REGION 3

PHILADELPHIA, PA 19103

DOCUMENTATION OF LONG TERM STERWARSHIP ASSESSMENT
RCRA Corrective Action
Long Term Stewardship (LTS) RCRIS code: CA88P1
Completed by: Quinton Ulrich
Date: 10/8/2025

Bayer Corporation (Bayer)
EPA ID: VAD003379062
807 South Shady Avenue
Damascus, VA 24236

Long Term Stewardship Assessment Summary:

On August 27, 2025, the United States Environmental Protection Agency's (USEPA) Land, Chemicals, and Redevelopment Division (LCRD) representative, Quinton Ulrich, conducted a long-term stewardship assessment site visit of the Bayer Corporation Facility (Facility) in Damascus, VA.

EPA has determined that Bayer Corporation is in compliance with EPA's Final Decision and Response to Comments (FDRTC). EPA concludes that the implemented engineering controls are effective in meeting the objectives of protection of human health and the environment but minor site maintenance is needed. EPA recommends that an institutional control is implemented to record the engineering controls that currently exist, ensure their integrity and maintenance over time, and address potential changes in future use. Property maintenance including brush clearing, mowing, and fence repairs, are needed to allow for verification of cap integrity at future inspections and to enhance site security.

Introduction:

Long-term stewardship (LTS) refers to the activities necessary to ensure that engineering controls (ECs) are maintained, institutional controls (ICs) continue to be enforced, and the remedy is protective based on current uses and exposures. The purpose of the EPA Region 3 LTS program is to periodically assess the efficacy of the implemented remedies and to update the community on the status of the RCRA Corrective Action facilities. The assessment is conducted in two-fold, which consists of a record review and a field inspection, to ensure that the remedies are implemented and maintained in accordance with the final decision.

Facility Background:

The Facility is located at 807 South Shady Avenue in Damascus, Virginia. Beaverdam Creek flows north along the western edge of the Facility. The Facility is located approximately 0.5 miles south of the Damascus town center, and approximately 0.5 miles north of the Virginia/Tennessee state line. The Facility property is currently vacant, with residential properties located across Shady Avenue to the East, as well as the Damascus Department of Public Works building and a Church located immediately South. A hiking trail runs along the outside of the Facilities fence to the east.

The Facility was owned and operated by Beaver Chemical Works from 1918 until 1929, by American Cyanamid from 1929 until 1981, and finally by Mobay Corporation (now Bayer Corporation) from 1981 until the facility closed in 1986. Operations at the site between 1918 and 1986 included the production of aqueous-solution and dry-powder sulfur-based textile dyes, alizarin, and solvent-soluble sulfur dyes as either dry powder or paste. Mobay Corporation initiated site closure in 1986 which included the demolition and removal of most of the Facility's buildings and other structures.

Prior to 1918, the central section of the facility was reportedly used to process wood and manufacture wooden products. However, documentation of facility operations during this period is limited. Interviews with residents of Damascus indicate the activities completed at the Facility are consistent with a lumber mill or tannin extraction facility. No activities related to chemically preserving wood products was reported during the interviews.

The RCRA Facility Investigation (RFI) identified a total of nine Solid Waste Management Units (SWMUs) and one former settling pond. Wastes managed inside the SWMUs included wastewater containing thiosulfate, hydrogen sulfide and 2,4-dichlorobenzene-containing wastewaters, reclaimed elemental sulfur, and chlorophenols.

During the RFI, a total of 1) 98 surface soil samples were collected; 2) 59 test pits were excavated; 3) 20 on-site monitoring wells and 1 offsite monitoring wells were installed; 4) 6 subsurface soil borings were advanced; 5) 6 surface water samples were collected from Beaverdam Creek; 6) stream gauging was conducted; 7) historical records were reviewed to gather information on historical site operations; and 8) and a risk assessment was performed to identify and define possible existing and future health risks and potential environmental impacts associate with exposure to chemical constituents present in various media at the facility.

The results of the investigations indicated no unacceptable risks existed in association with groundwater, surface water and stream sediments, drinking water, or ecological receptors existed at the site since they either had no detections of contaminants or had low-level detections of contaminants which did not exceed the EPA Risk-Based Criteria (RBC). However, the investigation indicated several areas of soil contamination existed at the site including lead contamination in the Flood Debris Landfill Area, as well as Polycyclic Aromatic Hydrocarbons (PAHs) and lead contamination in the Southern Non-Process Area. Additionally, an area of black-stained subsurface soil was identified in the Northern Process Area. Sample results indicated the black-stained soil did not contain hazardous constituents of concern above any RBC which could cause a threat to human health or the environment, however the EPA

determined the soil discoloration was consistent with sulfur-bearing dye products used at the Facility.

Between June 4, 1996 and February 22, 1997, Bayer completed Interim Measures (IMs) at the site in order to address the soil impacts identified at the Facility. The black-stained soils identified in the Northern Process Area were removed over an approximately 320-foot by 90-foot excavation. Soil removal continued until no visible soil discoloration remained. An additional 25-foot by 220-foot excavation was also completed to remove a separate section of black-stained soil observed in two adjacent 10-foot by 10-foot test pits located to the west of the larger excavation. Post-excavation collected from both the larger and smaller excavation verified no concentrations of lead above the soil clean-up criterion for lead (1,000 parts per million [ppm]) were present and remaining soils contained a 95% upper confidence level for lead concentrations of less than 400 mg/kg. The areas were then backfilled using off-site borrow material from a source which was sampled and proven to be free from contamination. Confirmation samples were not collected for the smallest excavation as previous sampling results showed no contaminants of concern were present in the remaining discolored areas.

Additional excavations were completed in the Southern Non-Process Area, the Flood Debris Landfill area, and to remove lead-contaminated soils. Soil removal continued until visual observations confirmed no waste material was present, surface soils with elevated lead concentrations above 1,000 ppm were removed, and the 95% upper confidence level of the arithmetic mean for residual lead concentrations was less than 400 mg/kg. In the Southern Non-Process Area, a sample grid was established across the entire area, and the excavation footprint was established using the results of the grid. During the lead excavations, approximately 500 railroad ties and surrounding soils with historical exceedances of PAHs were also removed from a former railroad spur in the Southern Non-Process Area.

The Flood Debris Landfill footprint was determined via sidewall sampling. Confirmation samples collected after the footprint of each excavation was established verified that no concentrations of lead above the EPA soil clean-up criterion for lead (1,000 ppm) remained in either location. The areas were then backfilled using off-site borrow material from a source which was sampled and found to be free from contamination.

A Statement of Basis for the Facility was approved on June 24, 1998, which concluded that the interim measures effectively remediated the property and that no further action was required as long as the property was not used for residential purposes. The Facility was issued a CA999 (Corrective Action Process Terminated; No Further Action Needed) upon approval of the Statement of Basis.

Current Site Use:

The Southern Non-Process Area has been redeveloped and is currently used for recreational activities such as baseball, camping, and hiking. A church and a storage building for the Damascus Township Department of Public Works have also been constructed in the Southern Non-Process Area.

The Northern Process Area is currently vacant and is not regularly accessed. All structures related to the historical operations at the Facility have been removed. A hiking path is located along the eastern edge of the site; however, the path is situated outside of the Northern Process Area's fence and does not cross into the property.

Long-term Stewardship Site Visit:
On August 27, 2025, EPA conducted a long-term stewardship site visit with both VADEQ representatives as well as the Town Manager of Damascus to discuss and assess the status of the implemented remedies at the Facility.

The attendees were:

Name	Organization	Email Address	Phone No.
Quinton Ulrich	EPA Region 3	ulrich.quinton@epa.gov	(215) 814-2708
Khai Dao	EPA Region 3	dao.khai@epa.gov	(215) 814-5467
Amanda Michel	EPA Region 3	michel.amanda@epa.gov	(215) 814-2709
Karen Weber	VADEQ	karen.weber@deq.virginia.gov	(804) 432-7790
Chris Bell	Damascus Township	townmanager@damascus.org	(276) 475-3831 ext. 4

Implementation Mechanism(s):
The Implementation Mechanism is the method for implementing Institutional Controls (ICs) and Engineering Controls (ECs) and other continuing obligations required as a condition of the Final Decision. The Facility is not subject to any ICs following the issuance of the CA900 (Performance Standards Attained - No Controls Necessary) decision on June 24, 1998. The following ECs are present at the Bayer Facility:

Engineering Controls (ECs) Status:
Vegetated Soil Cap: A 1-foot-thick vegetated soil cap was constructed in the Northern Process Area to reduce erosion and prevent direct contact with potential residual impacted soils. The cap appeared to be in good condition during the visit, however a lack of brush clearing and mowing made a thorough inspection of the cap difficult.

Erosion Controls: A combination of silt fence and drainage swales were installed following the construction of the vegetated soil cap in the northern process area to control erosion during heavy rain and storm events. A retaining wall was also present along the northwestern boundary of the Northern Process Area (along Beaverdam Creek) which had not been referenced in any historical reports. While the retaining wall was easily visible and appeared to be in good condition, the lack of brush clearing and mowing made inspection of the silt fences and drainage swales in the Northern Process Area infeasible.

Security Fence: A security fence was installed around the Northern Process Area to control access to the property. The fence is still present and adequately protects the property from unauthorized access, however it has been damaged by fallen trees and rust due to lack of maintenance.

Financial Assurance:
No Financial Assurance is required by the Final Decision. This is still appropriate.

Reporting Requirements/Compliance:
The Final Decision does not require any additional reporting.

Mapping:
A geospatial mapping of the site and areas of interest is presented in Figure 1.

Conclusions and Recommendations:
EPA has determined that Bayer Corporation is compliant with EPA's FDRTC and that the implemented engineering controls are effective in meeting the objectives of protection of human health and the environment. While the FDRTC acknowledges that interim measures met the objectives of the remedy, consideration for potential changes in future use was not addressed. Property maintenance including brush clearing, mowing, and fence repairs, are needed to allow for verification of cap integrity at future inspections and to enhance site security. Therefore, EPA recommends that an institutional control is implemented to record the engineering controls that currently exist, ensure their integrity and maintenance over time, and address potential changes in future use.

The Facility web fact sheet with additional information and available documents can be downloaded at:
https://cimc.epa.gov/ords/cimc/f?p=CIMC:RCRA:::::P14_RCRA_HANDLER_ID:VAD003379062

Files Reviewed:

USEPA (1997). *Statement of Basis – Bayer Incorporated, Damascus, Washington County, Virginia*. https://www.epa.gov/system/files/documents/2025-03/bayer-corp.-statement-of-basis.pdf

USEPA (1997). *Draft Interim measures Final Report for the Bayer Corporation Former Textile Dye Plant, Damascus, Virginia*.

ICF Kaiser Engineers, Inc. (1996). *Final (Revision 2) RCRA Facility Investigation Report Volume 1 of 2 for the Bayer Corporation Former Textile Dye Plant, Damascus, Virginia.*

ICF Kaiser Engineers, Inc. (1996). *Final (Revision 2) RCRA Facility Investigation Report Volume 2 of 2 for the Bayer Corporation Former Textile Dye Plant, Damascus, Virginia.*

Figures 1
Site Map and Areas of Interest

Table 1
Corrective Action Remedy Summary
Areas of Implemented Engineering and Institutional Controls

Facility Name	Bayer Corporation (Bayer)			
Address	807 South Shady Avenue, Damascus, VA 24236			
EPA ID Number	VAD003379062			
Are there restrictions or controls that address:	**Yes**	**No**	**Areas**	**Description of restrictions, controls, and mechanism**
Groundwater		X		
Residential Use		X		No restriction currently in-place.
Excavation		X		
Vapor Intrusion		X		
Capped Areas	X		Northern Process Area	1-foot-thick vegetated soil cap installed to control erosion.
Other Engineering Controls	X		Northern Process Area	Drainage swales, silt fencing, retaining wall installed to control erosion.
Other Restrictions		X		

Remedial Review Questionnaire

IC Review and Assessment Questions:	**Yes**	**No**	**Notes**
• Have the ICs specified in the remedy been fully implemented? Implementation mechanism in place?	X		No ICs prescribed
• Do the ICs provide control for the entire extent of contamination (entire site or a specific portion)?		X	No ICs in place
• Are the ICs eliminating or reducing exposure of all potential receptors to known contamination?		X	No ICs in place
• Are the ICs effective and reliable for the activities (current and future) at the property to which the controls are applied?		X	No ICs in place
• Have the risk of potential pathway exposures addressed under Corrective Action changed based on updated screening levels and new technologies?	X		Lead was remediated to a now outdated unrestricted use standard. The site is compliant with current non-residential limits, however residual lead concentrations in subsurface soils of some areas exceed the current residential lead screening level. The future resident exposure pathway to subsurface soils is potentially complete.
• Are modifications to the IC implementation mechanism needed? (i.e., UECA Covenant, Permit or Order)	X		An IC is recommended to record the engineering controls that currently exist, ensure their integrity and maintenance over time, and address potential changes in future use.
• Are there plans to develop or sell the property?	X		The northern process area is currently being assessed for purchase/donation and redevelopment by the Town of Damascus and Bayer Corp.
• Have all reporting requirements been met?	X		No ongoing reporting requirements

Groundwater Review and Assessment Questions:	**Yes**	**No**	**Notes**
• Is groundwater onsite used for potable purposes?		X	
• Is the Facility connected to a public water supply?		X	
• Have any new wells been installed at the facility?		X	
• Are the current groundwater flow rate and direction similar as mentioned in the previous studies?			N/A; no ongoing monitoring
• Groundwater contaminants stable or decreasing in concentration?			N/A; no ongoing monitoring
• Are groundwater monitoring wells still in place (# wells)?		X	
• Any evidence or reason to re-evaluate the number and location of monitoring points and/or monitoring frequency?		X	
• For wells where groundwater monitoring is no longer required, have the wells be decommissioned?	X		
• Is there evidence of monitored natural attenuation occuring in groundwater?			N/A; no ongoing monitoring
• Has (active remediation system) been maintained as necessary?			N/A; no active remediation system installed
• Is the (groundwater containment system) effectively containing COCs and protecting potential receptors (surface water body and/or groundwater resource) via hydraulic control?			N/A; no groundwater containment system installed
• Have notification letters been sent to the local POTW, County Department of Health, and Planning and Zoning Department regarding groundwater use restrictions?			N/A; no groundwater use restrictions implemented

Surface and Subsurface Soil Review and Assessment Questions:	**Yes**	**No**	**Notes**
• Is the facility being used for residential purposes or purposes not covered by the IC?		X	
• Have there been recent construction or earth-moving activities or plans for such?		X	

Engineered Cap or Cover Review and Assessment Questions:	**Yes**	**No**	**Notes**
• Have geosynthetic/vegetative landfill caps (name) been properly maintained?	X		No damage noted, however brush clearing and mowing is needed
• Have any repairs been necessary? (i.e., regrading, filling, root removal)		X	
• Is the leachate collection system operating and effectively preventing groundwater contamination?			N/A; vegetative cap was installed to stabilize soils in the Northern Process Area

Vapor Intrusion Review and Assessment Questions:	**Yes**	**No**	**Notes**
• Have there been construction of new structures within the vapor intrusion restriction zone(s)?			N/A; no VI risk
• Is the vapor intrusion mitigation system radius of influence effective for the structure in which its installed?			N/A; no VI mitigation system installed

Miscellaneous Review and Assessment Questions:	**Yes**	**No**	**Notes**
• Is the security fence intact?	X		Site security fence is intact, however some areas damaged by rust and fallen trees
• Is the appropriate signage posted?	X		Do not enter signs posted along the northern process area fence
• Has the Facility factsheet on EPA's website been revised with information from this LTS?	X		
• Are the Human Health and Groundwater EI determinations accurate?	X		

Appendix A
Site Photos