## Statement of Basis for the Remediation of Hyde Run Ditch at the Materion Brush Inc. Facility

14710 W. Portage River South Road, Elmore, Ohio Ottawa County EPA ID # OHD 004 212 999

Prepared by:

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## I. Introduction

#### Executive summary

The Ohio Environmental Protection Agency (Ohio EPA) has prepared this Statement of Basis (SB) for the Materion Brush Inc. (Materion) Facility located at 14710 W Portage River South Rd, Elmore, Ohio 43416, to explain the proposed corrective measures to address contaminated soil and sediment along Hyde Run Ditch. The purpose of this SB is to provide the public with information and solicit comments on the remedial alternatives (remedies) that Ohio EPA is proposing to select for Unit 26 (South Hyde Run Ditch), Unit 38 South (North Hyde Run Ditch South) and Unit 38 North (North Hyde Run Ditch North). Prior to taking a final action, an opportunity exists for the public to provide comments to Ohio EPA on the proposed remedial alternatives for the subject areas within Hyde Run Ditch which extends from the facility's southern fence line to the Portage River located to the north of the facility.

This SB summarizes information that can be found in greater detail in the September 24, 2018, *Materion – Hyde Run Corrective Measures Study (CMS) Units 26, 38S, & 38N* as well as other documents and records that are maintained by Ohio EPA. Ohio EPA reviewed the CMS report and Materion's proposed remedies for the three Hyde Run Ditch units. The remedies selected for Units 26, 38S and 38N will involve the establishment of an institutional control via an environmental covenant, targeted removal of soils/sediments that significantly drive risk, restoration of the areas with clean material, and monitored natural recovery.

The Environmental Covenant will restrict land use of the Hyde Run Ditch units to industrial use only and prohibit the use of ground water for potable purposes. Additional administrative controls will prohibit unauthorized access and emplace unit-specific limitations on excavation activities through a risk management plan. Targeted removal of "hot spot" areas will involve additional sampling activities either prior to or during the CMI design phase to define the target removal areas. Areas where soil/sediment are to be removed will be restored with clean material. Materion will develop a natural recovery strategy to demonstrate the effectiveness of the remedies.

Ohio EPA may modify the proposed remedies based on new information or public comments. As a precautionary response to COVID-19, Ohio EPA's offices and many libraries in the state of Ohio, at the time of draft issuance, are closed. These documents will be made available for public review upon reopening and these documents can be viewed anytime on Ohio EPA's website via the eDocument portal,

at: <u>http://edocpub.epa.ohio.gov/publicportal/edochome.aspx</u>. Using the search function, search under the document type of "Permit" and then refine the search using the facility's RCRA ID number (Secondary ID), which is OHD004212999 and Permit Purpose which is "Director Initiated Modification". Select from the list of documents. For additional accommodations or more information, please contact Halee Smith with Ohio EPA at (614) 441-0261.

## II. Facility Background

Materion is a 443 acre facility located at 14710 W. Portage River South Road in Elmore, Ohio, Ottawa County. The facility, located at 41° 20' 24" north latitude and 83° 13' 03" west longitude, is bounded by South Portage River Road and the Portage River to the north, and State Route 590 to the west. Agricultural land surrounds the east and southern bounds of the facility. Materion is located in a section of Ottawa County that is primarily agricultural with a very low population density. The facility has an Ohio Hazardous Waste Facility Installation and Operation Permit, currently for Container Storage, Post-Closure, and Corrective Action.

Hyde Run Ditch is in the central portion of the facility, wrapping east and south around the main manufacturing area. Hyde Run Ditch was divided into two waste management units (WMUs); Unit 26, South Hyde Run Ditch, and Unit 38, North Hyde Run Ditch. Unit 26 is located at the southern portion of Hyde Run Ditch and is within Materion's fence. Unit 38 was divided into two separate units, Unit 38S and Unit 38N. Unit 38S was defined as the area north of Unit 26 and south of Unit 38N, east of the manufacturing area, and is also within Materion's fence. Unit 38N is north of Materion's fence, downstream of the culvert discharge and extends "northward from the Materion culvert discharge, beneath West Portage River Road South via the road culvert to the Portage River." (CMS Report p.1) An overview of the three units can be seen in Figure 1.

## III. Facility (Operational) History

Materion operates a beryllium processing plant that converts beryllium hydroxide powder into beryllium metal, beryllium alloys and high-purity beryllium oxide powders. The facility is a large quantity generator of hazardous waste and has a State of Ohio Hazardous Waste Facility Installation and Operation Permit (Permit) which was last renewed on September 20, 2011. Condition E.1 of Materion's Permit states that the Permittee must institute a corrective action program for any releases of hazardous waste constituents from various WMUs (or Units) at the site.

Materion has been executing a corrective action program at the facility since the early 1990's. Materion conducted a RCRA Facility Investigation (RFI) to collect data and identify units exceeding risk-based standards and in need of corrective measures. Materion's first version of the RFI Report was submitted in August 1997 and was later revised after U.S. EPA and Ohio EPA commented on the document and additional data was collected in 1999. The RFI Report, Revision 1, dated August 25, 2000, identified 22 SWMUS and a tetrachloroethene (PCE) release area of concern. These areas were investigated during the RFI. The RFI report determined that only three areas had an unacceptable risk to human health and the environment, Unit 4 (Central Magnesium Fluoride Lagoon), Unit 26 (South Hyde Run Ditch) and Unit 38 (North Hyde Run Ditch). Corrective action was addressed at Unit 4 and long-term ground water monitoring is currently in place.

A Baseline Risk Assessment was performed as part of the RFI activities and is a part of the Final RFI Report. The Baseline Risk Assessment evaluated the potential risk to human health under various exposure scenarios and the ecological risk potential. The Final RFI Report concluded that there was the potential for unacceptable risk to human health or the environment and ecological risks may potentially exist at Units 26, 38S and 38N. The Final RFI Report was approved by U.S. EPA on January 19, 2001. The approved Final RFI Report is utilized as the primary reference for the Corrective Measures Study (CMS).

A Remedial Action Objectives (RAO) Report for the Hyde Run Ditch Units was submitted on November 4, 2014, and revised in August 2015. Ohio EPA approved the revised RAO Report on November 15, 2017. A CMS Report for Units 26, 38S and 38N was submitted to Ohio EPA on September 24, 2018. The CMS Report screened potential corrective action technologies for Units 26, 38S and 38N against certain threshold and balancing criteria. Results from the screening led to the development of three potential corrective action alternatives for each unit. The CMS Report concluded by proposing one remedy per unit for Ohio EPA's consideration.

## IV. Unit Descriptions

Hyde Run Ditch originates offsite to the southwest of Materion, cuts through the Materion property and ends at the Portage River. Unit 26 is the southern portion of Hyde Run Ditch, is within the facility's fence, and is approximately 2 acres. The northern portion of Unit 26 is open water. However, much of Unit 26 is a wetland with heavy phragmites and other vegetation.

Unit 38S is also within Materion's fence, east of the manufacturing complex, north of Unit 26, and its northern boundary is near a discharge structure that flows into a below grade culvert. Unit 38S measures roughly 800 ft. long north to south, by 200 ft. wide and is approximately 4.5 acres in size. Although a majority of the land is considered wetlands, Unit 38S is usually dry, and water flow within the unit sometimes consists entirely of Materion's NPDES permitted wastewater discharge. Heavy phragmites and woody vegetation can be found throughout the unit.

Unit 38N is approximately 0.5 acres in size and is located outside of Materion's fence, downstream of the culvert discharge, beneath West Portage River Road South via a road culvert to the Portage River. Unit 38N has relatively steep banks with very little soil cover. Sections of the bank have riprap boulders and the area is overgrown with trees and poison ivy.

## V. Summary of Investigation Results

A Baseline Risk Assessment was completed for the site in 2000 as part of the RFI activities and additional investigations were completed in 2010, 2014, and 2015 to define the nature and extent of contamination. Data collected from the investigations helped to develop a constituents of concern (COC) list for the three units. Metals are the predominant human health COCs for the three units while polychlorinated biphenyls (PCBs) were an additional concern for human health at Unit 38S and Unit 38N. Table 1 lists the COCs for each unit. Four metals were determined to be ecological COCs for the three units and are also listed in Table 1.

#### Table 1. Constituents of Concern (COCs) at Units 26, 38S and 38N

Human Health Chemicals of Concern	
Unit 26	Unit 38S and Unit 38N

Arsenic		Arsenic			
Beryllium		Beryllium			
Chromium, Total		Chromium, Total			
Fluoride		Cobalt			
Lead		Copper			
		Fluoride			
		Lead			
		Aroclor 1248			
		Aroclor 1254			
Ecological Chemicals of Concern					
Unit 26		Unit 38S/38N			
Phyto-Toxicity, Earthworms and Microbial Processes					
Soils	Sediments	Soils	Sediments		
		Chromium			
	Copper	Copper	Copper		
Fluoride	Fluoride	Fluoride	Fluoride		
Terrestrial Mammals					
n/a	n/a	Copper	Copper		

Taken from Materion's Units 26, 38S & 38N Corrective Measures Study (CMS) Report dated September 24, 2018

# VI. Description and Evaluation of Proposed Remedies for Units 26, 38N and 38S

Materion provided a Corrective Measures Study (CMS) Report to Ohio EPA on September 24, 2018, for the three Hyde Run Ditch units. The CMS Report documented the process used to conduct the preliminary screening of corrective action technologies that were considered and provided suggested remedies.

#### VI.1. Corrective Action Technologies

The following list of potential corrective action remedies for Units 26, 38S, and 38N was created for use in the preliminary screening evaluation:

- No Action (Baseline case)
- Institutional Controls
- Monitored Natural Recovery (MNR)
- Excavation and Disposal
- Cap/Cover (CC)
- In-situ Solidification/Stabilization (ISS)
- Phytoremediation
- Hydraulic Containment, also known as pump and treat (P&T)
- Vertical Barriers (VB).

### VI.2. Threshold Criteria

The potential remedies were evaluated against the following three threshold criteria:

- Remedy must protect human health and the environment, based on reasonably anticipated land use
- Remedy must attain applicable media cleanup objectives (ex. RAOs); and
- Remedy must control the source of release(s).

After a potential remedy (technology) meets the three Threshold Criteria, the technology is further compared to the following three screening criteria:

- Site characteristics
- Constituent characteristics and
- Technology limitations.

Materion's screening process reduced the number of potential corrective action technologies for Hyde Run Ditch from nine to four. The following remedies or technologies were selected for further evaluation in the corrective action remedy selection process:

• Cap/Cover;

- Excavation & Disposal ("Hot Spots" Only);
- Monitored Natural Recovery (MNR); and
- Institutional Controls.

To provide a baseline comparison for a potential remedy, "No Action" was also considered a potential technology.

## VI.3. Balancing Criteria

The next step in the remedy selection process involved taking each technology, assembling one or more technologies into three alternatives for each Unit, and comparing the alternatives to the following seven Balancing Criteria:

- Short-term effectiveness;
- Long-term effectiveness;
- Reduction of toxicity, mobility, and/or volume;
- Implementability;
- Preliminary cost;
- Community Acceptance; and
- Regulatory Acceptance.

Materion evaluated each technology against the set of Balancing Criteria and developed three corrective action alternatives for each unit. The following section describes the three alternatives for each unit.

## VII. Potential Corrective Action Alternatives

#### <u>Unit 26</u>

Alternative #1 – No Action

This alternative entails no activities to remove, control, mitigate, or minimize exposure to impacted media. The "No Action" alternative was used to compare all of the other remedies or technologies.

## Alternative #2 – Institutional Controls; MNR; and Comprehensive Soil/Sediment Excavation and Disposal

Alternative #2 involves an institutional control, physical removal (and disposal) of soil/sediment throughout all of Unit 26 and then MNR. The institutional control would involve obtaining an environmental covenant to limit Unit 26 to industrial land use and prohibit ground water use for potable purposes. Unit 26 would have additional restrictions on excavation and unauthorized access. If excavation or construction activities were to occur in the future, a Risk Mitigation Plan (RMP) would need to be developed and approved that would explain how excavation workers would be protected and how excavated soils would be managed.

The comprehensive soil/sediment excavation, removal, and disposal component of this remedy would remove and replace approximately 1 foot below grade for soils, and approximately 0.5 feet below grade for sediments for the entire Unit 26 area. The CMS Report concluded that this remedy would "permanently and significantly alter the existing environment and destroy the wetland."

The MNR component of the remedy would consist of a monitoring and inspections plan that would demonstrate the overall effectiveness of the corrective action remedy. The monitoring plan would be developed as a component of the CMI Work Plan.

## Alternative #3 – Institutional Controls; MNR; and Hot Spot Soil/Sediment Excavation and Disposal

Alternative #3 is similar to Alternative #2 due to the institutional controls and MNR components of the remedy. However, Alternative #3 consists of a targeted excavation and disposal plan (i.e., "hot spot") of soil/sediments based on residual risk. Using this approach would involve additional soil/sediment characterization activities to better define the potential removal areas. This remedy is also considered less likely to adversely impact existing wetland and habitat conditions compared to Alternative #2.

#### <u>Unit 38S</u>

The same three types of remedies were also considered for Unit 38S.

1.	Alternative #1	No Action
2.	Alternative #2	Institutional Controls; MNR; and Comprehensive Soil/Sediment/Sludge Excavation and Disposal
3.	Alternative #3	Institutional Controls; MNR; and Hot Spot Soil/Sediment/Sludge Excavation and Disposal

#### Alternative #2 – Institutional Controls; MNR; and Comprehensive Soil/Sediment/Sludge Excavation and Disposal

Alternative #2 would consist of having an institutional control (i.e. environmental covenant), MNR, and comprehensive excavation and disposal. For Unit 38S, the excavation and removal component of the remedy would include sludge of variable thicknesses along with soil/sediment removal. The CMS Report concluded that comprehensive soil/sediment/sludge removal and replacement of the entire footprint of Unit 38S would significantly alter the existing environment and destroy the wetland.

The MNR component of the remedy would involve a monitoring and inspections plan to demonstrate the effectiveness of the remedy. The monitoring plan would be developed as a component of the CMI Work Plan.

#### Alternative #3 – Institutional Controls; MNR; and Hot Spot Soil/Sediment/Sludge Excavation and Disposal

Alternative #3 for Unit 38S is similar to Alternative #2 in regard to establishing an institutional control and implementation of an MNR strategy. The main difference with Alternative #3 is the targeted removal of soil/sediment/sludge based on an evaluation of residual risk. Additional sampling of the area is planned, either prior to or during the CMI design phase, in order to better define the "hot spot" removal areas. The CMS Report stated that the updated wetland delineation and biological habitat studies lead to the conclusion that this remedy would "not adversely impact existing wetland and habitat conditions, especially as compared to Scenario 2." A post-removal soil/sediment sampling plan would be developed and submitted as part of the CMI Work Plan.

#### <u>Unit 38N</u>

Three potential remedies were also considered for Unit 38N.

1.	Alternative #1	No Action
2.	Alternative #2	Institutional Controls, MNR, Hot Spot Soil/Sediment Excavation and Disposal, and Cap/Cover to re-establish ground surface
3.	Alternative #3	Institutional Controls, MNR, Hot Spot Soil/Sediment Excavation and Disposal, and Cap/Cover as appropriate to supplement planned Ottawa County Portage River Road Bridge re-construction

#### Alternative #2 – Institutional Controls, MNR, Hot Spot Soil/Sediment Excavation and Disposal, and Cap/Cover to re-establish ground surface

Alternative #2 involves an institutional control and MNR. However, with this alternative, there is limited soil/sediment excavation and disposal (removal and restoration) and the installation of a cap/cover. Excavation and disposal in hot spot areas would remove approximately one foot below grade for soils and approximately 0.5 feet below grade for sediments within the footprint of Unit 38N. The use of replacement material and the installation of a cap/cover would restore the area to pre-excavation conditions and provide for long-term preservation of the remediated areas. Installation of the cap/cover could also involve tree removal, landscaping, and riprap armoring within Hyde Run to minimize erosion and protect the surrounding environment.

#### Alternative #3 – Institutional Controls; MNR; Hot Spot Soil/Sediment Excavation and Disposal; and Cap/Cover as appropriate to supplement planned Ottawa County Portage River Road Bridge reconstruction

Alternative #3 involves the institutional controls and MNR components of Alternative #2 along with an excavation and disposal component. However, Alternative #3 involves working with Ottawa County as they work to replace the Portage River Road bridge over Hyde Run and associated road widening of Portage River Road near Hyde Run. The county plans to begin the work in 2020 and has been in communication with Materion on how to coordinate activities. A cap/cover would still be installed, but under Alternative #3, the size of the cap/cover would be minimized allowing Ottawa County to restore surface conditions after they complete the bridge replacement and road widening efforts over Hyde Run.

## VIII. Corrective Action Alternative Evaluation

The next step in the corrective action process was to evaluate each of the proposed remedial alternatives to the seven Balancing Criteria. Materion added an additional criterion to their evaluation, Sustainability. Materion's evaluation process and ranking of the potential alternatives/remedies can be seen in the CMS Report.

## IX. Preferred Remedies

Materion recommended one remedy for each unit for Ohio EPA's consideration. Ohio EPA evaluated Materion's remedy selection process and agrees with the facility's selected remedies for each unit. The following section summarizes Ohio EPA's selected remedy and why the remedy is appropriate.

**Unit 26 - Alternative #3** – Institutional Controls; MNR; and Hot Spot Soil/Sediment Excavation and Disposal

Implementation of Alternative #3 at Unit 26 would address the following:

- RAOs would be met; and
- Unacceptable exposure to the COCs in the affected media by non-maintenance, Materion site workers and personnel would be prevented through the establishment of institutional controls; and
- Protection of potential human and ecological receptors to COCs would be addressed through implementation of MNR and associated performance monitoring; and
- Unacceptable exposure of potential ecological receptors to COCs in on-site media would be mitigated through targeted hot spot removal of soil/sediments at Unit 26; and
- Habitat and ecological impacts would be minimized through targeted removal activities vs. comprehensive removal.

Unit 38S - Alternative #3 – Institutional Controls; MNR; and Hot Spot Soil/Sediment/Sludge Excavation and Disposal

Implementation of Alternative #3 at Unit 38S would address the following:

- RAOs would be met; and
- Unacceptable exposure to the COCs in the affected media by non-maintenance, Materion site workers and personnel would be prevented through the establishment of institutional controls; and
- Unacceptable exposure of potential ecological receptors to COCs in on-site media would be mitigated through targeted hot spot removal of soil/sediments/sludge at Unit 38S; and
- Targeted removal of soil/sediment/sludge would reduce potential habitat and ecological impacts, allow existing flora and fauna to remain and minimizing the loss of well-established and thriving vegetation; and
- Performance monitoring program will be developed to create the appropriate metrics and locations to measure the effectiveness of the implemented remedy.

#### Unit 38N - Alternative #3 – Institutional Controls; MNR; Hot Spot Soil/Sediment Excavation and Disposal; and Cap/Cover as appropriate to supplement planned Ottawa County Portage River Road Bridge re-construction

Implementation of Alternative #3 at Unit 38N would address the following:

- RAOs would be met; and
- Unacceptable exposure to the COCs in the affected media by non-maintenance, Materion site workers and personnel would be prevented through the establishment of institutional controls; and
- Unacceptable exposure of potential ecological receptors to COCs in on-site media would be mitigated through targeted hot spot removal of soil/sediments along with the associated cap and cover activities; and
- Implementation of MNR would also provide long-term protection of ecological receptors and provide for the ongoing mitigation of potential exposure to COCs in ground water and surface water through performance monitoring, the existing NPDES permit, and the associated compliance requirements for Unit 38N.

Locations at Unit 38N planned for further evaluation during the Pre-Design studies are within the ditch that runs through Unit 38N towards the Portage River and around the drainage ditch. Additional soil and sediment characterization sampling will better define the target removal areas. Additional work will be performed at Unit 38N as Materion

works with the Ottawa County Road Department with the bridge replacement and road widening project. Installation of a cap and cover will restore the area around the excavation area to pre-construction conditions and provide for contouring and grading to the ground surface. The ditch may be lined with riprap to protect against erosion.

## X. Conclusion

Ohio EPA agrees with Materion's proposed remedies at Units 26, 38S and 38N. All of the chosen remedies will rely on an environmental covenant that will restrict land use to industrial purposes, restrict the extraction of ground water for potable purposes, and put unit-specific limitations on excavation and unauthorized access. Targeted soil/sediment/sludge excavation and removal activities of "hot spots" will be better defined after the Pre-Design studies are completed. The excavated materials will be removed by either dry excavation, after dewatering, or through removal using mechanical or hydraulic dredging techniques. Confirmatory soil and sediment sampling will occur post-removal and the confirmatory sampling plan will be a part of the CMI Work Plan. Excavated areas will be restored with a minimum of 1 foot of clean soil cover and long-term effectiveness of the remedy will be monitored through MNR.

Ohio EPA has three minor modifications that must be incorporated into the final remedies for the three units.

For Units 38S and Unit 38N, if any excavation or construction activities occur after completion of the prescribed corrective action activities, an RMP for the respective unit would need to be submitted to Ohio EPA for approval prior to the work commencing.

At Unit 38N, Ohio EPA is lengthening the "hot spot' area located on the south side of West Portage River South Road to include the location where sample U38N-SD-21 (and U38N-SD-22) are located. U38N-SD-21 is on the southwest edge of where proposed excavation activities will be performed and U38N-SD-22 is approximately 15 ft. southeast of the southeast corner of the proposed "hot spot" excavation area. Both areas have high PCB concentrations (Aroclor-1248 and Aroclor-1254) between 0 and 1.5 ft. below ground surface (bgs).

Ohio EPA is also adding U38SD-11 and U38SD-12 as hot spots at Unit 38N. Arsenic and Aroclor-1248 and Aroclor-1254 were found at high concentrations during the RFI down to two feet bgs.

## XI. References

AECOM, 2015. Materion - Revision 1 – Remedial Action Objective Report, Hyde Run – Units 26 and 38. AECOM, 2018. Materion – Hyde Run Corrective Measures Study (CMS) Report Units 26, 38S & 38N.

Cox-Colvin & Associates, Inc., 2000. RFI Report Brush Wellman Inc., Elmore, Ohio.

Ohio EPA, 2005. Ohio EPA Division of Hazardous Waste Management Corrective Action Handbook.

U.S. EPA, 1991. Guidance on RCRA Corrective Action Decision Documents: The Statement of Basis Final Decision and Response to Comments.

## XII. Glossary of Terms Used in the Statement of Basis

#### **Constituents of Concern (COC)**

Any contaminant discovered during a facility investigation at a level that has the potential to negatively impact human health or the environment.

#### **Corrective Measures Implementation (CMI)**

Part of the RCRA process that follows the CMS. The CMI phase involves the design and implementation of a chosen remedy.

#### **Corrective Measures Study (CMS)**

Part of the RCRA process. The CMS phase involves analyzing a range of clean-up alternatives and evaluating the advantages and disadvantages relative to facility-specific conditions. Such a study is called the Corrective Measures Study.

#### **Environmental Covenant**

A legally enforceable document that imposes activity and use limitations. The land use restriction runs with the land and is binding upon existing and any future property owner, should the property be sold.

#### Hot Spot

Area where there is a high concentration of a contaminant in soil/sediment.

#### **Operations and Maintenance**

A plan that defines long-term measures that will be implemented at a site, after the initial remedial actions, to assure that a remedy remains protective of human health and the environment.

#### Polychlorinated Biphenyls (PCBs)

A group of synthetic, organic, chlorinated, aromatic hydrocarbons having various industrial applications. They are highly toxic, poisonous and potentially carcinogenic environmental pollutants known to cause skin diseases. They tend to accumulate in animal tissues and are suspected of causing birth defects and cancer.

#### **Remedial Action Objective (RAO)**

Specific goals of a selected remedy for reducing risks posed by a site.

#### **RCRA Facility Investigation (RFI)**

The RFI is used to determine if a hazardous substance was released, the level of detectable contaminant, and the likely spread of the hazardous or potentially hazardous pollutant. This information is collected to support the choice of a cleanup remedy to reduce or eliminate the risks associated with contamination at a site.

#### **Statement of Basis**

- Summarizes information contained in RFI/CMS reports and the administrative record.
- Solicits public comment on all possible alternatives, including alternatives that may not have been identified in the CMS.
- Is a public participation document and expected to be widely read.
- Describes the proposed remedy, but does not select the final remedy.

Figures





