DOE/EA-0878

# ENVIRONMENTAL ASSESSMENT FOR THE CENTRALIZATION AND UPGRADING OF THE SANITARY WASTEWATER SYSTEM AT THE SAVANNAH RIVER SITE

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U. S. DEPARTMENT OF ENERGY
SAVANNAH RIVER OPERATIONS OFFICE
SAVANNAH RIVER SITE

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# 1.0 INTRODUCTION AND NEED FOR ACTION

This Environmental Assessment (EA) has been prepared by the U. S. Department of Energy (DOE) to assess the potential environmental impacts of centralizing and upgrading the sanitary wastewater collection and treatment systems on the Savannah River Site (SRS), near Aiken, South Carolina, to meet state and Federal regulations. Presently, some SRS sanitary wastewater treatment facilities are old and at various stages of compliance with newly promulgated and proposed U. S. Environmental Protection Agency (EPA) and South Carolina Department of Health and Environmental Control (SCDHEC) regulations for treatment and discharge of sanitary wastewater. Action is necessary to allow SRS to comply with those regulations, including the proposed 1993 National Pollutant Discharge Elimination System (NPDES) limits for total residual chlorine discharges. SRS has established interim sanitary wastewater provisions as allowed by the State regulating agency, SCDHEC, and continues to demonstrate good faith intentions to meet regulations by originating the proposed actions for centralization and upgrades.

The proposed centralizing and upgrading action is independent of any specific SRS production operations and is necessary for more efficient collection and treatment of sanitary wastewater on SRS at lower costs. As such, the proposed sanitary wastewater treatment facility replacements and upgrades at SRS are treated as part of the preliminary Reconfiguration Programmatic Environmental Impact Statement (EIS) "No Action" alternative (DOE, 1991).

# 2.0 PROPOSED ACTION AND ALTERNATIVES

## 2.1 Proposed Action

The proposed action is to comply with newly promulgated and proposed EPA and SCDHEC sanitary waste water regulations by replacing or upgrading existing SRS sanitary wastewater facilities (DOE, 1992). Presently, SRS operates twenty aging sanitary wastewater treatment facilities (i.e., combined permitted capacity of 1.85 million gallons per day or mgd) scattered across the site in in A, B, C, F, H, N, D, K, L, T, P and S Areas (Figure 2-1). The proposed action includes replacing fourteen of the twenty treatment facilities with a new 1.05 mgd central treatment facility and connecting them with a new eighteen-mile primary sanitary sewer collection system (Figure 2-1). The new central treatment facility would treat sanitary wastewater by the extended aeration activated sludge process utilizing the oxidation ditch method.

The proposed 1.05 mgd central treatment facility would be located on six acres near the center of SRS. It would provide treatment capacity for SRS populations as forecasted by latest site projections (WSRC, 1991) and modified by the latest DOE planning guidance for SRS (Stello, 1993). The treatment facility would biologically treat and physically separate the wastewater into two forms, clarified effluent (liquid) and sludge (solids). The liquid effluent would be further treated by non-chemical treatment methods of ultraviolet (UV) light disinfection to meet NPDES discharge limitations. Presently, SRS chlorinates wastewater prior to its release to onsite streams, but SRS residual chlorine discharges would not meet the SCDHEC proposed 1993 NPDES limitations without dechlorination.

Under the proposed action, the sludge would go through a volume reduction process to reduce pathogen levels to meet proposed land application criteria (40 CFR 503). Presently, SRS uses aerobic digestion to treat the SRS waste sludge before disposal.

The proposed SRS eighteen-mile collection system would intercept wastewater at points prior to its present discharge into existing sanitary wastewater treatment facilities. Interceptors, force mains, and gravity sewers would be constructed, using existing SRS rights-of-way as much as possible. The use of lift stations would

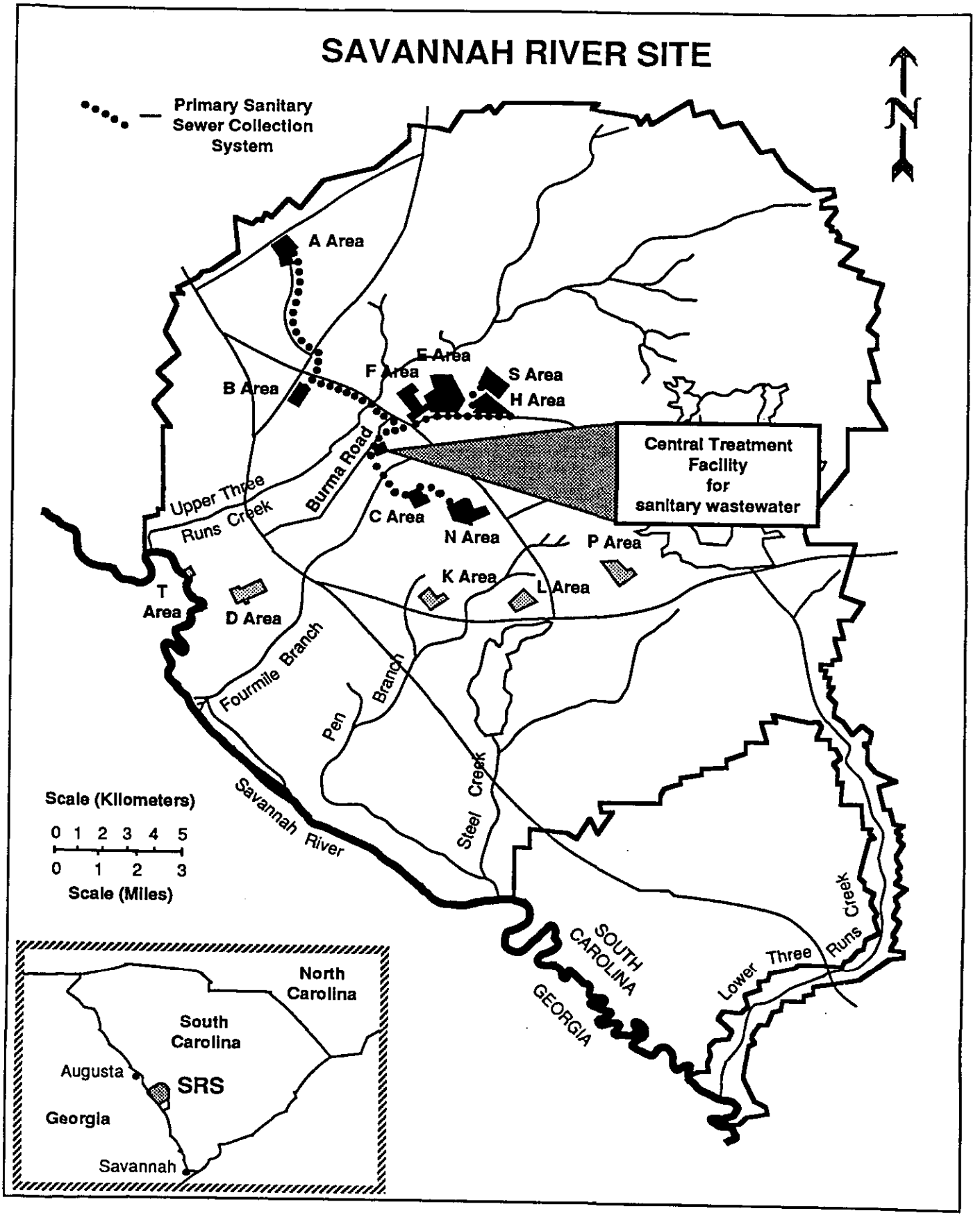


**Figure 2-1.** Location of the Central Treatment Facility and the Primary Sanitary Sewer Collection System.

be incorporated, where necessary, to transport wastewater flows to the central treatment facility. After treatment, the liquid effluent would be discharged into Fourmile Branch, a small tributary of the Savannah River, and the sludge would be applied to the land on SRS in accordance with NPDES and land application permit limits.

The 1.05 mgd central facility would contain a 525,000 gallon capacity equalization basin, three 350,000 gpd oxidation ditches with clarifiers, one ultraviolet light disinfection chamber, cascade aeration steps, a 50,000 gallon capacity sludge thickening basin, various masonry process buildings including analytical facilities, and standard support facilities (Figure 2-2). All basins, ditches and the disinfection chamber would be constructed of reinforced concrete. There would be supporting offices, process control facilities, a lunch room, and restrooms. Necessary water supplies would be provided by a 50 gallon per minute well screened in the Congaree Aquifer. A 350 kW standby diesel generator system would provide electrical power for all essential equipment in the event of power failure or scheduled outages.

Existing SRS sanitary wastewater treatment facilities that are replaced would be decommissioned and abandoned in place after successful startup of the new facilities. The existing SRS sanitary wastewater facilities in K, L, P, D and T Areas would not be connected to the new central treatment facility but would be upgraded as necessary to meet demands by replacing existing chlorination treatment systems with non-chemical UV light disinfection systems to meet the proposed NPDES limitations.

## 2.2 Process Description

Under the new system, untreated sanitary wastewater flows would be transported from existing sanitary wastewater discharge lines via the proposed trunklines to the new treatment facility (Figure 2-3). From the trunkline lift stations, wastewater flows would be transported at a flowrate such that no floods or backups would occur during periods of peak flow. Preliminary wastewater treatment would encompass passing the influent through a mechanical barscreen in the reinforced concrete headworks facility. During this treatment process, solids as small as 0.5 inches and grit would be removed. The influent would then flow by gravity to the equalization basin. The equalization basin would protect the facility from infiltration due to heavy rains and provide wastewater of uniform flow and composition to the ensuing processes. Diffused air would provide mixing and aeration in the equalization basin to prevent septicity and settling out of solids. After pumping a steady wastewater flow from the equalization basin for treatment, the wastewater alkalinity would be adjusted by the addition of soda ash in the oxidation ditches at a rate of approximately 83-84 lb/hr. Less than a one-month supply of soda ash in solid form would be maintained at any one time in the proposed facility. The soda ash would be converted to a liquid mixture in the day tank prior to being pumped into the oxidation ditches (Figure 2-3).

Biological treatment would be performed in three oxidation ditches operating in parallel to allow maximum flexibility and reliability. Start up of the treatment facility could be accomplished in phases as each trunkline is completed. In addition, the oxidation ditches could be taken off line in the event of sitewide population decreases. An intrachannel clarifier in each oxidation ditch would allow the solids and liquids to separate and sludge return to occur within the aeration channel. Clarified wastewater would enter the UV disinfection chamber for disinfection. No chemical treatment is planned for effluent disinfection because the UV light system would be a physical, rather than chemical, disinfecting agent. This would eliminate the need for chlorinating and dechlorinating agents and the potential for toxic chemical releases.

Disinfected effluent would next be aerated by means of cascade aeration. Using available fluid head to create turbulence, the effluent would fall in a thin film over a series of concrete steps until being discharged into the stilling basin. The effluent turbulence would be stabilized in the stilling basin prior to being monitored and discharged to Fourmile Branch.

Waste sludge removed by gravity from the intrachannel clarifiers would enter the aerated thickening/blending basin where the sludge would settle out and be compacted by gravity. Aeration would prevent odors. The thickening basin would receive sludge as necessary from wastewater treatment facilities at K, L, P, D and T

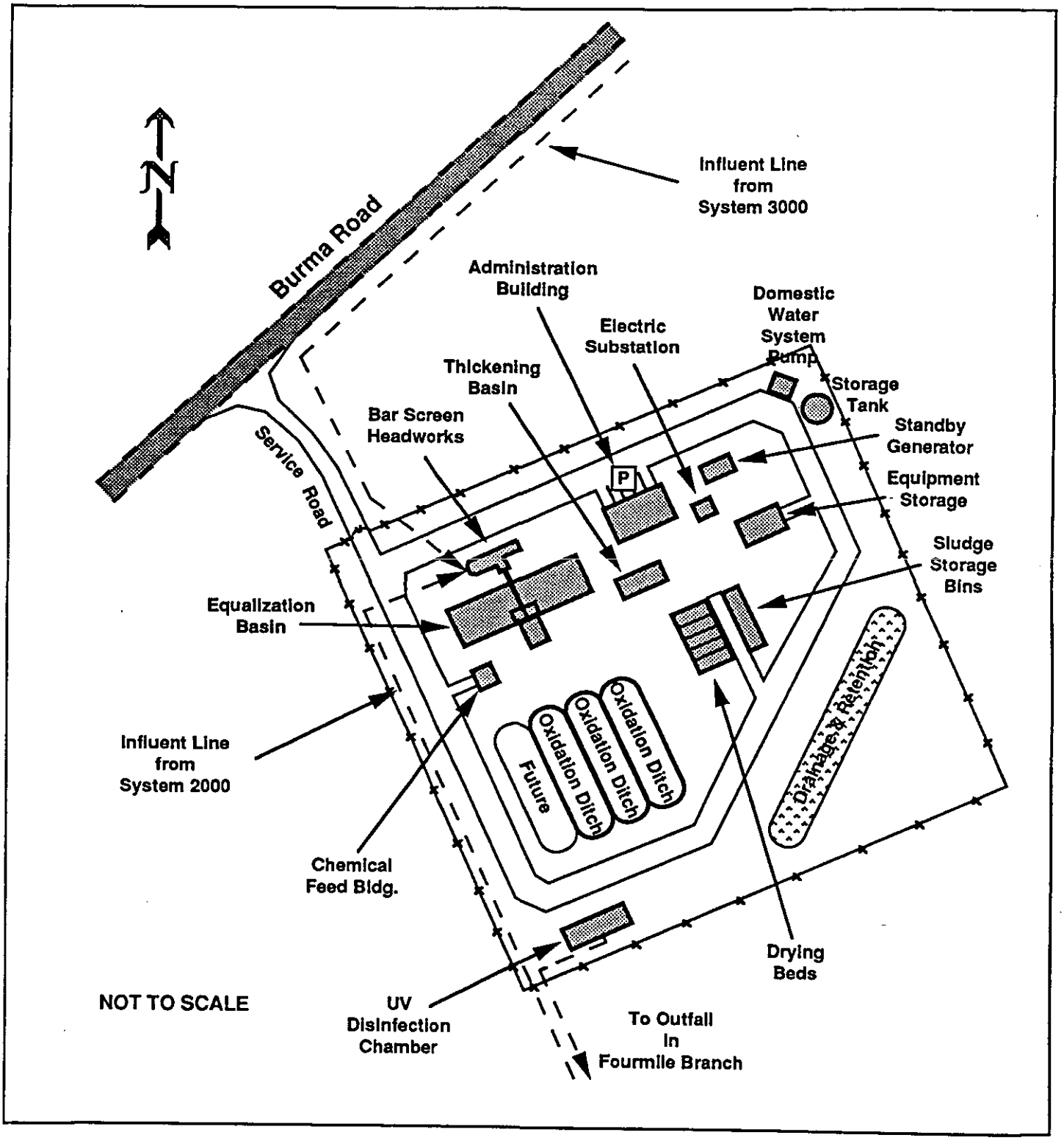


**Figure 2-2.** Site map illustrating the layout of the proposed Central Treatment Facility for sanitary wastewater at the Savannah River Site, South Carolina.

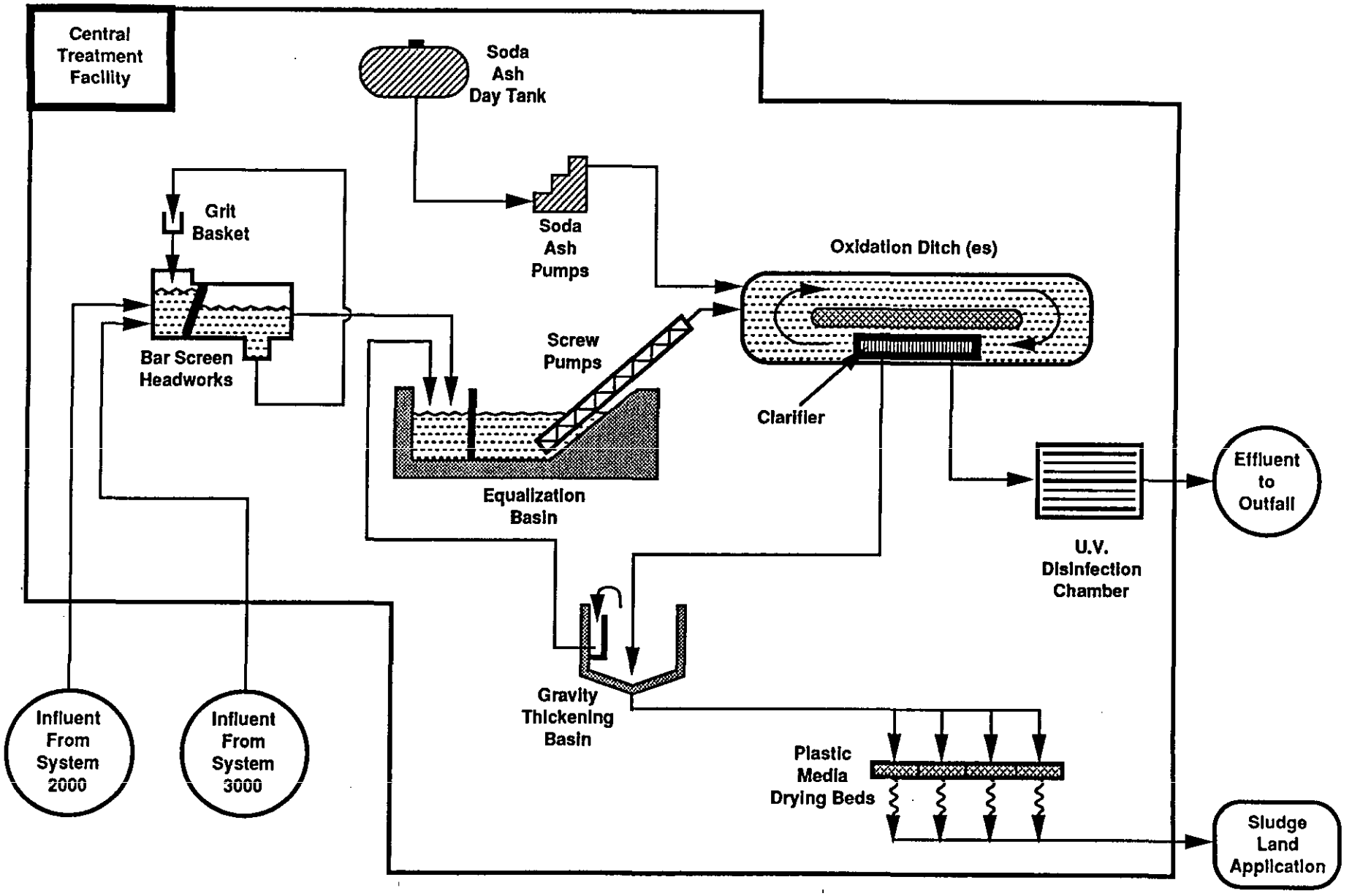


Figure 2-3. Process flow diagram for the Central Treatment Facility for sanitary wastewater at the Savannah River Site, South Carolina.

areas for treatment. Following sludge settlement, the clear upper liquid layer would be pumped to the oxidation ditch for reprocessing. The thickened sludge would then be pumped to plastic media drying beds for dewatering. Polymer would be added as necessary to the sludge prior to dewatering to enhance the water removal and improve solids capture. Filtrate from the dewatering process would also be returned to the oxidation ditch for reprocessing.

### 2.3 Alternative Actions

Among the alternatives considered to the proposed action is the alternative to take no action. This alternative would result in SRS continuing to treat wastewater in its 20 aging facilities scattered across the site as currently practiced and failing to comply with pending state and Federal regulations (i.e., 1993 NPDES limits for residual chlorine discharges and proposed land application criteria 40 CFR 503). Thus, the no action alternative is not a legal or reasonable alternative to the proposed action.

A second alternative would be to construct the central treatment facility at a different location on SRS. One potential site considered would require discharge into Upper Three Runs Creek onsite and was determined to have potentially unacceptable environmental impacts. Upper Three Runs Creek is a relatively pristine stream and operational discharge levels similar to that projected for the proposed central treatment facility would degrade it. Another location further upstream on Fourmile Branch was also considered but rejected because the projected organic load from the central treatment facility would have been greater than the concentration which Fourmile Branch could accommodate.

Another alternative to constructing and operating a new central treatment and collection system would be to upgrade existing SRS sanitary wastewater treatment facilities by continuing chemical treatment with dechlorination or using UV light disinfection at existing SRS sanitary wastewater treatment facilities. Although this would allow the treatment facilities to meet the proposed NPDES requirements, it was rejected because of its expense. It would also not provide the flexibility necessary to meet SRS's changing wastewater treatment needs. Environmental impacts and operation and maintenance costs would be twice as high as compared to the proposed action.

An additional alternative to the proposed action would be to construct and operate a totally consolidated SRS sanitary wastewater treatment facility and primary sanitary sewer collection system. Sized at approximately 1.3 mgd, the consolidated system would receive and treat sanitary wastewater from all existing SRS facilities, and many of these facilities are expected to be down-sized as SRS reactors are shut down and the site mission changes. An additional 18 miles of trunkline, or approximately 36 miles of trunkline would be required to transport the wastewater flows from all existing site facilities to the totally consolidated facility. Because of the increased waste load allocation from a totally consolidated treatment facility, the location of such a facility would be either further downstream on Fourmile Branch or directly on the Savannah River. This alternative would meet the proposed NPDES requirements, but provide much more than adequate treatment capacity for SRS at twice the cost of the proposed action. The increased cost is due to the additional 18 miles of trunkline and the larger totally-consolidated facility.

## 3.0 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

The SRS occupies about 199,000 acres in southwestern South Carolina approximately 25 miles southeast of Augusta, GA (Figure 2-1). The proposed site of the central facility is near the center of SRS and lies approximately 5 miles from the nearest SRS site boundary. It is just north of C Area and is surrounded by wooded areas. SRS contains five nuclear production reactor areas; two chemical separations areas; waste processing, storage, and disposal facilities; and various supporting facilities. More than 21,000 people work at SRS in these various operating areas and would be served by the new systems. A comprehensive discussion of SRS and associated environs is presented in the **Final Environmental Impact Statement, Continued Operation of K-, L-, and P-Reactors, Savannah River Site** (DOE, 1990), and in the environmental information documents (WSRC, 1989a, 1989b, & 1989c) for that EIS. The most recent socioeconomic data base of the six-county SRS area of influence (NUS, 1992) contains additional information.

## 3.1 Construction Impacts

The proposed action would take place in a planted pine forest near the center of SRS on a gently sloping, sandy site draining to Fourmile Branch. The proposed 6-acre location is not located within the 100 year floodplain. Ground surface elevation for the proposed location is approximately 200 ft above mean sea level across the proposed layout (USGS, 1987).

The location of the proposed action was assessed in a biological evaluation (Roecker, 1992) prepared by the Savannah River Forest Station (SRFS). This evaluation addressed the potential effects of the proposed action on threatened and endangered plant and animal species. None of the threatened and endangered species known to occur on SRS have ever been documented on or near the subject location (WSRC, 1989b). In addition, the proposed location provided only low quality habitat for the various threatened and endangered species found on site. No effect on any federally- or state-listed protected species would be expected as a result of the proposed action. This determination of no impact on threatened or endangered species was concurred with by the U. S. Fish and Wildlife Service (USFWS) after reviewing the SRFS report (Banks, 1993). The construction would also result in the harvesting of some marketable timber during clearing activities at the proposed location.

Reviews of the locations for both the proposed Central Treatment Facility and trunkline routes were also conducted by the Environmental Sciences Section of WSRC to identify potential wetlands impacts (Rogers, 1992a; 1992b). The review for the Central Treatment Facility indicated that the proposed site is 250 feet away from the nearest wetland, a small (less than 0.1 acre) isolated wetland located to the southeast. A recent Floodplain/Wetlands Assessment (see Appendix A) was conducted for the areas encompassed by the proposed trunkline routes. The Floodplain/Wetlands Assessment was prepared in compliance with 10 CFR Part 1022 as an appendix to this EA. Wetlands were determined to be located along the proposed trunkline route from A and B Areas north of Upper Three Runs Creek and the C and N Area trunkline route as it crosses Fourmile Branch. Construction activities in these wetlands would be minimized, and silt fences would be used to prevent erosion of soils into these areas (see Appendix A). Potential impacts associated with the stream crossings would be minimized by routing the trunkline above ground. The final design of the trunkline would be approved by SCDHEC to minimize the potential for any spill of untreated sewage. An approved erosion control and sedimentation plan would address the minimization and mitigation actions which would be taken during the project construction to ensure all wetlands would be protected.

Routing of the proposed 18 mile collection system would predominantly occur within existing road and utility right-of-ways. Upgrades of the existing sanitary wastewater treatment facilities would take place within previously developed areas. The proposed action represents the development of less than 0.003 percent of the total undeveloped SRS land area. Therefore, the amount of land to be utilized in conjunction with the proposed action would be negligible. Standard erosion control measures would be implemented during construction. Any dust emissions during construction would be minimized by sprinkling or other standard control methods. Standard materials would be utilized in the facility construction.

The construction of the proposed wastewater facility would result in the generation of approximately 30,000 cubic yards of construction related spoil. This spoil would be disposed of in the permitted SRS Inert Waste Landfill (Erosion Control Pit). Any contaminated soil generated during the excavation and grading activities would be disposed onsite in waste disposal areas in accordance with applicable regulations and site procedures (e.g., WSRC, 1992a). Appropriate measures (e.g., use of protective clothing) would be implemented to enable safe working conditions should any contaminated soils be encountered during the construction of either the proposed wastewater facility or trunkline.

The peak construction workforce for the proposed action is estimated to be 120 persons. When compared to the total SRS workforce of approximately 21,000 persons, the socioeconomic impacts of a construction workforce of 120 should be negligible.

Cultural resources at SRS are managed under the terms of a Programmatic Memorandum of Agreement (PMOA) among DOE-SR, the South Carolina State Historic Preservation Officer (SHPO), and the Advisory

Council on Historic Preservation. DOE-SR uses this PMOA to identify cultural resources, assess these in terms of National Register eligibility, and develop mitigation plans for affected resources in consultation with the SHPO. DOE-SR would comply with the stipulations of the PMOA for all activities related to the proposed actions. A survey of the proposed facility locations was conducted by the University of South Carolina Archaeological Department and no evidence of archaeological resources was found (Brooks, 1992). By constructing the trunklines within existing right of ways, there would be little potential for impacting sites.

The decommissioning and abandoning in place of the 14 existing facilities would involve the cleaning and salvaging of all equipment possible, and cleaning out and filling the wastewater treatment tanks at each facility with soil. In addition to the upgrading activities at the remaining six facilities, some chlorination equipment at those facilities would be cleaned and removed for salvage.

## 3.2 Operational Impacts

Operation of the new facilities would not result in the generation of any new waste types. As is currently the case, approximately 20 cubic yards of solids and 6 cubic yards of grit would continue to be generated annually and disposed of at the permitted SRS Sanitary Waste Landfill. When operating at capacity, an additional 10 cubic yards of solid waste would be generated annually and disposed of at the landfill. Approximately 175 cubic yards of dry sludge would be generated per year from the Central Treatment Facility. An additional 25 cubic yards of dry sludge would be generated as a result of the non-centralized sanitary wastewater treatment facilities operations, with volume reduction and treatment conducted at the new facilities. As a result of the sludge thickening and dewatering processes at the Central Treatment Facility, the dry sludge would contain a minimum solids content of 18 percent. All dry sludge would be trucked offsite for disposal by a subcontractor to a publicly owned treatment works near Augusta, Georgia (WSRC, 1992b), which is the current practice, until a permit is obtained for its reuse as a fertilizer and soil conditioner on the vegetated areas located on SRS (NEPA review under development).

No hazardous chemicals would be released to the atmosphere from the proposed Central Treatment Facility. The chemical feed equipment building and domestic water well treatment building would both contain chemical mixing and supply tanks as well as a thirty day chemical supply. To minimize the potential for releases to the environment, each building would be constructed with sloped floors draining into a containment sump. The containment area would be sized to contain the total volume of the largest chemical tank plus ten percent. Concrete curbing would also be provided. Contents of the sump would be removed to the equalization basin in the event of a chemical release. Workers handling or exposed to these chemicals would be trained on the proper handling, disposal and emergency response required for each chemical. Protective clothing and equipment would be worn when handling chemicals as necessary.

Use of the non-chemical UV light disinfection systems would eliminate the use and handling of 32,000 gallons of sodium hypochlorite per year for sanitary wastewater disinfection. The UV light disinfection system use would also eliminate the need for the 59,350 pounds of sodium sulfite per year which would have been required for dechlorination to meet the proposed NPDES permit requirements. Eliminating these chemicals would also eliminate the potential for toxic chemical releases from the treatment process.

A standby 350 kW diesel generator would provide electricity to the proposed Central Treatment Facility in the event of an interrupted power supply or scheduled power outage. During normal operations, this generator would operate 35 hours per year: 30 minutes per week to conduct no-load testing and an additional 45 minutes per month to conduct load testing. A permit is not required for a standby generator operating less than 250 hours per year; however, a log book would be required at the facility denoting the hours of operation. A 300-gallon above-ground diesel storage tank would supply the standby generator. The storage tank would have a containment dike and rain cover. Operation of this standby generator would not result in adverse environmental impacts.

Once operational, the Central Treatment Facility would require a staff of six persons. These persons would be relocated from the existing sanitary wastewater treatment facilities which have been centralized. Therefore, no socioeconomic impacts as a result of normal operations would be predicted.

The proposed action would require the installation of a new 50 gpm water well into the Congaree aquifer to provide both domestic and process water for the Central Treatment Facility. The projected withdrawal of 20,000 gpd at that facility would represent approximately 0.19 percent of the total daily groundwater usage rate for SRS (DOE, 1990). Domestic water treatment and distribution systems would be constructed and operated in accordance with the South Carolina Primary Drinking Water Regulations.

The Savannah River forms the western boundary of SRS and receives drainage from five tributaries on SRS: Upper Three Runs Creek, Fourmile Branch, Pen Branch, Steel Creek, and Lower Three Runs Creek. Fourmile Branch follows a generally southwesterly path to the Savannah River for a distance of about 15 miles, along which it receives powerhouse wastewater, cooling water, steam condensate, and sanitary treatment plant effluents. Fourmile Branch received thermal effluent from C Reactor during its operation from 1955 to 1985.

Operation of the new central facility and closure of the A-, B-, and S-Area, and Naval Fuel sanitary wastewater treatment facilities would eliminate sanitary wastewater discharges to Upper Three Runs Creek. SCDHEC has already issued a draft NPDES permit modification for a maximum discharge of 1.05 mgd of treated liquid effluent into Fourmile Branch from the new central facility. Overall stream quality in Fourmile Branch is expected to improve based on the new facility's cleaner effluent than that of the C-, F-, and H-Area package plants being closed, which currently discharge to Fourmile Branch. To assure that the effluent would meet South Carolina Water Quality Standards, a comprehensive water quality analysis using the EPA QUAL2E model was conducted. Results from the QUAL2E analysis indicated that the effluent would meet the permitting requirements for dissolved oxygen levels (i.e., greater than 5 mg/L) as determined by SCDHEC (Hayes, 1992).

The closure of the existing sanitary wastewater treatment facilities to be replaced would result in transporting the existing 70,000 gallons of sludge at these facilities to the new facilities for volume reduction and treatment prior to permitted onsite land application. The existing chemical treatment facilities would also be abandoned in place, with equipment removed and reused or excessed. Any contaminants or hazardous materials encountered during decommissioning would be handled in accordance with site procedures and applicable regulations (e.g., removal/disposal as required under the Resource Conservation and Recovery Act). None of the facilities affected by this proposed action are located in radiological zones, and no radiological contamination is expected.

The new facilities would be constructed and operated in accordance with the South Carolina Water Classifications and Standards. Although not a reasonably foreseeable event, the potential for process upsets which could impact water quality would be minimized by the incorporation of mitigative features into the facility design. Where possible, these features would include use of equalization basins, redundant solid screening, UV light systems, and sizing key components to be capable of handling three times the average daily flow. Furthermore, the proposed monitoring at the lift stations would give the facility staff time to react and prevent potential impacts resulting from unplanned events.

## 3.3 Cumulative Impacts

One construction impact of the proposed action would be the loss of 6 acres of planted pine forest habitat, but this is less than 0.003 percent of the existing forest habitat on SRS. Facility construction and operation would result in no adverse impacts on groundwater or surface water resources. Facility operation would result in an expected increase or improvement of surface water quality in both Upper Three Runs Creek and Fourmile Branch. The proposed action would eliminate discharges into Upper Three Runs Creek, and increase sanitary wastewater discharges into Fourmile Branch by 0.8 mgd. Treatment of the liquid effluent by UV light disinfection would result in an elimination of present SRS dechlorination and residual chlorine discharge difficulties. After a permit is obtained for its use, sludge would be reused onsite as a fertilizer and soil conditioner. In addition, facility operation would result in no adverse environmental impacts as a result of hazardous chemical or material use.

## 4.0 REGULATORY AND PERMITTING PROVISIONS CONSIDERED

DOE policy is to perform its construction and operations in compliance with all existing applicable federal, state, and local laws and regulations, and with all DOE orders. This section discusses the major regulatory permit programs that might be applicable to the proposed actions.

### 4.1 National Environmental Policy Act of 1969

NEPA, as amended (42 USC 4321 et seq), requires "all agencies of the Federal Government" to prepare a detailed statement on the environmental effects of proposed "major federal actions significantly affecting the quality of the human environment." This EA was prepared to assess the significance of the environmental effects of the proposed actions and to comply with NEPA, the Council on Environmental Quality Regulations on Implementing National Environmental Policy Act (40 CFR 1500-1508), DOE Regulations 10 CFR 1021, and DOE Order 5440.1E.

The proposed action encompassed by this EA and the proposed action as described in the onging NEPA review of the new sanitary sludge land application sites are separate actions at SRS. The implementation of either of these actions does not depend on the other, and either action could proceed with or without the other. The coverage of these two projects as independent actions within the framework of separate NEPA reviews is appropriate.

### 4.2 Other Regulations

In accordance with the South Carolina Pollution Control Act, the NPDES permit would be modified per South Carolina Regulations R.61-9, NPDES Permits, to include new effluent discharges and modifications to sanitary wastewater treatment facilities. The proposed trunkline crossings and outfall structure are expected to require authorization from U. S. Army Corps of Engineers under approved Nationwide Permits, including numbers 7, 12 and 33 under Section 404 of the Clean Water Act of 1977. Construction and operation permits would be required for the new facilities, and any facility modifications in accordance with South Carolina Regulations, R.61-68, Water Classifications and Standards. The sludge generated and treated would result in waste volume reduction and stabilization to meet the 40 CFR Part 503 requirements and the SCDHEC Land Application Guide. The construction and operation of the domestic water well, treatment, and distribution system would be permitted in accordance with the South Carolina Primary Drinking Water Regulations, R. 61-58. Closure of any existing wastewater facilities would be conducted in accordance with South Carolina Regulations R. 61-82, Proper Closeout of Wastewater Treatment Systems. An approved erosion control and sedimentation plan would be required in accordance with the Sediment Control Ordinance for Aiken County.

## 5.0 REFERENCES


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# APPENDIX A
# FLOODPLAIN/WETLANDS ASSESSMENT

# Floodplain/Wetlands Assessment for Centralization and Upgrading of the Sanitary Wastewater System located on the Savannah River Site (SRS)

## 1.0 DESCRIPTION OF PROJECT

This Floodplain/Wetlands Assessment is designed and intended to function as an Appendix to the **Environmental Assessment for Centralization and Upgrading of the Sanitary Wastewater System at the Savannah River Site** (DOE/EA-0878). A detailed description of the proposed action may be found in Section 2 of this document. A notice of floodplain and wetland involvement was published on August 27, 1993 (58 FR 45327). No comments were received.

## 2.0 EFFECT ON FLOODPLAINS OR WETLANDS

### 2.1 Floodplain and Wetlands - Upper Three Runs Creek

The force main from A and B Areas will be installed along existing road right-of-ways without crossing wetlands until the installation is about 3000 feet northwest of Upper Three Runs Creek along Road C (Figure A-1). There are intermittent areas of wetlands along approximately 2000 feet of this 3000 foot run of pipeline. Along this stretch of Road C, there is a grassed shoulder that ranges from 10 feet to 25 feet in width; this shoulder includes a relatively flat area immediately adjacent to the pavement and some areas with steeper slopes that grade into wetlands. The pipeline will be laid in some of these wetland areas, resulting in short-term impacts. Operation of construction equipment in the wetland areas would be minimized. All wetlands will be delineated and surveyed prior to construction. Construction impacts will be minimized and original contours will be restored in the wetland areas following completion of construction. Additionally, an appropriate erosion control plan will be developed and followed to ensure that no additional impacts to wetlands will occur due to erosion and sedimentation.

### 2.2 Floodplain and Wetlands - Fourmile Branch

The force main from C Area is planned to follow a power line which is in well-drained soils for most of the route. Where the line crosses Fourmile Branch there is about 300 feet of wetlands along the floodplain. The stream is braided in this area without a defined channel. Most of the trees (gum and ash) are dead or dying. This area appears to have been receiving sediment over the past 50 to 100 years and the soil material is only partly consolidated which could contribute to the tree die out. There are healthy grasses and weeds which are typical of wetlands. These soils will require platform support mats to work on in order to install the support pillars that will anchor the line over the stream and floodplain. This material will be removed when the line is completed. Two support pillars are to be constructed in the wetlands with a base about three feet square. This crossing is selected because it is the least distance for the line to cross wetlands and therefore have the least potential for impact.

Long term impact to these wetlands will be the addition of the two support pillars which is not considered to be significant. Short term impact will be the traffic that will crush the weeds and grasses for one growing season along the width of the construction route

needed to install the line. These proposed activities could fall under COE Nationwide Permit numbers 12 and 33.

### 2.3 Floodplain and Wetlands - Outfall Line to Fourmile Branch

The outfall line can be installed along the power line right-of-way without crossing any wetlands. The water will need to be controlled in such a manner as to not cause erosion to the stream sediment and the water chemistry such that it does not degrade downstream water quality. Bedding to control erosion may fall under Nationwide Permit number 7. An erosion control plan will be developed so that the proposed action complies with applicable State and local floodplain protection standards and further to ensure that no additional impacts to wetlands will occur due to erosion and sedimentation.

## 3.0 ALTERNATIVES CONSIDERED

Alternatives to the proposed action are covered in Section 2.3 of the **Environmental Assessment for Centralization and Upgrading of the Sanitary Wastewater System at the Savannah River Site.** The "no-action" alternative would not meet the need for action. As discussed in that section, other alternatives would have unacceptable water quality impacts from discharges, would not be cost-effective ways of meeting the need, and would have similar or greater wetlands involvement.

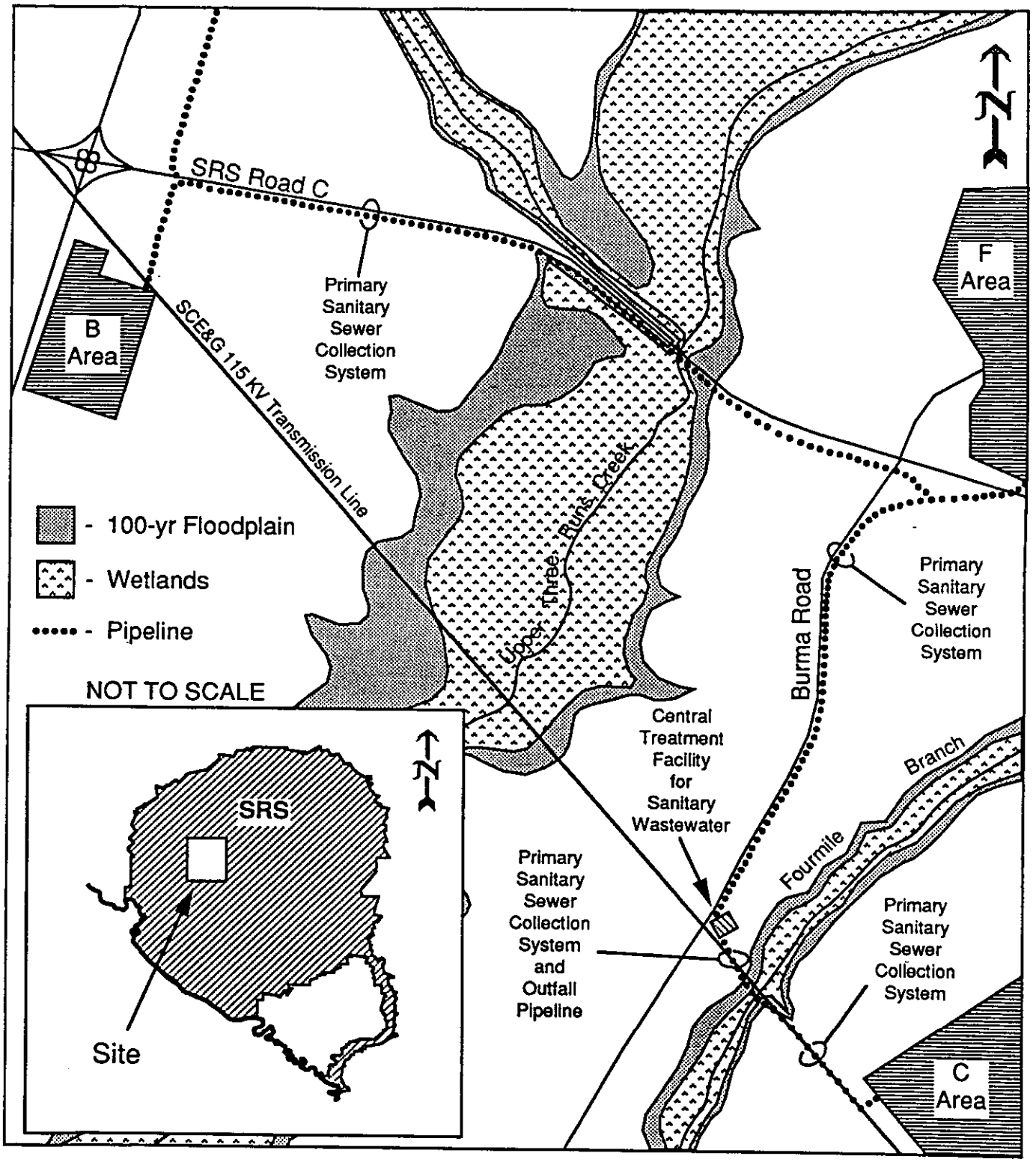


Figure A-1. Approximate site location of the 100-year floodplain and wetlands associated with the pipeline crossing of Upper Three Runs Creek and the pipeline crossing and outfall structure on Fourmile Branch. These floodplain and wetland location data were based on maps presented in NUS (1984).

# FINDING OF NO SIGNIFICANT IMPACT AND FLOODPLAIN STATEMENT OF FINDINGS FOR CENTRALIZATION AND UPGRADING OF THE SANITARY WASTEWATER SYSTEM AT THE SAVANNAH RIVER SITE, AIKEN, SC

**AGENCY:** U.S. Department of Energy

**ACTION:** Finding of No Significant Impact and Floodplain Statement of Findings

**SUMMARY:** The Department of Energy (DOE) has prepared an environmental assessment (EA), DOE/EA-0878, for the proposed centralization and upgrading of the sanitary wastewater system on the Savannah River Site (SRS), near Aiken, South Carolina. Based on the analyses in the EA, DOE has determined that the proposed action is not a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act (NEPA) of 1969. Therefore, the preparation of an environmental impact statement is not required, and DOE is issuing this Finding of No Significant Impact and Floodplain Statement of Findings.

**PUBLIC AVAILABILITY:** Copies of the EA are available from:

Mr. Karl E. Goodwin
Office of Processing and Reactor Facilities
Office of Defense Programs, DP-636
U. S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585
Phone: (301) 903-5498

For further information on the DOE NEPA process, contact:

Ms. Carol Borgstrom
Office of NEPA Oversight, EH-25
U. S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585
Phone: (202) 586-4600 or (800) 472-2756

**BACKGROUND:** Some SRS sanitary wastewater treatment facilities are old and cannot comply with newly promulgated and proposed U.S. Environmental Protection Agency (EPA) and South Carolina Department of Health and Environmental Control (SCDHEC) regulations for treatment and discharge of sanitary wastewater, including proposed 1993 National Pollutant Discharge Elimination System (NPDES) limitations for residual chlorine discharges.

**PROPOSED ACTION:** The proposed action is to decommission in place 14 of the 20 SRS sanitary wastewater facilities and to replace them with a new central treatment facility located on six acres near the center of SRS. Sanitary wastewater flows would be connected to the central treatment facility by a new 18-mile primary sanitary sewer collection system. The proposed 1.05 million gallons per day (mgd) central treatment facility would treat sanitary wastewater by an extended aeration-activated sludge process utilizing the oxidation ditch method. The treatment facility would biologically treat and physically separate the wastewater into two forms, clarified effluent (liquid) and sludge (solids). The liquid effluent would be further treated by nonchemical methods of ultraviolet (UV) light disinfection to meet NPDES discharge limits. Sludge would be reused as a fertilizer onsite once a permit is obtained from SCDHEC in accordance with the SCDHEC Land Application Guide. (Separate NEPA review for proposed sludge disposal is under development.) Until a permit for use of sludge as a fertilizer is obtained, current practice would be followed, which is to truck sludge offsite for disposal.

Six of the 20 existing SRS sanitary wastewater facilities, in K, L, P, D and T Areas, would not be connected to the new central treatment facility but would

be upgraded by replacing existing chlorination treatment systems with nonchemical UV light disinfection systems to meet the proposed NPDES limits.

**ALTERNATIVES CONSIDERED:** In addition to the proposed action, DOE considered the following alternatives:

(1) No-action (i.e., continued use of the existing SRS sanitary wastewater facilities)

(2) Upgrade and use existing sanitary wastewater treatment facilities

(3) Construct central treatment facility at an alternate SRS site

(4) Construct a totally consolidated sanitary wastewater collection and treatment system.

The no-action alternative would not comply with applicable state and Federal regulations and is therefore not a reasonable alternative, but was analyzed for baseline purposes. The impacts of the reasonable alternatives that would meet the need for DOE action were analyzed and were not selected for the following reasons: upgrading existing facilities would not provide flexibility to meet changing wastewater treatment needs and would cost twice as much as the proposed action; alternative locations for the central treatment facility would have adverse impacts to certain streams and creeks; a totally centralized facility would provide excess capacity at approximately twice the cost of the proposed action.

**ENVIRONMENTAL IMPACTS:** The potential consequences of the centralization and upgrading of the SRS sanitary wastewater system were considered to determine whether there would be significant impacts to water, air, and land resources;

floodplains and wetlands; ecology and cultural resources; health and safety; socioeconomic conditions; and transportation.

The central treatment facility would result in the loss of 6 acres of planted pine forest, which is less than 0.003 percent of the existing forest habitat at SRS. No threatened or endangered species are present at the proposed location, which is low quality habitat for those species. Treatment of the liquid effluent by UV light disinfection would result in an elimination of present SRS dechlorination and residual chlorine discharges. Facility operation would have no adverse environmental impacts due to hazardous chemical or material use. Facility operation would improve surface water quality in both Upper Three Runs Creek and Fourmile Branch by eliminating all sanitary sewage discharges into Upper Three Runs Creek, and providing cleaner sanitary discharges into Fourmile Branch. Discharges up to 0.8 mgd to Fourmile Branch would meet NPDES permit requirements, including those for dissolved oxygen. There would be minimal disturbance of wetlands during the construction phase, and original contours will be restored after construction. There would be no impacts to cultural resources, transportation, or local socioeconomic conditions. No health or safety concerns would be created. No cumulative impacts to the environment are expected as a result of the proposed action.

**FLOODPLAIN STATEMENT OF FINDINGS:** This is a Floodplain Statement of Findings prepared in accordance with 10 CFR Part 1022. A Notice of Floodplain and Wetlands Involvement was published on August 27, 1993 (58 Fed. Reg. 45327), and a floodplain and wetlands assessment was incorporated in the Environmental

Assessment. As part of the centralization and upgrading of the sanitary wastewater system at SRS, DOE is proposing to install a sanitary wastewater collection system that would cross through or near the onsite floodplains of Upper Three Runs Creek and Fourmile Branch and would have an outfall line at Fourmile Branch. An erosion control plan will be developed to ensure that erosion and sedimentation will not cause adverse impacts to the floodplain. Alternatives to the proposed location of the wastewater collection system would result in greater disturbance to wetlands. The proposed action conforms to applicable State or local floodplain protection standards. DOE will endeavor to allow 15 days of public review after publication of this statement of findings before implementing the proposed action.

**DETERMINATION:** Based on the information and analyses in the EA, DOE has determined that the proposed centralization and upgrading of the existing sanitary wastewater system at SRS does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of NEPA. Therefore, an environmental impact statement is not required.

Issue at Washington, D.C., this 30th day of Sept. 1993.

Peter N. Brush
Acting Assistant Secretary
Environment, Safety and Health