United States Department of Energy

Savannah River Site

Explanation of Significant Difference (ESD) for Incorporating Tanks 5 and 6 into the Revision 1 Interim Record of Decision Remedial Alternative Selection for the F-Area Tank Farm, Waste Tanks 17 and 20 (U)

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DISCLAIMER

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Prepared for
U.S. Department of Energy
and
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Aiken, South Carolina

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LIST OF ACRONYMS

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

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 Tanks 5 and 6 at the F-Area Tank Farm (FTF) into the interim response action selected in the *Interim Record of Decision Remedial Alternative Selection for the F-Area Tank Farm, Waste Tanks 17 and 20* (SRR-CWDA-2012-00111).

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 (SC1 890 008 989). 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 FTF as a RCRA/CERCLA Operable Unit (OU). The SRS FFA, Section IX.E, addresses the eventual removal of 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 FTF 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 FTF General Closure Plan and tank-specific Closure Module.

The Interim ROD (IROD) for FTF Waste Tanks 17 and 20 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 FTF OU. The IROD explained that an ESD would be used to incorporate the interim remedy for additional FTF waste tanks, group of waste tanks, and associated ancillary structures when satisfactorily removed from service in accordance with a SCDHEC approved closure module. An ESD (SRR-CWDA-2013-00007) was previously issued to modify IROD to apply the selected remedy to FTF Waste Tanks 18 and 19.

USDOE has submitted and implemented an FTF General Closure Plan (LWO-RIP-2009-00009) and the Waste Tanks 5 and 6 Closure Module (SRR-CWDA-2012-00071) that describes the waste removal, characterization of residuals, associated risk, and stabilization of the waste tanks. This ESD incorporates FTF Waste Tanks 5 and 6 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 FTF Waste Tanks 5 and 6 into the selected interim response action for the FTF waste tanks and ancillary equipment as found in the *Interim Record of Decision Remedial Alternative Selection for the F-Area Tank Farm, Waste Tanks 17 and 20* (SRR-CWDA-2012-00111). After the ESD is signed and issued to the public, a Remedial Action (RA) Start notification letter for FTF Waste Tanks 5 and 6 will be submitted to SCDHEC and USEPA to notify the agencies that the RA is initiated.

F-Area Tank Farm

The FTF is located at the SRS in Aiken County, South Carolina (Figure 1). The FTF is a 22-acre site within the General Separations Area, which encompasses E-, F-, H-, J-, S-, and Z-Areas (Figure 2). FTF consists of 22 liquid waste storage tanks, two evaporator systems, over 45,000 linear feet of transfer pipelines, six diversion boxes, one catch tank, a concentrate transfer system tank and three pump pits. Figure 3 shows the general layout of

FTF. There are three major waste tank types in FTF that range in size from 750,000 gallons (Type I tanks) to 1.3 million gallons (Type III and Type IV tanks) that have varying degrees of secondary containment and intra-tank interference, such as cooling coils and columns. FTF was constructed to receive waste generated by various SRS production, processing, and laboratory facilities. The use of FTF isolated these wastes from the environment, SRS workers, and the public. With FTF and its sister facility, H-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.

FTF Waste Tanks 5 and 6 are Type I tanks 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 [SRS-REG-2007-00002]. Figure 4 provides a cross-sectional sketch of a typical Type I 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 annulus pan to collect leakage, if any, from the primary tank. The waste tank tops are approximately 9 feet below grade. Each Type I tank has 12 concrete filled steel columns to support the roof. These columns have an outer diameter of two feet of 0.5-inch 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 carbon steel pipe cooling coils in a Type I waste tank [SRS-REG-2007-00002].

F-Area Tank Farm Closure Activities

FTF Waste Tanks 5 and 6 were operationally closed and removed from service on December 19, 2013 in accordance with an approved FTF General Closure Plan (LWO-RIP-2009-00009) and tank-specific Closure Module (SRR-CWDA-2012-00071). No ancillary structures were included in the removal from service of FTF Waste Tanks 5 and 6. The tanks were isolated from the remaining operating facility and filled with grout (i.e., stabilized). Some equipment installed in the tanks or used in the closure activities (e.g., slurry pumps, transfer jet, thermowells) were entombed in the grout as part of the stabilization process.

USDOE is in the process of removing the remaining FTF waste tanks and ancillary structures from service in accordance with the FTF General Closure Plan (LWO-RIP-2009-00009) and tank system-specific closure modules. FTF 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 F-Tank Farm at the Savannah River Site* (DOE/SRS-WD-2012-001) was prepared for FTF, based in part on the environmental protection information provided in the Performance Assessment for the FTF at SRS (SRS-REG-2007-00002). 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 FTF waste tanks and ancillary structures have been removed from service, an appropriate response action will be developed for the FTF OU, which includes the stabilized waste tanks and ancillary structures as well as the surrounding environmental media and groundwater directly below the FTF.

The FTF General Closure Plan requires monitoring of the groundwater under an approved FTF Groundwater Monitoring Plan, which describes the monitoring of the groundwater exiting the FTF. The Groundwater Monitoring Plan supports both the operation and removal from service of the FTF waste tanks and includes requirements for reporting the monitoring results [SRNS-RP-2011-00995]. The FTF 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 FTF OU which includes the stabilized tanks, the surrounding soils and the groundwater below the FTF. 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 FTF Waste Tanks 5 and 6 into the selected interim response action for the FTF Waste Tanks 17 and 20.

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 FTF 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 FTF General Closure Plan and the tank-specific closure module.

An Interim Corrective Measures Implementation/Remedial Action Implementation Plan (ICMI/RAIP) was prepared to include all waste tanks in the FTF that are in the IROD and subsequent ESDs. The ICMI/RAIP initially included Waste Tanks 17 through 20 [SRR-CWDA-2013-00048]. As additional tanks in FTF are closed, an ESD will be used to apply the interim remedy selected in the IROD to those FTF 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 FTF is industrial with USDOE maintaining control of the land. The FTF 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 FTF 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 FTF OU. The Land Use Control Implementation Plan will be deferred until final closure of the entire FTF OU.

III. BASIS FOR THE EXPLANATION OF SIGNIFICANT DIFFERENCE

The purpose of this ESD is to document a post-IROD change by incorporating FTF Waste Tanks 5 and 6 into the selected interim remedial action for FTF Waste Tanks 17 and 20 to include Annual Visible Engineered Barriers Inspection and Maintenance.

FTF Waste Tanks 5 and 6 have been operationally closed and removed from service under an FTF General Closure Plan (LWO-RIP-2009-00009) and a tank-specific Closure Module (SRR-CWDA-2012-00071). These tanks will be inspected and maintained until final closure of the FTF OU.

IV. DESCRIPTION OF SIGNIFICANT DIFFERENCE

The same interim action remedy selected for FTF Waste Tanks 17 and 20 is applied to FTF Waste Tanks 5 and 6. 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 FTF General Closure Plan and the tank-specific closure module. The addition of FTF Waste Tanks 5 and 6 to the selected interim remedy does not impact the cost of implementation.

V. STATUTORY DETERMINATIONS

The addition of FTF Waste Tanks 5 and 6 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 FTF 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 FTF 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:

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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-2012-001, *Basis for Section 3116 Determination for Closure of F-Tank Farm at the Savannah River Site,* Savannah River Site, Aiken, SC., Rev. 0, March 2012.

LWO-RIP-2009-00009, *Industrial Wastewater General Closure Plan for F-Area Waste Tank Systems*, Savannah River Site, Aiken, SC, Rev. 3, January 24, 2011.

SRNS-RP-2011-00995, *F-Area Tank Farm Groundwater Monitoring Plan*, Savannah River Site, Aiken, SC, Rev. 1, February 2012.

SRR-CWDA-2012-00071, *Industrial Wastewater Closure Module for the Liquid Waste Tanks 5F and 6F F-Area Tank Farm, Savannah River Site*, Rev. 1, April 2013.

SRR-CWDA-2012-00111, *Interim Record of Decision Remedial Alternative Selection for the F-Area Tank Farm, Waste Tanks 17 and 20 (U)*, Savannah River Site, Aiken, SC, Rev. 1, January 2013.

SRR-CWDA-2013-00007, *Explanation of Significant Difference (ESD) for Incorporating Tanks 18 and 19 into the Revision 1 Interim Record of Decision Remedial Alternative Selection for the F-Area Tank Farm, Waste Tanks 17 and 20 (U)*, Savannah River Site, Aiken, SC, Rev. 1.1, July 2013.

SRR-CWDA-2013-00048, *Interim Corrective Measures Implementation/Remedial Action Implementation Plan (ICMI/RAIP) for the F-Area Tank Farm, Waste Tanks 17 through 20 (U)*, Savannah River Site, Aiken, SC, Rev. 1, December 2013.

SRS-REG-2007-00002, *Performance Assessment for F-Tank Farm at the Savannah River Site*, Savannah River Site, Aiken, SC, Rev. 1, March 31, 2010.

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

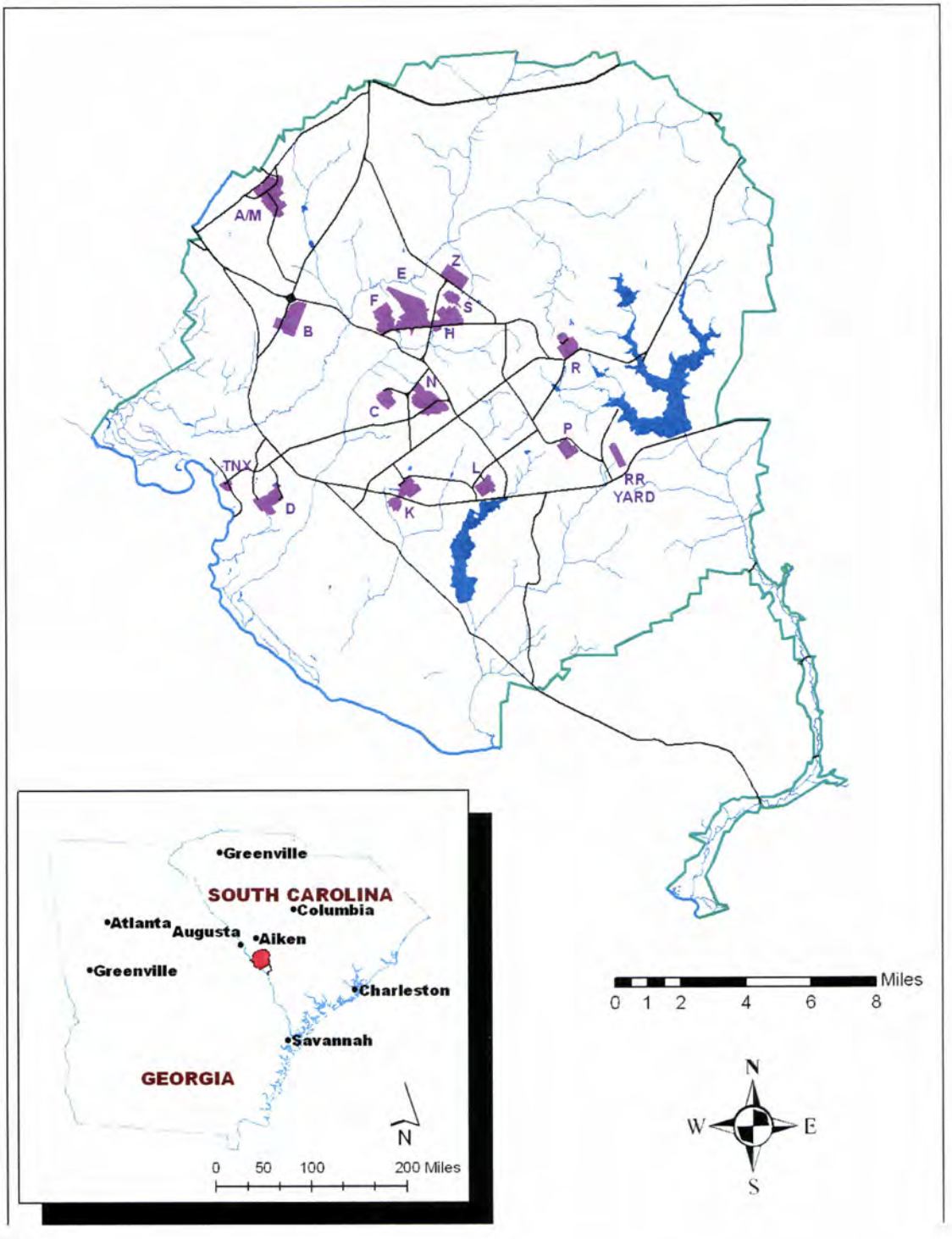

FIGURE 1: LOCATION OF THE SAVANNAH RIVER SITE

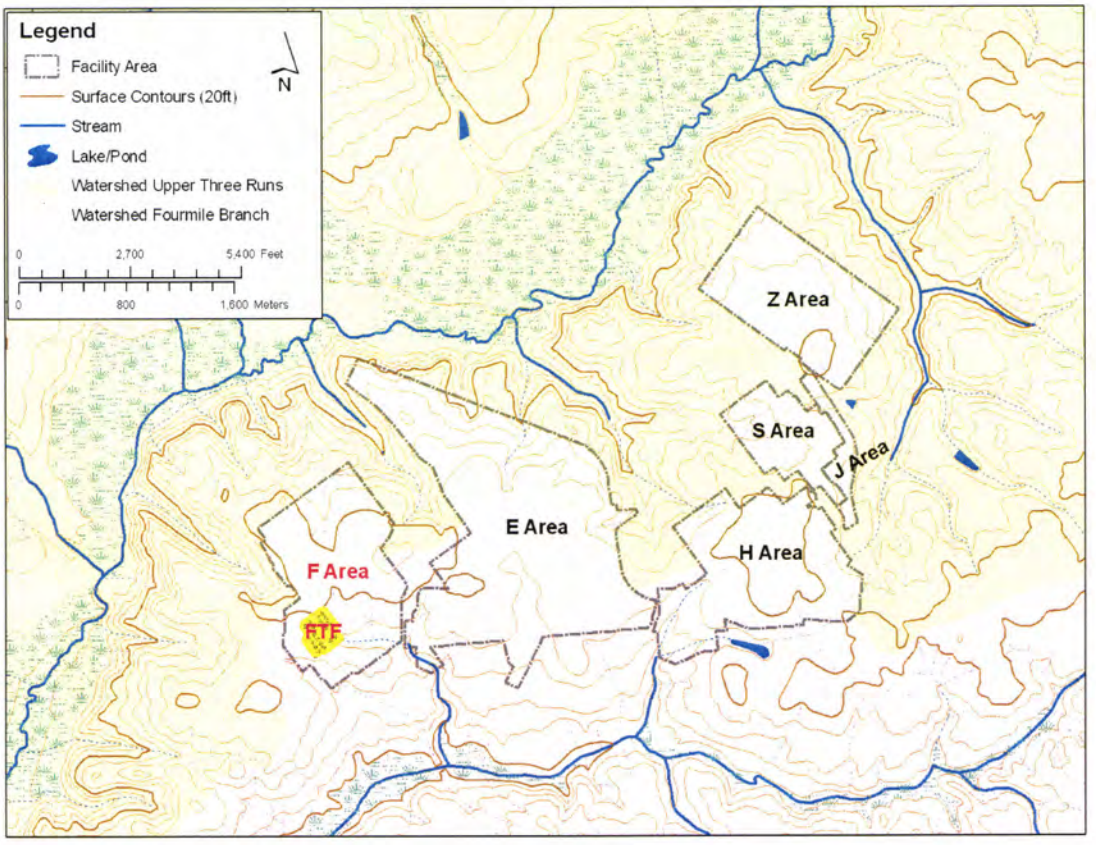

FIGURE 2: LAYOUT OF THE GENERAL SEPARATIONS AREA

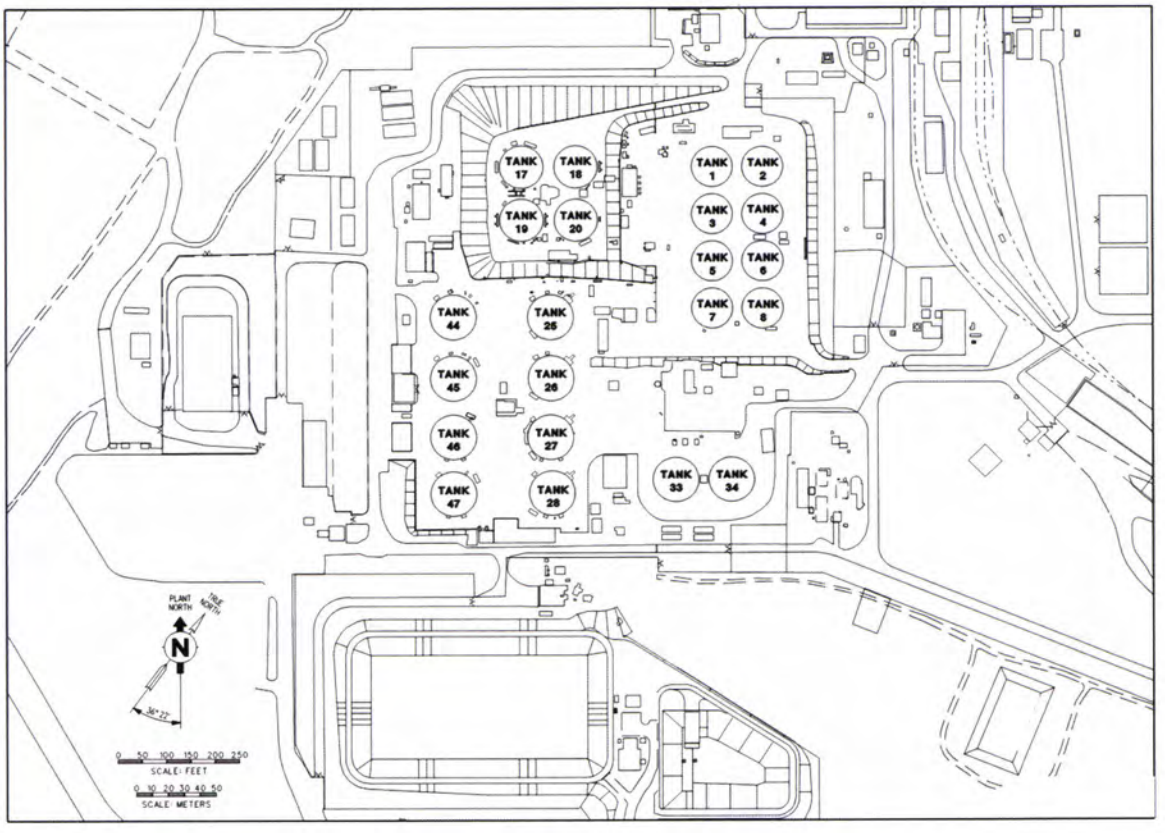

FIGURE 3: GENERAL LAYOUT OF THE F-TANK FARM

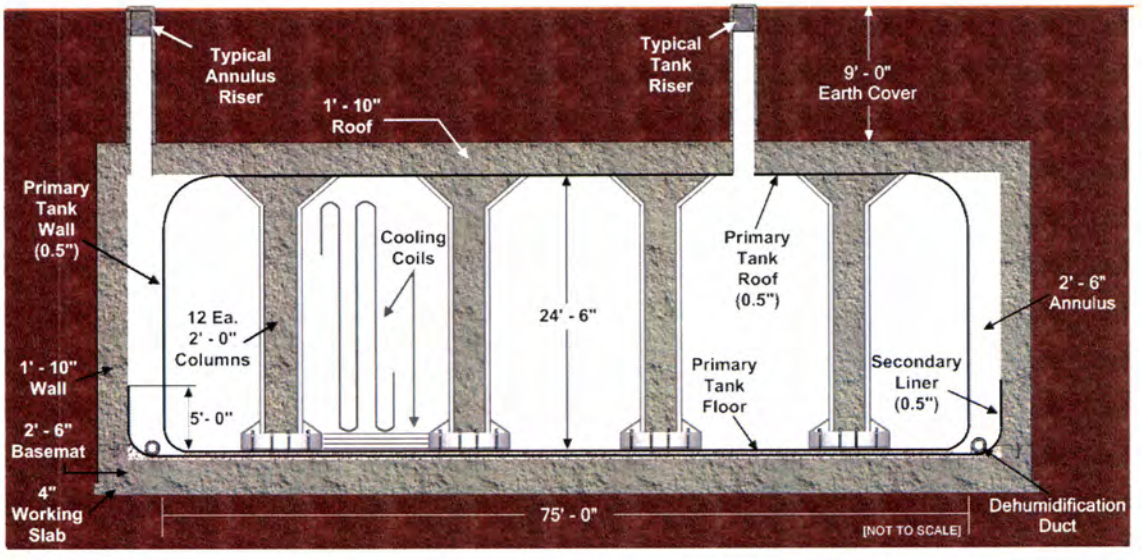

FIGURE 4: CROSS-SECTIONAL VIEW OF TYPICAL TYPE I TANK

8/5/14
Date

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