

Facility Decommissioning Evaluation Buildings 485-D and 482-2D, D-Area Cooling Tower and Switchgear Building

This is a Simple Model Decommissioning per Facility Disposition Manual 1C

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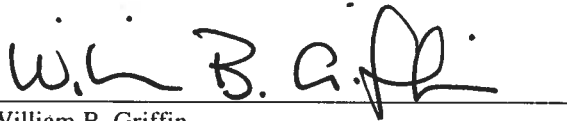


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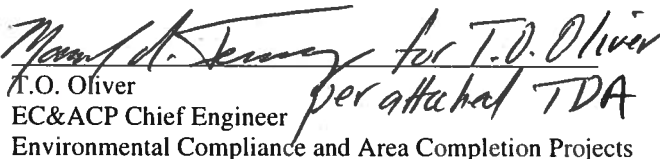


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Introduction

This document contains an evaluation of available existing information about a facility that is slated for decommissioning. This evaluation screens the project to determine whether it is appropriate to conduct the decommissioning under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), or to use a simpler graded approach.

This Facility Decommissioning Evaluation (FDE) consists of three sections. Part 1 contains a description of the project scope, including a brief summary of the purpose and history of the facility and photographs of the structures that are part of the project. Part 2 encompasses a series of questions, the answers to which determine the decommissioning model (CERCLA Model, Integrated Sampling Model, or Simple Model) that will be used. The three graded approach models are described in Facility Disposition Manual 1C, procedure 501. Part 2 also includes a justification for the answers to each question. Part 3 is a list of references that were used for the evaluation.

Conclusion

A review of the existing characterization data, process/building history, sample data and walk downs of the facility, supports the determination that this building and its ancillary structures meet the criteria of a Clean Building, Simple Model as described in Facility Disposition Manual 1C, Procedure 501. This decision is supported by the documentation found throughout the body of this document. No chemical or hazardous radioactive contaminants are associated with this structure.

Part 1. Project Scope

Scope

This Evaluation has been prepared in accordance with requirements found in Facility Disposition Manual 1C, Procedure 502, "Preparing Decommissioning Decision Documents." The scope of this evaluation includes the following buildings and ancillary structures, which are further described in the next section:

485-D Cooling Tower and the following ancillary structures:

482-2D Switchgear Building

Two empty, pedestal mounted electrical cabinets east of 482-2D

Sodium hypochlorite piping and communications pole supports to the facility from 683-D

The proposed decommissioning end-state for these facilities is demolition to the building slab or to grade as applicable.

The described decommissioning activities are not the final area closure actions. The decommissioning of a building is intended to reduce landlord costs, increase safety by removing excess facilities and reduce the potential for releases of hazardous substances to the environment.

Facility Description

Building 485-D (Figure 1) is a standard updraft industrial cooling tower constructed in 1952. The general materials of construction of the cooling tower are galvanized steel, wood and concrete. The cooling tower formerly had two 264" diameter updraft fans with 50 hp motors mounted on top of the structure. Fans and motors were removed during deactivation of the facility (Figure 2). The tower basin is reinforced concrete, approximately 63' long by 49' wide and 7' 1" deep at the shallowest section (distal to the pump basin) and 7' 3" proximal to the pump basin. The walls of the cooling tower basin extend approximately 3' above grade. There is a stairway on the east side of the cooling tower that allows access to the top of the cooling tower and a walkway across the top for access to the fans and drive motors. The area bounded by red dotted lines in Figure 2 delineates the area within the scope of this FDE (i.e., 485-D and ancillary facilities).



Figure 1. Building 485-D, D-Area Cooling Tower (Looking Southwest)

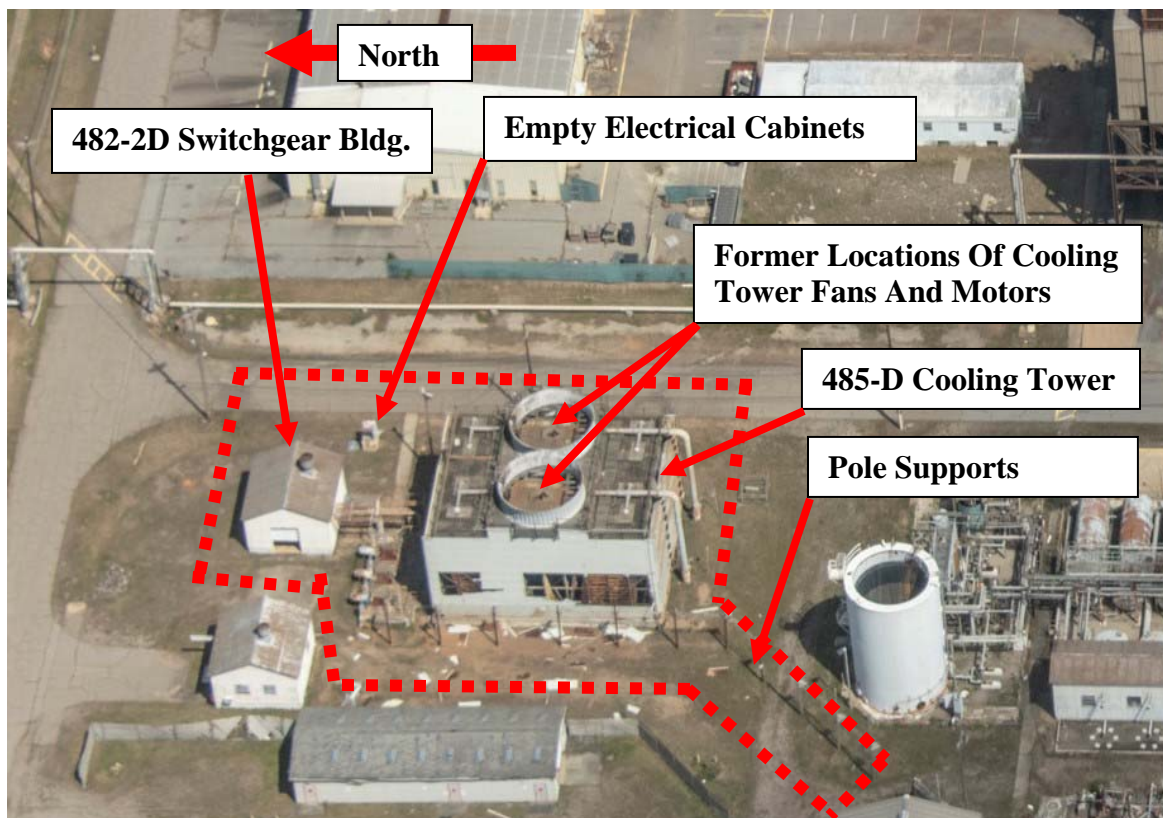


Figure 2. 485-D Cooling Tower Aerial Photo (Showing Fans and Motors Removed)

The three old 200 hp, vertically mounted, centrifugal recirculating pumps on the north side of the tower atop the pump basin (Figure 3) have been removed (Figure 4). The pump basin is approximately 20'8" by 26' wide and 10'11" deep, giving it a usable capacity of approximately 35,000 gallons. Access to the cooling tower basin is by a rung ladder on the west side of the basin, at the transition from the cooling tower basin to the pump basin. Sodium hypochlorite was provided to the cooling tower basin from Building 683-D. The sodium hypochlorite was used as a biocide/ algaecide in the cooling water. Sodium hypochlorite feed piping, as well as communication lines are carried overhead by a series of wooden poles, running northeast from Building 683-D. The poles are specific to the cooling tower and are included in the scope of this decommissioning.

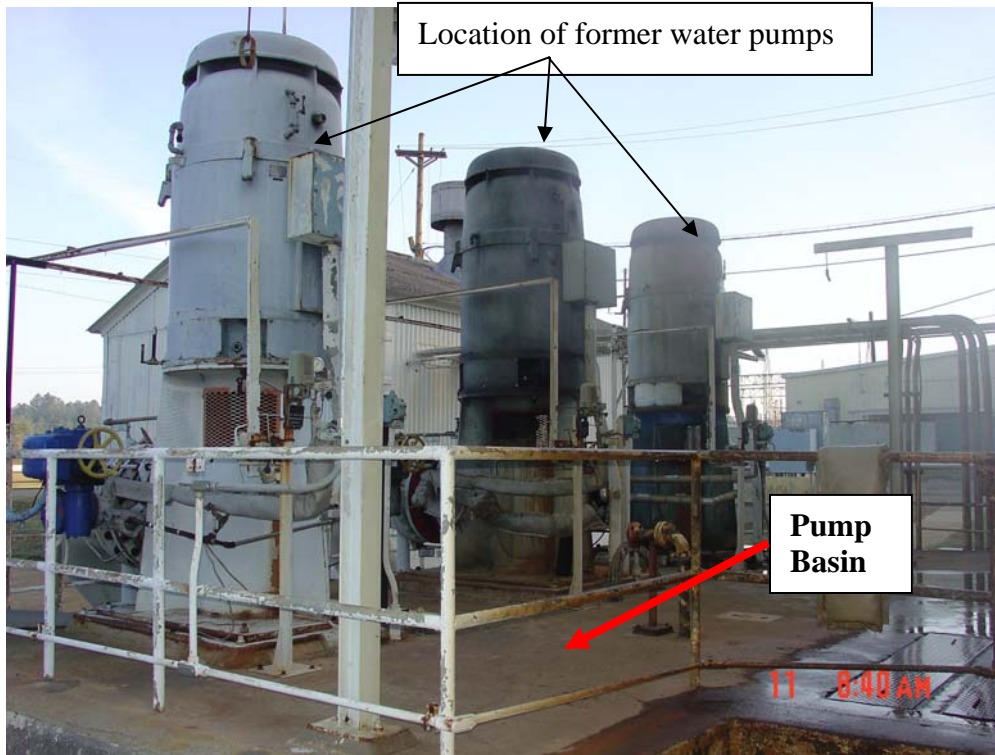


Figure 3. Building 485-D, Cooling Water Pumps Prior To Removal

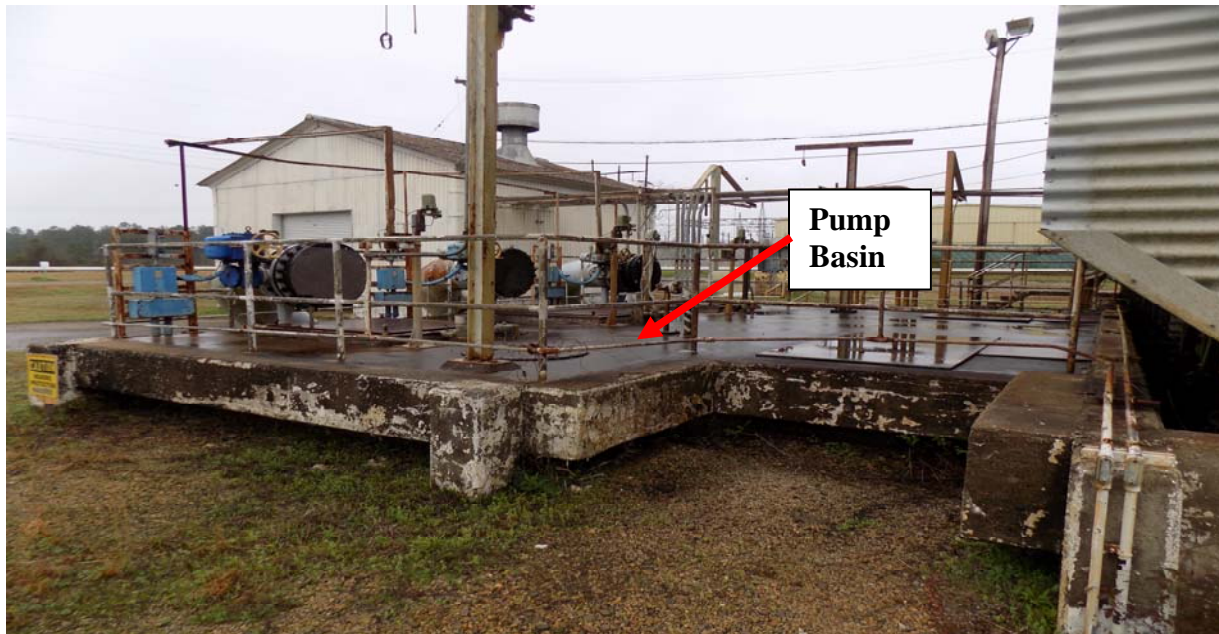


Figure 4. Building 485-D Cooling Water Pumps after Removal (Current Configuration)

The cooling tower provided cooling to the condenser circulating water for the 484-D Powerhouse. The Condenser Cooling Water Header is 42", influent and effluent. Piping is below grade. The cooling water header returning from the Powerhouse enters a manifold that split flow to the two sections of the cooling tower via two 20" pipes (Figure 5). The 24" discharge pipes from each of the three former cooling tower pumps go below grade at the north end prior to combining at a manifold to the 42" header feeding the Powerhouse.



Figure 5. Building 485-D, D-Area Cooling Tower Water Return Lines

Ancillary to the cooling tower is Building 482-2D (Figure 6), the 576 square feet (24' x 24') Cooling Tower Switchgear Building, also constructed circa 1952. Building 482-2D used to contain the dry transformers and switchgear for the cooling tower equipment. The transformers and switchgear were removed during deactivation. The building has a steel frame structure on a concrete slab. The siding and roof of the building are corrugated asbestos. The building has an 8' by 10' roll-up door in the west wall and a standard metal 36" hinged personnel door in the east wall.



Figure 6. Building 482-2D, Cooling Tower Switchgear Building

Two 200 amp, 2.4 kilovolt (kV) feeders provided line power from the Powerhouse to the 2.4 kV switchgear in 482-2D. The 2.4 kV switchgear fed the cooling tower pumps and two transformers. One transformer stepped down to 120 V for control power. The other transformer stepped down the 2.4 kV feed to 440 V. The 440 V switchgear was used to provide power to the cooling tower fans, the heaters in 482-2D, power to 483-D and a lighting transformer that fed a miscellaneous power panel. All the switch gear and the transformers described resided within Building 482-2D and were disconnected and removed during deactivation.

Outside, to the southeast of 482-2D, are two back-to-back electrical cabinets mounted on a raised concrete pedestal (Figure 7). Both electrical cabinets have been deenergized, disconnected, and their contents removed. The east cabinet is approximately 5' tall by 3' wide by 16" deep. The west cabinet is approximately 42" tall by 42" wide by 16" deep. These cabinets are included in the scope of this document.



Figure 7. Building 482-2D, Outside Electrical Cabinets

Both buildings, 485-D and 482-2D, are located in the northern portion of 400-D Area (Figure 8). Neither the cooling tower nor Building 482-2D has any floor drains, sumps or drains to process or sanitary sewers.

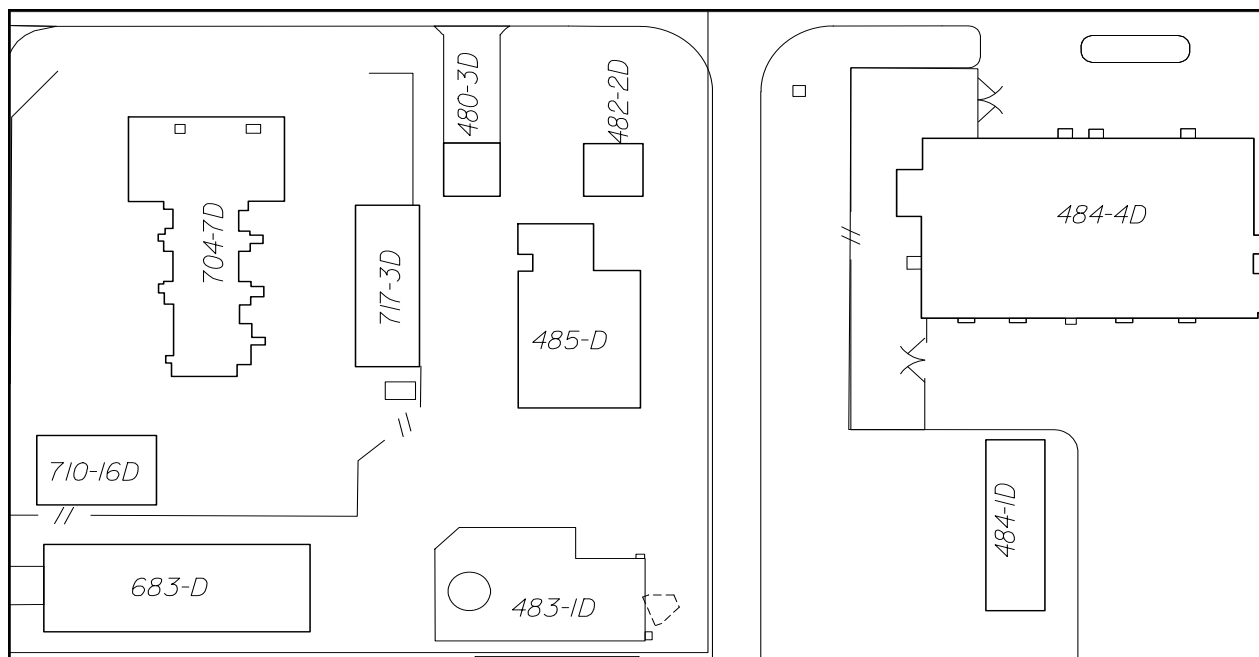


Figure 8. Buildings 485-D and 482-2D and Surrounding Area

Process History

Review of records, walkdowns and interviews indicate that no chemical or radioactive processes were performed in these buildings (i.e., no chemical, mechanical or electrical energy or interaction was performed to change the state of the input material or to produce a new output product). Cooling Tower water did, however, contain standard water treatment chemicals (chlorine, sodium hypochlorite, and lime), which functioned as an algicide/biocide and water softener, respectively.

The cooling tower began operation in 1952. The original water treatment chemicals used in the cooling tower water were lime (calcium hydroxide) and chlorine (liquid). These chemicals were delivered to the cooling tower basin from Building 480-3D via underground lines.

Around 1976, a gaseous chlorination system was installed in Building 683-D. In 1992, the system was modified to use domestic water for chlorination instead of service water. Circa 2006, elemental chlorine as a biocide was abandoned in favor of sodium hypochlorite, which is less hazardous to human health and the environment. A sodium hypochlorite metering system was installed in the opposite end of Building 683-D to replace the chlorination system.

Building 482-2D has no process history as it has only been used as an electrical switchgear building.

There are no sumps or floor drains in the facilities. The 482-2D floor slab is in good condition and has no indication of any stains resulting from spillage(s). As can be seen in Figure 9, the only discoloration of the slab is some slight rust staining where the motor control centers sat on the

concrete floor slab over a sixty year period. No oil(s) were contained in any equipment or otherwise used within the 482-2D facility.

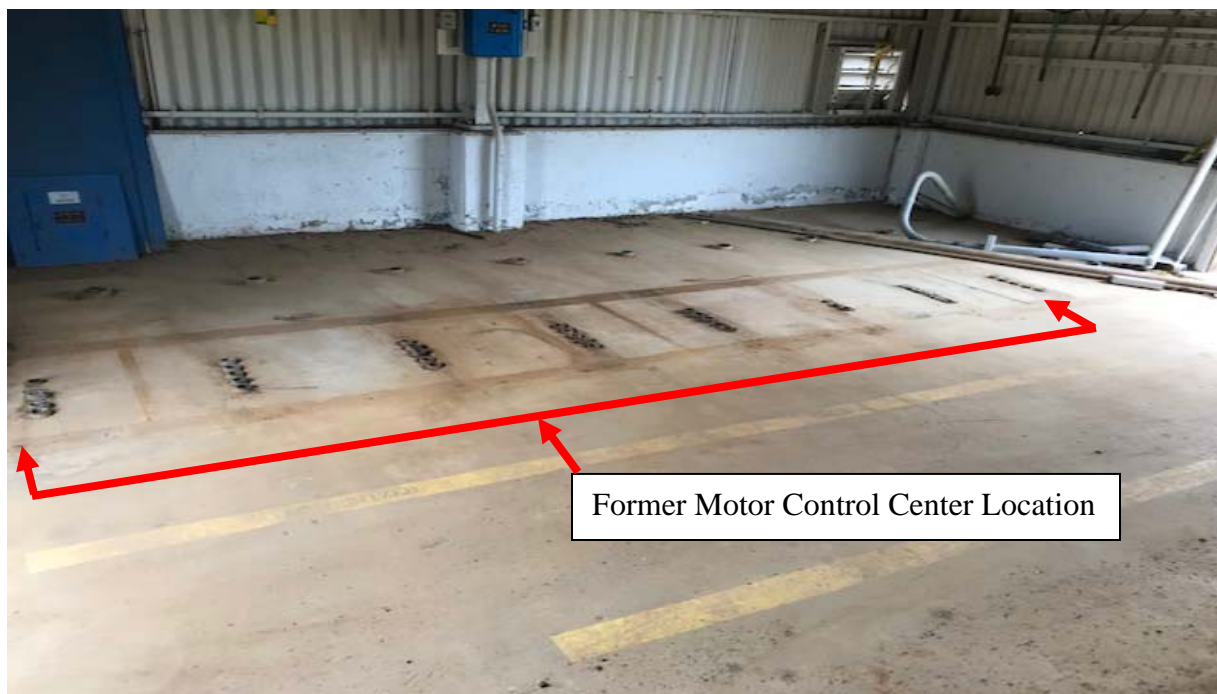


Figure 9. Building 482-2D Interior Floor Slab

Chemical Process

Chemical Name	Process location	Evidence of spills?
N/A	N/A	N/A

Radioactive Process

Isotope	Contaminated areas/others
N/A	N/A

Summary of Existing Characterization

Characterization has been accomplished using a combination of process knowledge/historical release information, verification walk downs and sampling as appropriate.

An important part of the characterization portion of this evaluation is a historical review of spills/releases to the environment. This review includes a review of the Occurrence Reporting and

Processing System/ Site Item Reportability and Issue Management (ORPS/SIRIM) database (Reference 3) conducted from the effective date of the Federal Facility Agreement (FFA) , August 16, 1993 (Reference 2) to present and a review of the FFA. The FFA serves as a review of releases/spills to the environment prior to August 16, 1993. Review of the FFA, ORPS/SIRIM database and SRS spill files reveal no documented evidence of spills at or around the area of the 485-D Cooling Tower or Building 482-2D. Accordingly, a final survey is not planned for this facility.

No chemical or radiological activities were ever conducted in Building 482-2D. Until 1976, chemicals in 485-D only ever involved receipt of lime and low-hazard quantities of chlorine metered/injected as a water treatment algacide/biocide into a process water line running to the cooling tower from the 480-3D building. In the mid-1970s, a gaseous chlorination system was installed in Building 683-D to replace water treatment previously provided by Building 480-3D. In 1992, the 683-D system was modified to use domestic water for chlorination instead of service water. Circa 2006, elemental chlorine as a biocide was abandoned in favor of sodium hypochlorite, a low-hazard, inexpensive and effective biocide for water treatment, which was metered into the cooling tower water system at 683-D. The sodium hypochlorite was used in a 12.5% solution with water. It was a stable, low-hazard source of chlorine in solution. The 485-D Cooling Tower never contained or processed radiological material(s) (Reference 5). When exposed to atmospheric conditions, chlorine rapidly decays (Reference 8). After over a decade of being shut down, chlorine is not a material of concern with regard to the cooling tower. There will be no chlorine remaining in the cooling water after such a long period of time. Neither is sodium hypochlorite of concern for the same reason. Further, the cooling tower and basin were drained for deactivation. Any stains found on the concrete slabs of the structures will be cleaned with a strong surfactant, such as BioSolve™, as part of the decommissioning activities for the building. Environmental Compliance & Area Completion Projects (EC&ACP) has determined that the nature of the chemicals used, the history of the facility and current facility condition do not warrant a final verification survey.

An asbestos survey of Building 485-D was conducted on January 13, 2020, and several areas tested positive for asbestos containing materials (ACM) and presumed asbestos containing materials (PACM). The results of that survey are included in Q-APG-D-00026, Baseline Asbestos Inspection Report of Building 485-D, Reference 6. An asbestos survey of Building 482-2D was conducted on November 30, 2019, and several areas tested positive for PACM. Survey results for 482-2D are documented in Q-APG-D-00006, Baseline Asbestos Inspection Report of Building 482-2D, Reference 7. In accordance with 40 CFR part 61.145, a ten-day notification will be filed with South Carolina Department of Health and Environmental Control (SCDHEC) prior to demolition and all ACM/PACM removal will be performed by asbestos trained personnel with proper permitting and waste disposal procedures.

Wastes generated during decommissioning will be characterized and managed in accordance with Savannah River Site (SRS) procedures and State and Federal regulations.

Historical Significance

A review has been conducted in accordance with a Programmatic Agreement. This review resulted in the publication of a Cultural Resources Management Plan (CRMP) (Reference 4) in which the facilities with historical significance are listed.

- Building 485-D is listed as having historical significance in that reference. Mitigating actions will have to be completed as identified in that reference. These actions, along with proper notification to the South Carolina Historical Preservation Office, will be completed prior to initiation of work that significantly alters the physical appearance of the building.
- Building 482-2D is not listed in that reference as being historically significant.

Part 2. Evaluation

Clean Facilities

	Question	Yes	No	Justification
1.	Has the facility ever contained or processed radioactive or hazardous material other than stored packaged material or materials of construction? <i>If yes, go to question 4.</i>		X	A review of records, walkdowns and interviews indicate that no chemical or radioactive processes were ever performed in these facilities (i.e., no chemical, mechanical, or electrical energy or interaction was performed to change the state of an input material or to produce a new output product). No chemical or radiological materials were ever present in Building 482-2D. The 485-D Cooling Tower never contained or processed radiological material(s) (Reference 5). Until 1976, chemicals in 485-D only ever involved receipt of lime and low-hazard quantities of chlorine metered/injected as a water treatment algacide/biocide into a process water line running to the cooling tower from the 480-3D building. In the mid-1970s, a gaseous chlorination system was installed in Building 683-D to replace water treatment previously provided by Building 480-3D. In 1992, the 683-D system was modified to use domestic water for chlorination instead of service water. Circa 2006, elemental chlorine as a biocide was abandoned in favor of sodium hypochlorite, a low-hazard, inexpensive and effective biocide for water treatment, which was metered into the cooling tower water system at 683-D. The sodium hypochlorite was used in a 12.5% solution with water. It was a stable, low-hazard source of chlorine in solution. When exposed to atmospheric conditions, chlorine rapidly decays (Reference 8). After over a decade of being shut down, chlorine is not a material of concern with regard to the cooling tower. There will be no chlorine remaining in the cooling water after such a long period of time. Neither is sodium hypochlorite of concern for the same reason. Further, the cooling tower and basin were drained for deactivation. Any stains found on the concrete slabs of the structures will be cleaned with a strong surfactant, such as BioSolve™, as part of the decommissioning activities for the buildings.
2.	If there was stored packaged material, has there ever been a spill? <i>If No or N/A, this is a Simple Model. Stop.</i>		X	There is no documented evidence of spills of chlorine or sodium hypochlorite within or outside the facility. EC&ACP has determined that a final survey is not required. EC&ACP determined that the nature of the chemicals used, the history of the facility and current facility condition do not warrant a final survey. Building 485-D and its ancillary facilities will be a Simple Model decommissioning.
3.	Was spill confined inside structure and cleaned to free release standard per Radiological Control Manual 5Q (for radiological) or continued occupancy per Industrial Hygiene Manual 4Q (for hazardous)? <i>If Yes, this is a Simple Model. Stop.</i>			N/A

Contaminated Facilities

	Question	Yes	No	Justification
4.	Is the facility listed as a RCRA/CERCLA Unit in Appendix C of the SRS FFA? <i>If Yes, this is a CERCLA Model. Stop.</i>			N/A

5.	Is the facility listed as a Site Evaluation Area in Appendix G of the SRS FFA? <i>If Yes, this is a CERCLA Model. Stop.</i>			N/A
6.	Is there evidence that there has been a release of hazardous or radioactive materials outside the structure? <i>If Yes, this is a CERCLA Model. Stop.</i>			N/A
7.	Is there a substantial threat of a release of hazardous or radioactive materials outside the structure? <i>If Yes, this is a CERCLA Model. Stop.</i>			N/A
8.	Has the facility been assigned a hazard category as defined in Facility Safety Document Manual 11Q? <i>If No, stop and refer facility for evaluation to assign a hazard category, then proceed</i>			N/A
9.	Is the hazard category Nuclear (HC-2 or 3), radiological or high hazard chemical? <i>If Yes, this is s CERCLA Model. Stop.</i>			N/A
10.	Has DOE-SR directed that decommissioning be performed using the CERCLA Model? <i>If yes, this is a CERCLA Model. Stop.</i>			N/A
11.	Does the complexity of the facility or the nature and extent of contamination warrant a higher than normal level of rigor and detail for decommissioning planning and evaluation? <i>If Yes, this is a CERCLA Model. Stop.</i>			N/A
12.	Is the facility a former nuclear, radiological or high-hazard chemical facility? <i>If Yes, this is an Integrated Sampling Model. Stop.</i>			N/A
13.	Has EC&ACP's Regulatory Support Group determined that a final survey is not required for this facility? <i>If Yes, this is a Simple Model. If No, this is an Integrated Sampling Model. Stop.</i>			N/A

Part 3. Review of Existing Records

The following facility records were reviewed as a part of this evaluation:

Ref #	Document No.	Revision/Date	Title
1	SRNS-RF-2008-00086-000-M&O	Revision 19-01-MO Feb.14, 2019	Standard Requirements Identification System- FA00 Facility List.
2	WSRC-OS-94-42	Rev 0, Aug. 16, 1993 All updates through Sept. 21, 2018, including Rev. 0 Appendices C, G and K for Fiscal Year 2019	FFA for the SRS, Administrative Document No. 89-05-FF
3	N/A	N/A / Since 1993	D-Area ORPS/SIRIM reports 08/1993 to 04/2009.
4	N/A	Final January 26, 2005	Savannah River Site's Cold War Built Environment Cultural Resources Management Plan
5	S-EHS-D-00001, Rev 0	April, 2006	D-Area Hazards Survey
6	Q-APG-D-00026	0/January 13, 2020	Baseline Asbestos Insection Report for Building 485-D
7	Q-APG-D-00006	0/November 30, 2019	Baseline Asbestos Insection Report for Building 482-2D
8	<u>Water Research</u> PII: S0043-1354(98)00519-3	Issue 12, Revision 0/ August 1999, Pages 2735-2746	Modelling of Chlorine Decay in Municipal Water Supplies.