UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION III

FINAL DECISION AND RESPONSE TO COMMENTS

GRIFFIN PIPE PRODUCTS COMPANY – THOMAS ROAD LANDFILL
THOMAS ROAD & ROUTE 685 (RIVER ROAD)
MADISON HEIGHTS, VIRGINIA

EPA ID NO. VAD000800532

Prepared by
Office of Remediation
Land and Chemicals Division
March 2017

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List of Acronyms

AR	Administrative Record
CMS	Corrective Measures Study
COC	Contaminants of Concern
DWM	VA Department of Waste Management
EPA	Environmental Protection Agency
FDRTC	Final Decision Response to Comments
GPRA	Government Performance and Results Act
HHRA	Human Health Risk Assessment
HSWA	Hazardous and Solid Waste Amendments
IM	Interim Measures
MCL	Maximum Contaminant Level
O&M	Operation and Maintenance
RCRA	Resource Conservation and Recovery Act
RFI	Remedial Field Investigation
RSL	Regional Screening Level
SB	Statement of Basis
SLERA	Screening Level Ecological Risk Assessment
UCLs	Upper Confidence Levels
VADEQ	Virginia Department of Environmental Quality
VHWMR	Virginia Hazardous Waste Management Regulations
WGS	World Geodetic System

Section 1: Introduction

The United States Environmental Protection Agency (EPA) is issuing this Final Decision and Response to Comments (FDRTC or Final Decision) in connection with the Griffin Pipe Products Company (Griffin Pipe) Thomas Road landfill facility located in Madison Heights, VA (Facility). The Final Decision is issued pursuant to 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.

On January 18, 2017, EPA issued a Statement of Basis (SB) in which EPA proposed a remedy for the Facility. EPA held a thirty (30)-day public comment period which began on January 18, 2017 and ended on February 17, 2017. The only comments EPA received during the public comment period were submitted by Griffin Pipe.

EPA has determined that it is not necessary to make significant modifications to the final remedy as set forth in the SB. Based on comments received during the public comment period EPA is, however, making minor modifications to the final remedy as described in more detail in Attachment A, EPA Response to Comments. This Final Decision and the remedy selected herein incorporate those minor modifications and clarifications.

Section 2: Facility Background

A. Site Description and History

The Facility is located about one mile north of the intersection of Thomas Road and State Route 685 in Amherst County, Virginia. The Facility, consists of approximately 15 acres and is surrounded by mostly wooded area with scattered residences to the northeast of the facility. Approximately 8 acres of the Facility have been developed as a landfill. A location map is in Attachment 1.

Griffin Pipe has disposed of foundry wastes from its Lynchburg, Virginia foundry at the Facility since the 1970's. In 1981, Griffin purchased the Facility and operated the landfill until 1984. The wastes disposed at the landfill included baghouse dust produced by the air emission control system for the iron melting cupola. Cupola dust is considered hazardous for cadmium (D006) and lead (D008). Griffin Pipe was the only source of waste, both hazardous and non-hazardous, received at the Facility.

On June 1, 1988 the Virginia Department of Waste Management (DWM), which subsequently changed its name to the Virginia Department of Environmental Quality (VADEQ), acknowledged that the Facility landfill had closed in accordance with the Virginia Hazardous

Waste Management Regulations (VHWMR). On October 25, 1988, DWM approved the solid waste landfill closure plan for the landfill. DWM certified that the landfill was capped and closed in November 1989.

On October 8, 2002, EPA issued a Final Administrative Order by Consent (Order) to Griffin Pipe, pursuant to Section 3008(h) of the Resource Conservation and Recovery Act of 1976, as amended by the Hazardous and Solid Waste Amendments of 1984, 42 U.S.C. Section 6928(h). The purpose of this Order was to have Griffin Pipe perform a RCRA Facility Investigation (RFI) to determine the nature and extent of any release of hazardous waste and/or hazardous constituents at or from the Facility and to perform a Corrective Measures Study (CMS) to identify and to evaluate alternatives for corrective action if necessary.

B. Geology and Hydrogeology

Groundwater flow is generally northwest towards Buck Branch, a tributary to the James River. However, the majority of the groundwater flow is through discrete fractures in underlying bedrock with only minor transport through overlying soils. Permeability values for the soil overburden and the intact bedrock are low. The Facility generally slopes toward Buck Branch. Groundwater flows downslope to the northwest toward Buck Branch and ultimately discharges to the stream or turns to the southwest and flows downstream towards the James River. A steep ridge to the northwest of Buck Branch prevents flow beyond the valley floor in this direction.

Two former engineered stormwater detention ponds (referred to as the former eastern and western pond areas, respectively), located approximately six to ten feet in elevation above Buck Branch, functioned as designed sedimentation basins that captured runoff from the landfill and adjacent areas. These former ponds discharged to Buck Branch.

Section 3: Summary of Environmental Investigations

A. RCRA Facility Investigation

Four groundwater monitoring wells were installed during the November 2006 RFI to assess potential groundwater contamination from the landfill. The RFI groundwater sampling was conducted from November 2006 to March 2008. During this time, Griffin Pipe also collected samples of waste material in the landfill, soil, sediment in former eastern and western ponds and surface water from Buck Branch.

Arsenic, cadmium, and lead were the only parameters found in the waste material at concentrations greater than the EPA Region 3 Risk Based Concentration (RBC) for Industrial Workers which establishes risk screening levels for industrial (non-residential) exposures. These RBCs are commonly referred to as "Industrial Screening Levels."

A Human Health Risk Assessment (HHRA) was conducted to evaluate the significance of potential exposures to various constituents detected in groundwater, surface soil and sediment

at the Facility and surface water and sediment of Buck Branch. Potential receptors include future industrial site workers, current and future trespassers, current and future recreational waders in Buck Branch, and off-site residents.

For groundwater, the only receptor groups with a potential risk were residential adults and children ingesting arsenic in groundwater. Based on available information, EPA determined that that Facility operations were not a source of arsenic. Moreover, arsenic in groundwater is present at naturally occurring levels and at levels below its drinking water standard, known as federal Maximum Contaminant Levels (MCLs), promulgated pursuant to Section 42 U.S.C. §§ 300f et seq. of the Safe Drinking Water Act (SDWA) and codified at 40 CFR Part 141. The HHRA concluded that the risks associated with surface soil, surface water and sediment do not exceed the applicable Regional Screening Levels (RSLs).

A Screening Level Ecological Risk Assessment (SLERA) was also conducted and focused on surface soil, sediment, and surface water exposures for terrestrial and aquatic receptors. The former eastern detention pond area had developed into an ecological habitat over time. Within the former eastern detention pond area of the landfill, the SLERA found that barium, cobalt, selenium, tin, cyanide, cadmium, lead, silver, and zinc exceeded their respective toxicity reference values (TRVS) and posed a risk to benthic macroinvertebrates, amphibians, mussels, and aquatic life.

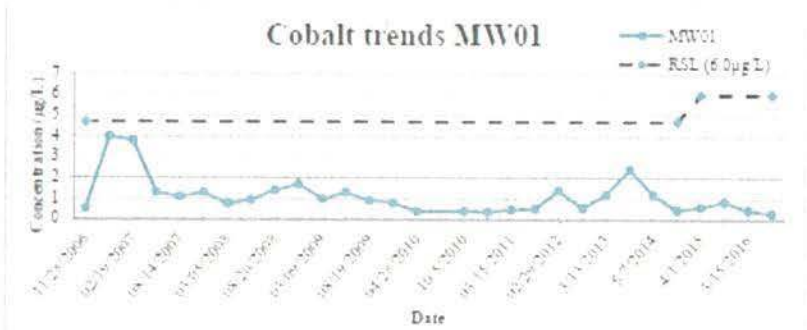
B. Additional Sampling

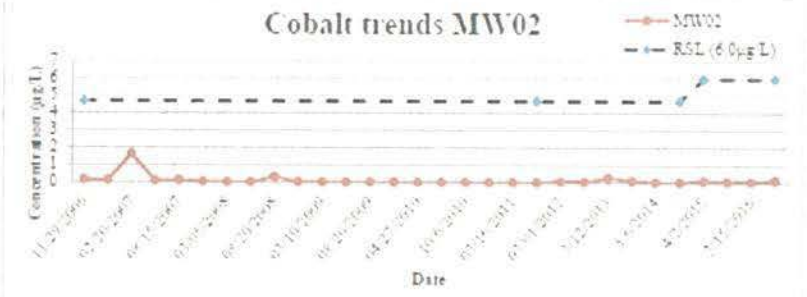
Following the RFI, Griffin Pipe continued quarterly groundwater monitoring through December 2011. Arsenic and cobalt were the only contaminants that exceeded their applicable MCLs, or RSL for tapwater, if no MCL exists, in groundwater. Arsenic was last detected above the MCL in 2008. Griffin Pipe re-evaluated the 95% Upper Confidence Levels (UCLs) for groundwater parameters in October 2010 and reported that the arsenic UCL was consistently below the Maximum Contaminant Level (MCL) for arsenic. The 95% UCL for cobalt remained above its applicable RSL. Cobalt does not have an MCL.

The Facility continued semiannual groundwater monitoring solely for cobalt through March 2016. Concentrations of cobalt have remained below the EPA RSL for tapwater (6 mg/L) since October 2011. On September 22, 2016, EPA approved the request from Griffin Pipe to discontinue groundwater monitoring.

In September 2013, sediment sampling was conducted to delineate the extent of potential contaminated soil within the former eastern detention pond area. Samples were analyzed for total barium, cadmium, cobalt, lead, selenium, silver, tin, zinc, and total cyanide. At least one inorganic parameter exceeded its respective remedial goal objective at each sample location. Cyanide was detected in two samples at concentrations less than the RSL. The remaining eight inorganic parameters were present to the total depth sampled at each of the ten borings. The highest concentrations were generally observed in the deep (2-4 foot) interval. Lead was the only constituent that exceeded the EPA RSL for industrial use. Figures 1 and 2 depict the historical data for Cobalt.

Figure 1


Cobalt trends MW01
MW01
RSL (6.0µg/L)
Concentration (µg/L)
Date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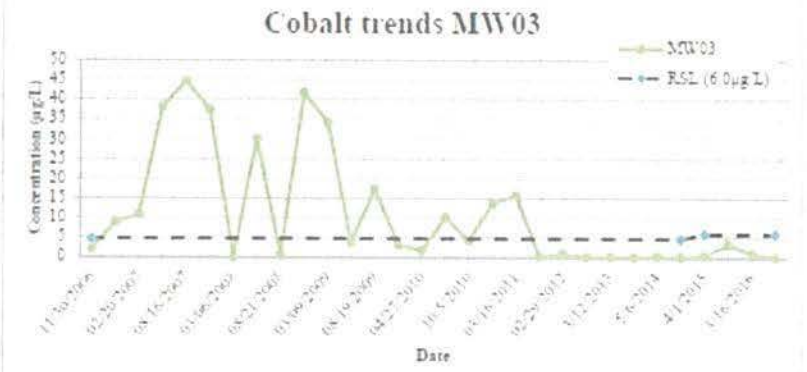
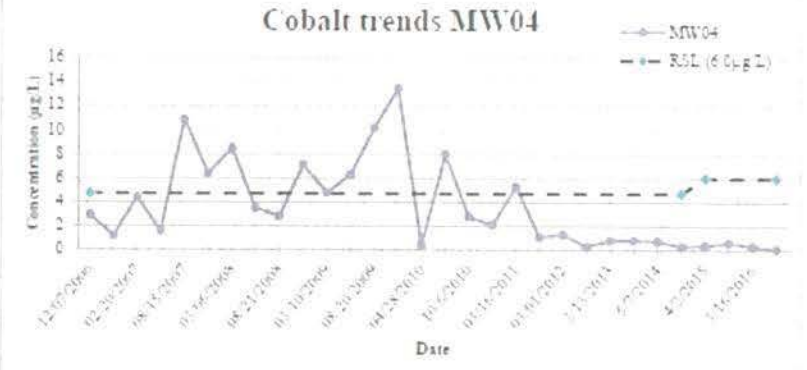
RSL (6.0µg/L)
Concentration (µg/L)
Date


Cobalt trends MW03
MW03
RSL (6.0µg/L)
Concentration (µg/L)
Date


Cobalt trends MW04
MW04
RSL (6.0µg/L)
Concentration (µg/L)
Date

Section 4: Interim Measures

On September 24, 2014, Griffin Pipe proposed to remove the former eastern detention pond area berm and cap any remaining impacted areas. The proposed interim measure (IM) included removal of portions of the berms that were constructed to form both the former eastern and western stormwater basins. The proposal also included the use of a geomembrane capping system (IM remediation cap) to control contaminated sediments currently in the former eastern detention pond area.

The IM Work Plan included an Operations and Maintenance (O&M) Plan for the existing landfill cap and the proposed IM remediation cap, and contains requirements for periodic inspection and maintenance of both caps. EPA approved the IM Work Plan on October 27, 2014.

Construction of the IM remediation cap commenced on July 25, 2016 and was completed on October 13, 2016 in accordance with the EPA-approved IM Work Plan. The IM remediation cap effectively eliminates access to contaminated sediment in the former pond area to terrestrial plants and animals, and the associated unacceptable ecological risks.

In addition, the EPA-approved O&M Plan was revised and to acknowledge that groundwater monitoring was no longer required.

Section 5: Corrective Action Objectives

EPA's Corrective Action Objectives for the specific environmental media at the Facility are the following:

1. Soils

   EPA's Corrective Action Objective for soil is to prevent human exposure to contaminants concentrations above the EPA allowable risk range of $1x10^{-4}$ to $1x10^{-6}$ for an industrial exposure scenario.

2. Groundwater

   EPA expects final remedies to return usable groundwater to its maximum beneficial use within a timeframe that is reasonable given the particular circumstances of the project. For projects where aquifers are either currently used for water supply or have the potential to be used for water supply, EPA will use MCLs.

   Analytical results from the groundwater show no exceedances of applicable MCLs or EPA RSL's for tapwater. Based on the Groundwater Statistical tool, EPA has determined, with a 95% confidence level that concentrations of the contaminants remaining in the groundwater at the Facility will remain below the applicable MCLs or

RSLs. Therefore, the overall objective to return the groundwater to its maximum beneficial use has been met, and there is no further action required for groundwater.

Section 6: Final Remedy

A. Final Remedy

EPA's final remedy for the Facility consists of the continued maintenance of the landfill cap and IM remediation cap in accordance with the EPA-approved O&M Plan, access and reporting requirements and the implementation of and compliance with the following land use restrictions because some contaminants will remain in the soil at the Facility above levels appropriate for residential exposure:

- The landfill will not be used in a way that will adversely affect or interfere with the integrity and protectiveness of the soil cap. This restriction will include a prohibition on disturbing surface and subsurface soil within the landfill area, and a requirement to monitor and maintain the cap.

- The former eastern detention pond area will not be used in a way that will adversely affect or interfere with the integrity and protectiveness of the IM remediation cap. This restriction will include a restriction on disturbing the surface and subsurface soil within the former eastern detention pond area, and a requirement to monitor and maintain the IM remediation cap.

- The Facility property shall be restricted to commercial and/or industrial purposes and shall not be used for residential purposes unless it is demonstrated to EPA that such use will not pose a threat to human health or the environment and EPA provides prior written approval for such use. "Residential purposes" includes all purposes that provide for living accommodations or services (e.g. dormitories, senior citizen housing, any day care facility whether for infants, children, the infirm, or the elderly).

- A periodic written certification that contains a statement that land use restrictions are in place and effective shall be submitted to EPA.

- EPA, Virginia Department of Environmental Quality (VADEQ), and/or their authorized agents and representatives, shall be provided access to the Facility property to inspect and evaluate the continued effectiveness of the Final Remedy selected by EPA in the Final Decision and, if necessary, to conduct additional remediation to ensure the protection of the public health and safety and the environment.

B. Implementation

The components of the Final Remedy for the Facility shall be implemented through an enforceable mechanism such as an order and/or an environmental covenant pursuant to the Virginia Uniform Environmental Covenants Act, Title 10.1, Chapter 12.2, Sections 10.1-1238-10.1-1250 of the Code of Virginia (Environmental Covenant). If an Environmental Covenant is to be the institutional control mechanism, it will be recorded in the chain of title for the Facility property and will be recorded with the Clerk's Office of the Circuit Court of Amherst County and/or the city of Lynchburg. A clerk-stamped copy of the Environmental Covenant will be sent to EPA and VADEQ within sixty (60) calendar days of recordation.

Under the Final Remedy, Griffin Pipe will be required to provide a coordinate survey, as well as a metes and bounds survey, of the landfill cap, the IM remediation cap, and Facility boundaries as follows:

1. The boundary of each use restriction shall be defined as a polygon; and

2. The longitude and latitude of each polygon vertex shall be established as follows:

    a. Decimal degrees format;
    b. At least seven decimal places;
    c. Negative sign for west longitude; and
    d. World Geodetic System (WGS) 1984 datum.

Mapping the extent of the land use restrictions will allow for presentation in a publically accessible mapping program such as Google Earth or Google Maps.

If Griffin Pipe or any subsequent owner fails to meet its obligations under the enforceable mechanism selected or if EPA, in its sole discretion deems that additional corrective measures and/or land use restrictions are necessary to protect human health or the environment, EPA has the authority after public comment, to require and enforce such additional corrective measures and use restrictions, provided any necessary public participation requirements are met.

Section 7: Evaluation of Final Remedy

This Section provides a description of the criteria EPA used to evaluate the Final Remedy consistent with EPA guidance. The criteria were applied in two phases. In the first phase, EPA evaluated three decision threshold criteria as general goals. In the second phase, for those remedies which meet the threshold criteria, EPA then evaluated seven balancing criteria.

Threshold Criteria

- **Protect Human Health and the Environment**-The Final Remedy will protect human health by eliminating and controlling exposure to potential unacceptable risk of exposure to contamination in the landfill and the former eastern detention pond area through the

implementation and maintenance of use restrictions. EPA is proposing to restrict land use to commercial or industrial purposes at the Facility.

The human health exposure pathway has been removed by the installation of caps over the landfill and the former eastern detention pond area. The installation of the landfill cap has ensured that the contaminants present in the perched groundwater within the landfill are not migrating to the aquifer below the landfill, and the groundwater monitoring has verified this. The IM remediation cap installed in the former eastern detention pond area eliminated exposure to contaminated sediment in the former pond area to terrestrial plants and animals, and the associated unacceptable ecological risks. The land use restrictions will ensure that both caps continue to protect human health and the environment.

- **Achieve Media Cleanup Objectives** – The Final Remedy was selected based on the current and future anticipated land use at the Facility for commercial or industrial purposes. The landfill and the former eastern detention pond area were capped and the Facility is required to comply with an EPA-approved O&M Plan that includes procedures to maintain the caps.

- **Remediating the Source of Releases** -There is no continuing source of releases. The landfill and the former eastern detention pond area were capped and the Facility is required to comply with an EPA approved O&M Plan that includes procedures to maintain the Landfill cap. Additionally, groundwater monitoring has shown that there is no discharge of contaminants. s.

Balancing Criteria

- **Long-term effectiveness** - The Final Remedy will maintain protection of human health and the environment over time by controlling the direct exposure to hazardous constituents remaining in the landfill and former eastern detention pond area though requiring compliance with the EPA-approved O&M Plan and land use restrictions.

- **Short-term effectiveness** - The human health exposure pathway has been effectively removed with the installation of the landfill cap and the IM remediation cap. The landfill cap has ensured that the contaminants present in the perched groundwater within the landfill are not migrating to the aquifer below the landfill. The IM remediation cap effectively removed the exposure to contaminated sediment in the former pond area by terrestrial plants and animals, and the associated unacceptable ecological risks.

- **Reduction of toxicity, mobility, or volume of the Hazardous Constituents** - The reduction of mobility and volume of hazardous constituents has already been achieved through the installation of the caps, as there is no exposure to unacceptable risk. The Final eRmedy will ensure the long-term reliability of the existing caps to reduce the mobility of the hazardous constituents.

- **Implementability** - The Final Remedy is readily implementable. The landfill and the IM

remediation caps are in place. With respect to the implementation of the use restrictions, the Facility may pursue an enforceable mechanism such as an order and/or an Environmental Covenant, which are routine administrative tasks. Therefore, EPA does not anticipate any regulatory constraints in implementing the Final Remedy.

- **Cost - The Final** Remedy is cost effective since the only remaining activities are the implementation of land use controls and the implementation of the EPA- approved O&M Plan. The costs associated with these activities are less than $100,000.

- **Community Acceptance** - The only comments EPA received on its remedy for the Facility were from Griffin Pipe. Based on those comments, EPA has made minor editorial modifications and clarified certain aspects of the Final Remedy as described in Attachment A, EPA Response to Comments.

- **State/Support Agency Acceptance** -VADEQ concurred with EPA's Final Remedy for the Facility.

Section 8: Financial Assurance

EPA has evaluated whether financial assurance for corrective action is necessary to implement EPA's Final Remedy at the Facility. The landfill and IM remediation caps have already been installed and, therefore, financial assurance will not be required since the cost for implementation of land use controls and the inspection and maintenance of the cap will be minimal.

Section 9: Declaration

Based on the Administrative Record compiled for the corrective action at the Facility, I have determined that the Final Remedy selected in this Final Decision and Response to Comments is protective of human health and the environment.

Date: 3-10-17

Catherine A. Libertz

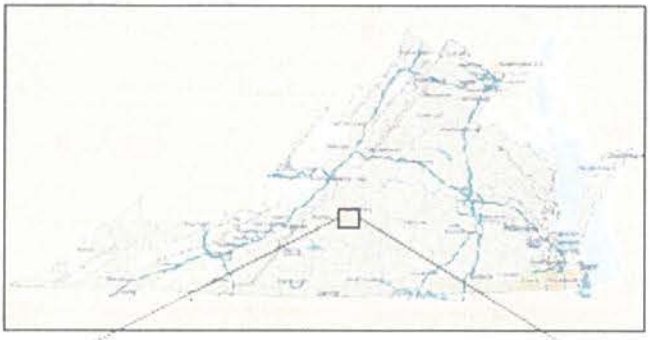
Catherine A. Libertz, Acting Director
Land and Chemicals Division
US EPA, Region III

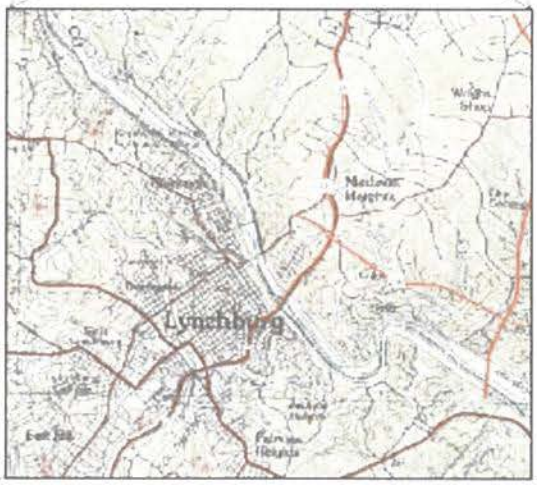
Section 10: Index to Administrative Record

October 8, 2002	3008(h) Order to Griffin Pipe (including cover letter)
August 8, 2003	Description of Current Conditions Report
December 10, 2007	Human Health & Ecological Risk Assessment (including cover letter)
April 30, 2010	RCRA Facility Investigation (RFI) Report – Revised (including cover letter)
April 14, 2011	EPA letter to Griffin Pipe Regrading Approval for Request of Reduced Groundwater Monitoring
August 10, 2012	Screening Level Ecological Risk Assessment (SLERA) (including cover letter)
April 30, 2013	Griffin Pipe letter to EPA for Addendum to August 10, 2012 SLERA
May 8, 2013	EPA letter to Griffin Pipe Regarding Approval of SLERA
June 27, 2013	EPA letter to Griffin Pipe Regarding Approval of RFI
November 8, 2013	Corrective Measures Study (CMS)
September 22, 2016	EPA letter to Griffin Pipe Regarding Approval for Discontinuation of Groundwater Monitoring
November 14, 2016	Interim Measures (IM) Report

Attachments:
Figure 1: Location of Facility
Attachment A: EPA Response to Comments

Figure 1





aegis ENVIRONMENTAL

Site Location

Thomas Road Landfill
Griffin Pipe Products Company, LLC
Amherst County, Virginia

David M. Sayre, P.G. September 2014

DRAWING 1

Attachment A
Response to Comments

During the comment period, EPA received comments from Griffin Pipe Products Company on the Statement of Basis. EPA's summary of Griffin Pipe Products Company's comments and EPA's responses to those comments are set forth below.

Griffin Pipe Products Company Comment No. 1 (Proposed Remedy)

> The Statement of Basis refers in multiple instances to the "eastern detention pond," in particular in Section 6 (Proposed Remedy). Griffin Pipe notes that, consistent with the interim measures implemented to date, the former detention ponds have been regraded and are no longer identifiable. Reference to an existing "eastern detention pond" going forward could lead to confusion for anyone examining the record. Therefore, Griffin Pipe requests that the Final Decision and Response to Comments and any other documents generated going forward refer instead to the "former eastern detention pond area".

EPA's Response

> EPA agrees with this comment and made corresponding changes that are reflected through the FDRTC.

Griffin Pipe Products Company Comment No. 2 (Proposed Remedy)

> Griffin Pipe notes that Section 6B requires Griffin Pipe to implement the Final Remedy through an enforceable mechanism such as an order and/or an environmental covenant. In the event Griffin Pipe prepares and records an environmental covenant that sets forth applicable land use restrictions, Griffin Pipe notes that the need for periodic certification that land use restrictions are in place would be moot for practical purposes. Therefore, Griffin Pipe respectfully suggests that, to the extent the cited language in the 4th bullet point is carried into the Final Decision, the bullet point should be revised as follows: "A periodic written certification that contains a statement that land use restrictions are in place and effective shall be submitted to EPA. In the event an Environmental Covenant is prepared and recorded as set forth in [Section 6A] which documents such land use restrictions, and a copy of the Environmental Covenant is provided to EPA, such Environmental Covenant shall satisfy this periodic reporting requirement and no further reporting to EPA shall be required by this Final Decision."

EPA's Response

> EPA disagrees with the comment. The requirement to provide written certification that that the land use restrictions are in place and effective is necessary to ensure the ongoing compliance with the land use restrictions once they are implemented through an Institutional Control, such as environmental covenant. Moreover, if the land use restrictions are implemented through an Environmental Covenant,

the requirement to provide written certification conforms with the language in the Virginia Unified Environmental Covenants Act Template, 9VAC15-90-30. Therefore, the Final Remedy retains the requirement to provide written certification.