective measure(s) 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 Corrective Measures Remedy.

II.D EMERGENCY RESPONSE; RELEASE REPORTING

II.D.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 three (3) days of discovery of such release.
- b. Unless otherwise directed by the Department, immediately take such actions as are necessary and appropriate to address such release.

II.D.2 Releases

The Permittee shall notify the Department in writing of the nature, source, extent, and location of a release of hazardous waste or hazardous constituents at or from the Facility within seven (7) days of discovery of such release which:

- a. Is not being addressed by corrective measures pursuant to **Permit Condition II.B** at the time of such discovery.
- b. Is not being addressed pursuant to **Permit Condition II.D.1 Emergencies**.

II.E REQUIREMENTS OF SWMU AND AOC

Based on the information submitted in **Permit Condition II.D.2 Releases**, the Department may require the SWMU and/or AOC to be included in an ongoing RCRA Facility Investigation or may require Interim Measures.

II.F DEPARTMENT'S AUTHORITY

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.

II.G GUIDANCE DOCUMENTS

Any corrective action performed at the facility shall be in general accordance with applicable EPA RCRA corrective action guidance available at:

<https://www.epa.gov/hwcorrectiveactionsites/corrective-action-resources-specific-epas-region-3>

II.H SOLID WASTE MANAGEMENT UNIT (SWMU) ASSESSMENT

II.H.1 Newly Identified SWMU

The Permittee shall notify the Department and the EPA Region III, in writing, of any newly identified SWMU at the Facility, resulting from a release (or suspected release) of hazardous waste or hazardous constituents, no later than thirty (30) days after the date of discovery. The notification shall include, but is not limited to, the following known information:

- a. A description of the SWMUs 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 units 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 releases of hazardous waste or hazardous constituents has not occurred or is not occurring.
- d. A discussion of the need for and feasibility of implementing interim measures immediately.

II.H.2 New SWMU Department Determination

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 for a newly identified SWMU.

II.H.3 Actions for New SWMU

Within sixty (60) days after receipt of the Director's determination that a RCRA Facility Investigation or Interim Measures is necessary, the Permittee shall submit a RCRA Facility Investigation Work Plan or Interim Measures Work Plan that meets the applicable guidance. 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.

II.H.4 Reports

Within the time specified in the approved RCRA Facility Investigation Work Plan or Interim Measures Work Plan, the Permittee shall submit the RCRA Facility Investigation Report or Interim Measures Report. The reports will provide all data necessary for the Department to determine whether a Corrective Measures Study or additional Interim Measures Work Plan is required.

II.H.5 RCRA Facility Investigation and Corrective Measures

In lieu of a separate RCRA Facility Investigation, the Permittee may propose either to incorporate any newly identified SWMU into ongoing corrective measures or to submit a proposal for the performance of corrective measures. Any such proposal shall be submitted to the Department along with the notification of the discovery of the SWMU(s).

II.I FINANCIAL ASSURANCE

II.I.1 Initial Cost Estimate

Assurances of financial responsibility for corrective action must be provided in accordance with conditions herein. The Permittee submitted an initial cost estimate for completion of the approved remedy(s) as a component of the CMI Work Plan submitted to the Department in December 2012.

II.I.2 Cost Estimate Updates

The cost estimate for completing the approved remedy(s) shall be updated pursuant to any changes or modifications to the final remedy approved by the Department or development of more detailed information.

Within ninety (90) calendar days of receipt of Department's written approval of modifications to the final remedy, the Permittee shall submit an updated cost estimate to the Department.

II.I.3 Financial Assurance Demonstration

Within thirty (30) calendar days of approval of the initial cost estimate for financial assurance and each succeeding year, the Permittee shall demonstrate compliance with financial assurance to the Department for completing the approved remedies in accordance with 40 C.F.R. § 264.101(b). Within thirty (30) calendar days of approval of any updated and/or revised cost estimate, the Permittee shall demonstrate to the Department financial assurance for the updated cost estimates.

II.J RECORDKEEPING

Upon completion of closure of any SWMU, the Permittee shall maintain in the Facility operating record, documentation of the closure measures taken.

II.K ACCESS FOR CORRECTIVE ACTION OVERSIGHT

The Department and its authorized representatives shall have access to the Facility at all reasonable times for the purpose of monitoring compliance with the provisions of this Permit. 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 its authorized representatives for the purposes described in this paragraph.

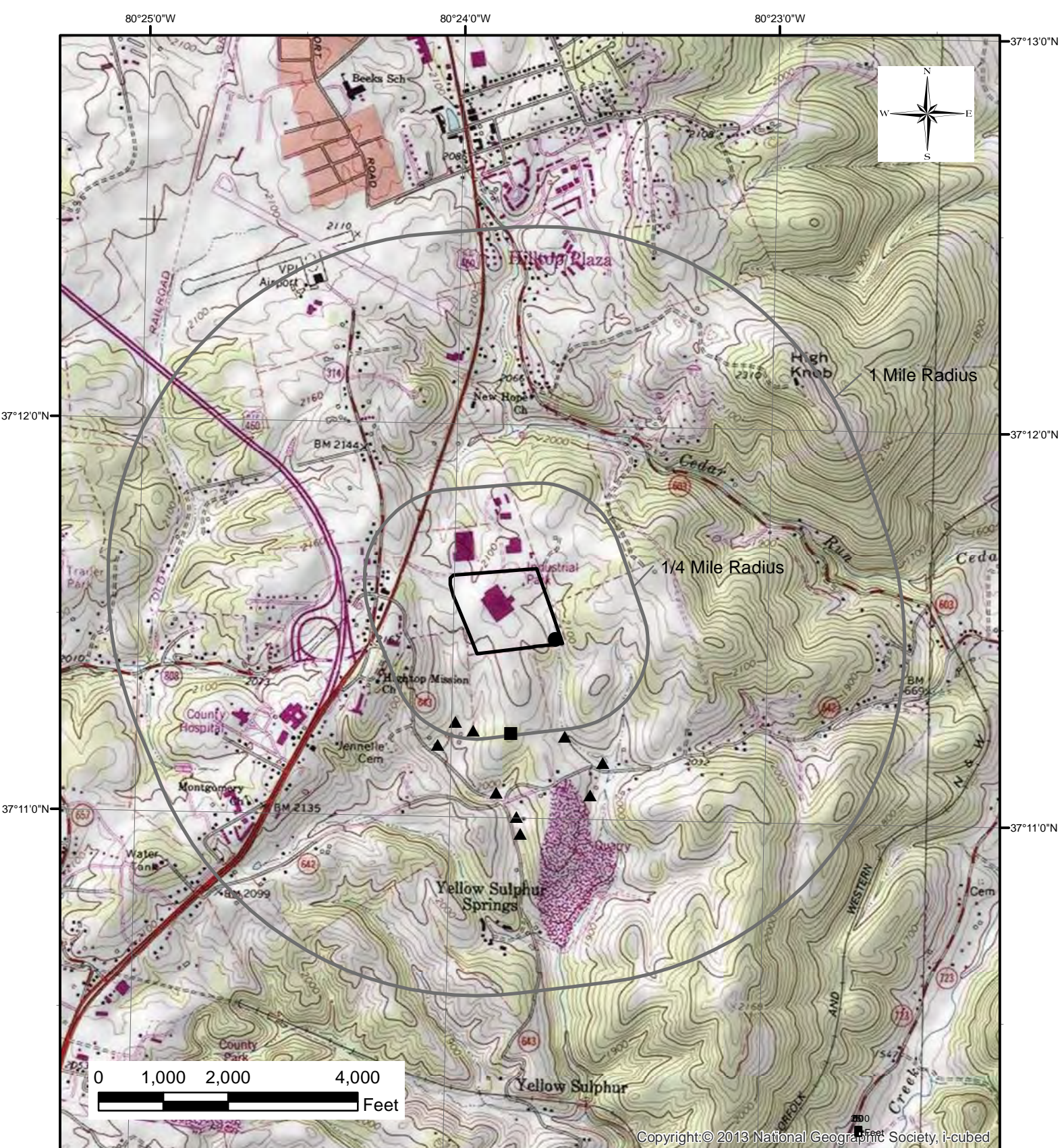
II.L COMPLETION OF REMEDY

If any of the institutional or engineering controls are no longer necessary to protect human health and the environment, the Permittee shall submit a written notification and certification to the Department by registered mail, stating that the remedy has been completed in accordance with requirements of this Permit and requesting removal of the controls from the Permit. The certification must be signed by the Permittee and by an independent, Virginia registered professional engineer.

II.L.1 No Permit Conditions Remain

In cases where no other Permit conditions remain, the Permit may be modified not only to reflect the determination that remedy controls are no longer necessary, but also to change the expiration date of the Permit to allow for earlier permit expiration in accordance with 40 CFR § 124, § 270.41, and § 270.42 as applicable.

ATTACHMENT A
FACILITY LOCATION AND SITE MAP



Legend

- Outfall 001
- ▲ Springs
- Agricultural Use Well
- Property Boundary



URS Corporation
4840 Cox Road
Glen Allen, Virginia 23060
804.515.8300

Date:
October 20, 2015

Prepared By:
RJP

Scale:
1" = 2,000'

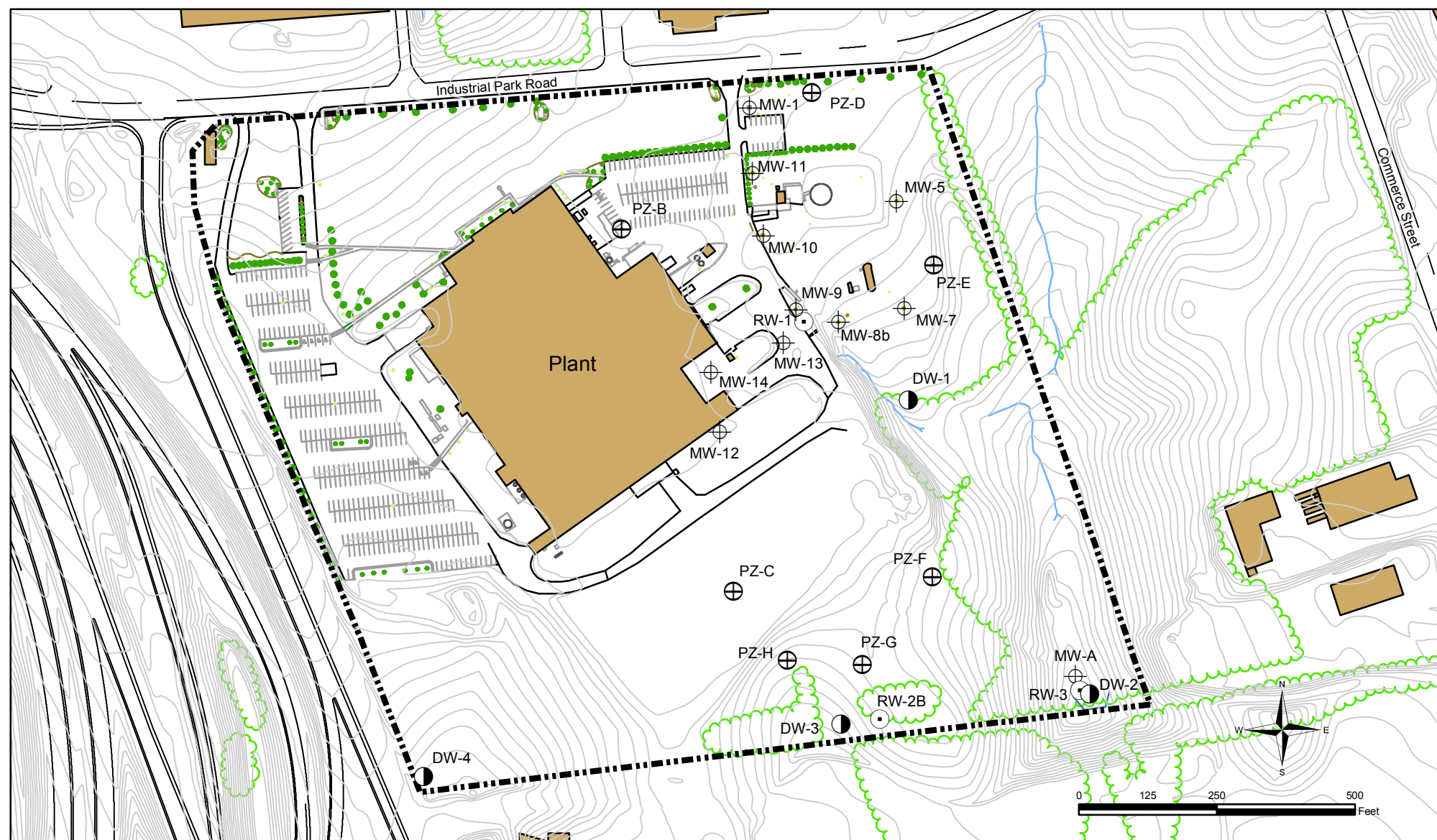
Job Number:
60419302

Reviewed By:
KAH

File Name:
Attachment A - Loc Map

FIGURE A-1 Facility Location Map

Federal-Mogul Powertrain LLC
300 Industrial Park Drive
Blacksburg, Virginia 24060



Legend

- Landscaped Trees and Shrubs
- ⬮ Property Line
- Deep Well Location
- Topographic Contour (feet, mean sea level)
- ⊕ Monitoring Well Location
- Streams
- ⊕ Piezometer Location
- Tree Line
- ◐ Recovery Well Location

Federal - Mogul Powertrain LLC
Blacksburg, Virginia
EPA ID No. VAD054039961

Date:
October 20, 2015

Job Number:
13653638

Prepared By:
RJP

Reviewed By:
KAH

Scale:
1" = 250'

File Name:
Atch. B - Site Map

FIGURE A-2
Facility Site Map

ATTACHMENT B

FACILITY BACKGROUND, ENVIRONMENTAL HISTORY, SWMUS, HWMUS, AND AOCS

ATTACHMENT B

FACILITY BACKGROUND, ENVIRONMENTAL HISTORY, SWMUs, HWMUs, AND AOCs

FACILITY DESCRIPTION

The Facility is located in the southeastern portion of the Town of Blacksburg, Virginia, approximately 0.5 mile north of the intersection of U.S. Route 460 and Business Route 460. The approximate 58-acre Facility is located on the south side of Industrial Park Road, within an industrial park complex. The Facility has been owned and operated by Federal-Mogul Corporation (F-M) for the production of high specification-engine-crankshaft and piston rod bearings for the automotive and industrial engine industries since 1971. Current major customers include General Motors, Chrysler, Caterpillar, and John Deere.

A one story 140,000 square foot main building houses the manufacturing plant, offices, a cafeteria, a boiler room, a hazardous waste accumulation area, and the current wastewater treatment plant. Separate production activities in the main building include casting, bonding, pressing, flanging, and finishing. The manufacturing process involves aluminum alloy casting, aluminum-to-steel bi-metal bonding, and metal machining of bearings and bushings.

The physical address and facility contact information is provided below:

Facility Address

Federal-Mogul Powertrain LLC
300 Industrial Park Road
SE Blacksburg, VA 24060-6699

Facility Contact

Ms. Lisa Sterner
EHS Manager
300 Industrial Park Road
SE Blacksburg, VA 24060-6699
520-557-3338

SUMMARY OF CORRECTIVE ACTIONS

Prior to June 1983, hazardous waste management operations at the Facility included collection of electroplating wastewater for treatment with chlorine, pH adjustment, and precipitation of metal hydroxides in two surface impoundments. Sludge from the ponds was pumped into two sludge-drying beds for dewatering and disposal. Wastewater from the ponds was discharged into Cedar Run under the authority of a National Pollutant Discharge Elimination System (NPDES) permit until 1983, at which time the two surface impoundments and two sludge-drying beds were closed. The wastewater treatment sludge, spent plating bath solutions, plating bath sludge, and spent stripping bath solutions were Environmental Protection Agency (EPA) listed hazardous wastes F006, F007, and F009.

The two surface impoundments (Hazardous Waste Management Unit [HWMU] 2) and two sludge-drying beds (HWMU 3), classified as S04 surface impoundments, were closed in 1983. For purposes of post-closure care, groundwater monitoring, and corrective action, these RCRA units were combined into a single unit (HWMU 2/3).

The original Hazardous Waste Management Post-Closure Permit for the Facility, dated September 1994, required monitoring of groundwater to demonstrate compliance with groundwater protection standards (GPS) established in the Permit. In accordance with the requirements of Part IV (Detection Monitoring) of the Permit, the Facility notified the Virginia Department of Environmental Quality (DEQ) on June 6, 1995 that it had determined that there was a statistically significant increase above background levels for pH, specific conductance, total organic carbon, total organic halogen, chloroform, and trichloroethene (TCE) at the point of compliance (POC). F-M resampled on June 27-29, 1995 and confirmed the background level exceedances.

In the 1995 Annual Groundwater Monitoring Report dated February 6, 1996, the Facility identified a potential alternative source for specific conductance (process water leakage from the northeast corner of the plant) and chloroform (municipal water). On July 15, 1996, F-M notified DEQ that it was terminating their efforts to identify an alternative offsite TCE source.

During subsequent hydrogeological site investigations conducted from October 1995 to July 1997, F-M identified several down gradient residential drinking water wells that were impacted with TCE. Accordingly, the affected residences were provided with carbon-based water purification systems, and were subsequently connected to the municipal water supply.

On July 31, 1997, F-M submitted a request for a major permit modification to the Permit, to implement a Base Corrective Action Program (CAP). The request was granted, and on April 13, 1998, DEQ issued a modified Permit to include a Base CAP consisting of corrective action monitoring of groundwater at 10 monitoring locations and contaminated groundwater recovery and treatment. The Facility implemented the Base CAP on August 21, 1998 with the startup of an onsite groundwater recovery system consisting of two groundwater recovery wells (RW-1 and RW-2) and a treatment system to remove TCE by air stripping and liquid phase granular activated carbon (LGAC).

On March 15, 2001, DEQ issued the Facility a Hazardous and Solid Waste Amendments of 1984 (HSWA) Permit for completion of a facility-wide RCRA Facility Investigation (RFI). This HSWA permit identified for investigation 24 interior solid waste management units (SWMUs), HWMUs, and areas of concern (AOCs), and 20 exterior SWMUs and HWMUs. As required by the HSWA Permit, F-M submitted a Draft RFI Work Plan to DEQ in July 2001. The RFI Work Plan identified one additional SWMU and five additional AOCs not identified in the HSWA Permit.

In a May 30, 2002 letter to the Facility, DEQ requested that F-M install a third recovery well (RW-3) to enhance capture of the onsite portion of the TCE plume. Based on the results of a pumping test and existing data, F-M installed a new recovery well (RW-3) in the area of wells MW-A and DW-2 in August 2002 to extract groundwater from the higher yielding weathered bedrock zone present to a depth of approximately 190 feet (ft). Installation of RW-3 was completed during the second week of August 2002 and subsequently connected to the existing remediation system after updated plans and specifications were completed. Pumping of RW-3 commenced on October 22, 2002.

A revised RFI Work Plan was submitted to DEQ on August 13, 2002. Prior to the submission of the revised work plan, URS Corporation, Inc. (URS) completed an offsite sampling program for

the RFI, which included the sampling of identified water wells, springs, and surface water in the Jennelle Road area south of the Facility. This offsite sampling effort was conducted to support the completion of Environmental Indicator (EI) forms for the RFI by September 30, 2002. DEQ indicated approval of the revised RFI Work Plan in a June 13, 2003 letter to the Facility.

In December 2002, F-M completed public-water connections to 680 Jennelle Road and 662 Jennelle Road. F-M completed the public-water connection to 758 Jennelle Road on April 21, 2003. On July 18, 2003, the Facility installed a locking cover on the 646 Jennelle Road spring box on Jennelle Road and at the same time removed the well pump from the well and completed public-water connections. F-M also acquired water rights to these properties as part of the agreement to provide public water connections and thereby preventing the future use of groundwater and surface water. As a precautionary measure, water rights were also acquired at 715 and 781 Jennelle Road in 2004 after ensuring these properties were connected to public water.

URS completed the initial phase of the RFI from April 22 through April 30, 2003, and the final phase from August 4 through September 19, 2003. RFI activities included completion of 36 soil borings using a membrane interface probe (MIP), completion of offsite sampling of selected surface water, springs, and residential well locations, onsite sampling of soil, sediment, and surface water, and installation of two monitoring wells. The Facility's EI forms CA725 and CA750 were updated and submitted to VDEQ in September. These revised forms incorporated additional data collected since September of 2002 and summarize actions taken by F-M to protect human health and the environment. The Draft RFI Report was submitted to DEQ in March 2004.

On February 18, 2004, F-M and URS met with DEQ to discuss the remediation system (zone of influence and capture zone) and the pending submittal of the new Hazardous Waste Management Permit (Part A/B), which expired on September 28, 2004. At this meeting, the Facility requested an extension for submitting the permit application from the original due date of March 28, 2004. A formal request for an extension was submitted to DEQ on February 23, 2004 and was subsequently approved by DEQ on March 26, 2004.

In May 2004, F-M submitted a new Hazardous Waste Management Permit Application (post-closure) to DEQ for the two closed hazardous waste surface impoundments and two closed sludge-drying beds. On January 9, 2006, VDEQ reissued a Hazardous Waste Management Post-Closure permit (Permit) for the Facility. The Permit requires that F-M implement a Base CAP at the Site to reduce TCE concentrations present in groundwater.

A focused Corrective Measures Study (CMS) was prepared and submitted to DEQ in May 2007 to address an identified source area of volatile organic compounds (TCE) in soil. This CMS proposed implementation of an interim measure consisting of soil vapor extraction (SVE). As part of the request for preparation of an Interim Measures Work Plan, DEQ requested revision of the CMS Report for soil to incorporate groundwater in support of selecting and implementing a final remedy for site-wide corrective action. A revised CMS was submitted to DEQ in May 2008, which recommended implementation of SVE as a final remedy for soil as described in an Interim Measures Work Plan submitted to DEQ in August 2008.

In September 2009, F-M withdrew its proposal for interim measures as described in the August 2008 Interim Measures Work Plan and proceeded with additional evaluations and pilot tests beginning in October 2009 to implement a modified SVE remedy for soil.

A final CMS was approved by DEQ on September 16, 2010.

The final CMS included results of full scale pilot testing of a solar-powered, SVE system and associated revisions to implement the final remedy which will consist of the following:

Operation of the existing solar-powered, SVE system as the final remedy for soil;
Operation of existing onsite groundwater pump and treat system as an element of the final remedy for groundwater;
Maintenance of the previously implemented institutional controls and engineering controls at offsite properties to prevent uncontrolled human health exposure to groundwater; and
Long-term performance monitoring of groundwater to verify the effectiveness and progress of the groundwater remedy in achieving remedial goals and corrective measures objectives. A full-scale pilot test of the solar-powered SVE system was initiated on May 25, 2010, and has provided evidence of system effectiveness by reducing the toxicity, mobility, and leaching of the VOCs from soil to groundwater.
On July 6, 2012, F-M requested a Class 2 permit modification of the Hazardous Waste Management Post-Closure Permit (VAD054039961) to include the final corrective action remedy. On September 18, 2012, DEQ approved the permit modification and incorporated VDEQ's decision of "Corrective Action Remedy Selected" under the Solid Waste Disposal Act, as amended by RCRA. The remedy is designed to address VOC and additional contaminants of concern impacts to soil and groundwater at the Site.
The major elements of the final remedy include the following:
Continued operation of the existing onsite groundwater pump and treat system until groundwater remedial goals and clean up targets are achieved.
Continued long-term performance monitoring of groundwater to verify the effectiveness and progress of the groundwater remedy in achieving remedial goals and clean up targets.
Continued operation of the existing solar vapor extraction system until soil remedial goals and clean up targets are achieved for VOCs.
Implementation and maintenance of institutional controls and engineering controls including property use restrictions for soil and groundwater in accordance with **Permit Condition VIII.B.3** below until soil and groundwater remedial goals and clean up targets are achieved.

In accordance with the previous Hazardous Waste Management **Permit Condition VIII.B.3**, F-M submitted a Corrective Measures Implementation (CMI) Work Plan to DEQ on December 14, 2012. The purpose of the CMI Work Plan was to outline the actions necessary to implement and maintain the selected corrective measures. The CMI Work Plan was approved by DEQ on March 14, 2013 and implementation of the plan was subsequently initiated.

IDENTIFICATION AND DESCRIPTION OF SWMUs AND AOCs

The HSWA Permit for the Facility identified 39 SWMUs, 4 HWMUs, and 1 AOC. The RFI identified five additional AOCs and a recent incident in 2010 resulted in an additional AOC. All identified SWMUs, HWMUS, and AOCs are listed below. **Permit Attachment A, Figures A-1 and A-2** show the location of the interior and exterior SWMUs, HWMUs, and AOCs, respectively.

Table 1: SWMU and AOC Identification

Identification	SWMU and AOC Description
Interior SWMU 1	Satellite Accumulation Area for scrape chrome and bimetal chips
Interior AOC 2	Leakage from process machines to floor
Interior SWMU 3	Bimetal chips awaiting recycling
Interior SWMU 4	Lip machine-cleans process machines of aluminum chips and stores them in a small container
Interior SWMU 5	Bimetal chips awaiting recycling
Interior SWMU 6	Used coolant awaiting recycling
Interior SWMU 7	Bimetal chips awaiting recycling
Interior SWMU 8	Roto clone sludge accumulation area
Interior SWMU 9	Bimetal scrap awaiting recycling
Interior SWMU 10	Vacuum collector of aluminum chips with container
Exterior SWMU 6	Cafeteria grease awaiting disposal
Exterior SWMU 7	Scrap aluminum awaiting recycling
Exterior SWMU 8	Scrap aluminum compactor
Exterior SWMU 9	Former location of drum storage pad
Exterior SWMU 10	Refuse awaiting disposal
Exterior SWMU 11	Scrap metal / steel awaiting recycling
Exterior SWMU 12	Gaylord boxes / aluminum scrap awaiting recycling
Exterior SWMU 13	Bimetal ribbon scrap awaiting recycling
Exterior SWMU 14	Copper / lead scrap awaiting recycling
Exterior SWMU 15	Aluminum dross awaiting recycling
Exterior SWMU 16	Scrap pallets awaiting recycling
Exterior SWMU 17	Chemical pallets awaiting recycling
Exterior SWMU 18	Scrap from gaylords awaiting recycling
Exterior SWMU 19	Synthetic oil collector system
Exterior SWMU 20	Aluminum dust baghouse
Exterior AOC	1993 Baghouse Fire

Identification	SWMU and AOC Description
Exterior AOC	Staging area for soil from the 1993 Baghouse Fire
Exterior AOC	2010 Ductwork Explosion
Interior SWMU 11	Scrap copper and lead broachings awaiting recycling
Interior SWMU 12	Major air pickup system of bimetal broaching for flange lines A-D
Interior SWMU 13	Scrap copper and lead bearings awaiting recycling
Interior SWMU 14	Baghouse collector for copper
Interior SWMU 15	Bimetal chips awaiting recycling
Interior SWMU 16	Aluminum chips awaiting recycling
Interior SWMU 17	Central baghouse for spa lines
Interior SWMU 18	Aluminum chips awaiting recycling
Interior SWMU 19	Scrap aluminum awaiting recycling
Interior SWMU 20	Central coolant system-location of mop rinse water from floor cleaning
Interior SWMU 21	Waste ink satellite accumulation area
Interior SWMU 22	Back brush accumulation area
Interior SWMU 23	Hazardous waste storage area (less than 90 day storage)
Interior SWMU 24	Wastewater treatment plant
Interior AOC	1992 Broken Cyanide Rinse water Pipe
Interior AOC	Hoist Anchor Bolts Leak
Interior AOC	Former Main Degreaser
Interior AOC	005 Plater
Exterior SWMU 1	Emergency overflow tank for wastewater treatment plant
Exterior HWMU 2	Former location of holding ponds
Exterior HWMU 3	Former location of sludge drying beds
Exterior SWMU 4	Wastewater treatment plant underground holding tanks
Exterior SWMU 5	LTC solution tank

ATTACHMENT C
HEALTH AND SAFETY PLAN REQUIREMENTS

ATTACHMENT C

HEALTH AND SAFETY PLAN REQUIREMENTS

The Permittee shall prepare a facility Health and Safety Plan for Corrective Measures Implementation activities at the Permitted facility and shall submit it to the Department and the EPA Region III. Compliance with the Occupational Safety and Health Administration (OSHA) Regulations is not under the jurisdiction or the authority of the Department or the EPA in the Commonwealth of Virginia. Therefore, the Health and Safety Plan submittal to the Department and the EPA Region III is for the administrative record only and the submittal will not receive approval nor disapproval by the Department or the EPA.

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. Therefore, the above office should be contacted to determine the major elements and requirements for a Health and Safety Plan under the OSHA Regulations.

ATTACHMENT D
REMEDIAL GOALS AND CLEAN UP TARGETS

ATTACHMENT D

REMEDIAL GOALS AND CLEAN UP TARGETS

REMEDIAL GOALS

The following remedial goals have been established for the Site based on the results of the RFI and CMS:

- a. To the extent possible, reduce COC concentrations and VOC mass in soil to prevent leaching to groundwater at concentrations that would result in groundwater concentrations above clean up targets, which consist of EPA maximum contaminant levels (MCLs).
Reduce concentrations of COCs in soil to levels that are protective of future use of the Facility.
Reduce concentrations of COCs in groundwater to levels at or below groundwater clean-up targets (EPA MCLs).
Prevent uncontrolled human exposure to onsite and offsite groundwater with COC concentrations above groundwater clean-up targets (EPA MCLs).
Prevent uncontrolled human exposure to on-site soil with constituent concentrations above risk-based concentrations.

SOIL CLEAN UP TARGETS

Clean up targets for VOCs in soil have been developed and consist of the calculated site-specific soil screening levels for the soil-to-groundwater migration pathway presented in the May 2007 CMS Report prepared by URS, as approved by DEQ. Clean up targets are concentrations of VOCs in soil that would prevent leaching to groundwater at concentrations that would potentially result in concentrations in groundwater above the groundwater clean up target (EPA MCLs).

Table 1: Clean up Targets for VOCs in Soil

VOC	Clean up Targets for Soil
Tetrachloroethene	20 µg/kg
Trichloroethene	4.8 µg/kg
cis-1,2-dichloroethene	41 µg/kg
trans-1,2-dichloroethene	69 µg/kg
Vinyl chloride	0.93 µg/kg
Total mass of VOCs	Reduce VOC mass by 90% until asymptotically low rate of mass removal is achieved

The clean-up targets for VOCs in soil were used along with other data to identify the area and volume of soil targeted for remediation by the final corrective measure. However, given the Site soil conditions (clay and chemical characteristics), it is unlikely that any remedy can achieve nearly 100% reduction of the VOC and TCE mass in soil necessary to meet the low-level clean up targets, which are at or close to the limits of quantitation in soil. A portion of the TCE and 1,2-cis-1,2-DCE (estimated at 10%) is expected to remain absorbed to the soil while the remainder of

the VOC mass is removed (volatized) by the SVE system(s). Based on the results of the SESOIL modeling and chemical properties of the COCs, an additional clean up target of 90% reduction in the VOC mass in soil has been established with operation of the SVE system continued until an asymptotically low rate of mass removal is achieved.

Implementation of soil corrective measures with SVE also will achieve risk-based clean-up targets for human exposure to Site soil under an industrial or residential land use scenario as shown on the following table.

Table 2: Comparison of Selected VOC Soil Clean up Targets to Risk-Based Clean up Targets for Human Health Soil Exposure

VOC	Type	Selected Numerical RG for Soil (Soil-to-Groundwater Pathway) (µg/kg)	RG for Human Health Exposure to Soil	
			Residential (µg/kg)	Industrial (µg/kg)
Tetrachloroethene	C	20	550	2,600
Trichloroethene	C	4.8	2,800	14,000
cis-1,2-dichloroethene	NC	41	390,000	5,000,000
trans-1,2-dichloroethene	NC	69	75,000	345,000
Vinyl chloride	C	0.93	60	1,700

Notes:

Type = Constituent type: carcinogenic (C) or non-carcinogenic (NC) Carcinogenic RSLC: target risk for carcinogenic compounds = 1E-06 Non-carcinogenic RSL: target hazard = 5E-01 for target organs.

Clean-up levels for non-VOC constituents (metals, PAHs, PCB) were developed for soil in the CMS – Addendum No.1 and consist of EPA Region III Residential RBCs (the most current version of the EPA Region III RSL table available shall be utilized) . The additional constituents are listed below. These constituents have not been found in groundwater above their respective MCL/GPS and therefore calculated site-specific SSLs as remedial goals are not warranted since leaching to groundwater is not evident. The facility retains the option to also evaluate these COCs through a quantitative risk assessment at such time as the remedies for VOCs in soil and groundwater are completed.

The facility shall supply VDEQ with a request and the details of the risk assessment prior to performing the evaluation.

Additional Constituents in Soil

Metals	PCB	PAHs
Arsenic	PCB-1254	Benzo(a)anthracene
Chromium		Benzo(a)pyrene
Lead		Benzo(a)fluoranthene
Thallium		Dibenzo(a,h)anthracene

Vanadium Indeno (1,2,3-cd)pyrene

GROUNDWATER

The following table identifies the numerical clean up targets established for groundwater, which reflect the regulatory goal of restoring groundwater to its most beneficial use (drinking water). Selected clean up targets for groundwater consist of the EPA MCLs under the Safe Drinking Water Act, which also correspond to the Groundwater Protection Standards established in the RCRA Permit.

Table 3: Clean up Targets for Groundwater

Constituent of Concern	Remedial Goal (µg/L)	Basis
Tetrachloroethene	5	EPA Drinking Water MCL
Trichloroethene	5	EPA Drinking Water MCL
Cis-1,2-dichloroethene	70	EPA Drinking Water MCL
Trans-1,2-dichloroethene	100	EPA Drinking Water MCL
Vinyl chloride	1	EPA Drinking Water MCL