

# Arrowhead Plating Superfund Site



U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 3

DELAWARE, MARYLAND, PENNSYLVANIA, VIRGINIA,  
WEST VIRGINIA, AND THE DISTRICT OF COLUMBIA

**Westmoreland County, Virginia**

**September 2019**

## EPA Announces Proposed Cleanup Plan

The U.S. Environmental Protection Agency (EPA) is issuing a Proposed Remedial Action Plan (Proposed Plan) to prevent human exposure to contaminants in indoor air, soil, and groundwater at and near the Arrowhead Plating Superfund Site.

## Site History and Background

The site is located approximately two miles southeast of the Town of Montross, Virginia on approximately 30 acres on the east side of State Route 3. The western portion of the Site consists of a one-story manufacturing building and a parking lot. The eastern portion of the Site contains five former sludge settling ponds, a treated wastewater pond, and two former sewage water treatment ponds. In addition, one chlorinated solvent tank and one acid tank are located along the northern edge of the facility. Both tanks are above-ground storage tanks and are presently empty.

From 1966 to 1979, the facility was used to manufacture cosmetic cases using electroplating, lacquering and enameling processes. Site soils, groundwater, and surface water were contaminated via on-site residual process wastes, contaminated containers, and manufacturing equipment.

EPA added the site to the National Priorities List in February 1990. In 1991, EPA selected a remedy for the site. The remedy included: a soil vapor extraction system to remove volatile organic compounds (VOCs) from contaminated soil and a pump-and-treat system to treat contaminated groundwater. EPA, in 1998, approved the use of the permeable reactive subsurface barrier system in lieu of the pump and treat system at the Site. In 2001, EPA approved the addition of a surface cap to the groundwater component of the selected remedy to limit surface water infiltration. In 2013, a sub-slab depressurizing system was installed at the site to address vapor intrusion (migration of the contaminants from the groundwater into overlying structures).

EPA initiated an additional Remedial Investigation and Feasibility Study in 2013 to gather more information after finding that the selected remedy was not effective in meeting cleanup goals for the site. The study detected significant contamination beneath the building and EPA has developed an updated Proposed Plan for cleaning up the site.

## Public Meeting

You're invited to learn more and submit comments on EPA's proposed cleanup plan at a public meeting:

**Thursday, October 17, 2019**

**George D. English, Sr.**

**Memorial Building**

**111 Polk Street**

**Montross, VA 22520**

**6:00 pm - 8:00 pm**

## Public Comment

Comments may also be submitted anytime during the public comment period from **September 26 to October 28, 2019**

**To review the Proposed Plan, visit:**

[www.epa.gov/superfund/arrowhead](http://www.epa.gov/superfund/arrowhead)

**Montross Branch  
Central Rappahannock  
Regional Library**

56 Polk St.

Montross, VA 22520

Phone: 804-472-3820

**U.S. EPA Region 3**

1650 Arch St.

Philadelphia, PA 19103

Phone: 215-814-3157

Please call for an appointment.

What is the plan for future cleanup?

The Proposed Plan includes a summary of 7 alternatives evaluated for the cleanup of groundwater at the Arrowhead Plating Superfund Site. The alternatives include different combinations of multiple cleanup technologies.

	Electrical Resistivity Heating (ERH)	Groundwater Extraction and Treatment System (GETS)	Enhanced Reductive Dechlorination (ERD); includes In Situ Chemical Reduction (ISCR) & In Situ Enhanced Bioremediation (ISEB)	In Situ Chemical Oxidation (ISCO)	Soil excavation with off-site disposal	Air Sparging (AS)/ Soil Vapor Extraction (SVE)	Vapor Intrusion (VI) mitigation	Institutional Controls (ICs)
	Heats soil and groundwater to boiling points of volatile contaminants and extracts the vapors	Pumps groundwater from the aquifer, treats it using conventional technology, and discharges it back to groundwater or surface water	ISCR uses zero valent iron to chemically degrade contaminants; ISEB stimulates naturally-occurring or introduced harmless bacteria that biologically degrade the contaminants	Strong chemical oxidizers are injected or mixed into soil and/or groundwater to destroy contaminants in place		AS pumps air underground to extract vapors from groundwater and wet soil <i>beneath</i> the water table; SVE pulls vapors out of the soil <i>above</i> the water table by applying vacuum	Sub-slab depressurizing system (SSDS): involves connecting a blower, or fan, to a small suction pit dug into the slab to vent vapors outdoors	Activity and use restrictions to limit exposure to indoor air and prevent installation of potable wells in the area of groundwater contamination
Alternative #1	No action*							
Alternative #2	✓	✓				✓	✓	✓
Alternative #3	✓		✓		✓		✓	✓
Alternative #4				✓			✓	✓
Alternative #5	✓		✓		✓		✓	✓
Alternative #6	✓			✓	✓		✓	✓
Alternative #7	✓		✓	✓	✓		✓	✓

\*Consideration of this alternative is required by regulation. The No Action alternative serves as a basis against which each of the other proposed remedial alternatives can be compared.

EPA's Nine Criteria Analysis

Before EPA can select a cleanup remedy, each potential cleanup alternative is evaluated using the following nine criteria:

1. Overall Protectiveness of Human Health and the Environment
2. Compliance with Applicable or Relevant and Appropriate Requirements
3. Long-term Effectiveness
4. Reduction of Toxicity, Mobility, or Volume through Treatment
5. Short-Term Effectiveness
6. Implementability
7. Cost
8. State Acceptance
9. Community Acceptance

To date, EPA has fully evaluated the first seven of the nine criteria. Once EPA receives and considers input from state officials and the community regarding the preferred alternative, we will make a final cleanup decision.

Based on the available information, the Preferred Alternative proposed for public comment is Alternative 7 - ERH, ISCO (injection), ERD (ISCR/ISEB), Excavation with Off-site Disposal, VI Mitigation, and ICs.

Alternative 7 ranked highest when balancing remedial timeframe, short- and long-term effectiveness, and cost. Alternative 7 has the potential to completely eliminate contaminant sources via treatment, and will achieve remediation goals slightly faster than other alternatives because of the shorter time to implement ERH. Alternative 7 treats a larger 1,4-dioxane footprint (versus hotspots). The ISCO treatment area will also eliminate the VOC source area prior to implementing ERD, thereby reducing the time to restore the aquifer. This alternative has the added benefit of being adaptable to a phased approach.

To see the full Proposed Plan, including information on the investigation and the evaluation of the alternatives, please visit [www.epa.gov/superfund/arrowhead](http://www.epa.gov/superfund/arrowhead)

How can the community get involved?

The public is encouraged to review the Proposed Plan and submit comments to EPA through October 28, 2019, Comments may be submitted by **postal mail, e-mail or in person** at the upcoming public meeting on Thursday, October 17.

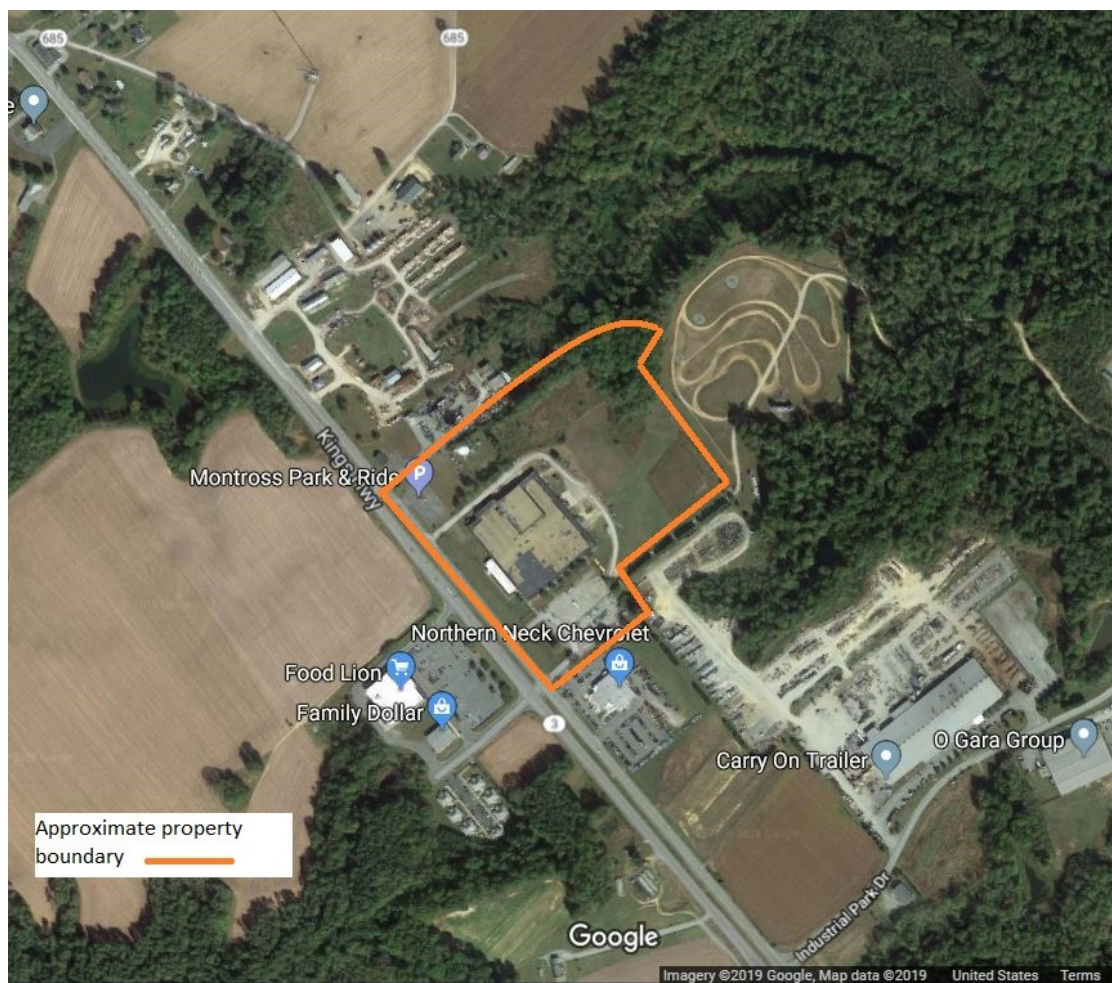
- Mail comments (postmarked no later than October 28, 2019) to: U.S. EPA Region 3, Attn: Chris Vallone, RPM, 1650 Arch Street (Mailcode 3SD23), Philadelphia, PA 19103; or
- E-mail comments to: [vallone.christopher@epa.gov](mailto:vallone.christopher@epa.gov)

After the close of the public comment period, EPA will consider all comments, consult with Virginia Department of Environmental Quality and, as appropriate, move forward with a final cleanup plan, called a Record of Decision (ROD) Amendment. The public's comments and EPA's responses will be included in the Responsiveness Summary section of the ROD Amendment.

U.S. Environmental Protection Agency, Region 3  
Attn: Cathleen Kennedy  
1650 Arch Street (Mailcode 3RA22)  
Philadelphia, PA 19103

Address Label Here

For more information about  
the Arrowhead Plating  
Superfund Site, please visit:  
[www.epa.gov/superfund/  
arrowhead](http://www.epa.gov/superfund/arrowhead)



### **Contact Us**

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