VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

FINAL DECISION AND RESPONSE TO COMMENTS

CCL (Harrisonburg) Inc.
Harrisonburg, Virginia

EPA ID NO. VAD000485078

August 2025

CCL Harrisonburg FDRTC
August 2025

Final Decision

The Virginia Department of Environmental Quality (DEQ) is issuing this Final Decision and Response to Comments (Final Decision) under the authority of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA) of 1976, and the Hazardous and Solid Waste Amendments (HSWA) of 1984, 42 U.S.C. Sections 6901 and 6992k, regarding the remedy for the CCL (Harrisonburg) Inc. (Facility) located at 810 North Main Street Harrisonburg, Virginia.

On July 14, 2025, DEQ issued a Statement of Basis (SB) in which it described its proposed remedy for the Facility. The SB is hereby incorporated in this Final Decision by reference and is included in the enclosed.

Public Comment Period

On July 14, 2025, DEQ published the public notice for the SB in the Daily News Record newspaper and announced a thirty (30)-day public comment period in which it requested comments from the public on the remedy proposed in the SB. A copy of the public notice and the SB was also placed on DEQ's webpage. The public comment period ended on August 14, 2025.

Response to Comments

DEQ did not receive any comments on the proposed remedy. Consequently, DEQ's Final Remedy did not change from the remedy proposed in the SB.

Final Remedy

The Final Remedy, the components of which are explained in detail in the SB will be implemented through a UECA Environmental Covenant. The Remedy includes the following components: 1) natural attenuation monitoring of contaminants in groundwater in accordance with an approved Monitoring Plan; and 2) implementation and maintenance of compliance with land use controls in the form of institutional and engineering controls.

Declaration

Based on the Administrative Record compiled for Corrective Action at the CCL Harrisonburg Facility, DEQ has determined that the Final Remedy selected in this Final Decision and Response to Comments is protective of human health and the environment.

Brett Fisher, Manager
Office of Remediation Programs
Virginia Department of Environmental Quality

August 19, 2025
Date

Enclosure: Statement of Basis, July 2025

CCL Harrisonburg FDRTC
August 2025

STATEMENT OF BASIS

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATEMENT OF BASIS

CCL (Harrisonburg) Inc.
810 North Main Street Harrisonburg, Virginia
Harrisonburg, VA

EPA ID NO. VAD000485078

July 2025

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1. INTRODUCTION

The Virginia Department of Environmental Quality (DEQ) has prepared this Statement of Basis (SB) to solicit public comment on its proposed decision for the CCL (Harrisonburg) Inc. facility located at 810 North Main Street Harrisonburg, Virginia (Facility). DEQ's proposed decision generally consists of 1) implement an agency approved Operation and Maintenance Plan for ongoing remedial obligations which incorporates a Long-Term Monitoring Plan, Community Relations Plan, and a Materials Management Plan; and 2) implement and maintain compliance with land use controls in the form of institutional and engineering controls. This SB highlights key information relied upon by DEQ in making its proposed decision.

The Facility is subject to the United States Environmental Protection Agency's (EPA) Corrective Action Program under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA) of 1976, and the Hazardous and Solid Waste Amendments (HSWA) of 1984, 42 U.S.C. § 6901 et seq. In October 2024, EPA changed the name of its "Resource Conservation and Recovery Act Corrective Action Program" to the "Hazardous Waste Cleanup Program." This rebranding is intended to increase broad understanding of the purpose of the program. The Cleanup Program is designed to ensure that certain facilities subject to RCRA have investigated and remediated any releases of hazardous waste and hazardous constituents that have occurred at their property.

The Administrative Record (AR) for the Facility contains all documents, including data and quality assurance information, on which DEQ's proposed decision is based. See Section 9, Public Participation, for information on how you may review the AR.

Information on the Hazardous Waste Cleanup Program can be found by navigating https://www.epa.gov/hwcorrectiveactionsites/corrective-action-resources-specific-epas-region-3.

DEQ has prepared this Statement of Basis (SB) in cooperation with the United States Environmental Protection Agency (EPA) and is providing the opportunity for public comment and review on its proposed decision.

2. FACILITY BACKGROUND

The Facility property consists of approximately 10.6 acres and is surrounded by a combination of commercial and residential properties. A location map is attached as Figure 1.

Victor Tube Corporation began manufacturing at the Facility in 1959 and by 1990 was operating under the name of "Vic, Inc." 900,000 Inc., a Delaware corporation owned by the CCL Container (Hermitage), Inc., purchased certain assets of Vic, Inc. in 1990 and changed the name to CCL Container (Harrisonburg) Inc. In 2003, IntraPac Corporation purchased the shares of CCL Container (Harrisonburg) Inc. from CCL Container (Hermitage), Inc. and changed the company's name to IntraPac (Harrisonburg) Inc. IntraPac Corporation was a wholly owned subsidiary of IntraPac Limited Partnership. IntraPac Limited Partnership was owned 50% by 2031256 Ontario Inc. (an indirect, wholly owned subsidiary of CCL Industries Inc.) and 50% by Brent Ullman Group. 2031256 Ontario Inc. sold its 50% interest in IntraPac Limited Partnership to Brent Ullman Group on October 6, 2005. On the same date, a newly formed company, CCL (Harrisonburg) Inc. re-purchased the Facility from IntraPac (Harrisonburg) Inc. and leased the property back to IntraPac (Harrisonburg) Inc.

In 2009 IntraPac (Harrisonburg) Inc. sold about two thirds of its business assets at the Facility to Montebello Packaging Inc. Montebello conducts manufacturing operations at the Facility as a tenant of CCL (Harrisonburg) Inc. which continues to conduct manufacturing operations at the Facility. On

December 23, 2011, IntraPac Limited Partnership sold its remaining interest in the business assets at the Facility to C.I. Capital. Past manufacturing operations at the Facility included the production of cigar tubes, metal cans, metal shells, and metal tubes, plastic injection molding, aluminum and tin tube production, and coating operations, with some limited machining, painting, and printing. CCL (Harrisonburg) Inc. has not conducted any manufacturing operations at the Facility since 2005.

The facility is currently occupied by Montebello Packaging. Montebello manufactures aluminum tubes and cans, aluminum marker barrels, laminate tubes, both foil and all-plastic tubes for pharmaceutical, personal care, cosmetics, household, industrial and food products.

Hydrogeology

The IntraPac facility is located within the Valley and Ridge physiographic province. This province is largely dominated by layered sedimentary rocks that have been complexly folded and thrust faulted (VDMME 1993 and USGS 1997). The facility is underlain by the Lower Ordovician age Edinburg Formation and Lincolnshire and New Market Limestones, which consist mostly of black limestones and shales. No extensive unconsolidated geologic deposits overlie the bedrock of the Valley and Ridge physiographic province. Topography at the IntraPac facility is relatively flat, with a slight slope to the southwest. The facility is located approximately 1,360 feet above mean sea level. The closest surface water body to the IntraPac facility is Blacks Run, located approximately 600 feet northwest of the facility.

Blacks Run flows southwesterly and discharges into Cookes Creek approximately 7 miles southwest of the facility. Cookes Creek eventually discharges into the North River. It should be noted that drainage ditches are used at the facility to control surface water runoff. The drainage features divert runoff to the southern portion of the facility, where surface water discharges off site. The fate of the runoff is believed to be discharged to the City of Harrisonburg storm water management system.

The principal aquifers beneath the IntraPac facility are the Valley and Ridge Aquifers (USGS 1997). The most productive rock units associated with these aquifers include sandstones and carbonate rocks (primarily limestones) and most are in valleys. The carbonate rocks typically yield moderate to large volumes of water; however, yield is dependent upon the number of solution cavities and degree of fracturing. Sandstone formations can also yield large quantities of water where the sandstone is fractured. Groundwater flow within the Valley and Ridge Aquifers generally moves along fractures and bedding planes in all rock types, and in solution openings in carbonate rocks. Recharge of the aquifer typically occurs from precipitation that falls on the valley floor, as well as from runoff from adjacent ridges. According to IntraPac and reviewed documents, the facility and surrounding area are supplied potable water by the local municipality. Since the facility began operation, it has always been provided potable water by the local municipality. The City of Harrisonburg is located within the Shenandoah River Basin and the City's main water supply sources are the North River, Silver Lake Spring, and Switzer Dam/Dry River. The intakes for these water sources are located several miles west/southwest of the IntraPac facility. The IntraPac facility is located within a "Zone X" flood designation area, which designates an area outside a 500-year flood plain.

3. SUMMARY OF ENVIRONMENTAL HISTORY

3.1 Environmental Investigations

The Facility is completing site-wide corrective action obligations under an Administrative Order of Consent under Section 3008(h) of the Resource Conservation and Recovery Act, as amended, 42 U.S.C. Section 6928(h), dated March 12, 2014. Below is a summary of the Facility's environmental investigations.

3.1.1 Preliminary Assessment and RCRA Status

On April 23, 1991, the Commonwealth of Virginia, Department of Waste Management (VDWM) conducted an Environmental Priority Initiative-Preliminary Assessment (EPI-PA) of Victor Tube Corporation. The EPI-PA Report was submitted to EPA in May 1991. The EPI-PA Report noted that hazardous waste produced at the Facility consisted of trichloroethylene (TCE)/stearate lubrication (Hazardous Waste No. F001) and paint/solvent wastes (Hazardous Waste Noc. F003/F005/D001). The estimated annual quantity of paint/solvent waste generated by the Facility was 15,972 pounds.

Between October 1980 and October 1986 Victor Tube Corporation (prior owner and operator of the Facility) managed a hazardous waste storage facility subject to RCRA. In 1985 the Facility closed the storage units in accordance with a closure plan that had been approved by the state. On October 9, 1986 the VDWM terminated interim status for Victor Tube Corporation, and notified the facility that it was thereafter prohibited from operating as a hazardous waste management facility.

3.1.2 Former AST/UST Releases/Virginia Voluntary Remediation Program

A 4,000-gallon above ground storage tank (AST) was formerly located on the north-central exterior of the facility. However, this area is now overlain by a compressor room (Compressor Room No. 1). The current compressor room was constructed in 1992 and rests on a poured concrete slab. The former AST was used to store virgin TCE which was used to degrease metal tubes. The AST was used from 1980 through 1986, at which time it was removed. The construction details of the tanks are not available. A release of an unknown quantity of TCE was discovered in 1990 during an environmental site assessment associated with the sale of the property from Victor Industries to CCL Container (Harrisonburg), Inc. Soil samples collected in the vicinity of the tank indicated the presence of TCE.

An underground storage tank (UST) containing petroleum hydrocarbons was located on the south side of the building. The UST was removed in 1990. The presence of petroleum hydrocarbons in the subsurface soils was not found. No detectable amounts of BTEX or TPH were found in confirmation samples collected following the UST removal.

In September 2000, soil gas and soil samples were collected from the former AST area to further delineate the extent of TCE-impacted soil. The impacted soil was found to extend to the top of bedrock, which was encountered at a maximum depth of 5 feet below site grade. Groundwater was not encountered or assessed during the follow-up soil gas and soil sampling conducted in 2000. In February 2001, the TCE-impacted soil identified during the environmental site assessment and follow-up soil gas and soil sampling was excavated and removed. A total of 12.78 tons (approximately 10 cubic yards) of impacted soil was excavated, removed, and transported off site for disposal as non-hazardous waste. The excavation was approximately 8 feet by 11 feet in size and reached a maximum depth of 5 feet where bedrock was encountered. The soil targeted for removal was determined through past assessment findings and filed screening; however, the excavation was limited due to the presence of a large, buried boulder and subsurface utilities. No free phase TCE or stained soil was observed during the soil removal. At the conclusion of soil removal, six soil samples were collected from the base of the excavation and excavation sidewalls for laboratory analysis of volatile organic compounds (VOCs). TCE was detected in all six samples and cis-1,2-dichloroethylene (DCE) was detected in two of the samples. The concentrations of TCE detected in the samples ranged from 5 ug/kg to 380 ug/kg. The concentration of cis-1,2-DCE ranged from 8 ug/kg to 36 ug/kg. The highest concentration of TCE was detected in the two deepest samples collected from the base of the excavation (soil immediately overlying bedrock). No other chlorinated VOCs were detected in the six soil samples.

Based on field observations made during removal of the impacted soil and post-excavation soil sample analytical results, the environmental consultant performing the removal action concluded the following:

"*concentrations of TCE detected in all of the post-excavation soil samples were below EPA, Region III, Risk-Based Concentration Table values for soil in an industrial use scenario, TCE concentrations detected in five (5) of the soil samples exceeded the least conservative EPA, Region III, Dilution Attenuation Factor Soil Screening Level indicating a potential for TCE to leach to groundwater, gross-contamination and a threat to groundwater was not present, and natural attenuation of the TCE was occurring suggesting that the potential threat to groundwater will continue to diminish with time*."

The consultant recommended that the excavated area be covered by an impermeable barrier (asphalt or concrete) to minimize infiltration and potential of TCE in soil to impact groundwater. The consultant also recommended consideration for further evaluation of groundwater to include a record search to determine if any wells are present in close proximity to the IntraPac facility and limited geophysical survey to determine the potential for shallow groundwater and secondary porosity features controlling the migration of groundwater (i.e., fractures, cracks, solution cavities, etc.).

Based on field observations made during site visits and a review of available documentation, none of the aforementioned recommendations were implemented. The excavated area appears to have been resurfaced with soil and grass. In August 2001, the TCE release area was entered into the Virginia Department of Environmental Quality Voluntary Remediation Program (VRP) by CCL Container (Harrisonburg) Inc. and was accepted into the program in October 2001. The site was assigned VRP Case No. 00297. Based on the VRP's review of a Voluntary Remediation Report submitted to this Agency in March 2002, the VRP accepted the conclusions of the report and determined that the "soil left in place after remedial activities occurred at the Site did not present an unacceptable risk to human health or the environment. No conditions, restrictions, institutional controls or other obligations are required." The VRP issued a Certification of Satisfactory Completion of Remediation to CCL Container (Harrisonburg) Inc. in May 2003. The certificate was issued without restriction on land use and provided immunity from enforcement under the Virginia Waste Management Act to current and future facility owners.

3.1.3 RCRA Facility Assessment

EPA, DEQ and IntraPac personnel identified 12 Solid Waste Management Units (SWMUs) and one Area of Concern (AOC) during a site visit conducted on August 2, 2006. There were no known releases from the 12 SWMUs identified in the table below. The one identified AOC was carried forward to the RCRA Facility Investigation (RFI) phase.

Table 1. SWMU Identification

Identification	SWMU/AOC Name
SWMU-1	Liquid Satellite Accumulation Area
SWMU-2	Liquid Less Than 90-Day Hazardous Waste Storage Area
SWMU-3	Solid Less Than 90-Day Hazardous Waste Storage Area
SWMU-4	RCRA Empty Container Storage
SWMU-5	Trash Compactor
SWMU-6	Parts Washers
SWMU-7	Used Oil Collection Area
SWMU-8	Used Oil Storage Area
SWMU-9	Internal and External Coaters
SWMU-10	Former Interim Status Drum Storage Area

SWMU-11	Former Liquid Less Than 90-Day Hazardous Waste Storage Area
SWMU-12	Dust Collector

AOC-1: AOC-1 refers to an area where a release of trichloroethylene (TCE) occurred from a former 4,000-gallon aboveground storage tank (AST) that was formerly located on the north-central exterior of the IntraPac facility discussed in Section 3.1.2.

3.1.4 RCRA Facility Investigation

Limited Phase II – RCRA Facility Investigation (April 2009)

In 2009, a Limited Phase II RCRA Facility Investigation (RFI) was conducted to determine if trichloroethylene (TCE) or any of its degradation products were present in the groundwater at the facility as a result of the historic release of TCE and if so, to determine if these constituents pose any unacceptable risk or hazard. Three bedrock groundwater monitoring wells were installed, and samples were collected from each well in January and March 2009. TCE, Cis-1,2-dichloroethene (cis-1,2-DCE), trans-1-2-DCE, 1,1-DCE and vinyl chloride (VC) were detected. TCE and cis-1,2-DCE were detected at concentrations exceeding the MCL in groundwater samples collected from MW-1 and MW-2.

Groundwater Monitoring (June 2009)

During the period of June 9-10, 2009, groundwater sampling was conducted using two different types of sampling methods. It was concluded that samples collected using the low-flow sampling method, which removes a much lower volume of water (approximately 3 gallons), accurately represented contaminant levels of the formation water that is in close proximity to the well. The purge and sample method produced a much larger volume of water (approximately 80 gallons). Therefore, groundwater sampled using this method is representative of aquifer conditions further from the well and possibly closer to the source of the contamination. TCE concentrations in MW-1 decreased dramatically with each successive sampling event from 12.8 mg/l in January 2009 to 8.8 mg/l in March 2009 to 4.9 mg/l in June 2009.

Pump and Treat Pilot Study (2009/2010)

A three-month pilot pump test was conducted from November 10, 2009, to February 12, 2010. The purpose of the study was to evaluate the effectiveness of pump and treat technology to reduce TCE concentrations in the source area. Approximately 118,443 gallons of groundwater were pumped from MW-1 over 89 days of operation. As the pumping progressed, TCE concentrations in groundwater samples collected from MW-1 increased and eventually stabilized and remained elevated between 4.9 and 6.1 mg/l for the length of the pilot study. Water levels in the two observation wells were not significantly affected by the drawdown in the pumping well (MW-1). Based on these results, it was determined that the use of a pump-and-treat system from a 2-inch monitoring well was not an efficient and cost-effective form of remediation at the site. The results of the study also indicated that there is not a good hydraulic connection between MW-1 and MW-2, which is located approximately 95 feet downgradient of MW-1. Groundwater flow in karst areas, such as the site's location, typically occurs within bedrock fractures, conduits and to a lesser extent along bedding planes. It was recommended that a dye trace study be conducted to establish the extent and path of the impacted groundwater. Existing monitoring wells, domestic use wells, springs and surface water bodies in the area would be monitored to establish impacts to the surrounding environment.

Spring and Well Survey (May 2010)

A survey was conducted in May 2010 to identify springs and well within a one-mile radius of the facility. On May 26, 2010, groundwater flow at the site was established to be toward the southwest at a gradient of 0.18 ft/ft. Based on these data and field observations, the most likely path of groundwater flow to the surface (base flow) was established to be in the direction of the seeps noted along Blacks Run between Washington

Street and Johnson Street. The groundwater elevation data suggested that groundwater flow shifts to a more southerly direction during the drier months when the groundwater elevation is lower. At the time of the survey, Blacks Run was dry above the seeps. It was also established that groundwater may also flow towards Big Spring which is located next to the Harrisonburg Court House. Of the wells located in this survey, only Metro Pants #1 and Valley of Virginia Coop #1 would be considered possible receptors of groundwater contaminants from the site. A dye trace study was recommended to monitor the following potential receptors: Metro Pants #1 and Valley of Virginia Coop #1 (if access is permitted), Big Spring, the seeps found along Blacks Run and an upgradient spring.

Dye Trace Study (April/July 2011)
Three pounds of eosine dye mixed with 3 gallons of water was injected into MW-1 on April 21, 2011, followed by a 1,000-gallon potable water flush. The well was flushed at a rate of approximately 1 gallon per minute (gpm) for a period of approximately 17 hours. Prior to injection, new dye receptors were placed at all of the selected monitoring points. The dye receptors were replaced on a weekly basis for the first month and bi-weekly basis for the first month and bi-weekly thereafter for a total of 10 weeks.

The dye was strongly detected at the Big Spring located approximately 0.8 miles southwest of the site. The detection occurred one week or less from the time of the dye injection. Eosine was not detected at any other monitoring location during the course of the 10-week study. The rapid movement of the dye from the injection location to the Big Spring likely indicates conduit flow under the site. Groundwater elevation measurements conducted at the site also indicate that groundwater movement at the site is to the southwest. Upon completion of the study, it was recommended sampling Big Spring for the compounds of concern.

Spring and Groundwater Sampling (Sept/October 2011)
Big Spring was sampled in September and October of 2011 and again in May 2012. All the sampling results for TCE, 1,2-DCE, 1,1-DCE and vinyl chloride (VC) were below their respective MCLs. EPA's oversight contractor sampled the spring in September and December 2013 and February 2014 for TCE only. TCE was not detected above the MCL during any sampling event. Blacks Run was sampled upgradient and downgradient of the Big Spring outfall in October 2011. Results for TCE, 1,2-DCE, 1,1-DCE and VC were below their respective MCLs.

Groundwater sampling from the three on-site wells showed overall declining TCE concentrations in the two impacted wells (MW-1 and MW-2). Using low-flow sampling methodology, the TCE concentration in the sample collected from MW-1 in October 2011 was similar to the sampling event in May 2010, however, the overall concentration declined approximately 78 percent since sampling began in January 2009. The TCE concentration in MW-2 has shown a 95 percent reduction since June 2009 and was below the MCL with a slight increase in the concentration of cis-1,2-DCE (a dechlorination compound). The decline in TCE concentrations appears to have been the result of natural attenuation in the ground water at the site.

The data in the dye trace report suggest that the groundwater at the site moves off-site through conduit flow and emerges on the surface at the Big Spring. Multiple surface water samples collected at the Big Spring and Blacks Run show that TCE, 1,2-DCE, 1,1-DCE and VC levels are below the MCLs. Furthermore, the concentrations of these compounds in the groundwater below the site declined significantly from 2009 to 2011. The analytical data support the conclusion that natural attenuation is actively occurring at the site.

Supplemental Site Investigation (February 2012)
During the period of February 1-2, 2012, indoor composite air samples were collected over a 24-hour period using Summa canisters and analyzed for 1,1-DCE, cis-1,2-DCE, TCE and VC using USEPA

Method TO-15. A sub-slab vapor sample was also collected. TCE concentrations in the indoor air samples ranged from 27 ug/m^3 to below detection in the background and office samples. The sub-slab sample had a concentration of 15 ug/m^3.

During the period of February 2-3, 2012, two additional groundwater monitoring wells were installed (MW-3 and MW-4). The wells were drilled to approximately 85 feet below the ground surface which corresponded to approximately the same elevation as the bottom of MW-1 located near the TCE source area. On February 22, 2012, each well was sampled. The TCE concentration in MW-1 dropped approximately 81% from the first low-flow sampling event conducted in June 2009 (1.5 mg/l) to the sampling event conducted in February 2012 (o.29 mg/l). Cis-1,2-DCE levels dropped below the MCL. The TCE level in samples collected from MW-2 also showed a significant decrease dropping over 48% from 0.070 mg/l in June 2009 to 0.036 mg/l in February 2012. No compounds of concern were detected above their respective MCLs in the sample collected from MW-3. TCE was detected above its MCL of 0.005 mg/l at a concentration of 2.6 mg/l in the sample collected from MW-4. Cis-1,2-DCE was also detected in MW-4 above its MCL of 0.070 mg/l at a concentration of 0.910 mg/l.

Groundwater and Surface Water Sampling (May 2012)
Monitoring wells (MW-1, MW-2, MW-3, and MW-4) were sampled on May 20, 2012, using low-flow sampling methods. The analytical results showed concentrations of TCE and cis-1,2-DCE in MW-1, MW-2 and MW-4 above the MCLs. However, the TCE concentration in MW-4 had dropped dramatically from 2.6 mg/l during the initial sampling in February 2012 to 0.87 mg/l in May 2012. TCE was not detected above the MDL of 0.001 mg/l in MW-3 while cis-1,2-DCE was detected well below the MCL at 0.0029 mg/l.

Surface water samples were collected on May 30, 2012, from Big Spring and Blacks Run. One sample was collected directly from the Big Spring outfall pipe, one sample 45 feet upgradient of the Big Spring outfall and another 45 feet downgradient of the Big Spring outfall. TCE was detected in the Big Spring sample below the Federal MCL at a concentration of 0.0026 mg/l. TCE was detected at 0.0012 mg/l in the upgradient Blacks Run sample and 0.0014 mg/l at the downgradient sample. No other compounds of concern were detected in samples collected from Blacks Run.

Indoor Air, Groundwater and Surface Water Monitoring (August/November 2012)
Groundwater monitoring wells were gauged on August 7, 2012. Groundwater flow was established to be to the west and southwest at a gradient of 0.05 ft/ft. Although the pump and recovery tests indicate very low hydraulic conductivity values in the immediate vicinity of MW-3 and MW-4, the dye trace conducted in the Spring of 2012 indicated a much higher conductivity value (6.9E-3 ft/sec or higher) between the injection well (MW-1) and the Big Spring. Ihe higher hydraulic conductivity is likely the result of conduit or fracture flow in the karst geology between the injection well and the spring.

Surface water samples were collected on August 8, 2012, from two on-site storm water outfalls (Outfall 1 and Outfall 2) and 2 springs (SP-1 and SP-2). COCs were not detected above the MDLs in any of the surface water samples. A second round of indoor air samples was collected on November 6-7, 2012, from the same locations as discussed in Section 3.1.7, plus two locations within the office areas on the northwest side of the building. TCE was detected above the MDL in five of the indoor air samples, however none of the COCs were detected in the two samples collected in the office areas (AS-7 and AS-8). TCE was detected in the manufacturing area at concentrations ranging from 1.9 ug/m^3 in AS-3. The highest concentration of TCE (31 ug/m^3) was detected in the sample collected nearest the former TCE above ground storage tank (ASI). Four sub-slab vapor samples (SS-1 through SS-4) were also collected. TCE was detected above the MDL in all four of the sub-slab vapor samples at concentrations ranging from 13 ug/m^3 in SS-2 to 140 ug/m^3 in SS-4.

Groundwater samples were collected from MW-1, MW-2, MW-3 and MW-4 on November 6-7, 2012. TCE and cis-1,2-DCE were detected above the MDLs and Federal MCLs in samples collected from MW-1, MW-2 and MW-4. Cis-1,2-DCE was detected above the MDL but below the Federal MCL in MW-3. All groundwater results were comparable to the results obtained during the May 2012 sampling event. Following the groundwater sampling event, charcoal dye receptors were placed in MW-2, MW-3 and MW-4 to determine if dye from the spring 2011 dye trace study had migrated to those areas. The dye receptors remained in the wells for a period of approximately two weeks and were retrieved on November 20, 2012. Low levels of eosine dye ranging from 0.308 ppb in MW-3 to 1.606 ppb in MW-2 were detected in all three wells. These results indicate some degree of hydraulic connection between the dye injection well located nearest the TCE source area (MW-1) and the downgradient and side gradient wells (MW-2, MW-3 and MW-4).

Supplemental Site investigation and Interim Remedial Action (May/June 2013)
Two additional groundwater monitoring wells were installed on May 14, 2013. MW-5 was installed on-site, and MW-6 was installed at a neighboring property located at 800 North Main Street. Ihe wells were drilled to approximately the same elevation as the bottom of the existing MW-1 at depths ranging from approximately 80-90 feet below the ground surface.

On May 15, 2013, an indoor air survey of total VOCs using a photoionization detector (PID) accurate to 1 part per billion (ppb). The survey was conducted to locate any connection between the sub-slab vapors and the indoor air in the facility. The survey detected total VOCs only and was not compound specific. The screening results showed total VOC concentrations ranging from 382 ppb to 8778 ppb throughout the facility. Since the greatest subsurface concentration of TCE was only approximately 60 ppbv, the observed indoor VOC screening results do not appear to reflect TCE vapor intrusion in the building. Concerns were stated in the Work Plan that the use of VOCs in the current manufacturing processes would make it impossible to discern any TCE resulting from the potential subsurface vapor intrusion.

Indoor air samples (AS-1 through AS-10) were collected on June 5, 2013. The COCs were not detected above the appropriate USEPA Regional Screening Level (RSL) for Industrial Air at any of the ten sampling locations. Sub-slab vapor samples were collected at the three previously sampled locations (SS-2, SS-3, SS-4) and four new locations (SS-5, SS-6, SS-7 and SS-8). TCE concentrations were comparable to the previous samples collected from SS-2 and SS-3 and slightly higher in SS-4. The highest TCE concentrations of 310 ug/m^3 and 320 ug/m^3 were detected in SS-4 and SS-6 respectively.

Groundwater wells were sampled on June 3 and June 5, 2013, with the exception of the background well (BGW-1). Prior to sampling, all wells were gauged with an electronic water level indicator to establish groundwater flow direction. Groundwater flow was generally to the west at a gradient of 0.042 ft/ft. COCs were not detected in samples collected from the newly installed wells (MW-5 and MW-6). TCE and cis-1,2-DCE concentrations remain above the applicable Federal MCLs for drinking water in samples collected from MW-1, MW-2 and MW-4. TCE was detected above the Federal MCL for drinking water for the first and only time in a sample collected from MW-3.

A mobile interim pump-and-treat system was installed at the site on June 11, 2013. The system was equipped with a down-hole electric submersible Grundfos Redi-Flo pump installed to a depth of approximately 90 feet below the ground surface in MW-1. Groundwater was pumped at a rate of approximately 0.5 gallon per minute into a holding tank prior to being pumped through a bag filter and two granular activated carbon filters and into the sanitary sewer system under a discharge permit issued by the City of Harrisonburg. The pumping maintained a drawdown of approximately 30 feet in MW-1.

It is unclear whether the pumping had any effect on the indoor air quality at the facility. Although indoor TCE concentrations have decreased and remained low since the third indoor air sampling event conducted in June 2013, sub-slab TCE concentrations have increased significantly since the June 2013 sub-slab vapor sampling event. Although the increased sub-slab TCE concentrations may be the result of pumping TCE impacted groundwater back toward the source area, those increased sub-slab TCE concentrations have not resulted in increased TCE concentrations in the indoor air samples. This suggests that there is no connection between sub-slab vapor concentrations and indoor air concentrations of TCE.

Quarterly Monitoring (September 2013, December 2013, February 2014)
Quarterly groundwater, indoor air, and sub-slab monitoring in accordance with an EPA-approved work plan during September 2013, December 2013 and February 2014. The EPA oversight contractor also collected surface water samples from the Big Spring during each of the quarterly sampling events.

Prior to each sampling event, all groundwater monitoring wells were gauged to establish groundwater flow direction at the site. Historic data indicates that groundwater flow at the site is typically to the west or southwest. TCE and cis-1,2-DCE levels remained above the respective Federal MCLs in MW-1, however, the concentration of TCE decreased by almost 95 percent since the initial sampling conducted in January 2009. The TCE concentrations in samples collected from MW-2 decreased 96 percent since the initial sampling in June 2009 and were detected below the MCL during the last two quarters. Cis-1,2-DCE remained slightly above the MCL in samples collected from MW-2. TCE and cis-1,2-DCE remained above their respective Federal MCLs in MW-4, however, the concentration of TCE decreased by almost 97 percent since the initial sampling conducted in February 2012. Concentrations of all the COCs remain below the MCLs in samples collected from MW-3 for all seven sampling events conducted since the well was installed in 2012 except for the sample collected in June 2013. None of the COCs were detected in any of the samples collected from MW-5 or MW-6 since sampling began in June 2013.

None of the COCs were detected above the 10^{-5} RSLs for Industrial Air in any indoor air sample collected at the site from June 2013 through February 2014. TCE was detected at a concentration of 3.1 ug/m^3 in the sample collected at AS-9 on December 10, 2013. The USEPA *OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)* November 2001 states that "*For the purposes of making Current Human Exposures Under Control EI determinations, with respect to vapor intrusion under RCRA and CERCLA, EPA generally recommends the use of 10^{-5} values*." The 10^{-5} RSL for Industrial Air is 30 ug/m^3. The OSHA 8-hour time weighted average (TWA) standard for TCE is 537,385 ug/m^3. TCE was detected in all of the sub-slab air samples collected at the site ranging from 5.3 ug/m^3 in SS-8 to 5900 ug/m^3 in SS-6 during the period of June 2013 through February 2014.

RCRA Facility Investigation (RFI) Phase One (May 2014)
A series of sub-slab vapor, indoor air and groundwater sampling was conducted over a period of approximately 150 days. TCE was detected above the MCL (5 ug/l) at concentrations ranging from 350 ug/l to 1,800 ug/l in samples collected from MW-1. TCE was also detected above the MCL in samples collected from MW-4 during the baseline, 30-day and 60-day sampling events ranging from 13 ug/l to 74 ug/l. However, the TCE concentration in MW-4 dropped below the 5 ug/l MCL for the first time during the 90-day sampling event conducted in August 2014. The TCE concentration rose slightly during the 150-day sampling event to 15 ug/l. On July 14-15, 2014, an additional groundwater monitoring well (MW-7) was installed between the facility and MW-4. TCE was not detected above the MCL in samples collected from MW-2, MW-3, MW-5, MW-6 and MW-7 at any time during the entire Phase One study period.

Cis-1,2-DCE was detected above the MCL (70 ug/l) at concentrations ranging from 100 ug/l to 180 ug/l in MW-1 during the Phase One study period. Cis-1,2-DCE was also detected above the MCL in MW-2

(80 ug/l to 110 ug/l) and MW-4 (750 ug/l to 880 ug/l). A review of the analytical results indicated no effect of the pump shut down on COC concentrations in groundwater. COC concentrations remained below detection in samples collected from MW-3, MW-5, MW-6 and MW-7. TCE continued its historical decline in samples collected from MW-2 and MW-4 despite the discontinuation of the pump-and-treat operation. TCE levels in samples collected from the pumping well (MW-1) remained consistent with some occasional fluctuations which were likely the result of changes in precipitation levels.

Sub-slab vapor samples were collected during the baseline, 30-day, 60-day, 90-day and 150-day sampling events at seven locations throughout the facility. The highest level of TCE (7,000 ug/m^3) was detected at SS-6 located on the south side of the facility on August 27, 2014, the 90-day sampling event. Elevated TCE levels have also been historically detected at SS-3, SS-4 and SS-7.

Correlation coefficients were calculated between the sub-slab TCE concentrations and depth to groundwater at MW-1. The last four concentrations and depths to groundwater were utilized for each sub-slab sample to compute correlation coefficients for pump and treat and without pump and treat. Of the 12 correlation coefficients calculated, SS-4 indicated a statistically negative correlation at the 90% and 95% probability level for pumping and non-pumping, respectively. This indicated that during the pump and treat and non-pump and treat modes, an increase occurred in TCE concentrations with a decrease in depth to groundwater. SS-2 indicated a positive correlation to depth of groundwater during the non-pumping phase. Due to an apparent anomaly with the depth to groundwater data on 12/10/13 due to a pump malfunction, the SS-4 data were rerun without the anomalous data. These data indicated no statistical correlation between the TCE concentration and depth to groundwater during the pumping phase. Of the 12 correlation computations, however, six indicated a positive correlation and six indicated a negative correlation, indicating that the concentrations were quite random, and no correlation was evident from the pump and treat interim action.

RFI Phase Two (January 2016)
Phase II of the RFI Study consisted of surface and subsurface geophysical studies, the installation of additional bedrock monitoring well, the installation of a sub-slab vapor extraction system under the existing facility and an additional dye trace study.

During the period of January 9-10, 2016, a surface geophysical investigation was conducted. The purpose of this geophysical survey was to identify electrically conductive zones or low-resistivity zones (LRZs) that may be associated with high permeability geological structures, such as fracture zones and faults, which may represent preferred groundwater flow pathways. Based on the results of the survey, three additional groundwater monitoring wells (MW-5A, MW-7A and MW-8) were installed at locations showing probably LRZs downgradient of the facility. A suite of borehole geophysical logs on each borehole was generated to identify and characterize the orientation and flow characteristics of bedrock fractures. MW-7A – Both the caliper log and fluid temperature logs showed numerous small fracture zones over the entire depth of the borehole. However, based on the optical televiewer, most of these fractures can be seen as having very small, tight aperture openings or are infilled with white calcite. It was determined to be unlikely that there is much groundwater flow from most of these fractures. Three open fractures were detected by the televiewer and produce water according to the fluid temperature logs and the packer testing. Based on the orientation, two of the open fractures at 134 and 136 ft bgs likely represent bedding plane discontinuities. It is believed that most water flow in this well (>3 gpm) is coming from the open strike-parallel fracture at 137 ft bgs.

MW-8 – Karst solutioning and fracture zones were detected by the caliper and acoustic televiewer logs at 18-24, 57-80, 88-91 and 108-112 feet bgs. The fluid temperature log suggested that there was flow from fractures at 46-48, 58-60, 88-90 and maybe 106-112 ft bgs. The heat pulse flow meter (HPFM) suggested

that there was flow between the 18-24 and 58-60 ft bgs fracture zones. The HPFM also indicated that there is little to no flow beneath the 60-foot fracture zone under ambient or pumping conditions.

A sub-slab vapor extraction system was installed on January 9, 2016, under the facility at a location chosen due to the presence of elevated sub-slab TCE concentrations in the area along with numerous existing sub-slab monitoring points that were used to establish a radius of influence created by the extraction system.

During the period of June 6-8, 2016, monitoring wells MW-1, MW-4, MW-5A, MW-7A and MW-8 were sampled. TCE concentrations continue to trend lower in the groundwater samples collected from MW-1. The last sample collected on June 6, 2016 showed one of the lowest TCE concentrations to date. The TCE concentration found in the groundwater sample collected from MW-4 remains slightly above the MCL at a concentration of 21.7 ug/l. MW-5A, MW-7A and MW-8 were sampled for the first time during the June 2016 sampling event. TCE and its daughter products were not detected above the MCL in the groundwater sample collected from MW-5A. TCE (2,600 ug/l), 1,1-DCE (12.7 ug/l), cis 1,2-DCE (2,600 ug/l), and vinyl chloride (8.83 ug/l) were all detected above their respective MCLs in the groundwater sample collected from MW-7A. TCE (145.0 ug/l) and cis-1,2-DCE (180 ug/l) both exceeded their respective MCLs in the sample collected from MW-8.

Although not included as a part of the RFI – Phase Two Work Plan, the USEPA requested a limited dye trace study to establish if a hydraulic connection exists between MW-1 located near the source area and the newly installed monitoring wells (MW-5A, MW-7A, and MW-8). On June 8, 2016, three pounds of Sulphorhodamine B dye were injected into MW-1 followed by a 500-gallon potable water flush injected at a rate pf approximately 1 gallon per minute (GPM). Prior to the dye injections, charcoal dye receptors were placed in the screened intervals of MW-4, MW-5A, MW-7A, and MW-8 and in the Big Spring.

The first set of dye detectors were retrieved and replaced approximately 6 hours after dye injection. The second and third set of detectors were retrieved and replaced approximately 24-hours and 48-hours after dye injection, respectively. The fourth set of detectors was retrieved and replaced approximately 5 days after injection and the fifth and final set was retrieved approximately 50 days after injection. A strong detection of SRB was found on the charcoal receptor that was placed in the Big Spring within 24-hours of the dye injection. SRB was not detected in any of the receptors placed in the downgradient wells within 50 days of the dye injection.

RFI Phase Three (October 2018)
Following the RFI-Phase Two investigation, a Revised Draft RCRA Facility Investigation Report dated October 12, 2016, was submitted to the USEPA for review. On July 12, 2018, a meeting was conducted between representatives of the DEQ and CCL. During the meeting, CCL agreed to provide some additional data from the site including updated groundwater data, sub-slab vapor data and to conduct an additional dye trace study. A Proposed Work Plan was submitted to DEQ, dated August 17, 2018. The plan was approved by DEQ in a letter dated August 24, 2018. The plan consisted of an additional dye trace study, sub-slab vapor sampling and groundwater and surface water sampling.

Due to the elevated detection of TCE in the groundwater sample collected from MW-7A reported in the initial Draft RFI Report, CCL recommended an additional limited dye trace study in an effort to track groundwater movement from MW-7A to potential downgradient receptors MW-4, MW-8, seeps along Blacks Run and the Big Spring. The dye trace study was inconclusive. After approximately six months, dye injected into MW-7A was not detected in any monitoring points in Blacks Run, the Big Spring or the Harrison House Spring.

The off-gas sampling from the sub-slab vapor extraction system continued to detect TCE however, there was a 75% reduction in the TCE concentration since start-up of the system in January 2016. Sub-slab vapor sampling showed increase in TCE concentrations at various percentages from all sampling points within the influence radius of the system. This may be the result of the system drawing TCE vapors from source area closer to the vapor extraction point. TCE concentrations in the groundwater showed reductions in all wells sampled except for MW-7A which showed an increase.

RFI Phase Four (July 2022)
Phase Four of the RFI was conducted in July 2022 and included a spring and surface water survey and sampling event at locations recommended by the DEQ and the VDCR. Rather than performing an additional costly and potentially time-consuming dye trace study, DEQ recommended sampling the springs and surface water for the COCs at the subject site. The COCs were not detected in any spring or surface water sample collected at the recommended locations.

Phase Four also included the abandonment of MW-6 located on an adjacent property. The property owners had requested the removal due to an expansion in the area of the well. Multiple water samples collected from the well had not shown detections of any of the COCs.

3.2 Environmental Indicators (EIs)

The Facility was required to document the status of the EIs for the site, including *Current Human Exposures Under Control* (Human Health EI) and *Migration of Contaminated Groundwater Under Control* (Groundwater EI.) The Human Health EI was approved by EPA on July 15, 2015, and the Groundwater EI was approved by DEQ on September 18, 2023.

3.3 Current Environmental Conditions

The following section presents the current environmental conditions at the site.

3.3.1 Soil

The highest concentrations of TCE in soil were detected in the two deepest samples collected from the base of the former AST release excavation in soil immediately overlying bedrock. Based on the VRP's review of a Voluntary Remediation Report submitted to DEQ in 2002, the VRP accepted the conclusions of the report and determined that the "soil left in place after remedial activities occurred at the Site did not present an unacceptable risk to human health or the environment.

3.3.2 Groundwater

As of October 2018, groundwater samples collected from MW-1, MW-4, MW-7A and MW-8 have TCE and cis-1,2-DCE concentrations that exceed the Federal MCL. The highest concentrations of COCs were detected in MW-7A as listed in the table below.

Table 2: COCs Detected Above Maximum Contaminant Level (MCLs

Constituent	MCL (ug/L)	Maximum Conc. (ug/L)
1,1 DCE	7	17.9
Cis 1,2 DCE	70	2,270
Trans 1,2 DCE	100	60.3
TCE	5	3,750
VC	2	25.30

From 2009 until 2018, TCE concentrations have decreased in samples collected from MW-1 and MW-2 by 95 to 96 percent. The TCE concentration in samples collected from MW-4 has decreased by over 99 percent from 2.6 mg/l to 0.0014 mg/l in the 4 years from 2012 to 2016. Furthermore, the presence of cis-1,2-DCE in the groundwater samples along with negative ORP and low dissolved oxygen readings obtained during the low-flow sampling indicate that natural attenuation is actively occurring at the site. There is insufficient data to show trends in samples collected from MW-7A and MW-8.

MW-4, MW-5 and MW-8 are located near the downgradient property line. As of 2018, only MW-8 shows a TCE concentration above the MCL. Samples collected from MW-4 and MW-8 also show cis-1,2-DCE concentrations above the MCL. One off-site well (MW-6), which was installed directly downgradient of the TCE source area, has not shown detectable concentrations of any of the compounds of concern. MW-6 was subsequently abandoned in July 2022. In addition, samples collected from the remaining downgradient/side gradient wells (MW-3 and MW-5) do not show concentrations of the compounds of concern above the applicable MCLs.

No potable use wells or springs were identified within a 1-mile radius of the site. Multiple sampling events at the downgradient Big Spring have not shown any COCs above the appropriate MCLs. Therefore, it was established that no complete pathway between the impacted groundwater and human receptors could reasonably be expected under the current conditions.

3.3.3 Surface Water

A dye trace study conducted at the site indicated that groundwater near the source area emerges at the Big Spring located 0.8 miles southwest of the site. The Big Spring was sampled in September 2011, October 2011, September 2013, January 2015 and October 2018. The COCs were not detected above their respective MCLs in any of these samples. Furthermore, surface water samples from Blacks Run were collected upgradient and downgradient of the Big Spring outfall. Low levels of TCE below the MCL were detected at similar concentrations in both samples.

Additional surface water samples were collected from outfalls and springs located on-site and on an adjacent property. The COCs were not detected above the MDLs in any of the surface water samples.

Additional surface water and spring samples were collected at locations recommended by the DEQ and VDCR. Two additional spring samples (Linville Spring and Silver Lake Spring) and four additional surface water samples (Blacks Run, Smith Creek, Cooks Creek and Linvill Creek) were collected in July 2022. The COCs were not detected above their respective MCLs in any spring or surface water sample collected within a 5-mile radius of the site. Therefore, surface water was eliminated as a media known or reasonable suspected to be "contaminated" above appropriately protective risk-based levels.

3.3.4 Indoor Air

Seventy-six Indoor air samples were collected between February 1, 2012, and August 27, 2014, at various locations within the facility. An additional six background samples were collected outside the facility in the vicinity of fresh air intake vents. TCE was not detected above OSHA's TWQ for TCE of 537.385 ug/m^3 in any of the samples collected at the facility. Furthermore, TCE was detected above the 10^{-5} RSL for Industrial Air of 30 ug/m^3 in only one reliable indoor air sample (AS-3) at 31 ug/m^3 in November 2012. The USEPA OSWER *Draft Guidance for Evaluation the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)* November2001 states that "*For the purposes of making Current Human Exposures Under Control EI determinations, with respect to vapor intrusion under RCRA and CERCLA, EPA generally recommends the use of 10^{-5} values*."

Based on the data collected over four quarters from 2013 to 2014, TCE concentrations in the indoor air did not exceed the 10^{-5} Industrial RSL threshold. Therefore, under current conditions, there is no human exposure to concentrations of COCs that presents an unacceptable risk. A sub-slab vapor extractions system was installed at the site in January 2016 and continues to operate.

4. CLEANUP OBJECTIVES

EPA's Cleanup Program Objectives for the Facility are the following:

4.1 Groundwater

DEQ has determined that drinking water standards, namely Maximum Contaminant Levels (MCLs), for COCs in groundwater at the Facility are protective of human health and the environment. DEQ's Cleanup Objectives for Facility groundwater are the following:

1. To control exposure to the hazardous constituents in the groundwater by requiring compliance with and maintenance of a groundwater use restriction at the Facility as long as drinking water standards are exceeded.
2. To monitor stability and/or attenuation of concentrations of the following hazardous constituents in groundwater until drinking water standards are met.

Table 4: Remedial Cleanup Goals

Constituent	Remedial Goal (ug/L)	Basis
cis-1,2-Dichloroethene (cis-1,2-DCE)	70	MCL
1,1-Dichloroethene (1,1-DCE)	7	MCL
Trans-1,2-Dichloroethene (trans-1,2-DCE	100	MCL
Trichloroethene (TCE)	5	MCL
Vinyl Chloride (VC)	2	MCL

ug/L = micrograms per liter

4.2 Indoor Air

DEQ's Cleanup Objective for indoor air is to control exposure to volatile hazardous constituents in indoor air by requiring the use of vapor mitigation in existing buildings or in or beneath any newly constructed totally enclosed structures designed for occupation within 100 feet of the foot print of groundwater having site-related VOCs and SVOCs identified above protective levels (MCLs/RSLs), unless it is demonstrated to DEQ that vapor mitigation is not necessary to protect human health.

5. SUMMARY OF PROPOSED REMEDY

Under this proposed remedy, DEQ is requiring the following actions:

1. The Facility shall design and implement an Agency approved Operation and Maintenance Plan for ongoing remedial obligations which incorporates:
    a. Long Term Monitoring Plan - a site-wide long term monitoring program that will demonstrate long term stability and/or attenuation of site related contaminants in groundwater, Big Spring, and efficacy of the sub-slab vapor extraction system.
    b. Community Relations Plan
    c. Materials Management Plan for any earth moving activities, including excavation, drilling and construction activities, in areas at the Property where any contaminants remain in soils above the Agency's screening levels for nonresidential use, or in groundwater above the federal maximum contaminant levels ("MCLs") for drinking water promulgated pursuant to Section 42 U.S.C. §§ 300f et seq. of the Safe Drinking

Water Act and codified at 40 C.F.R. Part 141 (or Agency regional screening levels if no MCL has been adopted for a specific constituent).

2. Maintain compliance with Land Use Controls to be implemented through an environmental covenant pursuant to the Virginia Uniform Environmental Covenants Act (UECA), Title 10.1, Chapter 12.2, Sections 10.1-1238-10.1-1250 of the Code of Virginia and associated plans to include the following:
    a. The Property shall not be used for residential purposes or for children's (under the age of 16) daycare facilities, schools, or playground purposes and senior care facilities;
    b. Groundwater beneath the Property shall not be used for any purposes except for environmental monitoring and testing in accordance with a DEQ approved Long Term Monitoring Plan, or for non-contact industrial use as may be approved by the Agency as long as drinking water standards are exceeded. Any new groundwater wells installed at the Property must be approved by the Agency in writing;
    c. Any earth moving activities, including excavation, drilling and construction activities, in the areas at the Property where any contaminants remain in soils above the Agency's screening levels for non-residential use, or in groundwater above the federal maximum contaminant levels ("MCLs") for drinking water promulgated pursuant to Section 42 U.S.C. §§ 300f et seq. of the Safe Drinking Water Act and codified at 40 C.F.R. Part 141 (or Agency regional screening levels if no MCL has been adopted for a specific constituent), shall be conducted in accordance with the Agency-approved Materials Management Plan;
    d. Vapor intrusion mitigation measures in the existing building shall be maintained and monitored in accordance with the Agency Approved Operation and Maintenance Plan and vapor intrusion mitigation measures shall be installed in any existing or newly constructed totally enclosed building(s) designed for occupation within 100 feet of the footprint of groundwater having site-related VOCs identified above protective levels, unless it is demonstrated to DEQ that vapor mitigation is not necessary to protect human health; and
    e. Future modifications at the Property that could be reasonably understood to adversely affect or interfere with the integrity or protectiveness of the final VAD000485078 3 remedy will be evaluated to identify and address those potential impacts or interferences.

6. IMPLEMENTATION

DEQ proposes to implement the remedy through a future environmental covenant compliance with the UECA, or other enforceable mechanism. Therefore, DEQ does not anticipate any regulatory constraints in implementing its remedy.

7. EVALUATION OF DEQ'S PROPOSED DECISION

This section provides a description of the criteria DEQ used to evaluate the proposed decision for the site, consistent with EPA guidance. The criteria are applied in two phases. In the first phase, DEQ evaluates three decision threshold criteria as general goals. In the second phase, DEQ then evaluates seven balancing criteria to determine if the proposed decision provides the best relative combination of attributes.

RCRA Threshold Criteria:

- Remediation/Control of Sources of Releases
- Overall Protection of Human Health and the Environment
- Compliance with Media Standards and Objectives

RCRA Balancing/Evaluation Criteria:

- Long-term Effectiveness and Permanence
- Toxicity, Mobility, and Volume Reduction
- Short-term Effectiveness of Remedy and Human Exposure
- Implementability
- Capital Cost/Operations and Maintenance Costs
- Community Acceptance
- State/Support Agency Acceptance

6.1 RCRA Threshold Criteria

6.1.1 Remediation/Control of Sources of Releases

The AST used to store TCE, and the source of the historic release was removed in 1986. TCE-impacted soil was excavated and removed in 2001. Soil samples collected from the sides and bottom of the excavation tested below their respective screening values (Industrial Direct Contact).

Concerning AOC 1 (groundwater plume) – Investigations have shown that groundwater chemistry in samples collected from numerous wells to be conducive to natural attenuation. The presence of TCE degradation products detected in samples collected from MW-1, MW-2, MW-3, MW-4, MW-7A and MW-8 also supports the conclusion that the groundwater chemistry on site is conducive to biodegradation. Samples collected from MW-1, MW-2 and MW-4 have all shown decreases of TCE concentrations greater than 99% during the time period of 2009 through 2018. TCE concentrations in samples collected from MW-1, MW-2, MW-3 and MW-4 all show significant downward trends over the monitoring periods of each well. As of 2018, TCE concentrations in MW-2, MW-3 and MW-4 have dropped below the MCL. Multiple sampling events at the downgradient Big Spring have not shown any COCs above the appropriate MCLs.

6.1.2 Overall Protection of Human Health and the Environment

Based on the results of investigations all known sources of contamination have been characterized. Work conducted prior to the RFI removed source material. The proposed remedy includes institutional controls which protects human health and the environment from potential exposure to remaining hazardous constituents in groundwater and indoor air.

6.1.3 Compliance with Media Standards and Objectives

The target remediation objectives established by DEQ for organic constituents in groundwater (see Section 4.0 above) can be reasonably achieved with long-term natural attenuation processes. Long-term groundwater monitoring will be utilized to confirm that the remedy is effective in reducing constituent concentrations.

6.2 RCRA Balancing/Evaluation Criteria

6.2.1 Long-Term Effectiveness and Permanence

TCE concentrations in samples collected from MW-1, MW-2, MW-3 and MW-4 all show significant downward trends over the monitoring periods of each well. As of 2018, TCE concentrations in MW-2, MW-3 and MW-4 have dropped below the MCL. The data trends from sample collected from MW-1 suggest that TCE concentrations may fall below the MCL by 2029. These data sets support the long-term effectiveness of monitored natural attenuation at the site and its ability to reduce toxicity, mobility and volume.

6.2.2 Toxicity, Mobility, and Volume Reduction

Historic TCE trends measured in MW-1, MW-2, MW-3 and MW-4 from 2009 through 2018 have all shown dramatic decrease in TCE levels. Furthermore, surface water samples collected from numerous springs and

creeks within a 5-mile radius of the site have not shown TCE and/or its degradation products at concentrations that exceed the MCLs. These data indicate that contaminants present in the deep aquifer at the site are dramatically diluted prior to reaching the surface water or have restricted mobility.

6.2.3 Short-Term Effectiveness of Remedy and Potential Human Exposure

Historical sampling of surface water and springs within a 5-mile radius of the site has not identified any immediate risks to the surrounding community. Furthermore, the site is located in an urban setting with a municipal water supply. Therefore, the short-term effectiveness of the selected remedy is not considered a priority.

6.2.4 Implementability

DEQ's proposed remedy is readily implementable. With respect to the implementation of the ICs and as part of the proposed remedy, the Facility will pursue an environmental covenant under the Virginia Uniform Environmental Covenants Act, Title 10.1, Chapter 12.2, Sections 10.1-1238-10.1-1250 of the Code of Virginia. Therefore, DEQ does not anticipate any regulatory constraints in implementing its proposed remedy.

6.2.5 Capital Cost/Operations and Maintenance Costs

DEQ's proposed remedy is cost effective since the only remaining cleanup program activities include the recordation of the UECA covenant and long-term groundwater monitoring. The cost of the proposed remedy is reasonable in relation to the risk reduction provided to human health and the environment. The proposed measures are cost effective to implement now and in the predictable future, as needed.

6.2.6 Community Acceptance

DEQ will evaluate community acceptance of the proposed decision during the public comment period, which will last thirty (30) calendar days. DEQ's final decision and comments accepted during the public comment period will be addressed in the Final Decision and Response to Comments (FDRTC).

6.2.7 Support Agency Acceptance

DEQ will evaluate EPA's acceptance of the proposed remedy during the public comment period. DEQ's final decision will be set forth in the FDRTC.

8. FINANCIAL ASSURANCE

DEQ has evaluated whether financial assurance for cleanup is necessary to implement DEQ's proposed decision at the Facility. Given that DEQ's proposed decision does not require any further engineering actions to remediate soil, groundwater or indoor air contamination at this time and given that the costs of implementing institutional controls at the Facility will be de minimis, DEQ is proposing that no financial assurance be required.

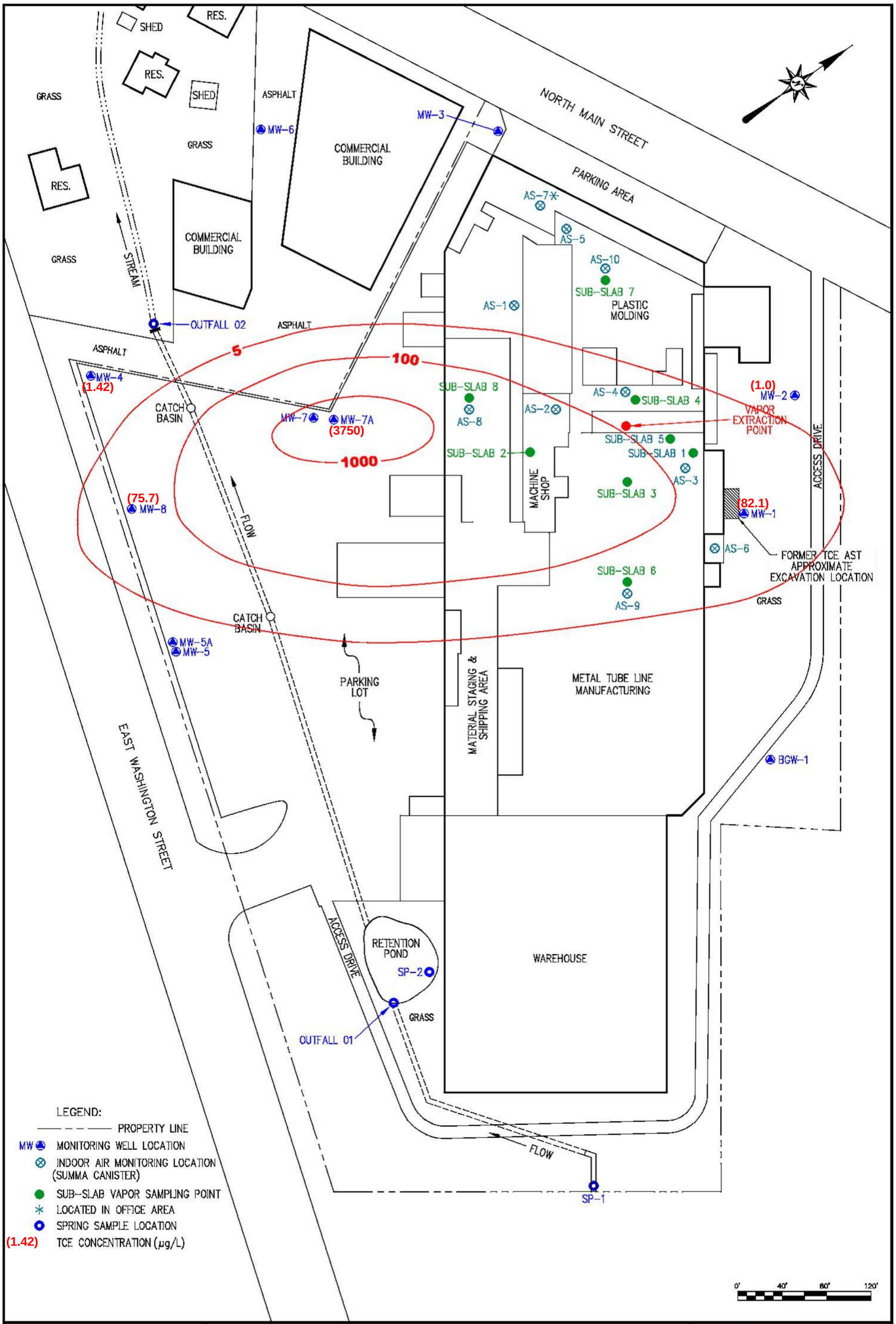
9. PUBLIC PARTICIPATION

Before DEQ makes a final decision on its proposed final remedy for the Facility, the public may participate in the decision selection process by reviewing this SB and documents contained in the Administrative Record for the Facility. The Administrative Record contains all information considered by DEQ in reaching this proposed decision. Interested parties are encouraged to review the Administrative Record and comment on DEQ's proposed decision. The Administrative Record, including the SB, is available for review by contacting DEQ at:

Virginia Department of Environmental Quality
1111 East Main Street, Suite 1400
Richmond, VA 23219
Contact: Mr. Calvin Jordan
Phone: (540) 209-3663
Email: william.jordan@deq.virginia.gov

The public comment period will last thirty (30) calendar days from the date notice of DEQ's proposed final remedy is published in a local newspaper. Comments may be submitted by mail, or email to Mr. Calvin Jordan at the address listed above.

DEQ will make a final decision after considering all comments, consistent with applicable RCRA requirements, regulations, and guidance. If the decision is substantially unchanged from the one in this Statement of Basis, DEQ will issue a final decision and inform all persons who submitted written comments or requested notice of DEQ's final determination. If the final decision is significantly different from the one proposed, DEQ will issue a public notice explaining the new decision and will reopen the comment period.



MARCH 2021

PROJECT NO: 309-1210
DRAWN BY: SW
APPROVED BY: MM

FIGURE 1

TCE CONCENTRATIONS IN GROUNDWATER (OCTOBER 22-23, 2018)

810 NORTH MAIN STREET
HARRISONBURG, VIRGINIA

ESHIELD
ENVIRONMENTAL ASSOCIATES, INC.
948 Floyd Drive
Lexington, KY 40505
(859) 294-5155