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**United States Department of Energy**

**Savannah River Site**

**Explanation of Significant Difference (ESD) for  
Incorporating Tank 12 into the Revision 1 Interim Record of  
Decision Remedial Alternative Selection for the H-Area  
Tank Farm, Waste Tank 16**

**CERCLIS Number: 89**

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**December 2016**

**Prepared by:**

**Savannah River Remediation (SRR)**

**Savannah River Site**

**Aiken, SC 29808**

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Savannah River Remediation, LLC  
Aiken, South Carolina**

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## **LIST OF ACRONYMS**

|                  |   |
|------------------|---|
| <b>CERCLA</b>    | <b>Comprehensive Environmental Response, Compensation and Liability Act</b>           |
| <b>ESD</b>       | <b>Explanation of Significant Difference</b>  |
| <b>FFA</b>       | <b>Federal Facility Agreement</b>   |
| <b>HTF</b>       | <b>H-Area Tank Farm</b>   |
| <b>ICMI/RAIP</b> | <b>Interim Corrective Measures Implementation/Remedial Action Implementation Plan</b> |
| <b>IROD</b>      | <b>Interim Record of Decision</b>   |
| <b>LLC</b>       | <b>Limited Liability Company</b>  |
| <b>LUC</b>       | <b>Land Use Control</b>   |
| <b>NCP</b>       | <b>National Oil and Hazardous Substances Pollution Contingency Plan</b>               |
| <b>OU</b>        | <b>Operable Unit</b>  |
| <b>RA</b>        | <b>Remedial Action</b>  |
| <b>RCRA</b>      | <b>Resource Conservation and Recovery Act</b>   |
| <b>ROD</b>       | <b>Record of Decision</b>   |
| <b>SCDHEC</b>    | <b>South Carolina Department of Health and Environmental Control</b>                  |
| <b>SRR</b>       | <b>Savannah River Remediation, LLC</b>  |
| <b>SRS</b>       | <b>Savannah River Site</b>  |
| <b>USDOE</b>     | <b>United States Department of Energy</b>   |
| <b>USEPA</b>     | <b>United States Environmental Protection Agency</b>                                  |

## **I. INTRODUCTION**

This Explanation of Significant Difference (ESD) is being issued by the United States Department of Energy (USDOE), which functions as the lead agency for Savannah River Site (SRS) remedial activities, with concurrence by the United States Environmental Protection Agency (USEPA) and the South Carolina Department of Health and Environmental Control (SCDHEC). The purpose of this ESD is to announce the incorporation of Waste Tank 12 at the H-Area Tank Farm (HTF) into the interim response action selected in the *Interim Record of Decision Remedial Alternative Selection for the H-Area Tank Farm, Waste Tank 16* (SRR-CWDA-2015-00157).

Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 117(c), SRS is required to publish an ESD whenever there is a significant change to a component of a remedy specified in a Record of Decision (ROD). Sections 300.435(c)(2)(i) and 300.825(a)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) require the lead agency to provide an explanation of the difference and to make this information available to the public in the Administrative Record File and information repositories.

USDOE manages certain waste materials at the SRS that are regulated under the Resource Conservation and Recovery Act (RCRA), a comprehensive law requiring responsible management of hazardous waste. USDOE received a RCRA hazardous waste permit from the

SCDHEC, which was most recently renewed on February 11, 2014. Module VIII of the Hazardous and Solid Waste Amendments portion of the RCRA permit mandates corrective action requirements for non-regulated solid waste management units subject to RCRA 3004(u). The SRS Federal Facility Agreement (FFA) lists the HTF as a RCRA/CERCLA Operable Unit (OU). The SRS FFA, Section IX.E, addresses the eventual removal of waste tanks and ancillary equipment from service and any appropriate CERCLA response action relating to the waste tank systems (WSRC-OS-94-42).

The USDOE intends to remove from service the waste tanks that do not meet the standards established in Appendix B (High Level Radioactive Waste Tank Systems) of the SRS FFA, pursuant to Section 120 of CERCLA and Sections 3008(h) and 6001 of RCRA, as amended by the Hazardous and Solid Waste Amendments of 1984 (hereafter jointly referred to as RCRA) and the Atomic Energy Act of 1954. Until the HTF waste tanks and ancillary equipment are removed from service, they are regulated under the Industrial Wastewater Construction Permit #17,424-IW, issued to SRS under the South Carolina Pollution Control Act, S. C. Code Ann., Section 48-1-10, et seq. (DHEC\_01-25-1993) and applicable regulations implementing that Act. Waste tanks and ancillary structures are removed from the conditions of Industrial Wastewater Construction Permit #17,424-IW when operationally closed and removed from service in accordance with an

approved HTF General Closure Plan and waste tank system-specific Closure Module.

The Interim ROD (IROD) for HTF Waste Tank 16 selected Annual Visible Engineered Barriers Inspection and Maintenance. The interim action is limited to any maintenance deemed necessary from the annual inspections from the time of removal of a waste tank or associated ancillary equipment from service until a final ROD is issued for the HTF OU. The IROD explained that an ESD would be used to incorporate the interim remedy for additional HTF waste tanks, group of waste tanks, and associated ancillary structures when satisfactorily removed from service in accordance with a SCDHEC approved closure module.

USDOE has submitted and implemented an HTF General Closure Plan (SRR-CWDA-2011-00022), the Waste Tank 12 Closure Module (SRR-CWDA-2014-00086) and the Addendum to the Waste Tank 12 Closure Module (SRR-CWDA-2015-00074) that describes the waste removal, characterization of residuals, associated risk, and stabilization of the waste tanks. This ESD incorporates HTF Waste Tank 12 into the interim remedy selected in the IROD.

This ESD is part of the Administrative Record File and is available for public review during normal business hours at the following repositories.

US Department of Energy  
Public Reading Room  
Gregg-Graniteville Library  
University of South Carolina – Aiken  
171 University Parkway  
Aiken, South Carolina 29801  
(803) 641-3465

Thomas Cooper Library  
Government Documents Department  
University of South Carolina  
Columbia, South Carolina 29208  
(803) 777-4866

## **II. SITE HISTORY AND SELECTED REMEDY**

This ESD documents the incorporation of HTF Waste Tank 12 into the selected interim response action for the HTF waste tanks and ancillary equipment as found in the *Interim Record of Decision Remedial Alternative Selection for the H-Area Tank Farm, Waste Tank 16* (SRR-CWDA-2015-00157). After the ESD is signed and issued to the public, an interim Remedial Action (RA) Start notification letter for HTF Waste Tank 12 will be submitted to SCDHEC and USEPA to notify the agencies that the interim RA is initiated.

### ***H-Area Tank Farm***

The HTF is located at the SRS in Aiken County and Barnwell County, South Carolina (Figure 1). The HTF is a 45-acre site within the General Separations Area, which encompasses E-, F-, H-, J-, S-, and Z-Areas (Figure 2). HTF consists of 29 liquid waste storage tanks, three evaporator systems, over 74,800 linear feet of transfer pipelines, eight diversion boxes, one catch tank, two concentrate transfer system tanks and ten pump pits. Figure 3 shows the general layout of HTF. There are four major waste tank types in HTF that range in size from 750,000 gallons (Type I tanks) to 1.07 million gallons (Type II tanks) to 1.3 million gallons (Type III/IIIA and Type IV tanks) that have varying degrees of secondary containment and intra-tank interference, such as

cooling coils and columns. HTF was constructed to receive waste generated by various SRS production, processing, and laboratory facilities. The use of HTF isolated these wastes from the environment, SRS workers, and the public. With HTF and its sister facility, F-Area Tank Farm, facilities are in place to pretreat the accumulated sludge and salt solutions (supernate) to enable the management and treatment of these wastes within other SRS facilities (i.e., Defense Waste Processing Facility and Saltstone Production Facility). These treatment facilities convert the sludge and supernate to more stable forms suitable for permanent disposal in a Federal Repository or the Saltstone Disposal Facility, as appropriate.

HTF Waste Tank 12 is a Type I tank constructed in the early 1950s. These waste tanks are 75 feet in diameter and 24.5 feet high, with a nominal operating capacity of 750,000 gallons. The primary liner of Type I waste tanks is made of 0.5-inch thick carbon steel. The 0.5-inch thick carbon steel waste tank top and bottom were joined to the walls with non-stress-relieved welded knuckle plates made of the same material. Figure 4 provides a cross-section of a typical HTF Type I waste tank.

The carbon steel shell sits inside a 22-inch thick reinforced concrete vault with a 2.5-foot annular space surrounding the primary tank. Lining the bottom of the vault for secondary containment is a 5-foot high, 0.5-inch thick carbon steel secondary liner (annulus pan) to collect leakage, if any, from the primary tank. A dehumidification ductwork system was installed on the secondary liner floor to keep the annular space dry by circulating warm air

at a temperature above its dew point. Dehumidification equipment consisting of an above-ground heater and fan connect to the ductwork inlet via an annulus inlet riser.

The waste tank tops are approximately nine feet below grade. Each Type I waste tank has twelve concrete filled steel columns to support the roof. These columns have an outer diameter of two feet, and are 0.5-inch thick carbon steel pipe filled with concrete and welded to the top and bottom of the primary tank. Cooling coils in Type I waste tanks are configured in both a horizontal and a vertical array, which creates obstacles to waste removal and other activities inside the waste tank. There are approximately 22,800 linear feet of 2-inch Schedule 40 carbon steel pipe cooling coils in a Type I waste tank. [SRR-CWDA-2010-00128]

#### *H-Area Tank Farm Closure Activities*

HTF Waste Tank 12 was operationally closed and removed from service on April 28, 2016 in accordance with an approved HTF General Closure Plan (SRR-CWDA-2011-00022), a waste tank system-specific Closure Module (SRR-CWDA-2014-00086) and an Addendum to the waste tank system specific Closure Module (SRR-CWDA-2015-00074). No ancillary structures were included in the removal from service of HTF Waste Tank 12. The waste tank was isolated from the remaining operating facility and filled with grout (i.e., stabilized). Some equipment installed in the waste tank or used in the closure activities (e.g., submersible transfer pump, steam jets, thermowells) were entombed in the grout as part of the stabilization process.

USDOE is in the process of removing the remaining HTF waste tanks and ancillary structures from service in accordance with the HTF General Closure Plan (SRR-CWDA-2011-00022) and waste tank system-specific closure modules. HTF waste storage and removal operations are governed by Industrial Wastewater Construction Permit #17,424-IW issued by SCDHEC on January 25, 1993 (DHEC\_01-25-1993) and the FFA. The State of South Carolina has authority for approval of wastewater treatment facility operational closure under Chapter 61, Article 82 of the SCDHEC Regulations. The *Ronald Reagan National Defense Authorization Act (NDAA) for Fiscal Year 2005*, Section 3116 (a) specifies the criteria for USDOE to use to determine whether residuals remaining in the waste tank systems can be managed as non-high level waste at a USDOE site in a "covered state" (e.g., South Carolina) where activities are regulated by the state's approved closure plan or permit, authority for the approval or issuance of which is conferred on the State outside of Section 3116. The *Basis for Section 3116 Determination for Closure of H-Tank Farm at the Savannah River Site* (DOE/SRS-WD-2014-001) was prepared for HTF, based in part on the environmental protection information provided in the Performance Assessment for the HTF at SRS (SRR-CWDA-2010-00128). Based on the information in the Section 3116 Basis Document and the performance assessment, the Secretary of Energy, in consultation with the Nuclear Regulatory Commission, determined that the residual material in the waste tank systems could be managed as non-high level waste.

In accordance with the SRS FFA, when all HTF waste tanks and ancillary structures have been removed from service, an appropriate response action will be developed for the HTF OU, which includes the stabilized waste tanks and ancillary structures as well as the surrounding environmental media and groundwater directly below the HTF.

The HTF General Closure Plan requires monitoring of the groundwater under an approved HTF Groundwater Monitoring Plan, which describes the monitoring of the groundwater exiting the HTF. The Groundwater Monitoring Plan supports both the operation and removal from service of the HTF waste tanks and includes requirements for reporting the monitoring results. [SRNS-RP-2012-00146] The HTF Groundwater Monitoring Plan remains in effect until all waste tanks have been removed from service, at which time a remedial decision will be made for the HTF OU which includes the stabilized tanks, the surrounding soils and the groundwater below the HTF. Because these monitoring requirements are already in place, groundwater monitoring is not a part of this interim action.

#### ***Selected Remedy***

This ESD documents the incorporation of HTF Waste Tank 12 into the selected interim response action for the HTF Waste Tank 16.

The selected remedy, Annual Visible Engineered Barriers Inspection and Maintenance, includes annual inspections of the engineered barriers (e.g., visible grout) for physical integrity. In addition, the area will be inspected for excessive water

accumulation that may cause premature degradation of the engineered barriers associated with stabilization of the waste tanks. The interim action is limited to any maintenance deemed necessary from the annual inspections from the time of removal of a waste tank or associated ancillary equipment from service until a final ROD is issued for the HTF OU. This alternative was selected because it is protective of human health and the environment, and the requirement for annual inspections is consistent with the maintenance and monitoring requirements of the HTF General Closure Plan and the waste tank system-specific closure module.

An Interim Corrective Measures Implementation/Remedial Action Implementation Plan (ICMI/RAIP) was prepared to include all waste tanks in the HTF that are in the IROD and subsequent ESDs. The ICMI/RAIP initially included Waste Tank 16. [SRR-CWDA-2016-00095] As additional waste tanks in HTF are closed, an ESD will be used to apply the interim remedy selected in the IROD to those HTF waste tanks and associated ancillary structures removed from service. Because there is no change to the implementation of the interim remedial action selected in the IROD, the ESD will also refer to the same ICMI/RAIP for implementation of the selected remedy.

The current land use for the HTF is industrial with USDOE maintaining control of the land. The HTF is currently in the operational phase and access is controlled by SRS facility security and administrative controls. Land use controls (LUCs) are not part of the interim action. LUCs may be

included in the final ROD for the HTF OU in order to prevent inadvertent exposure to remaining contaminated media and to ensure the integrity of the closed tanks by restricting land and groundwater uses within the HTF OU. The Land Use Control Implementation Plan will be deferred until final closure of the entire HTF OU.

### **III. BASIS FOR THE EXPLANATION OF SIGNIFICANT DIFFERENCE**

The purpose of this ESD is to document a post-IROD change by incorporating HTF Waste Tank 12 into the selected interim remedial action for HTF Waste Tank 16 to include Annual Visible Engineered Barriers Inspection and Maintenance.

HTF Waste Tank 12 has been operationally closed and removed from service under an HTF General Closure Plan (SRR-CWDA-2011-00022), a waste tank system-specific Closure Module (SRR-CWDA-2014-00086) and an Addendum to the waste tank system specific Closure Module (SRR-CWDA-2015-00074). This waste tank will be inspected and maintained until final closure of the HTF OU.

### **IV. DESCRIPTION OF SIGNIFICANT DIFFERENCE**

The same interim action remedy selected for HTF Waste Tank 16 is applied to HTF Waste Tank 12. The selected remedy, Annual Visible Engineered Barriers Inspection and Maintenance, is protective of human health and the environment and will comply with applicable federal and state laws. In addition, it is consistent with the maintenance and monitoring requirements of the HTF General

Closure Plan and the waste tank system-specific closure module. The addition of HTF Waste Tank 12 to the selected interim remedy does not impact the cost of implementation.

## **V. STATUTORY DETERMINATIONS**

The addition of HTF Waste Tank 12 to the interim remedial action enhances protection of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action. Because the ESD does not fundamentally change the interim remedy, the Applicable or Relevant and Appropriate Requirements discussion presented in the IROD is not reevaluated in this ESD. This interim remedial action does not constitute the final remedy for the HTF and the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element will be addressed by the final response action. A final remedial action will be evaluated and conducted in the future for the entire HTF OU according to the requirements of the FFA.

Based on information currently available, the lead agency believes the selected remedy provides the best balance of tradeoffs among the other alternatives with respect to the evaluation criteria. The USDOE expects the selected remedy to satisfy the statutory requirements in CERCLA Section 121(b) to: (1) be protective of human health and the environment and (2) be cost-effective. In accordance with Section 121(c) of CERCLA and NCP §300.430(f)(5)(iii)(c), a statutory review will be conducted within 5 years of initiation of the

remedial action, and every 5 years thereafter, to ensure that the interim remedy continues to be protective of human health and the environment.

## **VI. PUBLIC PARTICIPATION**

The public will be informed of the changes to the selected remedy as specified in this ESD through mailings of the *SRS Environmental Bulletin*, a newsletter sent to approximately 3,500 citizens in South Carolina and Georgia, and through notices in the *Aiken Standard*, the *Allendale Citizen Leader*, the *Augusta Chronicle*, the *Barnwell People-Sentinel*, and *The State* newspapers.

To obtain more information concerning this ESD, contact:

Amy Joslin  
Savannah River Remediation, LLC  
Dir. of Public Affairs & Project Communication  
Savannah River Site  
Building 766-H  
Aiken, South Carolina 29808  
(803) 208-1956  
amy.joslin@srs.gov

## **VII. REFERENCES**

DHEC\_01-25-1993, Sadler, M. F., *Construction Permit #17,424-IW for F and H-Area High-Level Radioactive Waste Tank Farms (SCDHEC Bureau of Water, Permit to Construct)*, South Carolina Department of Health and Environmental Control, Columbia, SC, Rev. 0, January 25, 1993.

DOE/SRS-WD-2014-001, *Basis for Section 3116 Determination for Closure of H-Tank Farm at the Savannah River Site*, Savannah River Site, Aiken, SC, Rev. 0, December 2014.

SRNS-RP-2012-00146, *H-Area Tank Farm Groundwater Monitoring Plan and Sampling and Analysis Plan*, Savannah River Site, Aiken, SC, Rev. 1, November 2012.

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SRR-CWDA-2010-00128, *Performance Assessment for the H-Area Tank Farm at the Savannah River Site, Aiken, SC, Rev. 1, November 2012.*

SRR-CWDA-2011-00022, *Industrial Wastewater General Closure Plan for H-Area Waste Tank Systems, Savannah River Site, Aiken, SC, Rev. 0, May 2012.*

SRR-CWDA-2014-00086, *Industrial Wastewater Closure Module for the Liquid Waste Tank 12H H-Area Tank Farm, Savannah River Site, Savannah River Site, Aiken, SC, Rev. 0, May 2015.*

SRR-CWDA-2015-00074, *Addendum to the Industrial Wastewater Closure Module for Liquid Waste Tank 12H H-Area Tank Farm, Savannah River Site, SRR-CWDA-2014-00086, Revision 0, May 2015, Savannah River Site, Aiken, SC, Rev. 0, October 2015.*

SRR-CWDA-2015-00157, *Interim Record of Decision Remedial Alternative Selection for the H-Area Tank Farm, Waste Tank 16, Savannah River Site, Savannah River Site, Aiken, SC, Rev. 1, July 2016.*

SRR-CWDA-2016-00095, *Interim Corrective Measures Implementation/Remedial Action Implementation Plan (ICMI/RAIP) for the H-Area Tank Farm, Waste Tank 16 (U), Savannah River Site, Aiken, SC, Rev. 0, September 2016.*

WSRC-OS-94-42, *Federal Facility Agreement for the Savannah River Site, Administrative Docket No. 89-05-FF (Effective Date: August 16, 1993).*

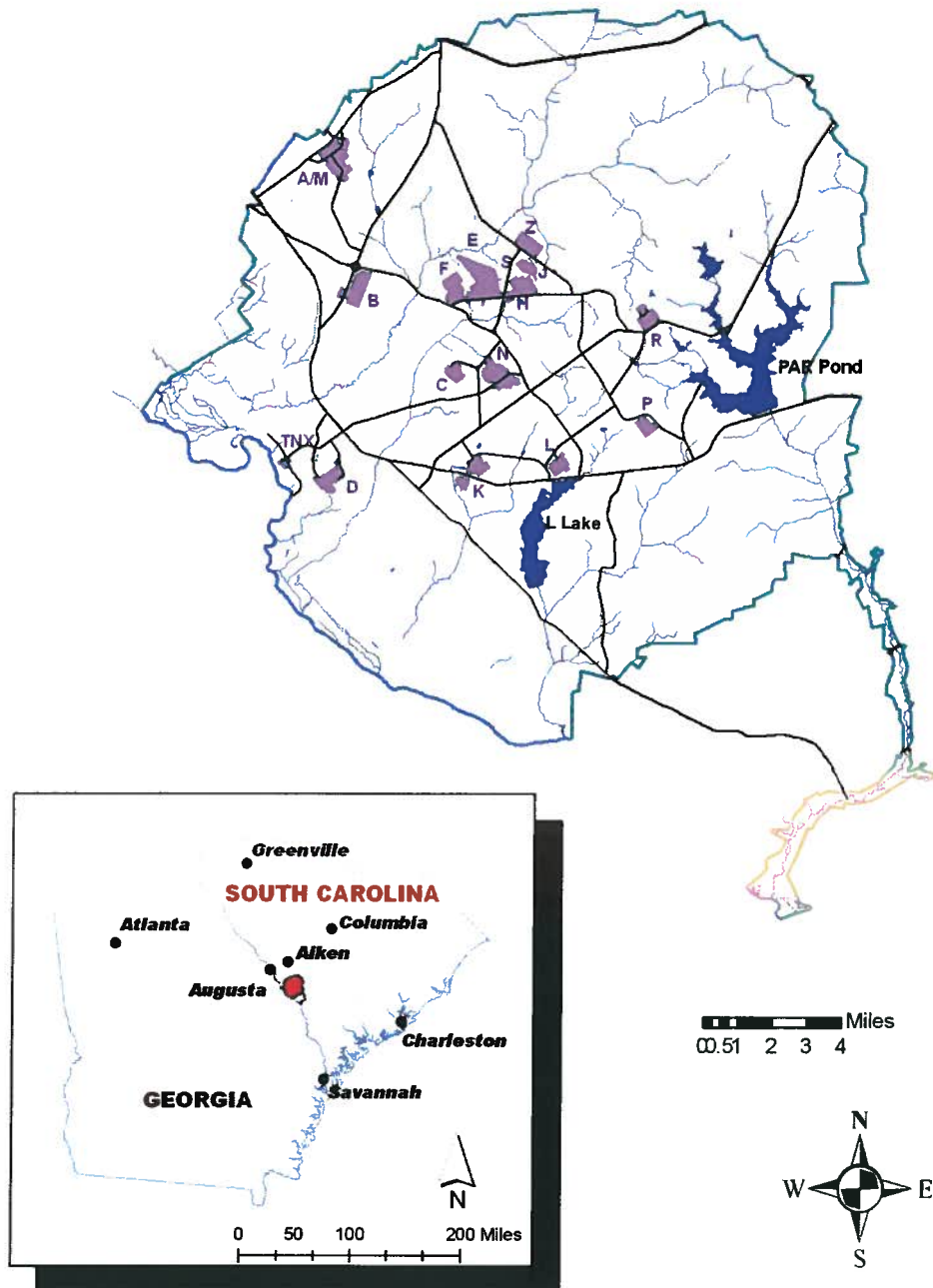


Figure 1. Location of the Savannah River Site

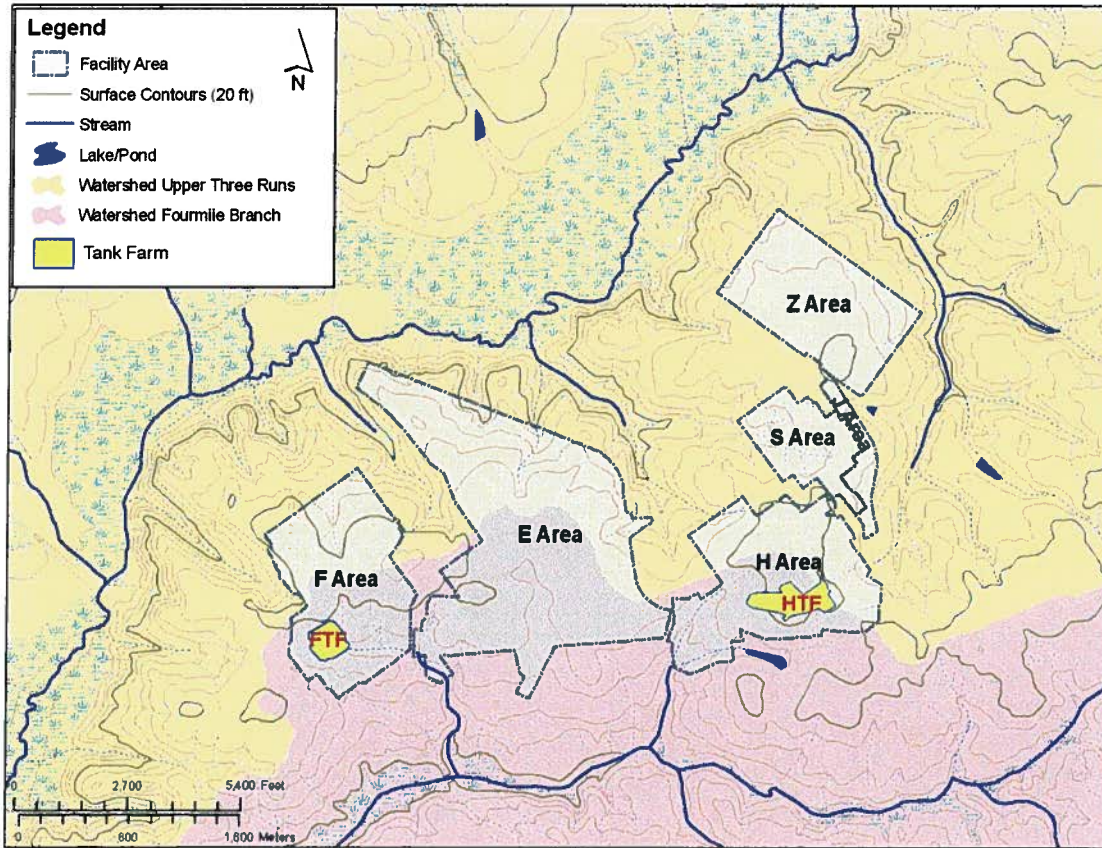


Figure 2. Layout of the General Separations Area

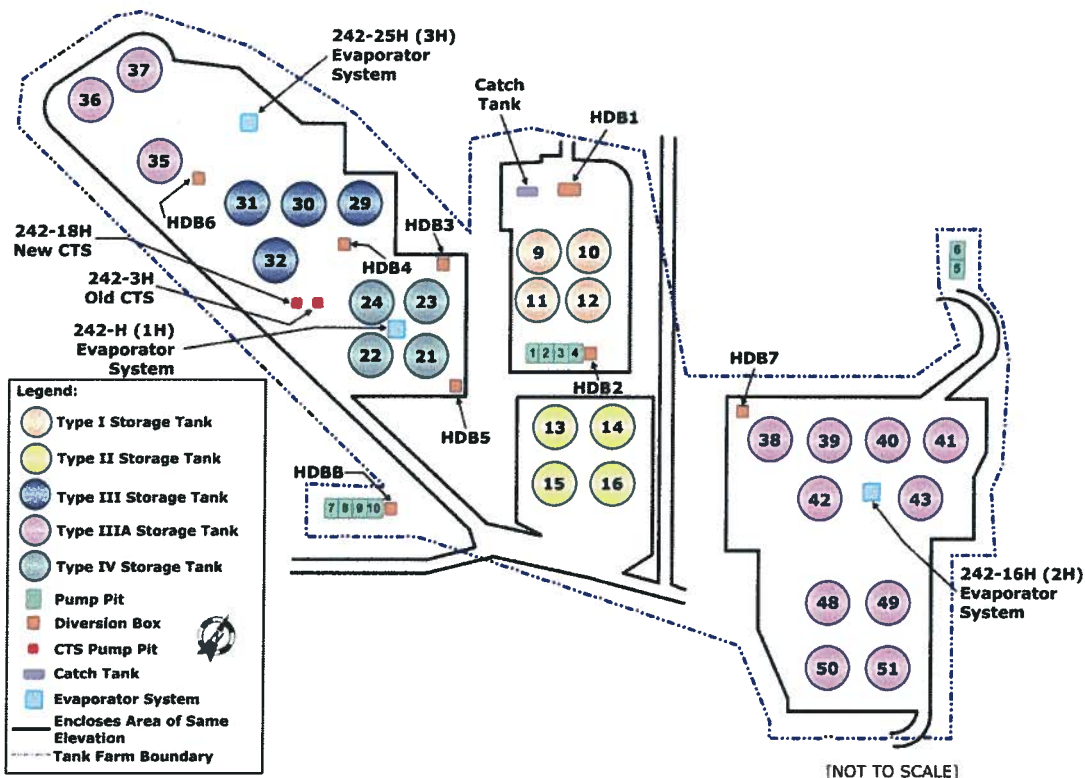


Figure 3. General Layout of the H-Area Tank Farm

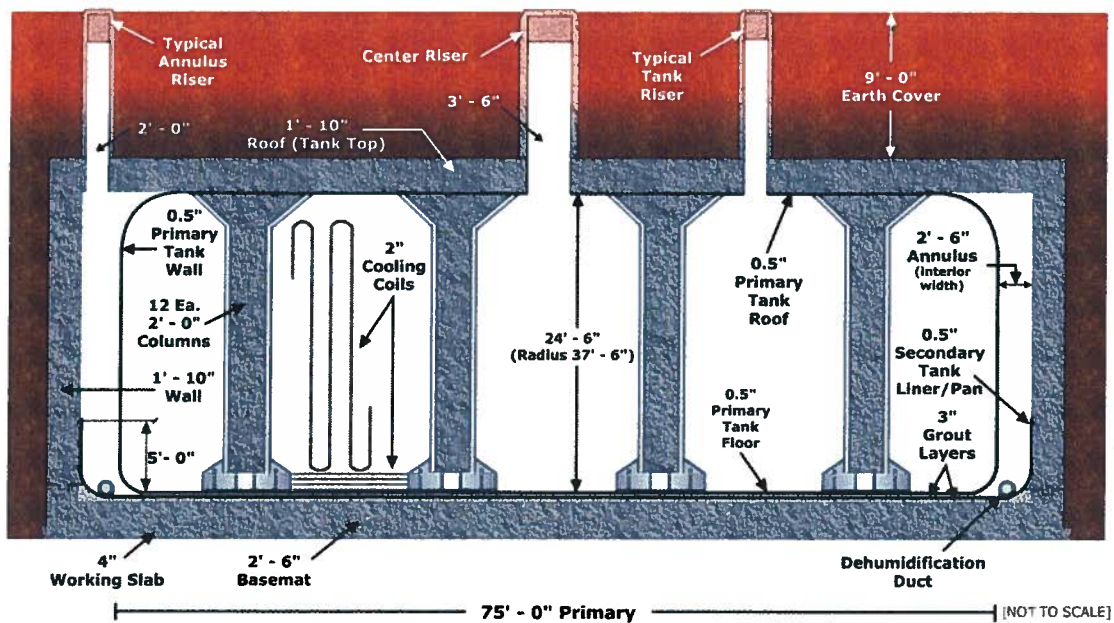


Figure 4. Cross-Sectional View of Typical HTF Type I Tank

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2/15/17 *A.A. Holmes*  
Date *for* Michael A. Mikolanis  
Assistant Manager for Infrastructure and Environmental Stewardship  
U. S. Department of Energy  
Savannah River Operations Office

2/22/2017 *Franklin E. Hill*  
Date Franklin E. Hill  
Director  
Superfund Division  
U. S. Environmental Protection Agency - Region 4

3/20/17 *Daphne G. Neel*  
Date Daphne G. Neel  
Bureau Chief  
Bureau of Land and Waste Management  
South Carolina Department of Health and Environmental Control