



**UNITED STATES  
ENVIRONMENTAL PROTECTION AGENCY  
REGION III**

**STATEMENT OF BASIS**

**UNITED STATES ARMY, FORT A.P. HILL  
BOWLING GREEN, VIRGINIA**

**EPA ID NO. VAD 221 002 0416**

**SEPTEMBER 2010**



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## **I. Introduction**

The United States Environmental Protection Agency (EPA) has prepared this Statement of Basis to solicit public comment on its proposed remedy for the United States Army (Army), Fort A.P. Hill (Fort A.P. Hill) facility in Bowling Green, Virginia (hereinafter referred to as the Facility or site). EPA's proposed remedy for the Facility is Monitored Natural Attenuation with Institutional Controls, as discussed in more detail in Section IV below. This SB highlights the key information EPA relied on in proposing its remedy for the Facility.

The Facility is subject to EPA's Corrective Action program under the Solid Waste Disposal Act, as amended, commonly referred to as the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Sections 6901 et seq. The Corrective Action program requires that facilities subject to certain provisions of RCRA investigate and address releases of hazardous waste and hazardous constituents, usually in the form of soil or groundwater contamination, that have occurred at or from their property.

On September 29, 2000, Virginia received authorization from EPA for the Corrective Action Program under Section 3006 of RCRA. EPA retained the lead for this Facility under a work share agreement with the Virginia Department of Environmental Quality (VDEQ). EPA prepared this SB in cooperation with VDEQ.

EPA is providing a 30-day public comment period on this SB beginning on September 15, 2010 and closing on October 15, 2010. EPA may modify its proposed remedy based on comments received during this period. EPA will announce its selection of a final remedy for the Facility in a Final Decision and Response to Comments (Final Decision) after the public comment period has ended.

The information presented in this SB can be found in greater detail in the Administrative Record (AR) for the Facility. The AR is available for public review at the EPA Region III Office in Philadelphia as described in Section VII of this document. In addition, information on the Corrective Action program as well as a fact sheet for the Facility can be found at <http://www.epa.gov/reg3wcmd/correctiveaction.htm>.

## **II. Facility Background**

### **A. Facility Description**

The Facility is located in Caroline County, Virginia approximately two miles north of the town of Bowling Green, 75 miles south of Washington, D.C., and 40 miles north of Richmond, Virginia (Figure 1). The Facility encompasses approximately 76,000 acres and is bisected by U.S. Route 301, which connects Bowling Green and Port Royal, Virginia.

Fort A.P. Hill was established in June 1941 to provide a training area for infantry and artillery troops during World War II. The Facility has been used for training since 1941 and currently serves all branches of the U.S. military as an armed forces regional training center to provide joint and combined arms training support. Approximately 70,000 of the 76,000 total acres of the Facility are used for training. A barbed wire topped chain-link fence is located near some of the main gates and all other access points to the Facility are blocked and controlled. The public also utilizes selected training areas for recreational purposes. Recreational user access is



controlled and tracked on a daily basis. The Army has stated that it expects to use Fort A.P. Hill as a military training facility into the foreseeable future.

### III. Summary of Environmental History

#### A. Environmental Investigations and Remedial Programs – 1980 to 1987

Table 1 summarizes various environmental investigations conducted by the Army at the Facility between 1980 and 1987.

**Table 1. Environmental Investigations/Remedial Programs Prior to RCRA Facility Assessment**

<b>Investigation/ Remedial Program</b>	<b>Date</b>	<b>Summary</b>
U.S. Army Environmental Hygiene Agency Solid Waste General Survey	1976	Solid waste areas, including landfills, were surveyed by the U.S. Army. Recommendations were provided for solid waste management practices including the municipal landfill leased by Caroline County.
U.S. Army Toxic and Hazardous Material Agency Installation Assessment	1982	Assessment of Facility was conducted by the Army to evaluate the presence of toxic or hazardous materials and to assess the potential for offsite migration. Sources of potential contamination included: waste photographic solutions, herbicide storage, silvex in soil near Building 225, and DDT in the soil behind Building 1233.
Building 225 Remedial Cleanup of Herbicides and Dioxins in Soil	1984-1985	A soil investigation was conducted to characterize the nature and extent of herbicides and dioxins released to soil. A remedial action was completed that included soil removal and building demolition. Contaminated soil was placed in 1,138 55-gallon drums and disposed offsite. Site closure was approved by the Virginia Department of Waste Management in May 1989.
Headquarters POL* Facility DDT Cleanup Program	1985-1987	An initial remedial action was completed by the Army at the Facility in 1985 and included excavation, removal, and offsite disposal of 1,032 tons of DDT contaminated soil. Follow-up soil sampling was conducted in 1987 and additional soil removal was completed in November 1987 with EPA approval. EPA approved the removal report and determined that no further action was required in April 1988.
U.S. Army Environmental Hygiene Agency Geohydrologic Study	1987	Groundwater study of five landfills including: Ammunition Supply Point, Taylors Corner 1, Taylors Corner 2, Sales Corner, and Construction/Demolition/Debris. Recommended follow-up monitoring.
Old Entomology Building 139	1979, 1987	Initial sampling was conducted in 1979 between the building and a nearby stream. In 1987, two underground tanks were removed at Building 139 and environmental sampling was initiated to evaluate potential releases to soil.

- POL – Petroleum, Oils and Lubricants



## **B. Wilcox Sanitary Landfill**

On August 24, 1981 the VDEQ issued a Solid Waste Management Permit #332 to the Army to operate the Wilcox Sanitary Landfill, which consists of an approximate 8-acre landfill disposal area. This landfill operated until 1992 at which time it commenced post-closure care, including monitoring the groundwater and landfill decomposition gas, as required by Permit #332. In 2005 and 2006, the Facility implemented Phase I of the Landfill Gas Remediation Plan (Remediation Plan) to address increases in detected methane concentrations near the Wilcox Sanitary Landfill boundary. The Remediation Plan included installation of several new landfill gas vents and conversion of several existing gas monitoring points to vents. The Facility continues to monitor landfill gas quarterly as required by the Remediation Plan and Permit #332.

In 2006, VDEQ modified Permit #332 to require remedial activities at the Wilcox Sanitary Landfill. Those remedial activities consist of monitored attenuation of groundwater to address organic constituent concentrations in groundwater above the permit's groundwater protection standards. The groundwater protection standards are EPA's maximum contaminant levels (MCLs) promulgated at 40 C.F.R. Part 141 pursuant to Section 1412 of the Safe Drinking Water Act, 42 U.S.C. Section 300g-1, and for those constituents without an MCL, the standards consist of risk-based alternative concentration limits (ACLs) established by VDEQ (collectively referred to as "VDEQ's Groundwater Protection Standards").

The Facility will continue monitoring the groundwater as required by Permit #332 until VDEQ's Groundwater Protection Standards are achieved and maintained. Groundwater is monitored for volatile organic compounds twice a year. Once VDEQ's Groundwater Protection Standards are met, groundwater monitoring will continue for 3 years thereafter. The contaminated groundwater in the area of the Wilcox Sanitary Landfill is limited to the confined aquifer at a depth of 30 to 50 feet.

## **C. RCRA Facility Assessment**

A RCRA Facility Assessment (RFA) was conducted by EPA in 1988. The RFA identified 33 SWMUs (hereinafter referred to as "RFA SWMUs") and 4 Areas of Concern (hereinafter referred to as "RFA AOCs") as summarized below.

**Table 2. RCRA Facility Assessment - Solid Waste Management Units and Areas of Concern**

<b>Unit Number</b>	<b>Unit Name</b>	<b>Operational Status at Time of RFA</b>
1	Old Ammunition Supply Point	Inactive
2	Headquarters POL Facility	Active
3	Old Entomology Building	Inactive
	a. Rinsewater Collection Tanks	Inactive
	b. Storage Area	Inactive
4	Paint Shop Waste Accumulation Area	Active
5	Washracks and Oil/Water Separators	Active
6	Building 225 – Silvex Storage Building Site	Closed



<b>Unit Number</b>	<b>Unit Name</b>	<b>Operational Status at Time of RFA</b>
7	Empty Container Area – Rhodes Camp Site	Active
8	Ordnance Disposal Pits – Range 31	Active
9	Waste Oil Underground Storage Tanks	Active
10	Used Battery Storage – DS Maintenance Area	Active
11	Waste Accumulation Points – DS Maintenance	Inactive
12	DS Maintenance Septic Drainage Field	Active
13	Ammunition Supply Landfill	Inactive
14	Taylor's Corner Landfill 1	Inactive
15	Taylor's Corner Landfill 2	Inactive
16	Active Landfill	Active
17	Wood Scrap Pile	Active
18	Metal Scrap Pit	Active
19	New Entomology Building	Active
	a. Outdoor Storage Area	Active
	b. Rinsewater Collection Tank	Active
	c. Sump	Active
	d. Wash Pad	Active
20	Fire Training Pit	Inactive
21	Acors Corner Landfill	Inactive
22	Dropzone Landfills	Inactive
23	Silver Recover Canisters	Active
	a. Health Clinic	Active
	b. Photo Lab	Active
24	Sales Corner Landfill	Inactive
25	Ammunition Supply Point	Active
26	Dioxin – contaminated Soil Storage Building	Active
27	Pender Camp Landfill	Inactive
28	Explosive Test Site – Range 23	Active
29	Demolition Instruction Site – Range 40	Active
30	Special Demolition Instructional Site – Range	Active
31	Steel Cutting Pit – Range 42	Active
32	Multi-Purpose Demolition Range	Active
33	Dumpsters	Active
A	Fuel Storage and Distribution Areas (POL)	Active
B	Abandoned Storage Units throughout the facility	Inactive
C	Wastewater Treatment Plants	Active
D	On-time Chemical Spills	Inactive

#### **D. Groundwater Investigations of Landfills and Cooke Lagoons**

The U.S. Army Environmental Hygiene Agency conducted groundwater investigations at several landfills (RFA SWMUs 13, 14, 16, 18, 21, and 24) and the Cooke Wastewater Lagoons (RFA AOC C) in 1991 to evaluate potential releases to groundwater and associated potential risks to human health and the environment. Groundwater samples were collected from existing



monitoring wells and from two seeps near the Wilcox Sanitary Landfill, referred to as the active landfill (RFA SWMU 16) in the RFA, for organic and inorganic analysis.

The investigation report concluded that while constituents had been released into the groundwater in the landfill areas, the constituents were in concentrations below applicable regulatory levels. The report also stated that seep samples collected from the active landfill area (RFA SWMU 16) did not contain landfill leachate. In addition, groundwater sample data did not show that there was a release to groundwater at the Cooke Lagoons. The report did not recommend additional investigations at the landfills or Cooke Lagoons.

#### **E. Cooke Sewage Treatment Plant and Spray Irrigation Field**

The Cooke Sewage Treatment Plant and Spray Irrigation Field operates under Virginia Pollution Abatement (VPA) Permit VPA00008. This facility consists of two 2-million gallon sewage lagoons (Lagoon 1 and Lagoon 2) and a 2.6-acre spray irrigation field. VPA Permit VPA00008 requires quarterly groundwater monitoring to monitor potential leaching from the treatment lagoons and spray irrigation field. Groundwater monitoring data indicated potential leaching to groundwater based on detections of selected constituents above established background levels; however, constituent concentrations did not exceed VDEQ's Groundwater Protection Standards. As of 2008, all wastewater operations at the Facility were privatized. American Water Operations & Maintenance, Inc. (American Water) now holds title to the Cooke Sewage Treatment Plant and Spray Irrigation Field and VPA Permit VPA00008 was transferred to American Water along with associated permit conditions requiring groundwater monitoring and reporting. Title to the property on which the Cooke Sewage Treatment Plant and Spray Irrigation Field is located is still held by the Army.

#### **F. Wilcox Wastewater Treatment Plant**

The Wilcox Wastewater Treatment Plant operates under Virginia Pollution Discharge Elimination System (VPDES) Permit No. VA0032034 issued by the VDEQ. VPDES Permit No. VA0032034 requires annual groundwater monitoring to monitor potential leaching from the treatment lagoons. Groundwater monitoring data indicate leaching to groundwater based on detections of selected parameters above established background levels; however, constituent concentrations were below VDEQ's Groundwater Protection Standards. As of 2008, American Water holds title to the Wilcox Wastewater Treatment Plant and VPDES Permit No. VA0032034 was transferred to American Water along with associated permit conditions requiring groundwater monitoring and reporting. Title to the property on which the Wilcox Wastewater Treatment Plant is located is still held by the Army.

#### **G. Building TT0139 – Old Entomology Shop**

The old entomology Building TT0139 was identified as RFA SWMU 3. This building was used as a storage, formulation, and mixing facility for insecticides and rodenticides. It had a concrete floor with drains and two underground concrete tanks to collect rinse water. The tanks were removed in 1988 and pesticide contaminated soil and waste piles were generated.



Excavated soil was disposed offsite. A Consent Order, dated May 8, 1995, was executed by VDEQ and the Army to address closure requirements for the two tanks and two waste pile areas. A VDEQ-approved closure plan was implemented and on December 19, 1997, a closure report with required risk assessment analysis documenting achievement of clean closure was submitted to the VDEQ for approval. VDEQ approved clean closure of the tanks and waste piles by letter dated December 19, 1997.

#### **H. Closed Landfill Investigations for VDEQ**

Groundwater sampling was conducted at RFA SWMUs 13, 14, 15, 18, and 24 in March 1997 and May 1999, as part of an agreement with the Army and VDEQ to evaluate groundwater quality at these units. Samples were analyzed for volatile organic compounds (VOCs) and metal compounds and results were reported to the DEQ Federal Facilities Program.

Results of the groundwater sampling indicated detectable releases of one or more VOCs at RFA SWMUs 15 and 24, with one VOC, 1,2-dichloroethene, detected at SWMU 24 at a concentration above its MCL. One or more metals were detected in groundwater samples collected from RFA SWMUs 13 and 18 at levels above their risk-based screening levels. As part of the FLA investigations, the Army conducted additional investigations at RFA SWMUs 13, 14, 15, 18, and 24, as discussed in more detail in Section J, below.

#### **I. Environmental Indicator Inspection Report for EPA Region III**

In May 1999, a RCRA Environmental Indicator Inspection was conducted at the Facility for EPA by the U.S. Army Corps of Engineers, Norfolk District. The purpose of the inspection was to determine if human exposures and groundwater releases were controlled at the 37 units identified in the RFA. A visual site inspection and records review was conducted and the potential for releases from each unit to the environment was assessed as follows:

- Undetermined release potential: RFA SWMU 27 and RFA AOC C;
- No Potential for release: RFA SWMUs 4, 10, 11, 19, 20, 23, 25, 26, and 33;
- Low potential for release: RFA SWMUs 1, 2, 3, 6, 7, 9, 12 and 16 and RFA AOCs A, B, and D; and
- Moderate to high potential for release: RFA SWMUs 5, 8, 13, 14, 15, 17, 18, 21, 22, 24, 28, 29, 30, 31, and 32.

The report was submitted to EPA Region III to determine if additional sampling would be required at the Facility. Based on information provided in this report, EPA notified Fort A.P. Hill in December 1999 that it was required to implement RCRA corrective action at the Facility.

#### **J. Facility Lead Corrective Action Agreement - 2000**

On January 28, 2000, Fort A.P. Hill accepted EPA's proposal to enter into a Facility Lead Corrective Action Agreement (Agreement or FLA) to address corrective action requirements at



the Facility. This Agreement committed the Army to undertake a RCRA corrective action program to:

- Characterize the extent and sources of releases of hazardous wastes or hazardous constituents;
- Perform interim measures to prevent or mitigate unacceptable threats to human health and the environment by controlling human exposures and contracting migration of any groundwater contamination at or from the Facility from releases of hazardous wastes or hazardous constituents;
- Meet EPA’s Environmental Indicators;
- Conduct effective public involvement; and
- Communicate regularly with the EPA, State, and community on corrective action progress at the Facility.

Under the Agreement, a list of 26 SWMUs (hereinafter referred to as “FL SWMUs”) and/or AOCs (hereinafter referred to as “FL AOCs”) requiring further investigation at the Facility was finalized and approved by EPA. The final list of FL SWMUs and AOCs excluded RFA SWMUs 1, 2, 3, 4, 6, 7, 9, 10, 11, 19, 23, and 33 and RFA AOCs A, B, and D, which had no or low potential for releases to the environment based on the results of the Environmental Indicator Inspection Report and additional release assessments conducted for the FLA Work Plan. The release assessments considered site history, observed conditions, previous investigation results, and formal regulatory closure of sites where investigations and/or remedial actions were performed. RFA SWMUs 8, 28, 29, 30, 31, and 32 were also excluded from further investigation in the FLA due to their location within areas actively used as ranges and areas currently used to support training and demolition activities at Fort A.P. Hill. RFA SWMU 8 was also addressed under a VDEQ-approved closure plan which specified that closure would not occur at that unit until it ceased operating as an active range.

Table 3, immediately below, lists the unit number and name and includes a cross-reference for RFA and FLA unit numbers. Units identified in the RFA that were included in the FLA were renumbered due to changes in units to be investigated and the subdivision of several units (e.g, RFA AOC A and RFA SWMU 5) into individual sites. One additional unit, FL SWMU 22, was added to the list of sites to be investigated. Figures 2, 3, and 4 show the locations of these units at the Facility.

**Table 3. Facility Lead Corrective Action Agreement Program – SWMUs and AOCs**

<b>RFA Unit Number</b>	<b>FLA Unit Number</b>	<b>Unit Name</b>
AOC C	AOC 1	Headquarters Wastewater Treatment Plant
AOC C	AOC 2	Wilcox Wastewater Treatment Plant
AOC C	AOC 3	Longstreet Lagoon
AOC C	AOC 4	Cooke Camp Wastewater Treatment Plant and Spray Irrigation
SWMU 5	SWMU 1	Pender Camp Washrack and Oil Water Separator
SWMU 5	SWMU 2	Cooke Camp Washrack and Oil Water Separator



<b>RFA Unit Number</b>	<b>FLA Unit Number</b>	<b>Unit Name</b>
SWMU 5	SWMU 3	Rappahannock Camp Washrack and Oil Water Separator
SWMU 5	SWMU 4	Wilcox Camp Washrack and Oil Water Separator
SWMU 5	SWMU 5	Raymonds Fork Washrack and Oil Water Separator
SWMU 5	SWMU 6	Buzzards Roost Washrack and Oil Water Separator
SWMU 5	SWMU 7	Range 1 Washrack and Oil Water Separator
SWMU 5	SWMU 8	Rodes Camp Washrack and Oil Water Separator
SWMU 5	SWMU 9	Jackson Camp Washrack and Oil Water Separator
SWMU 5	SWMU 10	Davis Camp Washrack and Oil Water Separator
SWMU 13	SWMU 11	Ammunition Supply Point Landfill
SWMU 14	SWMU 12	Taylor's Corner Landfill 1
SWMU 15	SWMU 13	Taylor's Corner Landfill 2
SWMU 18	SWMU 14	Construction/Demolition/Debris Landfill
SWMU 24	SWMU 15	Sales Corner Landfill
SWMU 16	SWMU 16	Wilcox Sanitary Landfill (closed)
SWMU 21	SWMU 17	Acors Corner Landfill
SWMU 22	SWMU 18	Dropzone Landfill 1
SWMU 22	SWMU 19	Dropzone Landfill 2
SWMU 27	SWMU 20	Pender Camp Landfill
SWMU 20	SWMU 21	Fire Training Pit 1
NA	SWMU 22	Fire Training Pit 2

### 1. Phase I Investigation

The first phase of the investigations conducted pursuant to the Agreement was undertaken in 2001 and 2002 and an investigation report was submitted to the EPA in August 2002. These investigations included geophysical surveys and environmental sampling and analysis of soil, groundwater, surface water, and sediment to characterize the nature and extent of potential releases of hazardous wastes and hazardous constituents to the environment. A site screening process was completed for each unit to evaluate potential threats to human health and the environment and the data collected were used to evaluate and complete EPA environmental indicator forms. EPA and VDEQ conducted a Facility visit in June 2004 to review the report findings, discuss the proposed interim measure at FL SWMU 22, and conduct a walkthrough inspection at selected units. Based on this review, EPA determined that additional investigations would be required at 5 units, FL SWMUs 12, 13, 14, 17, and 20, to determine if further actions were required. EPA required no further investigation or characterization at the remaining 21 units with the exception of interim measures at FL SWMU 22, as discussed in the following section.

At the following six of the 21 units where EPA determined that no further investigation or corrective action is necessary, EPA is requiring institutional controls because contamination remains in place at these units as described in more detail in Section V:



- FL SWMU 11 consists of an approximate 2.3-acre landfill that closed in 1976. This landfill was used for the disposal of ordnance-associated solid waste. Solid waste remains in place at this unit below a vegetative soil cover/cap.
- FL SWMU 15 consists of an approximate 5-acre landfill that closed in 1979. This landfill was used for disposal of trash and garbage. Solid waste remains in place at this unit below a vegetative soil cover/cap.
- FL SWMU 16 consists of an approximate 8-acre solid waste landfill closed in 1992 under the Virginia Solid Waste Management Regulations (Permit #332). This landfill is undergoing post-closure remediation under Permit #332 with the VDEQ. Solid waste remains in place at this unit below the landfill cap at the unit.
- FL SWMU 18 consists of an approximate 3-acre area in which a limited portion of the area was used for the disposal of trash. The landfill closed in 1950. Solid waste remains in place at this unit below a vegetative soil cover/cap.
- FL SWMU 19 consists of an approximate 8-acre area in which a limited portion of the area was reportedly used for the disposal of trash. The Army believes that the landfill closed prior to the 1970s. Solid waste remains in place at this unit below a vegetative soil cover/cap.

With the exception of FL SWMU 16, which is undergoing remediation under Permit #332, FLA investigations of these landfills did not indicate significant releases to groundwater, surface water, and sediment in the landfill area. Excluding FL SWMU 16, these landfills were closed prior to December 21, 1988, and, therefore, according to the Virginia Solid Waste Management Regulations, continued groundwater monitoring to evaluate potential landfills impacts on groundwater is not required.

## 2. Interim Measures at FL SWMU 22 (Fire Training Pit 2)

Interim measures were completed at FL SWMU 22 between October 2004 and May 2005 with approval from the EPA. The interim measures included the removal and offsite disposal of the concrete pad used for fire training and the excavation and offsite disposal of soil and material underlying the concrete pad containing petroleum constituents. Approximately 496 tons of soil and material were removed. Confirmatory soil and groundwater samples were collected at the completion of the interim measures. EPA approved the Solid Waste Management Unit 22-Fire Training Pit No. 2 Closure Report by letter dated November 28, 2006 documenting clean closure and unrestricted future land use at this SWMU.

## 3. Phase II Site Investigation

A second phase of investigations was conducted at FL SWMUs 12, 13, 14, 17, and 20 between 2005 and 2007 to further characterize the nature and extent of constituents in soil, groundwater, surface water, and sediment. These investigations included additional sampling, background evaluations, and human health and ecological risk evaluations to assess threats to human health and the environment. The Facility Lead Investigation Report, dated March 2009 was approved by EPA in a letter dated August 12, 2009. Based on the investigation results and risk assessments conducted, no further assessment of these SWMUs was required.



The Phase II Site Investigation which includes a more detailed summary of the investigations conducted at these SWMUs can be found in the Administrative Record (AR) for the Facility. Section G, Public Participation, below describes how you may review the AR.

The landfills associated with FL SWMUs 12, 13, 14, 17, and 20 were closed prior to December 21, 1988, and, therefore, according to the Virginia Solid Waste Management Regulations, continued groundwater monitoring to evaluate potential impacts on groundwater is not required. Institutional controls will be required at FL SWMUs 11, 15, 18, and 19 due to contamination remaining in place at these landfills as described in more detail in Section V.

#### **IV. Proposed Remedy**

EPA is proposing Monitored Natural Attenuation with Institutional Controls (ICs) as the final remedy for the Facility.

##### **A. Monitored Natural Attenuation**

Natural attenuation refers to a system where a variety of physical, chemical, or biological processes act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater. Monitored Natural Attenuation simply refers to the act of collecting samples to “monitor” the natural attenuation process.

EPA has determined that Facility groundwater does not currently pose a threat to human health or the environment given that it is not used for potable purposes. In order to assure that human health and the environment continue to be protected, EPA is proposing that the final remedy for the Facility include requirements to monitor groundwater from the Facility to ensure that groundwater contamination is attenuating.

The Wilcox Wastewater Treatment Plant, the Cooke Wastewater Treatment Plant and Spray Irrigation Field and the Wilcox Sanitary Landfill are being addressed and monitored under existing permits with the VDEQ, as discussed in more detail in Section III. Those permits for the Wilcox Wastewater Treatment Plant and the Cooke Wastewater Treatment Plant and Spray Irrigation Field require American Water to maintain a VDEQ-approved groundwater monitoring program. The Wilcox Sanitary Landfill requires the Army to continue monitoring groundwater to track the natural attenuation of contaminants. Therefore, EPA has determined that the VDEQ permits for those units satisfy the monitored natural attenuation component of EPA’s proposed remedy. Those conditions include ongoing monitoring and maintenance sufficient to maintain the units, prevent releases and protect human health and the environment.

##### **B. Institutional Controls**

Because contamination will remain in the groundwater at the Facility, EPA’s proposed final remedy includes Institutional Controls (ICs). ICs are non-engineered instruments such as administrative and/or legal controls that minimize the potential for human exposure to contamination by limiting land or resource use. The proposed ICs are listed in Section V.

Contaminated groundwater at the Facility remains in the unconfined aquifer at a depth of 30 to 50 feet. Groundwater use at the Facility is limited to water supply wells drawing from deep confined aquifers present at an average depth of over 400 feet. Even though there are no current consumptive uses of groundwater contained in the unconfined aquifer, it is EPA’s goal



that groundwater be restored to drinking water standards to be protective of potential future use. Until groundwater is restored to drinking water standards, EPA is proposing to require ICs, as necessary, to prevent consumptive use of the contaminated groundwater.

Contaminated soils remain in place at FL SWMUs 11, 12, 13, 14, 15, 16, 17, 18, 19, and 20. Engineering controls, consisting of landfill caps or vegetative soil covers, are in place to contain wastes remaining in place and access to these areas is restricted to authorized personnel.

EPA proposes that the following ICs be implemented:

- prohibition on the access and use of groundwater in the unconfined water table aquifer within areas hydrogeologically connected to AOCs and SWMUs for any other purpose other than environmental monitoring and testing;
- prohibition on the development and use of AOC and SWMU areas for residential housing, elementary and secondary schools, child care facilities, and playgrounds;
- prohibition on earth moving activities in landfill areas, SWMUs 11, 12, 13, 14, 15, 16, 17, 18, 19, and 20, to prevent contact with or exposure to waste materials remaining in place;
- written notification to EPA in the event Fort A.P. Hill intends to sell part or all of the Facility, 45 days prior to any such sale, and a demonstration that the prospective purchaser is aware of the restrictions placed on land and groundwater use; and
- written notification to EPA and VDEQ 45 days in advance of any proposed land use changes that are inconsistent with land-use control objectives or the final remedy.

Fort A.P. Hill has already incorporated these restrictions and requirements into the Base Installation Master Plan, instructions, and orders used by the Commanding Officer to govern conduct, action, and activities on the Facility. If necessary, EPA will also require the ICs to be implemented through an enforceable mechanism such as an order, permit or environmental covenant.

## **V. Evaluation of EPA's Proposed Decision**

This section provides a description of the criteria EPA uses to evaluate proposed remedies under the Corrective Action program. The criteria are applied in two phases. In the first phase, EPA evaluates three criteria, known as threshold criteria. In the second phase, EPA uses seven balancing criteria to select among alternative solutions, if more than one is proposed. The Facility has demonstrated that the current conditions meet the threshold criteria established by EPA. Because EPA is not selecting among alternatives, a complete evaluation of the balancing criteria is not necessary.



The following is a summary of EPA's evaluation of the Threshold Criteria:

#### **4. Protect Human Health and the Environment**

This proposed remedy protects human health and the environment from exposure to contamination.

There are no human health threats associated with domestic uses of the contaminated groundwater originating from the Facility because groundwater from the contaminated aquifers is not used for drinking water purposes. Even though there are no current consumptive uses of contaminated groundwater at the Facility, it is EPA's goal that groundwater be restored to drinking water standards to be protective of potential future use. Until groundwater is restored to drinking water standards through monitored natural attenuation, EPA is proposing to require ICs, as necessary, to prevent consumptive use of the contaminated groundwater. In addition, under Permit #332, groundwater is being monitored at FL SWMU 16 to prevent or manage any additional release(s) that may occur from the permitted units.

Fort A.P. Hill has removed contaminated soils at FL SWMU 22 and implemented and maintained engineering controls, such as landfill caps and soil covers, at landfill units to contain remaining waste. ICs will prohibit the disturbance of capped areas and prohibit the residential use of these areas while wastes remain in place. Groundwater monitoring will continue at FL SWMU 16 under the Permit #332 to detect any releases from this unit.

#### **5. Achieve Media Cleanup Objectives**

EPA's proposed remedy meets the appropriate cleanup objectives which are the protection of human health and the environment based on assumptions regarding current and reasonably anticipated land and water resource use(s).

During prior remedial activities, Fort A.P. Hill excavated contaminated soils from FL SWMU 22 and implemented and maintains engineering controls, such as landfill caps and soil covers, at landfill units to contain remaining waste at FL SWMUs 11, 12, 13, 14, 15, 16, 17, 18, 19, and 20. ICs will prohibit the disturbance of capped areas and prohibit the residential use of these areas while wastes remain in place. Groundwater monitoring will continue at FL SWMU 16 under Permit #332 to detect any releases from this unit.

Under EPA's proposed remedy, groundwater monitoring will continue until the concentration of each constituent does not exceed the constituent's respective MCL, in accordance with Permit No. VPA00008 for the Cooke Sewage Treatment Plant and Spray Irrigation Field and Permit No. VA0032034 for the Wilcox Wastewater Treatment Plant.

#### **6. Remediating the Source of Releases**

In all remedy decisions, EPA seeks to eliminate or reduce further releases of hazardous wastes or hazardous constituents that may pose a threat to human health and the environment. The Facility has remediated the sources of releases by completing interim measures to remove contaminated soils at FL SWMU 22; implementing and maintaining engineering controls (landfill capping) at landfill units to contain remaining waste, and implementing and maintaining ICs at landfill units that prohibit disturbance of capped areas and restrict uses of these areas



while wastes remain in place. Groundwater monitoring will continue at FL SWMU 16 under Permit #332 to detect any releases at this unit into the future. Groundwater monitoring for the privatized wastewater facilities (FL AOC 2 and FL AOC 4) will continue to be conducted by American Water (permit holder of the VPDES permits for these units) and reported to VDEQ.

## **VI. Environmental Indicators**

Under the Government Performance and Results Act (GPRA), EPA has set national goals to address RCRA corrective facilities. Under GPRA, EPA evaluates two key environmental clean-up indicators for each facility: (1) Current Human Exposures Under Control and (2) Migration of Contaminated Groundwater Under Control. EPA determined that the Facility met these environmental indicators on July 29, 2003. The environmental indicator determinations are available at [http://www.epa.gov/reg3wcmd/ca/va/hhpdf/hh\\_vad210020416.pdf](http://www.epa.gov/reg3wcmd/ca/va/hhpdf/hh_vad210020416.pdf).

## **VII. Public Participation**

Interested persons are invited to comment on EPA's proposed decision. The public comment period will last thirty (30) calendar days from the date that notice is published in a local newspaper. Comments may be submitted by mail, fax, e-mail, or phone to Ms. Barbara Smith at the address listed below.

A public meeting will be held upon request. Requests for public meeting should be made to Ms. Barbara Smith at the address listed below.

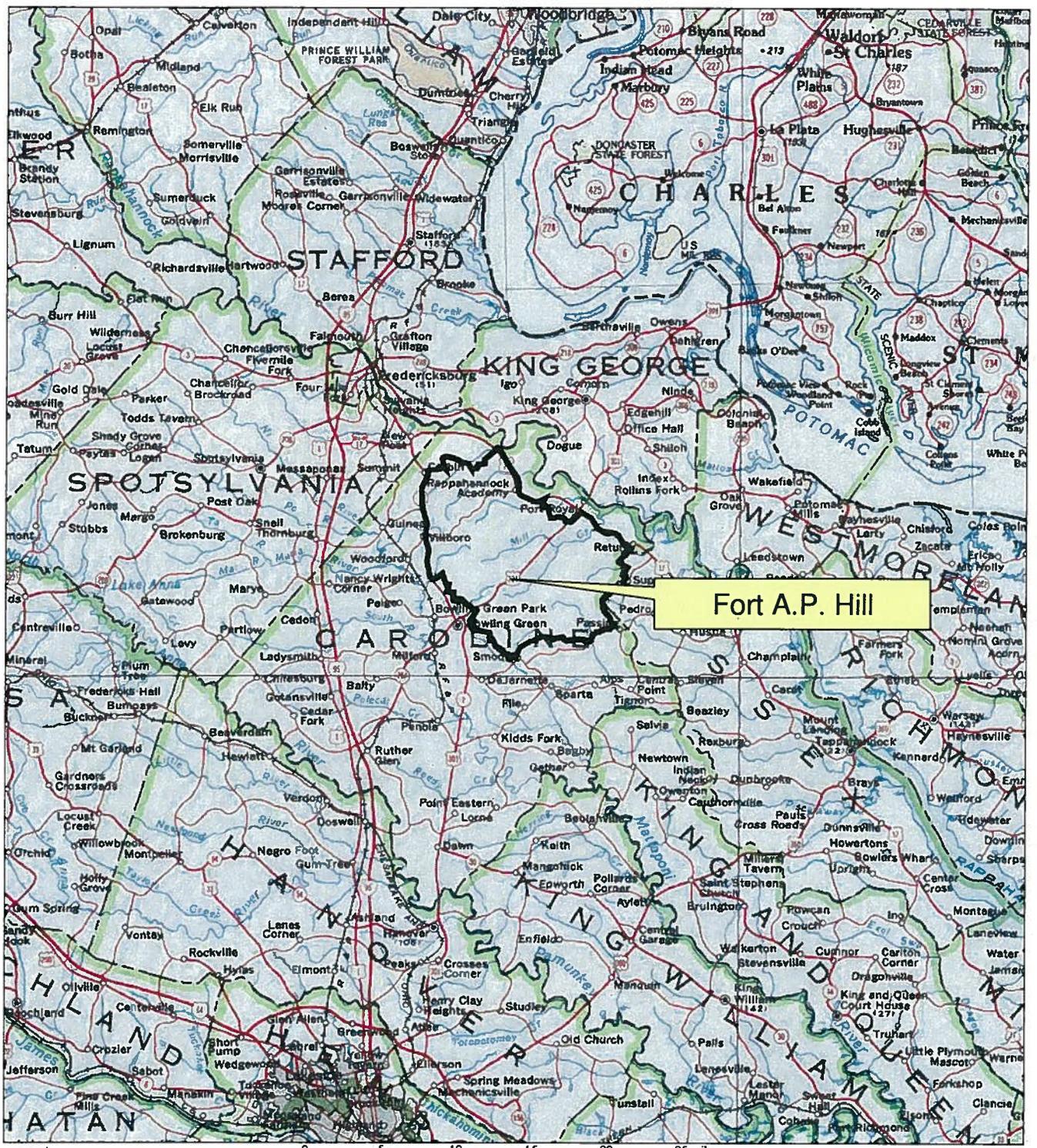
The Administrative Record contains all the information considered by EPA for the proposed decision at the Facility. The Administrative Record is available at the following location(s):

U.S. Environmental Protection Agency, Region III  
1650 Arch Street – 3LC20  
Philadelphia, PA 19103-2029  
Contact: Barbara Smith  
Phone: (215) 814-5786  
Hours: Mon-Fri, 9:00 A.M – 5:00 P.M.  
Email: [smith.barbara@epamail.epa.gov](mailto:smith.barbara@epamail.epa.gov)

U.S. Army Fort A.P. Hill  
Directorate of Public Works  
Environmental Division  
19952 North Range Road  
Bowling Green, VA 22427-3123  
Contact: Sergio Sergi           Voice: (804) 633-8152  
Hours: Mon-Fri, 9:00 A.M – 5:00 P.M.  
Email: [sergio.a.sergi@us.army.mil](mailto:sergio.a.sergi@us.army.mil)

The Administrative Record, which contains all documents used to prepare this Statement of Basis is available for public review by contacting either of the above contacts at EPA or Fort A.P. Hill.





MN 10°

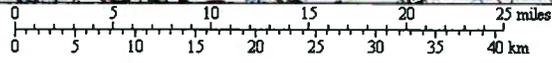


FIGURE 1

Fort A.P. Hill Vicinity Map

**Facility Lead  
Corrective Action Agreement  
Statement of Basis  
Fort A.P. Hill  
Bowling Green, Virginia**

Date: June 2009		URS Project No.: 11657073	
Drawn by: CLD	Checked by: JOS	Reviewed by: JOS	Approved by: JOS
Scale: 1 Inch = 10 Miles		File name: Fig 1 Vicinity Map	

Source: TOPO! ©2000  
National Geographic  
Holdings  
WWW.TOPO.COM



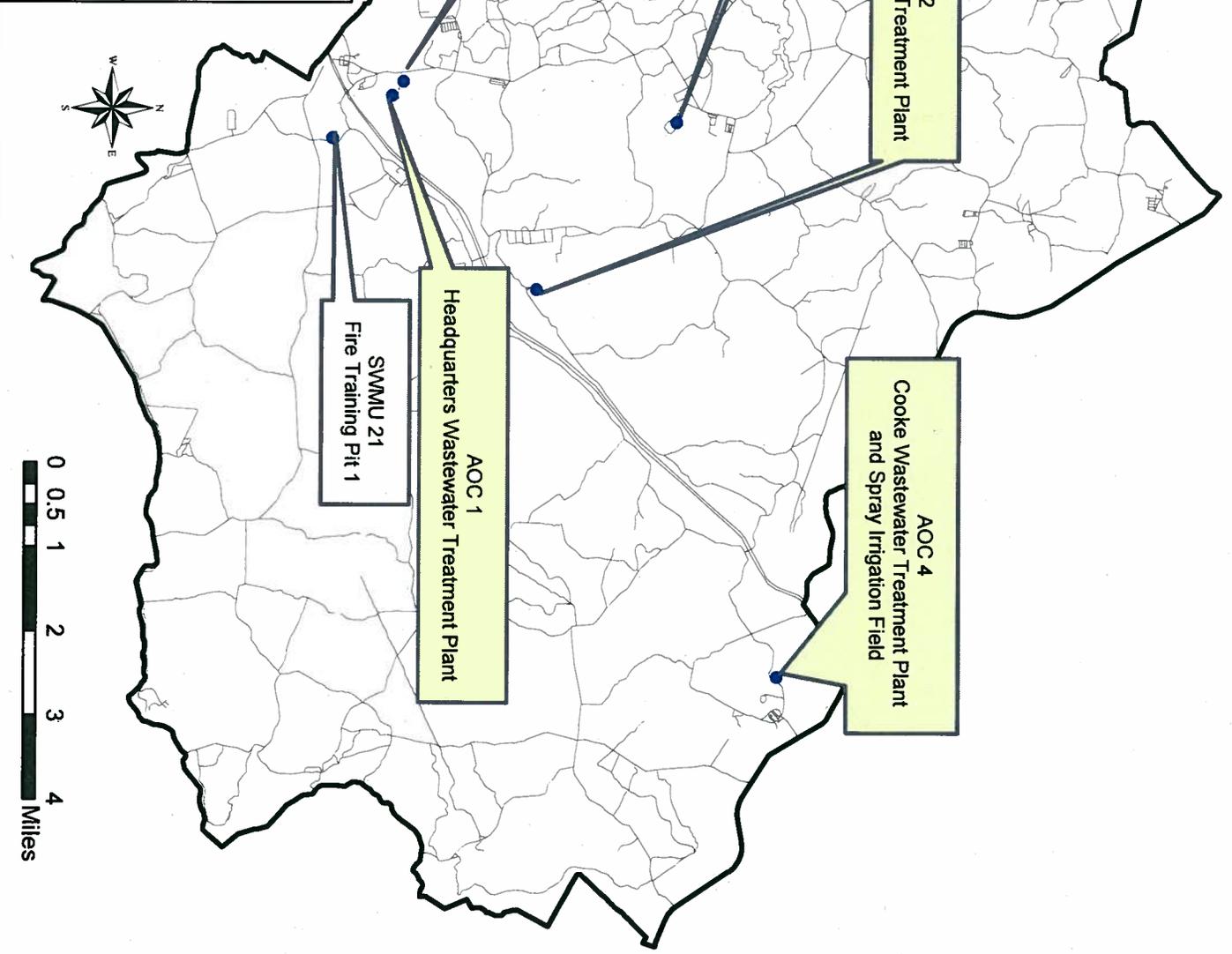
URS CORPORATION  
5540 FALMOUTH ST.,  
SUITE 201  
RICHMOND, VA 23230



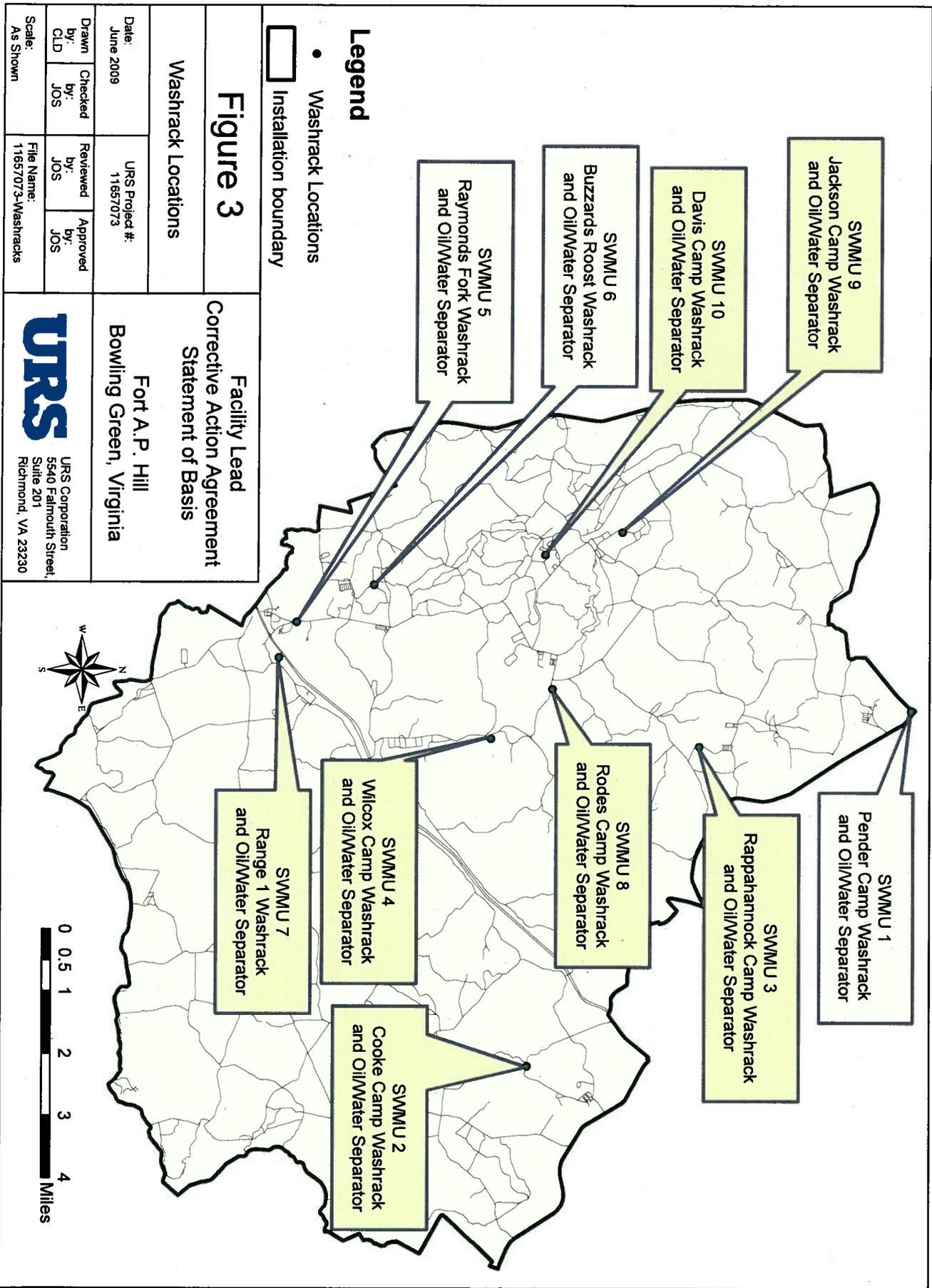
# Legend

- Miscellaneous SWMMU/AOC Locations
- Installation boundary

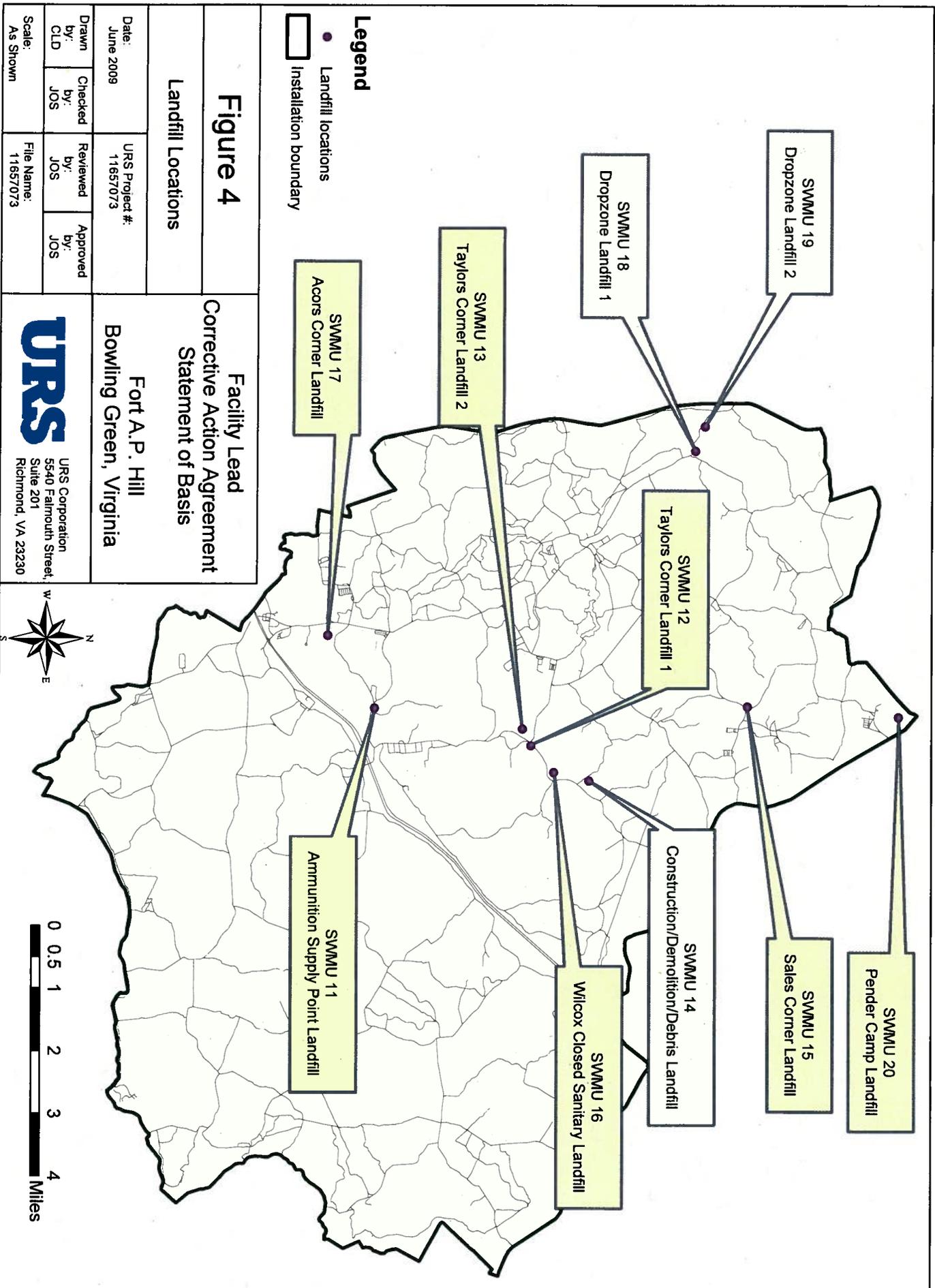
<b>Figure 2</b>			
Miscellaneous SWMMU/AOC Locations			
Date:	June 2009	URS Project #:	11657073
Drawn by:	CLD	Checked by:	JOS
		Reviewed by:	JOS
		Approved by:	JOS
Scale:	As Shown	File Name:	11657073-MiscSWMMUs
<b>Facility Lead</b> <b>Corrective Action Agreement</b> <b>Statement of Basis</b>		<b>Fort A.P. Hill</b> <b>Bowling Green, Virginia</b>	
		URS Corporation 5540 Falmouth Street, Suite 201 Richmond, VA 23230	











**Legend**

- Landfill locations
- Installation boundary

**Figure 4**

Landfill Locations

Date:		URS Project #:	
June 2009		11657073	
Drawn by:	Checked by:	Reviewed by:	Approved by:
CLD	JOS	JOS	JOS
Scale: As Shown		File Name: 11657073	

**Facility Lead**  
**Corrective Action Agreement**  
**Statement of Basis**

**Fort A.P. Hill**  
**Bowling Green, Virginia**



URS Corporation  
 5540 Fairmount Street,  
 Suite 201  
 Richmond, VA 23230



