

SITES DETERMINED TO BE EXEMPT FROM PERMIT STATUS

RFAAP, Radford Virginia
RCRA Corrective Action Permit Number VA 1210020730

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1.0 SITES DETERMINED TO BE EXEMPT FROM PERMIT STATUS

The following discussion presents information pursuant to the February 23, 2010 meeting between RFAAP and US EPA representatives regarding those sites that warrant removal from the RCRA Corrective Action Permit VA 1210020730 based on either operational status of the unit or applicability to the definition of a Corrective Action Unit under RCRA. These sites represent the subset of the Site Screening Areas (SSAs) and Miscellaneous Units (MUs) that require no additional study or evaluation to support a determination of being exempt from future consideration under the Permit.

In accordance with the RCRA Corrective Action Permit VA 1210020730, the scope of this investigation has been determined by the RFAAP and the US EPA (the parties). See Part II – *Specific Facility Conditions* – Section D.7 below. The language in bold provides the regulatory basis for the scope of this investigation:

*“D- 7. Attachment A contains a list of thirty-one (31) identified Site Screening Areas (SSAs) which may pose a threat, or potential threat to human health and the environment. The Permittee shall submit to the EPA and the VDEQ SSP Work Plan(s) which shall outline the activities necessary to determine if there have been releases of hazardous substances, solid wastes, pollutants, contaminants, hazardous wastes, or hazardous constituents to the environment from the SSAs. **The scope of the SSPs shall be determined by the Parties.** The SSP Work Plan(s) shall include a proposed Deadline or Milestone for the submittal of an SSP Report(s)....”*

1.1 SSA 19: THE A-B LINE ACIDIC WASTEWATER TREATMENT PLANT

The AB-Line Acidic Wastewater Treatment Plant (Bldg. 420-1) is an active site consisting of the following subunits:

- ❖ Unit 19a; Wastewater / Lime Slurry Mix Tank (Mixing Manhole): Lime slurry from the Lime Slurry Mix Pit (Unit 19c) is pumped into Unit 19a to provide initial neutralization of the plant’s influent acidic wastewater before being pumped to the neutralization mixing tanks (Unit 19b).
- ❖ Unit 19b; Wastewater Neutralization Mix Tanks: Partially neutralized wastewater from Unit 19a is pumped into a series of six acid-brick lined concrete mix tanks for further neutralization. Lime slurry is added to each mix tank independently, and each tank overflows to the next, until neutralization is complete after passing through the 6th mix tank. Lime slurry addition and pH is controlled via instrumentation. Wastewater exiting Unit 19b flows to concrete settling basins before being discharged to the New River via Outfall 007.

- ❖ Unit 19c; Lime Slurry Mix Pit: Slaked lime (calcium oxide) from Unit 19d is fed into an acid-brick lined concrete lime slurry mix pit to prepare lime slurry for wastewater neutralization in Units 19a and 19b.
- ❖ Unit 19d; Lime Silo, Hopper, and Slaker: Building 420-1 houses a lime silo having a capacity to store 1.5 million pounds of lime. The lime is slaked, and fed into Unit 19c to prepare the lime slurry.
- ❖ Unit 19e; Bucket Conveyor System: A conveyor system used to transfer slaked lime from the Unit 19d hopper to the Unit 19c Lime Slurry Mix Pit.

1.1.1 Historical Information of Site:

1942–Present: The AB-Line Acidic Wastewater Treatment Plant (Bldg. 420-1) began operations in 1942 to treat acidic wastewater (pH <2) generated from the acid and nitrocellulose production areas. Acidic wastewater was, and still is generated in the Acid Area during nitric acid production, and nitric and sulfuric acid concentration processes. Additionally, wastewater was, and still is generated in the Nitrocellulose (NC) Area during cellulose nitration (with nitric and sulfuric acids), acid screening, and NC purification processes. The influent acidic wastewater from these areas to the AB-Line Wastewater Treatment Plant is neutralized with lime slurry (calcium oxide), before being discharged to the New River via Outfall 007.

1.1.2 Spill / Cleanup Records of Site:

Plant wastewater utilities and Environmental personnel were consulted to determine if any spills or cleanup actions have occurred at the site. Wastewater process upsets have occurred on occasion over the plant's operational history; however, were contained within the treatment facility. No employees recalled any records of chemical spills or cleanup actions from this facility during its years of operation. The 1987 RFA noted there were no visible signs of releases; however, there was noted evidence of soil discoloration.

In the late 1990's, an engineer reported the discovery of a former calcium sulfate sludge trench near the AB-Line facility. Confirmation of the trench's existence was obtained via aerial photos, ground penetrating radar, and excavation of the trench. Upon confirmation, the trench was completely excavated and the soil disposed of accordingly. The trench was located east of the AB-Line discharge Parshall flume, north of the railroad tracks, and west of the CASBL Lab (Bldg. 5511). Calcium sulfate (also known as Plaster of Paris) is not a listed hazardous substance under 40 CFR 116.4.

1.1.3 Historical Studies and Investigations Conducted at SSA-19:

- ❖ RCRA Facility Assessment of Radford Army Ammunition Plant; 1987; Prepared by A. T. Kearney for the Environmental Protection Agency; Section IV, pages 64-65

1.1.4 Migration Pathways Analysis

- ❖ **Soil and Groundwater:** The acid sewer system conveying influent and effluent from this unit is constructed as a stainless steel pipe within a concrete trench. The units are maintained as an active unit receiving regular inspections and maintenance, thereby eliminating the migration pathway to soil and groundwater.
- ❖ **Surface Water:** Currently regulated under the VPDES permit at Outfall 007.

1.1.5 Basis for Removal from the RCRA Corrective Action Permit

The influent wastewater to the facility has a pH <2; however, is specifically excluded from RCRA permit regulation under 40 CFR Part 270.1 (c) (2) (v) because it is considered to be elementary neutralization wastewater treatment unit.

This SSA should be removed from the RCRA Corrective Action Permit because it is an active wastewater treatment plant permitted under VPDES and there is no complete migration pathway for a reportable quantity of listed hazardous substances/wastes to be released to the environment from this facility.

1.2 SSA 20: C LINE ACIDIC WASTEWATER TREATMENT PLANT

The C-Line Acidic Wastewater Treatment Plant (Bldg. 420-2) is an active site consisting of the following subunits:

- ❖ **Unit 20a; Acidic Wastewater Influent Sumps:** Influent acidic wastewater, storm water, and cooling water flows into two below grade acid-brick lined concrete sump tanks, where it is commingled with lime slurry to initiate neutralization. Wastewater is then pumped to the wastewater neutralization tanks (Unit 20b).
- ❖ **Unit 20b; Wastewater Neutralization Mix Tanks:** Acidic wastewater from Unit 20a is pumped through a series of six below grade acid-brick lined concrete basins, where it is mixed with lime slurry from Unit 20d, and neutralized. Lime slurry is added to each mix tank independently, and each tank overflows to the next, until neutralization is complete after passing through the 6th mix tank. Lime slurry addition and pH is controlled via instrumentation. Wastewater exiting Unit 20b flows to Outfall 005 via the Wastewater Effluent Sump and Parshall Flume (Unit 20c).
- ❖ **Unit 20c; Wastewater Effluent Sump and Parshall Flume:** Effluent from Unit 20b flows through concrete sump tanks and exits the facility through a Parshall flume before being discharged to the New River via Outfall 005. Flow and pH measurements are monitored in the Parshall flume before discharge.

- ❖ Unit 20d; Lime Silo, Hopper, and Slaker: Building 420-2 houses a lime silo having a capacity to store 775,000 pounds of lime. The lime is slaked, and fed into a lime slurry tank before being pumped to the Acidic Wastewater Influent Sumps (Unit 20a).

1.2.1 Historical Information of Site

1942–Present: The C-Line Acidic Wastewater Treatment Plant (Bldg. 420-2) is an active facility, which began operations in 1942 to treat acidic wastewater (pH <2) generated from the Nitroglycerin No. 1 and Nitrocellulose production areas. Additionally, in 1985, effluent from the Sulfuric Acid Recovery Plant Wastewater Treatment Facility (SSA-18; Bldg. 4330) was directed to the C-Line facility. The C-Line Acidic Wastewater Treatment Plant currently receives low volumes of acidic wastewater primarily from overflows of the NC Area's Building 3054 pit, storm water runoff from the Sulfuric Acid Recovery Wastewater Treatment Facility, and cooling water from the NC Area. Most of the acidic wastewater generated at RFAAP flows to the AB-Line Wastewater Treatment Facility. Influent acidic wastewater from all areas is neutralized with lime slurry (calcium oxide), before being discharged to the New River via Outfall 005.

1.2.2 Spill / Cleanup Records of Site

Plant wastewater utilities personnel were consulted to determine if any spills or cleanup actions have occurred at the site. Wastewater process upsets have occurred on occasion over the plant's operational history; however, were contained within the treatment facility. No employees recalled any records of chemical spills or cleanup actions from this facility during its years of operation. The 1987 RFA noted there were no visible signs of releases.

1.2.3 Historical Studies and Investigations Conducted at SSA-20

- ❖ RCRA Facility Assessment of Radford Army Ammunition Plant; 1987; Prepared by A. T. Kearney for the Environmental Protection Agency; Section IV, pages 66-67

1.2.4 Migration Pathways Analysis

- ❖ Soil and Groundwater: The acid sewer system conveying influent and effluent from this unit is constructed as a stainless steel pipe within a concrete trench. The units are maintained as an active unit receiving regular inspections and maintenance, thereby eliminating the migration pathway to soil and groundwater.
- ❖ Surface Water: Currently regulated under the VPDES permit at Outfall 005.

1.2.5 Basis for Removal from the RCRA Corrective Action Permit

The influent wastewater to the facility has a pH <2; however, is specifically excluded from RCRA permit regulation under 40 CFR Part 270.1 (c) (2) (v) because it is considered to be elementary neutralization wastewater treatment unit.

This SSA should be removed from the RCRA Corrective Action Permit because it is an active wastewater treatment plant permitted under VPDES and there is no complete migration pathway for a reportable quantity of listed hazardous substances/wastes to be released to the environment from this facility.

1.3 SSA 21: CONTINUOUS AUTOMATED SINGLE-BASE LINE

The CASBL Wastewater Treatment Plant (Bldg. 5502) is an inactive site consisting of the following equipment:

- ❖ Carbon adsorption tanks
- ❖ Clarifiers
- ❖ Polishing filters
- ❖ Flocculation mix and feed tanks
- ❖ Crystallizer feed tanks
- ❖ Ion exchangers
- ❖ Neutralization tanks
- ❖ Sodium hydroxide feed tanks
- ❖ Hydrochloric acid feed tanks
- ❖ Sludge dewatering filter
- ❖ Sludge conveyor and hopper
- ❖ Associated piping, pump systems, instrumentation, electrical and electronics

1.3.1 Historical Information of Site

1981: The Continuous Automated Single-Base Line (CASBL) Wastewater Treatment Plant (Bldg. 5502) was constructed in 1981; however, was never operated. The plant was designed to treat industrial organic wastewater from the CASBL propellant manufacturing area, which could have contained the solvents ethanol, ether, and other constituents, such as 2,4-dinitrotoluene, diphenylamine, and dibutyl phthalate. Effluent from test operations of the CASBL facility was

discharged to the Biological Wastewater Treatment Plant, Bldg. 470, and was never treated at the CASBL facility. The facility was placed in inactive status in the early 1980's.

1.3.2 Spill / Cleanup Records of Site

The facility was never operated; therefore, no spills or cleanup actions have occurred.

1.3.3 Historical Studies and Investigations Conducted at SSA-21

- ❖ RCRA Facility Assessment of Radford Army Ammunition Plant; 1987; Prepared by A. T. Kearney for the Environmental Protection Agency; Section IV, page 68

1.3.4 Migration Pathways Analysis

- ❖ **Soil, Groundwater, and Surface Water:** This unit never handled any hazardous waste as it was never operated. Therefore, there is no potential for a release of hazardous waste to the environment.

1.3.5 Basis for Removal from the RCRA Corrective Action Permit

This SSA should be removed from the RCRA Corrective Action Permit because it was never operated and never received or handled any hazardous waste. Therefore, this SSA should be removed from the RCRA Corrective Action Permit because there is no potential for a reportable quantity of listed hazardous substances/wastes to ever have been released to the environment from this facility.

1.4 SSA 33: RAW AND DRINKING WATER SLUDGE FILTER PLANT (BUILDING 451)

The Raw Water and Drinking Water Sludge Filter Plant (Bldg. 451) is an active facility consisting of the following facilities and equipment:

- ❖ Raw water sedimentation basins and pumps
- ❖ Backwash surge tank
- ❖ Sedimentation basin surge tank
- ❖ Lime silo
- ❖ Lime slurry mix tanks

- ❖ Sludge tank
- ❖ Sludge press
- ❖ Sludge thickener tank
- ❖ Clarifier
- ❖ Associated pumps and piping systems

1.4.1 Historical Information of Site

1980-Present: The Raw Water and Drinking Water Sludge Filter Plant (Bldg. 451) began operations in 1980. The facility was designed to remove basin sludge from raw filtered water generated at the adjacent Main Raw Water Filter Plant (Bldg. 409), and remove sludge from the raw water generated at the adjacent Drinking Water Plant (Bldg. 419). Raw water sludge from both facilities (Buildings 409 and 419) is pumped to the Sludge Filter Plant to be dewatered using lime slurry. The filtrate (raw water) is then clarified, and pumped back to the 409 basins to be recycled. The dewatered sludge is collected in a sludge tank, processed through a sludge press, and then hauled to an on-site landfill for disposal.

1.4.2 Spill / Cleanup Records of Site

This facility has never handled any listed or characteristic hazardous wastes. It is a drinking water treatment plant. The sludge it generates is drinking water sludge. Plant wastewater utilities personnel were consulted to determine if any spills or cleanup actions have occurred at the site. No employees recalled any records of chemical spills or cleanup actions from this facility during its years of operation. The 1987 RFA noted no reports of releases.

1.4.3 Historical Studies and Investigations Conducted at SSA-33

- ❖ RCRA Facility Assessment of Radford Army Ammunition Plant; 1987; Prepared by A. T. Kearney for the Environmental Protection Agency; Section IV, page 81

1.4.4 Migration Pathways Analysis

- ❖ Soil, Groundwater, and Surface Water: This unit never handled any hazardous waste as it is a drinking water treatment works. The sludge it generated is a non-hazardous mix of silts and flocculants. Therefore, there is no potential for a release of hazardous waste to the environment.

1.4.5 Basis for Removal from the RCRA Corrective Action Permit

This SSA should be removed from the RCRA Corrective Action Permit because there is no documentation or indication that a reportable quantity of listed hazardous substances/wastes has been released to the environment from this facility.

1.5 SSA 34: RAW WATER SLUDGE FILTER PLANT (BUILDING 456)

The Raw Water Sludge Filter Plant (Bldg. 456) is an inactive facility consisting of the following facilities and equipment:

- ❖ Raw water sedimentation basins and pumps
- ❖ Backwash surge tank
- ❖ Sedimentation basin surge tank
- ❖ Lime silo
- ❖ Lime slurry mix tanks
- ❖ Sludge tank
- ❖ Sludge press
- ❖ Sludge thickener tank
- ❖ Clarifier
- ❖ Associated pumps and piping systems

1.5.1 Historical Information of Site

1980-Present: The Raw Water Sludge Filter Plant (Bldg. 456) was never operated since its construction in 1980. The facility was designed to remove basin sludge from raw filtered water generated at the adjacent Raw Water Filter Plant (Bldg. 407). Within the Filter Plant, lime slurry was intended to dewater the sludge, and the filtrate (raw water) clarified, and pumped back to the 407 basins to be recycled. The dewatered sludge would have been collected in a sludge tank, processed through a sludge press, and hauled to an on-site landfill for disposal. No operations have been conducted at this facility.

1.5.2 Spill / Cleanup Records of Site

The facility never operated; therefore, no spills or cleanup actions have occurred.

1.5.3 Historical Studies and Investigations Conducted at SSA-34

- ❖ RCRA Facility Assessment of Radford Army Ammunition Plant; 1987; Prepared by A. T. Kearney for the Environmental Protection Agency; Section IV, page 81

1.5.4 Migration Pathways Analysis

- ❖ Soil, Groundwater, and Surface Water: This unit never handled any hazardous waste as it was never operated. Therefore, there is no potential for a release of hazardous waste to the environment.

1.5.5 Basis for Removal from the RCRA Corrective Action Permit

This SSA should be removed from the RCRA Corrective Action Permit because it was never operated and never received or handled any hazardous waste. Therefore, this SSA should be removed from the RCRA Corrective Action Permit because there is no potential for a reportable quantity of listed hazardous substances/wastes to ever have been released to the environment from this facility.

1.6 SSA 55: SEWAGE TREATMENT PLANT (BUILDING 424 - NORTHEAST SECTION)

The Sewage Disposal Plant (Bldg. 424) consists of the following subunits:

- ❖ Unit 55a; Sewage Bar Screen: Sewage entering the sewage disposal plant first passes through a bar screen to remove large debris.
- ❖ Unit 55b; Equalization Basin: Sewage passing through the bar screen is pumped to a concrete equalization basin to settle out bulk solids. In the basin, ammonia in the sewage is converted to nitrates. Sludge from the equalization basin is sent to the aerobic digestion tank (Unit 55f).
- ❖ Unit 55c; Primary Clarifier: Sewage flowing from the Equalization Basin (Unit 55b) is pumped to a concrete clarifier where most of the residual solids in the wastewater are settled out. Further conversion of ammonia to nitrates occurs in this clarifier. Sludge from the primary clarifier is sent to the aerobic digestion tank (Unit 55f). Wastewater exiting the primary clarifier flows to the trickling filter (Unit 55d).

- ❖ Unit 55d; Trickling Filter: Wastewater is pumped from the primary clarifier (Unit 55c) to a trickling filter. The filter is constructed of wood and contains approximately 10 feet of rock media containing a bacteriological film to remove organic matter from the wastewater. The filter reduces the chemical oxygen demand (COD) of the wastewater. The wastewater then flows to the final clarifier (Unit 55e).
- ❖ Unit 55e; Final Clarifier: Wastewater exiting the trickling filter (Unit 55d) enters a concrete final clarifier where residual solids are settled out. Sludge from the final clarifier is sent to the aerobic digestion tank (Unit 55f), and the wastewater flows to the chlorine disinfection contact tank (Unit 55h).
- ❖ Unit 55f; Aerobic Digestion Tank: Sludge from the equalization tank (Unit 55b), primary clarifier (Unit 55c), and final clarifier (Unit 55e) is pumped to an aerobic digestion tank where microbiological organisms digest most of the organic solids materials. The resulting wastewater from digestion is then pumped back into the equalization basin to be recycled. Residual sludge from the digestion tank is taken to a sludge drying bed (Unit 55g) and sent off-site for disposal approximately every two years.
- ❖ Unit 55g; Sludge Drying Beds: Sludge from the aerobic digestion tank (Unit 55f) is placed in drying beds near the Building 424 treatment facility. Sludge is removed from the beds every two years and sent off-site for disposal.
- ❖ Unit 55h; Chlorine Disinfection Contact Tank: Wastewater from the final clarifier (Unit 55e) is pumped to a concrete chlorine disinfection tank, where chlorine is added to disinfect the wastewater. The water is provided adequate residence time to kill any remaining bacteria in the water before being discharged to the New River via Outfall 026.
- ❖ Unit 55i; Sulfur Dioxide Dechlorination Station: Prior to discharge to the New River, the water is treated with sulfur dioxide to remove all traces of chlorine. Water exiting the dechlorination station is then discharged to the New River via Outfall 026.

1.6.1 Historical Information of Site

1941-Present: The Sanitary Wastewater Treatment Plant (Sewage Disposal Plant - Bldg. 424) is an active facility that began operations in 1941 to treat sewage generated from the Main Plant Area (Montgomery County portion) of the Radford Army Ammunition Plant. The facility was designed to treat up to 1,000,000 gallons of sewage per day, but currently treats approximately 200,000 gallons per day.

The influent sewage wastewater passes through a bar screen to remove debris, then flows into an equalization basin where bulk solids are settled out. From the equalization basin, wastewater flows into a primary clarifier where additional solids are settled. The wastewater is then sent to a

trickling filter and final clarifiers to remove residual traces of solids and organic materials. Sludge from the equalization basin, primary clarifier, and final clarifier are pumped to an aerobic digestion tank where solids are further broken down. The wastewater exiting the digestion tank is returned to the equalization basin for recycling, and the residual sludge is taken to the drying beds. The sludge is removed from the drying beds approximately every two years for off-plant disposal. Wastewater leaving the final clarifier is then chlorinated and allowed to pass through a contact tank for disinfection. The water is then dechlorinated with sulfur dioxide before being discharged to the New River via Outfall 026.

1.6.2 Spill / Cleanup Records of Site

Plant wastewater utilities and Environmental personnel were consulted to determine if any spills or cleanup actions have occurred at the site. Wastewater process upsets have occurred on occasion over the plant's operational history; however, were contained within the treatment facility. No employees recalled any records of chemical spills or cleanup actions from this facility during its years of operation.

1.6.3 Historical Studies and Investigations Conducted at SSA-55

- ❖ RCRA Facility Assessment of Radford Army Ammunition Plant; 1987; Prepared by A. T. Kearney for the Environmental Protection Agency; Section IV, page 100

1.6.4 Migration Pathways Analysis

- ❖ **Soil, Groundwater, and Surface Water:** This unit never handled any hazardous waste as it is a sanitary sewage treatment works. The sludge it generates is a non-hazardous biosolid residual. Therefore, there is no potential for a release of hazardous waste to the environment.

1.6.5 Basis for Removal from the RCRA Corrective Action Permit

This treatment unit is not a RCRA regulated facility. The influent wastewater to the facility was specifically excluded from RCRA regulation under 40 CFR 261.4 (a) (1) (i), because it was regulated as a VPDES wastewater treatment unit under the Clean Water Act operated to treat domestic sewage.

1.7 SSA 56: SEWAGE TREATMENT PLANT (BUILDING 4325 - NORTHWEST SECTION)

The Sewage Disposal Plant (Bldg. 4325) is an inactive site consisting of the following subunits:

- ❖ Unit 56a; Sewage Bar Screen: Sewage entering the sewage disposal plant first passed through a bar screen to remove large debris. Sewage then flowed to the conical bottom Imhoff tank (Unit 56b).
- ❖ Unit 56b; Conical Bottom Imhoff Tank: Sewage which passed through the bar screen (Unit 56a) gravity fed a concrete conical bottom tank, where bulk solids were allowed to settle out. In the tank, ammonia in the sewage was converted to nitrates. Sludge from the Imhoff tank was sent to the drying beds (Unit 56d).
- ❖ Unit 56c; Aeration Basins: Wastewater from the Imhoff tank overflowed into concrete aeration basins, where biological activity from aeration reduced ammonia levels and converted it to nitrates. Sludge from the basins was sent to the drying beds (Unit 56d).
- ❖ Unit 56d; Sludge Drying Beds: Sludge from the Imhoff tank (Unit 56b), aeration basins (Unit 56c), and final clarifier (Unit 56e) was placed in drying beds near the Building 4325 treatment facility. Sludge was removed from the beds and sent off-site for disposal.
- ❖ Unit 56e; Final Clarifier: Wastewater exiting the aeration basins (Unit 56c) entered a steel, conical bottom final clarifier where residual solids were settled out. Sludge from the final clarifier was sent to the sludge drying beds (Unit 56d).
- ❖ Unit 56f; Chlorine Disinfection Contact Tank: Wastewater from the final clarifier (Unit 56e) was pumped to a concrete chlorine disinfection tank, where chlorine was added to disinfect the wastewater. The water was provided adequate residence time to kill any remaining bacteria in the water before being discharged to the New River via Outfall 028.
- ❖ Unit 56g; Sodium Thiosulfate Tablet Dechlorination Station: Prior to discharge to the New River, the water was treated with sodium thiosulfate tablets to remove all traces of chlorine. Water exiting the dechlorination station was then discharged to the New River via Outfall 028.

1.7.1 Historical Information of Site

1951–2001: The Sanitary Wastewater Treatment Plant (Sewage Disposal Plant - Bldg. 4325) is an inactive facility, which began operations in 1951 to treat sewage generated from the Horseshoe Area (Pulaski County portion) of the Radford Army Ammunition Plant. The facility was designed to treat up to 40,000 gallons of sewage per day. The facility was rendered inactive in January of 2001 and replaced with a septic field and tank system.

When the plant was active, influent sewage wastewater passed through a bar screen to remove debris, then flowed into a conical bottom Imhoff tank, where bulk solids were settled out. From

the Imhoff tank, wastewater then overflowed weirs in the Imhoff tank into concrete aeration basins where the wastewater was exposed to biological action via agitation. The wastewater then overflowed weirs in the aeration basins to a final clarifier tank where additional solids were settled and chemical oxygen demand (COD) levels were reduced. The wastewater from the final clarifier then flowed to a disinfection contact tank where chlorine was added. The water was then dechlorinated with sodium thiosulfate tablets before being discharged to the New River via Outfall 028. Sludge from the Imhoff tank, aeration basins and final clarifier were taken to sludge drying beds, and later removed for off-plant disposal. The sewage treatment plant is currently inactive. Waste is treated by a septic drainfield system.

1.7.2 Spill / Cleanup Records of Site

Plant wastewater utilities and Environmental personnel were consulted to determine if any spills or cleanup actions have occurred at the site. Wastewater process upsets have occurred on occasion over the plant's operational history; however, were contained within the treatment facility. No employees recalled any records of chemical spills or cleanup actions from this facility during its years of operation.

1.7.3 Historical Studies and Investigations Conducted at SSA-56

- ❖ RCRA Facility Assessment of Radford Army Ammunition Plant; 1987; Prepared by A. T. Kearney for the Environmental Protection Agency; Section IV, page 101

1.7.4 Migration Pathways Analysis

- ❖ **Soil, Groundwater, and Surface Water:** This unit never handled any hazardous waste as it is a sanitary sewage treatment works. The sludge it generated were non-hazardous biosolid residuals. Therefore, there is no potential for a release of hazardous waste to the environment.

1.7.5 Basis for Removal from the RCRA Corrective Action Permit

This treatment unit is not a RCRA regulated facility. The influent wastewater to the facility was specifically excluded from RCRA regulation under 40 CFR 261.4 (a) (1) (i), because it was regulated as a VPDES wastewater treatment unit under the Clean Water Act operated to treat domestic sewage. The sewage treatment plant is inactive. Waste is treated by a septic drainfield system, which is regulated by the Virginia Department of Health (VDH).

1.8 SSA 73: MAIN LAB WASTE CONTAINER STORAGE AREA (BUILDING 201)

1.8.1 Historical Information of Site

1941-Present: The Main Lab (Building 201) is an active chemical and materials analytical testing laboratory constructed in 1941, which routinely conducts tests on production materials in support of RFAAP operations. Various waste materials are generated in the testing process. The SSA is the 90-day hazardous waste accumulation area that is currently regulated under the RCRA Operational Permit for RFAAP. These waste materials are managed to prevent release until they are treated wither at the permitted onsite Explosive Waste Incinerator or at permitted off plant facilities.

1.8.2 Spill / Cleanup Records of Site

No records of any spills exist from this site.

1.8.3 Historical Studies and Investigations Conducted at SSA-73

- ❖ RCRA Facility Assessment of Radford Army Ammunition Plant; 1987; Prepared by A. T. Kearney for the Environmental Protection Agency; Section IV, page 118

1.8.4 Migration Pathways Analysis

- ❖ Soil, Groundwater, and Surface Water: This unit is routinely inspected and evaluated under the requirements of the RFAAP RCRA Operational Permit. Therefore, should a release of hazardous waste to the environment ever occur, it would be fully addressed under the requirements of that permit.

1.8.5 Basis for Removal from the RCRA Corrective Action Permit

This SSA should be removed from the RCRA Corrective Action Permit because it is currently regulated under the RFAAP RCRA Operational Permit as a 90-day accumulation area.

1.9 SSA 78: RUBBLE PILE SOUTHWEST OF UNIT 51 (NEAR BUILDINGS 4601-8 AND 4601-9)

1.9.1 Historical Information of Site

The rubble pile southwest of Unit 51 and south of buildings 4601-8 and 4601-9 is a landfill area of approximately 4,000 square feet. The site began accepting debris such as concrete, brick, dirt, and asphalt pavement materials generated throughout the plant sometime in the 1970's; however, no records exist which define the exact dates. The filled area is covered and vegetated or graveled, and the site remains active for disposal of such materials. This area is managed under

the RFAAP Facility Land Use Controls Program; therefore, it will be avoided under a future land use scenario.

1.9.2 Spill / Cleanup Records of Site

No chemicals have ever been present at this site, thus, no spills or cleanup actions have occurred.

1.9.3 Historical Studies and Investigations Conducted at SSA-78

- ❖ RCRA Facility Assessment of Radford Army Ammunition Plant; 1987; Prepared by A. T. Kearney for the Environmental Protection Agency; Section IV, page 123

1.9.4 Migration Pathways Analysis

- ❖ **Soil, Groundwater, and Surface Water:** This unit never handled any hazardous waste as it continues to be operated as a rubble fill. Therefore, there is no potential for a release of hazardous waste to the environment.

1.9.5 Basis for Removal from the RCRA Corrective Action Permit

Under the provisions of the Virginia Department of Environmental Quality Solid Waste Management Regulations (VSWMR) Title 9; VAC 20-80-60.D.7, this site is conditionally exempt from the requirements of the chapter. The exemption states “Landfilling of solid waste which includes only rocks, brick, block, dirt, broken concrete and road pavement, and which contains no paper, yard or wood wastes” is exempt from the VSWMR. Additionally, the site is currently managed under the RFAAP Facility Land Use Controls Program; therefore, it will be avoided under a future land use scenario.

2.0 MISCELLANEOUS UNITS (MU'S)

2.1 SEWER SYSTEMS – BOTH ACID AND INDUSTRIAL

These units service a majority of the facility and the definition of the limits of these units are ambiguous. For example, stormwater at the RFAAP facility is managed in part by a core trunk line that flows south to north across much of the plant. Stormwater at the RFAAP facility is managed in part by a core trunk line that flows south to north across much of the plant. The line's origin is 350 feet northeast of the filtered water storage tanks and 150 feet south of Building 235 (guard changing house). At this junction, the line is comprised of double 36-inch diameter steel pipes. This system trends south and west where it meets double 36-inch diameter reinforced concrete pipes 150 feet northeast of spent acid storage (Building 3003) and 25 feet southwest of the former acid weigh house (Building 3002). This double sewer is known in part as the Acid Sewer. The double sewer line then trends north approximately 1,450 north to a junction 200 feet west of (Building 3678) and terminates in an open ditch. At this point, the

open ditch conveys stormwater west approximately 1,700 feet to the discharge structure at Stormwater Outfall 004 under the conditions of the Virginia Pollution Discharge Elimination System (VPDES) Permit. As defined, it would be technically impractical to attempt to characterize this system and manage it as a corrective action unit.

Similarly the Industrial sewer conveys process and storm water from several of the industrial process areas to the industrial wastewater treatment plant. Effluent from this plant is discharged under a VPDES Permit.

2.1.1 Migration Pathways Analysis

- ❖ Soil and Groundwater: This unit is operated as a process component under a VPDES Permit and is inspected and maintained for integrity under the requirements of that permit. Therefore, any release from the unit would be addressed under the requirements of that Permit
- ❖ Surface Water: Currently regulated under the VPDES permit at Outfall 004.

2.1.2 Basis for Removal from the RCRA Corrective Action Permit

Both these units are active, and considered to be regulated units under the VPDES Permit for both storm water and wastewater. An Annual Comprehensive Site Evaluation to monitor compliance with the facility Storm Water Pollution Prevention Plan (SWPPP) under the facility VPDES Stormwater Permit is conducted.

2.2 ABANDONED BUILDINGS AT INCREMENT AREA NO.3

The structures at Increment Area No. 3 were never completed into operational buildings. Their construction was terminated when WWII ended. Red conductive flooring is not confirmed. The drainage ditches surrounding the buildings are monitored under the VPDES SWPPP.

2.2.1 Migration Pathways Analysis

- ❖ Soil, Groundwater, and Surface Water: This unit never contained any hazardous waste. Therefore, there is no potential for a release of hazardous waste to the environment.

2.2.2 Basis for Removal from the RCRA Corrective Action Permit

These structures never contained, stored or treated any hazardous waste.

2.3 OLEUM PLANT AREA

The Oleum Plant Area is described and discussed under SSA 18 and SSA 72 (Both currently under evaluation under the 2007 Site Screening Process. Therefore, this MU is redundant.

2.3.1 Basis for Removal from the RCRA Corrective Action Permit

This Area has been addressed under the discussion of SSA 18 and SSA 72. As described there is sufficient basis to remove this unit from the permit.

2.4 BUILDINGS AND/OR DEMOLITION DEBRIS WITH EXPOSED CONDUCTIVE FLOORING (EXAMPLE: BLDG. 9358-4)

This MU is interpreted to be focused on structures that may be slated for demolition. The MU at this time is ambiguous and poorly defined.

2.4.1 Basis for Removal from the RCRA Corrective Action Permit

RFAAP has a Plant wide initiative known as the Demolition Program. Management of building demolition and associated debris are addressed under this program. The program includes protocols to ensure compliance with all applicable regulations with a requirement of preventing release to the environment. Therefore, the inclusion of this MU in the RCRA Corrective Action Permit is not necessary and redundant.

2.5 DISCARDED MUNITIONS ALONG THE NEW RIVER PROXIMATE TO THE BALLISTICS RANGE

This MU is interpreted to address the *potential* for discarded munitions along the bank of the New River associated with the historic operation of the Ballistic Range. There has never been any documented release of ordnance in this region.

2.5.1 Migration Pathways Analysis

- ❖ Soil, Groundwater, and Surface Water: This unit never contained any hazardous waste. Therefore, there is no potential for a release of hazardous waste to the environment.

2.5.2 Basis for Removal from the RCRA Corrective Action Permit

The Current Conditions Study of the Hydrogeology of the Horseshoe Area included extensive ground reconnaissance of this area along the New River and throughout the downrange limits of the Ballistics Range. No indication of munitions or ordnance of any type was recorded. Accordingly this MU should be removed from the RCRA Corrective Action Permit.

2.6 AUTOMATED SINGLE BASE AREA

This area is described in the discussion of SSA 21 (See discussion above – this Unit was never operated).

2.6.1 Basis for Removal from the RCRA Corrective Action Permit

This Area has been addressed under the discussion of SSA 21. As described there is sufficient basis to remove this unit from the permit. Therefore, this MU is redundant.