

## F- LINE AREA SETTLING PONDS

### SITE DESCRIPTION

The F-Line Area Settling Ponds (~5 acres total) are located in the east central portion of SFAAP. Wastewater from the F-Line production facilities drained into ditches, which, for the most part, led to the six F-Line Area Settling Ponds (1A, 1B, 2A, 2B, 3A, and 3B) and two Blender Ponds (4A and 4B). The six Settling Ponds were unlined earthen ponds equipped with stand pipes to permit settling of solids and decantation of water. The northernmost Settling Ponds (3A and 3B) were constructed in 1942 and abandoned in 1971. The remaining ponds were operational from 1943 to 1969. These ponds were used to settle propellant solids from wastewater generated during production of propellants. The ponds were also part of the natural drainage system, ultimately discharging into Spoon and Kill Creeks. During past operations, SFAAP occasionally removed the propellant solids which had accumulated in the ponds and burned them at the burning grounds. The pond sediments were contaminated with uncolloided propellant with lead salts, phthalates and NC from the manufacturing process.

The RFI indicated nitroglycerine in soil at concentrations that exceed USEPA’s target risk range for carcinogenic risk. Lead was also found at concentrations exceeding USEPA and KDHE guidance values. A surface soil (4,500 cy) removal was completed in 2001.

### CLEANUP STRATEGY

Four years of LTM will be conducted.

### STATUS

**REGULATORY:** RCRA  
**RRSE:** High  
**CONTAMINANTS:** Ordnance Compounds, Metals  
**MEDIA OF CONCERN:** Soil, Groundwater, Surface Water, Sediment

<b>PHASES</b>	<b>Start</b>	<b>End</b>
RFA.....	197907 .....	199009
CS.....	199408 .....	199805
RFI/CMS.....	199601 .....	199907
DES .....	199907 .....	199908
CMI(C).....	199906 .....	200109
<b>LTM.....</b>	<b>200110 .....</b>	<b>200909</b>

**RC: 200109**

# PYOTTS POND AND SLUDGE DISPOSAL AREA

## SITE DESCRIPTION

Pyotts Pond and Sludge Disposal Area (~12 acres) is located in the east-central portion of SFAAP. Pyotts Pond is an unlined, earthen impoundment with a surface area of ~1.7 acres and a capacity of ~697,000 ft<sup>3</sup> /5.2 million gal. The pond was constructed in 1968 to aide in pollution control. In the past it has received drainage from the South Acid Area, the Paste Mix Area, the NC Area, the Solvent Area and the NG Area, as well as non-contact cooling water, boiler blowdown and some process water from the South Acid Area. Neutralization of water entering the pond resulted in an accumulation of calcium sulfate sludge, which was periodically dredged and landfilled adjacent to the pond to the north. The pond was used primarily for flow control and emergency containment for acid manufacturing. Effluent from the pond drains northeast to Kill Creek, and was monitored by NPDES Outfall 004. The pond supports an active aquatic ecosystem. PCBs were detected in two pond sediment samples.

Initial RFI results indicated elevated levels of mercury and nitroguanidine in the surface water. Groundwater contained nitroguanidine, and sediments contained elevated levels of PAHs and nitrocellulose.

## CLEANUP STRATEGY

Additional RFI activities will be performed to fully define the extent of contamination to characterize the sludge in the pond. A risk assessment revision will require additional surface water and groundwater sampling. A pond closure plan will be developed and the pond will be closed. Approximately 7,000 cy of sediment and soil will be removed, treated and disposed of off-site.

Five years of LTM will be conducted.



## STATUS

**REGULATORY:** RCRA  
**RRSE:** Medium  
**CONTAMINANTS:** Metals, Nitroguanidine, PAHs, Nitrocellulose  
**MEDIA OF CONCERN:** Soil, Sediment, Surface Water, Groundwater

<b>PHASES</b>	<b>Start</b>	<b>End</b>
RFA.....	199707 .....	199009
CS.....	199408 .....	199805
<b>RFI/CMS.....</b>	<b>199606 .....</b>	<b>200807</b>
DES.....	200808 .....	200809
CMI(C).....	200810 .....	200909
LTM.....	200910 .....	201409

**RC Expected: 200909**

# SAAP-013

## SOUTH ACID AREA LWTP EVAPORATIVE LAGOONS

### SITE DESCRIPTION

The South Acid Area LWTP Evaporative Lagoons (32 acres) were located in the east-central portion of SFAAP. The Liquid Waste Treatment Plant (LWTP) consisted of 5 aboveground tanks: 3 for treating wastewater, 1 for slurring lime, and 1 for feeding wastewater to be treated. In addition, there were 4 unlined, earthen cells used as Evaporative Lagoons associated with the LWTP. Use of the LWTP and lagoons began in 1979. Volumes of waste treated at the LWTP varied with the need of production operations. The plant treated up to 1.5 million gallons of corrosive wastewater each month. In the summer of 1986, the lagoons were reportedly nearing their effective capacity, and the wastewater from the lagoons was being applied to land within the plant boundaries. Land application of wastewater had been performed in many areas of SFAAP, including the open areas in the western and southern portions of the NQ production area.

In a letter dated March 11, 1996, KDHE approved a schedule of work for remediation of the lagoon sludge and dismantlement of the lagoons. This action partially fulfilled KDHE requirements for lagoon closure. This work was completed in August 1999.

### CLEANUP STRATEGY

Additional requirements to complete closure of the lagoons include groundwater monitoring at selected sites downgradient of the lagoons for a period of not less than five years, and submittal of a final work plan for closure activities consistent with KDHE's pond closure/sampling verification plan. The Army is currently determining the lateral extent of the plume.

Ten years of LTM will be conducted.



### STATUS

**REGULATORY:** RCRA

**RRSE:** Low

**CONTAMINANTS:** Metals, Nitrates

**MEDIA OF CONCERN:** Soil, Groundwater

PHASES	Start	End
RFA.....	197907 .....	199009
CS.....	199408 .....	199805
IRA.....	199810 .....	199909
<b>LTM.....</b>	<b>199910 .....</b>	<b>201509</b>

**RC: 199909**

# SAAP-014

## ROCKET STATIC TEST AREA

### SITE DESCRIPTION

The Rocket Static Test Area is located in the east-central portion of SFAAP. It encompasses ~7 acres in the northeastern portion of the Proving Ground area. The site includes 4 firing platforms. Two outdoor firing platforms are located immediately north of each of the two Rocket Static buildings.

The Proving Ground was used to conduct proof and surveillance tests of SFAAP manufactured powder and propellants common to cannon and rocket artillery. Tests were conducted between 1965 and 1971.

Phase I and II RFI sampling indicated lead, nitroglycerine, propellants, and phthalates in surface soil above action levels. Lead and nitroglycerine were found in the groundwater above action levels. Completed soil and surface water sampling in FY04.

### STATUS

**REGULATORY:** RCRA  
**RRSE:** High  
**CONTAMINANTS:** Metals, Nitroglycerine, Propellants  
**MEDIA OF CONCERN:** Soil, Groundwater, Surface Water, Sediment

PHASES	Start	End
RFA.....	197907 .....	199009
CS.....	199408 .....	199805
<b>RFI/CMS.....</b>	<b>199810 .....</b>	<b>200509</b>
DES .....	200510 .....	200512
CMI(C).....	200601 .....	200609
LTM.....	200610 .....	201109

**RC Expected: 200609**

### CLEANUP STRATEGY

Remedial activities will consist of soil excavation, treatment and off-site disposal of ~200 cy of soil.

Five years of LTM will be conducted.



# SAAP-015

## WASTE STORAGE MAGAZINES

### SITE DESCRIPTION

The Waste Storage Magazines (57 acres) are located in the southeast portion of SFAAP, and are also known as the J-Magazine Area Buildings. The buildings included in this SWMU are J-117, J-118, J-119, J-120, J121, J-122, J-124, J-127, and J-128. All magazines used natural lighting to preclude accidental detonation of explosives, are secured with locking doors, and have concrete floors with secondary containment. Materials designated to be stored in each magazine included production waste from propellant manufacturing, spent solvents, and other explosive and hazardous waste.

During a site inspection in 1990, rust colored stains were noted on the concrete loading pad at J-127.

Initial sample data were found to be unreliable; therefore, the site must be re-sampled.

### STATUS

**REGULATORY:** RCRA  
**RRSE:** Medium  
**CONTAMINANTS:** Pesticide  
**MEDIA OF CONCERN:** Soil, Groundwater, Surface Water, Sediment

<b>PHASES</b>	<b>Start</b>	<b>End</b>
RFA.....	197907	.....199009
CS.....	199509	.....199805
<b>RFI/CMS.....</b>	<b>200001</b>	<b>.....200809</b>
<b>RC Expected: 200809</b>		

### CLEANUP STRATEGY

A RFI will be performed.

The site buildings are currently undergoing RCRA closure (Section I of the Part B Permit).



# TEMPORARY WASTE STORAGE MAGAZINES

## SITE DESCRIPTION

Most of the Temporary Waste Storage Magazines (79 acres) are located in the southwest-central portion of SFAAP. This includes the B-Area Storage Buildings B-14, B-16, B-20, B-21 and B-22. Also included in this SWMU is Building 181-2 which is located in the central portion of SFAAP. Building 181-2 is an inactive 12 x 15 ft metal structure that was used to store spent degreasing solvents. The building has a concrete floor and is surrounded by an earthen dike. The solvents which were stored in 181-2 were transferred in 1984 to Building J-125, where temporary spill containment was provided. When the upgrading of J-124 was complete, the solvents were then transferred from J-125 to J-124. Over time, 181-2 contained ~550 gallons of spent degreasing solvents.

During a site visit in 1990, no signs of past releases were evident. It was noted, however, that the earthen dike for spill containment for building 181-2 was "inadequate."

Initial sample data were found to be unreliable; therefore, the site must be re-sampled.

## CLEANUP STRATEGY

A RFI will be performed.

The site buildings are currently undergoing RCRA closure (interim status).



## STATUS

**REGULATORY:** RCRA  
**RRSE:** Low  
**CONTAMINANTS:** Metals, Pesticides, Solvents  
**MEDIA OF CONCERN:** Soil, Sediment, Groundwater, Surface Water

PHASES	Start	End
RFA.....	197907	.....199009
CS.....	199610	.....199805
<b>RFI/CMS.....</b>	<b>200001</b>	<b>.....200809</b>

**RC Expected: 200809**

# SAAP-017

## G-LINE AREA DITCHES

### SITE DESCRIPTION

The G-Line Area Ditches (~284 acres) are located in the southcentral portion of SFAAP. It was a solvent propellant area. G-Line operated from 1943-1948, and 1953-1960. It was reported that during the 1940s, the G-line NC wringers overflowed, and NC fines had been observed along drainage ditches from the area leading to Kill Creek. It is likely that G-Line Area ditches received the same types of materials and followed the same historical wastewater treatment practices as the F-Line Area. The G-Line area is situated close to the basin divide between flow westward to Captain Creek and flow eastward to Spoon and Kill Creeks. Consequently, it is possible for contamination to migrate in either direction depending on the location of the source of contamination in the G-Line area. In addition, it has been reported that NC spills occurred in the area, and NC wastes were observed in the ditches in the area. It is possible that small amounts of propellant solids containing lead salts may have settled in these ditches.

### STATUS

**REGULATORY:** RCRA  
**RRSE:** Low  
**CONTAMINANTS:** Solvents, Nitrocellulose, Metals  
**MEDIA OF CONCERN:** Soil, Groundwater, Surface Water, Sediment

PHASES	Start	End
RFA.....	197907 .....	199009
CS.....	199610 .....	199805
<b>RFI/CMS.....</b>	<b>200001 .....</b>	<b>200807</b>
DES .....	200808 .....	200809
CMI(C).....	200810 .....	200909
LTM.....	200910 .....	201409
<b>RC Expected: 200909</b>		

Initial sample data were found to be unreliable, therefore, the site must be re-sampled.

### CLEANUP STRATEGY

A RFI will be performed. A soil removal of ~11,000 cy may be required. Soil will be disposed of off-site.

Five years of LTM will be conducted.



# SAAP-018

## OLD/NEW SANITARY LANDFILLS

### SITE DESCRIPTION

The entire Landfill Area encompasses ~50 acres located about 1 mile west of the NG Area near the central-western border of SFAAP. However, only 31 acres make up the Old/New Sanitary Landfills. The landfills employed a trench-type operation. Several types of landfills are included in the Landfill Area: the sanitary landfill (31 acres); the asbestos landfill (1 acre) and the ash landfill (19 acres, SAAP-019). This Landfill Area began operation in 1943. Prior to the designation of the New Sanitary Landfill in 1967, refuse of all types was buried at a site just south of the new landfill. No records from the Old Landfill were available. SFAAP no longer uses the New Sanitary Landfill; currently, waste is disposed off-site. Although there was no hazardous waste placed in either landfill, there is one area reported to have received containers of a lead compound east of the landfill, and 2 areas with known asbestos waste near the Sanitary Landfill.

### STATUS

**REGULATORY:** RCRA  
**RRSE:** Low  
**CONTAMINANTS:** Dioxin, Furans, Lead  
**MEDIA OF CONCERN:** Soil, Groundwater, Surface Water

PHASES	Start	End
RFA.....	197907 .....	199009
CS.....	199408 .....	199805
<b>RFI/CMS.....</b>	<b>199810 .....</b>	<b>200510</b>
DES .....	200710 .....	200712
IRA.....	200010 .....	200210
CMI(C).....	200801 .....	200809
LTM.....	200810 .....	203809

**RC Expected: 200809**

The RFI report states that the primary concerns at SFAAP-018 and 019 are the constituents detected in groundwater (sulfide; cis-1,3-dichloropropene and ammonia nitrogen) and dioxins/furans in the shallow soil. Institutional controls have been implemented (fencing) to control site access. An IRA for erosion control was completed in FY02.

Shallow groundwater flowing through a sand lens within the site complicates remedial action. Additional RFI activities are being performed in FY05 to delineate the lateral extent of the disposal cells, and groundwater characterization.

### CLEANUP STRATEGY

To reduce groundwater flow through the site, remedial action activities will include construction of a landfill cap and a French drain or other feature. Thirty years of LTM will be required. The abandonment of all installation wells will be funded under this site.



# SAAP-019 ASH LANDFILL

## SITE DESCRIPTION

There are two, unlined ash landfills. SAAP-019 (~19 acres) is located north of the Sanitary Landfill, in the central-western portion of SFAAP. The area of SAAP-019 adjacent to SAAP-018 will be addressed under SAAP-018. The other landfill is located southeast of Power House #1 (~1 acre).

It has been reported that these landfills were used prior to 1966. The ash landfills contain unknown quantities of fly ash from the ash-sludge system and coal fines from the coal pile. Fly ash sometimes contains heavy metals.

## CLEANUP STRATEGY

In the area southeast of Power House #1, ~1,000 cy of material will be excavated and disposed of off-site.



## STATUS

**REGULATORY:** RCRA

**RRSE:** Low

**CONTAMINANTS:** Metals

**MEDIA OF CONCERN:** Soil,  
Groundwater

<b>PHASES</b>	<b>Start</b>	<b>End</b>
RFA.....	197907	.....199009
CS.....	199408	.....199605
RFI/CMS.....	199606	.....199706
DES.....	200710	.....200712
CMI(C).....	200801	.....200809

**RC Expected: 200809**

# ASH LAGOON (AND SLUDGE DISPOSAL AREA)

## SITE DESCRIPTION

The Ash Lagoons and Sludge Disposal Area are located on 15 acres in the north-central portion of SFAAP. There are four Ash Lagoons, all are 15 feet deep. Lagoon 165-1 is 103,600 ft<sup>2</sup>, Lagoon 165-2 is 118,900 ft<sup>2</sup>, Lagoon 165-3 is 95,000 ft<sup>2</sup>, Lagoon 165-4 is 10,000 ft<sup>2</sup>. These lagoons began operation in 1979 to collect fly ash and bottom ash from the boiler house (Power House #1) via an ash-slucice system. The ash wastes (which may contain heavy metals) were allowed to settle out in the lagoons and the slightly alkaline wastewater was filtered and recycled back to the boiler house. Lagoons 165-1, 165-2, and 165-3 were periodically dredged and the sludge was landfilled in the Ash Landfill (SWMU 19). The lagoons are located just south of Pond A; however, discharge most likely flowed in the direction of the topographic slope to Pond B, located 2,000 feet east of the lagoons. Reports from site visits in 1987 and 1990 both indicated that the embankments of the lagoons appeared to be in good condition. The lagoons are reportedly unlined; however, logs from a 1992 site visit indicated one lagoon appeared to have a liner. Unlined lagoons present a pathway for constituents to migrate into the groundwater.

Initial sample data were found to be unreliable, therefore, the site was re-sampled. The RFI Addendum was completed in February 2005.

## CLEANUP STRATEGY

Ash from the lagoons will be excavated and disposed (55,000 cy) and the lagoons will be clean closed.



## STATUS

**REGULATORY:** RCRA  
**RRSE:** High  
**CONTAMINANTS:** Metals  
**MEDIA OF CONCERN:** Soil

<b>PHASES</b>	<b>Start</b>	<b>End</b>
RFA.....	197907 .....	199009
CS.....	199509 .....	199805
RFI/CMS.....	199604 .....	200410
<b>DES .....</b>	<b>200610 .....</b>	<b>200612</b>
CMI(C).....	200701 .....	200709

**RC Expected: 200709**

# SAAP-021

## CONTAMINATED MATERIALS BURNING

### GROUND PAGE 1 OF 2

#### SITE DESCRIPTION

The Contaminated Materials Burning Ground consists of ~10 acres located in the west central portion of SFAAP. The site was brought into operation in 1943 to decontaminate scrap metal (which was later salvaged) and to burn other combustible material that had been contaminated with explosives or propellants. Prior to 1970, burning of contaminated materials occurred in two open trenches. However, in about 1970, two unlined 30 x 300 ft pads were installed where the trenches were located. The pads were separated by an earthen berm. Contaminated material accumulated at the site until the pad was full, which generally took ~1-2 months. Burning was initiated using diesel fuel, waste oils, and scrap wood (including telephone poles). SFAAP randomly sampled the remainder of the residue for TCLP metals (leachable), and upon negative results disposed the ash in the sanitary landfill. After one pad was burned, the other pad began receiving materials for the next burn. During a site visit in 1990, burn areas were observed away from the main burn pads.

Also located on the site was an open top tank, ~8 ft in diameter, which was used to burn waste solvent. Adjacent to the tank was an elevated platform which appeared to have been used as an unloading dock for liquids to be emptied into the tank. At the time of a 2001 site visit, the tank contained water.

Groundwater and surface water runoff from the burn area flow northwest to Captain Creek or the adjacent oxbow.

Phase I & II RFI results indicated the presence of dioxins, metals, solvents, and petroleum hydrocarbons in soil. Petroleum hydrocarbons and volatile organic compounds were detected in groundwater and surface water. Additional sampling was completed in spring 2003. An ex-situ bioremediation pilot test for TPH, VOC and PAHs in groundwater was conducted FY04.

Approximately 5,000 cy of POL-contaminated soil was excavated and bioremediated in FY04 (from Area D). The CMS was completed in November 2004. No contamination was detected at Area C.

#### CLEANUP STRATEGY

Remedial action will consist of excavation and disposal of ~8,000 cy of wastes (Areas E and F). An additional 2,400 cy is anticipated from Area A & B (assumes funding for completion in FY05).

#### STATUS

**REGULATORY:** RCRA  
**RRSE:** High  
**CONTAMINANTS:** Metals, Petroleum Hydrocarbons, Dioxins, Solvents, VOCs  
**MEDIA OF CONCERN:** Soil, Groundwater, Surface Water

PHASES	Start	End
RFA.....	197907 .....	199009
CS.....	199408 .....	199805
RFI/CMS.....	199601 .....	200411
<b>DES .....</b>	<b>200505 .....</b>	<b>200506</b>
CMI(C).....	200507 .....	200606
LTM.....	200607 .....	201009

**RC Expected: 200606**

**SAAP-021**  
**CONTAMINATED MATERIALS BURNING**  
**GROUND PAGE 2 OF 2**

Five years of LTM will be conducted.



# OLD EXPLOSIVE WASTE BURNING GROUND

## SITE DESCRIPTION

The Old Explosive Waste Burning Ground (30 acres) is located north of the Contaminated Materials Burning Ground (SWMU 21) in the west central portion of SFAAP. In this area, waste explosives including NG slums (i.e., NG mixed with sawdust for stabilization) and various propellant formulations from the sumps, settling ponds, filters, and drains in the production areas were disposed by open burning on designated pads. The site was in operation from 1943 to 1980. SAAP-022 is ~7 acres which includes 5 burning pads, and a NG slums burning area. During a Groundwater Contamination Survey in 1987, the USAEHA reported that the site was a grass covered field showing no signs of vegetative stress.

## STATUS

**REGULATORY:** RCRA  
**RRSE:** High  
**CONTAMINANTS:** Metals, Nitroglycerine  
**MEDIA OF CONCERN:** Soil, Groundwater, Surface Water, Sediment

<b>PHASES</b>	<b>Start</b>	<b>End</b>
RFA.....	197907 .....	199009
CS.....	199403 .....	199805
RFI/CMS.....	199601 .....	199910
DES .....	200110 .....	200404
<b>CMI(C).....</b>	<b>200206 .....</b>	<b>200509</b>

**RC Expected: 200509**

RFI and CMS activities are complete. Lead and NG were detected in surface soil above action levels.

In FY05, ~39,000 cy of contaminated soil were excavated and disposed off-site in accordance with CMS recommendations. One round of groundwater sampling was conducted, and there were no contaminants detected above action levels.

## CLEANUP STRATEGY

LTM is not required. The RA report is expected to be complete in late FY05.



# NEW EXPLOSIVE WASTE BURNING GROUND

## SITE DESCRIPTION

The New Explosive Waste Burning Ground (17 acres) was in operation since 1980 when it replaced the Old Explosive Waste Burning Ground (SWMU 22). It was located in the southwest portion of SFAAP and consisted of a diked earthen pad measuring 130 x 340 ft. A maximum of 5,000 lbs of explosives were permitted to be burned on this pad at one time, and smaller quantities were permitted to be detonated. Waste NQ, GN, explosives, and propellants of various formulations were burned and/or detonated at this site.

Releases to the soil were reportedly evident, as indicated by stained soils observed at the time of a site visit conducted in 1990. This unit is currently listed on SFAAP's RCRA Part A Application; and the Subpart and Part B Application. Physical remediation is complete and the final report was submitted to the USEPA and KDHE in 2000. Final clean closure acceptance by regulatory agencies was received in 2000. No further action is needed at this site. The wells will be closed under SAAP-018.

## STATUS

**REGULATORY:** RCRA

**RRSE:** Medium

**CONTAMINANTS:** PAHs

**MEDIA OF CONCERN:** Soil

<b>PHASES</b>	<b>Start</b>	<b>End</b>
RFA.....	197907 .....	199009
CS.....	199610 .....	199805

**RC: 199909**

# NITROGLYCERINE AND PASTE MIX AREA

## SITE DESCRIPTION

The NG and Paste Mix Area (149 acres) is located in the central portion of SFAAP. NG manufacturing in this area began in 1943 and continued until 1971. Two operating lines provided nitrated glycerine for use in the paste mix area. There were several recorded instances where NG spilled onto the soil in the NG area. The amount of NG spilled ranged from 1-2 lbs to a 1,200 lb spill in August of 1944. This site drains into Pyotts Pond. The buildings have been removed.

Field observations in 1985 indicated the main ditch contained between ten and fifteen inches of stagnant water, with grass present throughout most of the length.

Investigation activities identified 11 sumps as possible explosive hazards. The sumps have been fenced to limit access. Remote sampling of the 11 sumps and ditches in FY04 indicated that NG concentrations are well below explosive levels and therefore no Explosive Safety Submission is required. Elevated levels of lead in soil and surface water were detected, probably resulting from drainage from the paste mix area. This site also includes the ditches that the 11 sumps drained into, and the areas immediately around the buildings, due to documented spills.

This site also includes potential residual contamination in the paste mixing area.

## CLEANUP STRATEGY

Additional RFI investigations will be performed to fully define the extent of contamination around the paste mix buildings, nitrators, ditches, and sumps. Remedial activities will include excavation, treatment (blending) and hauling ~15,000 cy of materials to an off-site disposal facility. Five years of LTM will be conducted.



## STATUS

**REGULATORY:** RCRA

**RRSE:** High

**CONTAMINANTS:** Metals, Solvents, NG

**MEDIA OF CONCERN:** Soil, Groundwater, Surface Water, Sediment

<b>PHASES</b>	<b>Start</b>	<b>End</b>
RFA.....	197907	199009
CS.....	199408	199805
<b>RFI/CMS.....</b>	<b>199806</b>	<b>200609</b>
DES.....	200610	200709
CMI(C).....	200710	200809
LTM.....	200810	201309

**RC Expected: 200809**

# NITROCELLULOSE AREA DITCHES

## SITE DESCRIPTION

The NC Area Ditches (4,100 linear feet) are located in the north central portion of SFAAP. This site consists of the ditches leading from the NC Area to Pond A. NC is prepared by the reaction of cotton linters (cellulose) and a mixture of nitric and sulfuric acids. NC was produced during two periods, 1943 through 1960, and 1965 through 1971. Nitrocellulose was detected in the ditch sediments during initial RFI activities.

Initial sample data were found to be unreliable, therefore the site must be re-sampled. Currently, the site is being re-sampled and the report will be completed by late FY05.

## CLEANUP STRATEGY

Additional RFI activities are being performed to fully define the extent of contamination in FY04-FY05. Remedial activities will include excavation, treatment and disposal of ~1,500 cy (2,500 linear feet of ditch soil) of contaminated sediment. Five years of LTM will be conducted.



## STATUS

**REGULATORY:** RCRA  
**RRSE:** High  
**CONTAMINANTS:** Metals, Nitrocellulose  
**MEDIA OF CONCERN:** Sediment, Groundwater

PHASES	Start	End
RFA.....	197907	199009
CS.....	199610	199805
<b>RFI/CMS.....</b>	<b>200001</b>	<b>200509</b>
DES.....	200510	200512
CMI(C).....	200601	200609
LTM.....	200610	201109

**RC Expected: 200609**

# SINGLE BASE PROPELLANT AREA (WASTE WATER SETTLING) SUMPS

## SITE DESCRIPTION

The Single Base Propellant Area (501 acres) consists of a series of buildings in the north-central portion of SFAAP. Single base propellant for small arms, cannon, and rockets was produced in this area during the periods of 1943-1948, and 1951-1960. Solvents (acetone, alcohol, ether) were used in the Single Base Propellant process. There were four different types of production buildings in this area numbered 1600, 1650, 1700 and 1725 series. There were wastewater sumps adjacent to each of the 1600 and 1650 series buildings, which were designed to settle out solids from the building's wastewater. Flow equalization tanks were located adjacent to each of the 1700 and 1725 series buildings. Each of these tanks was covered by an open wooden grate. Wastewater from the sumps and tanks was discharged to a collection sewer, which eventually discharged to open ditches. These ditches discharged west into Captain Creek. The three southeast buildings' wastewater drained east and eventually discharge into Pond A. At the time of the USAEHA study in 1985, all the sumps contained standing water, soil, and pieces of rotted wood from the baffles, all of which appeared to have partially decayed. The buildings in this area were undergoing removal via demolition and burning in 1990. At the time of the 1992 site visit, some of the buildings which fed the sumps had already been removed. Remediation will consist of soil removal from impacted areas outside the building foundations and drainage areas.

Initial samples were found to be unreliable; therefore, the site must be re-sampled.

## CLEANUP STRATEGY

Additional RFI sampling activities will be performed to fully define the extent of contamination around building foundations and ditches. Visual inspections will be conducted in areas not sampled. Remedial activities will include excavation and disposal of ~2,400 cy of contaminated soil around the building foundations. Confirmatory sampling for metals, phthalates, and NC will be conducted at 50-foot intervals in ditches and one sample per building sump. Five years of LTM will be conducted.

## STATUS

**REGULATORY:** RCRA  
**RRSE:** Medium  
**CONTAMINANTS:** Metals, SVOCs, Propellants  
**MEDIA OF CONCERN:** Soil

<b>PHASES</b>	<b>Start</b>	<b>End</b>
RFA.....	197909 .....	199909
CS.....	199610 .....	199808
<b>RFI/CMS.....</b>	<b>200001 .....</b>	<b>200709</b>
DES.....	200710 .....	200712
CMI(C).....	200801 .....	200809
LTM.....	200810 .....	201309

**RC Expected: 200809**



# NQ AREA SAC & LWTP EVAPORATIVE LAGOONS

## SITE DESCRIPTION

The NQ LWTP Evaporative Lagoons Area (10 acres) is located in the northwest portion of SFAAP. The Sulfuric Acid Concentrator (SAC) Liquid Waste Treatment Plant (LWTP) went into operation in 1984. It consisted of a 45,000-gal tank for distillate and a 17,000-gal tank for other corrosives. It received corrosive distillate from the SAC and some corrosive wastewater from the NQ production processes. Lime neutralizers were added to the acidic wastewater, which then flowed into the two Evaporative Lagoons located south of the LWTP. The wastewater transfer line from the LWTP to the evaporative lagoons had documented releases. The lagoons were constructed in 1984. At the time of the 1987 investigation, the lining of the lagoons appeared damaged. Observations of higher soil moisture and occasional small amounts of water at the base of the berm on the west side of the southern lagoon indicated releases were occurring. The lining was replaced in 1988. It was reported that when the liner was replaced in one of the lagoons, the breaks in the old liner indicated that release to the underlying soil did occur.

In 1996, the lagoons were remediated and dismantled under an agreement with KDHE, constituting partial fulfillment of requirements for lagoon closure. The lagoons have been covered and final grading and seeding was implemented for minimal surface water infiltration and erosion. Confirmation soil samples were collected in FY02 along the LWTP transfer line.

In FY04, the LWTP transfer line was excavated and disposed.

## CLEANUP STRATEGY

Ten years of LTM will be conducted.

## STATUS

**REGULATORY:** RCRA  
**RRSE:** Low  
**CONTAMINANTS:** Corrosives, Emtals, NQ, GN  
**MEDIA OF CONCERN:** Soil, Groundwater

<b>PHASES</b>	<b>Start</b>	<b>End</b>
RFA.....	197907	.....199909
CS.....	199408	.....199705
RFI/CMS.....	199510	.....199909
IRA.....	199901	.....199905
<b>LTM.....</b>	<b>199910</b>	<b>.....201509</b>

**RC: 199909**

# WASTE CALCIUM CARBIDE TREATMENT

## SITE DESCRIPTION

This site is a state regulated unit and was clean closed outside of the ER,A program. No further action is planned under the IRP.

## STATUS

**REGULATORY:** RCRA

**RRSE:** NE

**CONTAMINANTS:** N/A

**MEDIA OF CONCERN:** N/A

<b>PHASES</b>	<b>Start</b>	<b>End</b>
RFA.....	197907 .....	198004
CS.....	197907 .....	198004

**RC: 198004**

# SAAP-029

## INDUSTRIAL WASTEWATER LAGOONS

### SITE DESCRIPTION

This site is a state regulated unit and was clean closed outside of the ER,A program. No further action is planned under the IRP.

### STATUS

**REGULATORY:** RCRA

**RRSE:** NE

**CONTAMINANTS:** N/A

**MEDIA OF CONCERN:** N/A

<b>PHASES</b>	<b>Start</b>	<b>End</b>
RFA.....	197907 .....	198004
CS.....	197907 .....	198004

**RC: 198004**

# PESTICIDE HANDLING AREA

## SITE DESCRIPTION

The Pesticide Handling Area (20 acres) is located in the north central portion of SFAAP, with a new building erected a short distance from the old structure that it replaced. The old facility and its surrounding area were reportedly cleaned of pesticide residues. The new facility met USAEHA's Criteria for Design of a Pest Control Shop, Pesticide Storage and Mixing Facility. The new Pesticide Storage and Mixing Building operated from 1984 to 2001. The facility contains four sumps, one in each area: the pesticide storage room, the herbicide storage room, the inside mixing room and the outside mixing area. All liquid within the sumps is recycled into formulations, and there is no discharge from the sumps. No spills or releases were recorded for this site. During a Preliminary Review site visit to the Pesticide Handling

Area in 1990, an aqua-blue stain was evident at the outside sump and outside the pesticide building. It was identified as a dibromide solution which is an indicator dye to show areas where herbicides/pesticides were sprayed. Any contamination is assumed to have resulted from operations at the former area. It was also noted that stressed vegetation was observed leading from the shop and following a newly constructed road; however, SFAAP personnel indicated that an underground steam line in the area may have impacted the vegetation.

Initial samples were found to be unreliable; therefore, the site must be re-sampled.

## CLEANUP STRATEGY

Additional RFI activities will be performed to fully define the extent of contamination. Potential remedial activities may include excavation and disposal of ~1,500 cy of pesticide-contaminated materials to an off-site facility. Confirmatory sampling will be performed. No LTM is anticipated.

## STATUS

**REGULATORY:** RCRA  
**RRSE:** Low  
**CONTAMINANTS:** Pesticides, Herbicides, Dioxins  
**MEDIA OF CONCERN:** Soil, Groundwater

PHASES	Start	End
RFA.....	197907	199009
CS.....	199610	199805
<b>RFI/CMS.....</b>	<b>200001</b>	<b>200807</b>
DES.....	200808	200809
CMI(C).....	200810	200909
<b>RC Expected: 200909</b>		



# CONTAMINATED WASTE PROCESSOR (EVAPORATIVE LAGOON)

## SITE DESCRIPTION

The Contaminated Waste Processor (CWP) and Evaporative Lagoon (8 acres total) are located in the central portion of SFAAP close to its western border. The CWP is an incinerator measuring ~40 x 60 ft. The CWP was designed to incinerate materials contaminated or suspected of being contaminated with explosives, and to decontaminate (flash) explosive-contaminated metal prior to salvage. Because the CWP could only handle materials with residual amounts of explosives, the waste materials to be incinerated were checked to insure they did not contain pockets of explosives. Waste residuals from the CWP were also analyzed for EP Toxicity. If results indicated the waste was hazardous it was treated/disposed off-site at a hazardous waste treatment facility. Otherwise it was landfilled on-site. The CWP operated between 1982 and 1996. Three existing monitoring wells have been in place around the lagoon since 1981. There is a potential for trace concentrations of explosives and propellant compounds such as NG, DNT, and soluble lead to be present in and around the CWP after incineration. While these would not be explosion or fire hazards, they may be soluble and could potentially contaminate groundwater.

Initial RFI results indicated the presence of phthalates in the soil samples. No contamination has been found in the groundwater.

## CLEANUP STRATEGY

Additional RFI activities will be performed to fully define the extent of contamination. A remedial action including excavation, treatment, and disposal of ~800 cy of contaminated soil will be performed. Confirmatory sampling will be conducted. The lagoon will be closed in accordance with KDHE Non-hazardous Industrial Wastewater Lagoon Closure requirements. No LTM is anticipated.

## STATUS

**REGULATORY:** RCRA  
**RRSE:** Medium  
**CONTAMINANTS:** Phthalates, Dioxins, Phenols, Metals  
**MEDIA OF CONCERN:** Soil, Groundwater

PHASES	Start	End
RFA.....	197907 .....	199009
CS.....	199408 .....	199805
<b>RFI/CMS.....</b>	<b>200001 .....</b>	<b>200807</b>
DES .....	200808 .....	200809
CMI(C).....	200810 .....	200909
<b>RC Expected: 200909</b>		



# LEAD DECONTAMINATION AND RECOVERY UNIT

## SITE DESCRIPTION

The Lead Decontamination and Recovery Unit (0.7 acres) is located on the central portion of SFAAP near the western border. The facility borders the Captain Creek flood plain. Surface drainage is toward a south-west drainage ditch which subsequently drains west near the Old Explosive Waste Burning Ground (SWMU 22) to Captain Creek. Some runoff also eventually drains into an oxbow lake near Captain Creek. The site consists of a small building and melting rack within a paved area, and encompasses approximately one half acre. The Recovery Unit was in operation from 1943 to 1970. Contaminated lead recovered from routine maintenance activities in the acid, NG, and propellant manufacturing buildings was placed on a rack and suspended over a tank. An overhead heater melted the lead, which then dropped into the tank. The lead was drained into molds and made available for salvage. Lead solids have been observed scattered throughout the site. Lead is the primary constituent of concern at this site. It is somewhat soluble under acidic conditions.

RFI results indicated lead in soil above action levels. An underground storage tank (UST) was removed from this site under the UST program. Fuel oil contaminated soil associated with the UST was addressed under this site. The CMS was completed and the lead contaminated soil (803cy) was excavated, treated and disposed off-site in FY02. One round of groundwater sampling was conducted in December 2004 (under SAAP-022); no contaminants were found above action levels.

UST soil removal has been completed and the site has been clean closed. No further action is planned for this site.

## STATUS

**REGULATORY:** RCRA

**RRSE:** High

**CONTAMINANTS:** Lead, POL

**MEDIA OF CONCERN:** Soil

<b>PHASES</b>	<b>Start</b>	<b>End</b>
RFA.....	197907 .....	199009
CS.....	199408 .....	199805
RFI/CMS.....	199601 .....	200310
IRA.....	200109 .....	200310

**RC: 200310**

# PASTE AREA HALF TANKS AND DITCHES

## SITE DESCRIPTION

The Paste Mix Area is located in the central portion of SFAAP just northeast of the NG Area. The Half Tanks in this area received wastewater from wash down of propellant processing equipment and buildings in the Paste Mix Area, and possibly from buildings in the NG Area as well. The Half Tanks were used from 1965 to 1971. The tanks discharged into 2 unlined settling ponds, then to Pyotts Pond. There were 2 steel Half Tanks (area totaling 1 acre) located up gradient from each of the settling ponds and are designated Half Tank 33/34 and 33/35. The 33/34 tanks are located southeast of the Paste Mix Area between the Five Corners Settling Ponds and the Paste Sump, and the 33/35 tanks were located northwest of the Paste Area near the NG Settling Ponds. According to a survey, the settling ponds were abandoned and in disrepair. As a result, unidentified quantities of NC and NG were known to be in and around the lagoons. Reportedly, overflowing of the metal flumes and half tanks occurred. There was no secondary containment.

The IRA occurred in FY02 and consisted of removal and decontamination of the Half Tanks, removal of ~60 cy of impacted soils from the Half Tanks and ~700 cy of contaminated soil from around the Half Tanks and from the drainage ditches extending from each tanks to its stream discharge point. Confirmation samples were collected to verify that remaining soils met KDHE requirements. The ditches extending from the Half Tanks, up gradient to the source area, will be remediated as part of the SWMU 24 cleanup.

## CLEANUP STRATEGY

Four years of LTM will be conducted.

## STATUS

**REGULATORY:** RCRA  
**RRSE:** High  
**CONTAMINANTS:** Lead, Nitrocellulose, Nitroglycerine, SVOCs  
**MEDIA OF CONCERN:** Soil, Sediment, Groundwater

PHASES	Start	End
RFA.....	197907	199009
CS.....	199610	199805
RFI/CMS.....	199810	200309
IRA.....	200010	200309
<b>LTM.....</b>	<b>200310</b>	<b>200909</b>
<b>RC: 200309</b>		



# FIVE CORNERS SETTLING PONDS

## SITE DESCRIPTION

The Five Corners Settling Ponds (0.4 acres) are located in the central portion of SFAAP, immediately south of the Paste Mix Area and immediately east of the NG Area. There were 2 earthen, unlined ponds (5A, 5B), each ~40 ft in diameter. The ponds were used periodically from 1953 to 1971. There were no containment berms surrounding these ponds. The Settling Ponds received NG wastewater resulting from the wash down of equipment and buildings and from sprinkler trips.

RFI results indicated the presence of lead, nitroglycerin, nitrocellulose, and SVOCs in soil. The IRA occurred in FY02 and consisted of removal of 900 cy of contaminated soil and re-grading. Groundwater was sampled and no contaminants were above action levels. This site is clean closed.



## STATUS

**REGULATORY:** RCRA

**RRSE:** High

**CONTAMINANTS:** Metals

**MEDIA OF CONCERN:** Sediment

<b>PHASES</b>	<b>Start</b>	<b>End</b>
RFA.....	197909 .....	199009
CS.....	199610 .....	199805
RFI/CMS.....	199810 .....	200409
IRA.....	200010 .....	200309

**RC: 200409**

# NITROGLYCERIN AREA SETTLING PONDS

## SITE DESCRIPTION

The NG Area Settling Ponds (0.4 acres) were located in the central portion of SFAAP, at the northeastern edge of the NG Area just north of the Paste Mix Area. The 2 ponds (6A, 6B) were used periodically from 1953 to 1971 to receive wastewater resulting from the wash down of equipment and buildings, and from sprinkler trips. The propellant solids and sludge which settled in the ponds were occasionally removed during production and burned at the burning grounds. These ponds were investigated in 1985 and designated as Pond 6A (the southern pond) and Pond 6B (the northern pond). During site visits in both 1985 and 1987, Pond 6A was reported to contain approximately 16 inches of standing water, while Pond 6B was dry. Both ponds contained ~12-18 inches of sediment which appeared to be soil.

## STATUS

**REGULATORY:** RCRA  
**RRSE:** Medium  
**CONTAMINANTS:** Metals, SVOCs, NG, NC  
**MEDIA OF CONCERN:** Soil, Sediment, Groundwater

PHASES	Start	End
RFA.....	197909	199009
CS.....	199610	199805
RFI/CMS.....	199810	200309
IRA.....	200010	200309
<b>LTM.....</b>	<b>200310</b>	<b>200909</b>
<b>RC: 200309</b>		

RFI results indicated the presence of lead, nitroglycerin, nitrocellulose, and SVOCs in soil. The IRA occurred in FY02 and consisted of removal of 1,300 cy of contaminated soil and re-grading.

## CLEANUP STRATEGY

Four years of LTM will be conducted. Replace one groundwater monitoring well.



# SAAP-036 N-LINE AREA

## SITE DESCRIPTION

The N-Line (301 acres) is located in the south central portion of SFAAP. Production occurred in this area during three periods of operation: 1943 through 1948; 1953 through 1960; and 1965 through 1971. In this area the final machining and inspection of extruded and cut propellant grains occurred. Off-spec materials and trimmings were sent to a grinding mill and then to the north end of N-Line for re-blending. Wastewater originated primarily from floor and equipment washing and flowed through floor drains into unlined ditches which lead to a small tributary of Spoon Creek. There were ~20 eastwardly trending ditches and 2 concrete settling sumps. During several site visits in the late 1980s, the ditches were reportedly well vegetated, except those which received heavy storm water. Propellant solids containing NG and lead salts settled in these ditches. The propellant formulations processed in this area were single or double base and were generally reactive. The N-Line was known as the solvent-less propellant area along with the F-Line.

The RFI report states that risks due to the ingestion of groundwater by residential receptors exist. The RFI recommended CMS and removal action. Propellant and lead contaminated soil was identified during the RFI. Lead and nitroglycerin were found in groundwater.

In 2001, this site was increased in size. This additional area will need to be investigated. The two Tunnel Dryers (SAAP-043) within this SWMU boundary will be investigated and cleaned up under this site.

## CLEANUP STRATEGY

Additional RFI activities will be performed to determine extent of contamination. Remedial activities will include excavation and disposal off-site of ~16,000 cy of contaminated soil. Waste propellant will be removed from the two sumps and confirmatory sampling will be conducted. Contaminated soil includes ~1,000 cy from a leaking UST containing POL products.



## STATUS

**REGULATORY:** RCRA  
**RRSE:** Medium  
**CONTAMINANTS:** Lead, POL, Propellants  
**MEDIA OF CONCERN:** Soil, Groundwater

PHASES	Start	End
RFA.....	197909 .....	199009
CS.....	199408 .....	199805
<b>RFI/CMS.....</b>	<b>199810 .....</b>	<b>200807</b>
DES .....	200808 .....	200809
CMI.....	200810 .....	200909

**RC Expected: 200909**

# SAAP-037 SANDBLAST AREAS

## SITE DESCRIPTION

Sandblasting occurred in several locations (totaling ~3 acres) during various periods of operation. From ~1964 to 1969, an area east of the former Maintenance Office Building 245-3 was used for sandblasting. Between 1980 and 1984, an area west of the Paint and Sign Shop Building 504 was used. Additionally, documents indicate an area south of the Equipment Storage Building 566-1 was used. It is believed this area was used prior to 1980, but records of this use were not available. Sandblasting was used to prepare equipment such as motors, pumps, pipes, trailers and heavy equipment for painting and preservation. The bulk of the sand recovered was disposed in the sanitary landfill; however, residual sand was left on the ground in these areas. In addition, sand was not contained during the sandblasting operations and was therefore able to migrate through the air. The primary concerns at these sites are paint wastes and their constituents, especially metals such as lead, chromium, and cadmium.

## STATUS

**REGULATORY:** RCRA

**RRSE:** Medium

**CONTAMINANTS:** Metals

**MEDIA OF CONCERN:** Soil

PHASES	Start	End
RFA.....	197909 .....	199009
CS.....	199509 .....	199805
<b>RFI/CMS.....</b>	<b>200001 .....</b>	<b>200807</b>
DES.....	200808 .....	200809
CMI (C).....	200810 .....	200909

**RC Expected: 200909**

Initial samples were found to be unreliable; therefore, the site must be re-sampled.

## CLEANUP STRATEGY

Additional sampling will be completed. The project will proceed with excavation, treatment and disposal off-site of 3,000 cy of contaminated soil.



# SAAP-038

## OIL WATER SEPARATOR

### SITE DESCRIPTION

The Oil Water Separator (0.5 acres) was located in the north central portion of SFAAP. It began operation in 1971 to service the auto maintenance shop located in Building 542. A majority of the flow to the separator was derived from the floor drain in the car wash bay. Additional wastewater sources include rainwater and condensate from steam radiators used to heat the building. Although no oil or grease was reportedly dumped into the drains leading to the separator, a small quantity of sludge collected in the tank. Sludge was removed from the tank in 1987 and tested for TCLP prior to transfer to the Sanitary Landfill (SWMU 18). This was the first recorded removal of sludge. During a site visit in 1990, the integrity of the tank was questioned because there was influent to the separator, but the tank did not appear to be filling. Oil stains and bare ground were noted under and downgradient of the half tank. It was also indicated that there was visual evidence of potential release to the surface water and soil.

Initial samples were found to be unreliable; therefore, the site was re-sampled in January 2004.

### CLEANUP STRATEGY

Complete the RI report in FY05. Excavation and off-site disposal of 500 cy of contaminated soil may be needed.



### STATUS

**REGULATORY:** RCRA  
**RRSE:** High  
**CONTAMINANTS:** Pesticides, Metals, VOCs, TPH, SVOCs  
**MEDIA OF CONCERN:** Soil

<b>PHASES</b>	<b>Start</b>	<b>End</b>
RFA.....	197909	.....199009
CS.....	199509	.....199805
RFI/CMS.....	200001	.....200409
DES.....	200510	.....200512
CMI (C).....	200601	.....200609

**RC Expected: 200609**

# SAAP-039

## SOUTH ACID AREA DITCHES

### SITE DESCRIPTION

The South Acid Area Ditches (11 acres) are located in the east central portion of SFAAP. The primary drainage ditches originate near the Calcium Cyanamide Disposal Area (SWMU 40). A second ditch originates at the Sulfuric Acid Regenerator. A third influent ditch from the NG and Paste Mix Areas joins the ditch from SWMU 40. All three ditches discharge into Pyotts Pond. During a site visit in 1990, the surface water observed in the east ditch was tinted orange; a white precipitate was observed along both ditches. Reportedly the orange color was caused by the neutralization of acidic ferrous sulfate and sulfuric acid with hydrated lime. The sediment was reported to contain ferrous sulfate and calcium sulfate. Wastes handled at this site include sulfuric and nitric acids, and wastes from the LWTP which may have contained NQ.

Initial samples were found to be unreliable; therefore, the site must be re-sampled. A large portion of the re-sampling effort has been completed. The RFI Addendum Report is due to be completed in late FY05.

### CLEANUP STRATEGY

A limited soil removal may be needed.



### STATUS

**REGULATORY:** RCRA  
**RRSE:** Medium  
**CONTAMINANTS:** Metals, Nitrates, Sulfates  
**MEDIA OF CONCERN:** Surface Water, Sediment, Groundwater

PHASES	Start	End
RFA.....	197909 .....	199009
CS.....	199509 .....	199805
<b>RFI/CMS.....</b>	<b>199602 .....</b>	<b>200510</b>
DES .....	200710 .....	200712
CMI(C).....	200801 .....	200809
<b>RC Expected: 200809</b>		

# CALCIUM CYANAMIDE DISPOSAL AREA

## SITE DESCRIPTION

The Calcium Cyanamide Disposal Area (2 acres) is located in the east central portion of SFAAP. Waste from the operation of the NQ pilot plant was disposed of in a natural ravine at this site. Calcium cyanamide was generated for wet guanidine nitrate (GN) production and delivered to the NQ pilot plant from the main NQ Area. Whenever the carbide content was too high for acceptance at the pilot plant, the calcium cyanamide was taken to the Calcium Cyanamide Disposal Area. The calcium cyanamide sludge was disposed of in this area for only a 3-month period in 1982. The waste material, consisting of calcium cyanamide and fluorspar, was later covered to form a landfill, and enclosed by a barbed-wire fence. The fenced-in area comprises approximately one acre; however, less than half of the area was actually used for disposal of the calcium cyanamide waste. The 200' x 60' disposal area is located in the northeastern portion of the landfill, an area which is now a grassy plateau which slopes downward ~15 ft. An evaporation pond is located just southwest of the landfill. White and black stains were observed along the edges of the pond during site visits in 1989 and 1990.

There is some concern that the surface water runoff from this site drains to Pyotts Pond via the South Acid Area Drainage Ditch discussed in the previous section (SWMU 39).

Initial samples were found to be unreliable; therefore, the site must be re-sampled for SVOCs, VOCs, metals, sulfates and cyanide.

## CLEANUP STRATEGY

Additional RFI activities will be conducted to determine the extent of contamination. Approximately 5,000 cy of waste will be removed from the disposal area.



## STATUS

**REGULATORY:** RCRA  
**RRSE:** Medium  
**CONTAMINANTS:** Metals, Sulfate  
**MEDIA OF CONCERN:** Soil, Groundwater, Sediment, Surface Water

PHASES	Start	End
RFA.....	197909	199009
CS.....	199408	199805
<b>RFI/CMS.....</b>	<b>200001</b>	<b>200807</b>
DES.....	200808	200809
CMI(C).....	200810	200909

**RC Expected: 200909**

# CALCIUM CARBONATE CAKE LANDFILL

## SITE DESCRIPTION

The Calcium Carbonate Cake (CCC) Landfill (2 acres) is located in the west central portion of SFAAP. It measures ~350 x 315 ft and was operated from May 1986 to June 1988. Between May 1988 and December 1991, the CCC was provided to farmers rather than landfilled. This practice was discontinued in December 1991 due to market saturation. Initially, containerized CCC was disposed of at this site, but later uncontainerized CCC was deposited. The source of CCC was NQ production. CCC is a byproduct of GN manufacturing. GN is an intermediate product of NQ. A leachate collection system was installed in the CCC Landfill at the time of construction. The leachate in the collection system tank is monitored. During a site visit in 1990, it was noted that the landfill cap was cracked, vegetative cover was sparse, and erosional features had developed.

## STATUS

**REGULATORY:** RCRA  
**RRSE:** Medium  
**CONTAMINANTS:** Nitrates, SVOCs, Sulfates  
**MEDIA OF CONCERN:** Groundwater

PHASES	Start	End
RFA.....	197909	199009
CS.....	199610	199805
RFI/CMS.....	199704	200009
IRA.....	199901	199905
<b>LTM.....</b>	<b>200107</b>	<b>203509</b>

**RC: 200009**

In 1998, the landfill cap was repaired and graded to minimize infiltration and erosion. Also, new ground cover was established. All work was inspected and accepted by KDHE representatives.

Per KDHE’s requirement, additional wells were installed in FY02.

## CLEANUP STRATEGY

Thirty years of LTM will be conducted. The cap is maintained with non-IRP funds.



**TEMPORARY SANITARY LANDFILL**

**SITE DESCRIPTION**

The Temporary Sanitary Landfill (3 acres) is located in the west central portion of SFAAP, adjacent to the CCC Landfill discussed in the previous section (SWMU 41). It was used to manage non-hazardous solid waste consisting of general trash and sanitary waste. CCC was initially landfilled in the first cell; however, that practice was discontinued.

During the site visit in 1992, it appeared that the landfill consisted of three cells. The cap is maintained with non-IRP funds. Groundwater monitoring will be addressed under SAAP-041.

**STATUS**

**REGULATORY:** RCRA

**RRSE:** Medium

**CONTAMINANTS:** Nitrates

**MEDIA OF CONCERN:**  
Groundwater

<b>PHASES</b>	<b>Start</b>	<b>End</b>
RFA.....	197909 .....	199009
CS.....	199610 .....	199805
RFI/CMS.....	199602 .....	200109
<b>RC: 200109</b>		

# TUNNEL DRYERS (CCC STORAGE)

## SITE DESCRIPTION

There are a total of six Tunnel Dryers (8 acres) that were used for temporary storage of Calcium Carbonate Cake (CCC). Four of the dryers are located in the west central portion of SFAAP. The 2 remaining dryers are located in the southern portion of SFAAP and will be handled under SAAP-036. The dryers began operation in 1986. Each dryer measures ~125 x 18 ft, with 6 ft high walls, and each has a leachate collection system. CCC was a byproduct of the GN step of the NQ production process. The CCC was loaded into dump trucks via conveyor in the NQ area and transported to the tunnel dryers. The CCC was dumped into the dryer and arranged using a front-end loader. The product was ultimately offloaded from the tunnel dryers by vendors. The tunnel dryers are not enclosed. During a site visit in 1990, it was observed that CCC had been tracked beyond the walls of the tunnel dryers by the trucks loading and unloading at the site.

## STATUS

**REGULATORY:** RCRA

**RRSE:** Medium

**CONTAMINANTS:** Nitrates, Metals

**MEDIA OF CONCERN:** Soil, Groundwater

<b>PHASES</b>	<b>Start</b>	<b>End</b>
RFA.....	197909 .....	199009
CS.....	199509 .....	199805
<b>RFI/CMS.....</b>	<b>199604 .....</b>	<b>200809</b>
LTM.....	200810 .....	201309

**RC Expected: 200809**

Initial groundwater samples were found to be unreliable; therefore, the site must be re-sampled.

## CLEANUP STRATEGY

Additional RFI activities will include sampling of soil and groundwater. Five new wells will be installed and monitored for five years. No soil cleanup is anticipated.



# SAAP-044 TANK T784

## SITE DESCRIPTION

Tank T784 (1 acre) is located in the northwest corner of the NQ area in the northwest portion of SFAAP. Limited production began in the NQ Area in 1981. Tank T784, also known as Account # 9049, is a vertical steel above ground wastewater collection tank which held cooling tower blowdown water, NQ crystallizer condensate, GN evaporator condensate, and non-contact cooling water. A pipe discharged the wastewater from T784 into the River Water Treatment Plant (RWTP) Lagoons (SWMU 2), via an underground transfer line. This pipe follows the north plant boundary before turning directly north towards the lagoons. Several releases have occurred as a result of breaks in the RWTP Lagoon transfer line. Tank overflows have also occurred. There are no spill containment structures for the tank.

Initial samples were found to be unreliable; therefore, the site was re-sampled. The RFI report was finalized in March 2005.

## CLEANUP STRATEGY

No further action is needed.

## STATUS

**REGULATORY:** RCRA

**RRSE:** Medium

**CONTAMINANTS:** Solvents, Metals

**MEDIA OF CONCERN:** Soil,  
Groundwater, Surface Water

<b>PHASES</b>	<b>Start</b>	<b>End</b>
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RFA.....	197909 .....	199009
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CS.....	199509 .....	199805
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<b>RFI/CMS.....</b>	<b>199604 .....</b>	<b>200509</b>
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**RC Expected: 200509**

# SAAP-045

## BUILDING 9040 & CALCIUM CYANAMIDE CONVEYORS (BINS)

### SITE DESCRIPTION

Building 9040 (2 acres) is the wet Guanidine Nitrate (GN) building. It is located in the central part of the NQ Area in the northwestern portion of SFAAP. The NQ Area began limited production in 1981. Calcium cyanamide was produced in Building 9004 and transferred via belt conveyor to Building 9040 for use in the GN process. The belt conveyor, which led to storage bins located on the east side of Building 9040, is enclosed in an elevated, sheet metal galleyway. There are four 175-ton storage bins. Calcium cyanamide was released at the bins because of problems with the screw conveyors used to transport material from Building 9004. A concrete pad was constructed in a small portion of the area under the storage bins; however, the pad was too small to effectively contain the spillage, especially in windy conditions. Bare spots were observed in areas near the storage bins.

### STATUS

**REGULATORY:** RCRA  
**RRSE:** Medium  
**CONTAMINANTS:** Metals, Nitrates  
**MEDIA OF CONCERN:**  
 Groundwater

PHASES	Start	End
RFA.....	197909 .....	199009
CS.....	199610 .....	199805
<b>RFI/CMS.....</b>	<b>200001 .....</b>	<b>200510</b>
LTM.....	200710 .....	201709

**RC Expected: 201103**

A drainage divide is located in the NQ Area running east of Building 9040. It separates the Captain Creek drainage area from the area drained by unnamed creeks flowing northward toward the Kansas River. Initial samples (1995) were found to be unreliable; therefore, the site was re-sampled in 2003. The preliminary results indicate that the nitrate plume is not leaving SFAAP. Additional RFI activities included a hydrologic assessment and collection of geotechnical and geochemical data to facilitate a technology evaluation of potential remedies to address nitrate-contaminated groundwater.

A RFI Addendum, which included the Risk Assessment, was completed in FY05. It is anticipated to recommend LTM only. Removal of the sumps at Building 9040 will be handled under SAAP-047. These sumps are the source for groundwater contamination at SAAP-045.

### CLEANUP STRATEGY

Ten years of LTM will be conducted after source removal.



# SAAP-046

## DECONTAMINATION OVEN

### SITE DESCRIPTION

The Decontamination Oven (2-acre site) is located in the northeast portion of SFAAP. The oven was constructed in 1970 and was used to decontaminate oversized equipment/materials contaminated with trace explosives. There were no secondary containment features at this site (PRC, 1990). Only trace explosives were treated in this area. It may have been possible for volatile contaminants to be released via the exhaust fan during heating. Lead may have been released from the equipment and vehicles decontaminated at this site.

Initial samples were found to be unreliable, therefore the site must be re-sampled.

### CLEANUP STRATEGY

Additional soil samples will be taken. It is expected that ~400 cy of contaminated soil will be excavated and disposed off-site.



### STATUS

**REGULATORY:** RCRA

**RRSE:** Medium

**CONTAMINANTS:** Lead

**MEDIA OF CONCERN:** Soil

<b>PHASES</b>	<b>Start</b>	<b>End</b>
RFA.....	197909 .....	199201
CS.....	199509 .....	199805
<b>RFI/CMS.....</b>	<b>200001 .....</b>	<b>200807</b>
DES.....	200808 .....	200809
CMI(C).....	200810 .....	200909

**RC Expected: 200909**