



Westinghouse Electric Company
Nuclear Fuel
Columbia Fuel Fabrication Facility
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USA

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Our ref: LTR-RAC-24-59

November 27, 2024

Subject: Columbia Fuel Fabrication Facility Middle Ditch Removal Action Work Plan

Mr. Cassidy:

As requested in the department's August 30, 2024 response letter to the "Middle Ditch Additional Assessment Report" submitted August 23, 2024 (LTR-RAC-24-46), Westinghouse Electric Company, Inc. submits the attached Middle Ditch Removal Action Work Plan for your review and approval.

Please let me know if you have any questions or require additional information.

Respectfully,

A handwritten signature in black ink, appearing to read 'Ray Bates'.

Ray Bates
Environmental Projects
Westinghouse Electric Company, CFFF
803.351.6629 (m)

CC: Jeff Ferguson, Director, Environment Health & Safety
Nancy Parr, Environmental Manager
Diana Joyner, Principal Environmental Engineer
Jeremy Grant, AECOM Project Manager
ENOVIA Records

Westinghouse Columbia Fuel
Fabrication Facility
Middle Ditch Maintenance
Removal Action Work Plan

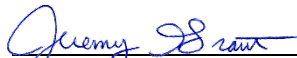
November 2024

Quality information

Prepared by


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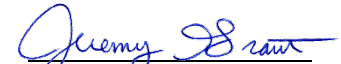
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Table of Contents

1.	Project Introduction	1-1
1.1	Project Background	1-1
1.2	Summary of Work	1-1
2.	Removal Action Summary	2-1
2.1	Planning, Permitting, and Notifications	2-1
2.1.1	Land Disturbance Permit/Erosion and Sedimentation Control Plan	2-1
2.1.2	Health and Safety	2-2
2.2	Surveying	2-2
2.3	Site Preparation	2-2
2.4	Area 1 Removal Action	2-2
2.5	Area 2 Removal Action	2-2
2.6	Area 3 Removal Action	2-3
3.	Personnel and Equipment	3-1
3.1	Onsite Personnel Qualifications	3-1
3.2	Equipment	3-1
4.	Project Deliverables	4-1
5.	Confirmation Sampling and Analysis	5-1
6.	Waste Management	6-1
6.1	Onsite Handling and Management	6-1
6.2	Loading and Offsite Shipment	6-1
6.3	Waste Tracking and Shipping Papers	6-1
6.4	Decontamination	6-1
7.	References	7-1

Figures

Figure 1	Site Location Map
Figure 2	Property Map
Figure 3	Sediment Analytical Results
Figure 4	Middle Ditch Site Plan
Figure 5	Area 1 – Removal Plan
Figure 6	Area 2 – Removal Plan
Figure 7	Area 3 – Removal Plan

List of Abbreviations and Acronyms

BMP	Best Management Practices
BOL	Bill of Lading
CA	Consent Agreement
CFFF	Columbia Fuel Fabrication Facility
COPC	Contaminants of Potential Concern
DCGL	Derived Concentration Guideline Levels
DOT	Department of Transportation
ECM	Erosion Control Matting
ECM	Erosion Control Matting
LDP	Land Disturbance Permit
MSA	Material Staging Area
NPDES	National Pollutant Discharge Elimination System
PPE	Personal Protective Equipment
SC	South Carolina
SCDES	South Carolina Department of Environmental Services
SCDHEC	South Carolina Department of Health and Environmental Control
SOF	Sum of Fractions
SWPPP	Stormwater Pollution Prevention Plan
SPCC	Spill Prevention, Control, and Countermeasure Plan
Westinghouse	Westinghouse Electric Company, LLC

1. Project Introduction

1.1 Project Background

The South Carolina Department of Environmental Services (SCDES), formerly known as South Carolina Department of Health and Environmental Control (SCDHEC) and the Westinghouse Electric Company, LLC (Westinghouse) Columbia Fuel Fabrication Facility (CFFF) entered into Consent Agreement (CA) 19-02-HW on February 26, 2019. The purpose of the CA is to cleanup legacy impacts at the CFFF located at 5801 Bluff Road in Hopkins, South Carolina (SC) (**Figure 1**). CFFF manufactures fuel assemblies and components for the commercial nuclear power industry.

The Middle Ditch is a stormwater conveyance that runs east to west along the interior of the site (**Figure 2**). It conveys much of the runoff from the manufacturing area, the Northern Storage Area Operational Unit, and building roof drains. Flow in the ditch is intermittent in many areas and becomes perpetual flow prior to the confluence with the Eastern Ditch. Under the CA, Westinghouse submitted a work plan to remove impacted sediment (**Figure 3**) contained in limited areas within the Middle Ditch where the radiological cleanup goals, also known as Derived Concentration Guideline Levels (DCGLs), were exceeded. When multiple radionuclides are present, a “sum of fractions” (SOF) approach is used to assess compliance with the concentration levels. For the legacy impact at the CFFF, the SOF approach is used to assess the cumulative potential dose of radiation exposure by adding the fractions of individual U isotopes and Tc-99 divided by their screening levels. These calculations are performed in accordance with CFFF procedure RA-433, *Environmental Remediation*.

1.2 Summary of Work

This work plan describes a maintenance activity to remove legacy sediment impact from the ditch. Key features of the work include:

- Stormwater controls to protect water quality and to protect down-stream portions of the ditch from migration of impacted sediments to unimpacted areas
- Removal of impacted sediments associated with the Middle Ditch
- Packaging, transporting, and disposal of all waste generated by the removal activities
- Confirmatory soil sampling
- Ditch restoration and planting

Westinghouse intends to self-perform the maintenance activity in accordance with site procedures, with assistance from specialty contractors as necessary.

2. Removal Action Summary

The purpose of this section is to provide an overview of the maintenance activities in the Middle Ditch for three individual segments herein referenced as Areas 1, 2, and 3 respectfully.

Field sampling identified exceedances of the DCGL SOF within the Middle Ditch at sediment sampling locations CB-116, Echo Valve, LOC 5 (including sub-surface impacts observed at SED-71), and SED-16. This impact is defined by three separate areas as shown on **Figure 4**. The size and shape of Areas 1, 2, and 3 are based on historical knowledge, contours of the area, and the proximity to nearby 'clean' sample locations.

Of note in Area 2, the portion of the Middle Ditch between Echo Valve and LOC 5, is a section that contained a sediment sample below the DCGL SOF threshold (SED-72). Sediment in this section will be removed, segregated from the other sediments, and analyzed to determine if it needs to be disposed of as waste, or may be used as backfill for the excavation when removal activities are complete. The estimated areas and potential removal volumes are shown below.

Area	Location	Surface Area (ft ²)	Estimated Volume (ft ³) per 18-inch layer of sediment removal	Estimated Weight (lbs @ 85 lbs/ft ³)	Estimated Weight (tons)
Area 1	CB-116	20	30	2,550	1.5
Area 2	Echo Valve	625	937.5	79,688	40
	SED-72*	1,175	1,690	143,650	72
	LOC 5	2,250	3,375	286,875	144
Area 3	SED-16	750	1,125	95,625	48
				Total:	305.5

ft² – square feet

ft³ – cubic feet

lbs – pounds

lbs/ft³ – pounds per cubic feet

* Sediment samples from SED-72 did not contain U concentrations above the DCGL SOF and will be segregated and sampled to evaluate further handling and waste management.

2.1 Planning, Permitting, and Notifications

Certain Westinghouse site-specific notifications and permits are required for this scope of work which may include:

- Radiation Work Permit (RWP)
- Excavation Permit
- Barricade Permit/Tag
- Daily Notifications to site personnel where the work is occurring
- Non-routine logistical notifications relating to remote gates, truck traffic, etc.

Work will be performed in compliance with the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Industrial Activities (SCR000000) effective July 1, 2022; the Westinghouse Storm Water Pollution Prevention Plan (SWPPP) dated October 2022; and the Westinghouse Best Management Practices (BMP) and Spill Prevention, Control, and Countermeasure Plan (SPCC) dated June 2023. Prior to intrusive activities, a contracted utility locating company equipped with ground-penetrating radar will be mobilized to identify potentially impacted utilities.

2.1.1 Land Disturbance Permit/Erosion and Sedimentation Control Plan

The area of disturbance for this maintenance activity is less than one acre, and therefore a land disturbance permit (LDP) is not required. Also, the Middle Ditch is not a water of the United States, so no Section 404 Permit is required for this effort. BMPs will be planned and implemented to eliminate or reduce the transmission of sediment and prevent impact to the quality of downstream waters.

Westinghouse will implement BMPs consistent with the facility SWPPP to meet the intent of the General SC NPDES permit for construction activities.

2.1.2 Health and Safety

All work will be performed in accordance with Westinghouse health and safety procedures.

2.2 Surveying

A professional land surveyor, licensed in the State of South Carolina, will be utilized to perform necessary surveying activities.

Topographical surveys have already been performed and will be performed, if necessary, at the completion of restoration activities. Daily logs will be maintained for excavation, disposal, and backfilling. The final phase of survey activities will be performed upon completion of maintenance activities. As-built surveys will be generated as necessary for any engineered improvements incorporated into the Middle Ditch (e.g., a drainage pad, or culvert to improve flow).

2.3 Site Preparation

Site preparation tasks will initiate with preliminary utility locating in all areas to confirm the presence/absence of utilities. Prior to earth disturbing work, erosion and sediment controls, and elements of the CFFF, current SWPPP, and BMP/SPCC plan will be implemented and confirmed to be in place.

A material staging area (MSA) will be located on the current calcium fluoride storage pad and will use concrete Jersey Barriers to create storage bins. The storage bins will be used to segregate and store the excavated soils and sediments prior to processing and packaging for shipment off site. The MSA will be established in a way to prevent the potential movement of sediments and prevent any potential migration of impacted sediment.

2.4 Area 1 Removal Action

Area 1 consists of a small discharge area immediately downstream of the CB-116 outfall represented by sample CB-116A. It also consists of the terminal run of stormwater drainage pipe that runs from the nearest drop inlet to outlet CB-116 (**Figure 5**). Due to the small nature of this removal, it is anticipated that the area will be restored prior to receipt of the confirmation sample results. Minimal stormwater BMPs, such as a berm and waddles around the excavation will be used.

Area 1 removal will include removal of the sediment within the drainage pipe and removal of the small area of soil immediately below the drainage outfall.

Once removal efforts are complete, a sample will be collected and sent to a laboratory for analysis as described in Section 5. Due to the small excavation size, Westinghouse will line the bare excavation with filter fabric and place riprap as a presumptive permanent restoration. Once the confirmation results are received and if no further removal is deemed necessary, the BMPs will be removed and the removal action at Area 1 will be deemed complete. Should sampling results indicate additional removal is required, the riprap can be temporarily removed and additional soil removal can be performed followed by additional confirmatory sampling. A general site plan of the removal operation is presented on **Figure 5**.

2.5 Area 2 Removal Action

Area 2 consists of a portion of the Middle Ditch between the Echo Valve storm drain outfall and the next downstream culvert adjacent to historic sample location LOC 5 (**Figure 6**).

Activities will start with constructing appropriate dams and flow diversion devices along with properly sized pumps to isolate that section of the ditch. The “pump around” system will consist of a dam, a sump in the upstream portion of the ditch, and a hose to transfer the accumulated stormwater to farther downstream portions of the ditch. Two pumps may be used to provide adequate back-up flow capacity to handle anticipated flows. The dam will be located at the Echo Valve outfall and upstream portion of the Middle Ditch. The pumps will be placed adjacent to the Echo Valve

outlet and routed approximately 600 feet to the convergence of the Middle Ditch and Eastern Ditch. An energy dissipation pad will be constructed of riprap and the diverted water will go through sediment socks prior to return into the ditch. The system will be designed to isolate the ditch from stormwater flow during maintenance activities and continue until either the results from the confirmation sampling are received or temporary stabilization of the exposed surface is installed. The “pump around” system will be established and kept in place until stabilization of the area is complete.

An adequately sized excavator will be used to remove the soil/sediments from the ditch segment proceeding from upstream to downstream. Should the removed sediments be too wet to transport then the sediment will be spread within the MSA to naturally dewater, or possibly aided by mixing in an absorbent to stabilize the sediment prior to transportation and disposal. It is anticipated that up to 6,002 cubic feet (ft³) of soil/sediment will be removed from within the ditch. The excavation will proceed using the excavator and directly loading soils/sediments into a small off-road dump truck that will move and place the material into storage bins at the MSA. In this area, the soils may be dewatered, sampled, and processed into super sacks for offsite disposal at an approved facility. Once removal is complete, confirmatory samples will be collected and analyzed for contaminants of potential concern (COPCs) as described in Section 5.

Upon completion of the excavation and confirmatory sampling, the exposed sections of ditch will be covered with erosion control matting (ECM) until such time as the results of the confirmation sampling are received indicating that the excavation has adequately removed impacted sediment. Once confirmation sampling results indicate that the excavation is complete, permanent vegetation will be planted in accordance with the facility’s SWPPP. The ECM may be kept in place until permanent vegetation is achieved. Westinghouse may elect to provide erosion protection and velocity reduction measures to help mitigate the potential for future erosion. This would be in the form of riprap and would preclude the use of, or be used in conjunction with, ECM.

2.6 Area 3 Removal Action

Area 3 consists of a portion of the middle ditch between the downstream culvert just north of and adjacent to the West I Lagoon and the convergence of the Middle Ditch and the Eastern Ditch. The specific removal will extend from a point halfway between SED-61 and SED-16 (lower boundary) to a point approximately 50 feet upstream of SED-16 (upper boundary) (**Figure 7**).

Activities will start with establishing a “pump around” of Area 3 by moving one of the pumps from Area 2 to the culvert outlet adjacent to West I and then constructing appropriate dams and flow diversion just downstream of the culvert to isolate Area 3 of the ditch. The “pump around” is designed to manage water from Echo Valve outfall as the primary dewatering method and then placing the secondary pump as necessary in a place where the storage between the culverts can be utilized, if necessary. The “pump around” will be established and kept in place until stabilization of the area is complete.

An adequately sized excavator will be used to remove the soil/sediments from this ditch segment proceeding from upstream to downstream. Should the soils/sediment be too wet to transport then the sediment will be spread within the MSA to naturally dewater, or possibly aided by mixing in an absorbent to stabilize the sediment prior to transportation and disposal. It is anticipated that up to 1,125 ft³ of soil/sediment will be removed from this area within the ditch. Once removal is complete, confirmatory samples will be collected and analyzed for COPCs as described in Section 5.

Upon completion of the excavation and confirmatory sampling, the exposed sections of ditch will be covered with ECM until such time as the results of the confirmation sampling are received indicating that the excavation has adequately removed impacted sediment. Once confirmation sampling results indicate that the excavation is complete, permanent vegetation will be planted. The ECM may be kept in place until permanent vegetation is achieved. Westinghouse may elect to provide erosion protection and velocity reduction measures to help mitigate the potential for future erosion. This would be in the form of riprap and would preclude the use of or be used in conjunction with ECM.

3. Personnel and Equipment

3.1 Onsite Personnel Qualifications

Existing Westinghouse staff and specialty subcontractors with prior site experience will be utilized to perform these maintenance activities to remove historic soil/sediment impact. Project personnel are trained to perform work in accordance with CFFF procedures. Personnel working on the site have Westinghouse site-specific facility training and receive RWP briefings.

3.2 Equipment

Equipment will be mobilized to the site on an as-needed basis throughout the project. A list of typical equipment includes the following:

Type of Equipment	Planned Use	Project Notes
CAT 320 Long Reach Excavator	Excavation of Middle Ditch sediments/soil into onsite haul truck	This machine will work from the banks to avoid direct contact with impacted soils other than the bucket and stick of the machine. Equipment will be decontaminated for free release as necessary.
Rented Mini-Excavator (as Necessary)	Excavation of Middle Ditch sediments/soil into onsite haul truck or directly into long reach excavator	This machine will work from the banks to avoid direct contact with impacted soils other than the bucket and stick of the machine. Equipment will be decontaminated for free release as necessary.
Site Dump Truck (Onsite Haul Truck)	Material transportation onsite	This machine will be used to transport excavated soil to the MSA. The truck bed will be surveyed and decontaminated for free release as necessary.
Hydraulic Excavator/ Material Handling	Loading of trucks with outbound materials from the MSA	The machine will be positioned outside the MSA in the clean area and will be used to lift and load the waste bags into the dump trailer for conveyance to the local railroad transfer facility.
JD 329K Skid Steer	Utility and special duties including silt fence installation	Used only during clean set-up and backfill operations. Standard decontamination and expected free release from the site.
Vacuum Truck	Drain piping cleanout	Used to clear debris inside of drain piping to CB-116.
Diesel Self-priming Dewatering Pump	Pump arounds	Upon completion of removal action, the pumps will be cleaned of sediment with a water wash.
Dewatering accessories	Pump arounds	Upon completion of removal action, the discharge hoses will be flushed of sediment with a water wash.
Sandbags, sand supersacks, and possible bladder dams	Dam materials for water diversion and pump around	Sandbags and other dam materials will be brushed free of sediment within the MSA and then either reused or disposed as municipal waste.
Various Small Items	Various support applications	Case by case basis dependent on use, placement within the site, etc.
Jersey Barriers	Used to create Storage Bins within the MSA	Existing concrete Jersey Barriers will be used to create storage bins within the MSA to support the segregation and storage of excavated soils and sediments.

4. Project Deliverables

Upon completion of the project, a report will be submitted to SCDES describing the maintenance work performed in the Middle Ditch to remove the legacy impacts. Based on field quality assurance oversight, the report will include certification that the work has been completed consistent with this work plan. Critical items to be included with this report include:

- Summary of maintenance activities
- Summary of volumes of soil/sediment removed and disposed, including the disposal facility
- Summary of water diversion activities
- Confirmatory sampling results and laboratory reports
- Certification that the removal effort met the objectives of the work plan
- Listing of any related deviations from the plan

5. Confirmation Sampling and Analysis

Confirmatory sampling within the removal areas will include the collection of samples as summarized in Section 2. Spatially representative soil samples will be collected within the area of excavation at the bottom of each excavation surface and at locations determined by the project Health Physicist and/or Environmental Staff. It is anticipated that one sample will be collected for each approximate 50 linear feet of excavation. This will result in approximately one sample from Area 1, five samples from Area 2, and two samples from Area 3. Additional sampling of excavated soil will be performed as necessary to support the determination to reuse as clean fill, or dispose as contaminated offsite. Sampling will be performed in accordance with CFFF procedure RA-136, *Soil Sampling and Disposal*.

Samples will be analyzed for uranium by Method DOE EML HASL-300, U-02-RC Modified, and Tc-99 by Method DOE EML HASL-300, Tc-02-RC Modified. Upon receipt of the laboratory results, confirmation sample results will be compared to the DCGL SOF in accordance with CFFF procedure RA-433. DCGL SOF results less than 1 confirm that the removal effort is complete, and DCGL SOF results greater than 1 may indicate that additional removal is still needed. This evaluation of the sample results, and the evaluation of whether any additional remediation is warranted will be performed by the CFFF Environmental Staff.

6. Waste Management

This section provides a framework for management of waste materials generated from implementation of the work plan.

6.1 Onsite Handling and Management

The MSA will serve as the primary accumulation, consolidation, and loading point for all waste material. The anticipated wastes generated by the maintenance activity include:

- Middle Ditch soils and sediments
- Project wastes (poly plastic, rock, personal protective equipment [PPE], etc.)

The MSA is designed to allow for each of these materials to be handled and loaded for offsite disposal.

6.2 Loading and Offsite Shipment

Specially designed, Department of Transportation (DOT)-approved, 9 cubic yard capacity bags will be used for watertight packaging of radiologically impacted waste materials. The bags will be loaded within the MSA using a template frame and handled with a specialized lifting frame. Once full, the bags will be weighed inside the MSA, sealed, and assigned a unique shipping number. Each bag will be lifted from the MSA into an open-topped on-road truck. Only approved, properly licensed transporters will be used for transportation of the waste materials from the CFFF. Waste classification analysis and approval for offsite disposal will be completed before the start of activities to generate pre-approvals from the disposal facility.

Personnel will scan each load to record the appropriate radiological information to ensure compliance with the waste profile for the intended disposal facility. Once loaded, the truck will be secured, inspected, and then exit the Columbia site through the entry control point. The truck will transport the material to a rail spur where the sealed bags will be lifted from the truck and transloaded into gondola-style rail cars. Once enough rail cars are loaded, the material will be transported to the disposal facility.

6.3 Waste Tracking and Shipping Papers

A Waste Tracking Log will be developed and maintained to track each shipment of waste transported offsite. The log will identify the waste type being transported, the date and time the material left the site, appropriate radiological information, the disposal facility, the truck identification number, the shipping document number accompanying the load, and the weight of each loaded unit. A bill of lading (BOL) or DOT manifest form will accompany each load and will be signed by an owner-approved agent before the material leaves the site, the truck driver before leaving the site, a representative of the rail company when the material is transferred to rail cars, and a representative of the disposal facility when the load is received. Upon arrival at the disposal facility, the BOL/manifest will be signed, and a copy returned to Westinghouse, complete with the applicable signatures as proof of delivery. The returned BOL/manifests and Certificates of Disposal (as applicable) will be cross-checked and matched with the original copy of the manifest already on file. The Waste Tracking Log will be used to track the receipt of completed and signed manifests.

6.4 Decontamination

Final equipment decontamination will take place within the MSA to ensure containment during any decontamination needed. Crews will utilize the PPE identified in the Westinghouse RWP which may include water resistant PPE, splash shields, and heavy high-density polyethylene gloves for power washer operators.

Health Physics Staff will survey equipment prior to decontamination to identify suspect areas with potential radioactive contamination. This procedure will prevent inadvertently spreading radionuclides during the decontamination process.

Crews will begin by removing any removable (e.g., loose) contamination identified by the initial survey, beginning with the least aggressive means, and increasing efforts as necessary to achieve decontamination.

Decontamination efforts will proceed until the equipment meets Free Release criteria as specified by site procedures. Any project equipment or material that do not meet the Free Release criteria will be properly disposed of as described above.

7. References

AECOM Technical Services, 2023 Westinghouse Electric Company, LLC Columbia Fuel Fabrication Facility, *Feasibility Study Work Plan*, July 2023.

Consent Agreement - CA 19-02-HW signed February 26, 2019.

NPDES General Permit for Stormwater Discharges Associated with Industrial Activities (SCR000000) effective July 1, 2022.

Westinghouse Storm Water Pollution Prevention Plan (SWPPP) dated October 2022.

Westinghouse Best Management Practices (BMP) and Spill Prevention, Control, and Countermeasure Plan (SPCC) dated June 2023.

Westinghouse, 2021. Procedure RA-136 Soil Sampling and Disposal Revision 4, April 8, 2021.

Westinghouse, 2022. Procedure RA-433 Environmental Remediation Revision 3, September 12, 2022.

Figures



Legend

Locations

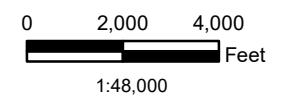
- Property Line
- Topographic Quadrangle Boundary

ID Topographic Quadrangle Name

- 1 Southwest Columbia
- 2 Gaston
- 3 Fort Jackson South
- 4 Saylors Lake
- 5 Congaree
- 6 Gadsden

Dominion Energy Substation

CFFF



Map Projection: NAD 1983, South Carolina State Plane, FIPS 3900, Feet

Datum: North American 1983

Data Source: Esri/USGS

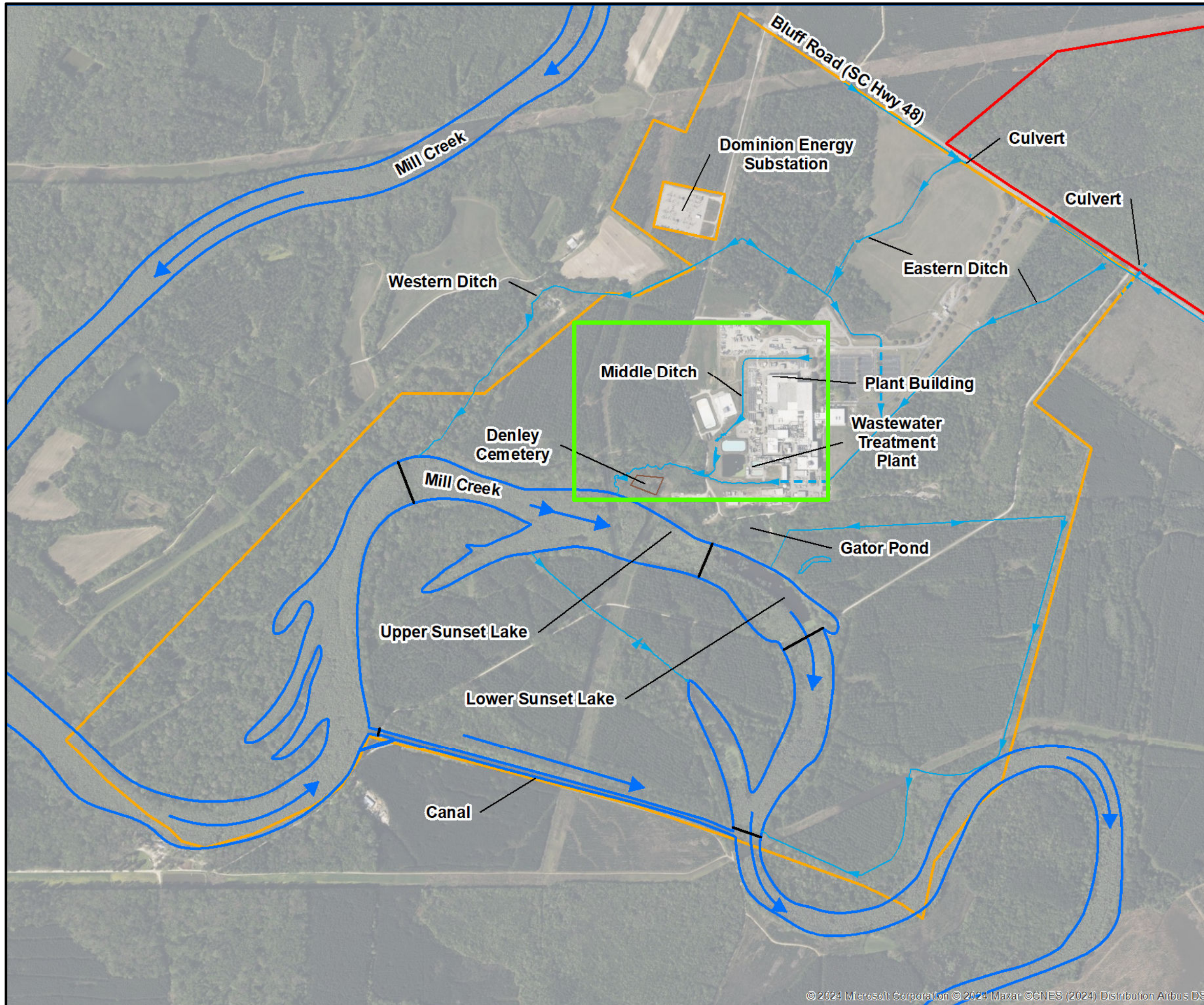


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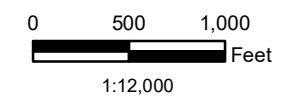
**Middle Ditch Removal Action Work Plan
Site Location Map**

WESTINGHOUSE COLUMBIA FUEL FABRICATION FACILITY
HOPKINS, SOUTH CAROLINA

PROJECT NO. 60700386	PREPARED BY: CCS	DATE: November 2024	FIGURE 1
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- Legend**
- Mill Creek Flow Direction
 - Ditch
 - Culvert
 - Property Line
 - SCRDI Bluff Road (Superfund Site)
 - Mill Creek
 - Dike Location



Map Projection: NAD 1983, South Carolina State Plane, FIPS 3900, Feet
 Datum: North American 1983

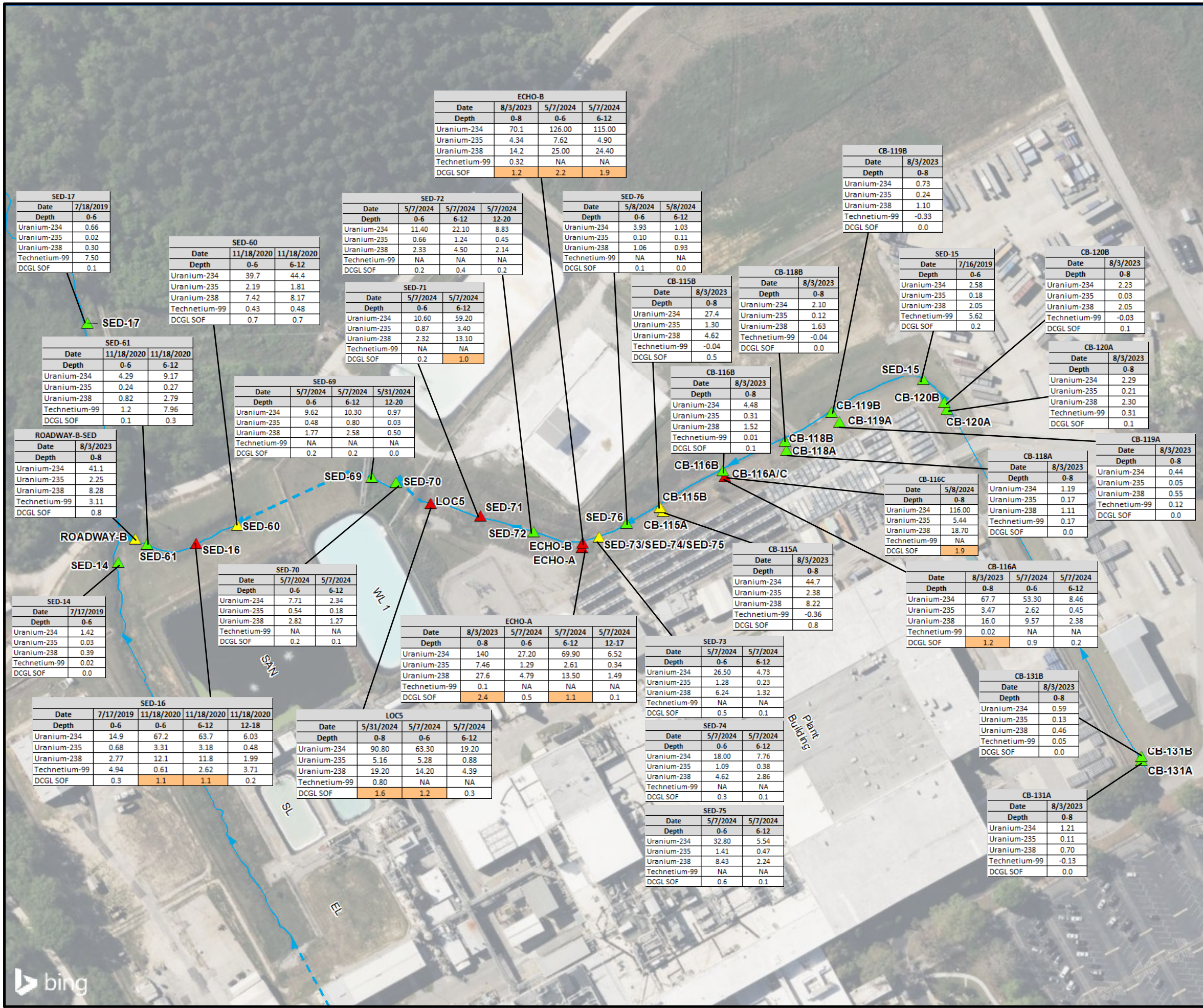


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**Middle Ditch Removal Action Work Plan
 Property Map**

WESTINGHOUSE COLUMBIA FUEL FABRICATION FACILITY
 HOPKINS, SOUTH CAROLINA

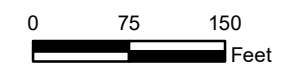
PROJECT NO. 60700386	PREPARED BY: CCS	DATE: November 2024	FIGURE 2
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Legend

- ▲ Sediment Sample Location with a DCGL SOF less than 0.5
- ▲ Sediment Sample Location with a DCGL SOF between 0.5 and 0.9
- ▲ Sediment Sample Location with a DCGL SOF greater than or equal to 1
- DCGL Modified Derived Concentration Guideline Levels
- SOF Sum of Fractions
- Ditch
- - - Culvert
- EL Former East Lagoon
- NL North Lagoon
- SL South Lagoon
- SAN Sanitary Lagoon
- WL1 West Lagoon I
- WL2 West Lagoon II

Note: Uranium and Technitium-99 concentrations are in pCi/g. SOF determined in accordance with RA-433.



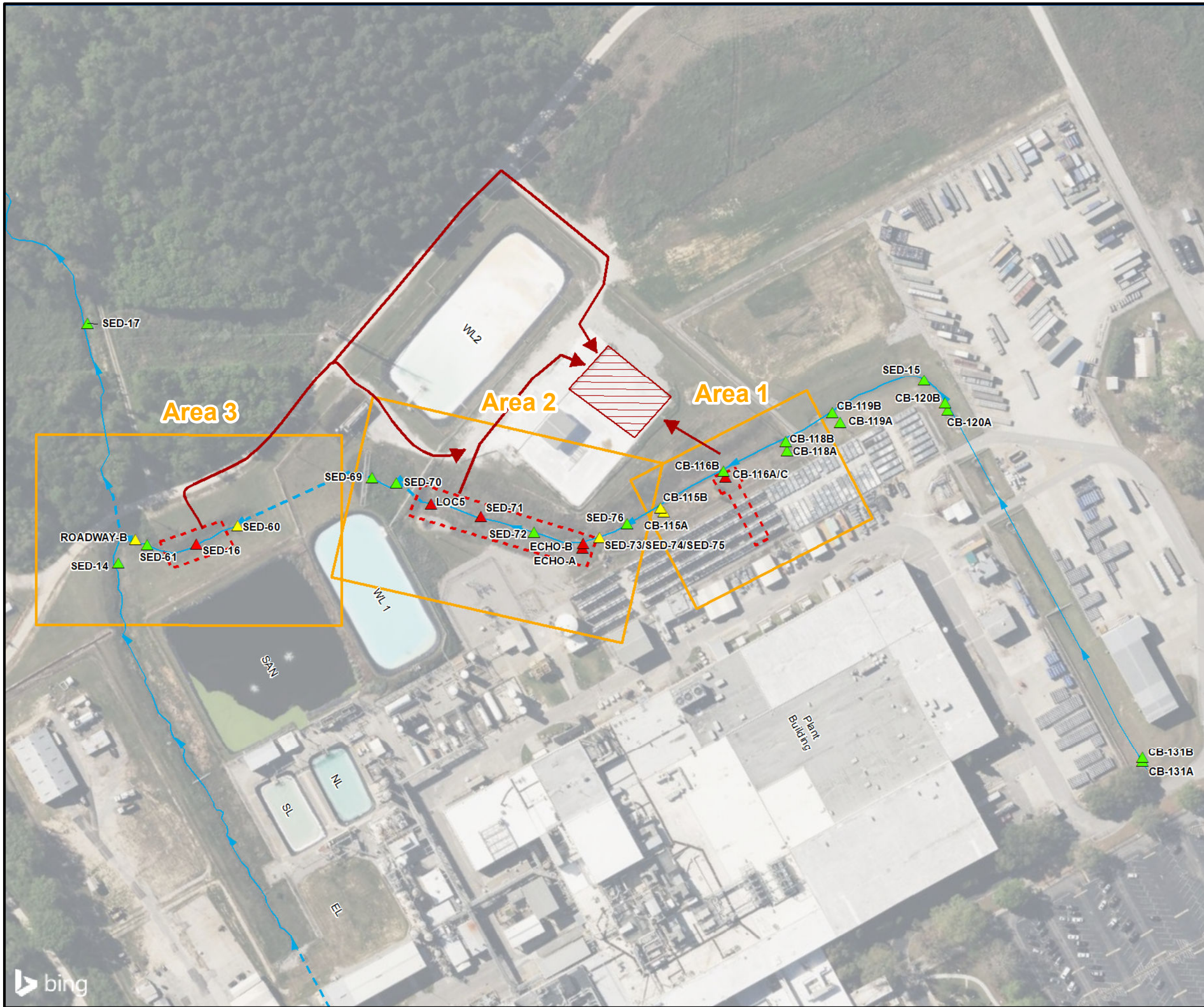
Map Projection: NAD 1983, South Carolina State Plane, FIPS 3900, Feet
Datum: North American 1983



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Middle Ditch Removal Action Work Plan
Sediment Analytical Results
WESTINGHOUSE COLUMBIA FUEL FABRICATION FACILITY
HOPKINS, SOUTH CAROLINA

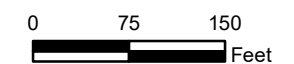
PROJECT NO. 60700386	PREPARED BY CCS	DATE November 2024	FIGURE 3
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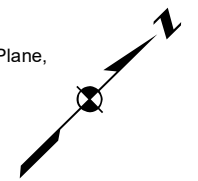
Legend

- ▲ Sediment Sample Location with a DCGL SOF less than 0.5
- ▲ Sediment Sample Location with a DCGL SOF between 0.5 and 0.9
- ▲ Sediment Sample Location with a DCGL SOF greater than or equal to 1
- DCGL Modified Derived Concentration Guideline Levels
- SOF Sum of Fractions
- Ditch
- - - Culvert
- Potential Haul Routes
- Soil Storage Bins
- Area Boundary
- Dig Area Boundary
- EL Former East Lagoon
- NL North Lagoon
- SL South Lagoon
- SAN Sanitary Lagoon
- WL1 West Lagoon I
- WL2 West Lagoon II

Note: SOF determined in accordance with RA-433.



Map Projection: NAD 1983, South Carolina State Plane, FIPS 3900, Feet
 Datum: North American 1983

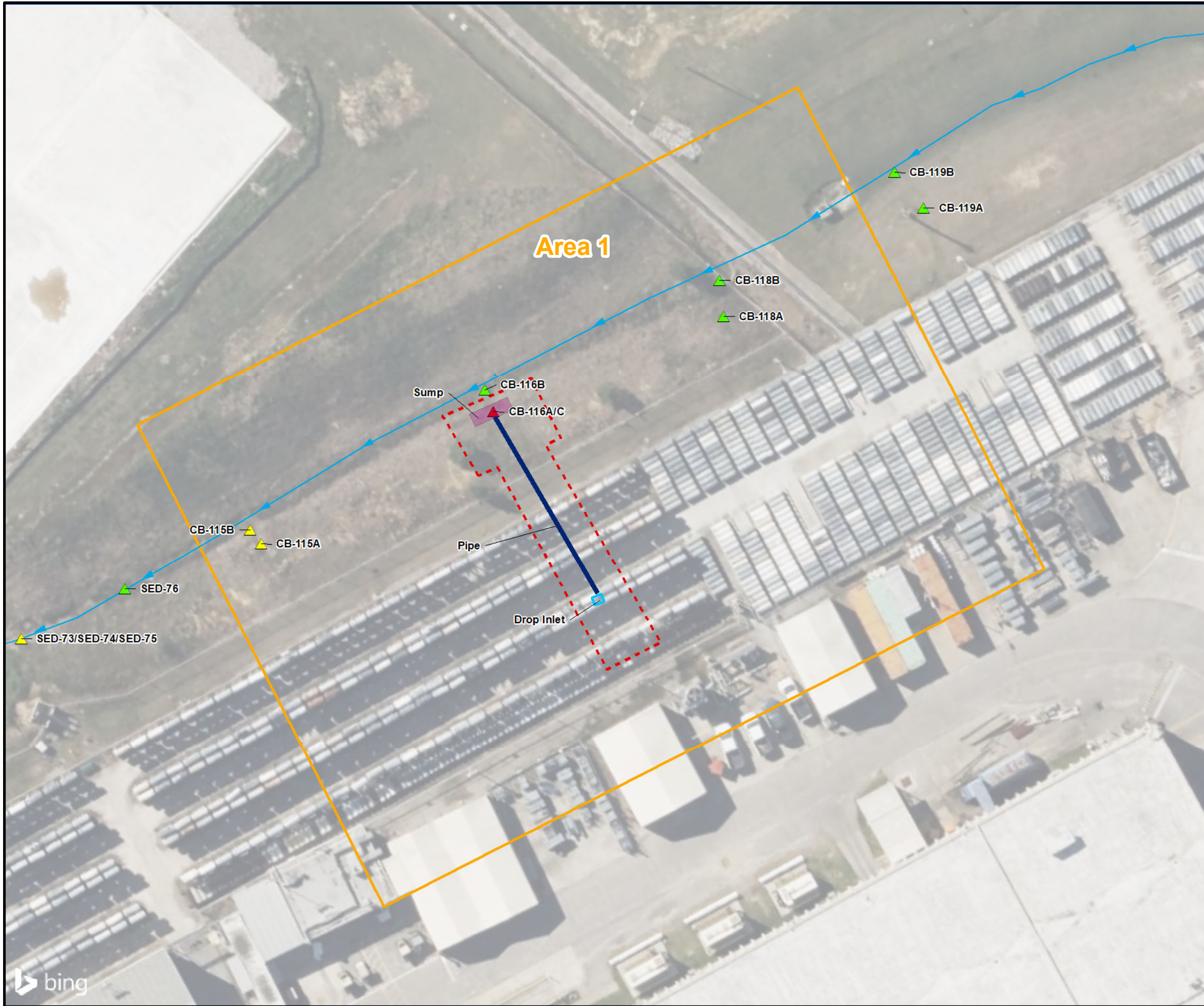


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Middle Ditch Removal Action Work Plan
Middle Ditch Site Plan
 WESTINGHOUSE COLUMBIA FUEL FABRICATION FACILITY
 HOPKINS, SOUTH CAROLINA

PROJECT NO. 60700386	PREPARED BY: CCS	DATE: November 2024	FIGURE 4
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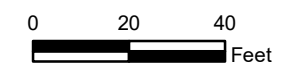




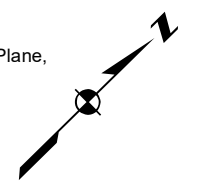
Legend

- ▲ Sediment Sample Location with a DCGL SOF less than 0.5
- ▲ Sediment Sample Location with a DCGL SOF between 0.5 and 0.9
- ▲ Sediment Sample Location with a DCGL SOF greater than or equal to 1
- DCGL Modified Derived Concentration Guideline Levels
- SOF Sum of Fractions
- ▶ Ditch
- - - Culvert
- Area Boundary
- Dig Area Boundary
- EL Former East Lagoon
- NL North Lagoon
- SL South Lagoon
- SAN Sanitary Lagoon
- WL1 West Lagoon I
- WL2 West Lagoon II

Note: SOF determined in accordance with RA-433.



Map Projection: NAD 1983, South Carolina State Plane, FIPS 3900, Feet
 Datum: North American 1983

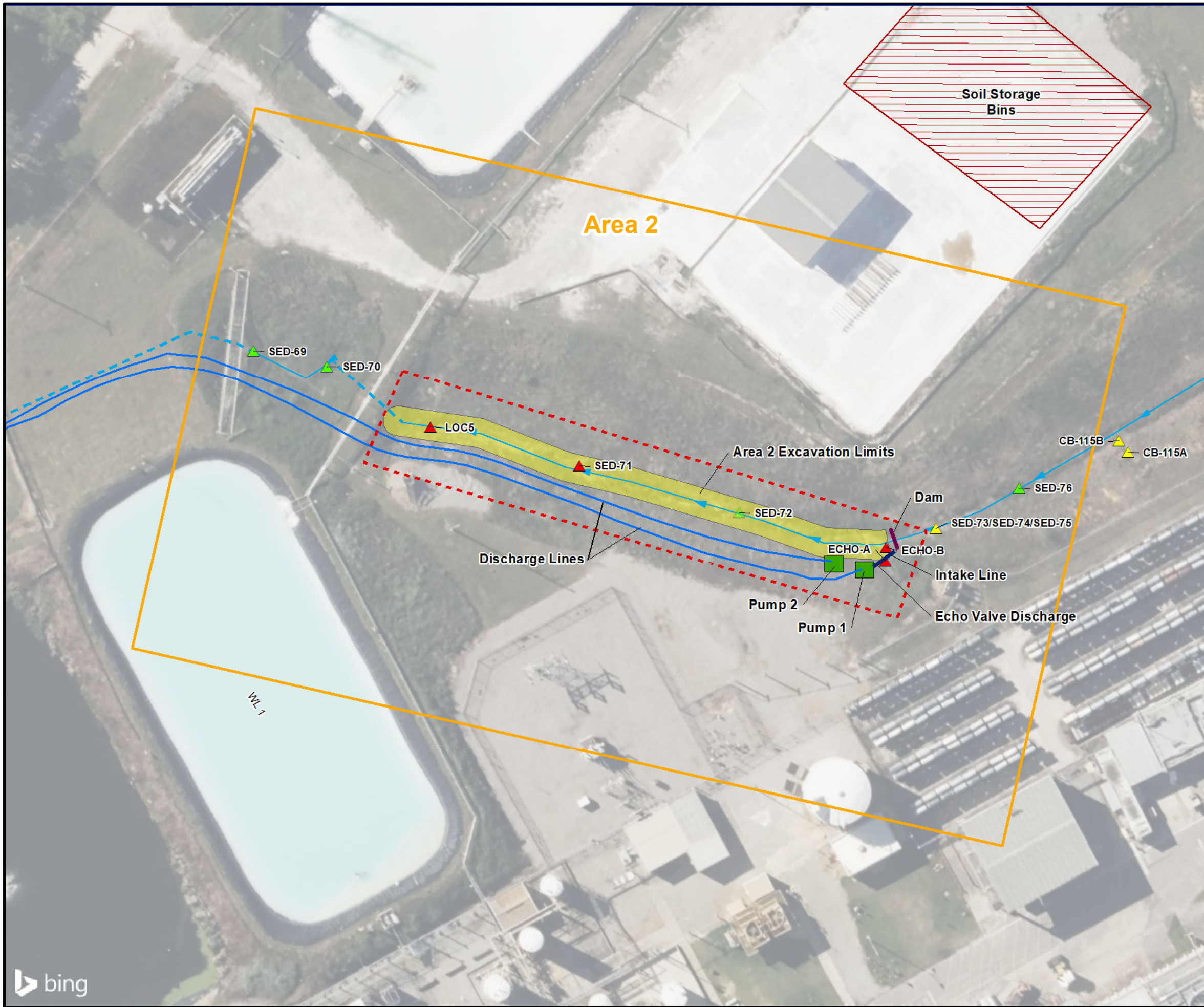


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Middle Ditch Removal Action Work Plan
Area 1 Removal Plan
 WESTINGHOUSE COLUMBIA FUEL FABRICATION FACILITY
 HOPKINS, SOUTH CAROLINA

PROJECT NO. 60700386	PREPARED BY: CCS	DATE: November 2024	FIGURE 5
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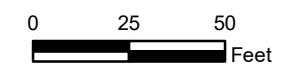


Legend

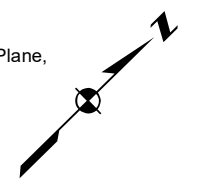
- ▲ Sediment Sample Location with a DCGL SOF less than 0.5
- ▲ Sediment Sample Location with a DCGL SOF between 0.5 and 0.9
- ▲ Sediment Sample Location with a DCGL SOF greater than or equal to 1
- DCGL Modified Derived Concentration Guideline Levels
- SOF Sum of Fractions
- Ditch
- - - Culvert
- Area Boundary
- Dig Area Boundary
- Soil Storage Bins
- Area 2 Excavation (220.33 Cubic Yards)

- EL Former East Lagoon
- NL North Lagoon
- SL South Lagoon
- SAN Sanitary Lagoon
- WL1 West Lagoon I
- WL2 West Lagoon II

Note: SOF determined in accordance with RA-433.



Map Projection: NAD 1983, South Carolina State Plane, FIPS 3900, Feet
 Datum: North American 1983

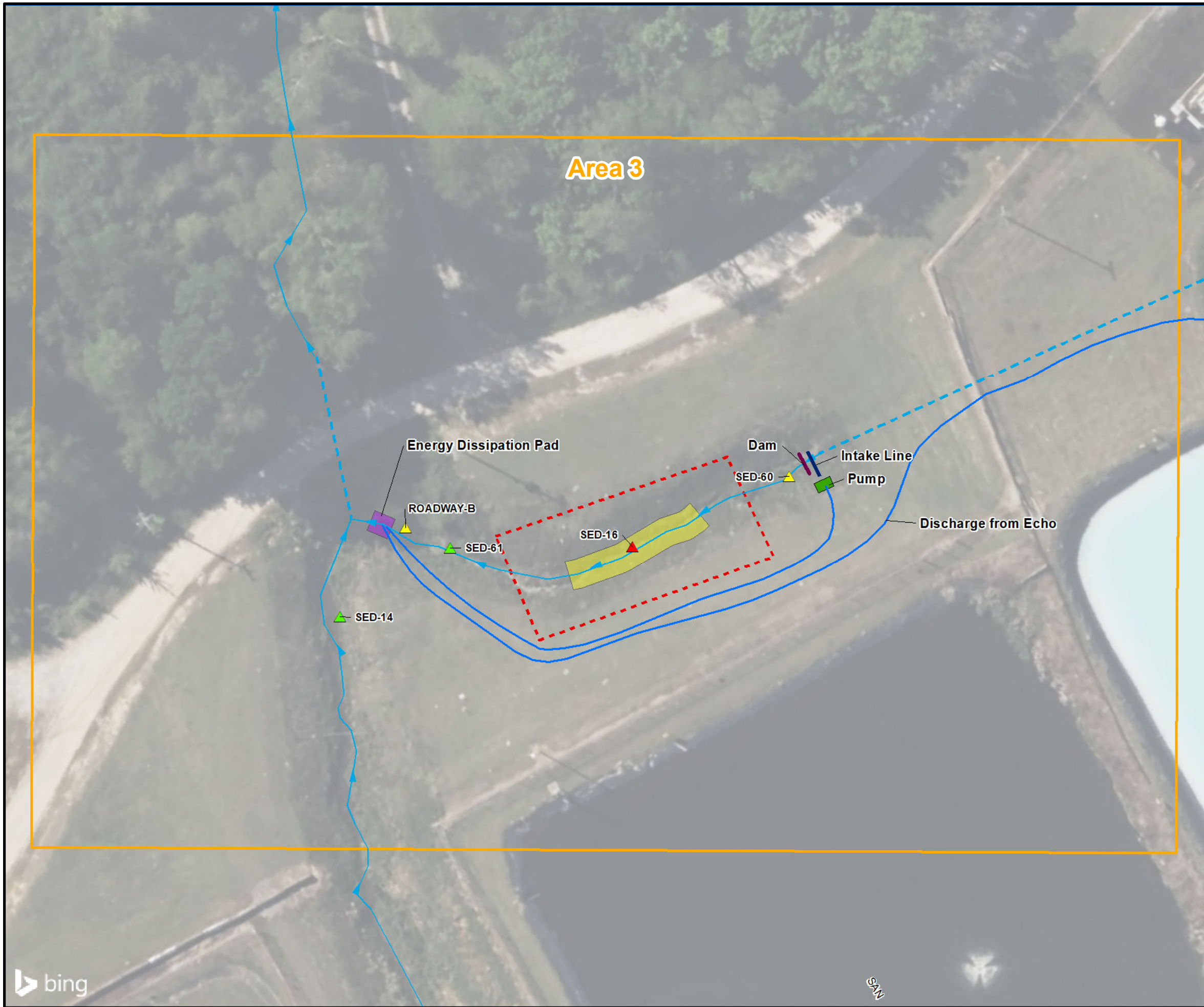


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Middle Ditch Removal Action Work Plan
Area 2 Removal Plan
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 HOPKINS, SOUTH CAROLINA

PROJECT NO. 60700386	PREPARED BY: CCS	DATE: November 2024	FIGURE 6
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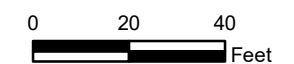


Legend

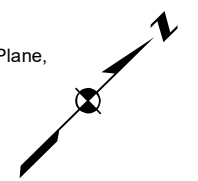
- ▲ Sediment Sample Location with a DCGL SOF less than 0.5
- ▲ Sediment Sample Location with a DCGL SOF between 0.5 and 0.9
- ▲ Sediment Sample Location with a DCGL SOF greater than or equal to 1
- DCGL Modified Derived Concentration Guideline Levels
- SOF Sum of Fractions
- ▶ Ditch
- - - Culvert
- Area Boundary
- Dig Area Boundary
- Area 3 Excavation Limit (39.38 Cubic Yards)
- Energy Dissipation Pad

- EL Former East Lagoon
- NL North Lagoon
- SL South Lagoon
- SAN Sanitary Lagoon
- WL1 West Lagoon I
- WL2 West Lagoon II

Note: SOF determined in accordance with RA-433.



Map Projection: NAD 1983, South Carolina State Plane, FIPS 3900, Feet
 Datum: North American 1983



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Middle Ditch Removal Action Work Plan
Area 3 Removal Plan
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PROJECT NO. 60700386	PREPARED BY: CCS	DATE: November 2024	FIGURE 7
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