EMERGENCY ACTION PLAN
FOR DAM FAILURE

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
(SANTEE COOPER)

FERC PROJECT NO. 199

Santee Dam – National Inventory of Dams No. SC00732
Pinopolis Dam – National Inventory of Dams No. SC01076

South Carolina Public Service Authority
(Santee Cooper)
1 Riverwood Drive
Moncks Corner, SC 29461

CONTROL COPY NUMBER _____

Submitted 07/2020
Revised 12/2024

CONTAINS CRITICAL ENERGY INFRASTRUCTURE INFORMATION
DO NOT RELEASE

STATE OF SOUTH CAROLINA

COUNTY OF BERKELEY, ss:

The undersigned, being duly sworn, states that he has read the following and knows the contents of it, and that all the statements contained in that document are true and correct, to the best of his knowledge and beliefs.

Shea McMakin, P.E.
Superintendent, Gen. Construction Services
Chief Dam Safety Engineer
South Carolina Public Service Authority
(Santee Cooper)

Sworn to and subscribed before me this 18th day of December, 2024.

Signature of S.C. Notary Public

My Commission Expires July 29, 2031

SEAL

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I.A. NOTIFICATION FLOWCHARTS – SANTEE SYSTEM

I.A.1. Typical Messages

Typical messages can be found ahead of corresponding flowcharts.

Figure I-1 Santee Verification Procedure

See Figure I-1 enclosed

FIGURE I–1. SANTEE VERIFICATION PROCEDURE

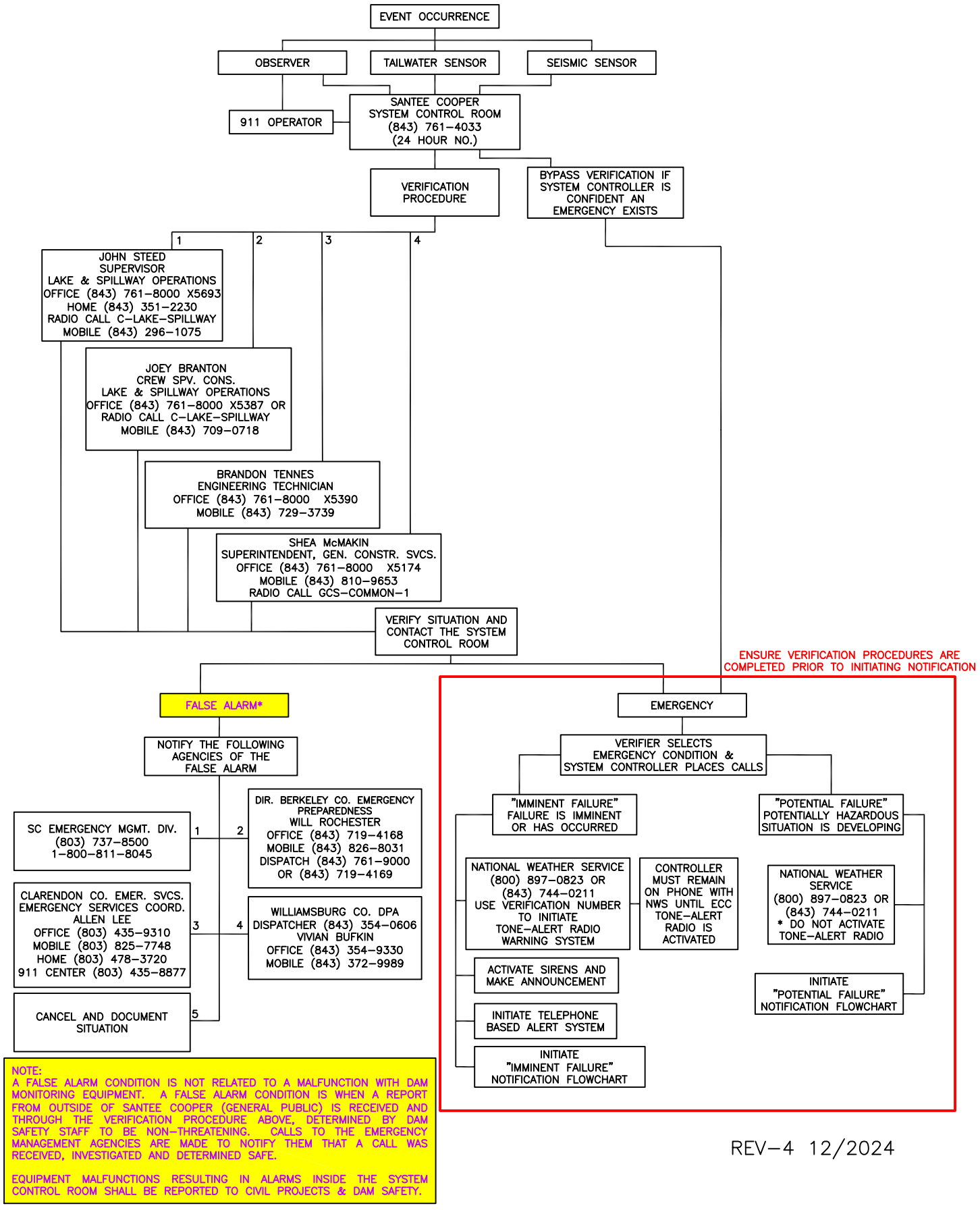

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Figure I-2 Santee Imminent Failure Notification Flowchart

See Figure I-2 enclosed.

Typical Message:

Imminent Failure Emergency Condition

"This is (System Operator's Name) with Santee Cooper in Moncks Corner. We have a ***Dam Failure*** emergency at our (Name of Structure) facility. This condition mandates an immediate evacuation of all floodplain residents upstream of U.S. Highway 52. Do you understand that all floodplain residents upstream of U.S. Highway 52 must be evacuated from their homes?"

Please refer to the copy of Santee Cooper's Emergency Action Plan for Dam Failure on file with your office for additional information.

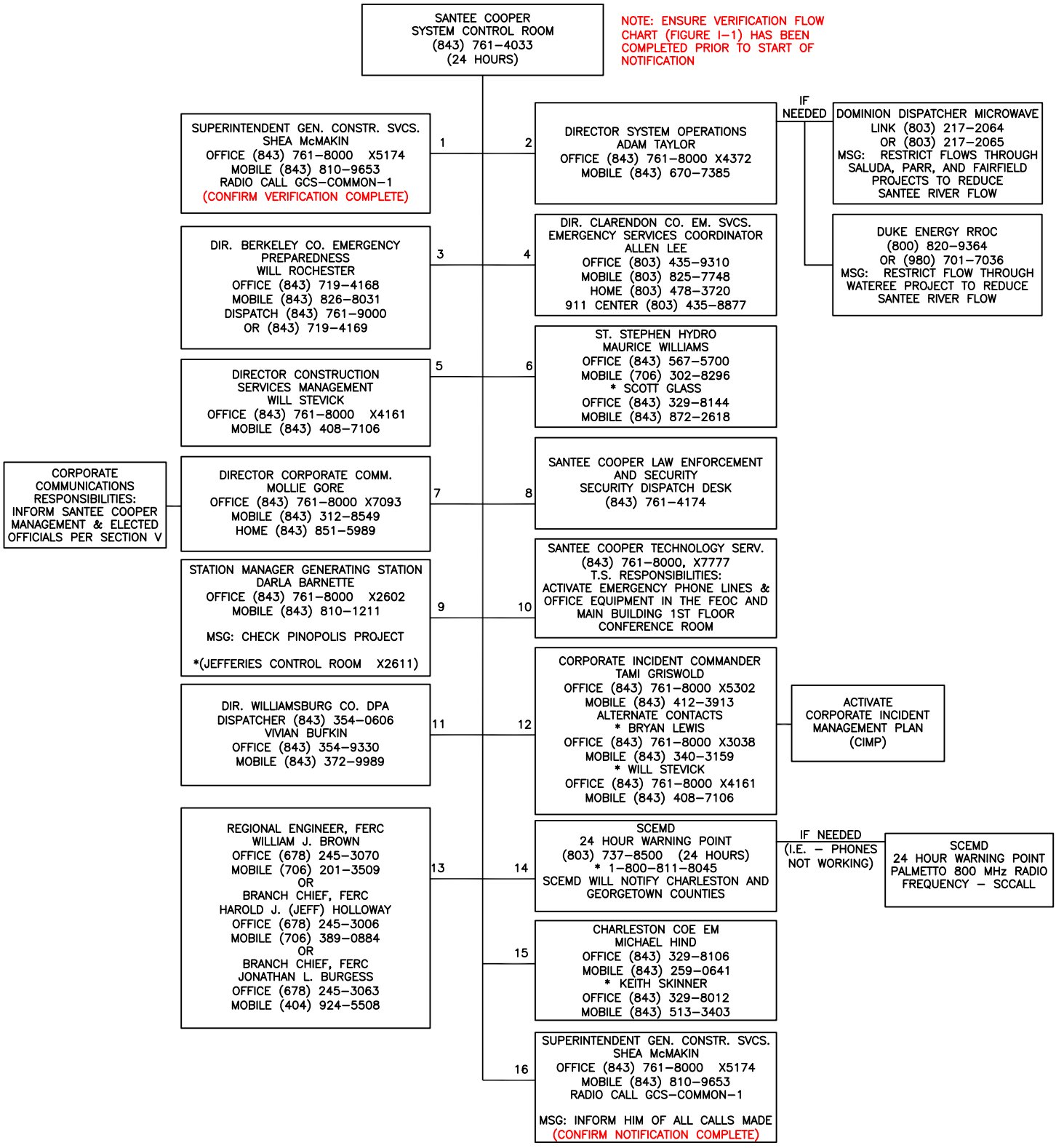
Periodic Test

"This is (System Operator's Name) with Santee Cooper in Moncks Corner. We are conducting a test of our Emergency Action Plan for Dam Failure. This is only a test. We have a "Test Imminent Dam Failure Condition" at the Santee Dam. Do you understand that this is only a test?

We intend to conduct these tests on a regular basis to be certain all response personnel are familiar with their required actions. Thank you for your assistance."

FIGURE I–2. SANTEE "IMMINENT FAILURE" NOTIFICATION FLOWCHART

MESSAGE: FAILURE IS IMMINENT OR HAS OCCURRED



* INDICATES ALTERNATE PHONE NUMBER

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Figure I-3 Santee Potential Failure Notification Flowchart

See Figure I-3 enclosed.

Typical Message:

Potential Failure Emergency Condition

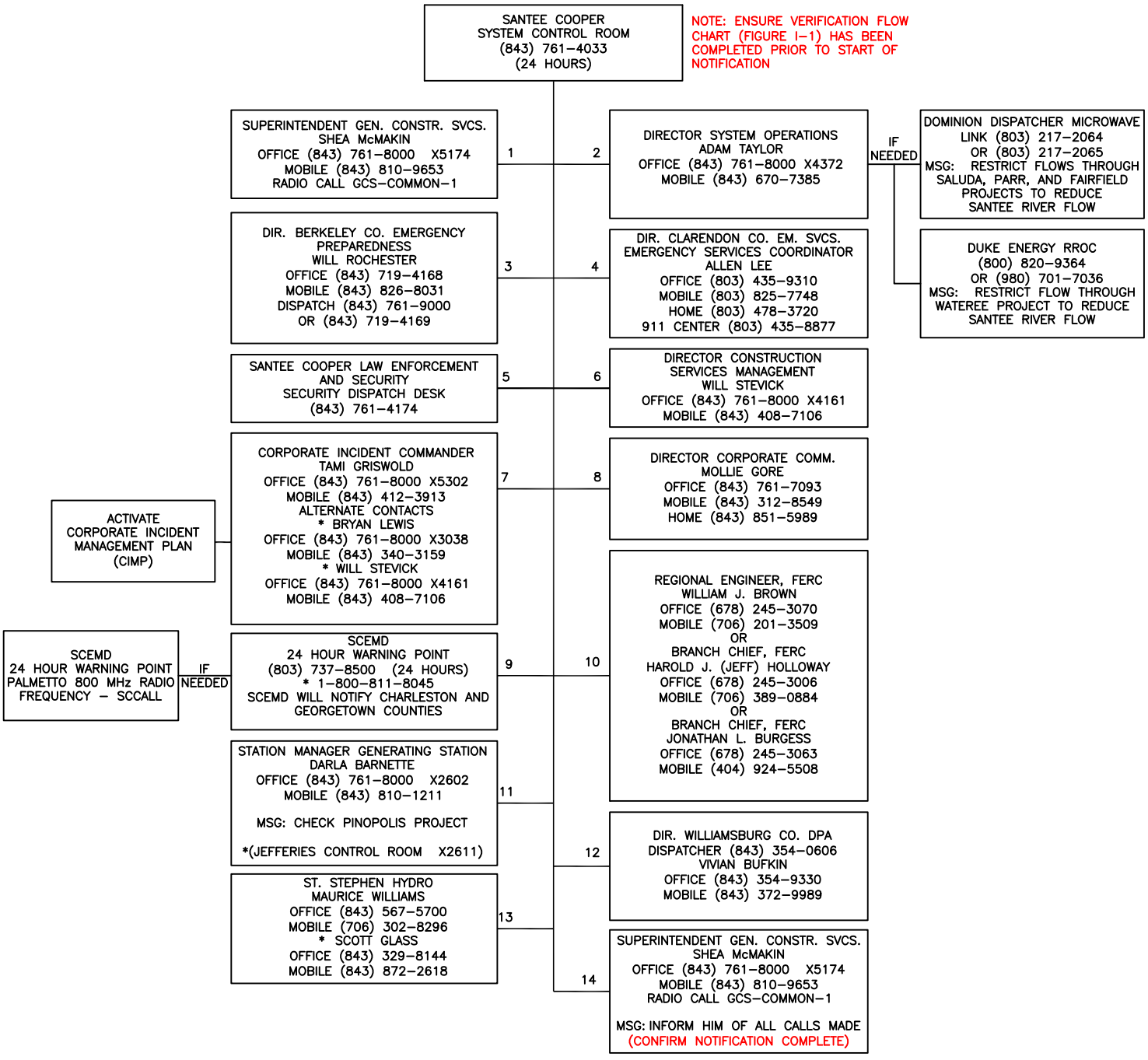
"This is (System Operator's Name) with Santee Cooper in Moncks Corner. We have a ***Potential Dam Failure*** condition at our (Name of Structure) facility. This condition mandates that you set up your lines of emergency communications with your staff such that you will be able to immediately respond to a possible evacuation order. Floodplain residents should not be evacuated at this time. This is not a test. Do you understand that you should set up your lines of emergency communications but should not evacuate floodplain residents?"

Please refer to the copy of Santee Cooper's Emergency Action Plan for Dam Failure on file with your office for additional information.

We will advise you if the status of this condition changes.

FIGURE I–3. SANTEE "POTENTIAL FAILURE" NOTIFICATION FLOWCHART

MESSAGE: POTENTIALLY HAZARDOUS SITUATION DEVELOPING



* INDICATES ALTERNATE PHONE NUMBER

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Figure I-4 Santee High Flow Notification Flowchart

See Figure I-4 enclosed.

Typical Message:

High Flow Situation

"This is (System Operator's Name) with Santee Cooper in Moncks Corner. We have a ***High Flow*** situation at our Santee Dam facility. This situation mandates that you set up your lines of emergency communications with your staff such that you will be able to immediately respond to a possible evacuation order for residents in the Santee River Floodplain as well as upstream lake front residents. Floodplain residents and lake front residents should not be evacuated at this time. Do you understand that you should set up your lines of emergency communications but should not evacuate floodplain and lake front residents?"

Please refer to the copy of Santee Cooper's Emergency Action Plan for Dam Failure on file with your office for additional information.

We will advise you if the status of this condition changes.

High Flow Emergency Condition

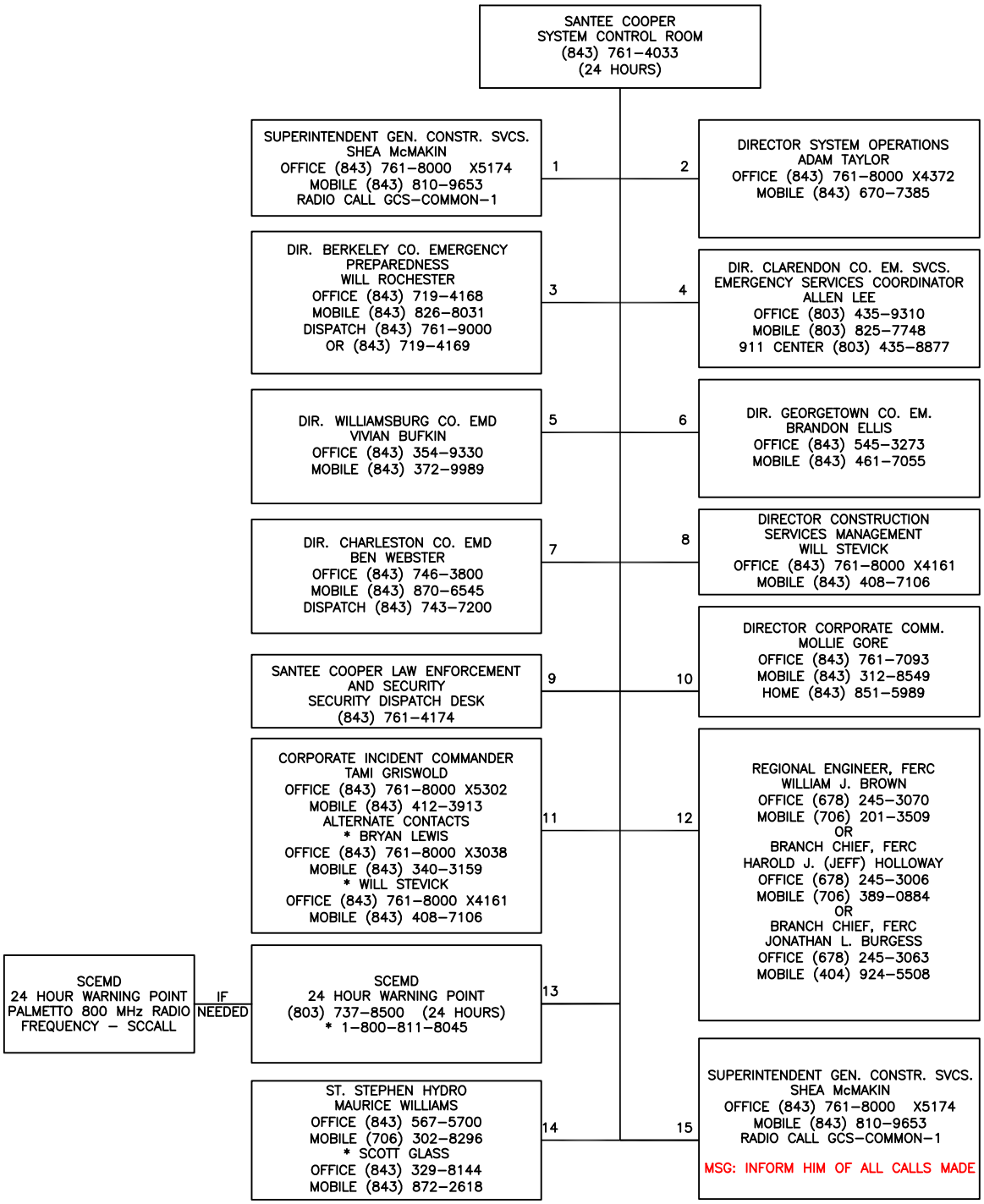
"This is (System Operator's Name) with Santee Cooper in Moncks Corner. We have a ***High Flow Emergency Condition*** at our Santee Dam facility. This condition mandates your lines of emergency communications with your staff have been set up to be able to immediately respond to a possible evacuation order for residents in the Santee River Floodplain as well as upstream lake front residents. Floodplain residents and lake front residents should not be evacuated at this time. Do you understand that at this point your lines of emergency communications should be set up?"

Please refer to the copy of Santee Cooper's Emergency Action Plan for Dam Failure on file with your office for additional information.

We will advise you if the status of this condition changes.

FIGURE I–4. SANTEE INITIAL "HIGH FLOW" (75K – 550K CFS) NOTIFICATION FLOWCHART

MESSAGE: HIGH FLOW SITUATION



* INDICATES ALTERNATE PHONE NUMBER

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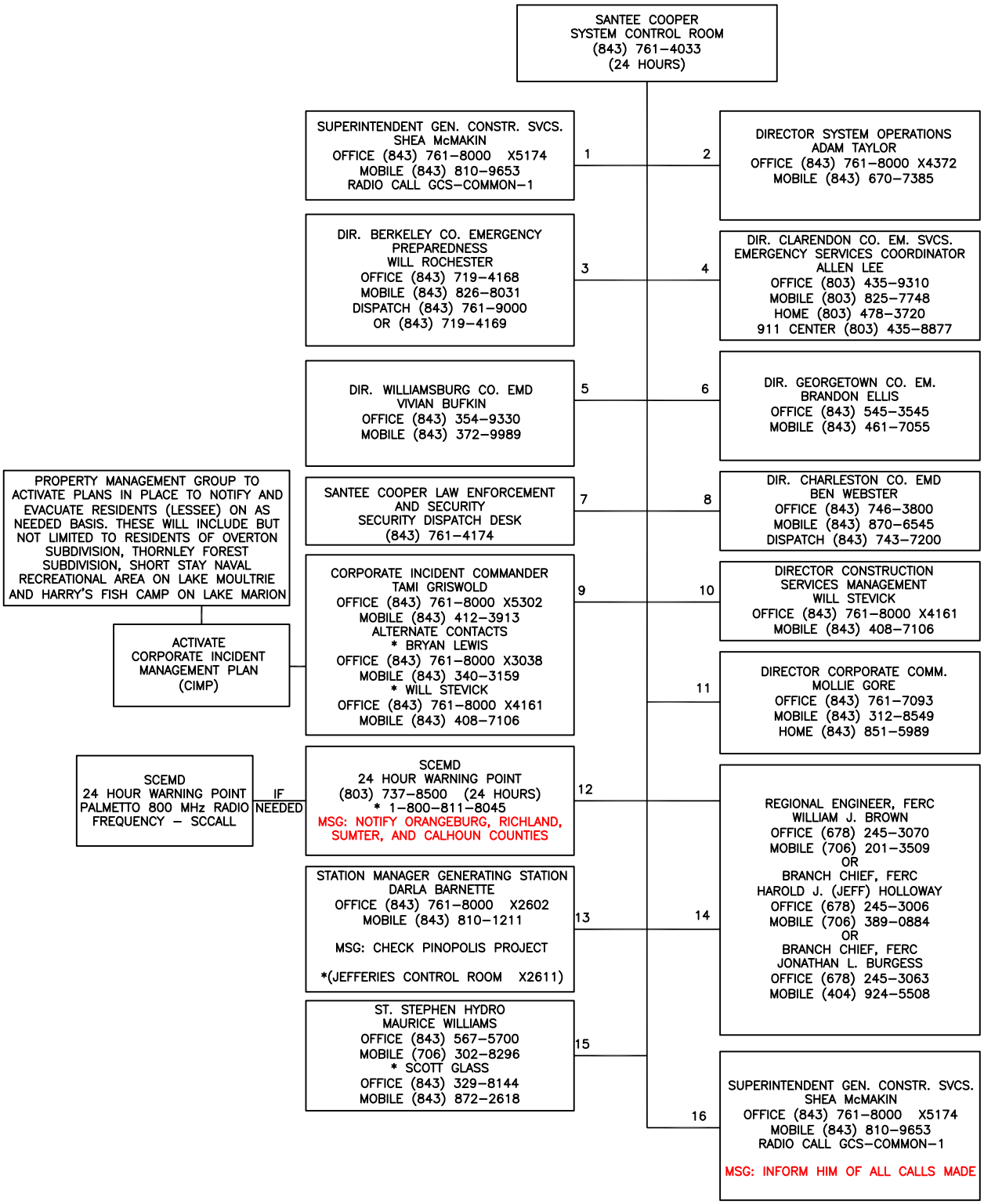
FIGURE I–4. SANTEE "HIGH FLOW EMERGENCY CONDTION" NOTIFICATION FLOWCHART

MESSAGE: HIGH FLOW EMERGENCY CONDITION



* INDICATES ALTERNATE PHONE NUMBER

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I.B. NOTIFICATION FLOWCHARTS – PINOPOLIS SYSTEM

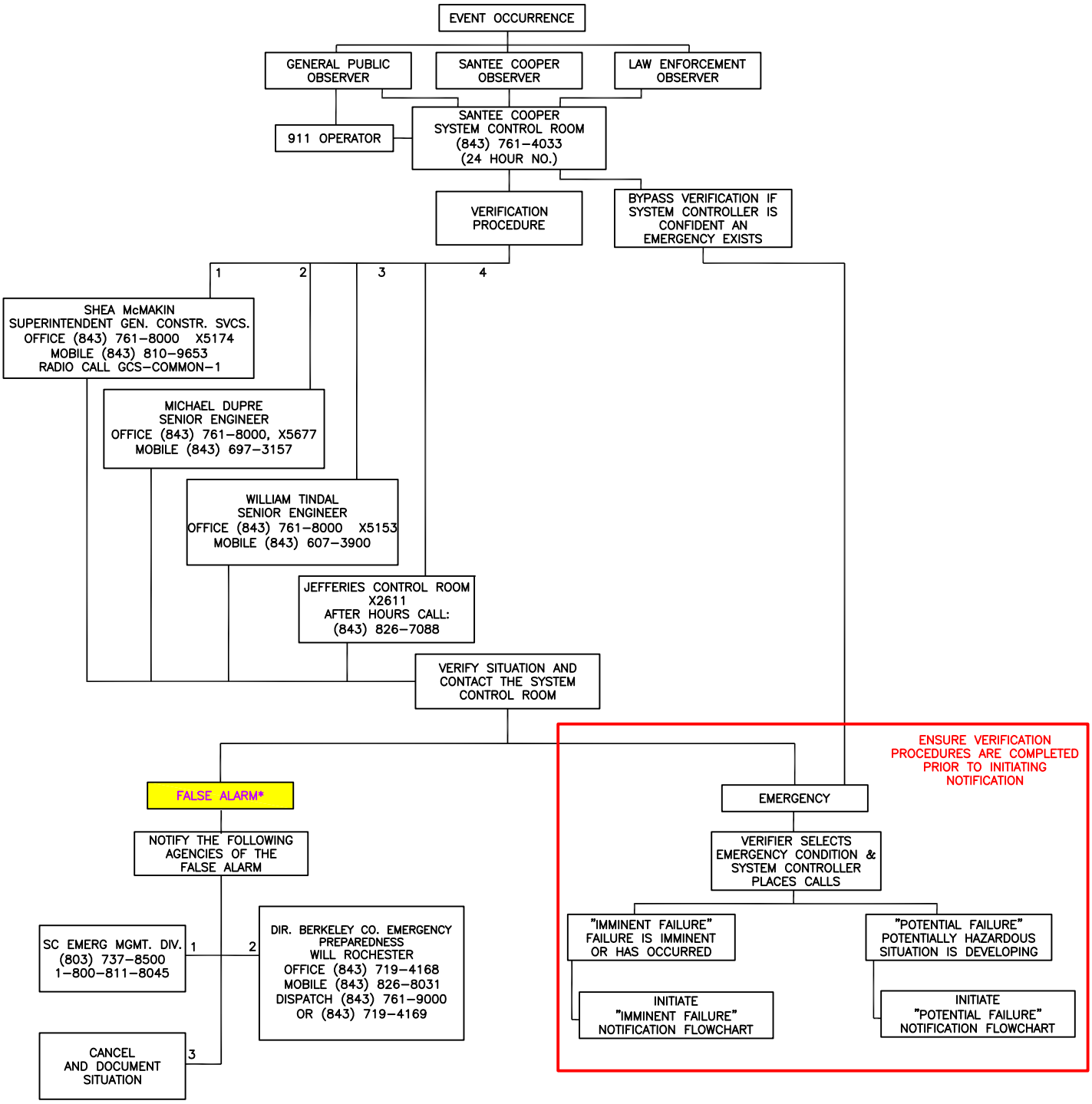
I.B.1. Typical Messages for Pinopolis System

Typical messages can be found ahead of corresponding flowcharts.

Figure I-5 Pinopolis Verification Procedure

See Figure I-5 enclosed.

FIGURE I–5. PINOPOLIS VERIFICATION PROCEDURE



NOTE:
A FALSE ALARM CONDITION IS NOT RELATED TO A MALFUNCTION WITH DAM MONITORING EQUIPMENT. A FALSE ALARM CONDITION IS WHEN A REPORT FROM OUTSIDE OF SANTEE COOPER (GENERAL PUBLIC) IS RECEIVED AND THROUGH THE VERIFICATION PROCEDURE ABOVE, DETERMINED BY DAM SAFETY STAFF TO BE NON–THREATENING. CALLS TO THE EMERGENCY MANAGEMENT AGENCIES ARE MADE TO NOTIFY THEM THAT A CALL WAS RECEIVED, INVESTIGATED AND DETERMINED SAFE.

EQUIPMENT MALFUNCTIONS RESULTING IN ALARMS INSIDE THE SYSTEM CONTROL ROOM SHALL BE REPORTED TO CIVIL PROJECTS & DAM SAFETY.

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Figure I-6 Pinopolis Imminent Failure Notification Flowchart

See Figure I-6 enclosed.

Typical Message:

Imminent Failure Emergency Condition

"This is (System Operator's Name) with Santee Cooper in Moncks Corner. We have a ***Dam Failure*** emergency at our (Name of Structure) facility. This condition mandates an immediate evacuation of all floodplain residents. This is not a test. Do you understand that all floodplain residents must be evacuated from their homes?"

Please refer to the copy of Santee Cooper's Emergency Action Plan for Dam Failure on file with your office for additional information.

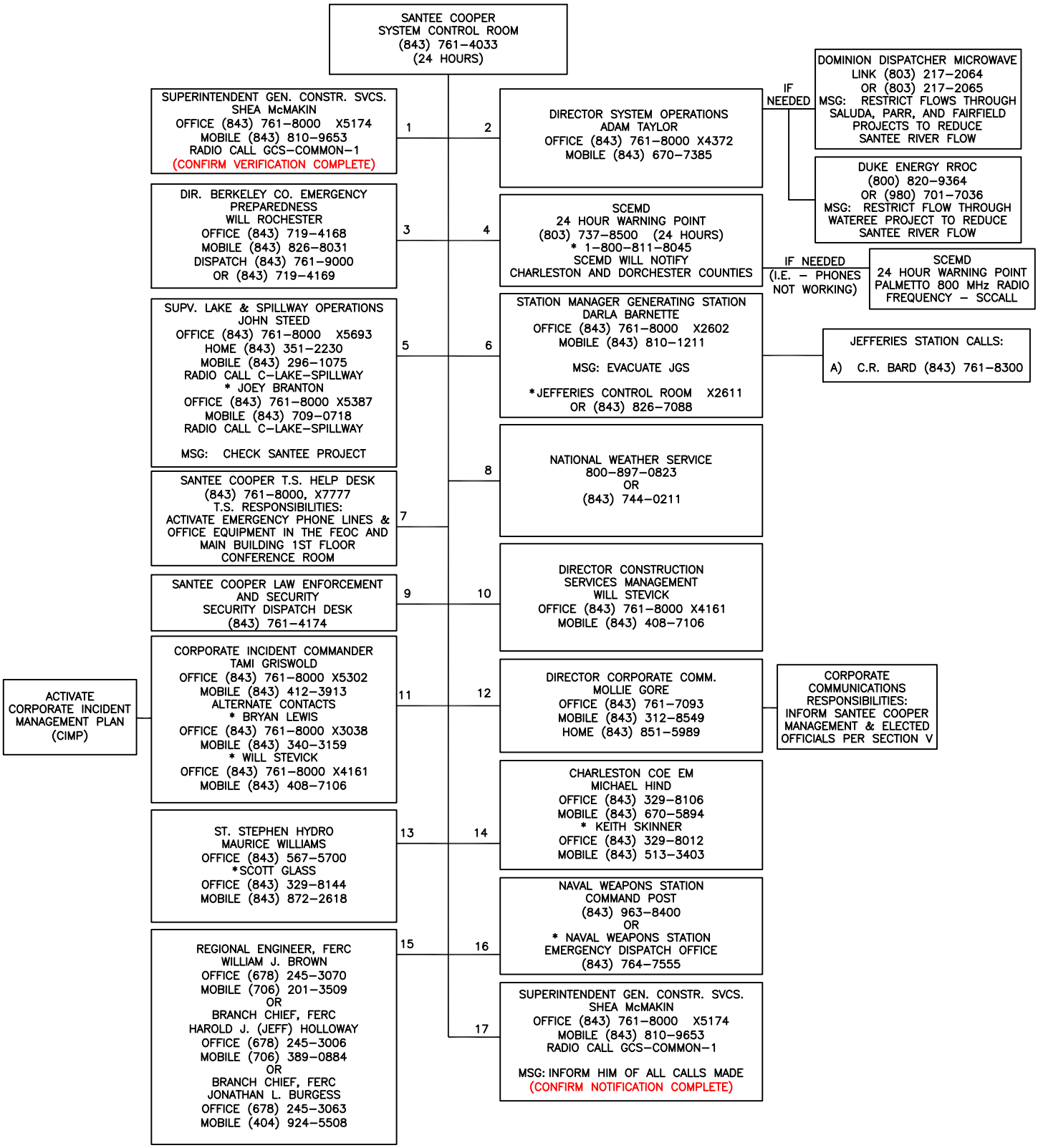
Periodic Test

"This is (System Operator's Name) with Santee Cooper in Moncks Corner. We are conducting a test of our Emergency Action Plan for Dam Failure. This is only a test. We have a "Test Imminent Dam Failure Condition" at the Pinopolis Dam. Do you understand that this is only a test?

We intend to conduct these tests on a regular basis to be certain all response personnel are familiar with their required actions. Thank you for your assistance."

FIGURE I–6. PINOPOLIS "IMMINENT FAILURE" NOTIFICATION FLOWCHART

MESSAGE: FAILURE IS IMMINENT OR HAS OCCURRED



* INDICATES ALTERNATE PHONE NUMBER

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Figure I-7 Pinopolis Potential Failure Notification Flowchart

See Figure I-7 enclosed.

Typical Message:

Potential Failure Emergency Condition

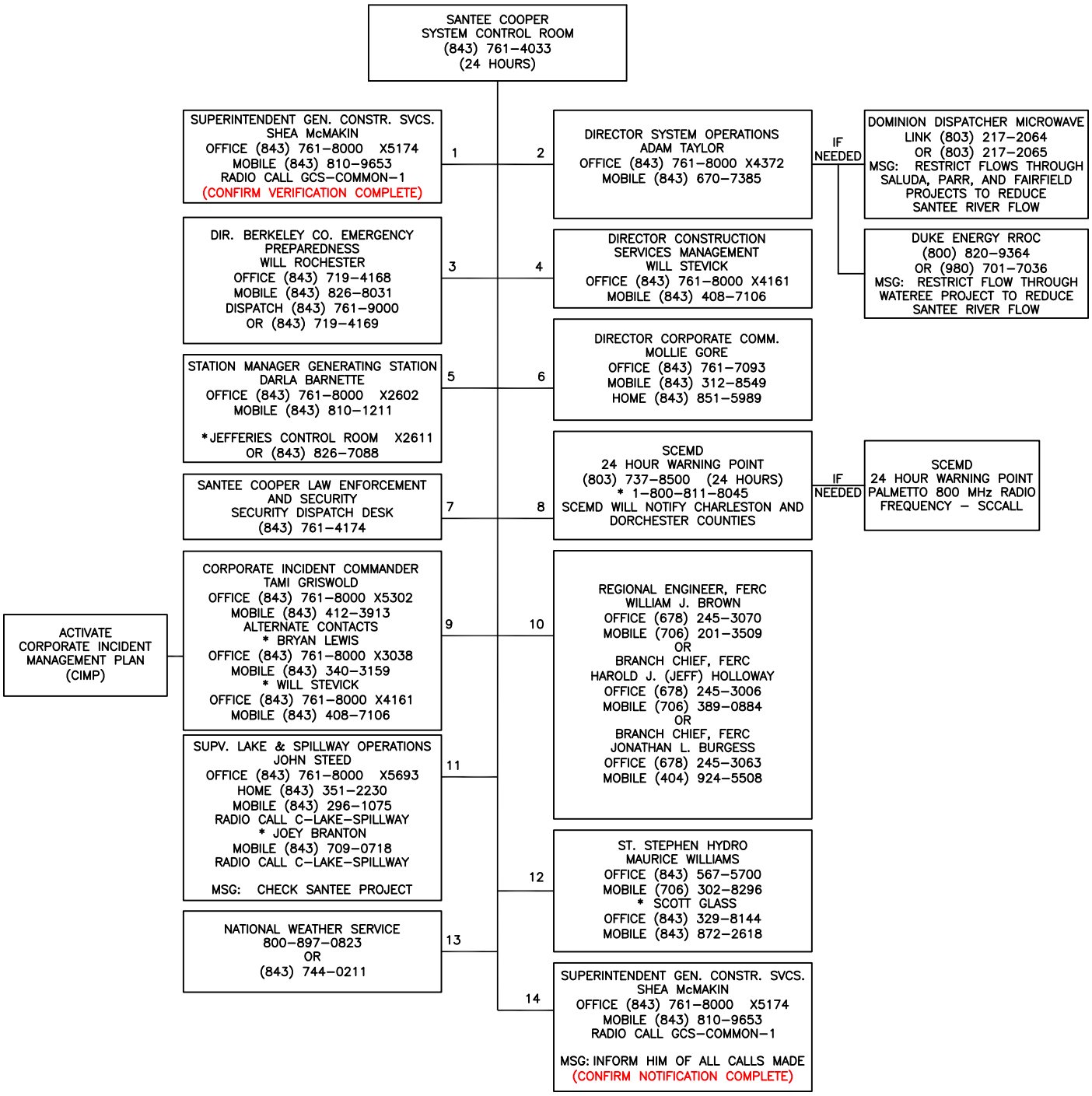
"This is (System Operator's Name) with Santee Cooper in Moncks Corner. We have a ***Potential Dam Failure*** condition at our (Name of Structure) facility. This condition mandates that you set up your lines of emergency communications with your staff such that you will be able to immediately respond to a possible evacuation order. Floodplain residents should not be evacuated at this time. This is not a test. Do you understand that you should set up your lines of emergency communications but should not evacuate floodplain residents?"

Please refer to the copy of Santee Cooper's Emergency Action Plan for Dam Failure on file with your office for additional information.

We will advise you if the status of this condition changes.

FIGURE I–7. PINOPOLIS "POTENTIAL FAILURE" NOTIFICATION FLOWCHART

MESSAGE: POTENTIALLY HAZARDOUS SITUATION DEVELOPING



* INDICATES ALTERNATE PHONE NUMBER

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II. STATEMENT OF PURPOSE

The purpose of this Emergency Action Plan (EAP) is to outline the actions required to identify, mitigate, and respond to emergencies that, although rare, could occur in the operation of Santee Cooper dam-related structures. Rapid implementation of this EAP is necessary to help safeguard the lives of downstream inhabitants.

This plan addresses the actions to be taken in response to developing and fully developed emergencies at the Pinopolis East Dam, Pinopolis Powerhouse, Pinopolis Lock, Pinopolis West Dam, Santee North Dam, Santee Spillway and Santee South Dam. Potential emergencies include dam failure or the uncontrolled release of water through damaged gates.

The primary intent of this plan is to describe the responsibilities of Santee Cooper personnel during an emergency and to identify the impact such an occurrence would have in the floodplain downstream of the structures. Fortunately, the South Carolina Emergency Management Division (SCEMD) has developed an extensive emergency response system, which includes all pertinent local, state, and volunteer agencies. Once Santee Cooper has identified an emergency and notified the immediately affected counties and SCEMD, the SCEMD's statewide system governs further emergency activities with Santee Cooper playing a supporting role as needed. A Memorandum of Understanding outlining the responsibilities of each party and signed by representatives of Santee Cooper, SCEMD, Berkeley County, Charleston County, Clarendon County, Georgetown County and Williamsburg County is included as *Appendix F* as *Exhibit F-1*. A list of EAP recipients is provided in *Tables C-2 and C-3* for internal and external plan holders respectively.

Santee Cooper's Emergency Action Plan for Dam Failure (EAP) has been prepared under the guidance of the Federal Energy Regulatory Commission and is available to you as a part of the South Carolina Emergency Management Division's emergency response network. ***The EAP contains confidential information in terms of dam safety and security and should not be copied or distributed, part or entirely, without the express written consent of Santee Cooper.***

III. PROJECT DESCRIPTION

The Santee Cooper Project, FERC project number 199, was completed in November of 1941. Its purpose was to develop the Santee, Cooper, and Congaree Rivers for navigation, to produce, distribute and sell electric power, to reclaim and drain swampy lands, to reforest the watersheds of the State's rivers, and to provide flood control for the downstream reaches of the Santee and Cooper Rivers.

The Santee Cooper Project consists of dams across the Santee River and the Cooper River forming Lakes Marion and Moultrie respectively (refer to project map page III-4). These two lakes are connected via a 7.56-mile-long Diversion Canal. The Santee Dam System includes the North Dam, the South Dam, and the Spillway. The Cooper Dam System, more commonly known as the Pinopolis Dam System, includes the East Dam, the West Dam, the Pinopolis Lock, the Pinopolis Powerhouse, and approximately 30 miles of perimeter dikes.

In the mid-1980's, the United States Army Corps of Engineers constructed the St. Stephen Hydropower Facility on Lake Moultrie. Santee Cooper remotely operates the St. Stephen facility from Moncks Corner under the terms and conditions of a government contract. Although this facility contributes to the hydraulic operations of the Santee Cooper project, it is maintained by the Corps and is not considered a part of this FERC regulated project. As such, potential emergencies associated with the St. Stephen Facility and its appurtenances are addressed in the Emergency Action Plan for St. Stephen Hydropower Facility, July 1997, published and maintained by the U. S. Army Corps of Engineers.

Pertinent features of the structures associated with the Santee Cooper project are provided below:

Structure	Length (MI)	Material	Principal Method of Construction
Pinopolis System			
East Dam	0.98	Earthen	Compacted Fill
East Dam Gravity	0.03	Concrete	Gravity
Hydro & Lock	0.10	Concrete	Gravity
East Dam Extension	4.94	Earthen	Compacted Fill
East Dike	5.81	Earthen	Compacted Fill
North Dike	7.06	Earthen	Compacted Fill
West Dam	1.48	Earthen	Compacted Fill
West Dam Extension	2.00	Earthen	Compacted Fill
West Dike	9.70	Earthen	Compacted Fill
Diversion Canal			
Diversion Canal	7.56	Earthen	Compacted Fill
Santee System			
North Dam	4.41	Earthen	Hydraulic Fill
Spillway	0.64	Concrete	Gravity
South Dam	2.76	Earthen	Compacted Fill

The project drainage area is characterized by relatively flat farmland and timberland. Numerous fishing camps and boat landings are located along the shores of both lakes.

The area downstream of the Santee Dam System is flat and sparsely populated swampland, timberland, and grassland. Occasional flooding is common in this region.

The area downstream of the Pinopolis Dam System is flat and populated. Further down-river, industry and military installations would be affected by flooding.

All project related structures and downstream communities are shown on *Figure III-1 Santee Cooper Project Map*.

Figure III-1 Santee Cooper Project Map

See Figure III-1 enclosed.

Figure III-1. Santee Cooper Project Map

IV. EAP RESPONSE PROCESS

IV.A. INCIDENT DETECTION, EVALUATION, AND EMERGENCY LEVEL DETERMINATION

The following information is provided to aid in emergency response to an unusual condition or incident detected and/or confirmed on the Santee Cooper Project. Included below are descriptions of current measures for detecting existing and potential failures, descriptions of monitoring equipment and early warning systems, descriptions of current inspection procedures, and processes for evaluating and confirming an incident's condition and emergency classification.

IV.A.1. Project Inspections

Santee Cooper personnel inspect all dams and dikes weekly and record instrumentation readings monthly. FERC representatives visit the project and prepare an inspection report on an annual basis. FERC approved Independent Consultants inspect the project and prepare comprehensive reports every five years. In addition, Santee Cooper maintenance forces work in different areas of the Project on a continually changing basis.

All recommendations made by each of these inspectors are addressed by Santee Cooper. Those recommendations requiring remedial work are forwarded to Santee Cooper's maintenance crews for action. Typical maintenance operations include french drain installation, spillway gate repairs, seeding and the like.

IV.A.2. Remote Sensors and Early Warning Devices

Santee Cooper has installed a limited series of remote sensors at the Santee North Dam to detect rising headwater levels, rising tail water levels and seismic activities. The Pinopolis system is monitored by one (1) officer on site 24/7 accompanied by locked facility doors and a camera. The officer on duty remains at the gate during dayshift unless an emergency occurs. The officer on duty patrols the Pinopolis System to monitor perform real-time training scenarios to ensure safety area during nightshifts and weekends. As of 2023, Jefferies Generation Sation (JGS) completed installation of new locks on the facility doors, that remain locked. There is one (1) camera on top of the hydro that is recording in real time and is being monitored at the JGS security station, the security operation center (SOC), and the HQ main desk.

1. Inflow Measurement Gages: Santee Cooper queries several flow gages along the reach of the Santee River upstream of Lake Marion during adverse weather to determine if there may be a potential for spillway operation. Such an occurrence would involve the mobilization of the spillway crew for as long as needed.

2. Raised Tailwater Detectors: Six tail water sensors are installed at 4,000-foot intervals along the Santee North Dam's toe road. These sensors would be activated by rising water or a failure of the radio transmitters (upgraded January 17, 2023) associated with a dam break and would sound an alarm in the system operator's work area. The radio transmitters are products of Banner Engineering - Model DXM100-S1R2 Wireless MODBUS SLAVE, MULTIHOP radio. The controller (housed in the Spillway Communication Building) monitoring the slave radios is a Banner Engineering - Model DXM700-B1R2 Wireless MODBUS MULTIHOP controller which has a hardwired MODBUS connection to the Bulk Comms System to transmit data to ECC. An alarm of this system will mandate that the system operator initiates the verification flowchart. The system is checked monthly to ensure communication with ECC is met.

3. Santee Spillway Seismic Indicator: A seismic trigger is installed in the Santee Spillway hydro plant and set to activate at a predetermined seismic acceleration. The old seismic trigger was replaced and upgraded with a Kinemetrics ETNA 2 unit on January 5th, 2023. The seismic instrument is also connected to a radio transmitter made by Banner Engineering - Model DXM 100-S1R2 Wireless MODBUS SLAVE, MULTIHOP radio and connected in series with the tail water detectors. Activation of the trigger sounds an alarm in the system operator's work area and mandates use of the verification flowchart. The system is checked monthly to ensure communication with ECC is met.

4. Pinopolis Powerhouse (Jefferies Hydro Station) Seismic Indicator: A seismic trigger accelerometer/recorder was installed in the Pinopolis Powerhouse in 2015. Although not required by the FERC, and not connected to any alarms or advanced warning systems, this instrument does allow for data retrieval and evaluation. The system is checked monthly to ensure communication with ECC is met.

IV.A.3. Emergency Verification and Condition Classification

All Santee Cooper structures are routinely monitored by Santee Cooper personnel for advance signs of a potential emergency. Local police and citizens may, however, also be able to observe signs of a possible failure condition. In addition, the system operator could be automatically warned of a failure condition at the Santee North Dam via remote tailwater sensors and a remote seismic sensor. No matter how the potential failure condition is identified, it must be reported to the Santee Cooper system operator for verification in accordance with the procedure outlined in the verification flowcharts included in Section I of this EAP.

If the Santee Cooper personnel responsible for verifying the occurrence determines that an emergency condition does in fact exist, **they must classify the seriousness of the occurrence** and alert the system operator. The system operator must initiate the appropriate emergency response procedure defined on the flowcharts included in Section I.

Emergency levels shall be determined by the field personnel verifying the incident. The incident may be classified as one of the following emergency levels:

1. **IMMINENT FAILURE.** The imminent failure emergency level is the worst-case condition and indicates that dam failure is imminent or has occurred. This type of failure typically involves a continuing and progressive loss of material from the dam. It is not usually possible to determine how long a complete breach of a dam will take. Therefore, once a decision is made that there is no time to prevent failure, the Imminent Failure warning must be issued. For evacuation purposes, emergency management authorities should assume the worst-case condition that failure has already occurred.

2. **POTENTIAL FAILURE.** The potential failure emergency level indicates that a potentially hazardous situation is developing. Potential failure emergencies and notifications convey that time is available for analyses, decisions, and actions before the dam could fail. Under this condition periodic updates will be provided to the emergency management authorities. Evacuation of downstream residents is NOT necessary during a potential failure emergency. The reclassification of the emergency to “Imminent Failure” will trigger evacuation of the downstream residents.

3. **HIGH FLOW.** The high flow emergency level indicates that flooding and/or high flows are present within the project drainage basin. Project personnel should use the procedures outlined in the enclosed *Table IV-1 Santee Cooper Project High*

Flow Operation/Notification Table as a guide in the event of a high flow emergency.

4. **NON-FAILURE.** The non-failure emergency level is appropriate for an event at a dam that will not, by itself, lead to a failure, but requires investigation and notification of internal and/or external personnel. Examples of non-failure conditions include spillway gate malfunctions, suspicious activity by unauthorized personnel and the like.

If the occurrence is classified as a false alarm, the operator must inform the party who initially raised the alarm and call the Agencies identified under the "false alarm" branch of the verification flowchart.

Table IV-1 Santee Cooper Project High Flow Operation/Notification Table

See Table IV-1 enclosed.

TABLE IV-1. SANTEE COOPER PROJECT 199
HIGH FLOW OPERATION/NOTIFICATION TABLE

Project Inflow (cfs)	Operation Procedures	Potential Impacts	Organizations to be Notified
0-100k	Maintain spillway and hydro operations as necessary to maintain normal reservoir levels and minimize potential downstream impacts from routine project spilling.	Minor isolated flooding in lower reaches of Santee River.	If spilling is commenced initiate Spill Call List for normal project spilling operations. Spill call list agencies to include Georgetown County EMD and SCEMD to advise of normal project spilling operations
100-550k (550k≈100 Year Storm)	To the extent possible draw reservoirs down to create storage before high flows reach project. Maintain hydro operations and maintain or adjust spillway discharge levels as necessary to maintain normal reservoir levels and minimize potential upstream and downstream impacts. Initiate EAP ***HIGH FLOW*** condition if spillway discharge approaches **75k cfs**. Monitor reservoir levels for rises above historical high levels (El=77 Marion, El=76 Moultrie, NGVD 29) and implement appropriate dam safety monitoring protocol. Maintain spilling operation until inflows subside and normal reservoir levels are restored.	Flooding of low-lying areas and roads in Santee River Floodplain.	When spilling is commenced initiate Spill Call List for normal project spilling operations as cited above. Initiate EAP ***HIGH FLOW*** condition notification flowchart if spillway discharge approaches **75k cfs**.
>550k	To the extent possible draw reservoirs down to create storage before high flows reach project. Maintain hydro operations and open spillway gates to pass inflows and balance lake storage and upstream and downstream impacts. Monitor reservoir levels for rises above historical high levels (El=77 Marion, El=76 Moultrie, NGVD 29) and implement appropriate dam safety monitoring protocol. Maintain spilling operation until inflows subside and normal reservoir levels are restored.	Flooding of homes and low-lying roads in the Santee River Floodplain. Low lying areas surrounding the lakes upstream of dams may begin to see flooding if lake elevations exceed approx. El=77 (NGVD 29) and El=76 (NGVD 29) for Lakes Marion and Moultrie respectively.	Initiate EAP ***HIGH FLOW*** condition notification flowchart if spillway discharge approaches **75k cfs**. If reservoir levels are projected to exceed El=77 and El=76 (NGVD 29) for Lakes Marion and Moultrie respectively, notify SCEMD and the following upstream county EMD's: Berkeley, Clarendon, Orangeburg, Richland, Sumter, and Calhoun.

IV.B. NOTIFICATION AND COMMUNICATION

IV.B.1. Notification

Emergency notification flowcharts have been developed to notify local emergency response personnel, Santee Cooper emergency response personnel and Santee Cooper management of emergencies or potential emergencies. Copies of these flowcharts are included in Section I of this EAP.

The Santee Cooper System Operator's initial response to a verified ***Potential Failure Emergency*** for any structure will be to call all parties listed on the ***Potential Failure Notification Flowchart*** and issue a potentially hazardous situation alert. This alert should not result in the evacuation of the floodplain. Potential failure notification flowcharts are provided in Figures I-3 and I-7, for the Santee and Pinopolis systems respectively.

The system operator's initial response to a verified ***Imminent Failure Emergency for the Santee River System*** is as follows:

1. Call the National Weather Service (NWS)
    a. Advise the NWS of the seriousness of the situation.
    b. Complete the situation verification system.
    c. Instruct the NWS to broadcast the emergency signal which will activate the Tone Alert Radios (TAR) previously distributed to all floodplain residents and remain on the line with the NWS until the TAR located in the Energy Control Center is activated.
2. Activate the Telephone Based Alert System to notify all floodplain residents of the emergency.
3. Activate the 15 floodplain sirens and announce the appropriate warning over the sirens' public address system, and
4. Call all parties listed on ***Figure I-2 Santee Imminent Failure Notification Flowchart*** and inform them that a failure is imminent or has occurred.

All individuals within the Santee River floodplain should be evacuated as directed by the South Carolina Emergency Management Division and each affected County Emergency Preparedness Division.

A verified ***Imminent Failure Emergency for the Pinopolis system*** will result in the system operator calling all parties on the appropriate flowchart and initiating evacuation of the Cooper River floodplain in coordination with the South Carolina Emergency Management Division and each affected County Emergency Preparedness Division.

Pre-scripted emergency communication messages are included in Sections I.A.1 and I.B.1 for the Santee and Pinopolis systems respectively. Messages for periodic tests, imminent failure, potential failure, and high flow emergency levels are provided.

IV.B.2. Communication

The notification of essential emergency response and verification personnel is completed by following the notification flowcharts in Section I of this EAP. Alternate means of communication are presented in Section VI.G.

Santee Cooper Corporate Communications and Public Affairs personnel are responsible for notifying those listed in Section V.B.3 of this EAP respectively. Santee Cooper Corporate Communications will disseminate information to the public, as necessary, in coordination with state and local public information personnel.

After initial notification, Santee Cooper will make periodic status reports to the affected emergency authorities and other stakeholders as necessary.

IV.C. EMERGENCY ACTIONS

Santee Cooper Dam Safety and General Construction Services personnel will be responsible for on-site monitoring of the identified emergency, as well as keeping local authorities informed of developing conditions at the dam from the time that an emergency starts until the emergency has been terminated. Upon declaration of an emergency, Santee Cooper personnel will follow their respective responsibilities as outline in Section V of this EAP or as directed by the Corporate Incident Management Team (CIMT) upon implementation of the Corporate Incident Management Plan (CIMP).

After the initial notifications have been made, Santee Cooper personnel will be working to repair the dam (if possible) and minimize impacts to life, property, and the environment. Throughout this time, an ongoing process of taking actions, assessing the situation, and communicating with others will be necessary. The incident may go through multiple emergency levels throughout this process as the situation improves or deteriorates. Santee Cooper has developed tables that include general actions for minimizing impacts associated with common dam safety incidents. *Table IV-2 Santee Cooper Potential Failure Emergency Action Items* provide general actions to be taken throughout a Potential Failure Emergency.

IV.D. TERMINATION AND FOLLOW UP

The South Carolina Emergency Management Division (SCEMD) will be responsible for declaring that the emergency at the dam is terminated. Prior to terminating the emergency, the Chief Dam Safety Engineer (CDSE) in coordination with SCEMD will review all actions, data, and the condition of the site to confirm that the necessary repairs have been completed and the dam is stable.

The CDSE will document the termination of the event in *Figure IV-1 Dam Emergency Termination Log* enclosed. The Dam Emergency Termination Log shall be submitted to the FERC upon termination of the incident.

After the termination of the incident, the CDSE and CIMT, in coordination with emergency management authorities, will conduct an evaluation that includes all affected participants. The following items are provided as an outline for discussion during the after-action review:

- Events or conditions leading up to, during, and following the incident.
- Significant action taken by each participant and improvements for future emergencies.
- All strengths and deficiencies found in the incident management process, materials, equipment, staffing level, and leadership.
- Corrective actions identified and a planned course of action to implement recommendations.

The results of the after-action review should be documented in an After-Action Report (AAR) and used as a basis for revising the EAP. The CDSE will coordinate the after-action review and develop the AAR.

Table IV-2 Santee Cooper Potential Failure Emergency Action Items

See Table IV-2 enclosed.

Table IV-2: Emergency Level – Potential Failure – Santee Cooper Project Action Items

Condition	Description of Condition	Action to be Taken
High Water Level	Marion Reservoir level reaches elevation 76.8 ft. and is rising.	1. Assess cause of increased reservoir stage, especially during fair weather conditions.
		2. Increase generation, if possible, and commence spilling operation.
		3. Perform additional tasks as directed by the Chief Dam Safety Engineer and/or Corporate Incident Management Team (CIMT).
		4. Make notifications if condition worsens.
Sabotage and Miscellaneous Other Issues	Criminal action with significant damage to embankment or structures where significant repairs are required and the integrity of the facility is compromised – condition appears stable with time.	1. Contact security and law enforcement authorities and restrict all access (except emergency responders) to dam. Restrict traffic on dam crest to essential emergency operations personnel only.
		2. Assess extent of damage and visually inspect entire dam for damage. Evaluate inspection results, confirm if extent of damage warrants revised emergency level and additional notifications.
		3. If necessary to lower reservoir level, start generation and commence spilling operation.
		4. Perform additional tasks as directed by the Chief Dam Safety Engineer and/or CIMT.
		5. Make notifications if conditions worsen.

Condition	Description of Condition	Action to be Taken
Gate Malfunction or Failure	Hydro/Spillway gates / valves damaged structurally (sabotage, debris, etc.) with uncontrolled release of water at a constant volume. Condition appears stable.	1. Identify tailwater condition; a) If tailwater is high enough not to impact the toe of the spillway - close any other gates, if open. b) If tailwater is low and would scour the toe of the spillway – open other gates until safe tailwater elevation is establish then close all the gates
		2. Install Stop logs or use other methods to stop or slow down the flow of water.
		3. Perform structural/mechanical evaluation and recommendations. Consult dam remediation contractor for evaluation and recommendations, if appropriate.
		4. Repair / replace gate / valve as necessary.
		5. Make notifications if conditions worsen such that further structural failure is imminent.

Condition	Description of Condition	Action to be Taken
Seepage	Localized new seepage or boil(s) observed along downstream face / toe of earthen embankment with muddy discharge and increasing but controllable discharge of water.	1. Measure and record feature dimensions, approximate flow rate, and relative location to existing surface features. Take photos if camera is available. Document location on a site plan and in inspection report.
		2. Place a ring of sand bags with a weir at the top towards the natural drainage path to monitor flow rate. If boil becomes too large to sand bag, place a blanket filter over the area using non-woven filter fabric and pea gravel. Attempt to contain flow in such a manner (without performing any excavations) that flow rates can be measured. Stockpile gravel and sand fill for later use, if necessary.
		3. Inspect the dam and collect piezometer, water level and seepage flow data daily unless otherwise instructed by engineer. Record any changes of conditions. Carefully observe dam for signs of depressions, seepage, sinkholes, cracking or movement.
		4. Perform geotechnical evaluation using all data collected.
		5. Maintain continuous monitoring of feature. Record measured flow rate and any changes of condition, including presence or absence of muddy discharge.
		6. Review information collected by field inspection and provide additional instructions /actions as required. Recommend remedial seepage and stability measures.
		7. Make notifications if condition worsens such that failure is imminent.
		8. Perform additional tasks as directed by the Chief Dam Safety Engineer and/or CIMT.

Condition	Description of Condition	Action to be Taken
Embankment Deformation	**Cracks:** New longitudinal (along the embankment) or transverse (across the embankment) cracks more than 6 inches deep or more than 3 inches wide or increasing with time. New concave cracks on or near the embankment crest associated with slope movement.	1. Measure and record feature dimensions, approximate flow rate, and relative location to existing surface features. Take photos. Document location on a site plan and in inspection report.
		2. Restrict traffic on dam crest to essential emergency operations only.
		3. Contact dam safety engineer and provide all data collected.
		4. Place buttress fill (min 3 ft. high, 15 ft. wide) against base of slope immediately below surface feature and extending 20 ft. beyond visible feature limits (parallel to the embankment). Stock pile additional fill.
		5. Place sand bags as necessary around crack area to divert any storm water runoff from flowing into crack(s).
		6. Inspect the dam; collect piezometer and water level data twice daily unless otherwise instructed by engineer; and record any changes of condition. Carefully observe dam for signs of depressions, seepage, sinkholes, cracking or movement.
		7. Review information collected by field inspectors and provide additional instructions / actions as required. Consider survey monitoring.
		8. Make notifications if conditions worsen such that failure is imminent.
		9. Perform additional tasks as directed by the Chief Dam Safety Engineer and/or CIMT.

Condition	Description of Condition	Action to be Taken
Embankment Deformation	**Slides / Erosion:** Deep slide / erosion (greater than 2 feet deep) on the embankment that may also extend beyond the embankment toe but does not encroach onto the embankment crest and appears stable with time.	1. Measure and record feature dimensions, approximate flow rate (if present), and relative location to existing surface features. Take photos if camera is available. Document location on a site plan and in inspection report.
		2. Restrict traffic on dam crest to essential emergency operations only.
		3. Contact dam safety engineer and provide all data collected.
		4. Remove substandard soil and reconstruct embankment fill slope using suitable fill material at the direction of the dam safety engineer.
		5. Grade crest road as necessary around slide area to divert any storm water runoff from flowing into slide(s).
		6. Inspect the dam; collect piezometer and water level data daily unless otherwise instructed by engineer; and record any changes of condition. Carefully observe dam for signs of depressions, seepage, sinkholes, cracking or movement.
		7. Review information collected by field inspectors and provide additional instructions /actions as required. Consider survey monitoring.
		8. Make notifications if conditions worsen such that failure is imminent.
		9. Perform additional tasks as directed by the Chief Dam Safety Engineer and/or CIMT.

Condition	Description of Condition	Action to be Taken
Embankment Deformation	**Sinkholes:** Small depression observed on the embankment or within 50 feet of the embankment toe that is less than 5 feet deep and 30 feet wide or which is increasing with time.	1. Increase generation to lower reservoir elevation.
		2. Measure and record feature dimensions, approximate flow rate, and relative location to existing surface features. Take photos if camera is available. Document location on a site plan and in inspection report.
		3. Restrict traffic on dam crest to essential emergency operations only.
		4. Contact dam safety engineer and provide all data collected.
		5. Backfill the depression with relatively clean earth fill (free of organic materials) generally even with surrounding grade and slightly mounded (6 to 12 inches higher) in the center in order to shed storm water away from the depression. Stock pile additional fill.
		6. Inspect the dam; collect piezometer and water level data daily unless otherwise instructed by engineer; and record any changes of condition. Carefully observe dam for signs of depressions, seepage, sinkholes, cracking or movement.
		7. Review information collected by field inspectors and provide additional instructions/actions as required. Consider remedial construction such as grouting.
		8. Make notifications if conditions worsen such that failure is imminent.
		9. Perform additional tasks as directed by the Chief Dam Safety Engineer and/or CIMT.

Figure IV-1 Dam Emergency Termination Log

Structure Name:	**County:**
Structure Location:	**River:**
Date/Time:	
Weather Conditions:	
General Description of Emergency Situation:	
Area(s) of Structure Affected:	
Extent of Damage to Dam and Possible Causes:	
Effect on Dam Operation:	
Initial Reservoir Elevation/Time: **Maximum Reservoir Elevation/Time:** **Final Reservoir Elevation/Time:**	
Description of Area Flooded Downstream/Damages/Casualties:	
Justification for Termination of Dam Safety Emergency:	
Other Data and Comments:	
Report Prepared By (Printed Name & Signature): **Date:**	

V. GENERAL RESPONSIBILITIES UNDER THE EAP

V.A. Santee Cooper Responsibilities

The 24-hour Santee Cooper System Operator is the cornerstone of the entire EAP. System Control's primary responsibilities are summarized below:

- React to the initial notification of a potential occurrence.
- Verify the occurrence.
- Notify the authorities of an emergency occurrence or declare a false alarm.

V.A.1. Corporate Response

Santee Cooper personnel will respond to dam safety emergencies in accordance with the requirements listed in *Section V.B.3 Santee Cooper – Corporate Response*. A summary of these requirements is provided as follows:

1. Determine if Santee Cooper Construction Crews could possibly correct the emergency condition. If so, approximately 40 construction workers and all available equipment will be mobilized to the location of the developing emergency.

2. If the emergency event has progressed to the extent that it is beyond control, construction crews will be made available for construction of the Diversion Canal Closure per Appendix D.2.

3. Mobilize an additional 20 personnel for assisting with evacuation.

4. Prepare the Forward Emergency Operations Center (FEOC) and the annex for use by response personnel.

5. Mobilize all corporate support services to assist the repair and/or evacuation effort.
    a. This effort will include notifying upstream dam owners that releases into the Santee Cooper Project should be minimized and possibly operating the Santee Spillway to reduce lake levels.

6. Notify elected officials.

7. The Santee Cooper System Operator shall contact the NWS, activate the telephone-based alert system for floodplain residents, and activate the floodplain sirens.

8. The Santee Cooper System Operator and/or General Construction Services personnel will keep the SCEMD notified of events as they occur during an emergency. Santee Cooper's Corporate Communications Department will keep the media advised of developments.

9. Personnel at other Santee Cooper facilities should monitor their own areas to determine if they were damaged by the event which triggered the emergency at the dam.

10. Dispatch a Santee Cooper liaison knowledgeable in the field of floodplain hydraulics to each of the downstream counties upon request to assist evacuation personnel with interpretation of floodplain mapping and projecting progress of the flood.
    a. A Santee Cooper trunking radio will be issued to the liaison to maintain contact with office personnel.
    b. Communication is responsible for keeping the radios and CIMT will distribute them.

11. Activate the Santee Cooper Call Center to assist in fielding questions the public may have concerning the emergency.

12. Assemble the Corporate Incident Management Team (CIMT) in the CIMT Emergency Operations Center (EOC), per the Corporate Incident Management Plan (CIMP).

V.B. Responsibilities for Notification and Communication

The verification and notification flowcharts provided in Section I include all pertinent information with respect to who should be called if an emergency occurs and the order in which they should be called. Alternate contacts are listed as appropriate. Sample communications are also listed. Notification flowcharts are provided for imminent failure, potential failure, and high flow emergency levels for the Santee System, as well as imminent and potential failure for the Pinopolis System. To promote efficiency throughout the notification process, these notification guides are designed to be self-explanatory by inspection.

In addition, the Santee Cooper Corporate Response information included in *Section V.B.3 Santee Cooper – Corporate Response* includes similar information for Santee Cooper management, Santee Cooper emergency response personnel and for elected officials.

V.B.1. Plan for Notification and Communication

Santee Cooper is fortunate that the physical characteristics and property ownership in the Santee River Floodplain results in no residences immediately downstream of Santee Dam. Santee Cooper will respond to emergency conditions as specified in *Section IV.B Notification and Communication*. Upon receipt of emergency notification, the local authorities then evacuate floodplain residents if needed.

All other notifications are carried out by Santee Cooper using the notification flowcharts included in *Section I Notification Flowcharts*.

V.B.2. Non-Santee Cooper Responsibilities

Upon receipt of a ***Potential Failure*** notification from the system operator, non-Santee Cooper personnel should establish their own internal communication lines and pass the word of the potentially hazardous situation to appropriate personnel.

Receipt of ***Imminent Failure*** notification mandates mobilization of all response personnel and results in the complete evacuation of the affected floodplain per the SCEMD's Site Specific evacuation plans.

V.B.3. Santee Cooper – Corporate Response

Imminent Failure and Potential Failure notifications will require all Santee Cooper support forces to mobilize. The Corporate Incident Management Team (CIMT) will provide additional resources as necessary throughout the emergency, according to the Corporate Incident Management Plan (CIMP). Responsibilities of Santee Cooper personnel during an emergency are defined below:

Corporate Incident Management Team (CIMT)

Corporate Incident Management Team shall serve as the liaison between various work forces. contact the following Santee Cooper personnel and alert them as to the type of emergency which has occurred: **Corporate Communications**

Corporate Communications shall contact the following Santee Cooper personnel and alert them to the type of emergency which has occurred:

Name	Title	Ext.	Personal
Jimmy Staton	President & CEO	7039	(843) 826-9447 (C)
Rahul Dembla	Chief Planning Officer	4051	(917) 822-7211 (C)
Marty Watson	Chief Commercial Officer	7072	(843) 992-6963 (C)
Carmen Thomas	Chief Legal Officer & General Counsel		
Shawan Gillians	Chief Strategy & Communications Officer	7004	(843) 925-1115 (C)
Mike Finissi	Chief Operations Officer	4009	(843) 826-1469 (C)
Vicky Budreau	Chief Customer Officer	4578	(843) 708-1762 (C)
Ken Lott	Chief Financial & Admin. Officer	5113	(843) 259-8414 (C)
Monique Washington	Chief Audit & Risk Officer	4474	(843) 870-1821 (C)
Jonathan Shealy	Chief Law Enfor. & Security	4024	(843) 312-1387 (C)
Andy Green	Sr. Mgr. Occ. Safety & Health	5393	(843) 560-4851 (C)

Corporate Communications shall also perform the following tasks:

1. Coordinate all press releases and media contact during and following an emergency.
2. Contact the NWS to coordinate the emergency messages and updates to be broadcast over the NWS state wire service, the Emergency Broadcast System, and the weather channels.
3. Establish Santee Cooper's Joint Information Center (located in the main office complex, ground floor conference room).
4. Coordinate with Retail Services to activate the call center to handle emergency calls and messages.
5. Change the corporate greeting to offer new menu choices that will advise and direct callers to the call center.

Public Affairs

Santee Cooper Public Affairs shall contact the following individuals and alert them to the type of emergency that has occurred:

SANTEE DAM SYSTEM			
Name	**Title**	**Office**	**Personal**
Peter M. McCoy	Chairman, Santee Cooper Board of Directors	(843) 459-8835	(843) 452-4722
Stephen H. Mudge	1st Vice Chair, Santee Cooper Board of Directors	(864) 642-1647	(864) 561-6800
David F. Singleton	2nd Vice Chair, Santee Cooper Board of Directors	(843) 449-4470	(843) 602-4470
Johnny Cribb	Berkeley County Supervisor	(843) 719-4094	(843) 452-8334
David Epperson	Clarendon County Administrator	(803) 435-0135	(803) 410-2771
Tiffany Cooks	Williamsburg County Supv.	(843) 355-9321 Ext. 5101	(803) 847-0830
Bill Tuten	Charleston County Administrator	(843) 958-4000	(843) 367-2776
Angela Christian	Georgetown County Administrator	(843) 545-3006	(843) 325-4480

PINOPOLIS DAM SYSTEM			
Name	**Title**	**Office**	**Personal**
Peter M. McCoy	Chairman, Santee Cooper Board of Directors	(843) 459-8835	(843) 452-4722
Stephen H. Mudge	1st Vice Chair, Santee Cooper Board of Directors	(864) 642-1647	(864) 561-6800
David F. Singleton	2nd Vice Chair, Santee Cooper Board of Directors	(843) 449-4470	(843) 602-4470
Johnny Cribb	Berkeley County Supervisor	(843) 719-4094	(843) 452-8334
Michael Lockliear	Mayor, Moncks Corner	(843) 719-7910	(843) 810-8379
Gregory Habib Natalie Ziegler	Mayor, Goose Creek City Administrator	(843) 797-6220 ext. 1113 (843) 797-6220 ext. 1115	(843) 200-2644
Christie Rainwater	Mayor, Hanahan	(843) 554-4221	(843) 817-1236

PINOPOLIS DAM SYSTEM			
Name	**Title**	**Office**	**Personal**
Keith Summey Ryan Johnson Butch Barfield	Mayor, North Charleston Mayor's office staff Emergency Preparedness Coordinator	(843) 740-2504 (843) 740-2520 (843) 740-2884	(843) 822-1055 (843) 637-1428 (843) 822-1070
John Tecklenburg	Mayor, Charleston	(843) 577-6970	(843) 709-3064
Jack O'Tool	Public Information Officer, Charleston	(843) 724-3746	(843) 519-3228
Daniel Flessas	Assistant, Emergency Management, Charleston	(843) 619-6117	(843) 872-8672
Bill Tuten	Charleston County Administrator	(843) 958-4000	(843) 367-2776
Jason Ward	Dorchester County Administrator	843-563-0100	(843) 200-4734

Santee Cooper Public Affairs shall also contact the following elected officials in the event of an ***Imminent Failure Emergency***:

Name	**Phone**
Governor Henry McMaster	(803) 734-2100
Senator Lindsey Graham	(202) 224-5972
Senator Tim Scott	(202) 224-6121
Congressman Jim Clyburn	(202) 225-3315
Congressman Nancy Mace	(202) 225-3176
Congressman Tom Rice	(202) 225-9895

Power System Control & Planning

1. Power System Control & Planning shall provide the manpower to perform emergency verification and notification per the flowcharts provided in *Section I Notification Flowcharts*.
2. Power System Control & Planning shall monitor and document all communications.
3. Power System Control & Planning and General Construction Services shall jointly determine the need for a release of water through the Santee Spillway based upon excessive inflow and/or an attempt to lower the lakes for safety reasons.
4. Power System Control & Planning shall contact upstream dam owners to request lowering inflows into the reservoirs as much as possible to minimize the duration of flooding impacts.

Telecom Services

1. Telecom Services and Transmission Operations shall supply the necessary communications support to include:
    a. Radio repair, providing additional communication devices and the like.
    b. Provide emergency generators and lighting when necessary.

General Construction Services

1. General Construction Services shall provide equipment and manpower to verify and correct any problem, which may occur on the Project's dams, dikes, and spillway (See the enclosed repair personnel list below).
2. General Construction Services shall also provide personnel to assist in evacuation (See the enclosed evacuation personnel list below).
3. General Construction Services and Customer Service shall jointly determine the need for a spill based upon excessive inflow and/or attempt to lower the lakes for safety reasons.
4. General Construction Services shall operate the spillway as necessary.
5. General Construction Services shall construct the Diversion Canal Closure as detailed in *Appendix D.2 Diversion Canal Closure Structure*.
6. Transportation shall provide mechanical maintenance support for vehicles and equipment.
7. General Construction Services shall coordinate with the CIMT and other Santee Cooper departments to dispatch trained liaison personnel to assist downstream counties.
8. The following personnel have a working knowledge of the EAP and will assist General Construction Services:

Personnel	Mobile Phone Number
Michael DuPre	(843) 697-3157
Mikki Soniat du Fossat	(843) 709-2613
Kelsey DiBiase	(803) 984-0375
Will Tindal	(843) 607-3900
Brandon Tennes	(843) 729-3739
Russell Bagwell	(843) 964-4118
Brittany Gaskins	(843) 860-4082

Human Resources

1. Occupational Health shall provide emergency medical services and contact the county emergency medical services unit if necessary.
2. Safety shall provide safety equipment to employees and outside personnel.
3. Perform additional duties as necessary per the Corporate Incident Management Plan (CIMP) as directed by the Corporate Incident Management Team (CIMT).

Law Enforcement and Security

1. Law Enforcement and Security shall secure corporate offices, ensure crowd control is effective, and coordinate the efforts of various law enforcement agencies on Santee Cooper Property.
2. Perform additional duties as necessary per the CIMP as directed by the CIMT.

Generation

1. Generation shall be responsible for implementing their internal emergency action plan in the event of a failure of the Lake Moultrie impounding structures.
2. In the event the emergency conditions are due to a problem within the Jefferies Hydro Station or the adjacent Pinopolis Lock, repairs shall be made with assistance from other departments.
3. Perform additional duties as necessary per the CIMP as directed by the CIMT.

Administration and Finance Department

1. The Finance Department shall set up project numbers to collect all charges associated with the emergency.
2. Procurement shall provide personnel to operate the in-house warehouses and streamline material orders from outside sources, when needed.
3. Procurement shall also assist by establishing purchase orders for materials and services.
4. Perform additional duties as necessary per the CIMP as directed by the CIMT.

Technology Services (TS) Department

1. TS shall provide and set up Santee Cooper's Forward Emergency Operations Center (FEOC) and Joint Information Center (JIC) telephones and computers with internet access.
2. Perform additional duties as necessary per the CIMP as directed by the CIMT.

Repair Personnel

The following members of Construction Services are available to assist in repair efforts:

SANTEE COOPER REPAIR PERSONNEL		
Personnel	**Radio Call Zone**	**Phone Number**
Anderson, Jamie	GCS-PINOPOLIS MAINT OPERATIONS	843-412-2866
Boodle, Jim (Supv.)	GCS-PINOPOLIS MAINT OPERATIONS	843-640-2131
Branton, Joseph (Crew Supv.)	GCS-SANTEE MAINT OPERATIONS	843-709-0718
Bunch, Freddie	GCS-POND-OPERATIONS	843-708-4742
Burgess, Penney	GCS-HAULING OPERATIONS	843-382-6960
Butler, Jeff	GCS-POND-OPERATIONS	843-283-2345
Collier, Johnny (Supv.)	GCS-HAULING OPERATIONS	843-709-5218
Collins, Anquine	GCS-SANTEE MAINT OPERATIONS	843-261-4679
DeLong, Dustin	GCS-PINOPOLIS MAINT OPERATIONS	843-291-0665
Durant, Terry	GCS-HAULING OPERATIONS	803-972-0756
Eaddy, John	GCS-SANTEE MAINT OPERATIONS	803-460-8375
Easterlin, Wanda	GCS-HAULING OPERATIONS	843-277-4785
Faulk, Will	GCS-PINOPOLIS MAINT OPERATIONS	843-480-3039
Fitzpatrick, Michael	GCS-PINOPOLIS MAINT OPERATIONS	843-826-6636
Gadson, Joseph (Crew Supv.)	GCS-SANTEE MAINT OPERATIONS	803-596-9230
Gaskins, Justin	GCS-PINOPOLIS MAINT OPERATIONS	843-607-1665
Golden, Chris	GCS-SANTEE MAINT OPERATIONS	864-624-6025
Jenkins, Beverly	GCS-HAULING OPERATIONS	803-496-6295
Johnson-Benjamin, Patsey	GCS-HAULING OPERATIONS	803-460-0287
Johnson, Waylon (Crew Supv.)	GCS-SANTEE MAINT OPERATIONS	803-603-8488
Kelly, Marilyn (Crew Supv.)	GCS-HAULING OPERATIONS	803-473-4974
Klein, Eric (Crew Supv)	GCS-PINOPOLIS MAINT OPERATIONS	843-296-8729
McKenzie, Justin	GCS-POND-OPERATIONS	843-543-5276
Middleton, Clifford	GCS-HAULING OPERATIONS	803-968-2275
Middleton, Nicole	GCS-HAULING OPERATIONS	718-637-1520
Middleton, Odell	GCS-SANTEE MAINT OPERATIONS	803-971-1127
Montgomery, Andrew	GCS-HAULING OPERATIONS	803-928-6555
Morant, Harriett	GCS-HAULING OPERATIONS	803-596-9220

SANTEE COOPER REPAIR PERSONNEL		
Personnel	**Radio Call Zone**	**Phone Number**
Murray, Michael	GCS-HAULING OPERATIONS	803-410-6652
Owens, Brice	GCS-POND-OPERATIONS	843-465-2833
Phillips, Wayne (Crew Supv)	GCS-POND-OPERATIONS	843-826-6076
President, Michael	GCS-SANTEE MAINT OPERATIONS	843-499-3655
Ravenell, Sylvester	GCS-HAULING OPERATIONS	843-847-6940
Richardson, Clayton (Crew Supv.)	GCS-POND-OPERATIONS	843-907-0684
Richburg, Stanley	GCS-HAULING OPERATIONS	803-410-1996
Simmons, Buck (Supv.)	GCS-POND-OPERATIONS	843-925-9758
Schipmann, Al	GCS-SANTEE MAINT OPERATIONS	843-560-1541
Smith, Al	GCS-HAULING OPERATIONS	843-709-3535
Spann, Jay	GCS-HAULING OPERATIONS	843-825-8372
Steed, John (Supv.)	GCS-SANTEE MAINT OPERATIONS	843-296-1075
Strickland, Todd	GCS-POND-OPERATIONS	843-283-7199
Swails, James	GCS-POND OPERATIONS	843-359-7000
Timmons, Jerry (Crew Supv.)	GCS-HAULING OPERATIONS	843-499-5250
Welch, Matthew	GCS-POND-OPERATIONS	843-312-1037
Wells, Wayne	GCS-PINOPOLIS MAINT OPERATIONS	843-323-2221
Whitehead, Brad	GCS-SANTEE MAINT OPERATIONS	843-870-9183
Williams, Wendy	GCS-HAULING OPERATIONS	803-596-4111
Wingo, Devilynn	GCS-PINOPOLIS MAINT OPERATIONS	843-709-7131

V.C. Responsibilities for Evacuation

Santee Cooper is fortunate that the physical characteristics and property ownership in the floodplain results in no residence immediately downstream of the dams. As a result, Santee Cooper does not directly inform residents of impending emergencies. Rather, Santee Cooper notifies the local authorities of occurrences and potential occurrences. The local authorities then evacuate floodplain residents, if needed.

Santee Cooper annually provides Berkeley, Charleston, Clarendon, Georgetown, and Williamsburg Counties with evacuation maps for the Santee River floodplain. Each evacuation map includes the following information for every floodplain resident:

- Name
- Phone number
- Address
- Tone Alert Radio (TAR) number

For information on the Cooper River floodplain, refer to section *VII.D Inundation Maps – Cooper River*.

As requested by Charleston County, Santee Cooper has provided Charleston County with floodplain mapping on the Charleston County 911 maps for use during evacuation. Additionally, Santee Cooper has provided floodplain GIS data to local agencies upon their request.

V.D. Responsibilities for Termination & Follow Up

An Engineer from Santee Cooper's Civil Projects Unit will be responsible for on-site monitoring of emergency situations. The Engineer will monitor conditions at the dam from the time the emergency starts until the emergency has been terminated and will report directly to the EAP Coordinator. Refer to Section V.E. for EAP Coordinator.

Santee Cooper has a 24-hour security staff at the dams and at the corporate offices that will coordinate with dam personnel to control security in the event of an emergency. Local law enforcement agencies will assume command of security upon their arrival. In accordance with Annex 13 of the South Carolina Emergency Operations Plan, the local law enforcement agency in command will retain direction and control. If SLED (State Law Enforcement Division) is required, they will coordinate directly with the local law enforcement, other law enforcement agencies, and Santee Cooper.

As stated in *Section II. Statement of Purpose*, South Carolina Emergency Management Division (SCEMD) has developed an extensive emergency response system, which includes all pertinent State and Volunteer Agencies. Once Santee Cooper has identified an emergency and notified the SCEMD, SCEMD's statewide system governs further emergency activities with Santee Cooper playing a supporting role as needed. Therefore, SCEMD will be responsible for the termination of the emergency.

A follow-up evaluation of the emergency shall be documented in a written report which will be prepared by Santee Cooper.

V.E. EAP Coordinator Responsibility

The individual occupying the superintendent's position of Santee Cooper's General Construction Services shall serve as Santee Cooper's EAP Coordinator. The present EAP Coordinator is Shea McMakin and is also the Chief Dam Safety Engineer. For any questions concerning the EAP or any functions pertaining to the EAP coordinator, please call Shea McMakin at (843) 761-8000 ext. 5174 or email him at shea.mcmakin@santeecooper.com.

VI. PREPAREDNESS

VI.A. Surveillance and Monitoring

Santee Cooper continuously monitors its project for signs of potential problems. Visual inspections and automatic remote sensing equipment greatly reduce the time required to respond to an emergency. For a detailed description of Santee Cooper's surveillance and monitoring program please refer to *Section IV.A.1 Project Inspections* and *Section IV.A.2 Remote Sensors and Early Warning Devices*.

VI.B. Evaluation and Detection of Response Timing

Timely implementation of the EAP is essential to the plan's effectiveness. Santee Cooper annually performs a timed surprise EAP test. This test assesses the responsible parties' ability to respond to an emergency, verify the situation, and notify the proper personnel and agencies.

Typical recorded initial response times range from 5-10 minutes, as all structures are well manned during working hours with on-call personnel that live in proximity to after-hours response. Typical times to complete the verification and notification procedure times range from 20-35 minutes. As the floodwaters from the failure of the Santee Dam would be slow moving, response times in this time range are more than adequate.

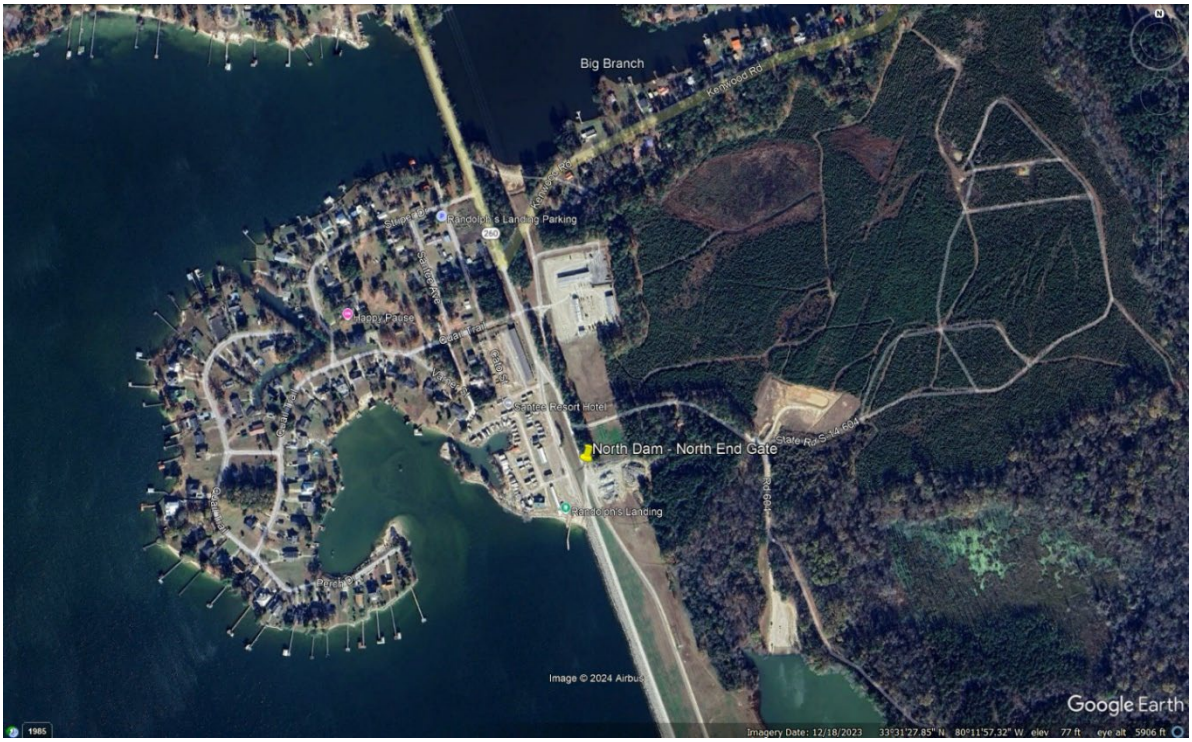
VI.C. Access to the Site

Vehicular access is readily available to all dams during all seasons. Severe weather may slightly reduce response times but not to the point such response time would be unacceptable.

Access to Santee North Dam – North End Gate

Coordinates:
33° 31’ 3.96” N; 80° 11’ 19.27” W

Site Map:



Directions:
The north end of the Santee Dam can be accessed by taking State Highway 260 east from Manning. Alternatively, the north end can be accessed from Moncks Corner by taking US Highway 52 west to State Highway 375. Turn left on HWY 375 and travel approximately three miles to Road 48. Turn left onto Road 48 and travel approximately ten miles to Road 351. Follow Road 351, which turns into Road 323, for approximately four miles. At the end of Road 323, turn left onto HWY 260 which runs out at the north end of the Santee Dam. Note that sections of this route are projected to be impacted by flood waters at various time intervals during a dam breach. In the event of a dam failure, the Santee River inundation maps should be referenced prior to selection of a travel route.

Access to Santee South Dam – South End Gate

Coordinates:
33° 24’ 46.50” N; 80° 8’ 57.33” W

Site Map:

Directions:
The south end of the Santee Dam can be accessed from St. Stephen by US Highway 52 west to SC Highway 45. Travel HWY 45 for approximately 13 miles and turn right onto Road 31, which runs into the south end of the Santee Dam. Note that a section of HWY 45 is projected to be impacted by flood water during a dam breach. In the event of a dam failure, the Santee River inundation maps should be referenced prior to selection of a travel route.

Access to Pinopolis East Dam – East End Gate

Coordinates:
33° 14’ 42.21” N; 79° 59’ 11.39” W

Site Map:

Directions:
The east end of Pinopolis Dam can be accessed from Moncks Corner by taking US Highway 52 west to Road 20 (Powerhouse Road). Turn left onto Powerhouse Road and travel for approximately 1.5 miles until reaching Jefferies Generating Station and the east end of Pinopolis Dam. Alternatively, Road 907 can be taken from US HWY 52 to access the Pinopolis East Dam. Note that most of Powerhouse Road and portions of Road 907 are projected to be impacted by flood waters to various degrees during a dam breach. In the event of a dam failure emergency, the Cooper River inundation maps should be referenced prior to selection of a travel route.

Access to Pinopolis West Dam – West End Gate

Coordinates:
33° 13’ 59.53” N; 80° 0’ 49.31” W

Site Map:

Directions:

The west end of the Pinopolis Dam can be accessed from Moncks Corner by taking Highway 6 west to the intersection of Highway 17A and Highway 6. Travel approximately two tenths of a mile west on Highway 6 then turn right onto HWY 21 (Broughton Road). Travel on Broughton Road for approximately two miles then take a sharp right onto Water Plant Road which leads to the west end of the Pinopolis West Dam.

In addition to vehicular access, Santee Cooper has contracts in place for the use of helicopters and airplanes should aerial access be necessary. There is also a variety of in-house equipment such as boats and all-terrain vehicles that would be available during an emergency.

Airspace Management

In several of Santee Cooper's Emergency Action Plan exercises, the question has arisen as to the control of the airspace above the emergency area. Ideally, the airspace above the emergency area would be limited to emergency helicopters only, and all local, state, and nation-wide news aircraft would be prohibited.

Based on the Code of Federal Regulations - 14 Part 91 Subpart B Section 91.137, Temporary flight restrictions in the vicinity of disaster/hazard area, the Administrator will issue a Notice to Airmen (NOTAM) designating an area within which temporary flight restrictions apply and specifying the hazard or condition requiring their imposition, whenever he determines it necessary to –

1. Protect persons and property on the surface or in the air from a hazard associated with an incident on the surface.
2. Provide a safe environment for the operation of disaster relief aircraft; or
3. Prevent the unsafe congestion of sightseeing and other aircraft above an incident or event which may generate a high degree of public interest.

VI.D. Response during Periods of Darkness

This EAP is written that the flowcharts and procedures are usable in all types of weather and during the night. Existing lighting facilities would be used for spillway releases made during the night. In addition, Santee Cooper dam personnel have access to portable lights. If Santee Cooper needs additional lighting, a list of commercially available equipment is in *Appendix D.2*. This list includes companies that rent portable lighting.

VI.E. Response during Weekends and Holidays

The remote sensors for surveillance listed, detailed in *Section IV.A.2,* are monitored 24 hours a day, seven days a week by System Control in the Energy Control Center. Furthermore, all applicable dam and spillway staff have mobile phones and live in the vicinity of the structures. As such, response time is minimized.

VI.F. Response during Periods of Adverse Weather

This EAP is written that the flowcharts and procedures are usable in all types of weather and during the night. Vehicular access is readily available to all dams during all seasons. (See *Section VI.C above*). Severe weather may slightly reduce response times, but not to the point such response time would be unacceptable.

VI.G. Alternative Systems of Communication

Santee Cooper has a multitude of ways in which communications can be established with outside emergency response personnel and floodplain residents. These communication paths are briefly described below:

Santee Cooper Trunking Radio System

Santee Cooper operates its own radio system for day-to-day communications. This system has multiple channels covering each department within Santee Cooper. Radio signals are available throughout the entire floodplain downstream of the Santee and the Pinopolis Dams. This system would be used primarily for Santee Cooper's efforts to correct emergency occurrences and for Agency personnel to direct Santee Cooper evacuation personnel.

Palmetto 800 Radio System

Santee Cooper has access to the South Carolina Statewide 800 MHz Radio and Mobile Data System (Palmetto (PAL) 800). The PAL 800 system is a cost-shared public/private partnership between state government, local governments, power utilities and Motorola, Inc. The system is a Motorola SmartZone trunked system with 69 transmitter sites across South Carolina and Georgia. Over 350 different agencies representing state government, federal government, local government, law enforcement agencies, fire services, EMS services and power utilities in South Carolina, North Carolina and Georgia currently participate in the shared statewide 800 MHz radio system.

In the event of an emergency, Santee Cooper has the capability to utilize the Palmetto 800 system to contact State and Local authorities. Santee Cooper has licensed radios tuned to the SCCALL frequency for use during an emergency associated with the dams. Santee Cooper's radios will allow broadcasts from the system operator's work area, fleet vehicles, and portable radios assigned to the Civil Projects Unit.

Telephone

Santee Cooper's existing telephone system will be used for many emergency related notifications and communications. This system will be supplemented with the radio systems outlined above plus local amateur radio operators, as needed.

Below is a list of "external" emergency telephone lines and extensions designated for emergency responses at the following locations:

OPERATIONS CENTER CONF. ROOM (CONFOC)	MAIN BUILDING 1ST FLOOR CONF. ROOM (JIC)
TELEPHONE NUMBER	**TELEPHONE NUMBER**
843-761-8000 ext. 5428	843-761-8000 ext. 4204
843-761-7246	
843-761-7247	Nicole Aiello ext. 7030
843-761-7248	Cell: (843) 685-1380
	Tracy Vreeland ext. 3007
	Cell: (843) 291-4166
	Jeffrey Straight ext. 4053
	Cell: (724) 757-5437
	John Brush ext. 5074
	Cell: (843) 312-7280

Mobile Telephone

Most Santee Cooper personnel carry mobile phones with numbers that are routinely updated and remain readily available for distribution by each department. Mobile numbers for essential personnel identified in the notification flowcharts are listed where applicable. Mobile telephones can be used to communicate with SCEMD, NWS, and intra-company personnel during an emergency. In addition, most supervisory personnel have mobile smart phones with GETS/WPS capabilities. The Santee Cooper Technology Services Department also has a limited number of mobile telephones with GETS/WPS capabilities available for check-out during times of emergency.

Microwave

Santee Cooper has an extensive microwave communication system which allows intra-company communication and communications with other power companies. Santee Cooper could use this system to contact authorities through other power companies, if needed.

Siren System

A series of 15 outdoor warning sirens are installed in the Santee River floodplain. The location of these sirens is shown in *Figure VI.1 Santee River Floodplain Siren Map*. These sirens are remotely operated by Santee Cooper System Control in the event of an occurrence which requires evacuation of the floodplain. The sirens produce an electronic wailing and accommodate emergency public address messages from the system operator. The sirens are omni-directional to provide maximum coverage.

The floodplain siren system has been zoned to accommodate the need for delayed evacuation times further downstream of the Santee Dam. The siren zones were developed based on evacuation zones determined by SCEMD and local emergency management officials. Sirens were separated in two (2) zones as follows:

- Zone 1- Santee Dam to US Highway 52
- Zone 2- US Highway 52 to US Highway 17-A/41

Tone Alert Radios

Tone Alert Radios (TARs) have been distributed to all Santee System floodplain residences and to the County Emergency Operation Centers. These radios include an alarm siren which can be activated by the National Weather Service (NWS) to notify the residents of an emergency which will require evacuation. Upon hearing the alarm, the residents can activate the voice portion of the radio to obtain a detailed description of the emergency event.

Emergency Transmitters

Emergency transmitters are located at Camp II, near Pineville, SC, Camp I, near Manning, SC, and at Santee Cooper's Operations Center in Moncks Corner, SC.

Telephone Alert System

A Telephone Alert System (T.A.S.), Code Red Emergency Notification Systems, will be used to contact the Santee System floodplain residences during an emergency event. The system may be launched via the internet or by telephone. Residents will be informed of the event, receive detailed instructions on evacuation, and be given the option to respond to the message. A detailed spreadsheet of the calls is transmitted to Santee Cooper immediately after the call is complete, informing Santee Cooper of the success of the notification. This notification includes a list of answered calls, unanswered calls, non-functioning numbers, and numbers in which a message was transmitted. The T.A.S. is a

zoned alert and sends a specific message based on the pending level of danger for each of the three evacuation zones as determined by SCEMD and local emergency management officials. Zone 1 residents live between the North Dam and Highway 52 and would experience flood levels first. Zone 2 residents live between Highway 52 and Highway 17-A. Zone 3 residents live between Highway 17-A and the Atlantic Ocean.

Satellite Telephones

Santee Cooper's Technology Services Department has satellite phones provided for designated business units during an emergency when normal phone services are disrupted. A full list of all Santee Cooper satellite phones and instructions can be found on the CIMT iPort page.

8816-315-60214 (CIMT)
8816-315-60215 (CIMT)
8816-315-60236 (Civil Projects)
8816-315-60317 (Civil Projects)
8816-325-12046 (Law Enforcement and Security)
8816-315-81222 (Corporate Communications)

VI.H. Emergency Supplies and Information

Santee Cooper has the following emergency supplies and resources on-hand for use during an emergency:

VI.H.1.Material Stockpiles and Construction Equipment

Santee Cooper has emergency stockpiles of riprap and armor stone that are maintained throughout the project. These locations are strategically located at the North Dam, South Dam, East Dam, West Dam and West Dike. Stockpiled quantities are routinely checked to ensure adequate amounts are present. A breakdown of the typical types and quantities of riprap maintained at each location can be found in the table below. If additional material is needed to combat an emergency, Santee Cooper will contact local material suppliers who already supply material on a day-to-day basis. Santee Cooper has a wide variety of construction equipment on hand to place material as needed. Santee Cooper equipment operators are contacted during an emergency using the repair personnel contact list provided in *Section V.B.3*. Should additional equipment be needed, local contractors will be contacted.

EMERGENCY STOCKPILE MATERIAL			
LOCATION	**W_{50} – 1200 LBS (TONS)**	**W_{50} – 500 LBS (TONS)**	**W_{50} – 200 LBS (TONS)**
North Dam	2,488	644	665
South Dam	1,304	621	1,213
West Dam	1,149	667	1,068
East Dam	878	-	24
East Dam Extension	6,141	475	710
West Dike (Pinopolis)	-	1,904	592
West Dike (Hatchery)	-	620	-
Total	**11,452**	**4,931**	**4,272**

VI.H.2.Coordination of Flows

As previously discussed, Santee Cooper monitors a series of upstream gauges to determine the amount of inflow into the project. Given the area/volume curve for the combined lake system and the total projected inflow, Santee Cooper's Power Supply determines if a release is required and, if so, the volume of water to be released through the Santee Spillway. Should a release be necessary to control excessive inflow, the system operator contacts members of the General Construction Services Department to initiate the release. These individuals are listed on the communications flowchart and are known by all system operators and their managers. Power Supply also calls a list of downstream residents and property owners who have requested notification of impending release. This list is updated regularly by Power Supply and is not included in this EAP.

Releases at the Santee Spillway and/or the St. Stephen Powerhouse could be initiated to reduce the head on a developing dam safety emergency. This decision would be made by General Construction Services personnel in consultation with Planning and Power Supply and the U.S. Army Corps of Engineers.

VI.H.3.Alternate Power Sources

The spillway gates are operated via electric motors powered by on-line power sources or auxiliary combustion engines permanently installed at the spillway. Auxiliary engines are used during the operation sequence if the on-line power fails. Since the auxiliary devices are permanently installed, there are no special requirements for making these devices available during an emergency.

VI.H.4 Emergency Operation Centers

The following emergency response centers will be established in the event of an emergency:

1. Forward Emergency Operations Center: A Forward Emergency Operations Center (FEOC) may be established in Santee Cooper's Moncks Corner Operations Center. Additional "outside" phone lines have been installed to accommodate emergency response personnel. A location has been set aside for the SCEMD mobile operations center to be positioned near the FEOC.

2. Emergency Media Center: A press facility will be set up in Santee Cooper's Moncks Corner auditorium. Press releases will be made at this location.

3. Corporate Incident Command Center: Per Santee Cooper's Corporate Incident Management Plan (CIMP), a corporate incident command center would be established in the Oak Room located at Santee Cooper's Operations Center Building to allow the Corporate Incident Management Team (CIMT) to gather, be informed of the facts surrounding the emergency, direct the use of Santee Cooper resources and to issue statements as needed.

4. State Emergency Operations Center: A State Emergency Operations Center (SEOC) is established in Columbia, SC at the SCEMD headquarters. The SCEMD and state agencies involved in the emergency operate from this location. At this location, there are direct lines to the County Emergency Operation Centers to provide pertinent information for coordination of necessary resources. A direct line between Santee Cooper and the SEOC is provided by the liaison from SCEMD dispatched to the FEOC. A web-based crisis information management system known as WebEOC is used at the SEOC and County EOCs to gather, disseminate, document emergency information, and allocate resources. WebEOC is available to authorized users anywhere and allows all emergency and non-emergency authorized users to view on-going activities associated with a disaster in the counties and state as permissions allow.

5. County Emergency Operations Center: Each of the five counties located downstream of the Santee Cooper Project Dams has established a local emergency operations center (EOC). County officials involved in the emergency would operate from their respective EOC.

VI.I. Coordination and Information

External and internal agency coordination will be critical to effectively managing a dam safety emergency. The coordination of flows is detailed in *Section VI.H.2 Coordination of Flows* above.

Additional coordination will also be necessary with agencies such as the National Weather Service (NWS) and the NOAA's Southeast River Forecast Center (SERFC). Santee Cooper has well-established contacts with these agencies and regularly coordinates with these agencies throughout normal river forecasting operations.

Also, as detailed in *Section V.B.3 Santee Cooper – Corporate Response,* Santee Cooper's Power Supply department will coordinate with upstream dam owners to minimize project inflows as much as possible.

VI.J. Training and Exercise

Dam safety training is performed by FERC requirements as outlined in Santee Cooper's Owner's Dam Safety Program (ODSP). In addition to annual training provided to Santee Cooper employees and contractors through the ODSP, the EAP is exercised annually per FERC requirements. An updated exercise schedule is provided in *Appendix C – Table C-1 EAP Annual Exercise Schedule*.

Each EAP exercise includes planning meetings and a tabletop exercise at a minimum. EAP training is performed at each tabletop exercise to ensure all responsible agencies and personnel are knowledgeable of the EAP and its processes. At the conclusion of each tabletop exercise the EAP is critiqued and any necessary revisions are made.

VI.K. Public Awareness and Communication

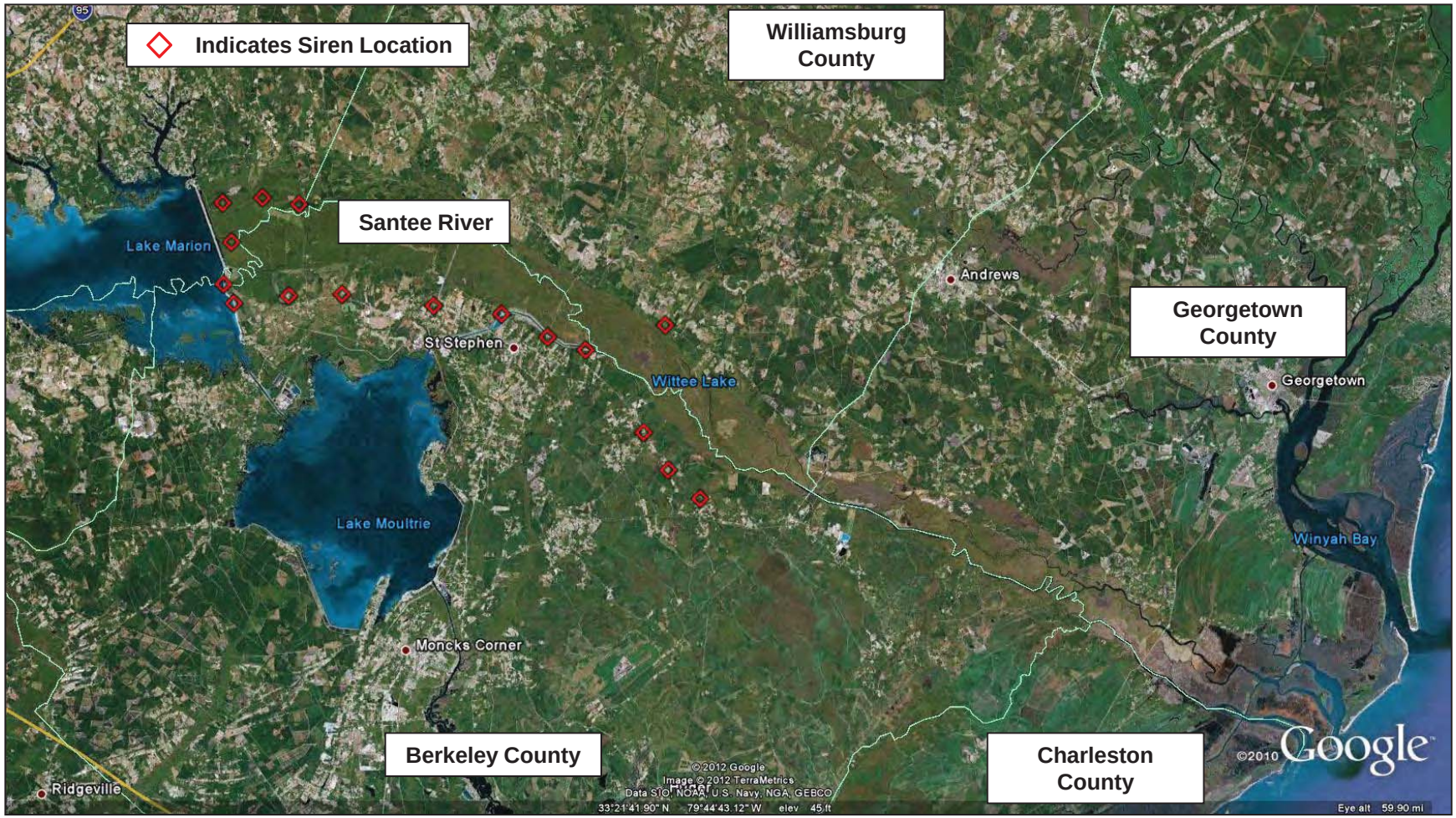
Public awareness for residents downstream of the Santee Dam is monitored annually by Santee Cooper's annual floodplain census. Santee Cooper personnel visit each residence located within the floodplain to update contact information and confirm occupancy of the structure as well as provide residents with dam safety emergency information.

Public community awareness meetings are also held every five (5) years to promote dam safety awareness for all Santee River floodplain residents. The public meetings are held at a location near floodplain residents and all members of the community and floodplain residents are invited to attend.

Figure VI-1. Santee River Floodplain Siren Location Map

See Figure VI-1 enclosed.

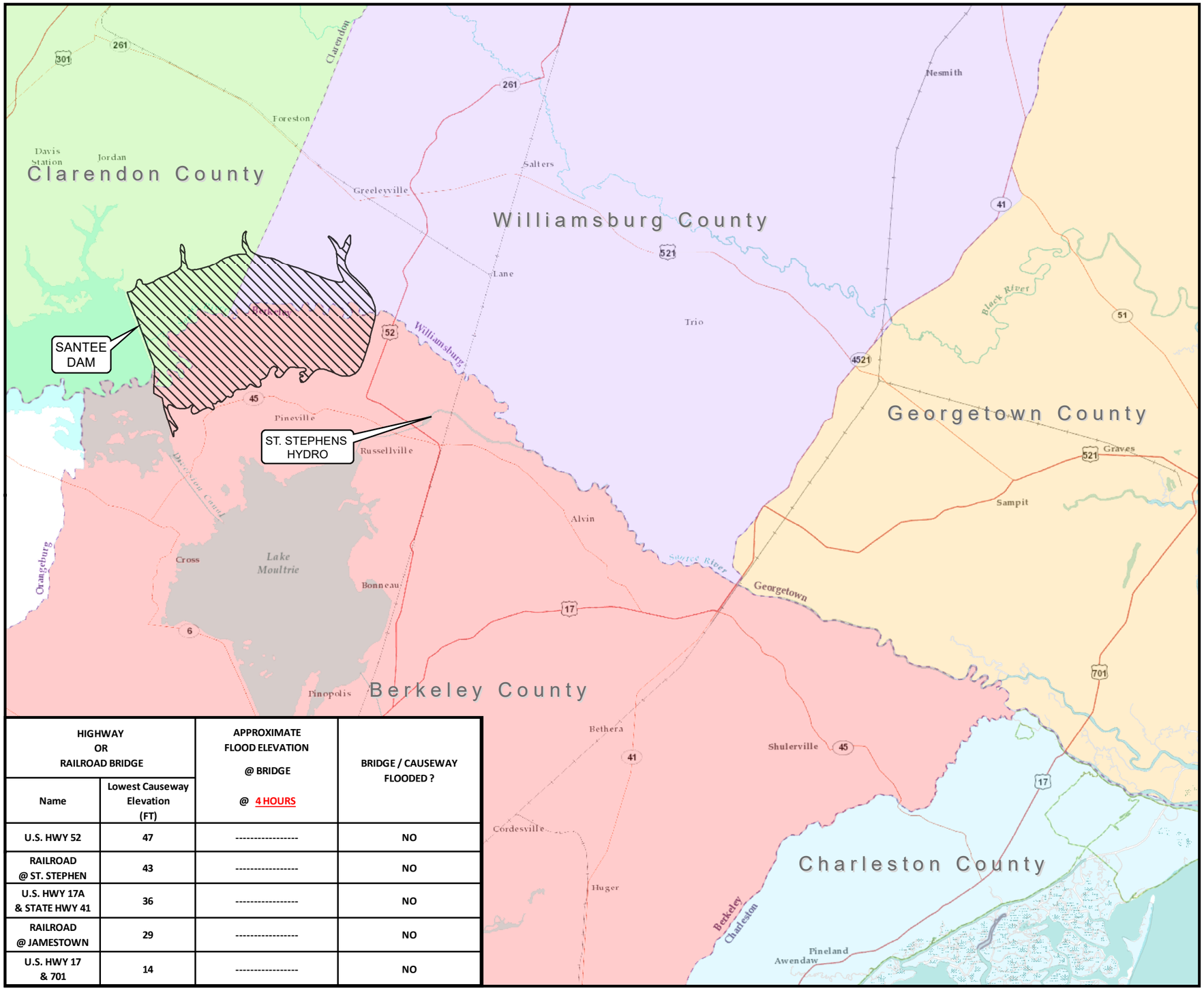
Figure VI-1.
Santee River Floodplain Siren Location Map



7/2020

VII. INUNDATION MAPS

VII.A. Inundation Maps - Santee River (General)



HIGHWAY OR RAILROAD BRIDGE		APPROXIMATE FLOOD ELEVATION @ BRIDGE @ 4 HOURS	BRIDGE / CAUSEWAY FLOODED ?
Name	Lowest Causeway Elevation (FT)		
U.S. HWY 52	47	----------	NO
RAILROAD @ ST. STEPHEN	43	----------	NO
U.S. HWY 17A & STATE HWY 41	36	----------	NO
RAILROAD @ JAMESTOWN	29	----------	NO
U.S. HWY 17 & 701	14	----------	NO

SANTEE RIVER DAM BREACH

4-HOUR FLOOD LEVEL

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

A1	4/2022

Legend

Counties

Name

- Berkeley
- Charleston
- Clarendon
- Georgetown
- Williamsburg

N

Miles

0 2.5 5 10

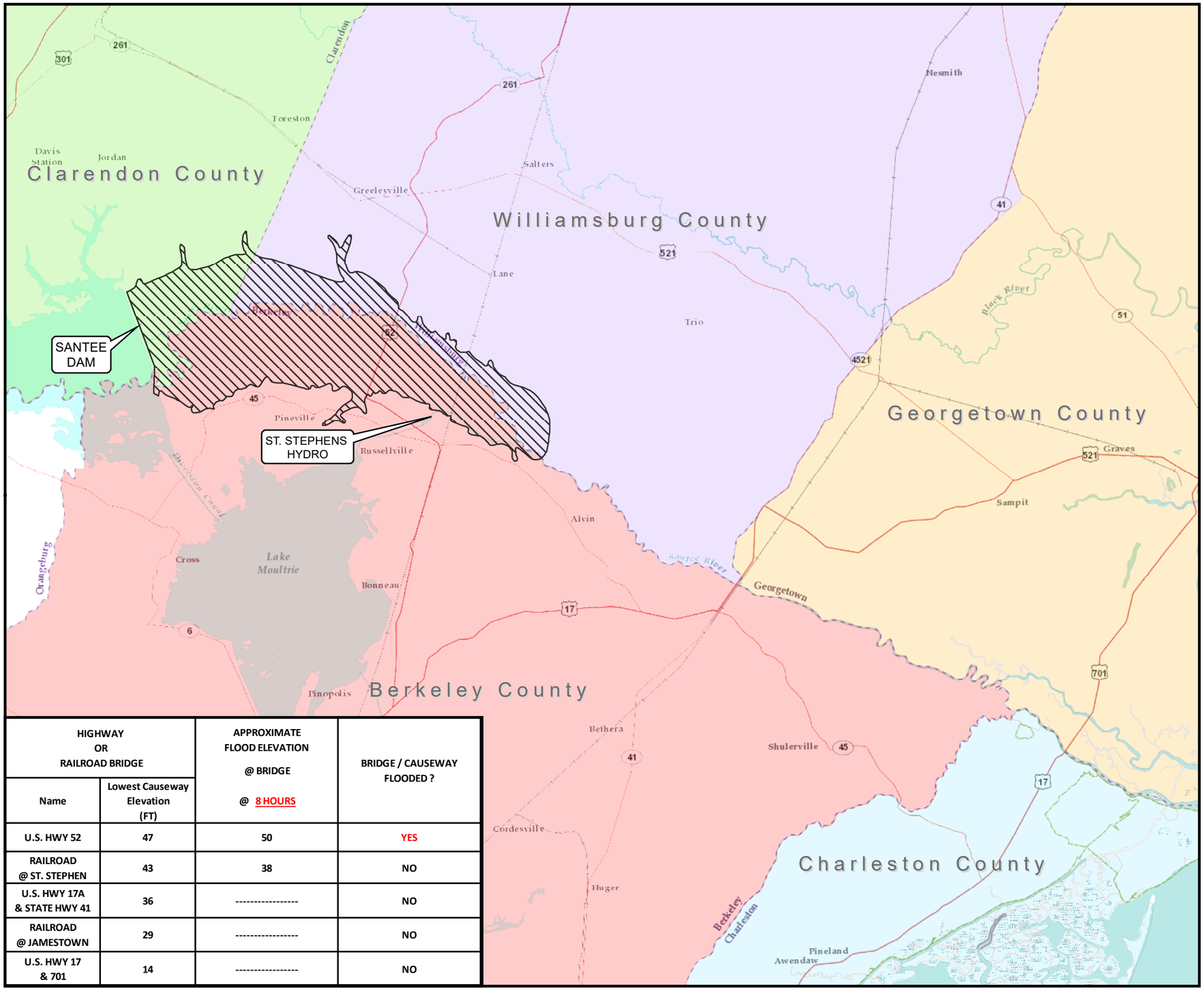
santee cooper

The limits of flooding shown are solely to be used as a guideline for the establishment of evacuation zones.

Service Layer Credits: Sources: Esri, Garmin, USGS, NPS

CONTAINS CRITICAL ENERGY INFRASTRUCTURE INFORMATION

DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER



HIGHWAY OR RAILROAD BRIDGE		APPROXIMATE FLOOD ELEVATION @ BRIDGE @ 8 HOURS	BRIDGE / CAUSEWAY FLOODED ?
Name	Lowest Causeway Elevation (FT)		
U.S. HWY 52	47	50	YES
RAILROAD @ ST. STEPHEN	43	38	NO
U.S. HWY 17A & STATE HWY 41	36	----------	NO
RAILROAD @ JAMESTOWN	29	----------	NO
U.S. HWY 17 & 701	14	----------	NO

SANTEE RIVER DAM BREACH

8-HOUR FLOOD LEVEL

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

A2	4/2022

Legend

Counties

Name

- Berkeley
- Charleston
- Clarendon
- Georgetown
- Williamsburg

N

Miles

0 2.5 5 10

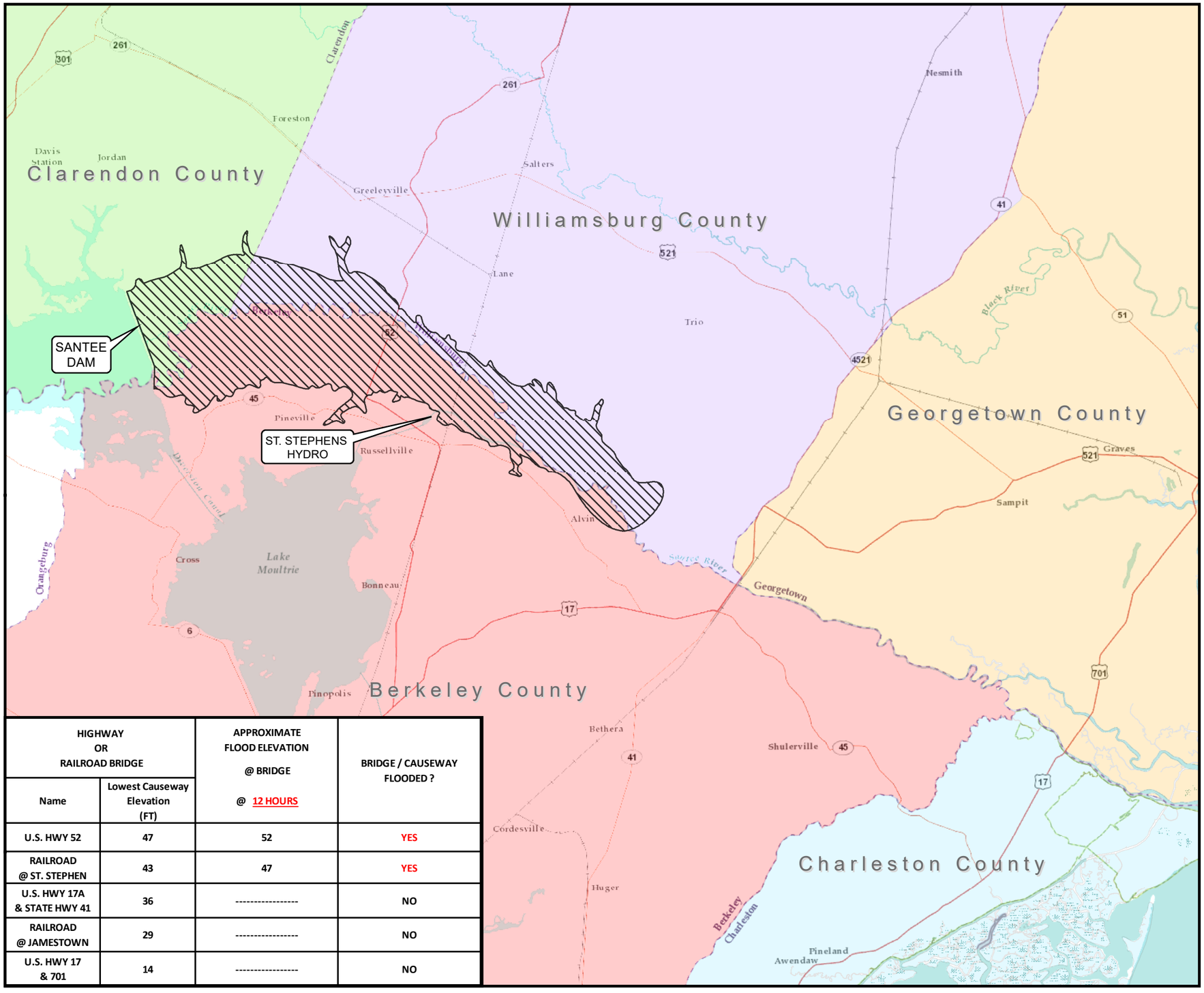
santee cooper

The limits of flooding shown are solely to be used as a guideline for the establishment of evacuation zones.

Service Layer Credits: Sources: Esri, Garmin, USGS, NPS

CONTAINS CRITICAL ENERGY INFRASTRUCTURE INFORMATION

DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER



HIGHWAY OR RAILROAD BRIDGE		APPROXIMATE FLOOD ELEVATION @ BRIDGE @ 12 HOURS	BRIDGE / CAUSEWAY FLOODED ?
Name	Lowest Causeway Elevation (FT)		
U.S. HWY 52	47	52	YES
RAILROAD @ ST. STEPHEN	43	47	YES
U.S. HWY 17A & STATE HWY 41	36	----------	NO
RAILROAD @ JAMESTOWN	29	----------	NO
U.S. HWY 17 & 701	14	----------	NO

SANTEE RIVER DAM BREACH

12-HOUR FLOOD LEVEL

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

A3	4/2022

Legend

Counties

Name

- Berkeley
- Charleston
- Clarendon
- Georgetown
- Williamsburg

N

Miles

0 2.5 5 10

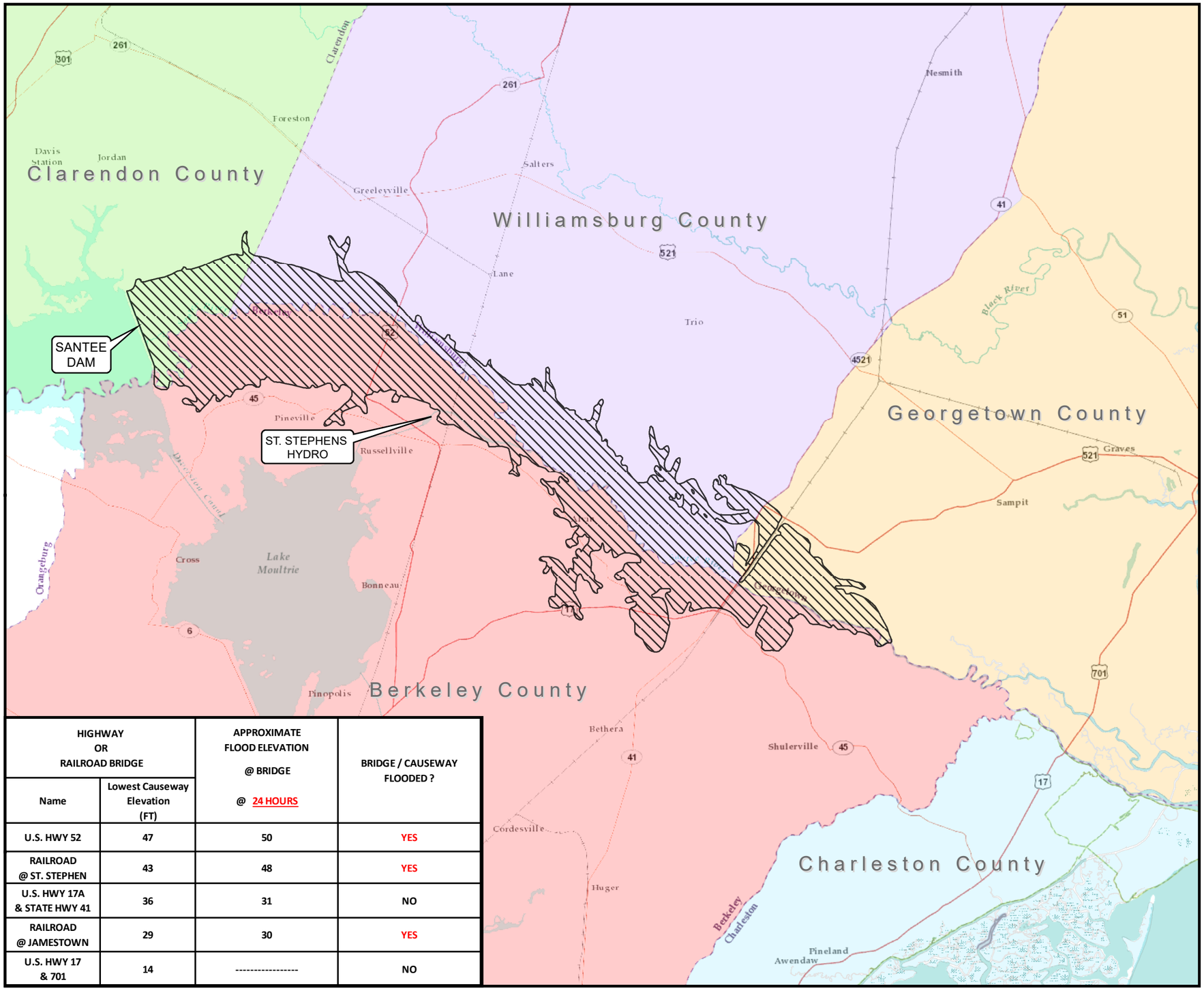
santee cooper

The limits of flooding shown are solely to be used as a guideline for the establishment of evacuation zones.

Service Layer Credits: Sources: Esri, Garmin, USGS, NPS

CONTAINS CRITICAL ENERGY INFRASTRUCTURE INFORMATION

DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER



HIGHWAY OR RAILROAD BRIDGE		APPROXIMATE FLOOD ELEVATION @ BRIDGE @ 24 HOURS	BRIDGE / CAUSEWAY FLOODED ?
Name	Lowest Causeway Elevation (FT)		
U.S. HWY 52	47	50	YES
RAILROAD @ ST. STEPHEN	43	48	YES
U.S. HWY 17A & STATE HWY 41	36	31	NO
RAILROAD @ JAMESTOWN	29	30	YES
U.S. HWY 17 & 701	14	----------	NO

SANTEE RIVER DAM BREACH

24-HOUR FLOOD LEVEL

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

A4	4/2022

Legend

Counties

Name

- Berkeley
- Charleston
- Clarendon
- Georgetown
- Williamsburg

N

Miles
0 2.5 5 10

santee cooper

The limits of flooding shown are solely to be used as a guideline for the establishment of evacuation zones.

Service Layer Credits: Sources: Esri, Garmin, USGS, NPS

CONTAINS CRITICAL ENERGY INFRASTRUCTURE INFORMATION

DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER

SANTEE RIVER DAM BREACH

48-HOUR FLOOD LEVEL

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

A5	4/2022

SANTEE DAM

ST. STEPHENS HYDRO

Clarendon County

Williamsburg County

Georgetown County

Berkeley County

Charleston County

Foreston
Davis Station
Jordan
Greeleyville
Salters
Lane
Trio
Nesmith
Black River
Graves
Sampit
Pineville
Russellville
Cross
Lake Moultrie
Bonneau
Pinopolis
Bethera
Cordesville
Huger
Shulerville
Georgetown
Pineland
Awendaw
Berkeley
Charleston

HIGHWAY OR RAILROAD BRIDGE		APPROXIMATE FLOOD ELEVATION @ BRIDGE @ 48 HOURS	BRIDGE / CAUSEWAY FLOODED ?
Name	Lowest Causeway Elevation (FT)		
U.S. HWY 52	47	45	NO
RAILROAD @ ST. STEPHEN	43	44	YES
U.S. HWY 17A & STATE HWY 41	36	34	NO
RAILROAD @ JAMESTOWN	29	34	YES
U.S. HWY 17 & 701	14	18	YES

Legend

Counties

Name

- Berkeley
- Charleston
- Clarendon
- Georgetown
- Williamsburg

N

Miles
0 2.5 5 10

santee cooper

The limits of flooding shown are solely to be used as a guideline for the establishment of evacuation zones.

Service Layer Credits: Sources: Esri, Garmin, USGS, NPS

CONTAINS CRITICAL ENERGY INFRASTRUCTURE INFORMATION

DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER

SANTEE RIVER DAM BREACH

5-DAY FLOOD LEVEL

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

A6	4/2022

SANTEE DAM

ST. STEPHENS HYDRO

Clarendon County

Williamsburg County

Georgetown County

Berkeley County

Charleston County

HIGHWAY OR RAILROAD BRIDGE		APPROXIMATE FLOOD ELEVATION @ BRIDGE @ 5 DAYS	BRIDGE / CAUSEWAY FLOODED ?
Name	Lowest Causeway Elevation (FT)		
U.S. HWY 52	47	37	NO
RAILROAD @ ST. STEPHEN	43	35	NO
U.S. HWY 17A & STATE HWY 41	36	26	NO
RAILROAD @ JAMESTOWN	29	25	NO
U.S. HWY 17 & 701	14	18	YES

Legend

Counties

Name

- Berkeley
- Charleston
- Clarendon
- Georgetown
- Williamsburg

N

Miles

0 2.5 5 10

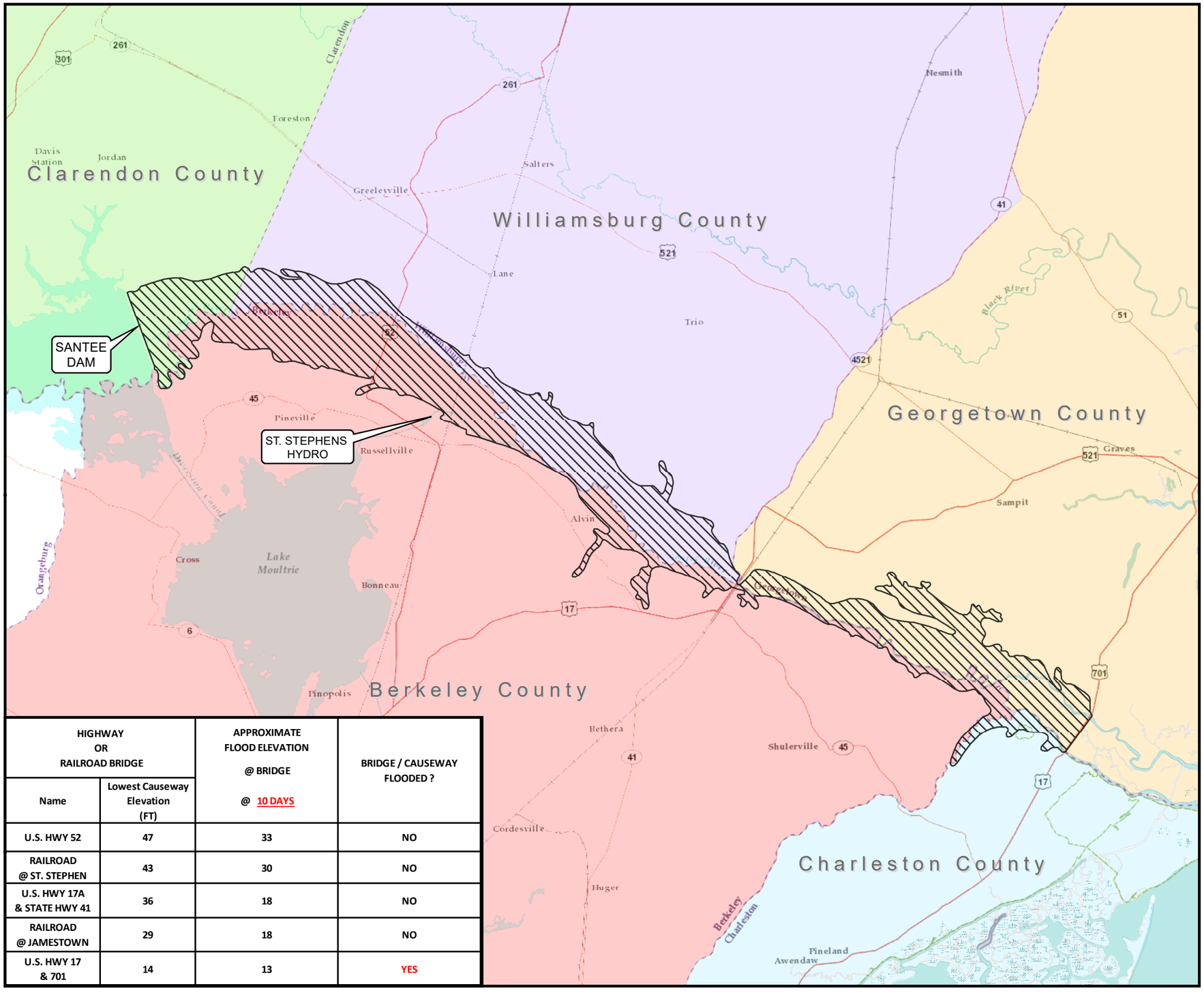
santee cooper

The limits of flooding shown are solely to be used as a guideline for the establishment of evacuation zones.

Service Layer Credits: Sources: Esri, Garmin, USGS, NPS

CONTAINS CRITICAL ENERGY INFRASTRUCTURE INFORMATION

DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER



HIGHWAY OR RAILROAD BRIDGE		APPROXIMATE FLOOD ELEVATION @ BRIDGE @ 10 DAYS	BRIDGE / CAUSEWAY FLOODED ?
Name	Lowest Causeway Elevation (FT)		
U.S. HWY 52	47	33	NO
RAILROAD @ ST. STEPHEN	43	30	NO
U.S. HWY 17A & STATE HWY 41	36	18	NO
RAILROAD @ JAMESTOWN	29	18	NO
U.S. HWY 17 & 701	14	13	YES

SANTEE RIVER DAM BREACH

10-DAY FLOOD LEVEL

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

A7	4/2022

Legend

Counties

Name

- Berkeley
- Charleston
- Clarendon
- Georgetown
- Williamsburg

N

Miles

0 2.5 5 10

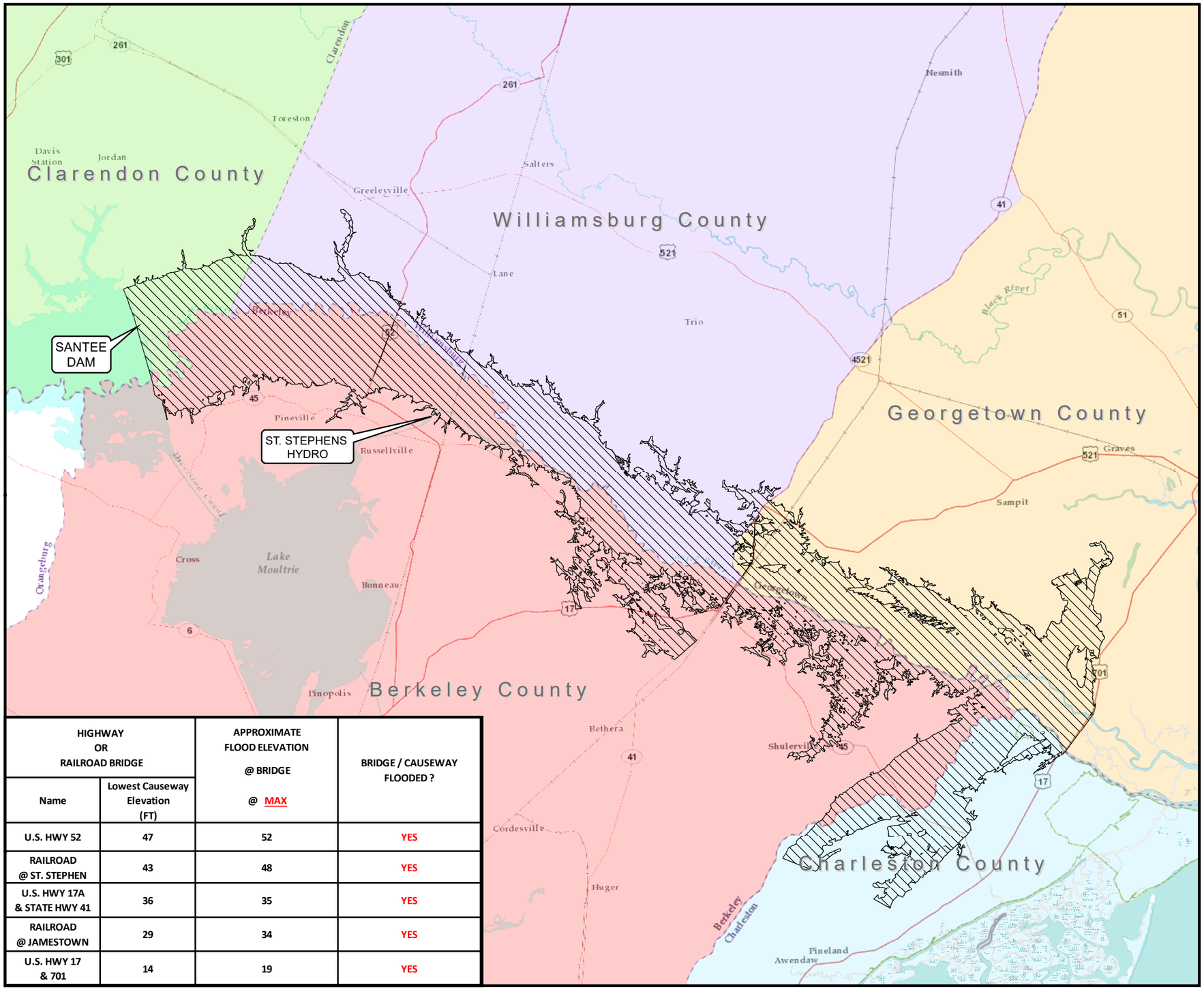
santee cooper

The limits of flooding shown are solely to be used as a guideline for the establishment of evacuation zones.

Service Layer Credits: Sources: Esri, Garmin, USGS, NPS

CONTAINS CRITICAL ENERGY INFRASTRUCTURE INFORMATION

DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER



HIGHWAY OR RAILROAD BRIDGE		APPROXIMATE FLOOD ELEVATION @ BRIDGE @ MAX	BRIDGE / CAUSEWAY FLOODED ?
Name	Lowest Causeway Elevation (FT)		
U.S. HWY 52	47	52	YES
RAILROAD @ ST. STEPHEN	43	48	YES
U.S. HWY 17A & STATE HWY 41	36	35	YES
RAILROAD @ JAMESTOWN	29	34	YES
U.S. HWY 17 & 701	14	19	YES

SANTEE RIVER DAM BREACH

MAX FLOOD LEVEL

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

A8	4/2022

Legend

Counties

Name

- Berkeley
- Charleston
- Clarendon
- Georgetown
- Williamsburg

N

Miles

0 2.5 5 10

santee cooper

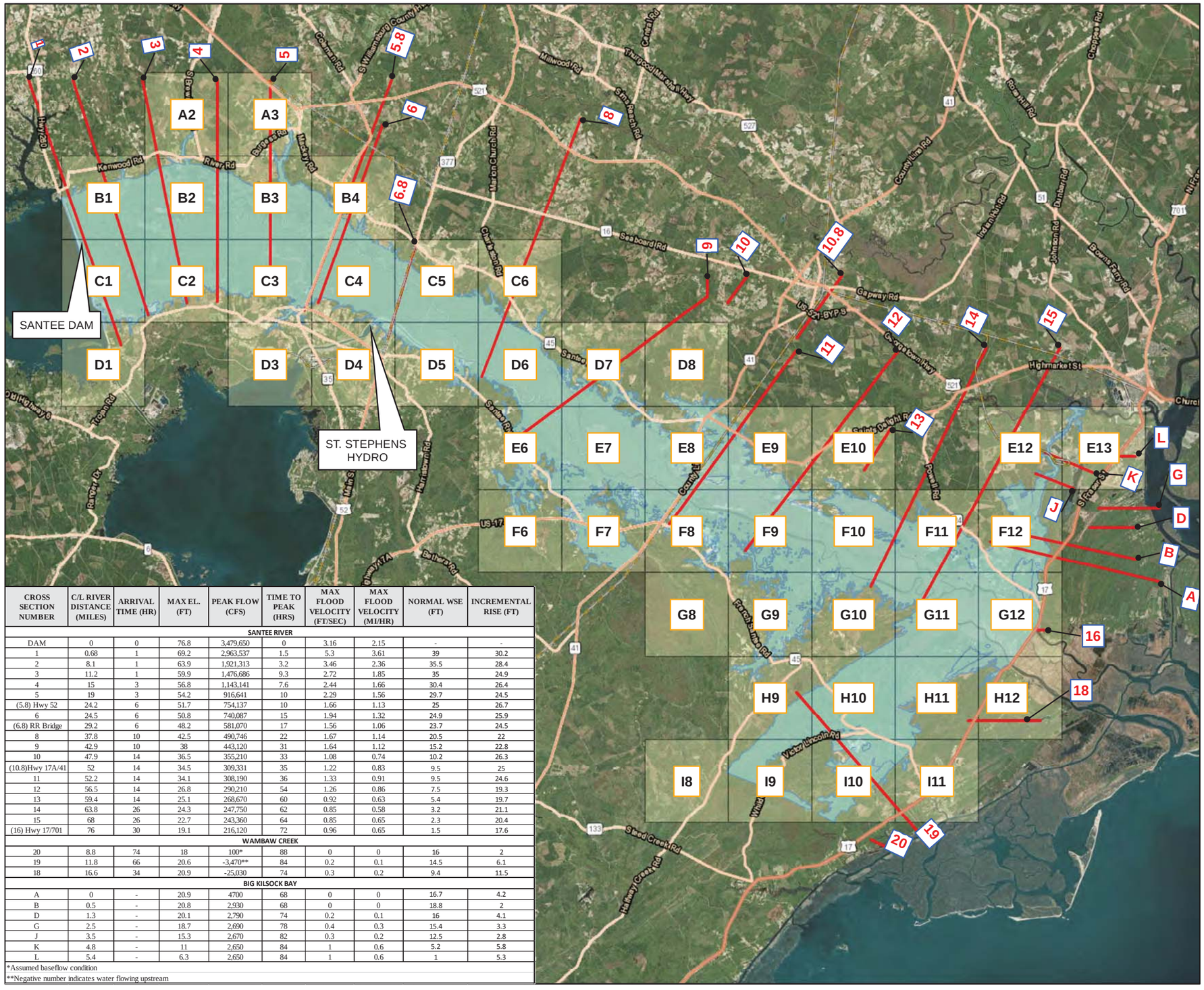
The limits of flooding shown are solely to be used as a guideline for the establishment of evacuation zones.

Service Layer Credits: Sources: Esri, Garmin, USGS, NPS

CONTAINS CRITICAL ENERGY INFRASTRUCTURE INFORMATION

DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER

VII.B. Inundation Maps - Santee River (Detailed)



CROSS SECTION NUMBER	C/L RIVER DISTANCE (MILES)	ARRIVAL TIME (HR)	MAX EL. (FT)	PEAK FLOW (CFS)	TIME TO PEAK (HRS)	MAX FLOOD VELOCITY (FT/SEC)	MAX FLOOD VELOCITY (MI/HR)	NORMAL WSE (FT)	INCREMENTAL RISE (FT)
SANTEE RIVER									
DAM	0	0	76.8	3,479,650	0	3.16	2.15	-	-
1	0.68	1	69.2	2,963,537	1.5	5.3	3.61	39	30.2
2	8.1	1	63.9	1,921,313	3.2	3.46	2.36	35.5	28.4
3	11.2	1	59.9	1,476,686	9.3	2.72	1.85	35	24.9
4	15	3	56.8	1,143,141	7.6	2.44	1.66	30.4	26.4
5	19	3	54.2	916,641	10	2.29	1.56	29.7	24.5
(5.8) Hwy 52	24.2	6	51.7	754,137	10	1.66	1.13	25	26.7
6	24.5	6	50.8	740,087	15	1.94	1.32	24.9	25.9
(6.8) RR Bridge	29.2	6	48.2	581,070	17	1.56	1.06	23.7	24.5
8	37.8	10	42.5	490,746	22	1.67	1.14	20.5	22
9	42.9	10	38	443,120	31	1.64	1.12	15.2	22.8
10	47.9	14	36.5	355,210	33	1.08	0.74	10.2	26.3
(10.8)Hwy 17A/41	52	14	34.5	309,331	35	1.22	0.83	9.5	25
11	52.2	14	34.1	308,190	36	1.33	0.91	9.5	24.6
12	56.5	14	26.8	290,210	54	1.26	0.86	7.5	19.3
13	59.4	14	25.1	268,670	60	0.92	0.63	5.4	19.7
14	63.8	26	24.3	247,750	62	0.85	0.58	3.2	21.1
15	68	26	22.7	243,360	64	0.85	0.65	2.3	20.4
(16) Hwy 17/701	76	30	19.1	216,120	72	0.96	0.65	1.5	17.6
WAMBAW CREEK									
20	8.8	74	18	100*	88	0	0	16	2
19	11.8	66	20.6	-3,470**	84	0.2	0.1	14.5	6.1
18	16.6	34	20.9	-25,030	74	0.3	0.2	9.4	11.5
BIG KILSOCK BAY									
A	0	-	20.9	4700	68	0	0	16.7	4.2
B	0.5	-	20.8	2,930	68	0	0	18.8	2
D	1.3	-	20.1	2,790	74	0.2	0.1	16	4.1
G	2.5	-	18.7	2,690	78	0.4	0.3	15.4	3.3
J	3.5	-	15.3	2,670	82	0.3	0.2	12.5	2.8
K	4.8	-	11	2,650	84	1	0.6	5.2	5.8
L	5.4	-	6.3	2,650	84	1	0.6	1	5.3

*Assumed baseflow condition

**Negative number indicates water flowing upstream

MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

OVERALL GRID INDEX	2/2018

Legend

- Cross Sections
- 4-Mile Grid
- Max Flood Level

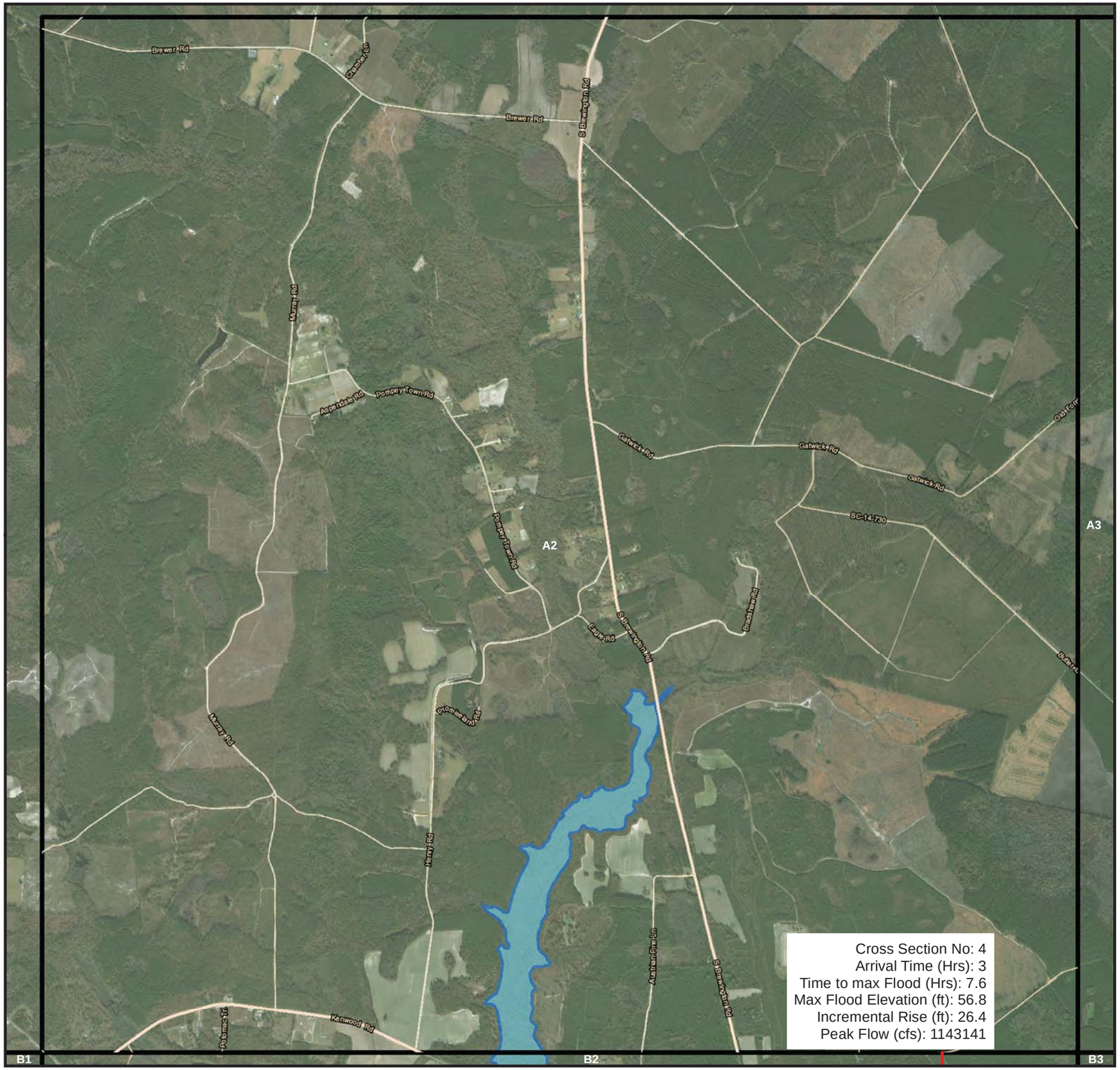
N

Miles
0 5 10

santee cooper

The limits of flooding shown are solely to be used as a guideline for the establishment of evacuation zones.

CONTAINS CRITICLE ENERGY INFRASTRUCTURE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

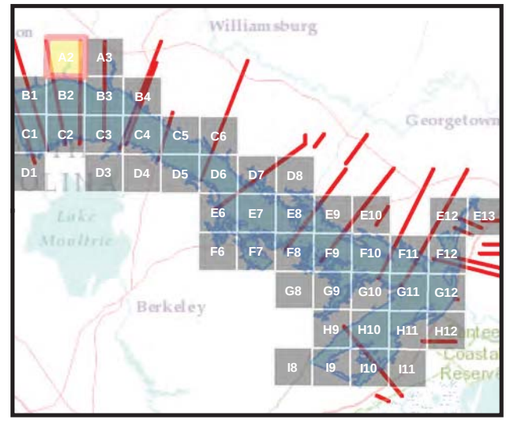
- Floodplain Structures (0)
- Cross Sections
- Max Flood Level

A2
SHEET 1 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-

MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

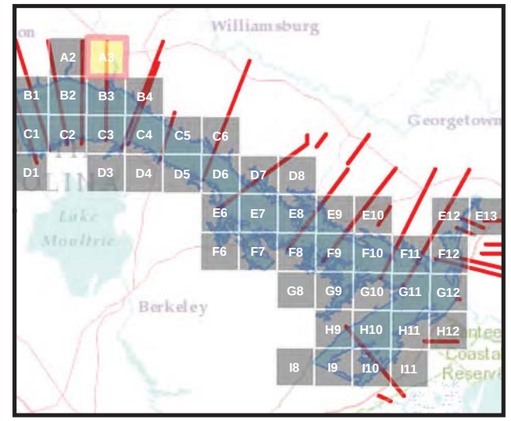
- Floodplain Structures (0)
- Cross Sections
- Max Flood Level

A3
SHEET 2 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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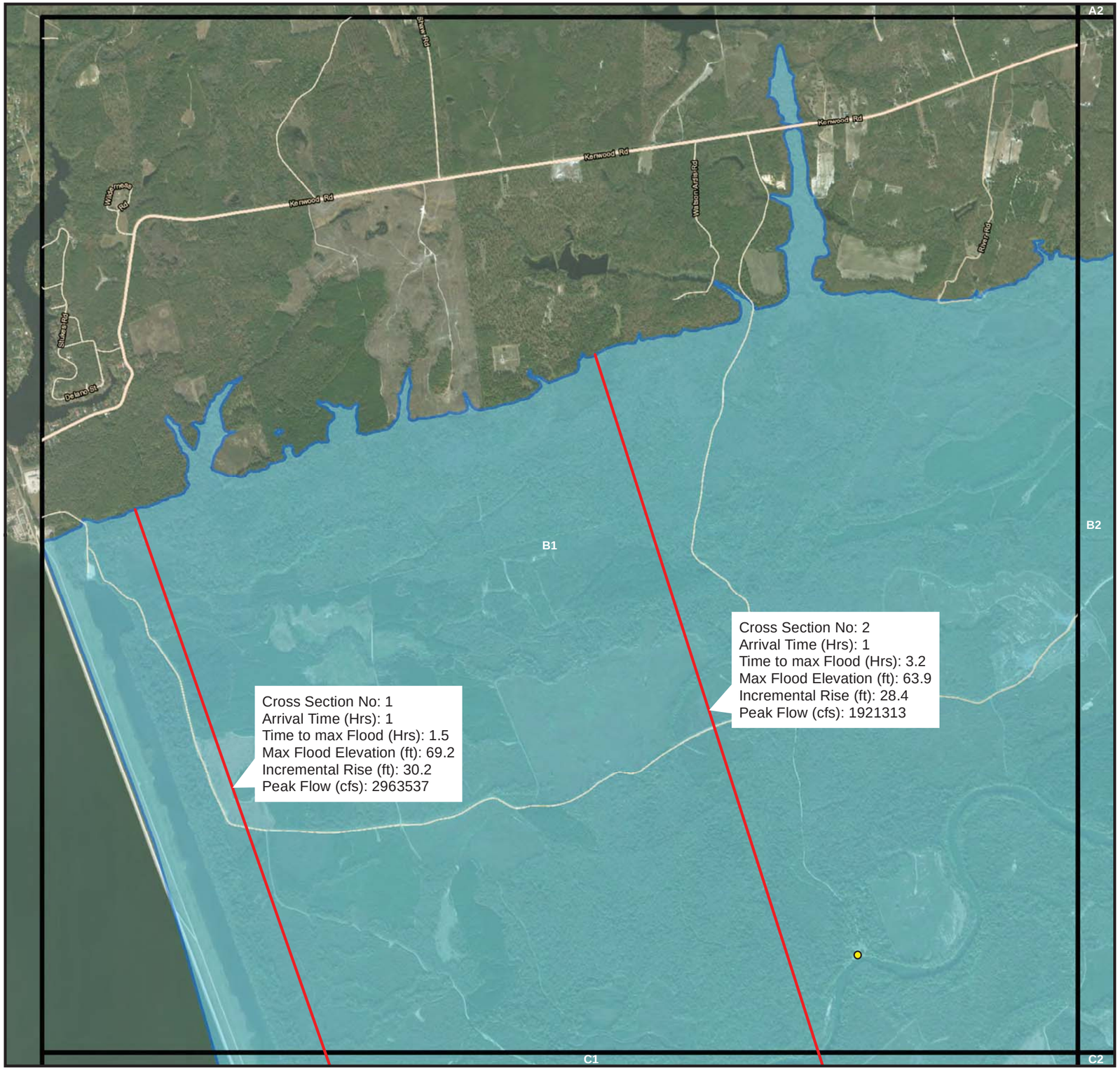
CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

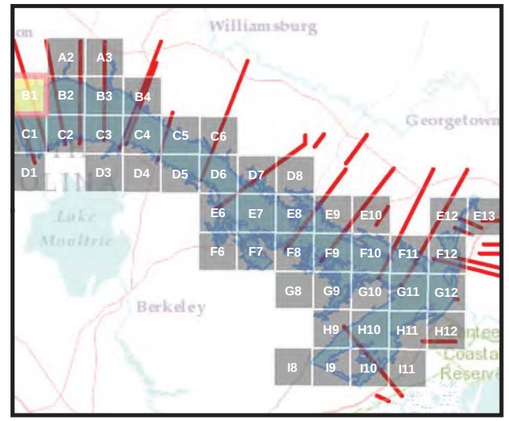
- Floodplain Structures (1)
- Cross Sections
- Max Flood Level

B1
SHEET 3 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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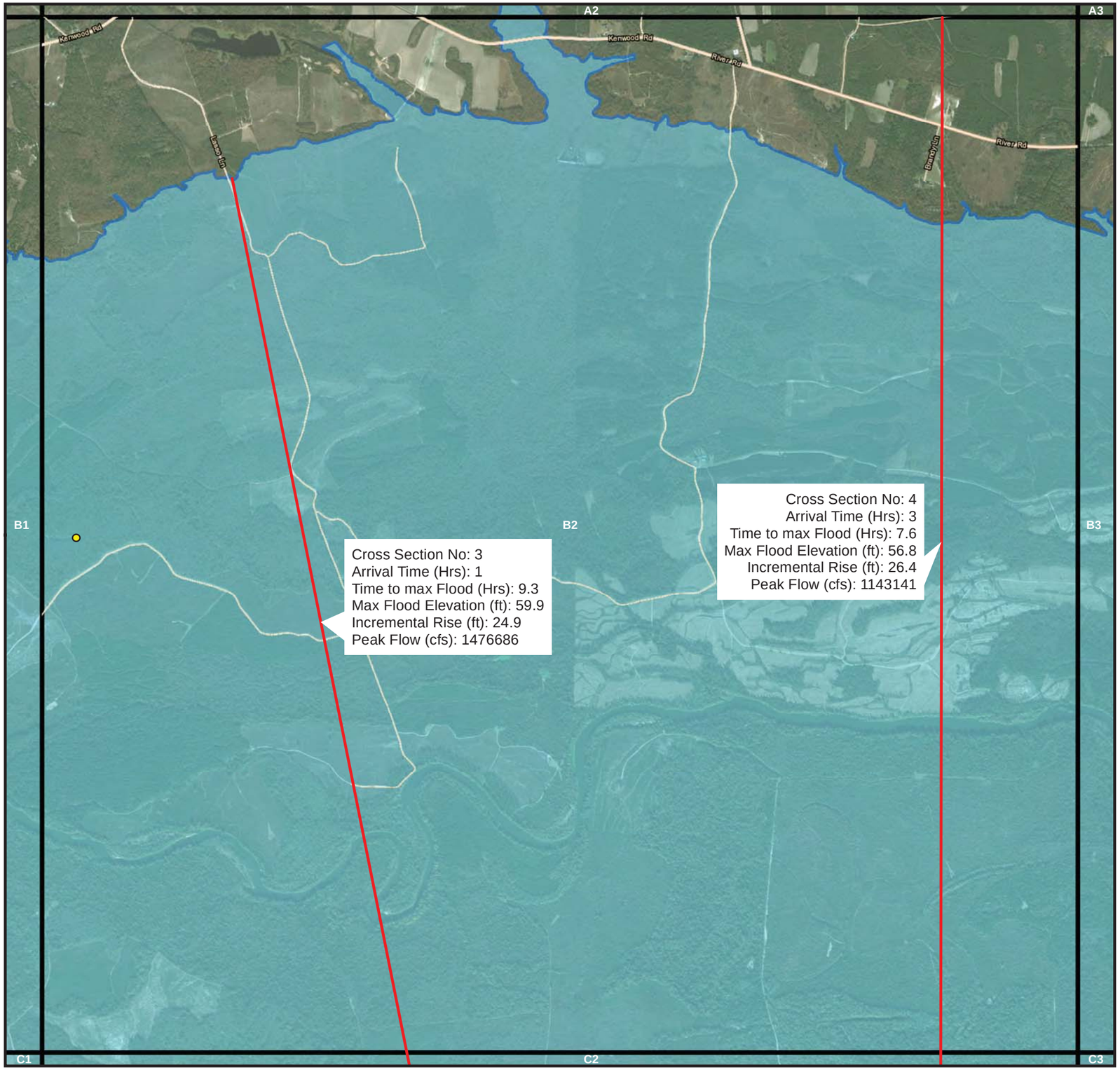
CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

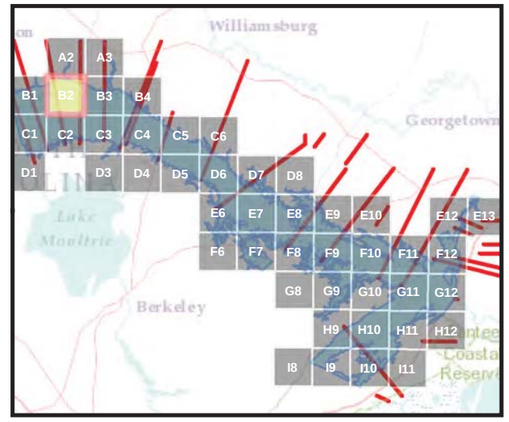
- Floodplain Structures (1)
- Cross Sections
- Max Flood Level

B2
SHEET 4 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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Sources: Esri, Garmin, USGS, NPS

CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-

MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

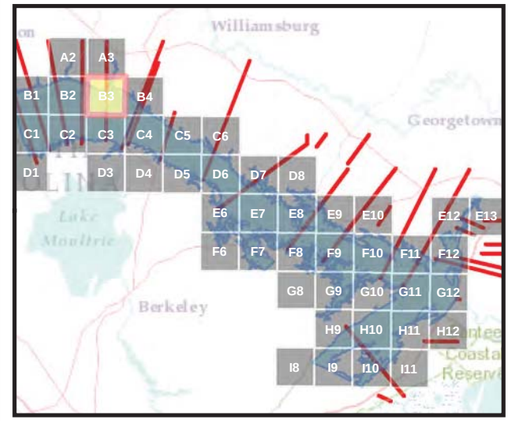
- Floodplain Structures (0)
- Cross Sections
- Max Flood Level

B3
SHEET 5 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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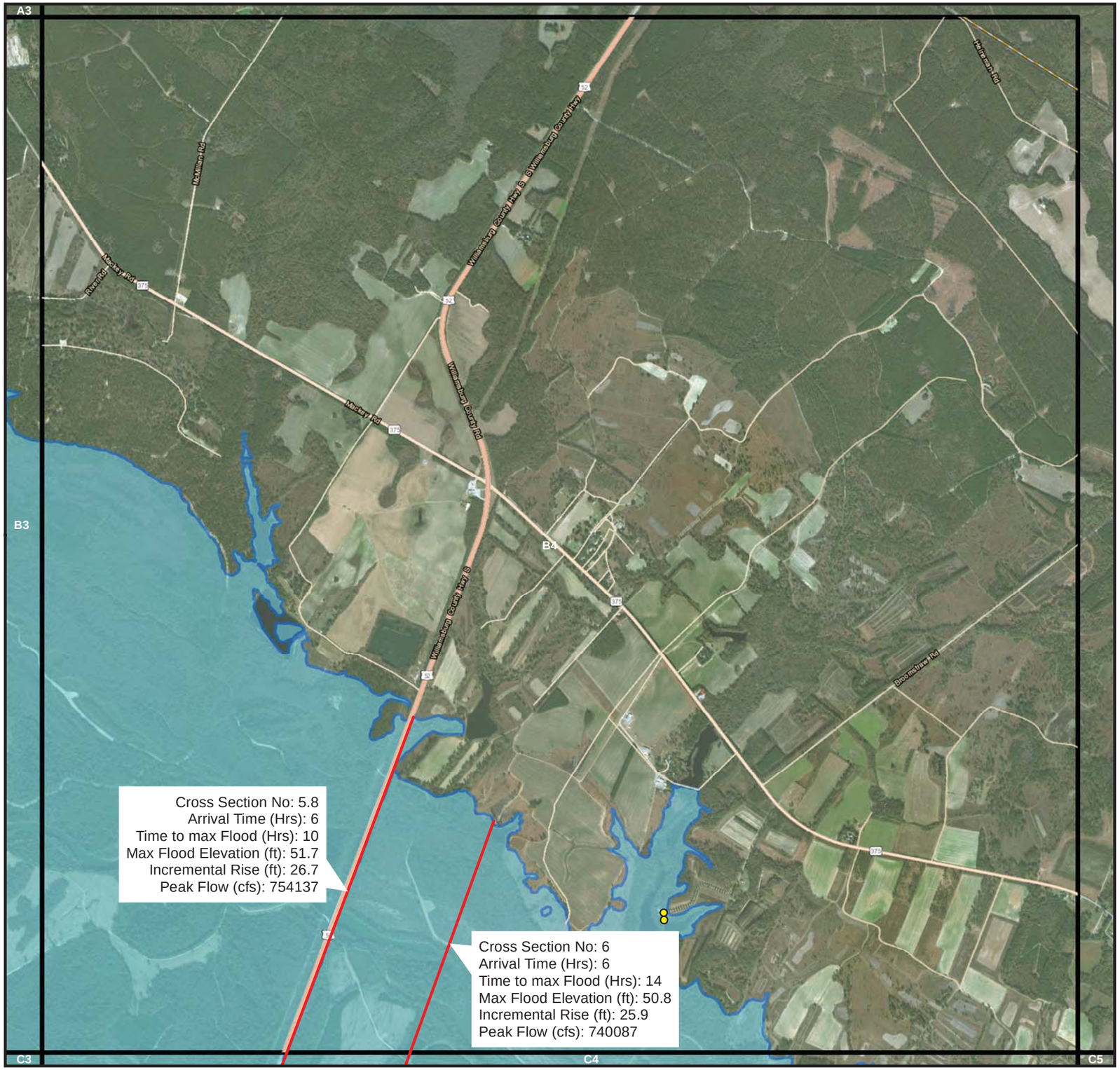
MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN



Legend

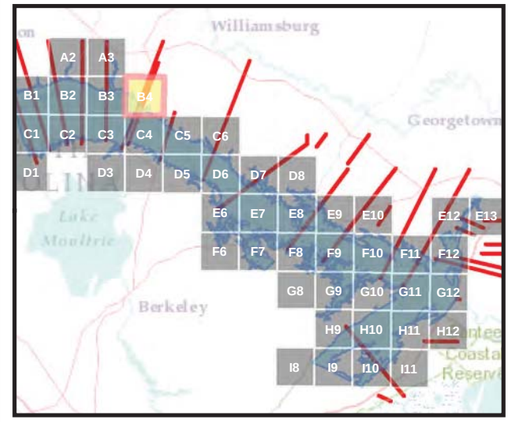
- Floodplain Structures (2)
- Cross Sections
- Max Flood Level

B4
SHEET 6 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



santee cooper

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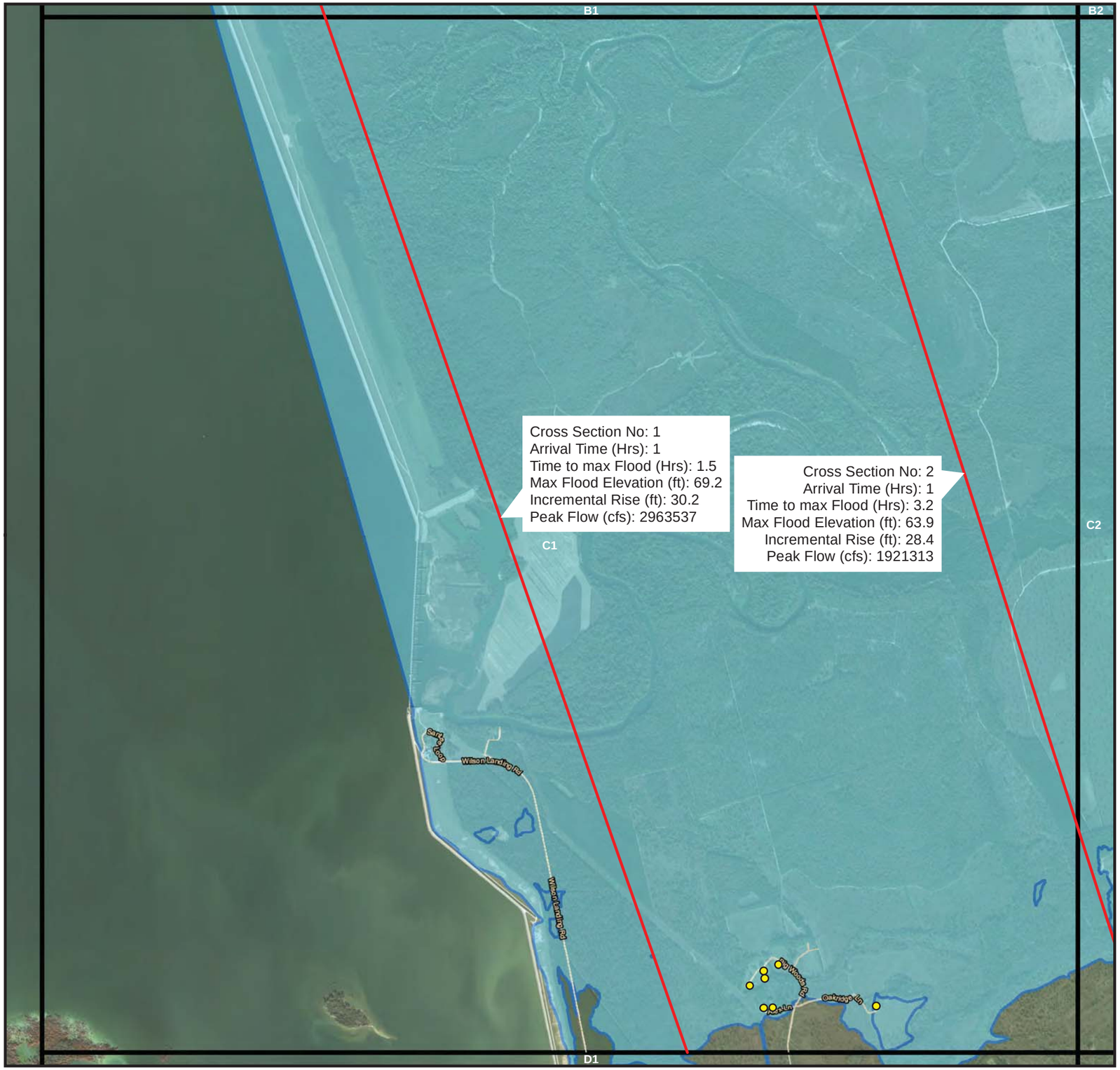
CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

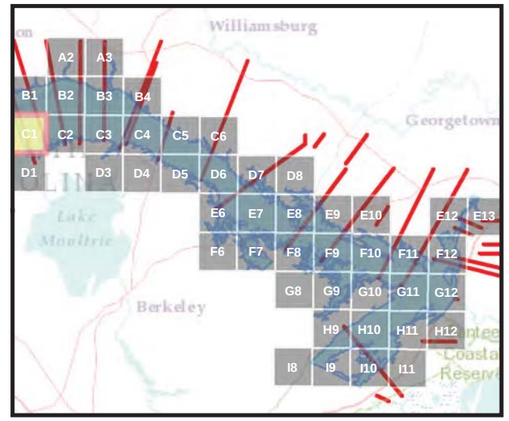
- Floodplain Structures (7)
- Cross Sections
- Max Flood Level

C1
SHEET 7 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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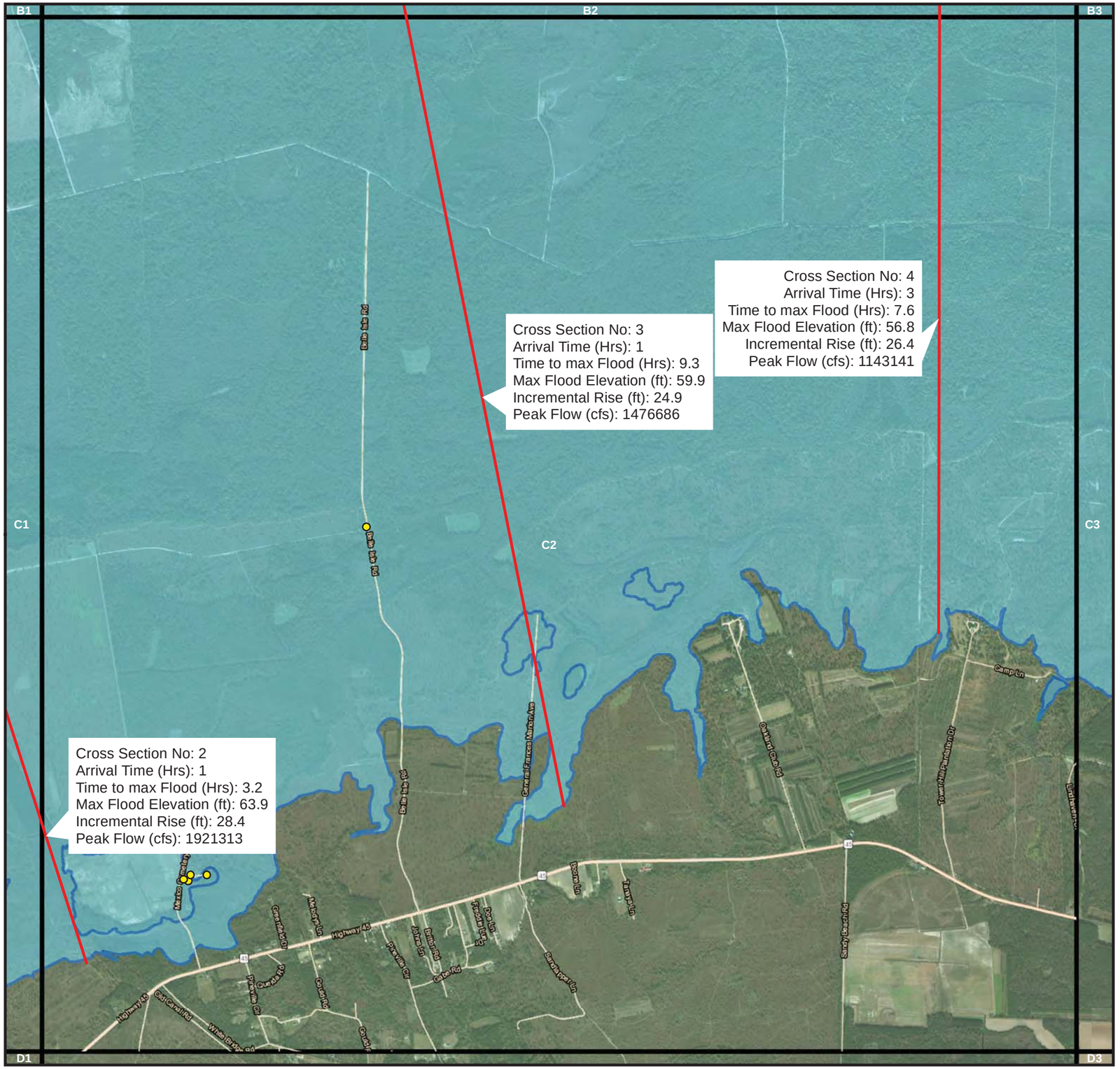
CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

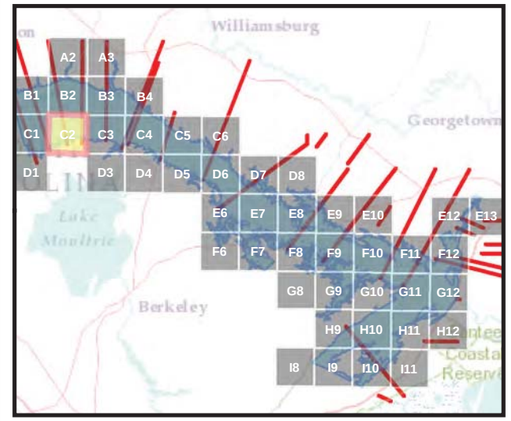
- Floodplain Structures (5)
- Cross Sections
- Max Flood Level

C2
SHEET 8 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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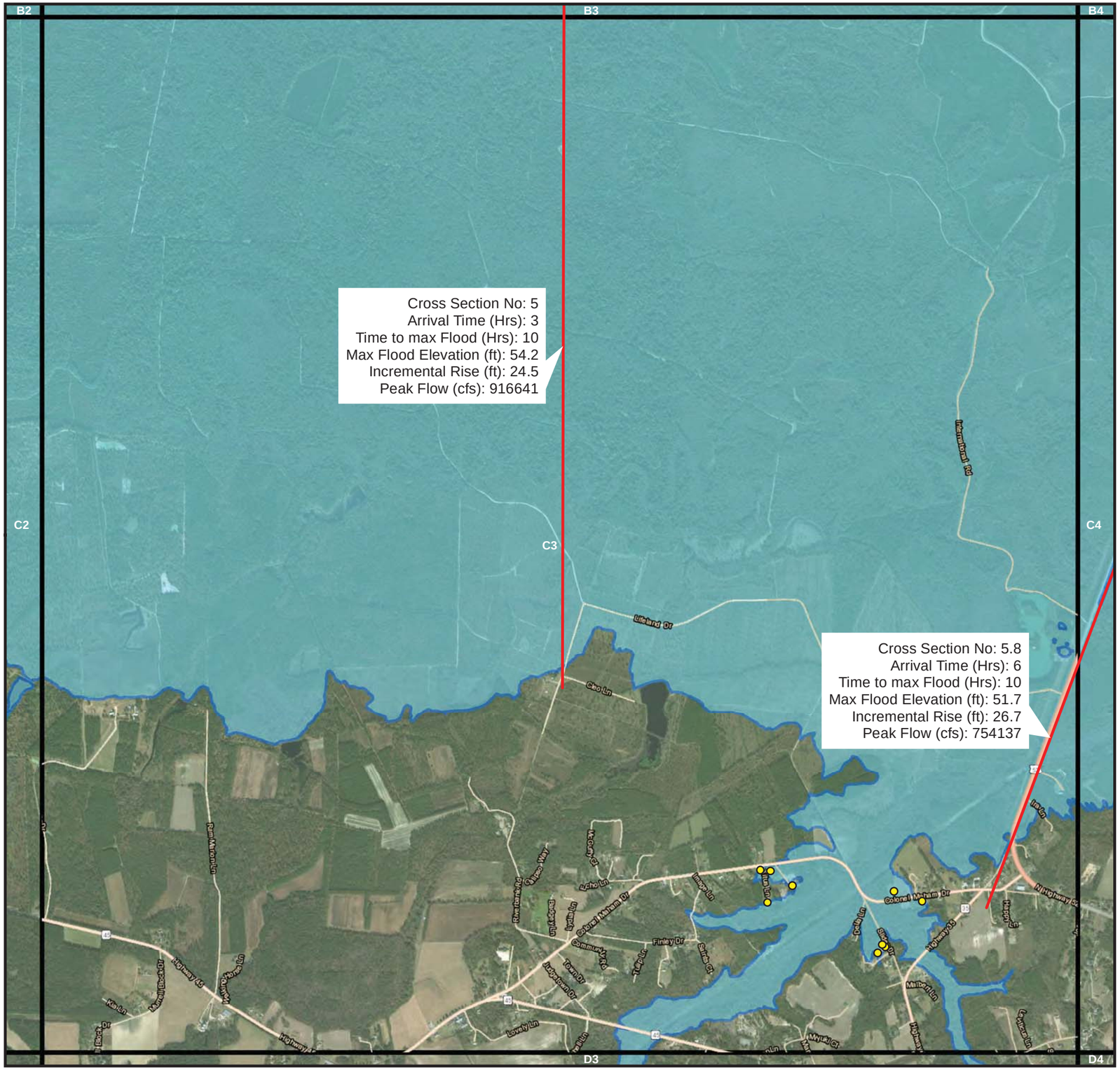
Sources: Esri, Garmin, USGS, NPS

CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

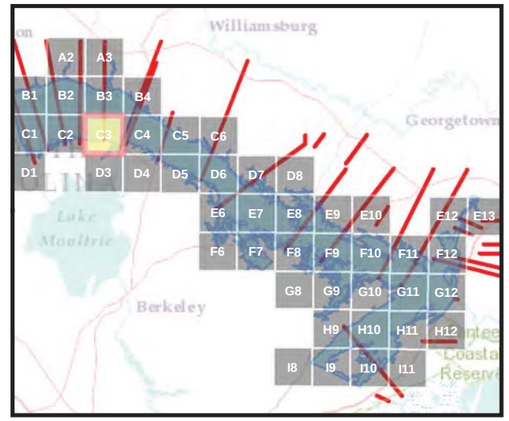
- Floodplain Structures (9)
- Cross Sections
- Max Flood Level

C3
SHEET 9 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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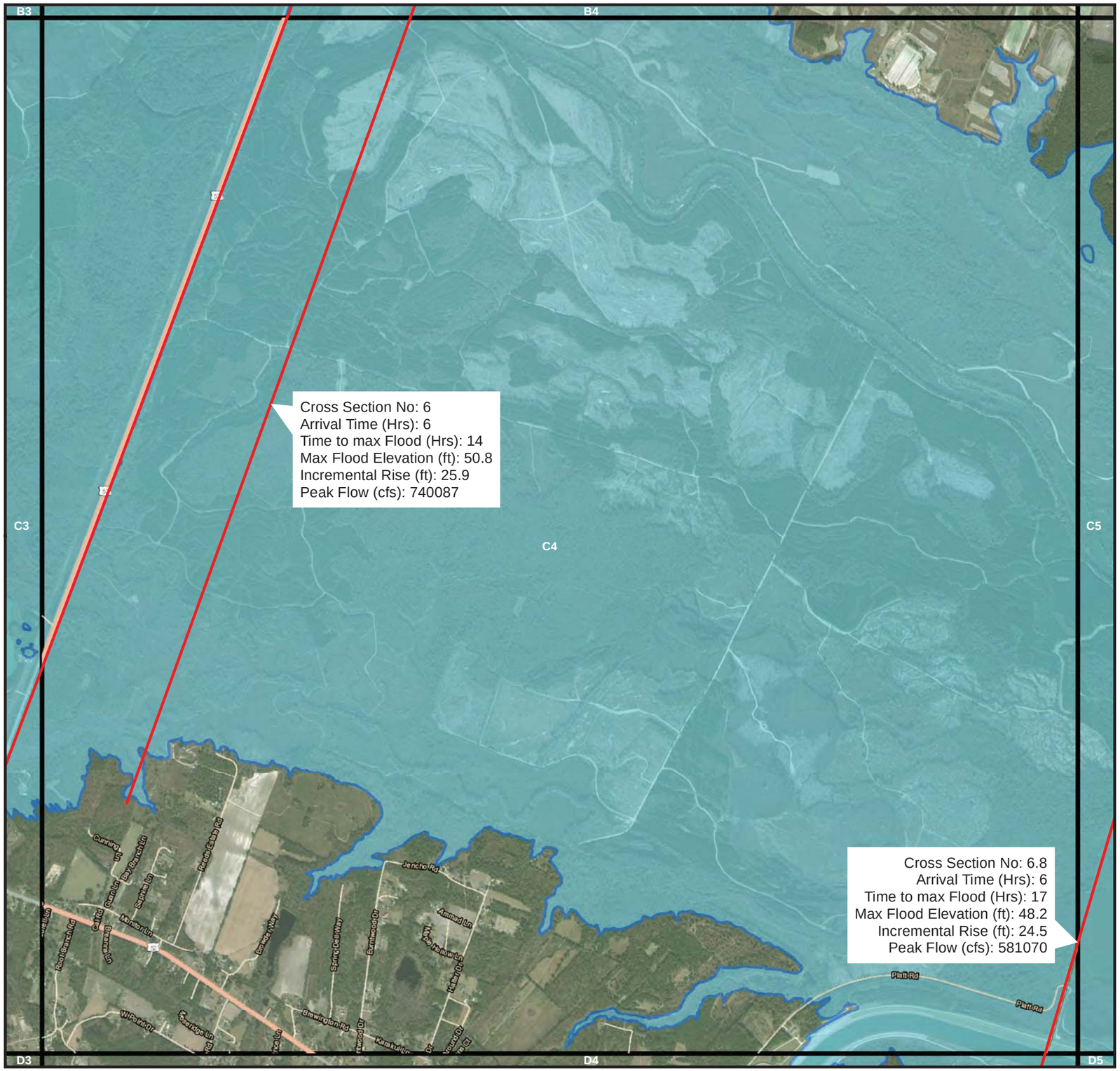
Sources: Esri, Garmin, USGS, NPS

CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

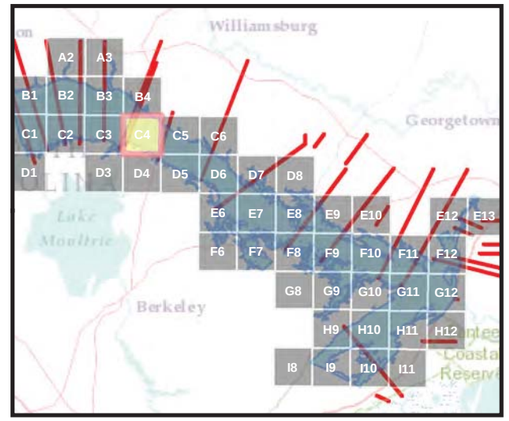
- Floodplain Structures (0)
- Cross Sections
- Max Flood Level

C4
SHEET 10 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



santee cooper

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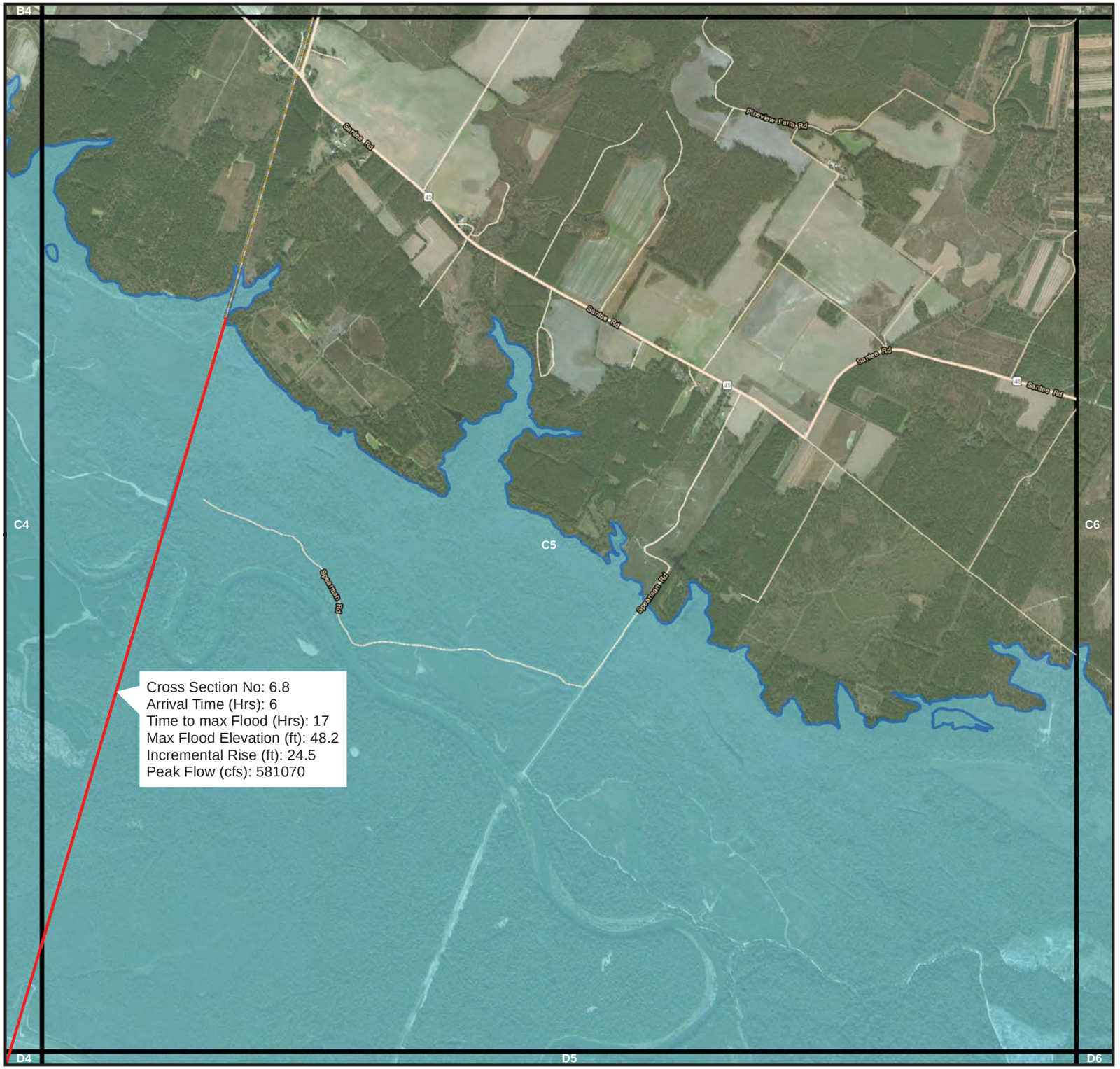
CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

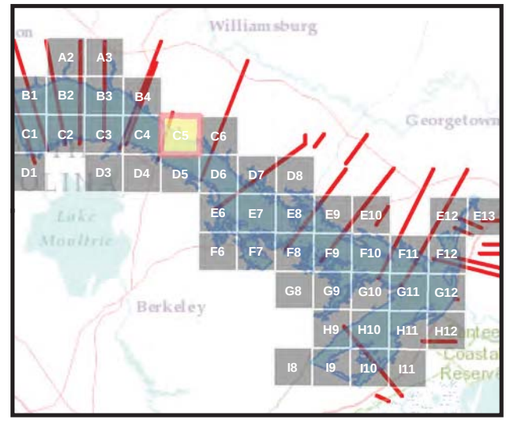
- Floodplain Structures (0)
- Cross Sections
- Max Flood Level

C5
SHEET 11 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-

MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

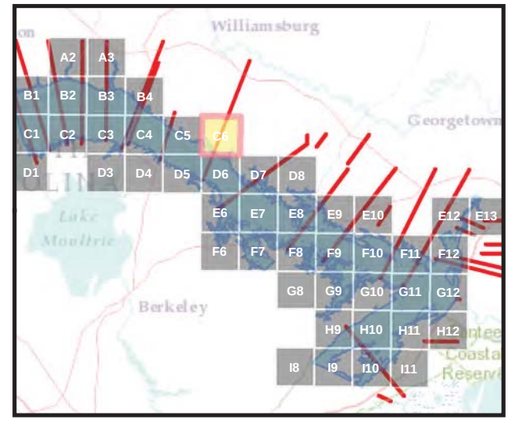
- Floodplain Structures (1)
- Cross Sections
- Max Flood Level

C6
SHEET 12 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



santee cooper

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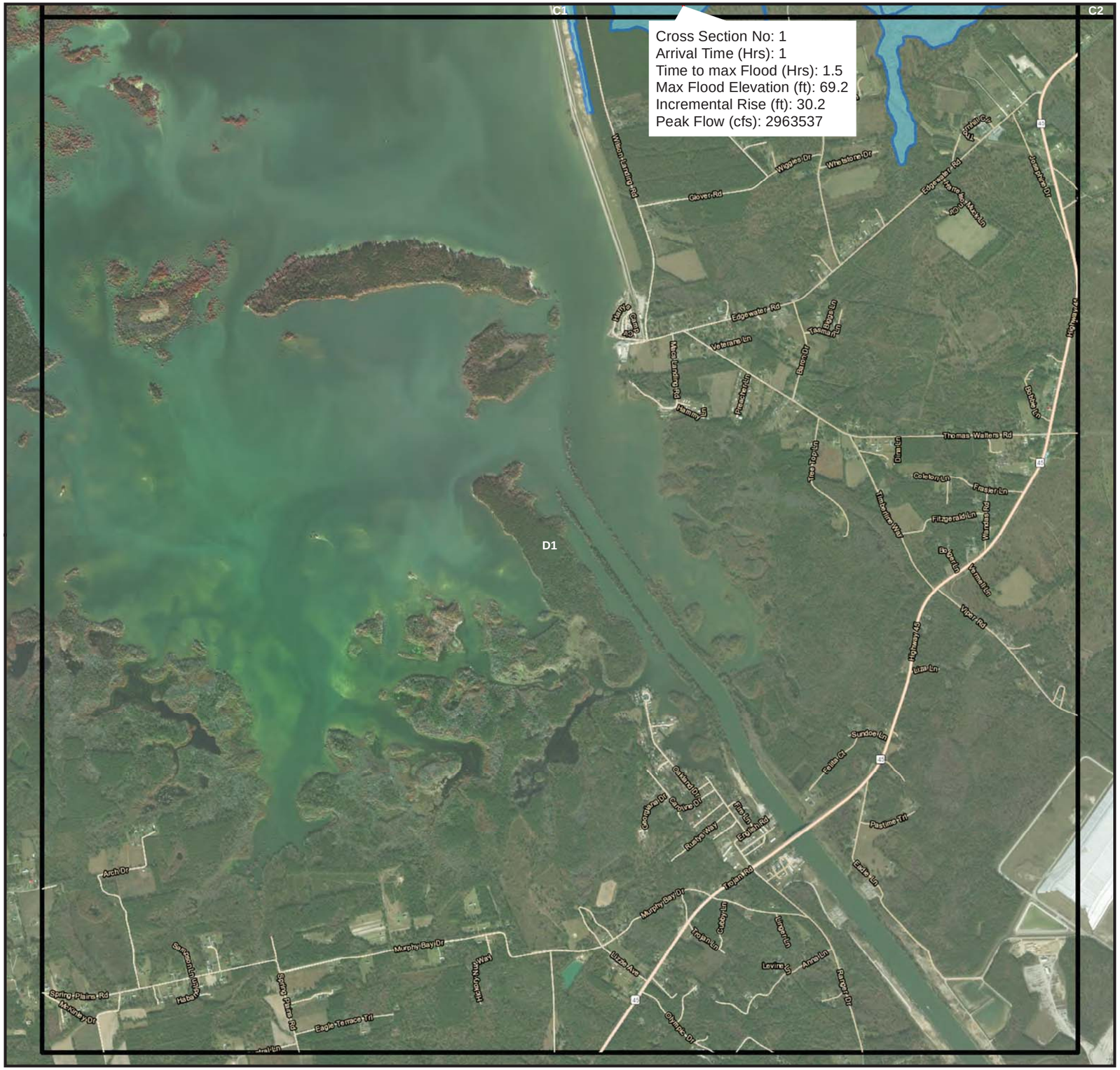
CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

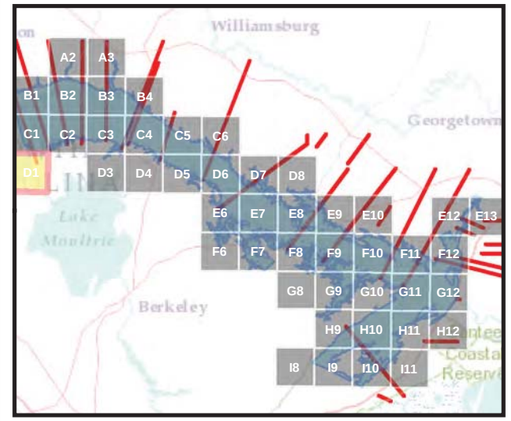
- Floodplain Structures (0)
- Cross Sections
- Max Flood Level

D1
SHEET 13 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



santee cooper

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CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-

MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

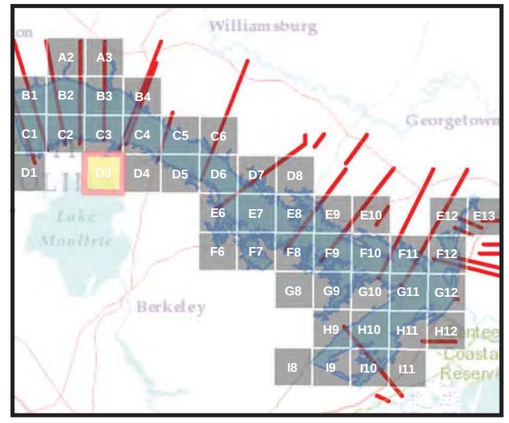
- Floodplain Structures (0)
- Cross Sections
- Max Flood Level

D3
SHEET 14 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



santee cooper

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CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-

MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

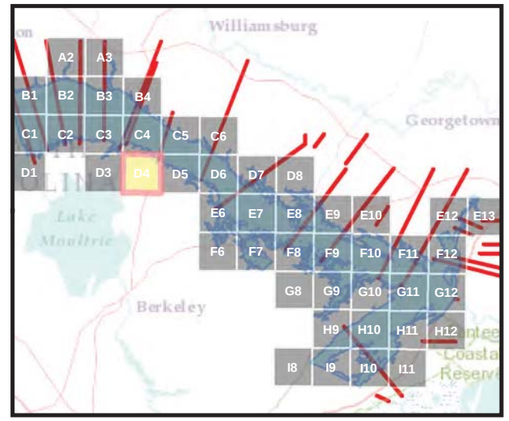
- Floodplain Structures (0)
- Cross Sections
- Max Flood Level

D4
SHEET 15 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



santee cooper

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CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-

MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

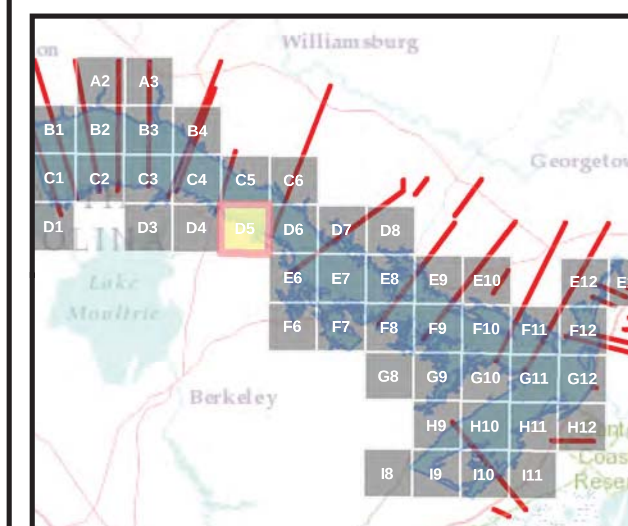
- Floodplain Structures (13)
- Cross Sections
- Max Flood Level

D5
SHEET 16 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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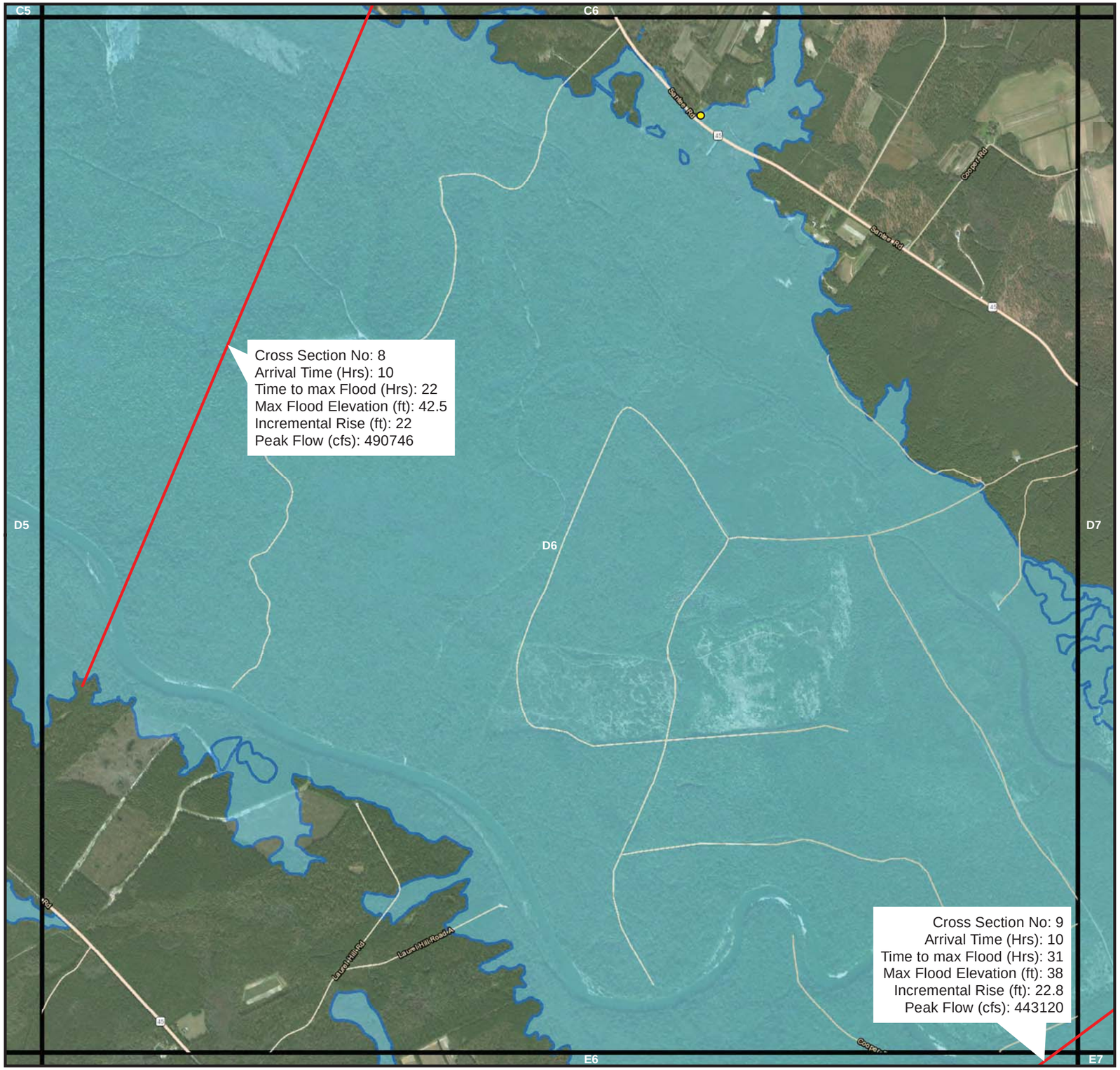
Sources: Esri, Garmin, USGS, NPS

CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-

MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN



Legend

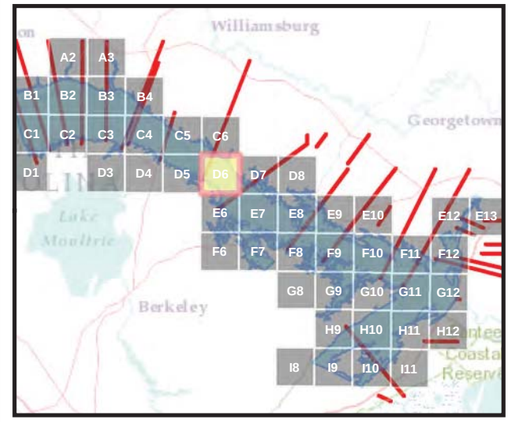
- Floodplain Structures (1)
- Cross Sections
- Max Flood Level

D6
SHEET 17 OF 46

Miles
0 0.5 1

N

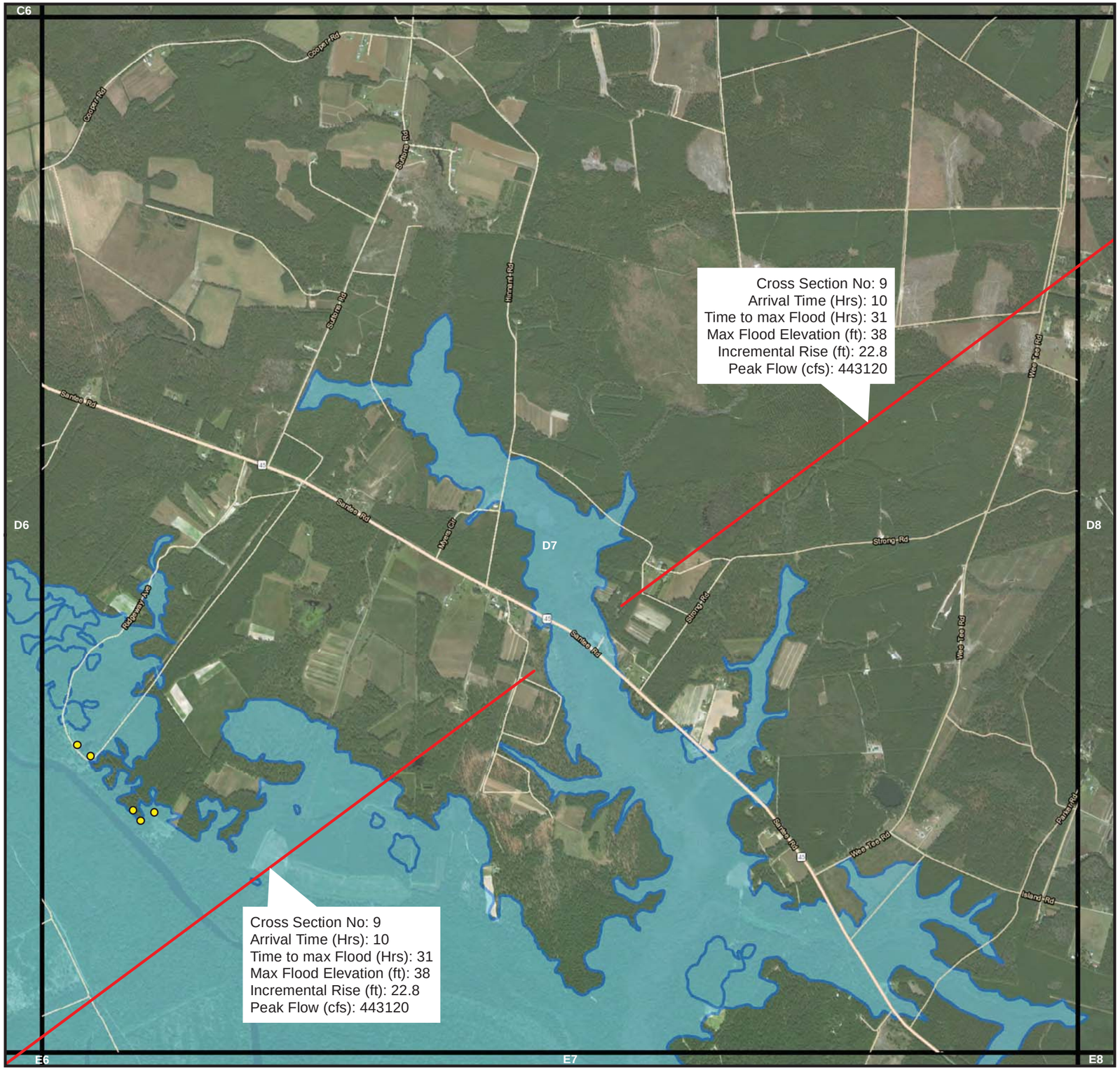
INDEX MAP: 2/2018



santee cooper

The limits of flooding shown are solely to be used as a guideline for the establishment of evacuation zones.

CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

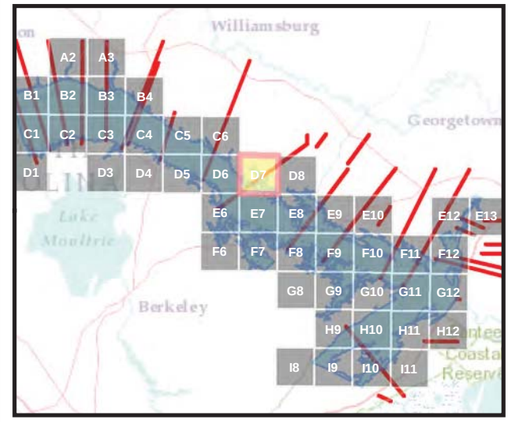
- Floodplain Structures (5)
- Cross Sections
- Max Flood Level

D7
SHEET 18 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



santee cooper

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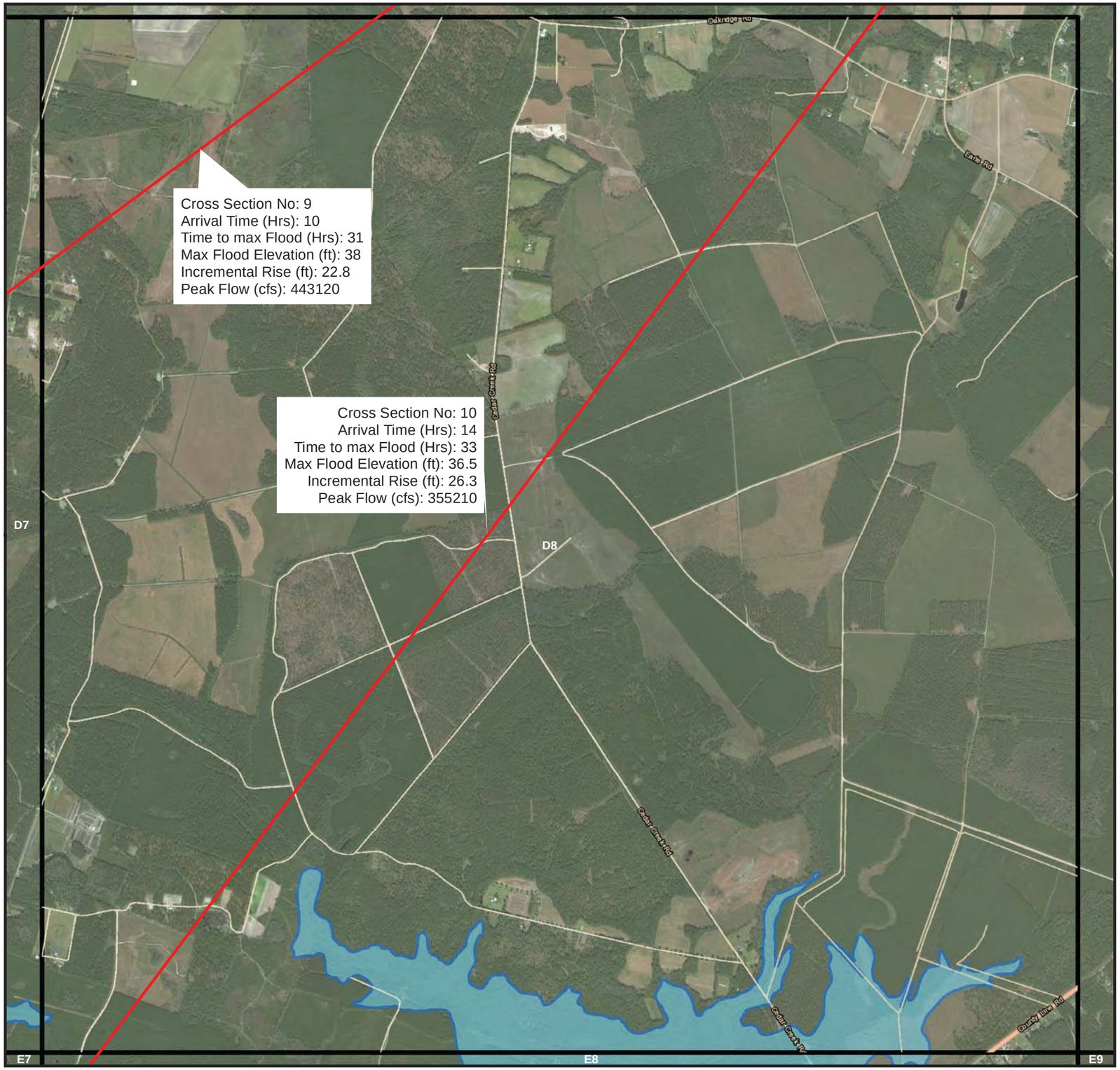
CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

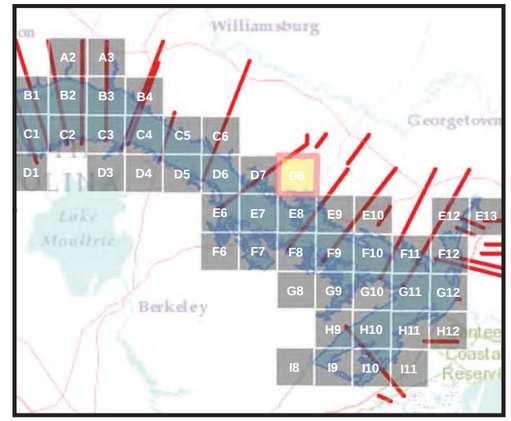
- Floodplain Structures (0)
- Cross Sections
- Max Flood Level

D8
SHEET 19 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



santee cooper

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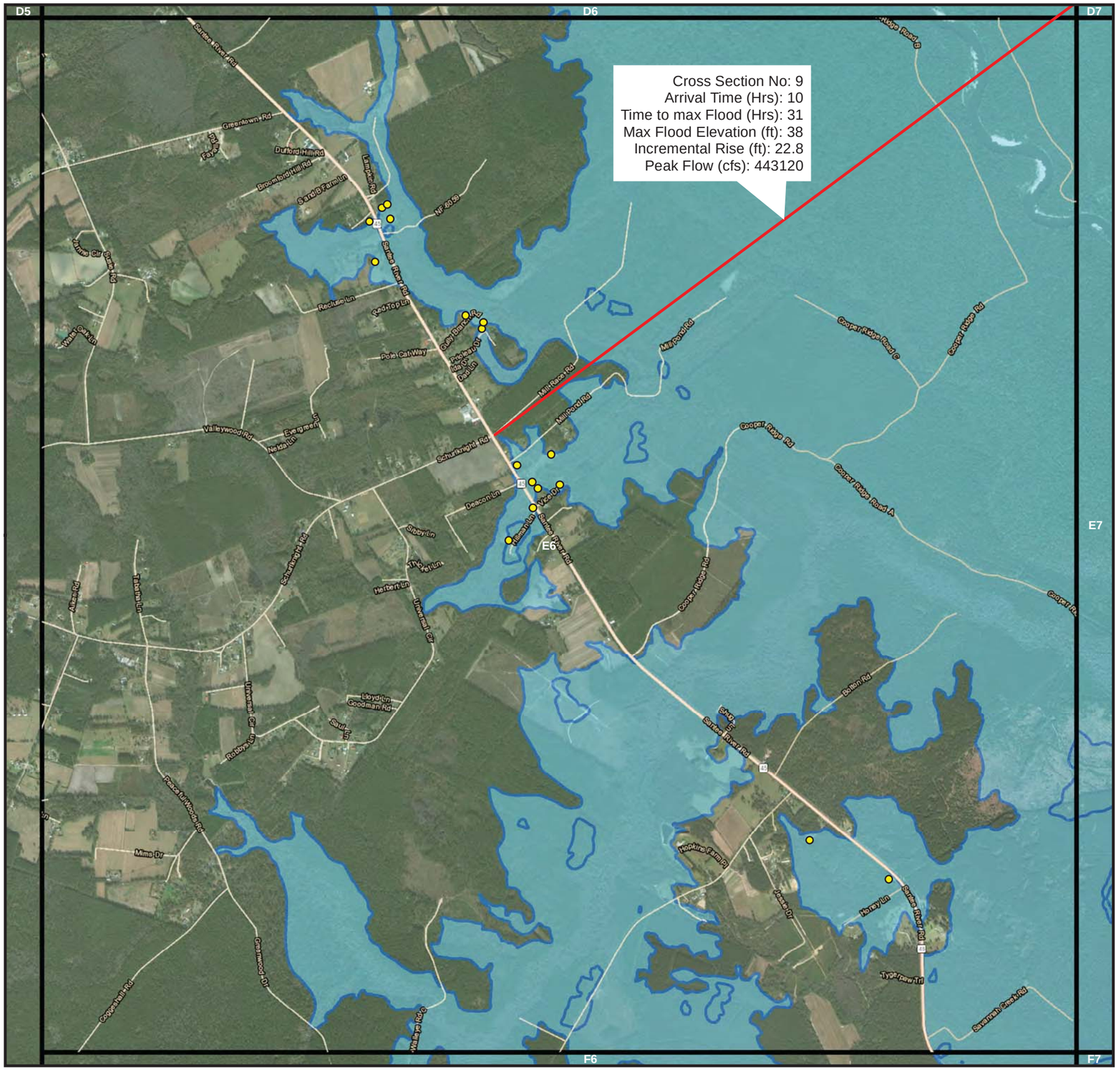
CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

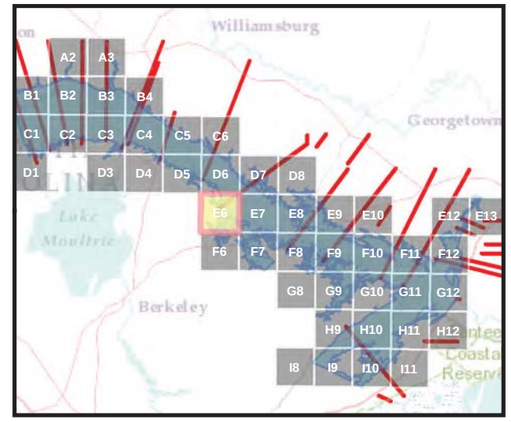
- Floodplain Structures (17)
- Cross Sections
- Max Flood Level

E6
SHEET 20 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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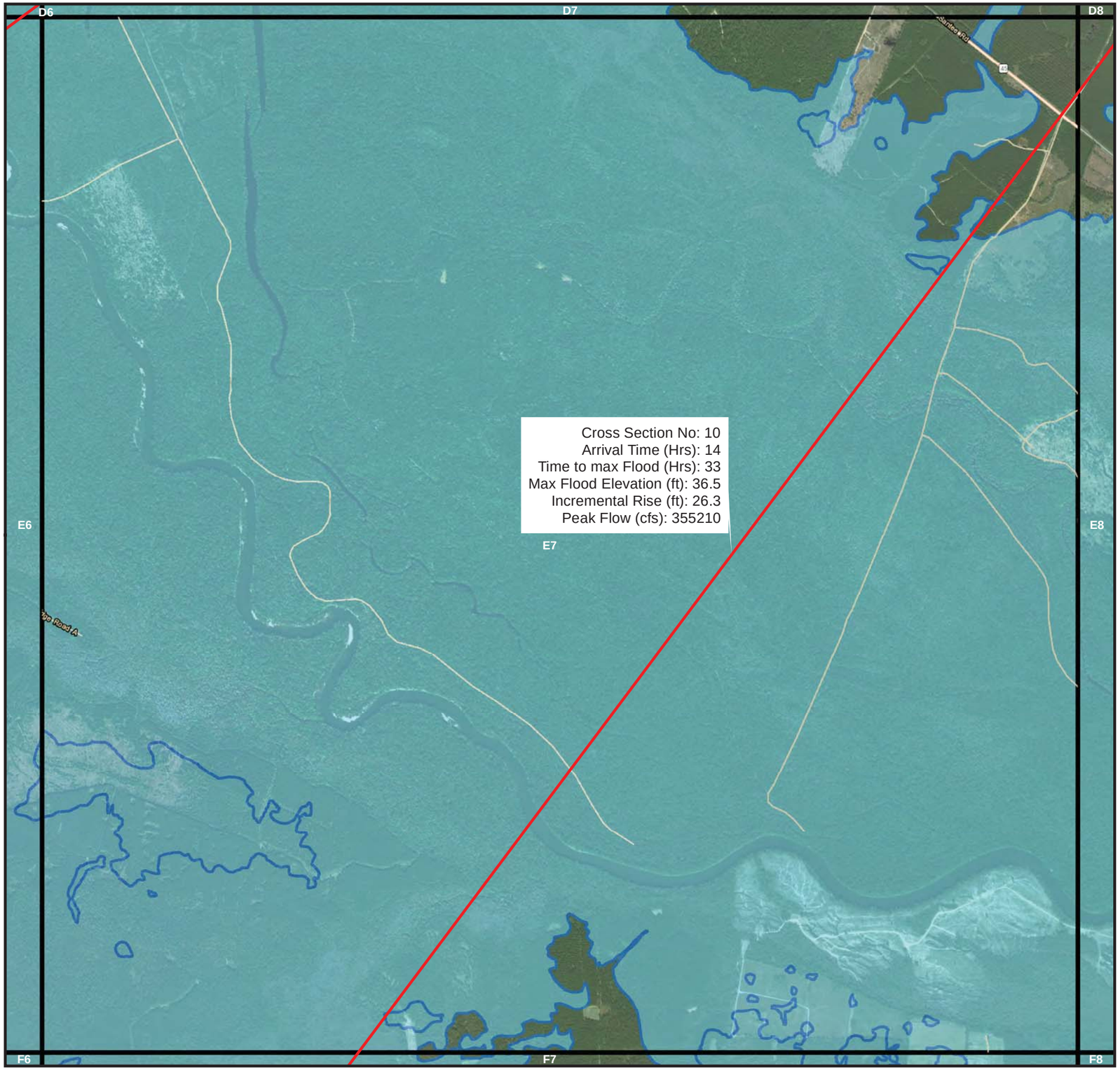
Sources: Esri, Garmin, USGS, NPS

CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

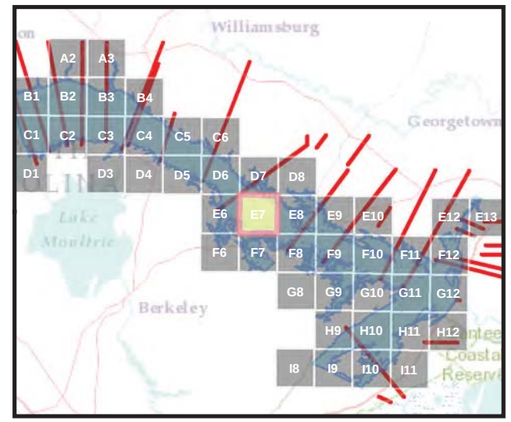
- Floodplain Structures (0)
- Cross Sections
- Max Flood Level

E7
SHEET 21 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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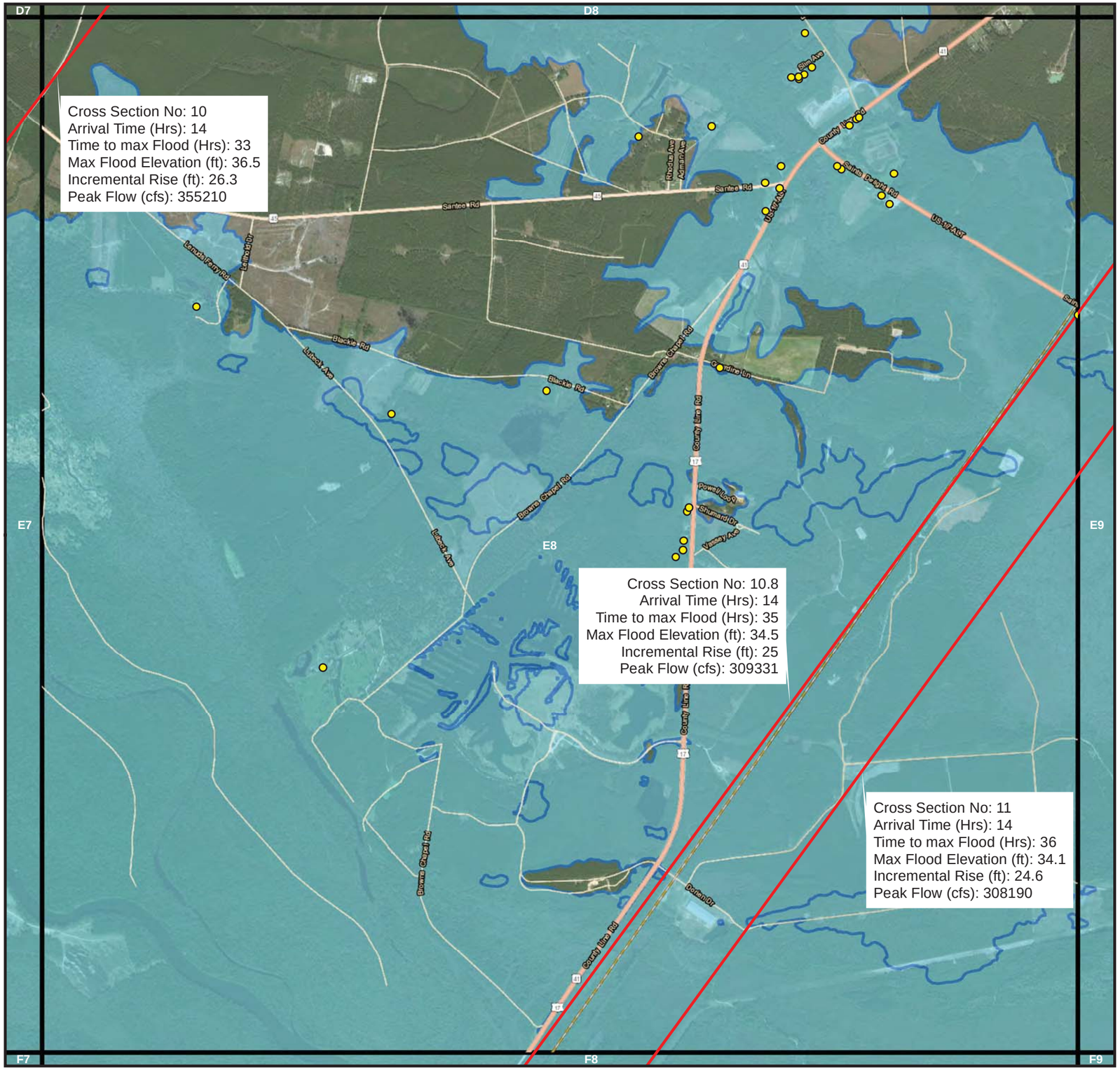
CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

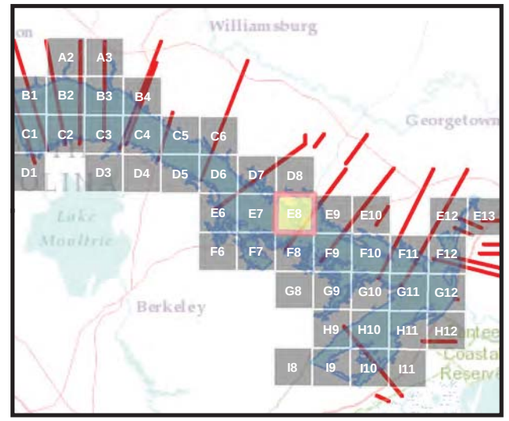
- Floodplain Structures (31)
- Cross Sections
- Max Flood Level

E8
SHEET 22 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



santee cooper

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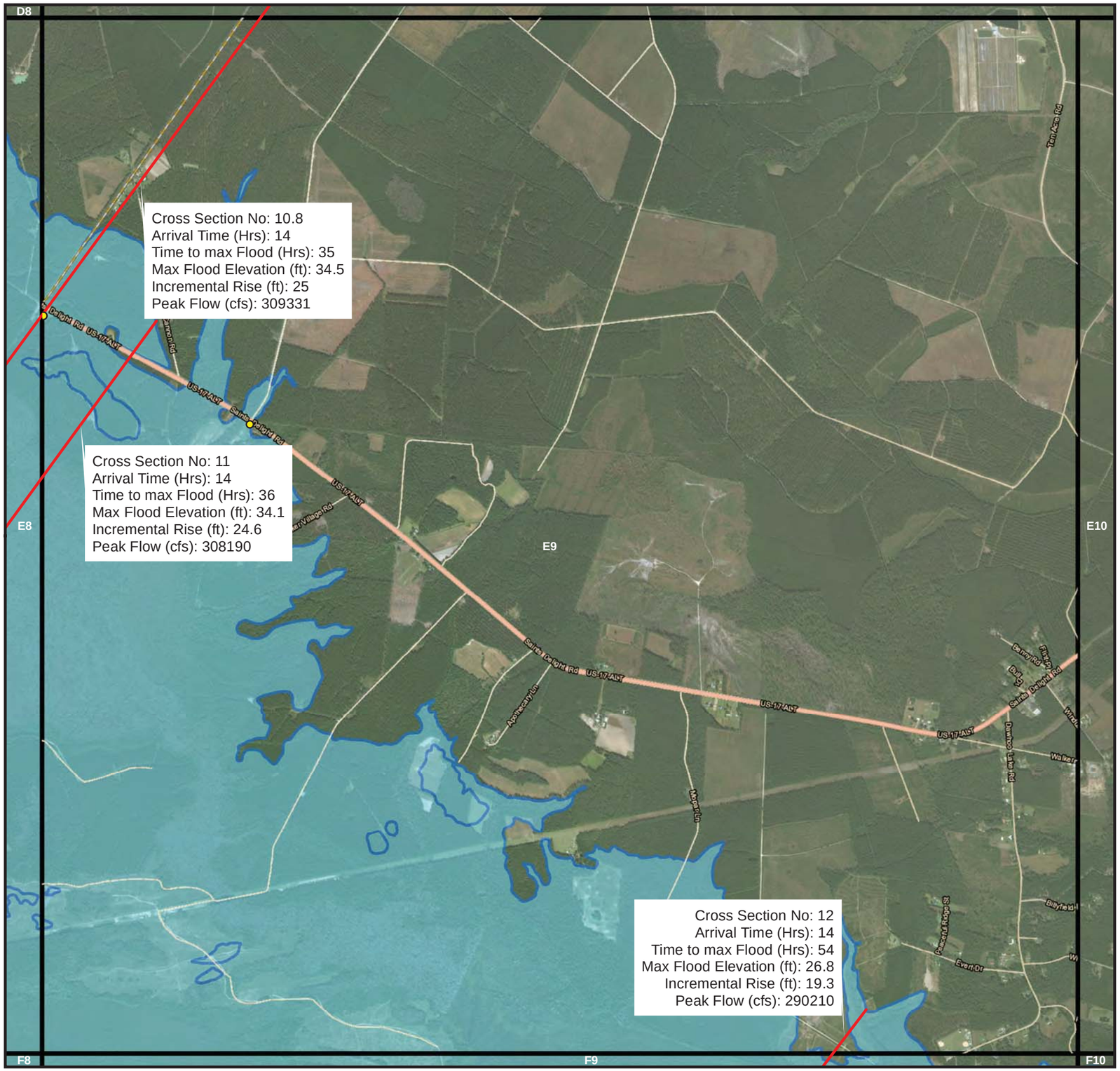
CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-

MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN



Legend

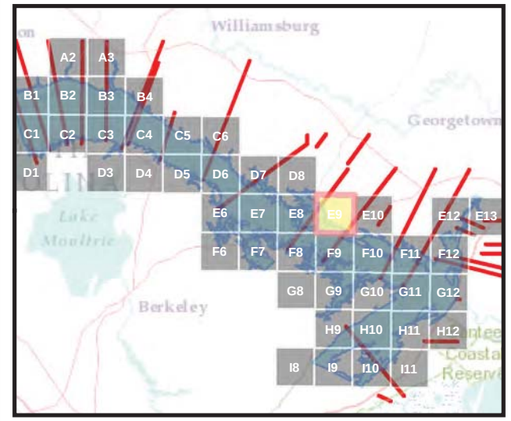
- Floodplain Structures (2)
- Cross Sections
- Max Flood Level

E9
SHEET 23 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



santee cooper

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CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-

MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

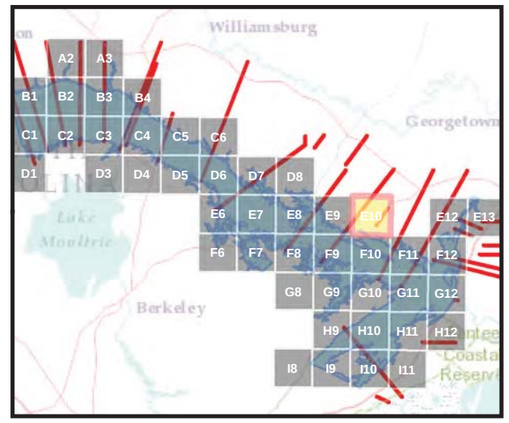
- Floodplain Structures (0)
- Cross Sections
- Max Flood Level

E10
SHEET 24 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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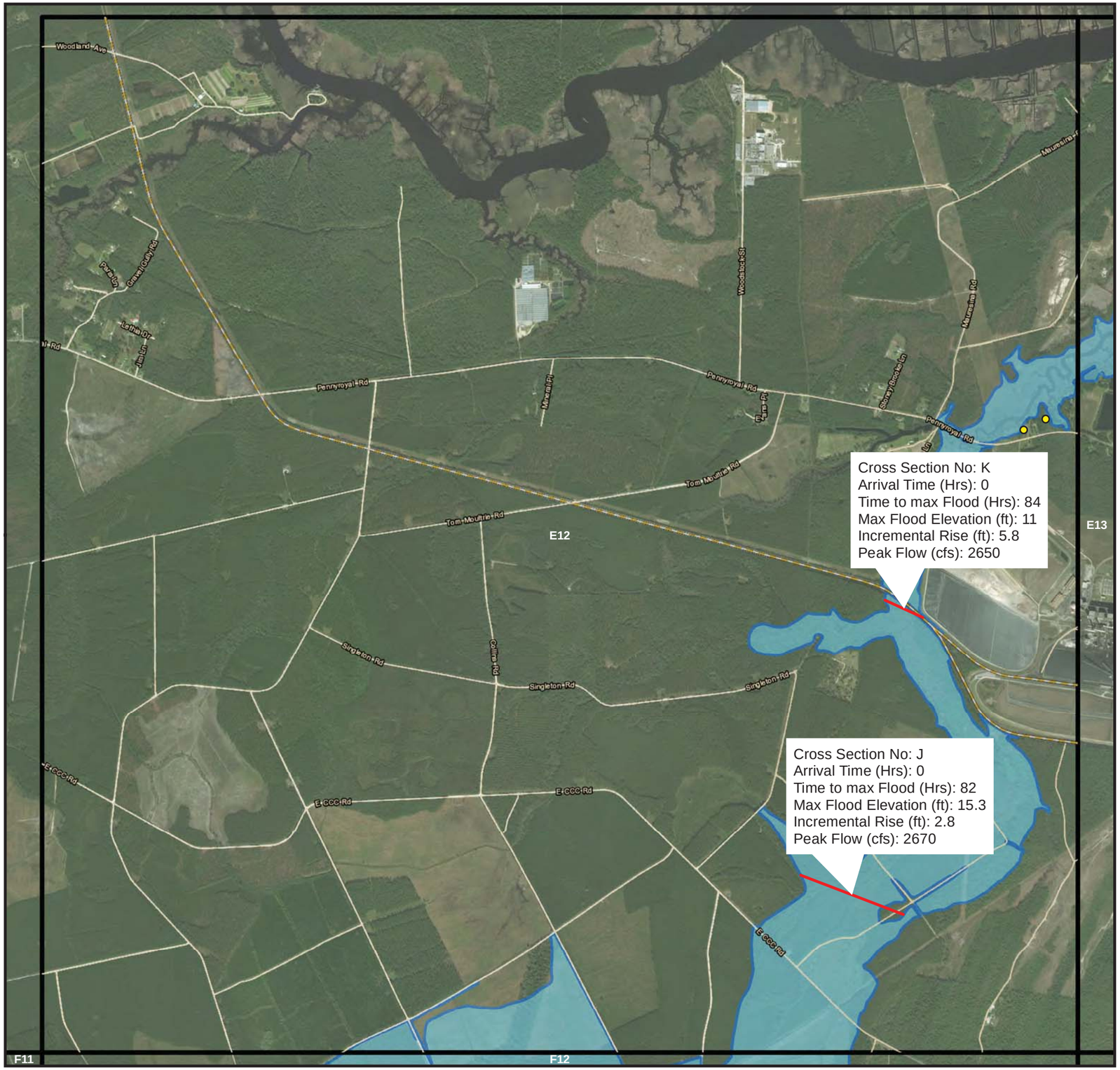
CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

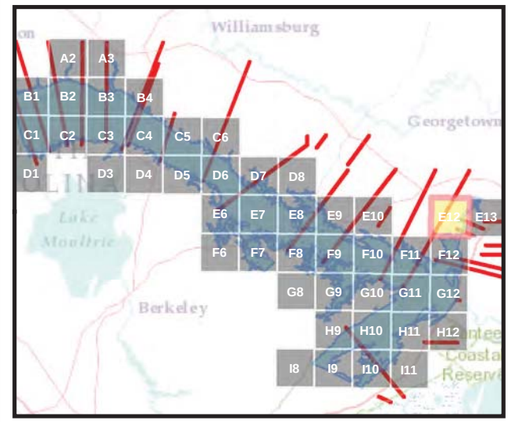
- Floodplain Structures (2)
- Cross Sections
- Max Flood Level

E12
SHEET 25 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



santee cooper

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CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-

MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

- Floodplain Structures (2)
- Cross Sections
- Max Flood Level

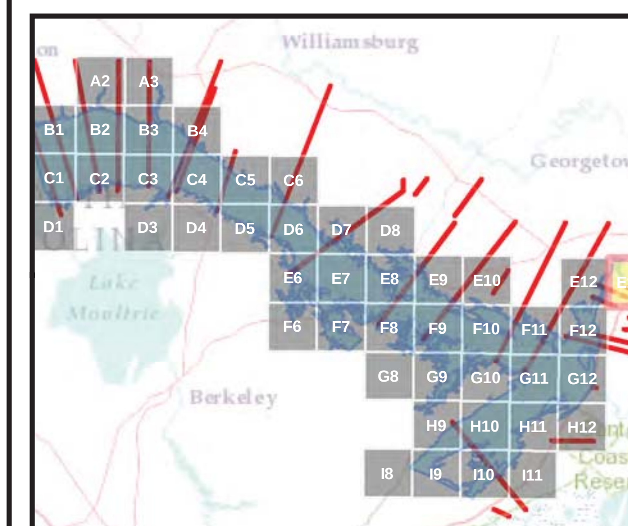
E13

SHEET **26** OF **46**

Miles: 0 — 0.5 — 1

N

INDEX MAP: 2/2018



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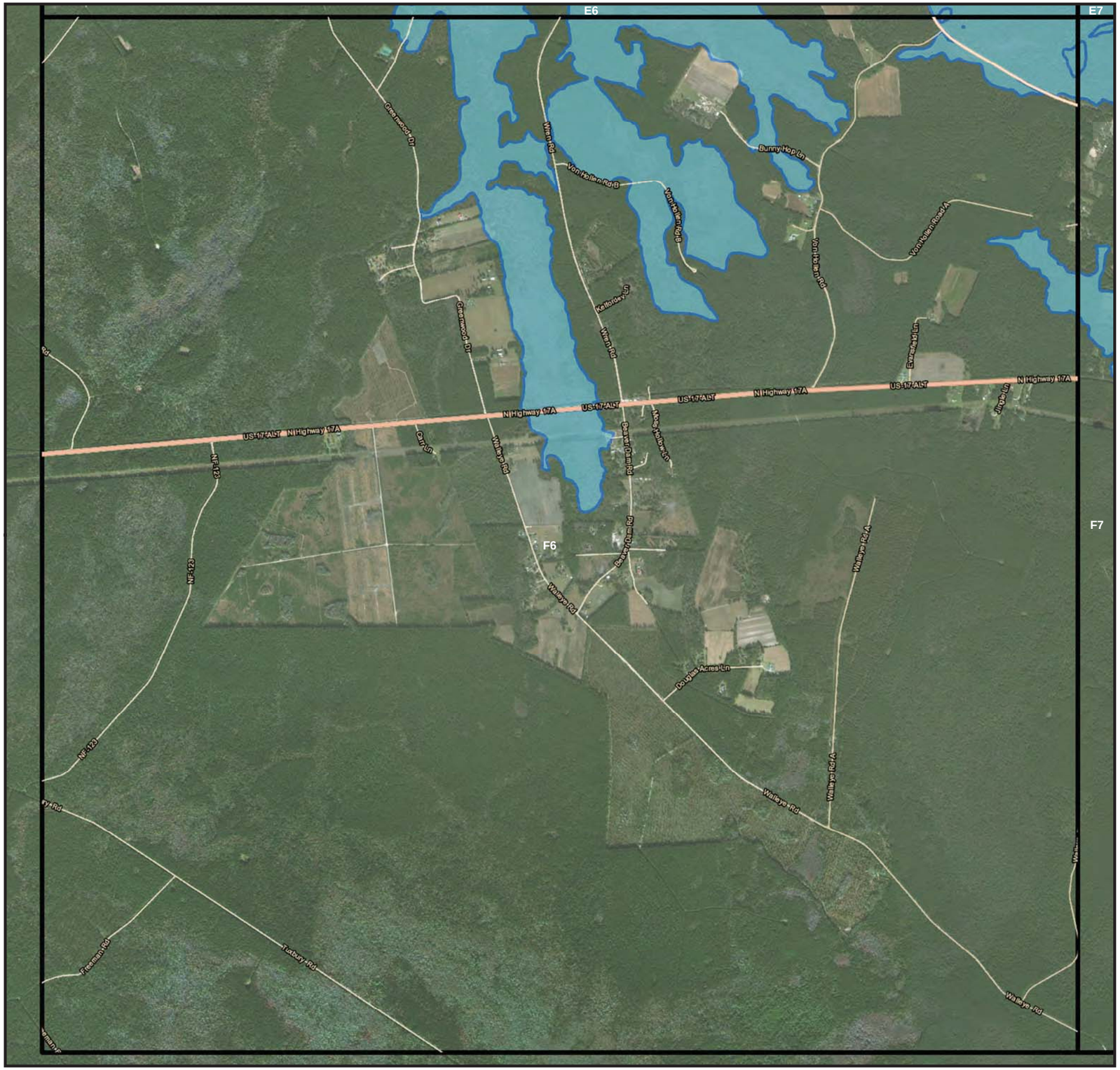
MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN



Legend

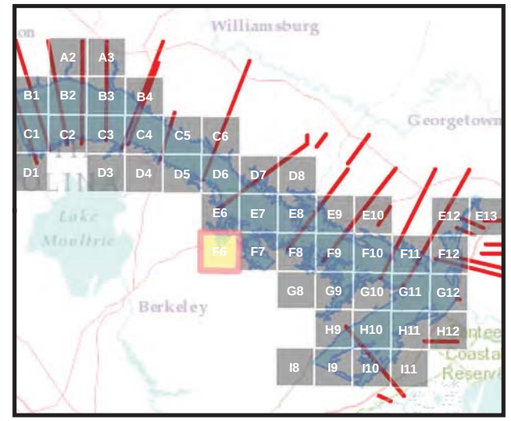
- Floodplain Structures (0)
- Cross Sections
- Max Flood Level

F6
SHEET 27 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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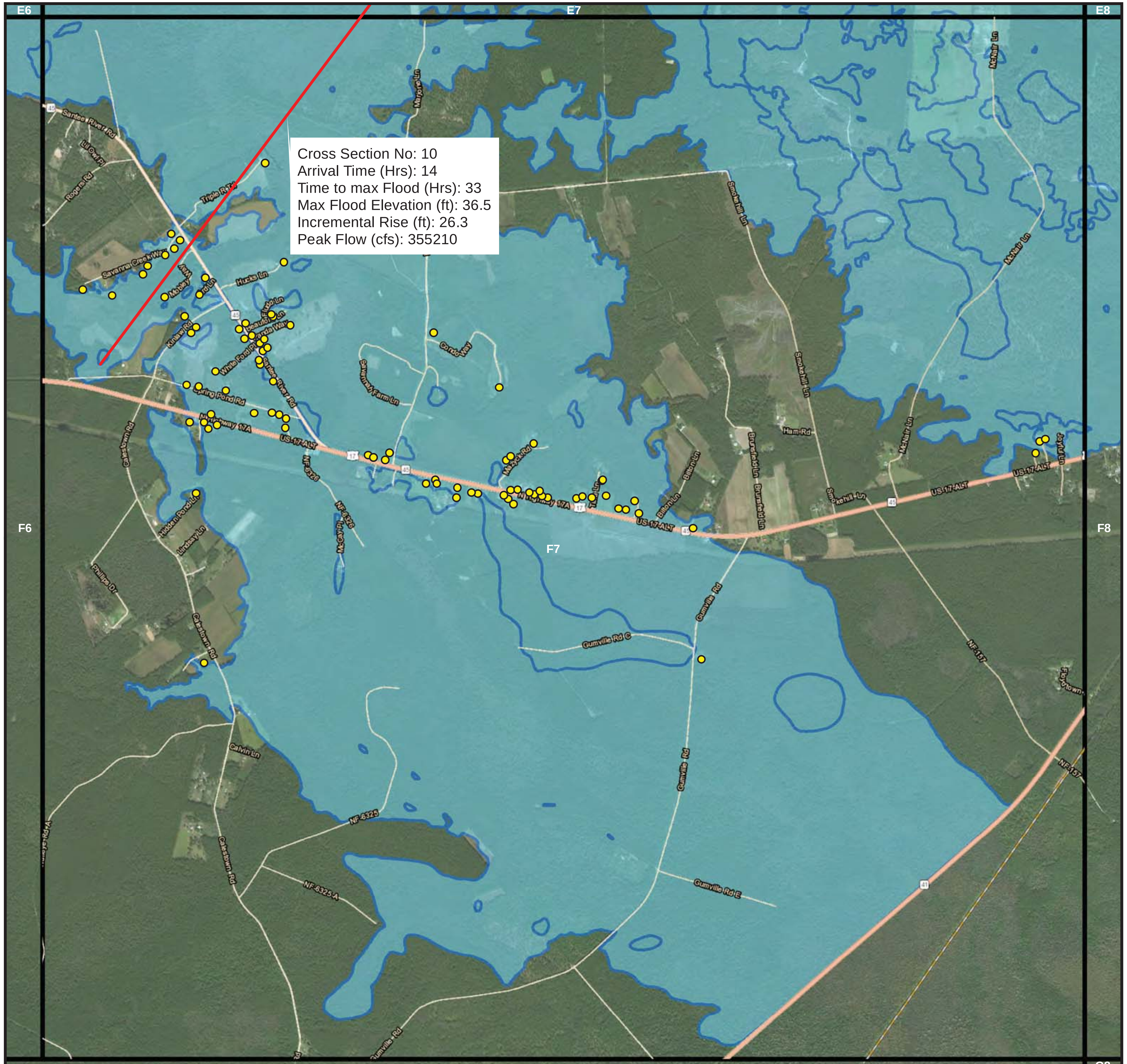


MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

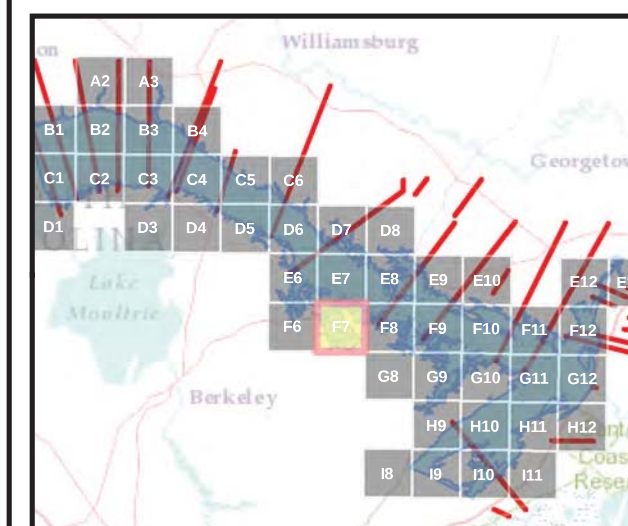
- Floodplain Structures (88)
- Cross Sections
- Max Flood Level

F7
SHEET 28 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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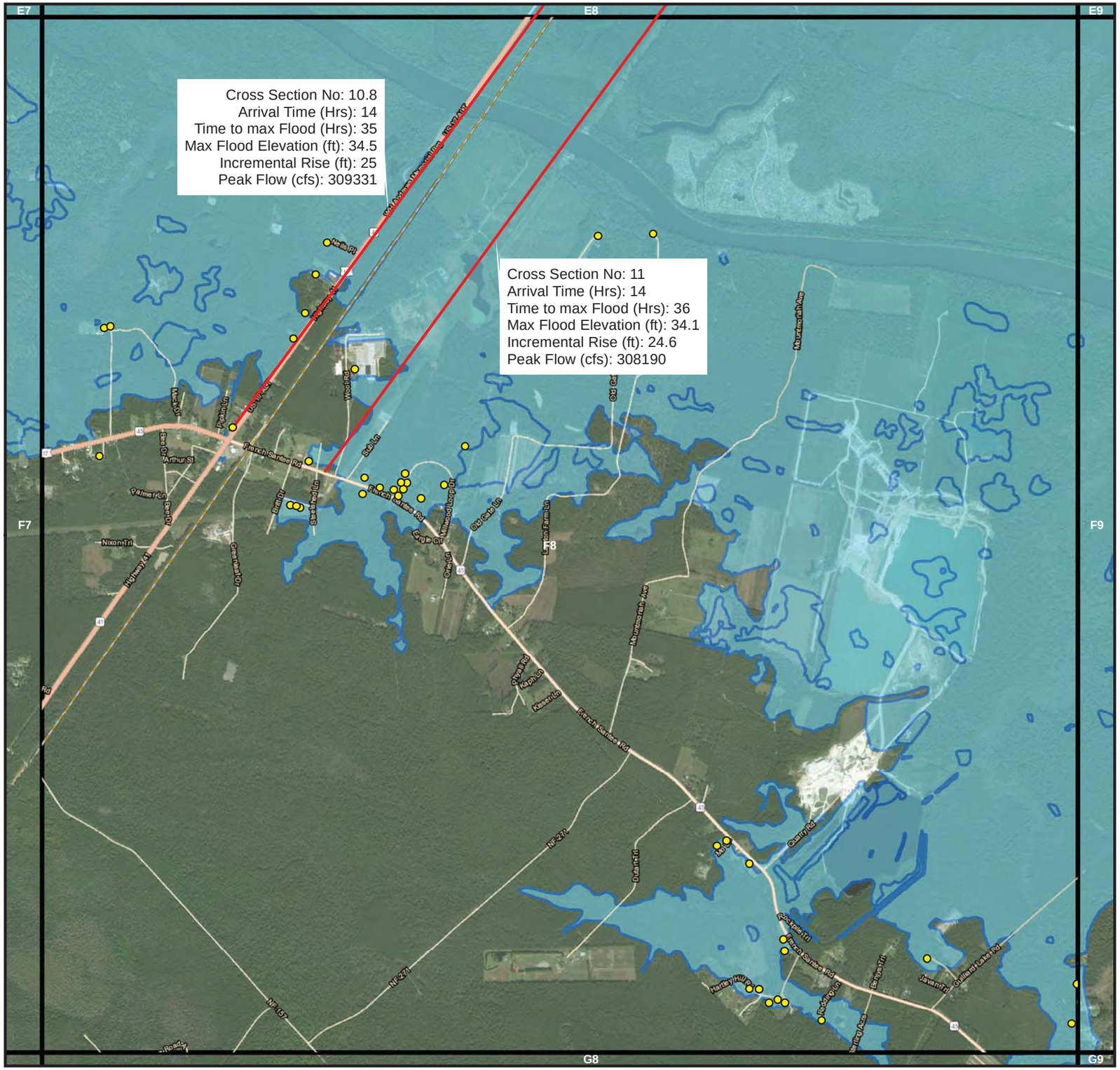
CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

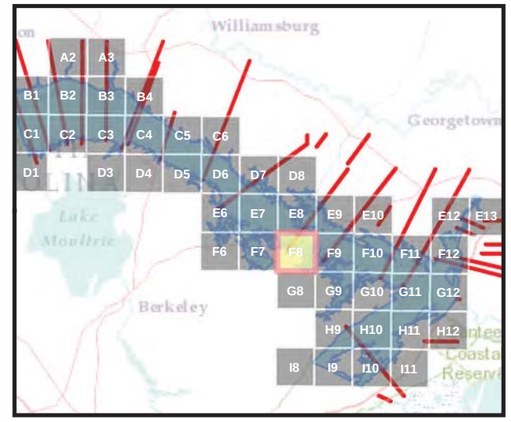
- Floodplain Structures (43)
- Cross Sections
- Max Flood Level

F8
SHEET 29 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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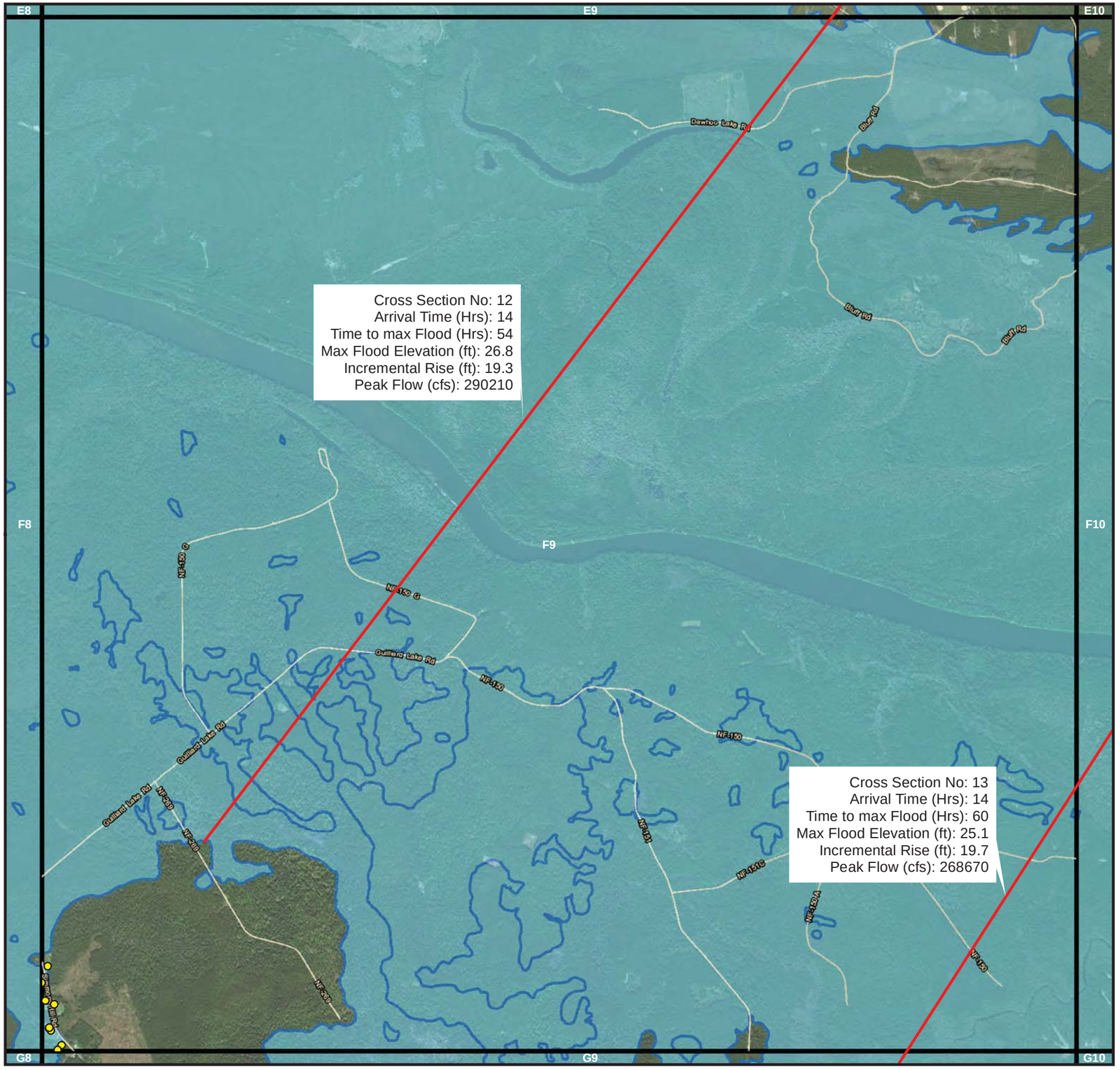
CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

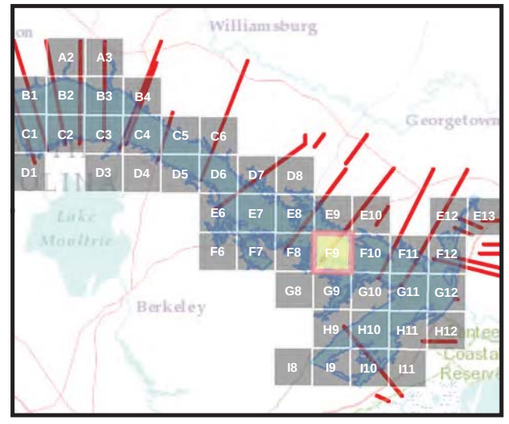
- Floodplain Structures (9)
- Cross Sections
- Max Flood Level

F9
SHEET 30 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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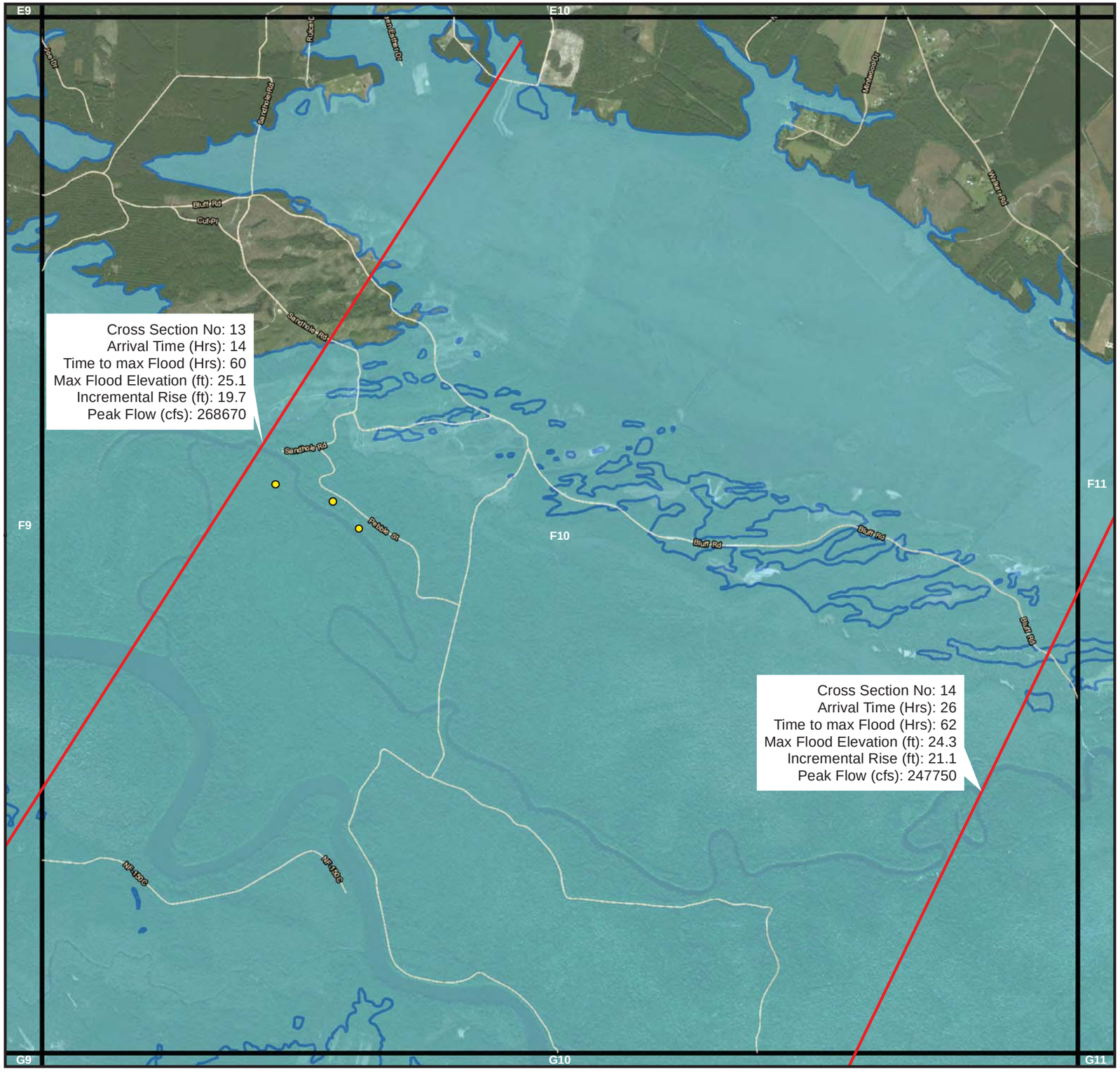
CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

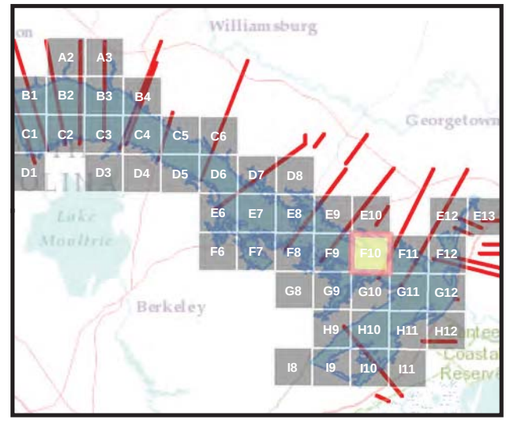
- Floodplain Structures (3)
- Cross Sections
- Max Flood Level

F10
SHEET 31 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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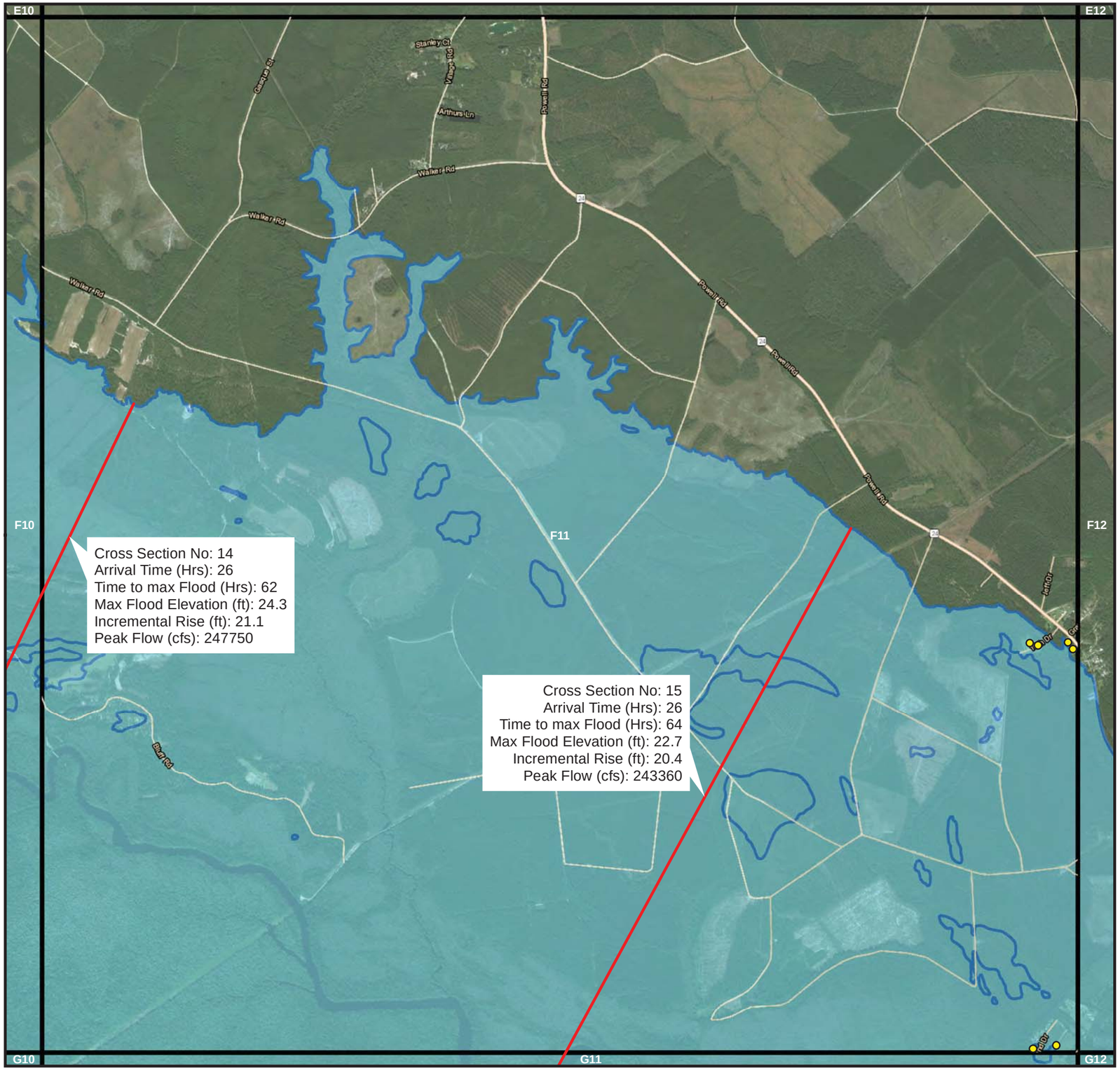
CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

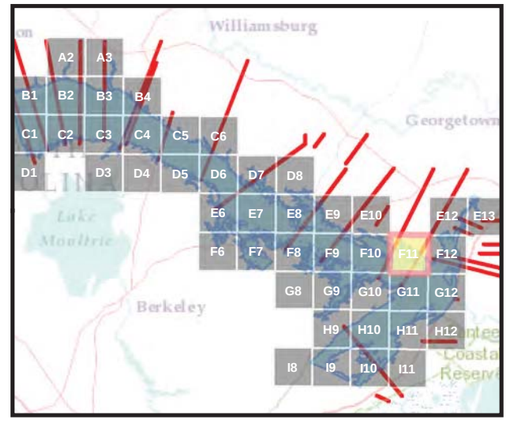
- Floodplain Structures (6)
- Cross Sections
- Max Flood Level

F11
SHEET 32 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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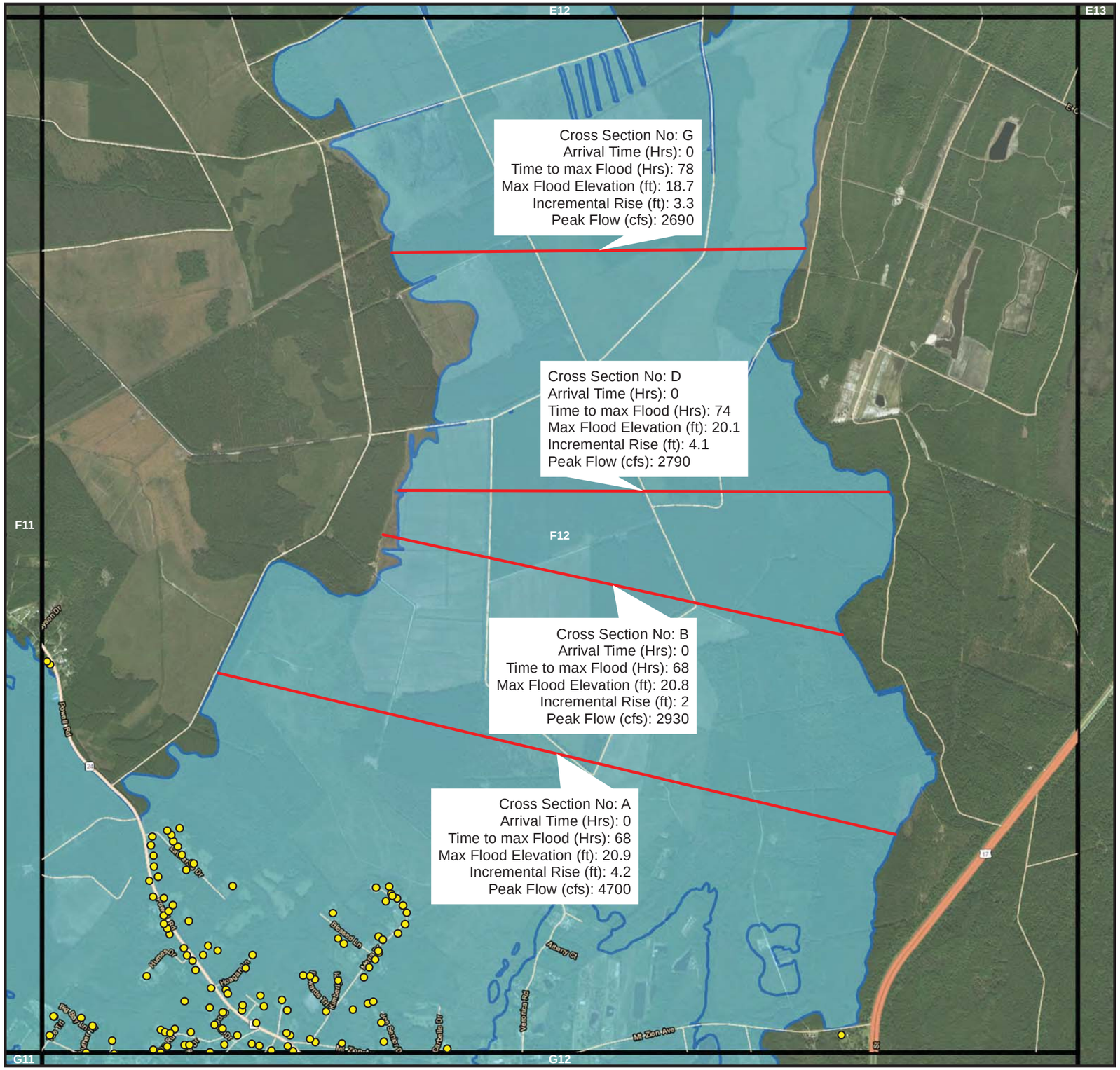
CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

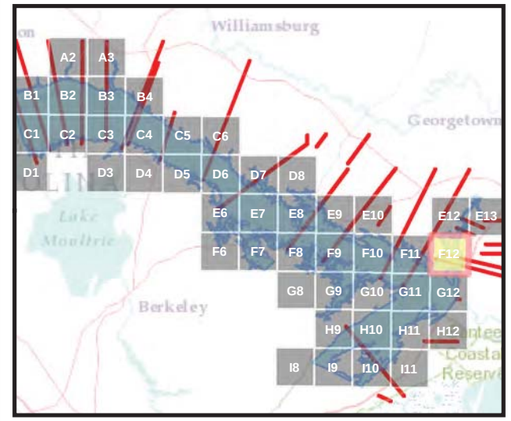
- Floodplain Structures (115)
- Cross Sections
- Max Flood Level

F12
SHEET 33 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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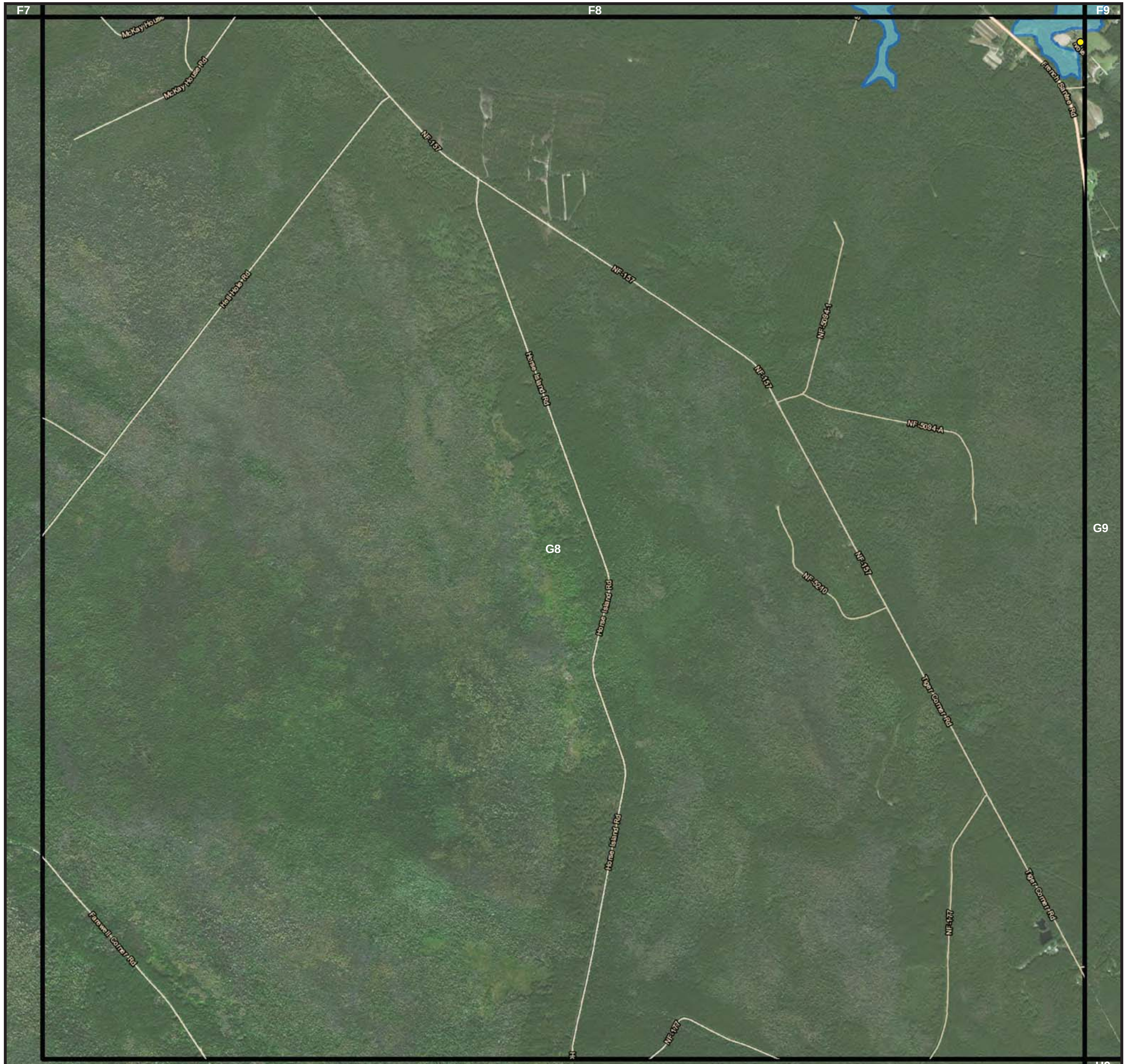
CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

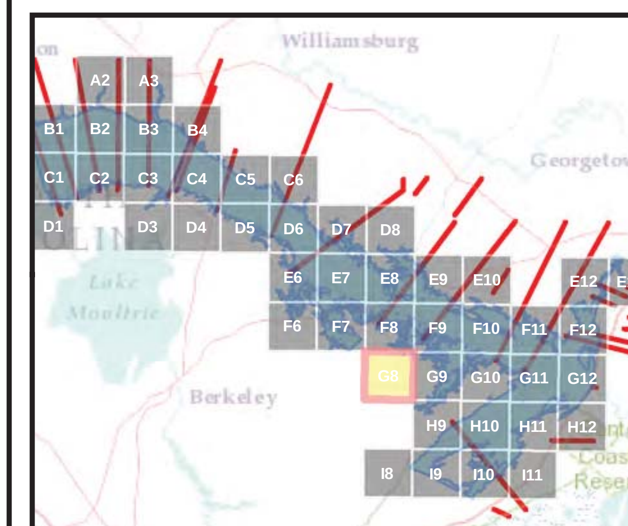
- Floodplain Structures (2)
- Cross Sections
- Max Flood Level

G8
SHEET 34 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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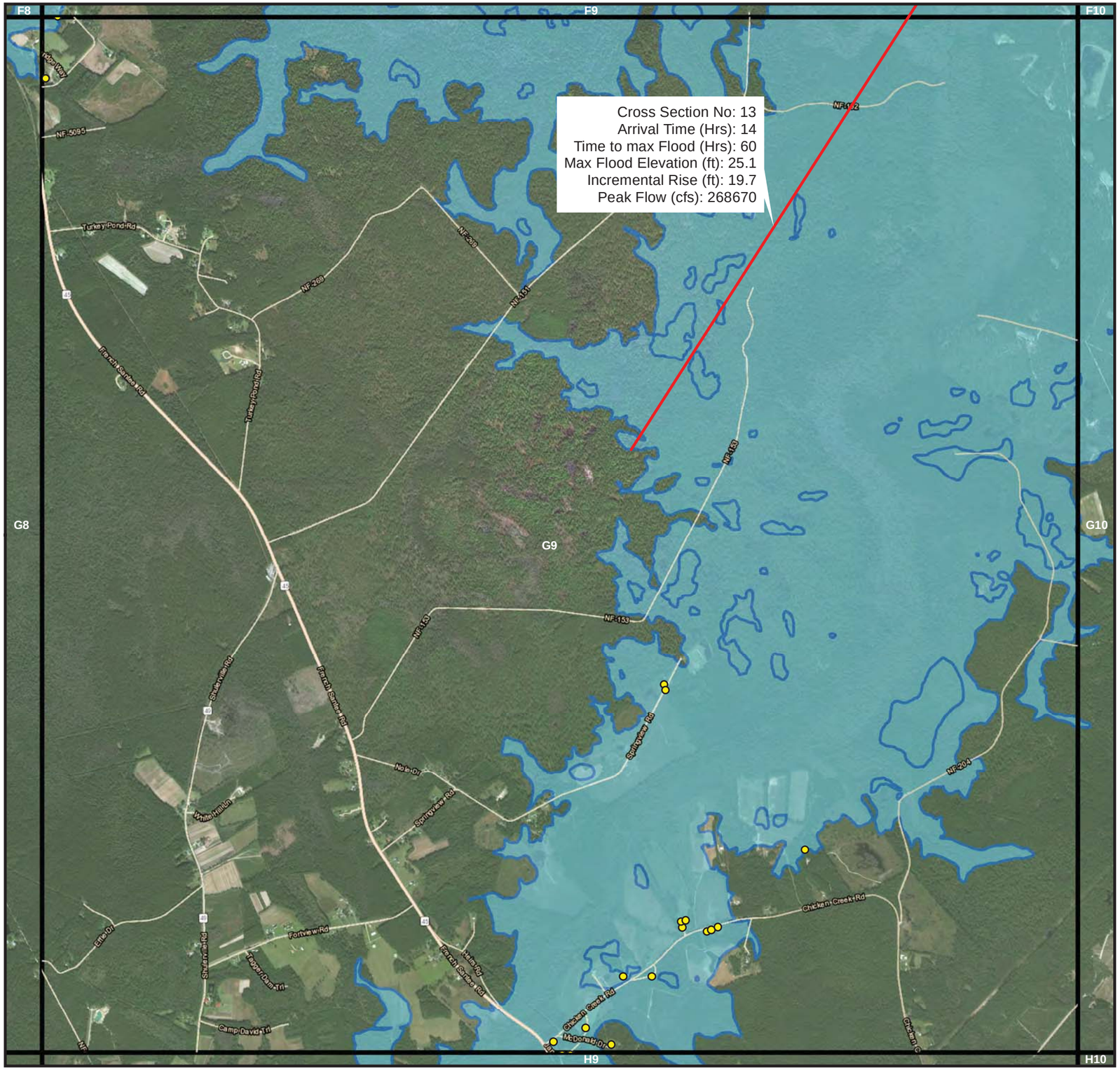


MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

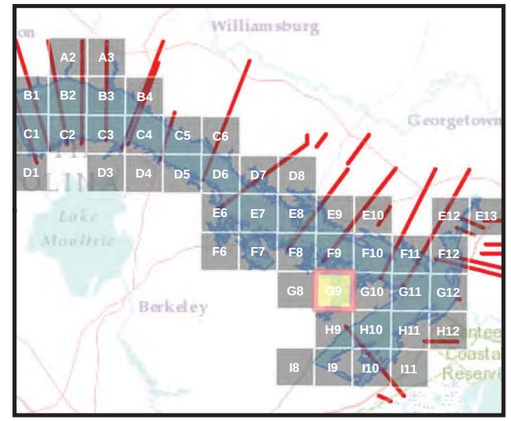
- Floodplain Structures (19)
- Cross Sections
- Max Flood Level

G9
SHEET 35 OF 46

Miles
0 0.5 1

N

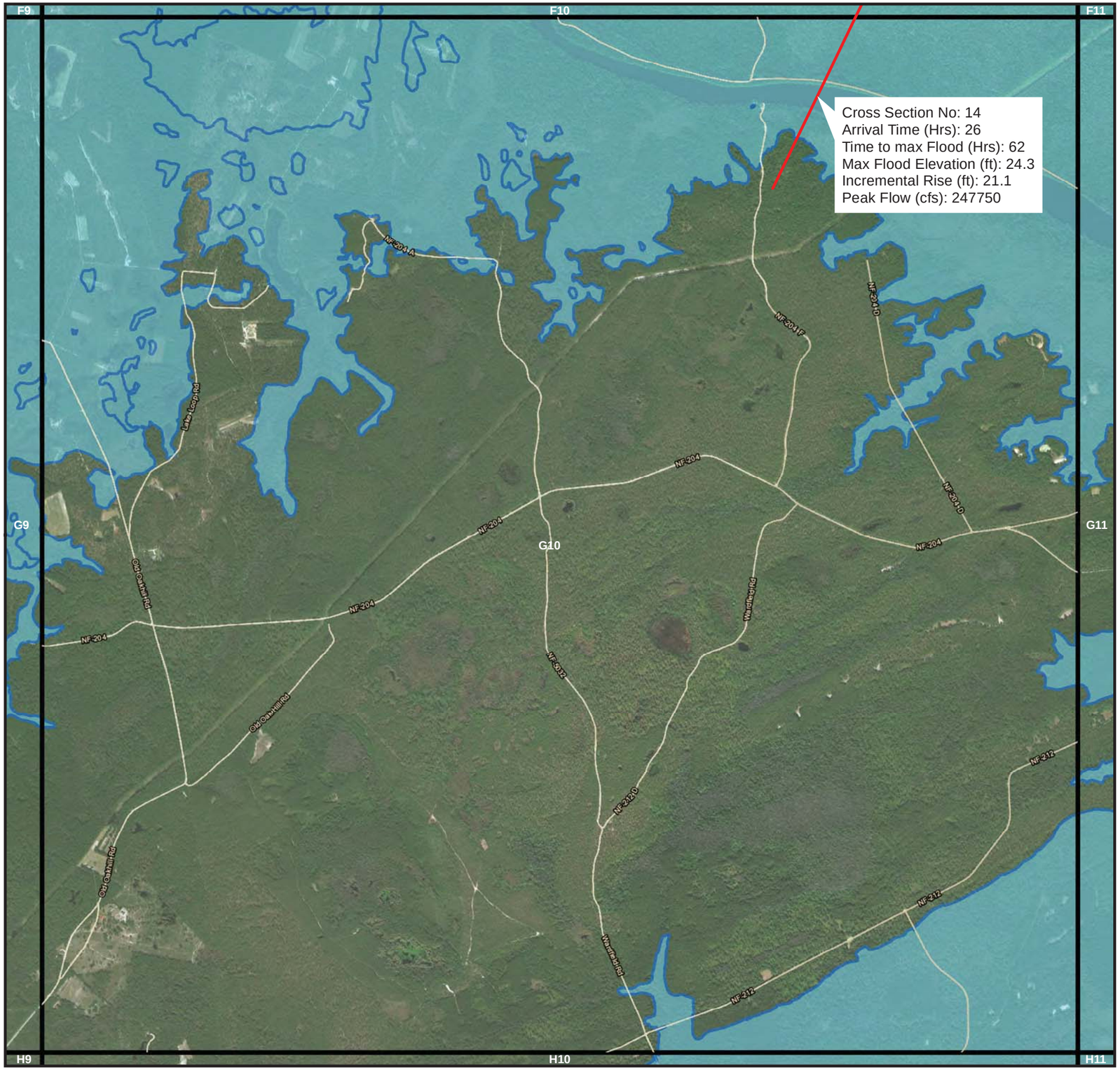
INDEX MAP: 2/2018



santee cooper

The limits of flooding shown are solely to be used as a guideline for the establishment of evacuation zones.

CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

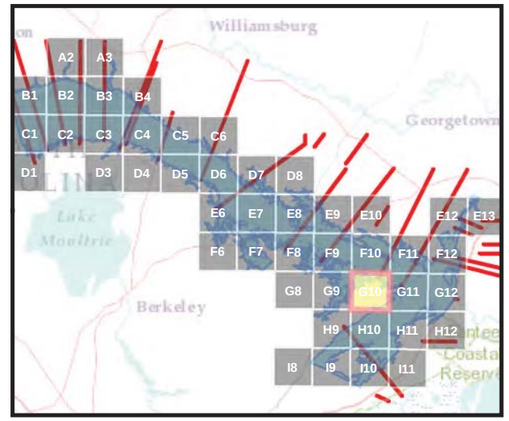
- Floodplain Structures (0)
- Cross Sections
- Max Flood Level

G10
SHEET 36 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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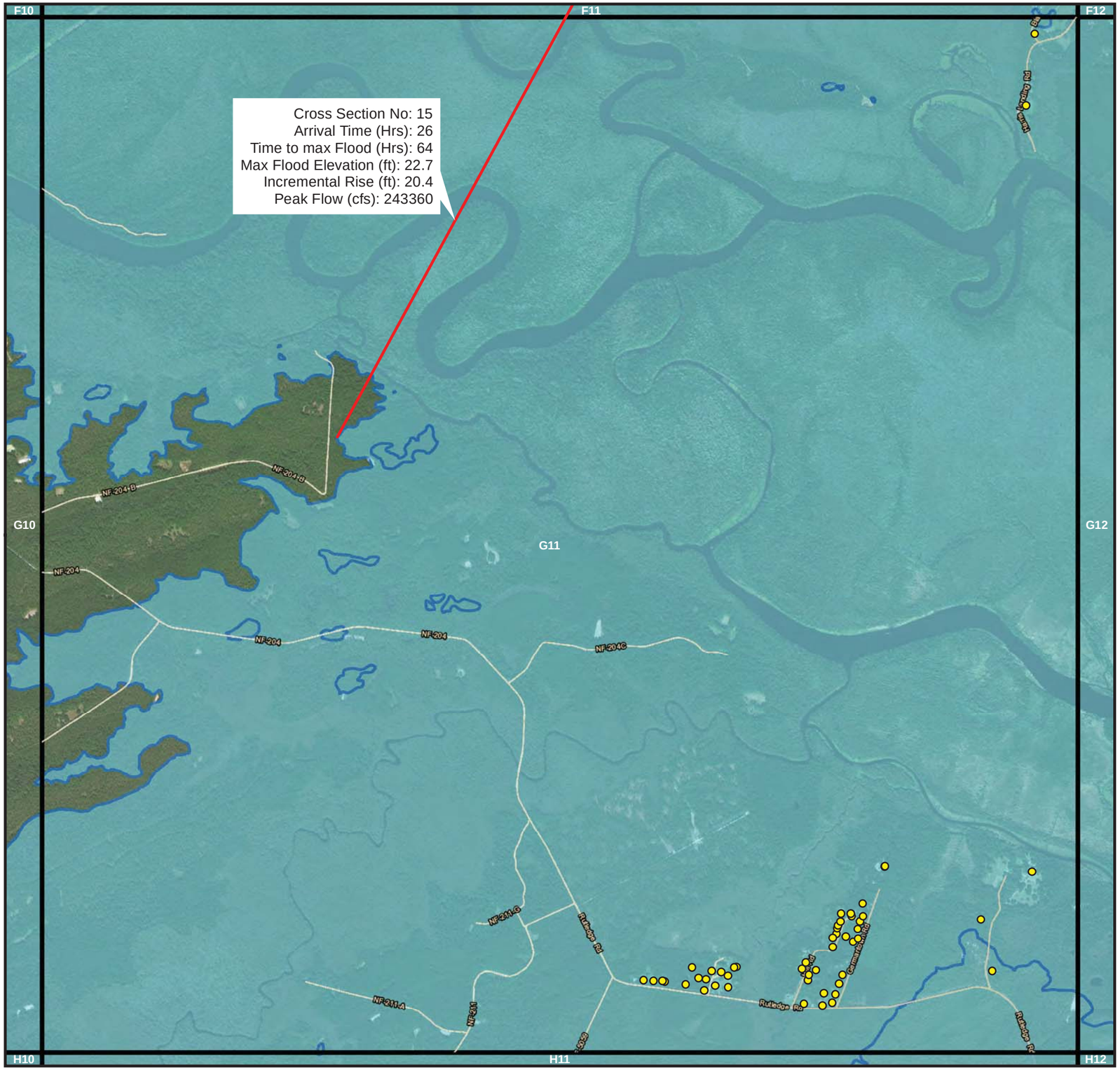


MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

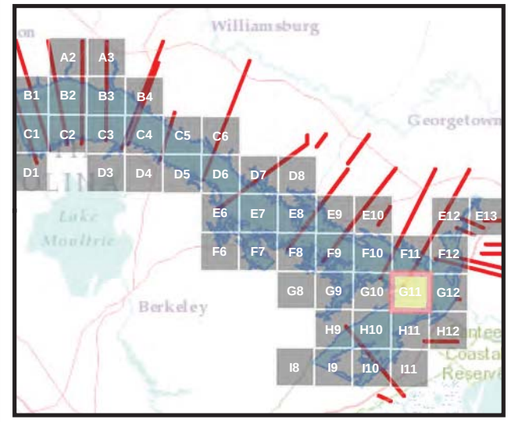
- Floodplain Structures (52)
- Cross Sections
- Max Flood Level

G11
SHEET 37 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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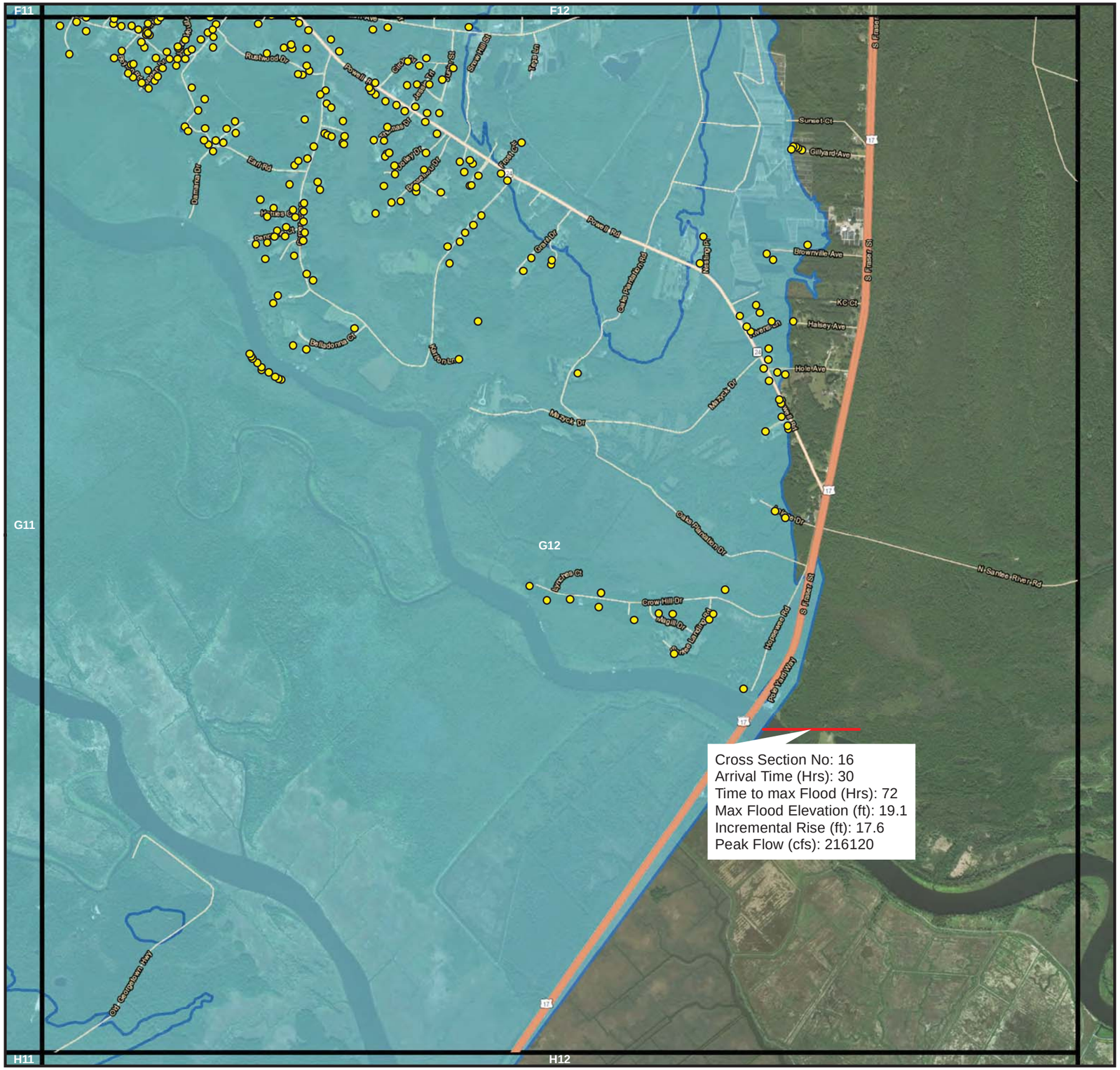


MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

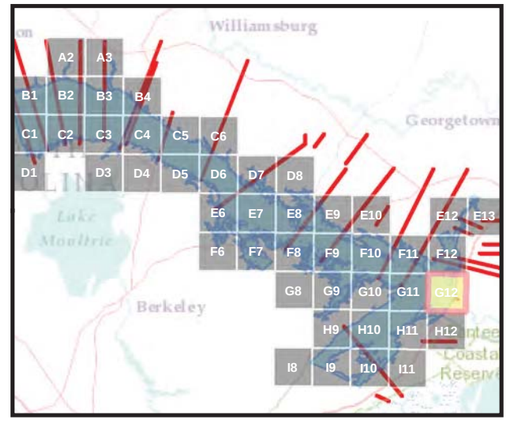
- Floodplain Structures (246)
- Cross Sections
- Max Flood Level

G12
SHEET 38 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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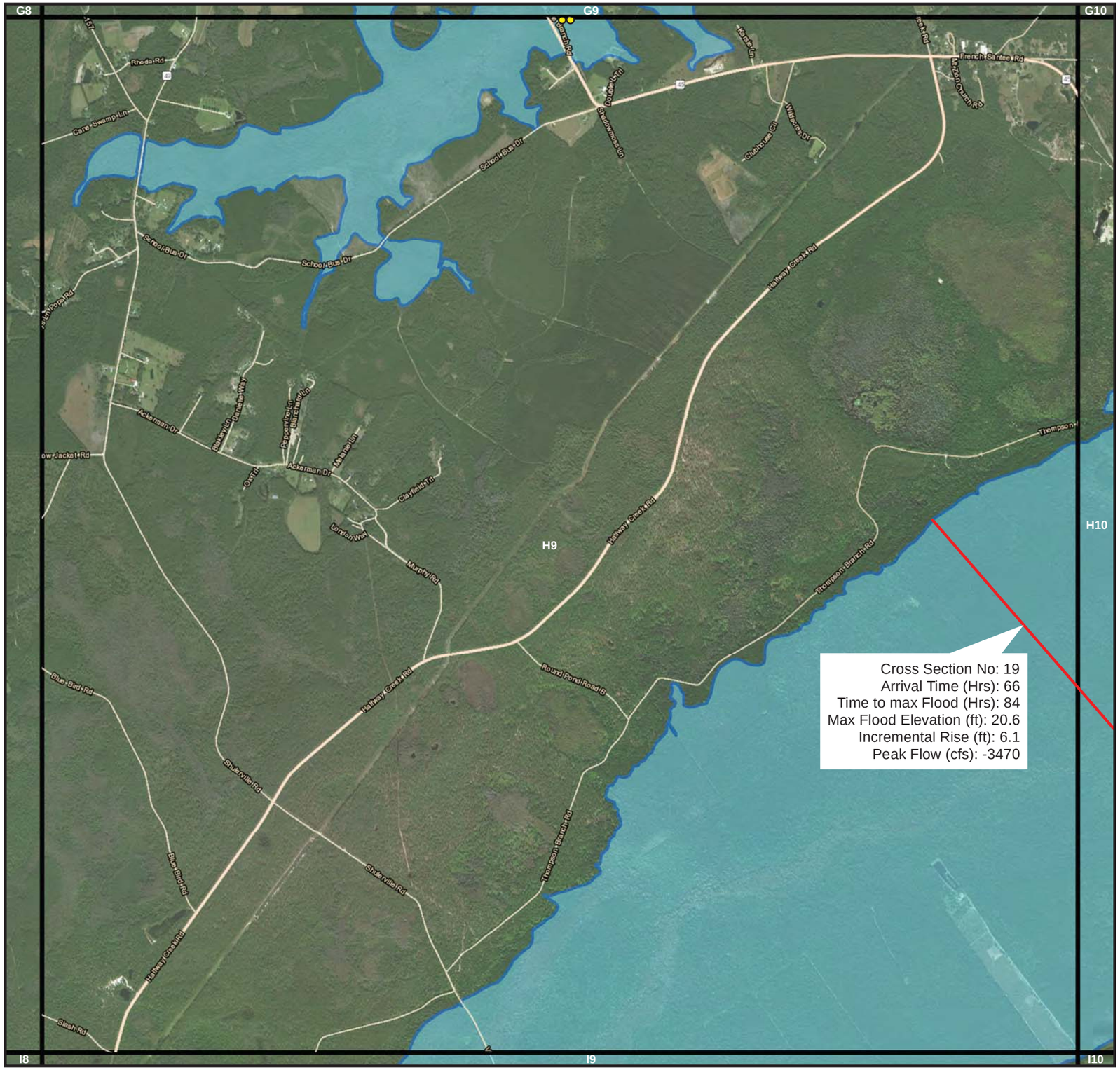


MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

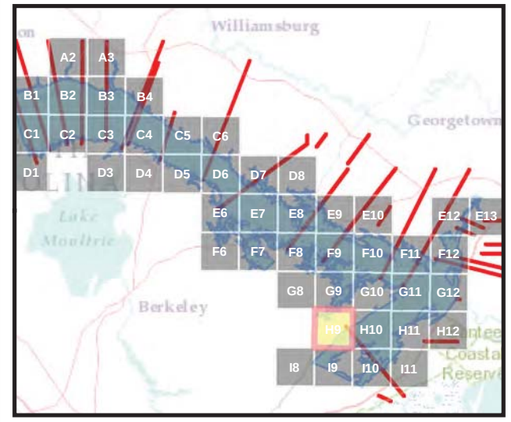
- Floodplain Structures (2)
- Cross Sections
- Max Flood Level

H9
SHEET 39 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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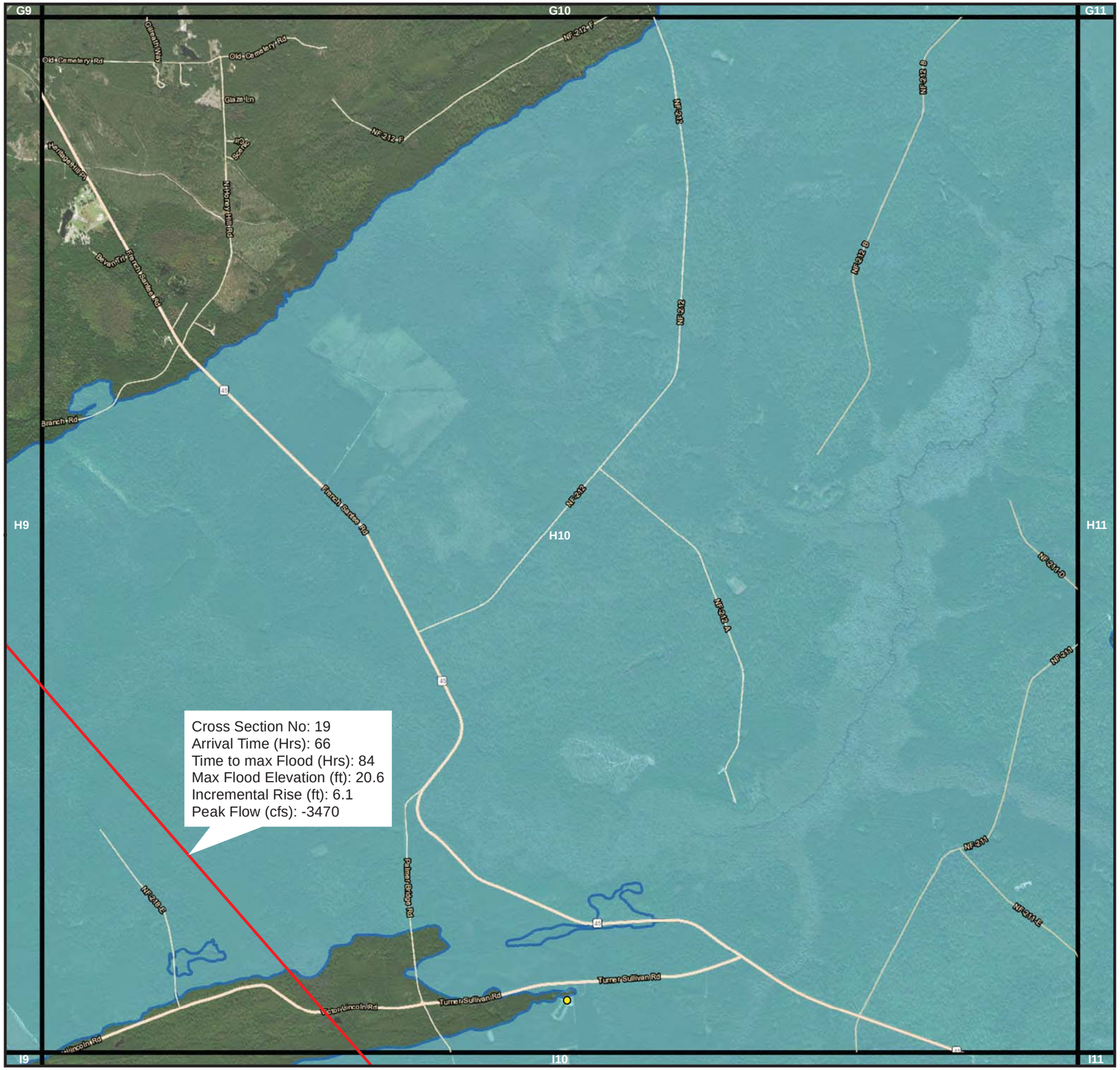
CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-



MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

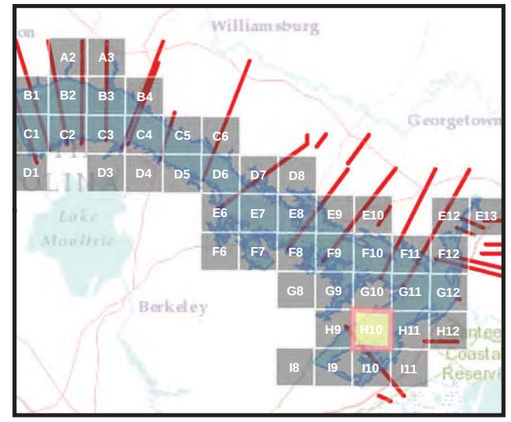
- Floodplain Structures (1)
- Cross Sections
- Max Flood Level

H10
SHEET 40 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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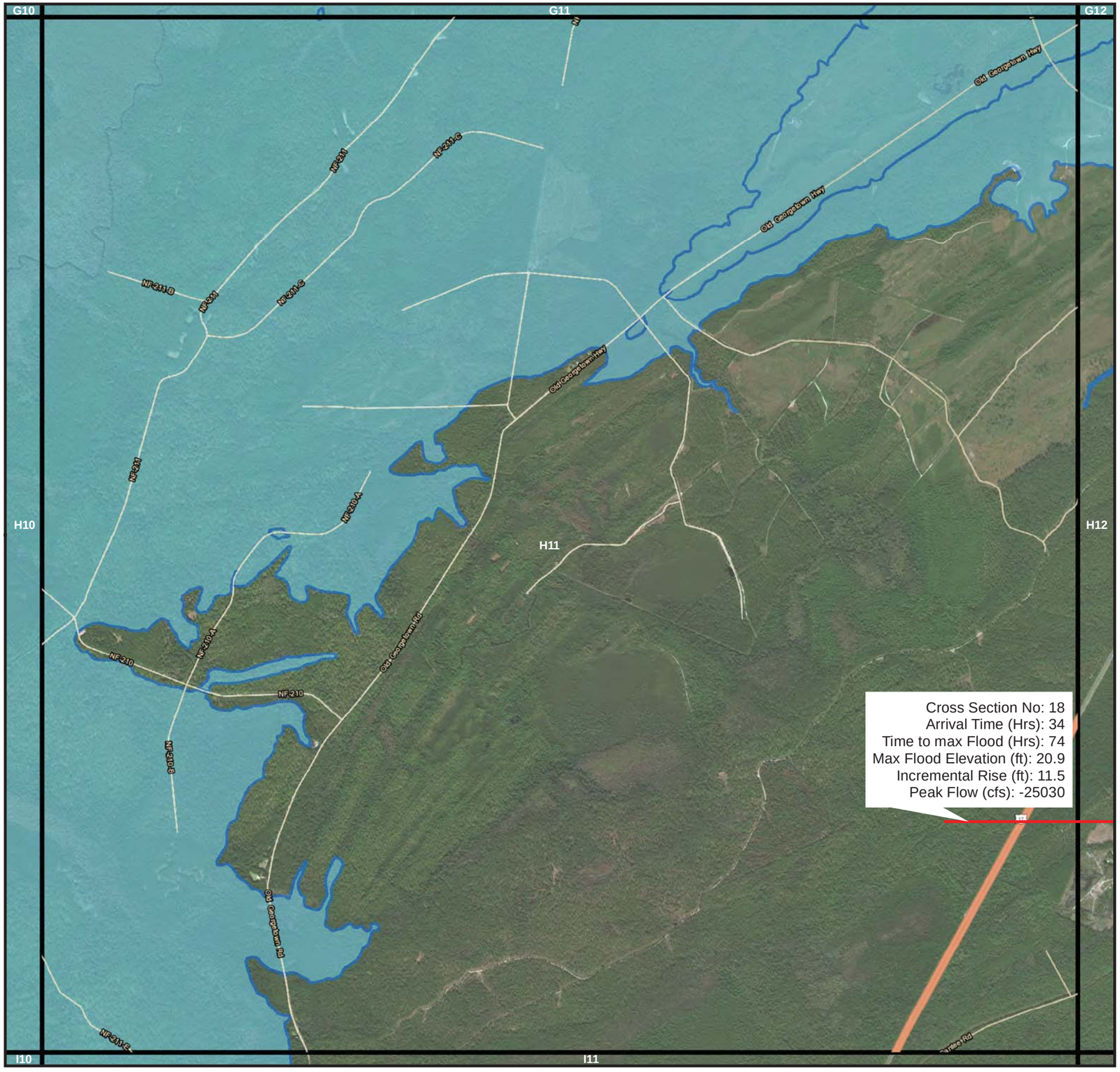


MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

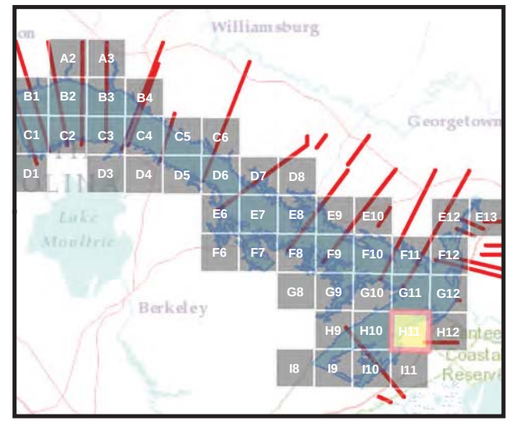
- Floodplain Structures (0)
- Cross Sections
- Max Flood Level

H11
SHEET 41 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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The limits of flooding shown are solely to be used as a guideline for the establishment of evacuation zones.

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Sources: Esri, Garmin, USGS, NPS

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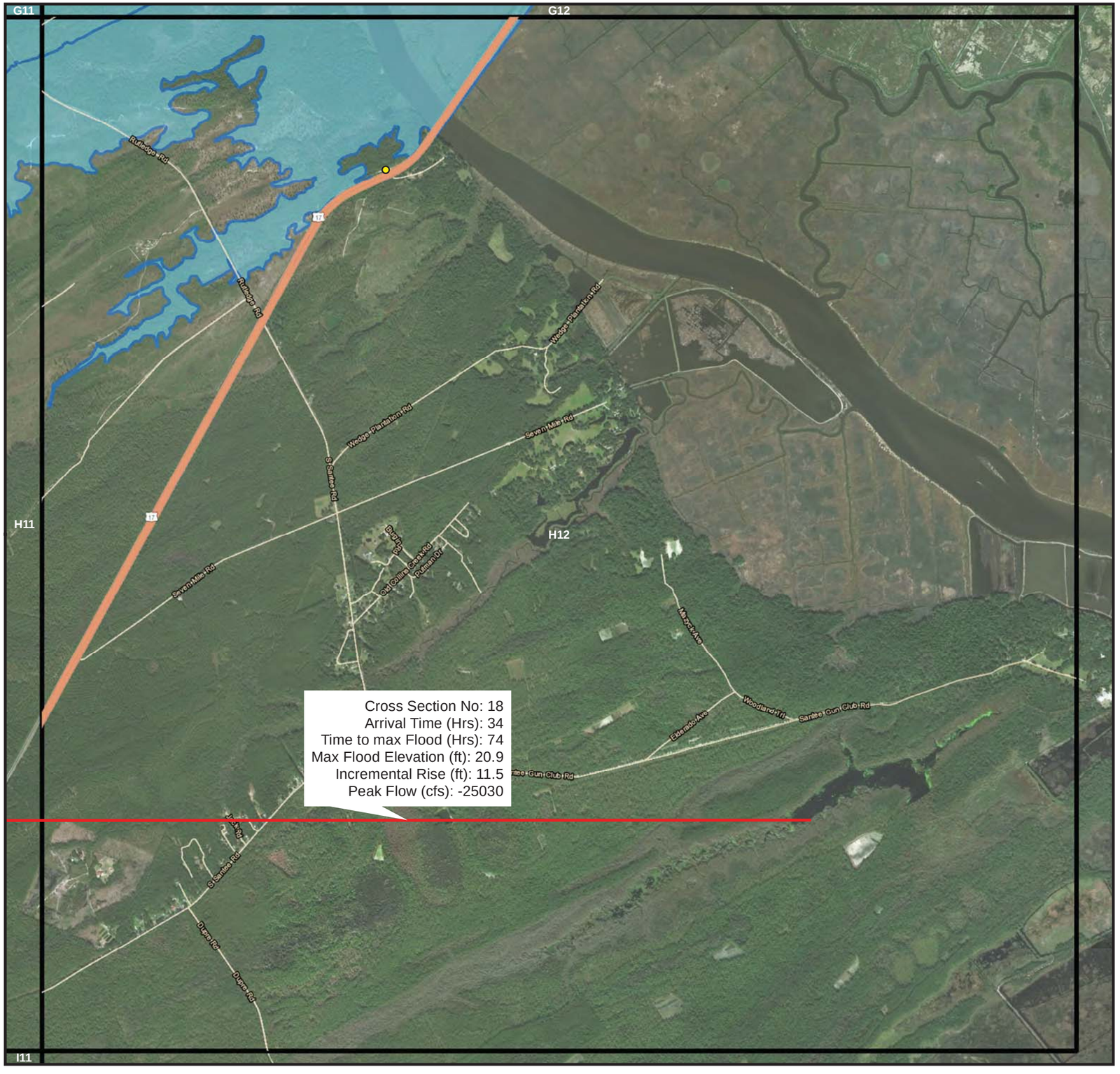
MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN



Legend

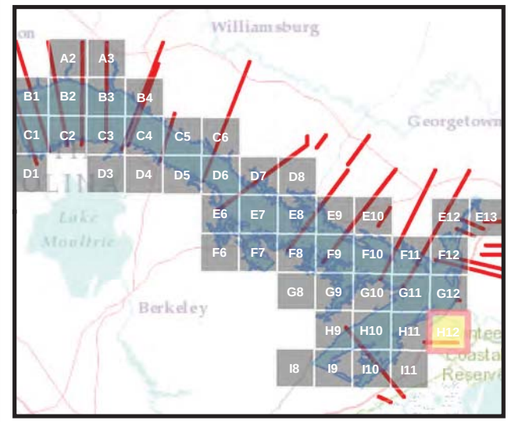
- Floodplain Structures (1)
- Cross Sections
- Max Flood Level

H12
SHEET 42 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-

MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

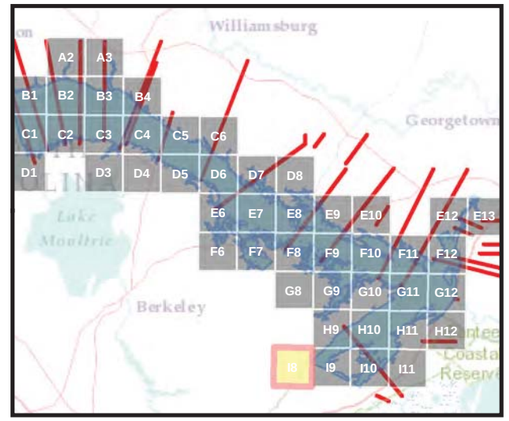
- Floodplain Structures (0)
- Cross Sections
- Max Flood Level

I8
SHEET 43 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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The limits of flooding shown are solely to be used as a guideline for the establishment of evacuation zones.

CONTAINS CRITICAL ENERGY INFRASTRCUTRE INFORMATION -DO NOT RELEASE WITHOUT CONSENT OF SANTEE COOPER-

MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

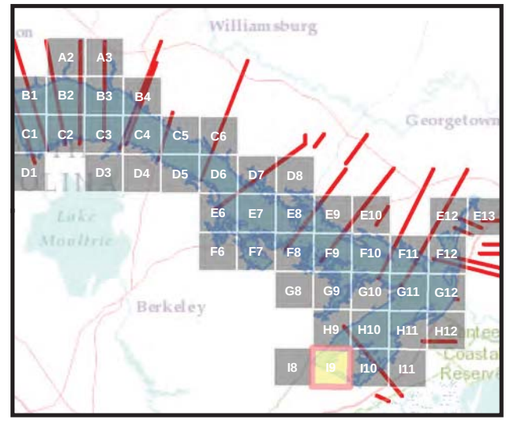
- Floodplain Structures (0)
- Cross Sections
- Max Flood Level

I9
SHEET 44 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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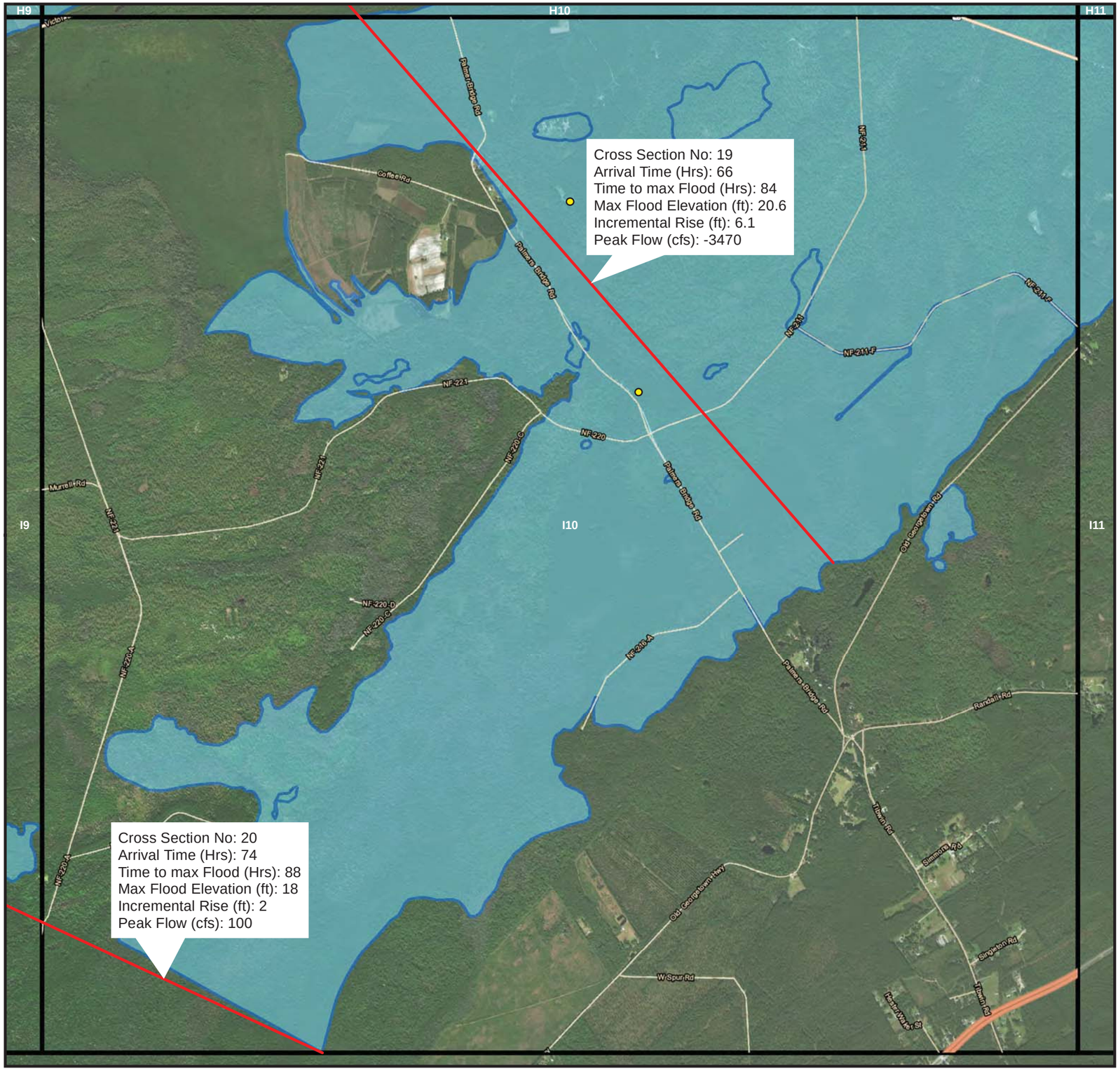


MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

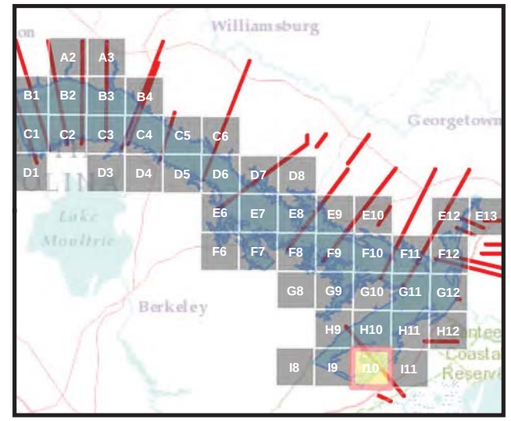
- Floodplain Structures (2)
- Cross Sections
- Max Flood Level

I10
SHEET 45 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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MAXIMUM INUNDATION BOUNDARY MAP OF SANTEE RIVER AFTER POSTULATED SANTEE DAM BREACHING

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE COOPER PROJECT - EMERGENCY ACTION PLAN

Legend

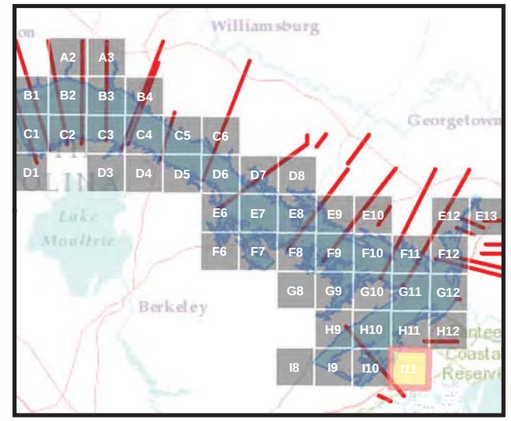
- Floodplain Structures (0)
- Cross Sections
- Max Flood Level

I11
SHEET 46 OF 46

Miles
0 0.5 1

N

INDEX MAP: 2/2018



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The limits of flooding shown are solely to be used as a guideline for the establishment of evacuation zones.

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VII.C. Inundation Maps - Cooper River

Cross Section Location Map of Cooper River FloodPlain after Hypothetical Failure of Pinopolis Dam 0-Hours and Maximum Inundation Boundaries

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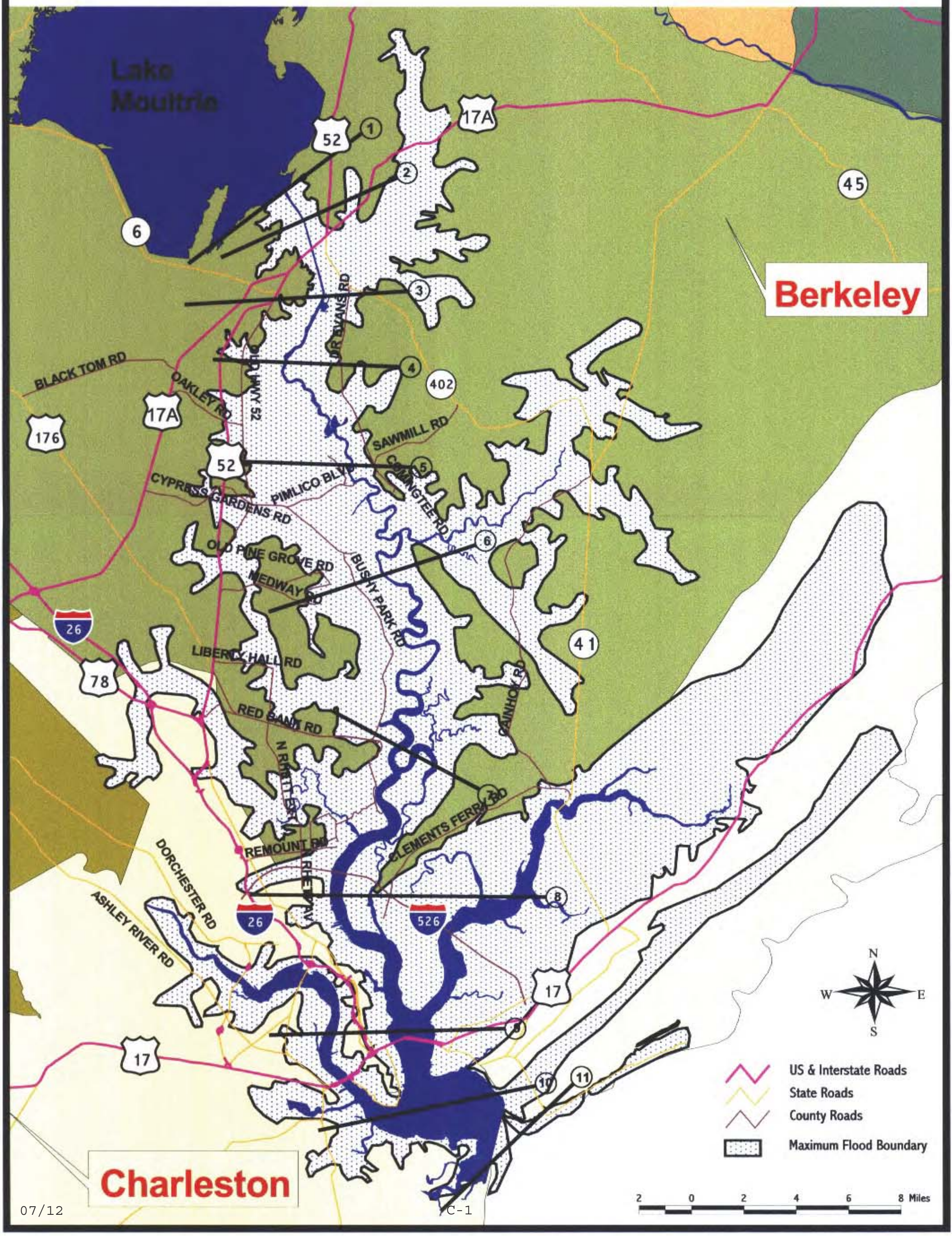

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Cooper River FloodPlain after Hypothetical Failure of Pinopolis Dam 4-Hours and Maximum Inundation Boundaries

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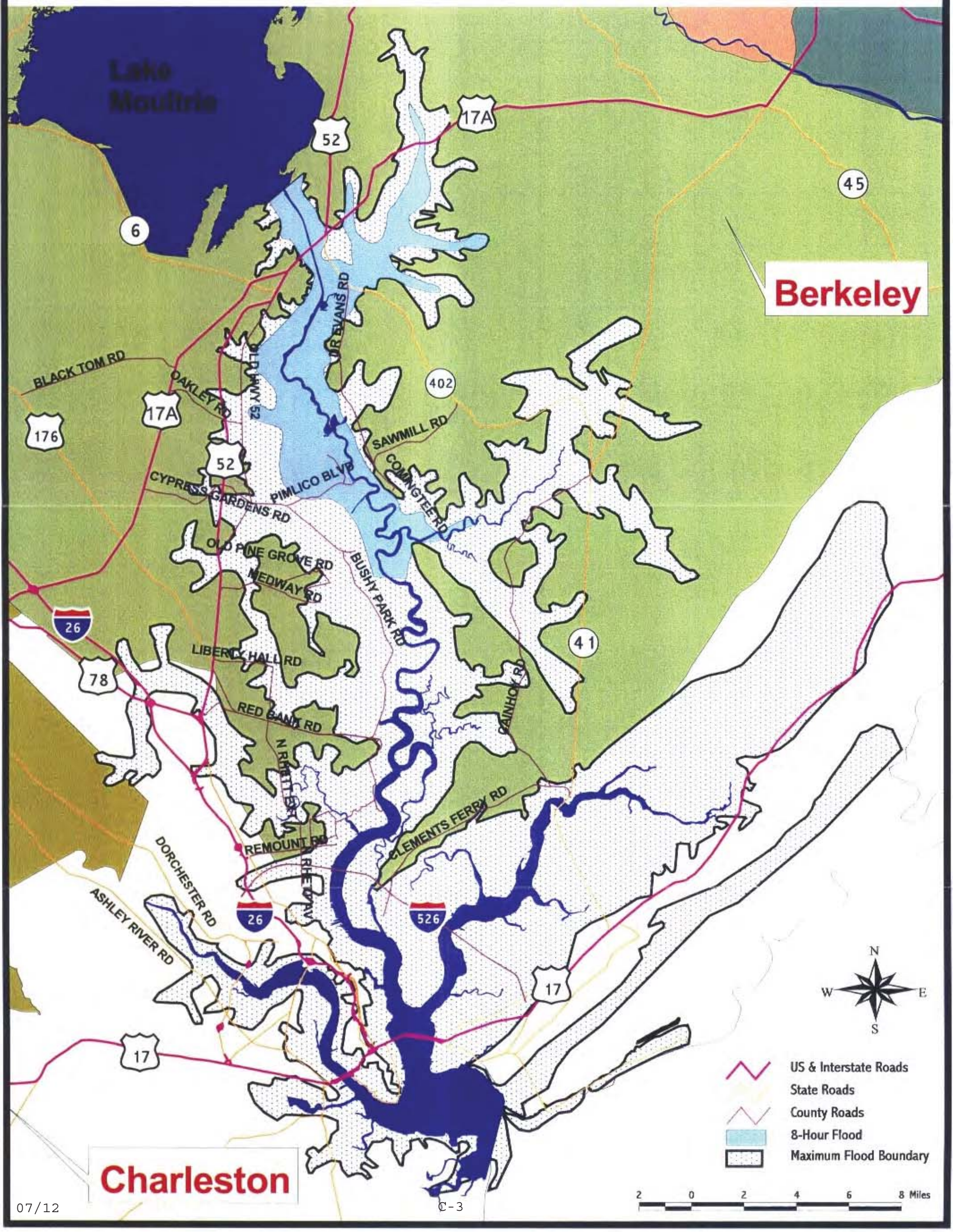
Cooper River FloodPlain after Hypothetical Failure of Pinopolis Dam 8-Hours and Maximum Inundation Boundaries



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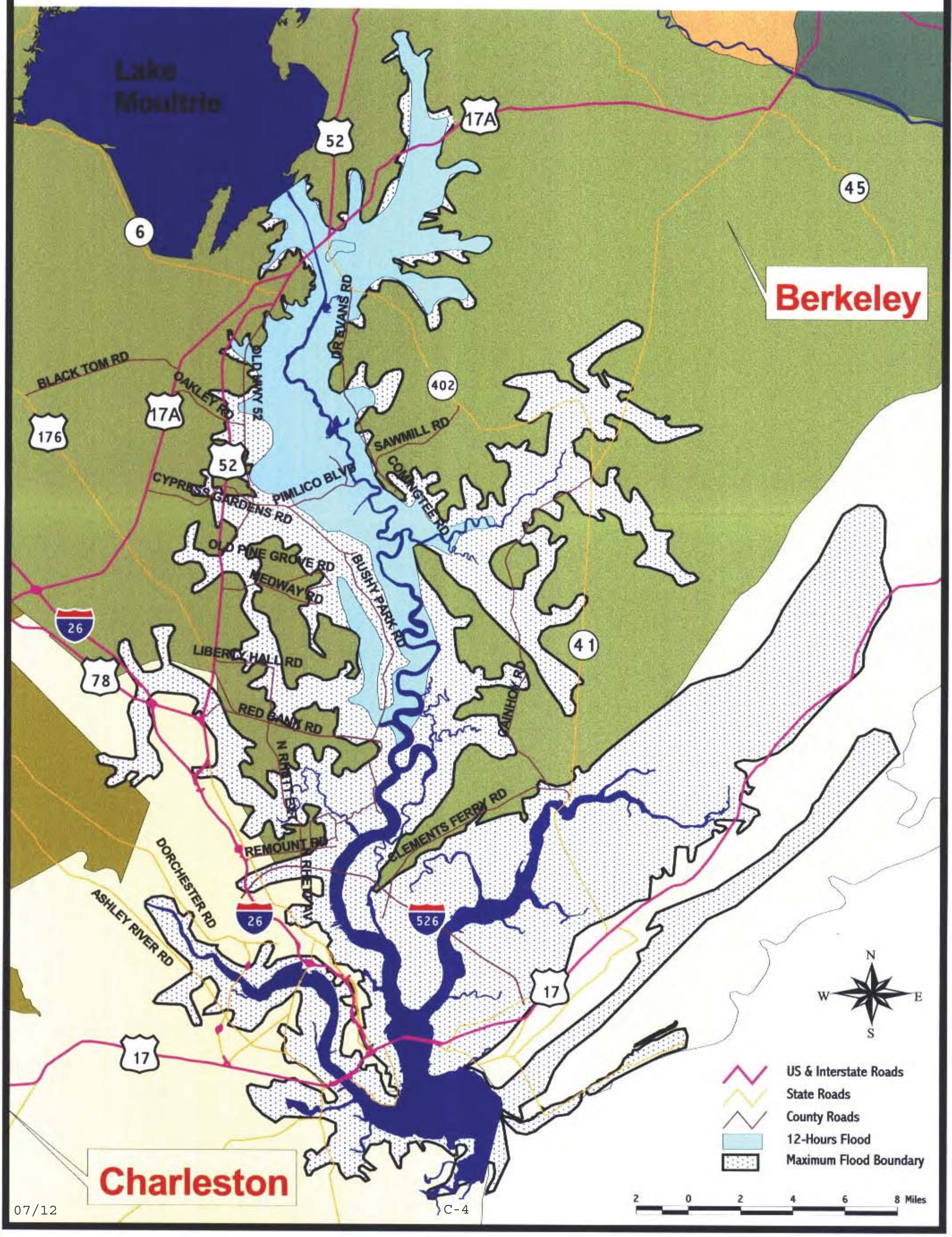
Cooper River FloodPlain after Hypothetical Failure of Pinopolis Dam 12-Hours and Maximum Inundation Boundaries



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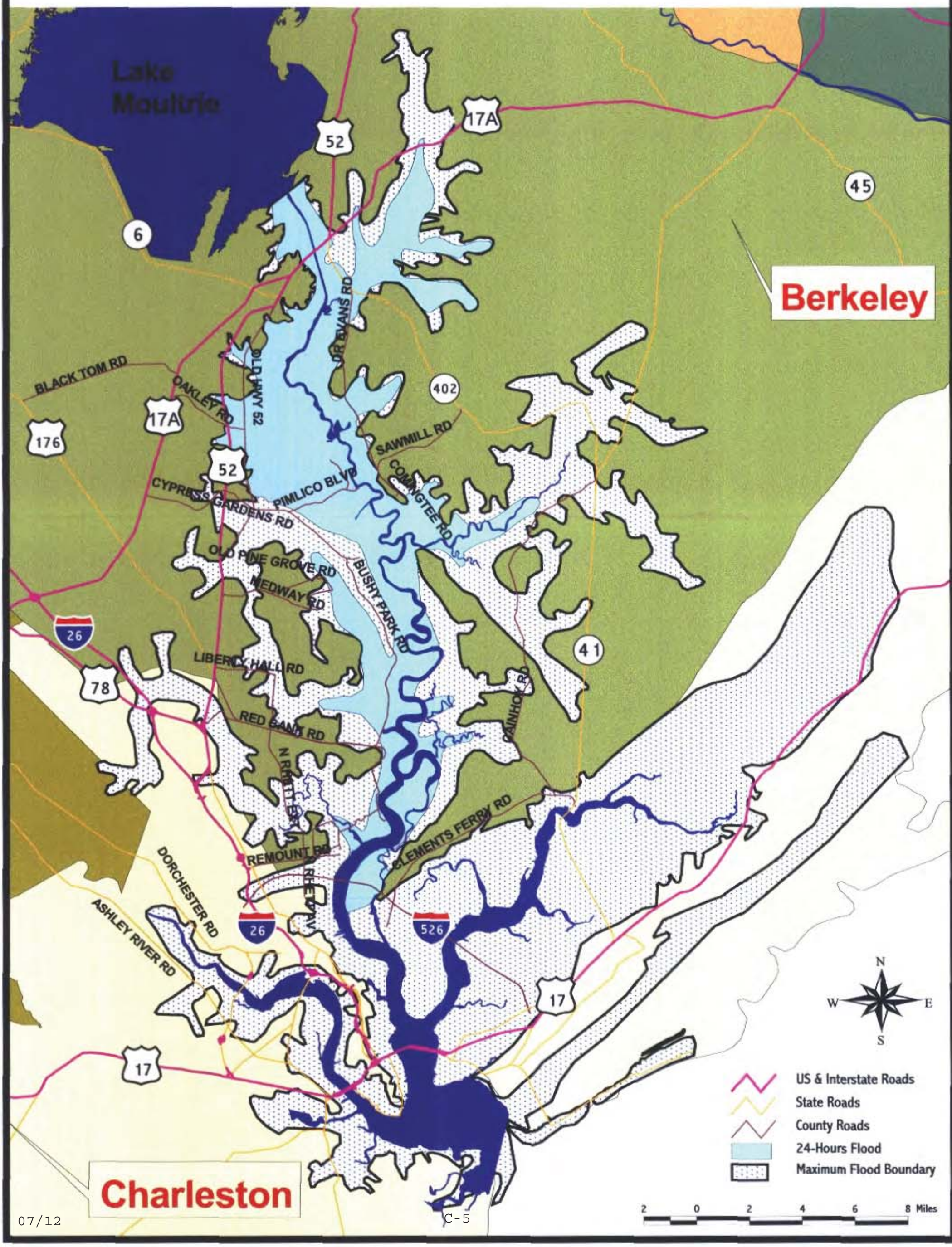
Cooper River FloodPlain after Hypothetical Failure of Pinopolis Dam 24-Hours and Maximum Inundation Boundaries



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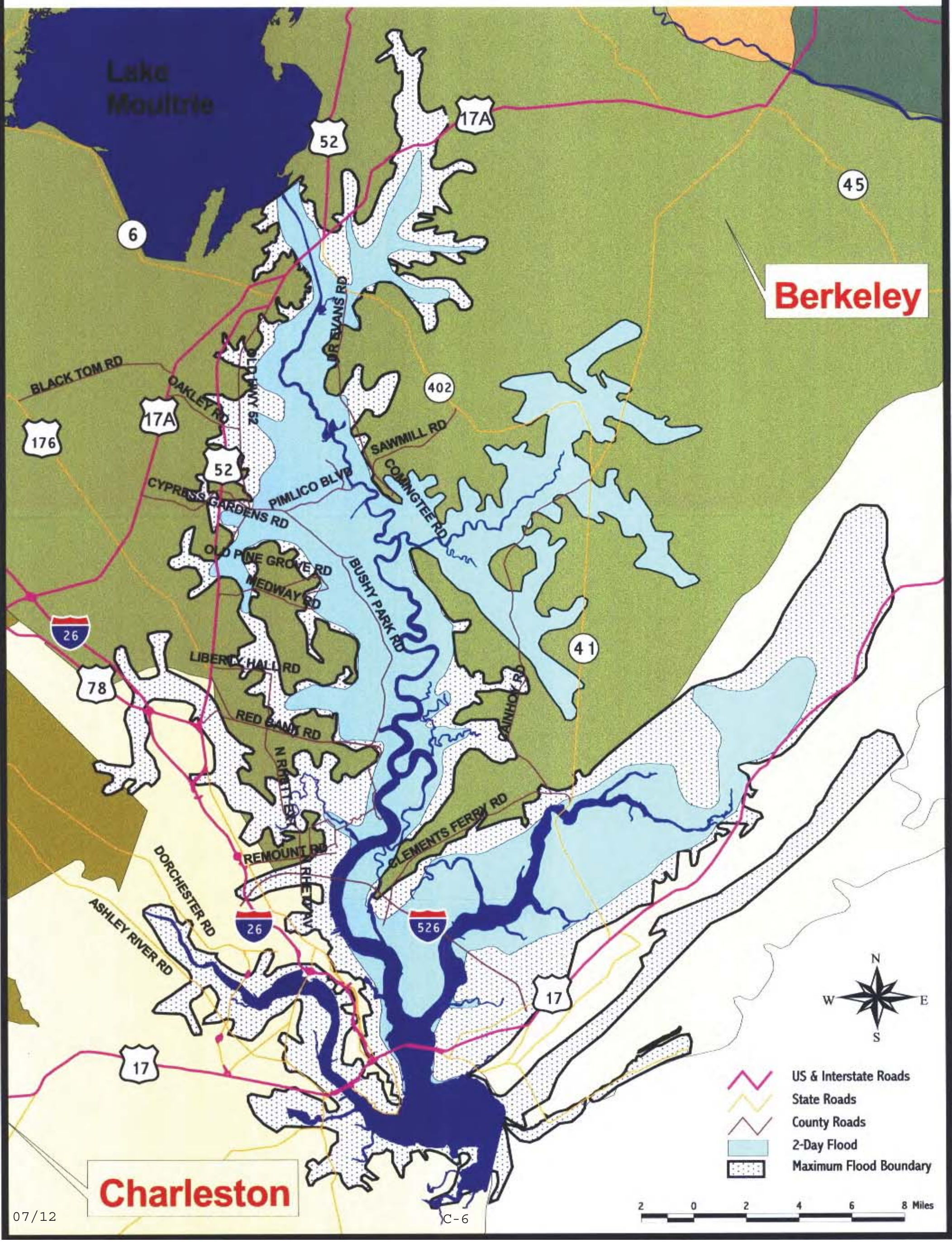
Inundation Map of Cooper River after Hypothetical Failure of Pinopolis Dam
2-Day and Maximum Inundation Boundaries



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Cooper River FloodPlain after Hypothetical Failure of Pinopolis Dam 3-Day and Maximum Inundation Boundaries

Lake Moultrie
Berkeley
Charleston
6
52
17A
45
402
176
26
78
41
526
17
BLACK TOM RD
OAKLEY RD
OLD HWY 52
JR EVANS RD
SAWMILL RD
COMINGTEE RD
CYPRESS GARDENS RD
PIMLICO BLVD
OLD PINE GROVE RD
MEDWAY RD
BUSHY PARK RD
LIBERTY HALL RD
RED BANK RD
N RHETT AV
REMOUNT RD
CLEMENTS FERRY RD
DORCHESTER RD
ASHLEY RIVER RD

N
W
E
S

US & Interstate Roads
State Roads
County Roads
3-Day Flood
Maximum Flood Boundary

2 0 2 4 6 8 Miles

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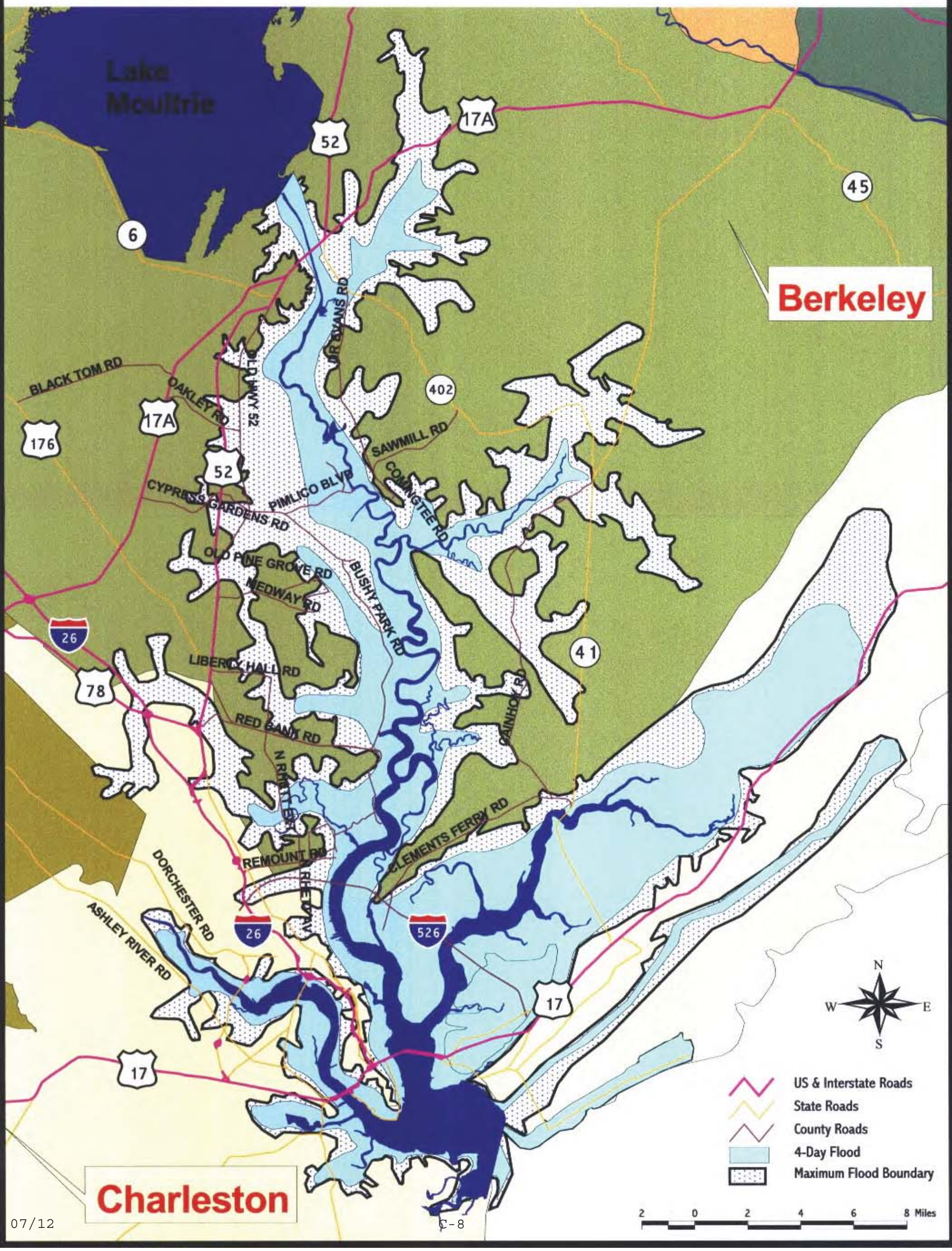
Cooper River FloodPlain after Hypothetical Failure of Pinopolis Dam 4-Day and Maximum Inundation Boundaries



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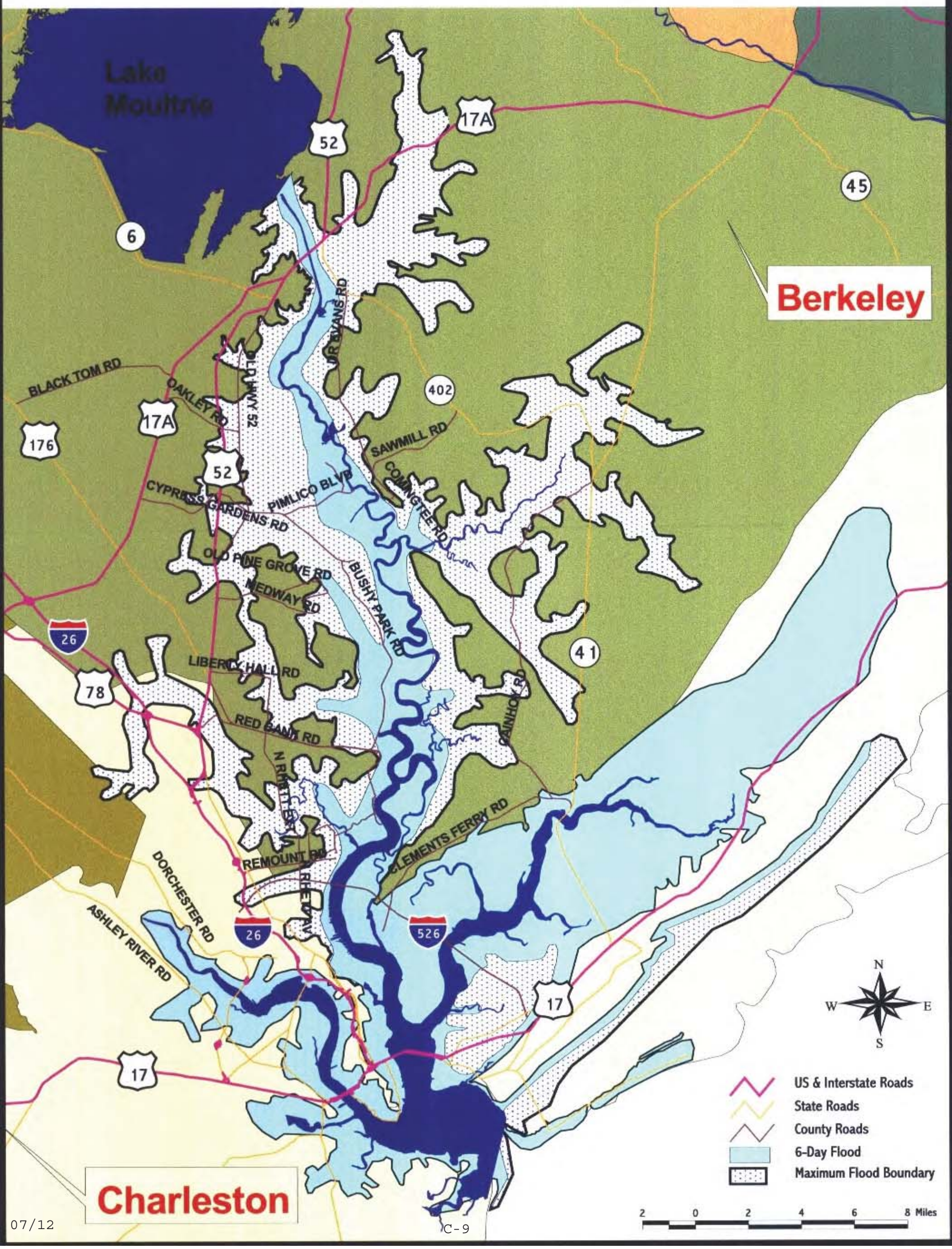
Cooper River FloodPlain after Hypothetical Failure of Pinopolis Dam 6-Day and Maximum Inundation Boundaries



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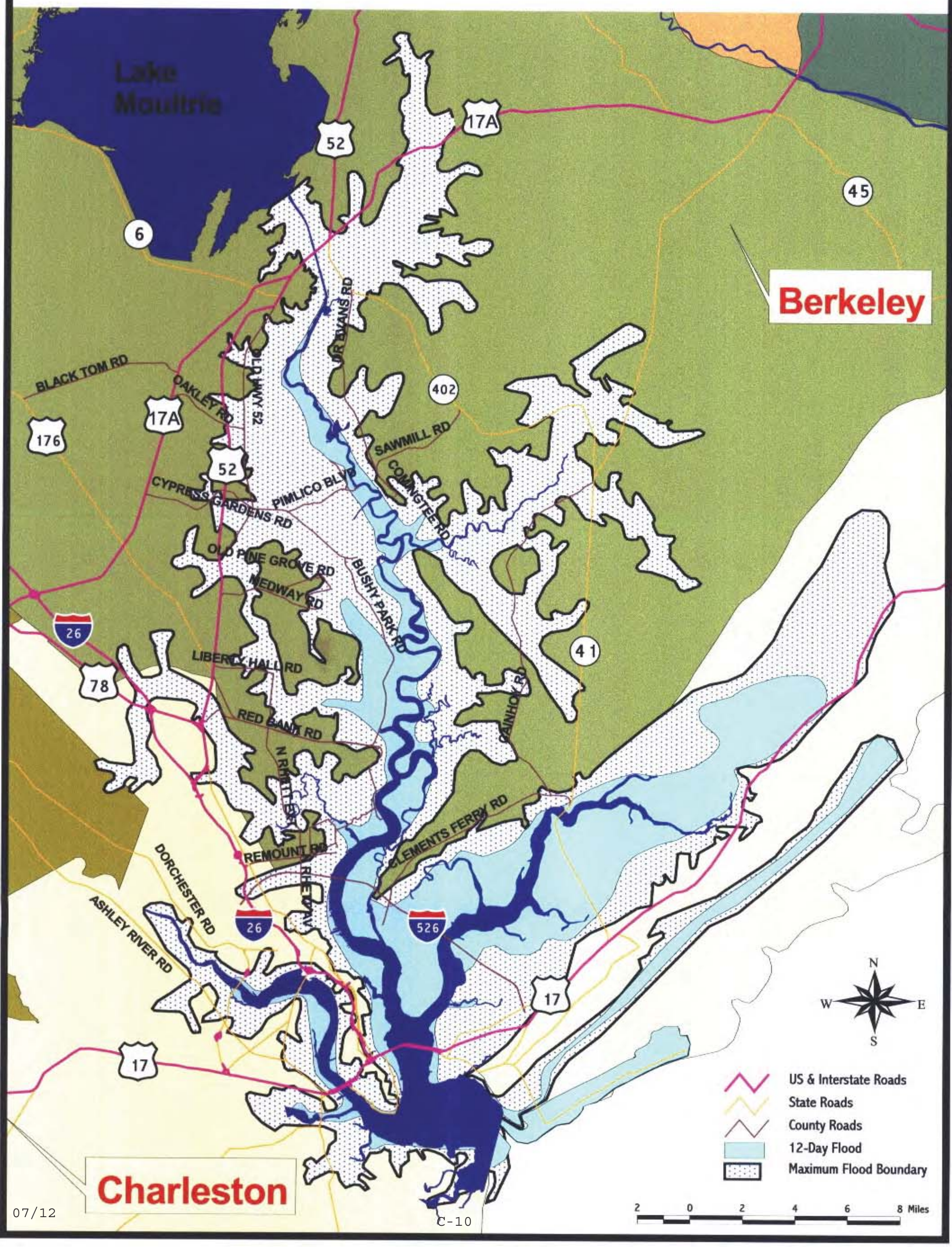
Cooper River FloodPlain after Hypothetical Failure of Pinopolis Dam 12-Day and Maximum Inundation Boundaries



VII.D. Probable Maximum Flood

Introduction

In the event of extreme inflow into the Santee Cooper system, the potential for a Probable Maximum Flood condition exists. During a PMF event, the inflow into Lake Marion would be approximately 1,770,000 cfs while the maximum spillway outflow is 1,390,000 cfs. As such, there is the potential for Lake Marion to rise an additional 10.6 feet above normal pool. Although the crest of the Santee South Dam is high enough to contain a PMF inflow, the area in the vicinity of Harry's Fish Camp is somewhat lower than the Santee South Dam and would be flooded as shown in *Figure VII-1 Probable Maximum Flood Limits*. Flood waters would flow around the southern end of the Santee South Dam and quickly return to the Santee River flood plain which would be flooded due to the outflow at the Santee Spillway.

Unlike a dam break flood, flooding from a PMF condition would be monitored for 5 to 7 days prior to actual overtopping from the reservoir. Therefore, emergency response personnel could be notified well in advance to ensure that all affected dwellings located within the flood boundary shown in *Figure VIII-1* below are evacuated.

Figure VII-1 Probable Maximum Flood Limits

See Figure VII-1 enclosed.

LAKE MARION

SANTEE SOUTH DAM

EADYTOWN

4 2

8

2042

2019

FRIENDSHIP CIR

BIG WOODS RD

PLEASANT LN

WIGGIE RD

WHETSTONE DR

WILSON LANDING RD

GLOVER RD

EMORY HILL LANE

THORNHILL CIR

EDGEWATER RD

HARRELSON CIR

SANDHILL

51

45

131

BARON DR

THOMAS WALTERS RD

LEGEND

- PMF Flood Limits
- Dam Break Flood Limits
- Paved Road
- Unimproved Road
- Water Line
- Structure
- 51 State Highway

Scale: 1" = 1200'

PROBABLE MAXIMUM FLOOD LIMITS

FIGURE VII-1

12/15

VIII. APPENDICES

APPENDIX A: DAMBREAK ANALYSIS – SANTEE SYSTEM

SANTEE COOPER – SANTEE RESERVOIR DAM BREACH SIMULATION

Introduction

The Federal Energy Regulatory Commission requires South Carolina Public Service Authority to develop an Emergency Action Plan in the event of a failure of the Santee Dam. A dam breach simulation model was previously developed to predict flood wave propagation downstream from the dam; however, the model was based on general topographic information taken from U.S. Geological Survey topographic maps with 10- or 20-foot contour intervals. Subsequently, more detailed topographic information, including 2-foot contour intervals has been acquired and the decision was made to conduct an updated and fully independent dam breach analysis separate from the original study.

Site Conditions

The Santee Dam lies in Seismic Zone 3, indicating a "major" seismic probability of occurrence. The dam's earth embankment was constructed using hydraulic fill methods which make it susceptible to liquefaction and failure because of seismic activity. The large volume of water stored in Lake Marion, released quickly by a near instantaneous dam failure, potentially threatens downstream development. *Figure A-1 Maximum Inundation of Santee River Floodplain* shows a general outline of the inundated area.

Data Sources

Cross section data at strategic locations was developed primarily from 1987, 1"=1600' stereo aerial photography. Road and railway profiles were also developed from aerial photography. Santee Cooper provided bridge waterway opening data for use in the computer model. U.S. Geologic Survey maps were used to distinguish between flood wave flow limits and lateral storage areas. The U.S.G.S. maps were also used for stream distance measurements. Inundation boundaries were plotted on maps prepared from 1987 topographic and planimetric mapping. The area south of Georgetown and north of the Santee River was supplemented by 1982 aerial photography maps.

Computer Program Description

Two computer programs were used to simulate a Santee Dam breach and resulting flood waves to the Atlantic Ocean. These models were:

1. **DAMBRK Model -** the National Weather Service Dam Break Flood Forecasting Model. This model is capable of simulating one river with multiple dams and/or bridges.

2. **DWOPER Model -** the National Weather Service Operational Dynamic Wave Model. This model is capable of simulating flood wave propagation through a multiple river system with multiple channel constrictions (bridges, dams, navigational locks).

Both computer models used were developed by D.L. Fread, Ph.D. Research Hydrologist, National Weather Service. The two models use identical computational methods for flood wave propagation.

Due to internal restrictions within DAMBRK for modeling multiple dams/bridges, the model had to be broken into three reaches: Reach one extends from the dam to Highway 52, reaches two extends from Highway 52 to cross section 11, and reach three extends from cross section 11 to highway 17/701. DWOPER was used in reach three to consider the flood wave propagation up Wambaw Creek and outflow through Big Kilsock Bay toward the Sampit River in conjunction with simultaneous flow into the ocean through Highway 17/701.

Dam Breach Simulation

Because the Santee Dam is in a major seismic probability zone, the embankment was assumed to fail during an earthquake in a 20-minute period with the reservoir at normal pool elevation. The breach size and configuration are shown in *Figure A-2* and is identical to that used in the previous dam breach simulation. A sensitivity analysis was completed to determine the effect of varying the breach width. Results of the study indicate that breaches wider than 4,000 feet have minor effects upon flood wave heights downstream.

Cross sections in the DAMBRK model use the "Special Floodplain Feature", which permits consideration of the channel, left overbank, and right overbank areas separately when considering the elevation, width, and friction (n-value) relationships. The DWOPER model requires composite cross sections and roughness coefficients, so that no breakdown could be made between channel and overbank input parameters. Cross section locations are shown in *Figure A-3*.

Manning's friction coefficients (n-values) used in the model were based on consideration of the previous model, discussion with field personnel who had visited the site, and engineering judgment. Channel n-values ranged from 0.025 to 0.035. Overbank n-values ranged from 0.06 to 0.12.

Storage at cross sections was based on flow path considerations from U.S. Geological Survey topographic maps.

Highway embankments would restrict the flood wave somewhat; however, due to the large bridge openings, head differential across the embankments would be relatively small. Failure of the roadway fill, although unpredictable, most likely would not cause an appreciable change in flood levels as compared to a non-failure condition. Therefore, highway embankments, for modeling purposes, were assumed not to fail.

Dam Break Results and Summary

A tabulation of the dam break flood profile is given in *Table A-1* below.

The results compare reasonably well with the previously completed study; however, in most areas these recent study projects flood wave levels up to four feet lower than the previous study. This difference is attributed to more accurate topographic information which is thought to provide larger flow areas and more valley storage.

Upstream of the Highway 17/701 bridge, the recent study indicates maximum stages that are 1.5 to 2.0 feet higher than the previous study. This occurrence is likely due to the more detailed topography and bridge opening data, and the fact that the bridge opening restricts the area available for discharge of flows into the ocean.

The dam breach simulation by the program DWOPER in the Wambaw Creek area indicates that the flood wave dissipates before reaching cross section 20, and therefore provides a significant reduction in the Charleston County flooding as predicted previously. The previously completed study did not consider dynamic wave modeling in this area as was done in this study.

The slightly higher stages computed upstream Highway 17/701 would result in outflow from the Santee River into Big Kilsock Bay. The outflow would most likely overflow into the Sampit River southwest of Georgetown and not return to the Santee River. This scenario was modeled using the DWOPER program. The model indicates that the magnitude of the outflow is minor and would cause little flooding along the flow path. Flood inundation maps depict flooding that is predicted in this area.

Table A-2 gives downstream water surface elevations along the Santee River at various times. The section numbers shown along the top of the table correspond to the cross sections on *Figure A-3*. By selecting a location along the river using an appropriate cross section from *Figure A-3*, one can estimate the times of flood arrival and maximum flooding from *Table A-2*.

Inundation maps were prepared which show flooded areas due to a dam breach at 4, 8, 12, 24, 48, 120, and 240 hours after the breach, and are shown in *Section VIII-A*. Flood delineations superimposed onto new contour maps are shown as Maximum Inundation Boundary Maps in *Section VIII-B*. Inundation maps provide the basis for development of the Emergency Action Plan.

Figure A-1 Maximum Inundation of Santee River Floodplain

See Figure A-1 enclosed.

Figure A-1 - Maximum Inundation of Santee River Floodplain

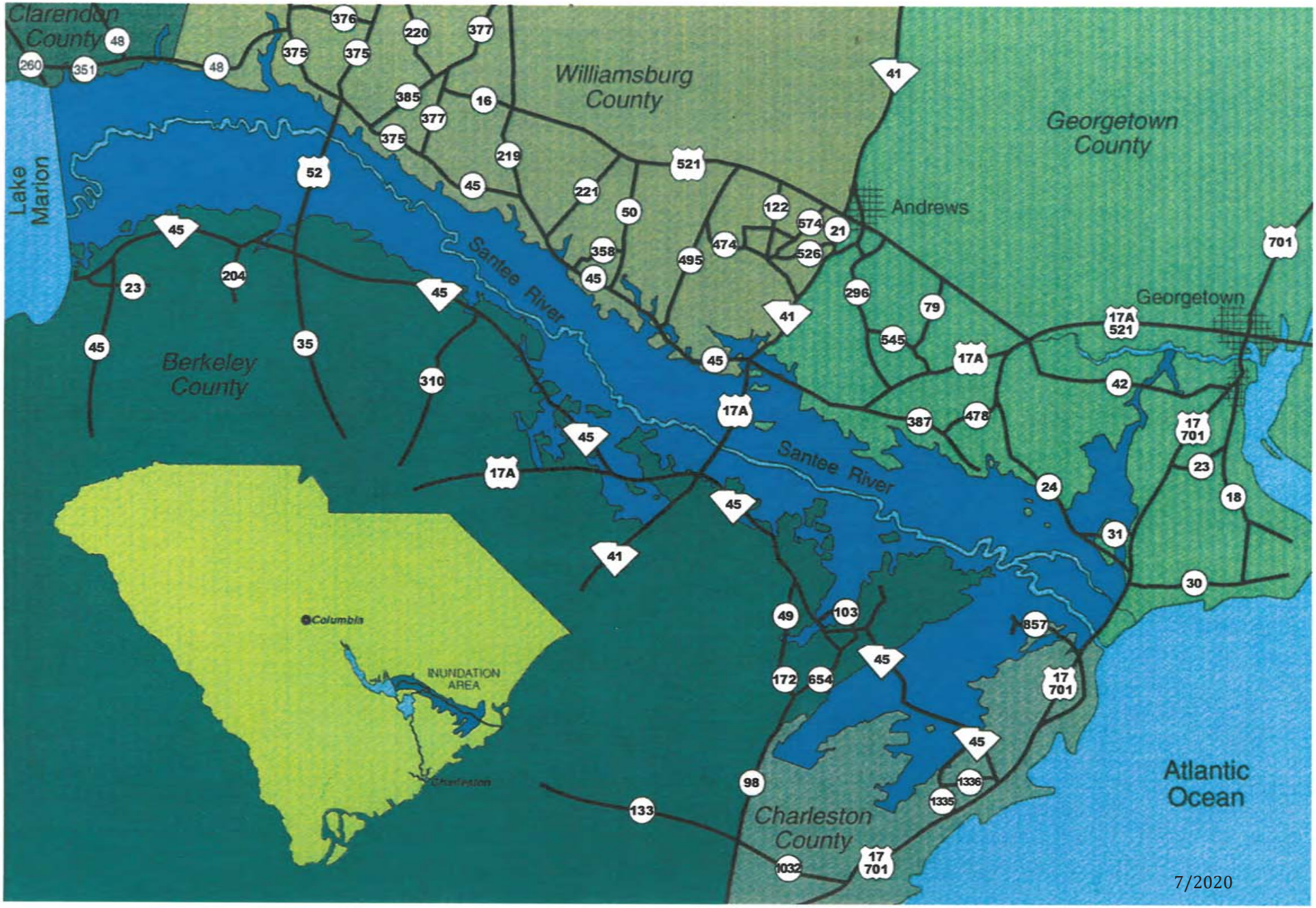
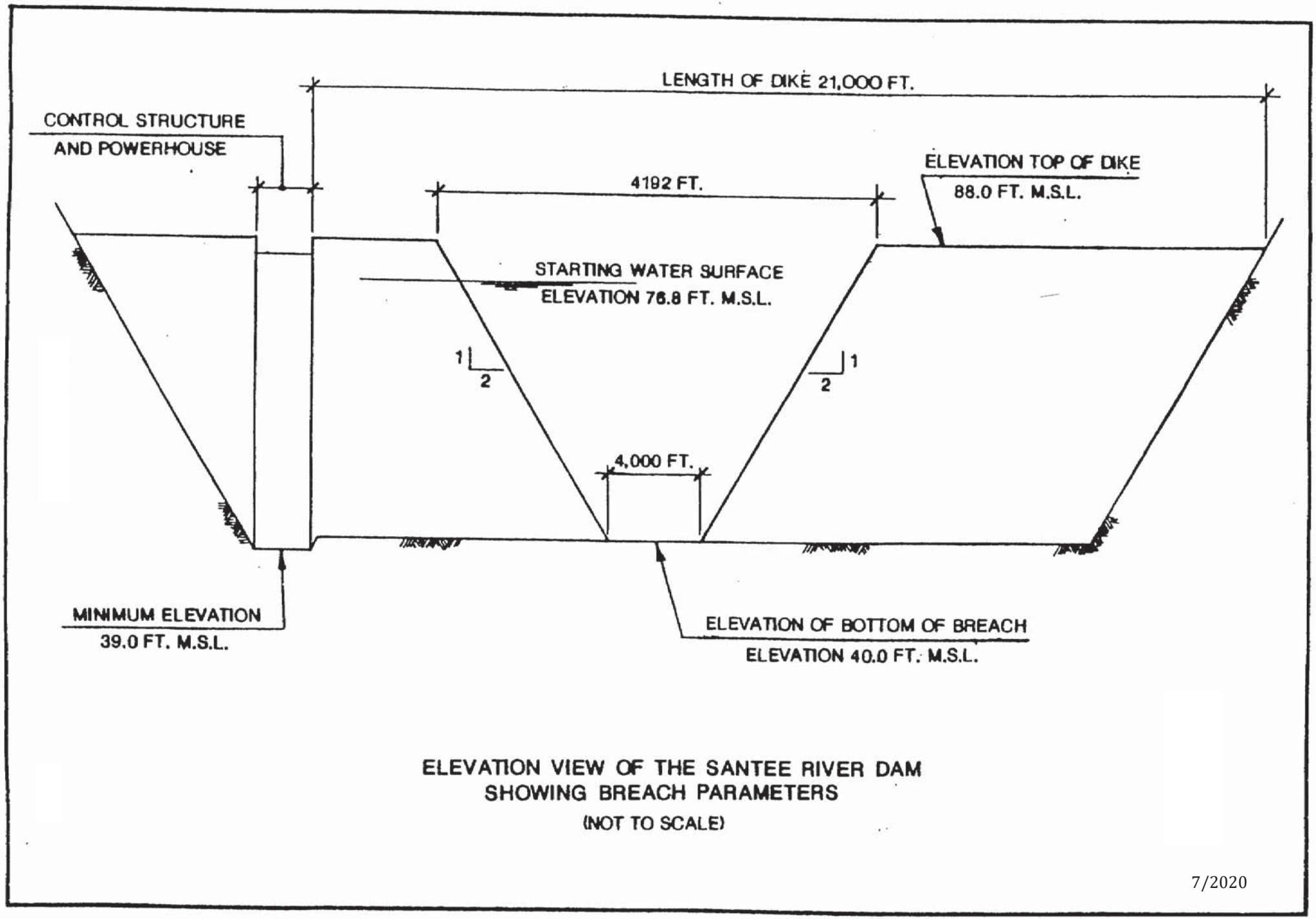


Figure A-2 Elevation View of the Santee River Dam Showing Breach Parameters

See Figure A-2 enclosed.

FIGURE A-2. ELEVATION VIEW OF THE SANTEE DAM BREACH PARAMETERS



ELEVATION VIEW OF THE SANTEE RIVER DAM
SHOWING BREACH PARAMETERS
(NOT TO SCALE)

Figure A-3 Cross Section Locations Along Santee River

See Figure A-3 enclosed.

Figure A-3. Cross Section Locations Along Santee River

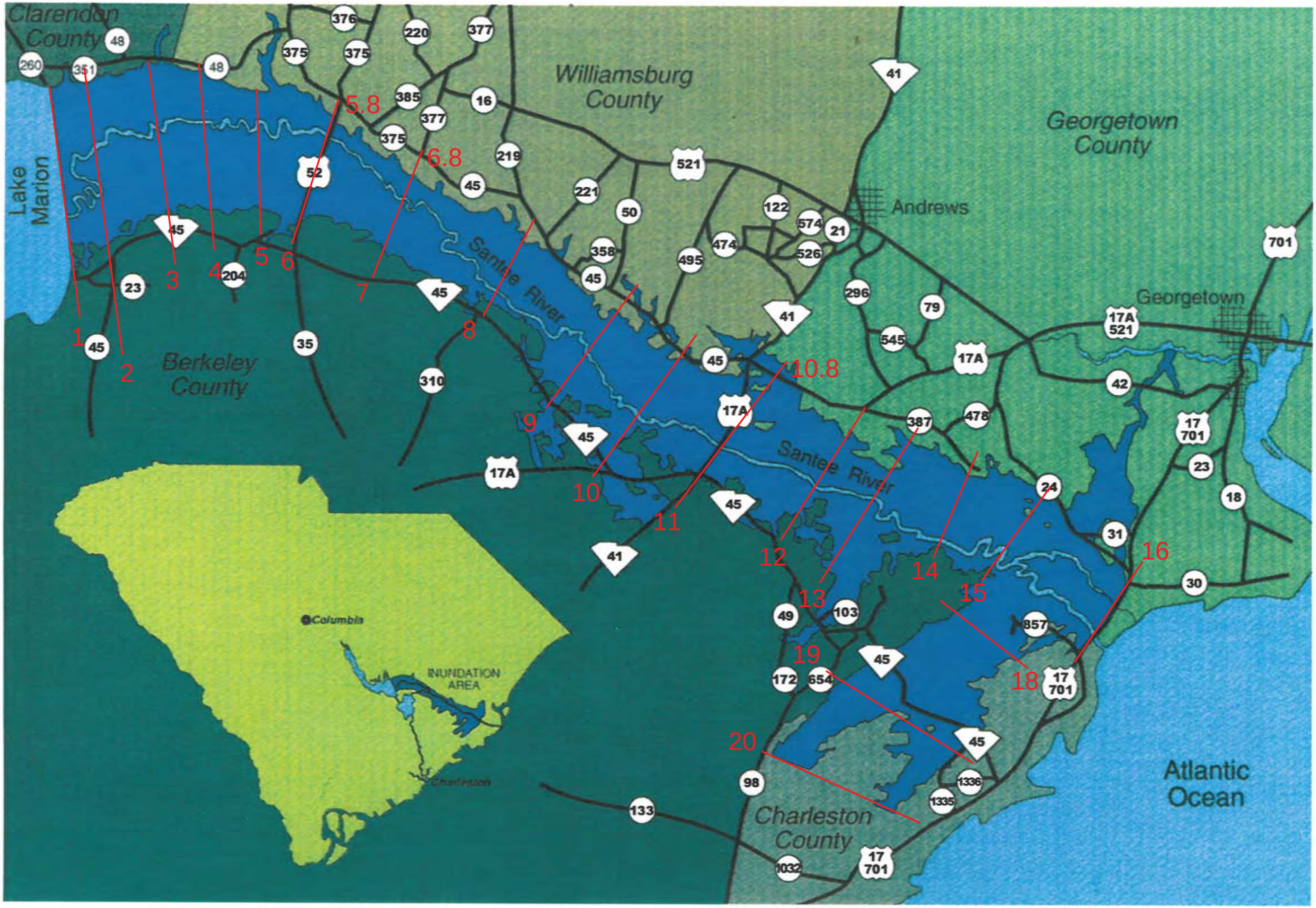


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Table A-1 Profile of Crests and Time Below the Santee Dam

SECTION	C/L RIVER MILES	MAX EL. (FT)	MAX FLOW (CFS)	TIME TO MAX EL. (HRS)	MAX FLOOD VELOCITY (FT/SEC)	MAX FLOOD VELOCITY (MI/HR)
SANTEE RIVER						
DAM	0.0	76.8	3,479,650	0.0	3.16	2.15
1	0.68	69.2	2,963,537	1.5	5.3	3.61
2	8.1	63.9	1,921,313	3.2	3.46	2.36
3	11.2	59.9	1,476,686	9.3	2.72	1.85
4	15.0	56.8	1,143,141	7.6	2.44	1.66
5	19.0	54.2	916,641	10.0	2.29	1.56
Hwy 52	24.2	51.7	754,137	10.0	1.66	1.13
6	24.5	50.8	740,087	15.0	1.94	1.32
RR Bridge	29.2	48.2	581,070	17.0	1.56	1.06
7	29.4	47.6	573,369	18.0	1.70	1.16
8	37.8	42.5	490,746	22.0	1.67	1.14
9	42.9	38.0	443,120	31.0	1.64	1.12
10	47.9	36.5	355,210	33.0	1.08	0.74
Hwy 17A/41	52.0	34.5	309,331	35.0	1.22	0.83
11	52.2	34.1	308,190	36.0	1.33	0.91
12	56.5	26.8	290,210	54.0	1.26	0.86
13	59.4	25.1	268,670	60.0	0.92	0.63
14	63.8	24.3	247,750	62.0	0.85	0.58
15	68.0	22.7	243,360	64.0	0.85	0.65
16/ Hwy 17/701	76.0	19.1	216,120	72.0	0.96	0.65
WAMBAW CREEK						
20	8.8	18.0	100*	88.0	0.0	0.0
19	11.8	20.6	-3,470**	84.0	0.2	0.1
18	16.6	20.9	-25,030	74.0	0.3	0.2
17	19.3	21.0	-36,140	72.0	0.4	0.3
BIG KILSOCK BAY						
A	0.0	20.9	4700	68.0	0.0	0.0
B	0.5	20.8	2,930	68.0	0.0	0.0
D	1.3	20.1	2,790	74.0	0.2	0.1
G	2.5	18.7	2,690	78.0	0.4	0.3
J	3.5	15.3	2,670	82.0	0.3	0.2
K	4.8	11.0	2,650	84.0	1.0	0.6
L	5.4	6.3	2,650	84.0	1.0	0.6

*Assumed baseflow condition

**Negative number indicates water flowing upstream

Table A-2 Downstream Flood Elevations at Various Times on Santee River

See Table A-2 enclosed.

TABLE A-2. Downstream Water Surface Elevations at Various Times
Since Failure of Santee North Dam on Santee River

SECTION	1.0	2.0	3.0	4.0	5.0	5.8	6.0	6.8	7.0	8.0	9.0	10.0	10.8	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0
Time (hrs)	Water Surface Elevations, (ft) Distances* in Miles Downstream from Santee North Dam																						
	0.7	8.1	11.2	15.0	19.0	24.2 HWY 52	24.5	29.2 RR BRIDGE	29.4	37.8	42.9	47.9	52.0 HWY 17A HWY 41	52.2	56.5	59.4	63.8	68.0	76.0 HWY 17	Wambaw Bay			
0.0	39.0	35.5	35.0	30.4	29.7	25.0	24.9	23.7	23.6	20.5	15.2	10.2	9.5	9.5	7.5	5.4	3.2	2.3	1.5	2.3	9.4	14.5	16.0
2.0	69.0	62.7	51.8	30.4	29.7	25.0	24.9	23.7	23.6	20.5	15.2	10.2	9.5	9.5	7.5	5.4	3.2	2.3	1.5	2.3	9.4	14.5	16.0
4.0	67.1	63.7	59.4	52.9	42.6	25.0	24.9	23.7	23.6	20.5	15.2	10.2	9.5	9.5	7.5	5.4	3.2	2.3	1.5	2.3	9.4	14.5	16.0
8.0	62.6	60.9	59.0	56.7	53.8	49.7	47.0	37.6	35.4	20.5	15.2	10.2	9.5	9.5	7.5	5.4	3.2	2.3	1.5	2.3	9.4	14.5	16.0
12.0	58.8	57.9	55.8	55.9	54.1	51.8	50.5	46.5	45.6	35.1	19.1	10.2	9.5	9.5	7.5	5.4	3.2	2.3	1.5	2.3	9.4	14.5	16.0
16.0	57.7	56.0	54.4	54.6	52.9	51.7	50.8	48.1	47.5	40.9	31.5	21.5	15.8	14.6	10.1	8.7	3.2	2.3	1.5	2.3	9.4	14.5	16.0
20.0	56.6	54.0	53.0	53.0	51.7	50.8	50.1	48.0	47.5	42.4	35.2	30.0	25.3	24.2	12.4	8.7	3.2	2.3	1.5	2.3	9.4	14.5	16.0
24.0	55.5	52.1	51.6	51.2	50.5	49.5	48.5	47.5	46.6	42.4	37.0	34.0	30.7	30.2	18.9	13.8	3.2	2.3	1.5	2.3	9.4	14.5	16.0
28.0	54.4	50.9	50.5	50.2	49.5	48.7	47.7	46.9	46.0	41.8	37.8	35.9	33.3	32.9	22.8	17.8	12.5	8.0	1.5	2.3	9.4	14.5	16.0
32.0	53.2	49.6	49.3	49.1	48.5	47.8	46.8	46.4	45.5	41.0	37.9	36.5	34.3	33.9	24.4	20.1	16.8	12.7	8.5	10.6	9.4	14.5	16.0
36.0	52.1	48.4	48.2	48.1	47.5	47.0	46.0	45.8	44.9	40.1	37.6	36.4	34.5	34.1	25.4	21.7	19.7	16.3	12.6	14.3	12.9	14.5	16.0
40.0	51.3	47.5	47.3	47.1	46.6	46.2	45.3	45.1	44.2	39.9	37.4	36.2	34.3	34.0	26.1	23.1	21.6	18.9	14.9	16.7	15.7	14.5	16.0
44.0	50.5	46.7	46.3	46.0	45.7	45.3	44.7	44.5	43.6	39.7	37.2	36.0	34.2	33.8	26.4	23.9	22.8	20.7	16.5	18.4	17.7	14.5	16.0
48.0	49.7	45.8	45.4	45.0	44.8	44.5	44.0	43.8	42.9	39.5	37.0	35.9	34.1	33.6	26.7	24.5	23.5	21.6	17.6	19.4	18.9	14.5	16.0
52.0	49.3	45.4	44.8	44.4	44.2	43.9	43.4	43.2	42.3	39.2	36.8	35.5	33.8	33.4	26.8	24.9	23.9	22.2	18.2	20.1	19.7	14.5	16.0
56.0	48.8	44.9	44.2	43.9	43.6	43.3	42.8	42.5	41.7	38.8	36.5	35.1	33.5	33.2	26.8	25.0	24.2	22.5	18.6	20.5	20.2	14.5	16.0
60.0	48.4	44.5	43.6	43.3	43.1	42.8	42.3	41.9	41.1	38.5	36.3	34.8	33.2	32.9	26.8	25.1	24.3	22.7	18.9	20.7	20.5	14.5	16.0
64.0	47.9	44.0	43.0	42.7	42.5	42.2	41.7	41.3	40.5	38.1	36.0	34.4	32.9	32.6	26.6	25.0	24.3	22.7	19.0	20.9	20.7	14.5	16.0
68.0	47.5	43.6	42.4	42.2	41.9	41.6	41.1	40.6	39.9	37.8	35.8	34.0	32.6	32.2	26.4	24.9	24.2	22.7	19.1	21.0	20.9	19.0	16.0
72.0	47.0	43.1	41.8	41.6	41.3	41.0	40.5	40.0	39.3	37.4	35.5	33.6	32.3	31.8	26.2	24.8	24.0	22.6	19.1	21.0	20.9	20.0	16.0
76.0	46.8	42.9	41.6	41.3	40.9	40.6	40.0	39.5	38.8	36.9	35.0	33.2	31.7	31.3	25.9	24.5	23.8	22.5	19.1	20.9	20.9	20.2	16.5
80.0	46.6	42.7	41.4	41.0	40.5	40.2	39.5	39.0	38.2	36.4	34.6	32.7	31.2	30.7	25.5	24.3	23.6	22.3	19.0	20.8	20.8	20.4	17.0
84.0	46.4	42.5	41.2	40.7	40.2	39.8	39.0	38.5	37.7	35.9	34.1	32.2	30.6	29.8	25.1	23.9	23.3	22.1	18.9	20.7	20.7	20.6	17.5
88.0	46.2	42.2	41.0	40.4	39.8	39.3	38.5	37.9	37.1	35.3	33.6	31.9	30.0	28.5	24.5	23.5	22.9	21.8	18.7	20.5	20.5	20.4	18.0
92.0	46.0	42.0	40.8	40.1	39.4	38.9	38.0	37.4	36.6	34.8	33.2	31.4	29.5	28.5	24.3	23.2	22.1	21.5	18.5	20.2	20.3	20.2	17.0
96.0	45.8	41.8	40.6	39.8	39.0	38.5	37.5	36.9	36.0	34.3	32.7	31.0	28.9	28.4	24.1	22.8	21.2	21.2	18.3	19.9	20.0	20.1	16.0
120.0	45.2	41.2	40.0	39.2	37.5	36.6	35.5	34.6	33.7	32.0	30.2	28.5	25.5	25.0	22.0	21.0	20.3	19.5	17.5	18.5	18.7	19.0	16.0
240.0	42.0	39.0	38.5	37.0	35.0	33.0	32.0	30.0	29.0	26.5	23.0	19.0	18.0	17.5	16.5	15.5	19.0	14.0	13.0	13.5	14.0	14.5	16.0
Max	69.2	63.9	59.9	56.8	54.2	51.8	50.8	48.2	47.6	42.5	38.0	36.5	34.5	34.1	26.8	25.1	24.3	22.7	19.1	21.0	20.9	20.6	18.0

* Distances are measured along the river channel downstream from Santee North Dam.

**Shading indicates flooding Red numbers indicate times of maximum flooding

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(TABLE2.WK3 FORMS)

APPENDIX B: DAMBREAK ANALYSIS – PINOPOLIS SYSTEM

The following assumptions were made in the derivation of the Pinopolis System dam break analysis:

1. Lake Moultrie water elevation = 75.00 FT - MSL (normal pool level)
2. Inflow into Lake Moultrie = average annual inflow conditions
3. Time to maximum breach = 0.50 HRS, Sunny Day Piping Failure
4. Trapezoidal breach section with the following properties:
    a. Base width = 300 FT
    b. Base elevation = 15 FT – MSL
    c. Crest elevation = 88 FT – MSL
    d. Side slopes of breach = 2:1 (horiz. to vert.)
5. Manning's "n" roughness coefficients range from 0.03 to 0.10.
6. Storage behind bridge abutments and in tributaries was considered.
7. Flow through the Diversion Canal was determined using the canal flow rating curves.

The assumptions established above and used in the "Dam Break" model generally comply with standard guidelines. The average breach width is wider to be more conservative. The flood routing terminated at Sullivan's Island near Charleston Harbor.

Table B-1 and *Table B-2* summarize the results of the "Dam Break" analysis below Lake Moultrie. *Figure B-1* is an elevation view of the dam showing the breach parameters. *Figure B-2* shows the maximum inundation limits of the Cooper River Floodplain.

Figure B-1 Elevation View of the Pinopolis West Dam Showing Breach Parameters

See Figure B-1 enclosed.

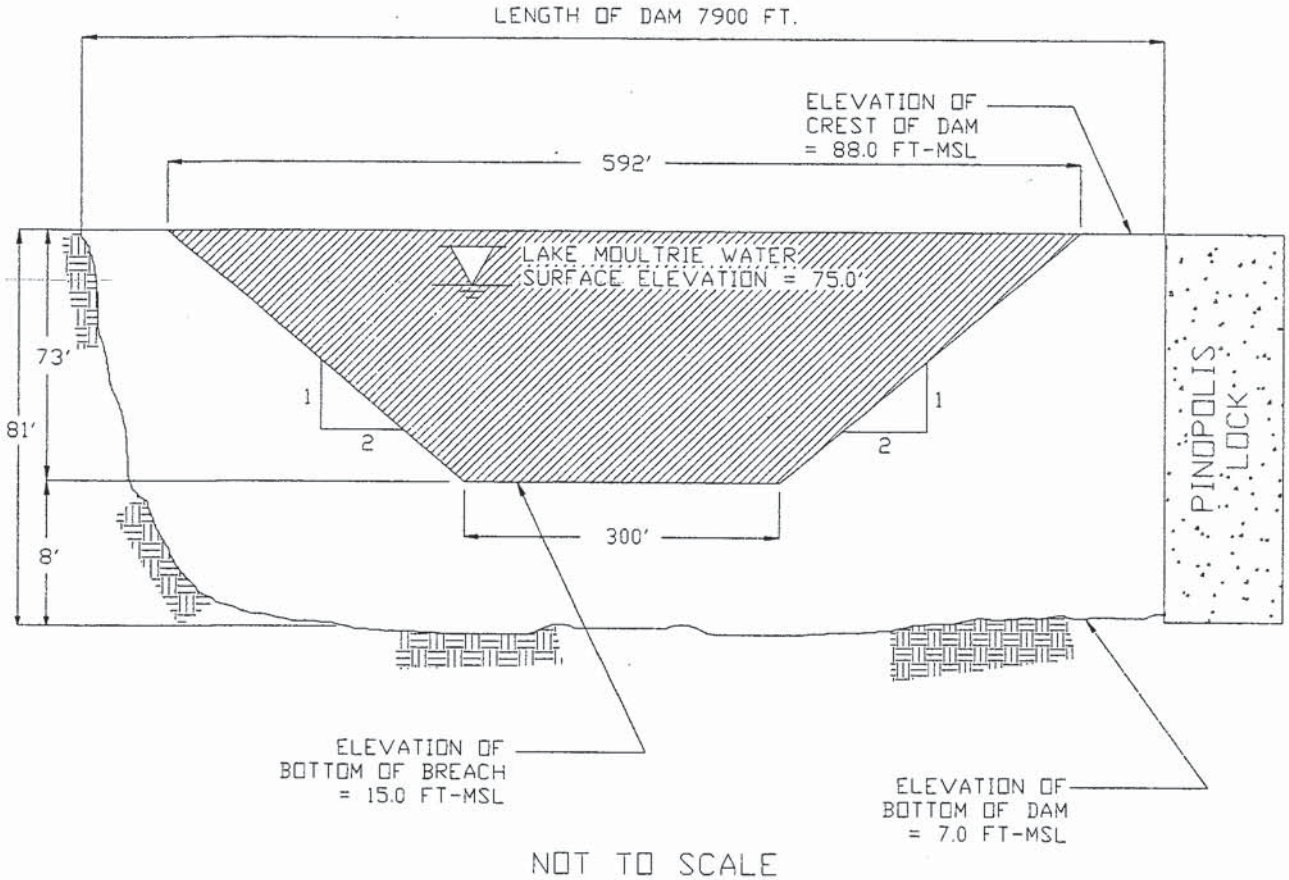

FIGURE B-1

ELEVATION VIEW OF THE PINOPOLIS WEST DAM SHOWING BREACH PARAMETERS

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Figure B-2 Maximum Inundation of Cooper River Floodplain

See Figure B-2 enclosed.

FIGURE B-2

Cross Section Location Map of Cooper River FloodPlain after Hypothetical Failure of Pinopolis Dam 0-Hours and Maximum Inundation Boundaries

santee cooper®

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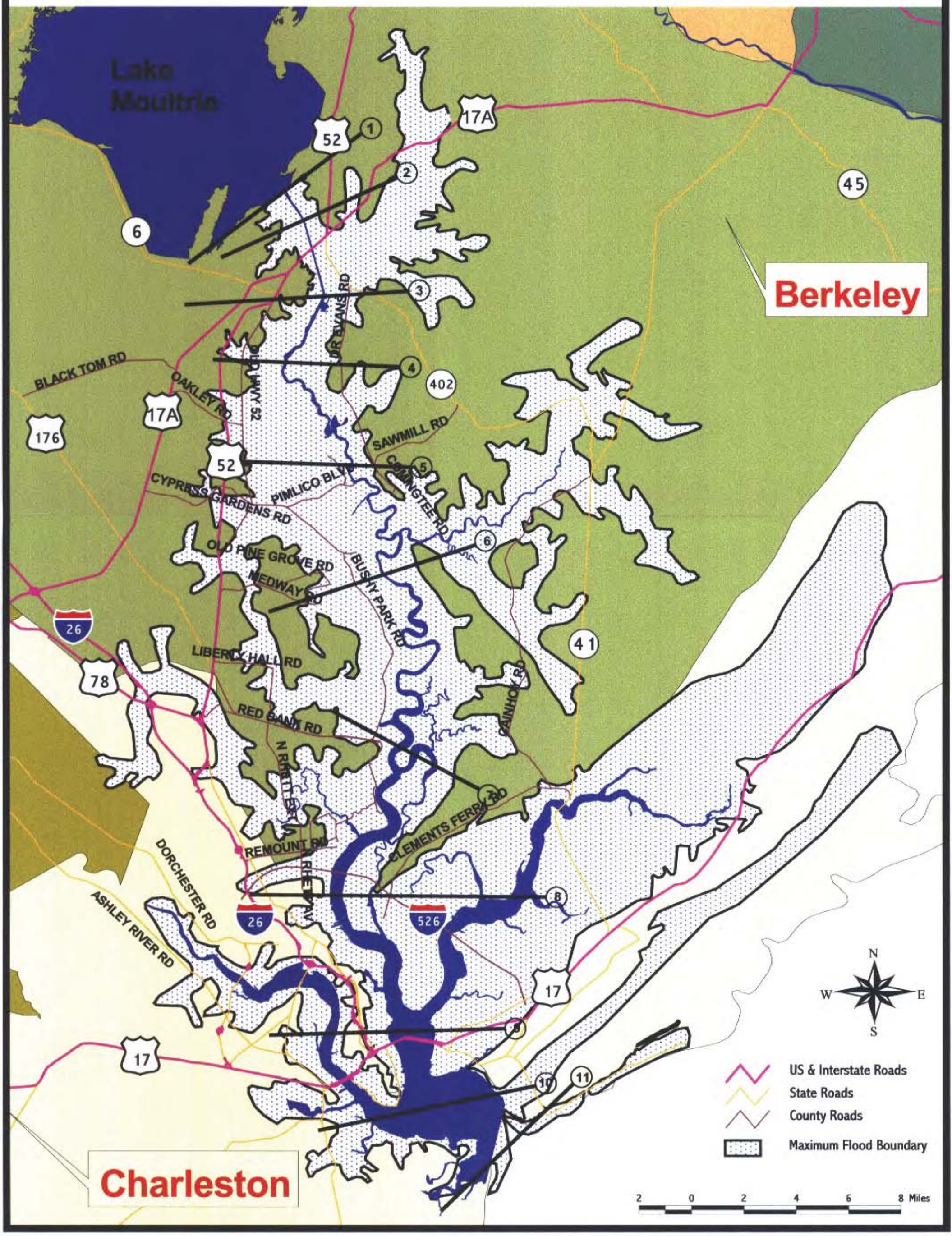


Table B-1 Hypothetical Failure of Pinopolis Dam on Cooper River – Summary of Results

Cross Section No.	Dist. From Dam (mi)		Max El. (ft)	Time to Max El. (hr)	Max Discharge (cfs)	Max Velocity (ft/s)	Flood Wave Arrival Time (hr)
	See Note 1	See Note 2					
1	0.00	0.0	38.8	7.0	568,000	7.7	0.0
2	1.53	1.6	34.2	11.8	533,000	7.4	1.0
3	3.98	3.8	30.0	18.6	418,000	5.6	2.0
4	7.32	7.3	26.1	23.8	347,000	2.2	3.0
5	10.99	12.2	22.9	29.6	331,000	2.3	5.0
6	14.81	20.3	19.3	44.2	256,000	2.1	8.0
7	20.93	32.4	15.5	56.0	183,000	1.3	12.0
8	26.28	38.6	12.7	67.0	169,000	1.5	24.0
9	32.28	45.5	9.8	101.4	110,000	1.1	36.0
10	34.49	47.8	8.4	114.8	104,000	1.3	48.0
11	37.31	50.6	5.9	171.1	71,000	1.2	66.0

Notes:
(1) Measured along floodplain to model flood wave.
(2) Measured along the river channel downstream from Pinopolis Dam

Table B-2 Downstream Flood Elevations at Various Times on Cooper River

See Table B-2 enclosed.

TABLE B-2

Downstream Water Surface Elevations at Various Times
Since Failure of Pinopolis Dam on Cooper River

Time (hrs)	Water Surface Elevations, (ft) Distances* in Miles Downstream from Pinopolis Dam										
	0	1.6	3.8	7.3	12.2	20.3	32.4	38.6	45.5	47.8	50.6
0	6.9	6.6	6.2	5.7	5.4	5.1	4.3	3.6	2.9	2.5	1.0
4	38.3	31.9	22.5	9.7	6.2	5.2	4.3	3.6	2.9	2.5	1.0
8	38.7	33.8	26.9	19.8	12.7	5.8	4.4	3.6	2.9	2.5	1.0
12	38.1	34.1	29.2	23.5	18.0	8.0	4.4	3.6	2.9	2.5	1.0
16	37.2	33.9	29.7	24.9	20.2	12.0	4.5	3.6	2.9	2.5	1.0
20	35.9	33.2	29.9	25.8	21.7	14.8	5.6	3.7	2.9	2.5	1.0
24	34.4	32.3	29.6	26.1	22.6	16.5	7.7	3.7	2.9	2.5	1.0
28	32.9	31.1	28.9	26.0	22.8	17.5	10.2	5.2	2.9	2.5	1.0
32	31.3	29.9	28.1	25.4	22.8	18.3	12.2	6.9	2.9	2.5	1.0
36	29.7	28.7	27.2	24.9	22.7	18.9	13.6	9.0	3.0	2.5	1.0
40	28.1	27.3	26.1	24.1	22.0	19.2	14.3	10.1	3.2	2.6	1.0
44	26.5	25.9	24.9	23.3	21.8	19.3	14.9	11.0	3.6	2.7	1.0
48	25.0	24.5	23.8	22.4	21.2	19.2	15.2	11.7	4.3	2.8	1.0
52	23.7	23.2	22.7	21.5	20.6	18.9	15.4	12.1	5.2	3.3	1.0
56	22.5	22.1	21.6	20.7	20.0	18.6	15.4	12.1	5.2	3.3	1.0
60	21.5	21.2	20.7	20.0	19.3	18.2	15.4	12.6	7.0	4.8	1.0
64	20.7	20.3	20.0	19.3	18.7	17.8	15.3	12.7	7.6	5.5	1.0
68	20.0	19.6	19.3	18.6	18.1	17.4	15.1	12.7	8.2	6.1	1.0
72	19.4	19.0	18.7	18.1	17.6	16.9	14.9	12.7	8.7	6.6	1.2
80	18.4	18.1	17.8	17.1	16.7	16.1	14.4	12.5	9.3	7.3	2.1
88	17.7	17.3	17.0	16.4	15.9	15.4	13.9	12.3	9.6	7.8	2.9
96	17.1	16.7	16.3	15.7	15.2	14.7	13.5	12.1	9.8	8.1	3.8
104	16.7	16.2	15.9	15.2	14.7	14.2	13.0	11.8	9.8	8.3	4.4
112	16.3	15.9	15.5	14.8	14.2	13.7	12.6	11.6	9.7	8.3	4.8
120	16.1	15.6	15.2	14.4	13.9	13.4	12.3	11.3	9.6	8.3	5.1
128	15.9	15.3	15.0	14.2	13.5	13.0	11.9	11.0	9.6	8.3	5.4
136	15.7	15.2	14.7	13.8	13.3	12.8	11.7	10.7	9.4	8.2	5.6
144	15.5	15.0	14.5	13.7	13.1	12.5	11.4	10.6	9.2	8.1	5.8
152	15.1	14.6	14.3	13.5	12.8	12.2	11.2	10.4	9.1	8.1	5.9
160	14.5	14.1	13.8	13.2	12.5	12.0	11.0	10.1	8.9	8.0	5.9
168	13.6	13.5	13.3	12.8	12.3	11.8	10.8	10.0	8.8	7.9	5.9
176	12.9	12.8	12.7	12.4	11.9	11.5	10.5	9.8	8.7	7.8	5.9
184	12.2	12.1	12.1	11.8	11.5	11.2	10.3	9.6	8.6	7.7	5.9
192	11.6	11.6	11.5	11.4	11.1	10.8	10.0	9.4	8.5	7.6	5.8
200	11.2	11.1	11.1	11.0	10.7	10.4	9.7	9.2	8.3	7.5	5.8
208	10.8	10.8	10.7	10.6	10.4	10.2	9.5	8.9	8.1	7.4	5.7
216	10.5	10.5	10.5	10.4	10.1	9.9	9.3	8.8	8.0	7.3	5.6
224	10.3	10.3	10.3	10.2	9.9	9.6	9.0	8.6	7.9	7.2	5.5
232	10.1	10.0	9.9	9.8	9.6	9.3	8.8	8.3	7.7	7.0	5.3
240	9.8	9.8	9.5	9.3	9.1	8.7	8.7	8.0	7.5	6.8	5.2
264	9.2	9.1	9.0	8.9	8.7	8.1	7.8	7.5	7.1	6.4	4.7
288	8.6	8.5	8.4	8.3	8.2	7.9	7.2	7.0	6.7	6.0	4.3
312	8.3	8.1	8.0	7.8	7.7	7.7	7.1	6.6	6.3	5.7	3.9
336	8.0	7.8	7.7	7.5	7.4	7.3	6.8	6.4	5.9	5.4	3.6
360	7.8	7.6	7.4	7.2	7.1	7.0	6.5	6.1	5.6	5.1	3.1
408	7.5	7.3	7.1	6.8	6.6	6.5	6.0	5.5	5.0	4.5	2.5
456	7.3	7.1	6.8	6.5	6.3	6.2	5.6	5.1	4.5	4.0	2.1
504	7.2	6.9	6.6	6.3	6.1	5.9	5.3	4.8	4.1	3.7	1.7
552	7.1	6.8	6.5	6.2	5.9	5.7	5.1	4.5	3.9	3.4	1.5
600	7.1	6.8	6.4	6.1	5.8	5.6	4.9	4.3	3.7	3.2	1.3
648	7.0	6.7	6.4	6.0	5.7	5.5	4.8	4.2	3.5	3.1	1.2
Max	**38.8**	**34.2**	**30.0**	**26.1**	**22.9**	**19.3**	**15.5**	**12.7**	**9.8**	**8.4**	**5.9**

* Distances are measured along the river channel downstream from Pinopolis Dam.

Assumption: Initial flow in the channel was assumed to be 6,000 cfs. The breach will cause a maximum flow of about 35,000 cfs. This flow will continue up to 6 days. Between the 6th and 7th days, the flow will be reduced to 6,000 cfs and will continue at this rate.

APPENDIX C: PLANS FOR TRAINING, EXERCISING, UPDATING, AND POSTING THE EAP

Appendix C.1 Posting the EAP

Updated copies of the EAP are distributed to all pertinent parties. Lists of Santee Cooper and external recipients of the EAP are provided in *Tables C-2* and *C-3* below respectively. These recipients are instructed to familiarize themselves with the plan and to know its whereabouts in the event of an emergency. An updated copy of the EAP is always kept at the emergency response desk of the Santee Cooper system operator.

Appendix C.2 Annual Training

Santee Cooper implemented a Dam Safety Awareness Training Program in 2014. This program, also known as the Owner's Dam Safety Program (ODSP), provides annual training to all departments within Santee Cooper that could affect Dam Safety including, but not limited to, system control, security, construction services, property management, and all consultants and contractors working on or near the project. The training provides guidance as it relates to each trainee's daily responsibilities. The training embodies the spirit of Dam Safety by empowering every employee, contractor, and consultant to report Dam Safety concerns without reprisal.

The annual Dam Safety Awareness Training is focused on the following learning objectives:

- Knowledge of the Santee Cooper Dam Safety Program Policy (SC Policy 5-10-00).
- Understand the ODSP Communication Chart.
- Understand FERC notification requirements.
- Understand how your job responsibilities affect Dam Safety.
- Knowledge of Project Works, common industry terms and how to identify and report a deficiency.
- Knowledge of the Emergency Action Plan for Dam Failure.

Training records, including lists of employees who completed the Dam Safety Awareness Training, are submitted annually to the FERC to satisfy ODSP requirements.

Appendix C.3 Annual Exercises

In a letter from the Federal Energy Regulatory Commission dated December 3, 2003, the following schedule was established for testing the EAP on an annual basis. The schedule is on a continuous 5-year cycle.

Exercise descriptions are provided below:

- **Table Top Exercise-** informal conference room environment with action taken and discussion based on a described emergency situation plus a series of messages to players.
- **Functional Exercise-** Highest level test without full activation of field personnel. Simulates emergency operations center environment. Simulates dam failure and response with time constraints.
- **Full Scale-** Highest level of testing. Evaluates operational capability of all facets of emergency management system. Actual mobilization of personnel and resources.

Table C-1 EAP Annual Exercise Schedule

YEAR	STRUCTURE	EXERCISE
2024	North Dam	Table Top
2025	North Dam	Functional
2026	North Dam	Table Top
2027	North Dam	Full Scale
2028	West Dam	Table Top
2029	North Dam	Table Top
2030	North Dam	Functional

Appendix C.4 Test of Readiness

Santee Cooper will conduct a surprise test of the EAP once per year without notifying response personnel that the test is coming. The test will consist of tripping a rising tailwater sensor, verification of the event and notification of the individuals on the flowchart that a test is taking place. The test will not involve activation of the floodplain sirens, the activation of the TARs in each floodplain resident's home or the mobilization of emergency response personnel. A critique of each test will be provided to the FERC. Santee Cooper's EAP Coordinator will determine the success of the test.

Appendix C.5 Updating the EAP

Santee Cooper will update the EAP annually, prior to the annual exercise. Any suggested changes to the EAP should be submitted to the EAP Coordinator by the end of the year the update is provided. The EAP Coordinator may be reached by phone at (843) 761-8000 Ext. 5174 or by email at shea.mcmakin@santeecooper.com.

Appendix C.6 Posting and Distribution of the EAP

Copies of the EAP are distributed to all pertinent parties. These individuals include all the people listed on the verification and notification flowcharts. The recipients of the EAP are listed on *Table C-2* below. Revisions to the EAP are issued as needed to keep up with organizational changes, changing events, and regulations.

Table C-2 Santee Cooper EAP Plan Holders

See Table C-2 enclosed.

TABLE C-2 SANTEE COOPER EAP PLAN HOLDERS

Title	FirstName	LastName	JobTitle	Address	Reprint Book #
			available		16
Mr.	Chris	Griffin	Project Manager B	MM06	55
Mr.	Robert	Blackwell	Manager Substation Civil Design	M501	56
Mr.	Mike	Coker	Sr Manager Operational Support	M403	57
Mr.	John	Steed	Group Supervisor Construction Services	LM2	58
Mr.	Michael	DuPre	Senior Engineer	OC08	59
Mr.	Ken	Lott	Chief Financial & Admin Officer	M602	60
Mr.	Jonathan	Shealy	Chief Law Enforcement & Security	MM05	61
Ms.	Traci	Grant	Director Inclusive Strategies & Corporate Secretary	M603	62
Ms.	Darla	Barnette	Jefferies Generation Station Manager	JGS	63
Mr.	Marty	Watson	Chief Commercial Officer	M605	64
Mr.	Richard	Kirby	Manager Area Transmmission Engineering	OC06	65
Mr.	Will	Tindal	Senior Engineer	OC08	66
			available		67
Mr.	Buck	Simmons	Group Supervisor Construction Services	OVT	68
Mr.	Andy	Green	Sr Manager OCC Safety & Health	AG02	69
Mr.	Matthew	McCants	Director Generation Services	A205	70
Mr.	John	Dills	Director New Generation	OC06	71
Mr.	Brian	Holmes	Manager Waste Management	A203	72
Mr.	Will	Stevick	Director Construction Services Management	A204	73
Ms.	Sandra	Starks	Asst Corporate Secretary	M601	74
			available		76
Mr.	Shea	McMakin	Superintendent Gen Construction Services & EAP Coordinator	OC08	77
Ms.	Mikki	Crocker	Senior Engineer	OC08	78
Ms.	Mollie	Gore	Director Corporate Communications & External Affairs	MG04	79
Mr.	Johnny	Collier	Group Supervisor Construction Services	LM2	80
Mr.	J.P.	Ramsing	Manager Technical Training	OC05	81
Ms.	Kelsey	DiBiase	Engineer III	OC08	82
			available		83
Mr.	Byron	Rodgers	Director Supply Chain Management	AG10	84
Mr.	Joseph	Branton	Crew Supervisor - Construction	LM2	85
Mr.	Jordan	Harris	Superintendent Generation Maintenance	A205	86
			available		87
Ms.	Loraine	Dennis	Manager OCC Health	AG02	88
			available		89
			available		90
			available		91
Mr.	Adam	Taylor	Director System Ops	ECC	92
Mr.	Jim	Boodle	Group Supervisor Construction Services	OVT	93
Mr.	Carey	Salisbury	Senior Director Generation	A205	94
Mr.	Ryan	Millwood	Group Supervisor Steam OPS	JGS	95
Mr.	Ryan	Millwood	Jefferies Control House	JGS	96
Mr.	Ryan	Millwood	Jefferies Hydro Operations	JGS	97
Mr.	Jimmy	Staton	President and CEO	M606	98
Mr.	David	Singleton	Second Vice Chairman Santee Cooper Board of Directors	M601	99
Mr.	Peter	McCoy Jr.	Chairman Santee Cooper Board of Directors	M601	100
Mr.	Russell	Bagwell	Engineering Tech A	OC08	101
Ms.	Diana	Scott	Manager System Operation Planning	ECC	102
			available		103
Mr.	Al	Lopez	Sr Manager Power System Design and Engineering	M501	104
			Corporate Incident Management Team Library	VIDCON1	105
			available		106
Mr.	Bryan	Lewis	Director Customer Service Retail	HG01	107
Mr.	Shiloah	Burbage	Engineer II	OC08	108
Mr.	Adam	Taylor	ECC Control Room Copy	ECC	109
Mr.	Brandon	Tennes	Engineering Tech B	OC08	110
			available		111
Mr.	Brandon	Biggs	Senior Engineer	OC06	112
			available		114
Mr.	Dan	Camp	Senior Director Real Estate & Camp Hall	MM06	115
Mr.	Clarke	McKenzie	Manager System Control	ECC	117
			available		118
Mr.	Stephen	Mudge	1st Vice Chairman Santee Cooper Board of Directors	M601	119
Ms.	Mollie	Gore	Electronic Copy for Master EAP Electronic Files	Email	

Table C-3 External EAP Plan Holders

See Table C-3 enclosed.

Reprint Book #	Title	First Name	Last Name	Job Title	Company	Address1	City	State	Postal Code
1	Ms.	Kristin	Graziano	Sheriff	Charleston County Sheriff's Office	3691 Leeds Avenue	Charleston	SC	29405
2	Mr.	Allen	Lee	Director	Clarendon County Emergency Services	219 Commerce Street	Manning	SC	29102
3	Capt.	Brandon	Landrum	Protective Services/Emergency Management Unit	State Law Enforcement Division	P.O. Box 21398	Columbia	SC	29221-1398
4	Mr.	Cameron	Rhyne		Duke Energy - Hydro Fleet M/C EC11J	257 Duke Lane, Building 8701	Stanley	NC	28164
5	Mr.	Delmar	Johnson	Emergency Preparedness Director	City of North Charleston	P.O. Box 190016	N. Charleston	SC	29419
6	Mr.	Hakim	Bayyoud	Floodplain and Building Services Director	Charleston County Building Services	4045 Bridgeview Drive, Rm. A311	N. Charleston	SC	29405
7	Ms.	Laura	Guillen	Engineering & Facilities Manager	C.R. Bard, Inc.	428 Powerhouse Road	Moncks Corner	SC	29461-4306
8	Mr.	Allen	Lee	Director	Clarendon County Emergency Services	219 Commerce Street	Manning	SC	29102
9	Mr.	Ken	Jones - EMFR	Emergency Manager	US Coast Guard – Sector Charleston	1050 Register St.	N. Charleston	SC	29405
10	Mr.	Joel	Evans	Director	Charleston County Planning Department	4045 Bridgeview Drive, Room A314	N. Charleston	SC	29405-7464
11	Mr.	Chad	Beam	Assistant State Fire Marshal	SC Emergency Response Task Force SC-TF1, SC-HART, FF-MOB	141 Monticello Trail	Columbia	SC	29203
12	Mr.	Allen	Lee	Director	Clarendon County Emergency Services	219 Commerce Street	Manning	SC	29102
13	Mr.	Dan	Isgett	Sheriff's Office Inspector	Berkeley County Sheriff's Office	1003 U.S. Highway 52	Moncks Corner	SC	29461
14	Capt.		Boniecki	Troop 6 Commander	SC Department of Public Safety - Highway Patrol	2070 Northbrook Boulevard	Hanahan	SC	29410
15	Mr.	David	Thachik	Dam Safety & Flood Response Progam Manager	S.C. Emergency Management Division	2779 Fish Hatchery Road	West Columbia	SC	29172-2024
16	Ms.	Shelly	Allen	Incident Support Team & Risk Manager	South Carolina State Fire	141 Monticello Trail	Columbia	SC	29203
17	Mr.	Dennison	Coomer	Emergency Services Manager	S.C. Department of Admin - (OTIS)	4430 Broad River Road	Columbia	SC	29210-4012
18	Chief	Michael	Hind	Emergency Management	USACE Charleston District	69A Hagood Avenue	Charleston	SC	29403
19	Mr.	Leonard	Vaughan	Meteorologist	National Weather Service	2909 Aviation Way	West Columbia	SC	29170-2102
20	Mr.	Aaron	Dale	Director Regular Renewable Operations	Duke Energy	9550 Research Drive	Charlotte	NC	28262
21	Mr.	Maurice	Williams	Plant Manager	U.S. Army Corps of Engineers - St. Stephen Power Plant	1275 Rediverstion Road	St. Stephen	SC	29479-0940
22	Mr.	Blair	Holloway	Lead Meteorologist	National Weather Service - Charleston	5777 South Aviation Avenue	Charleston	SC	29406-6177
23	Mr.	John	Shelton	Science Quality Assurance Branch Chief	U.S. Geological Survey- South Atlantic Water Science Center	720 Gracern Road, Suite 129	Columbia	SC	29210-7655
24	Mr.	Stephen	Gardner	Williamsburg County Sheriff	Williamsburg County Sheriff Department	200 South Jackson Street	Kingstree	SC	29556
25	Mr.	William	Brown	Regional Engineer	Federal Energy Regulatory Commission	3700 Crestwood Parkway, Suite 950	Duluth	GA	30096
26	Mr.	Mark	Wilbert	Emergency Manager	City of Charleston	180 Lockwood Blvd.	Charleston	SC	29403

Reprint Book #	Title	First Name	Last Name	Job Title	Company	Address1	City	State	Postal Code
27	Mr.	Jay	Cox	Emergency Response Coordinator	SCDHEC Region 6 EQC	927 Shine Avenue	Myrtle Beach	SC	29577
28	RADM	Keith	Smith	Commander	Charleston – US Coast Guard	1050 Register St.	N. Charleston	SC	29405
29	Mr.	Jim	Hursey		Naval Nuclear Power Training Unit	1260 Snow Pointe Road	Goose Creek	SC	29445-8612
30	Mr.	William	Pierce	Interim Chief of Police	Georgetown Police Department	2222 Highmarket Street	Georgetown	SC	29440
31	Mr.	Matt	McDowell	Fire Chief, Emergency Response Specialist	INEOS Aromatics (Cooper River Plant)	1306 Amoco Dr.	Wando	SC	29492
32	Mr.	Tim	Baxley	Sheriff	Clarendon County Sheriff's Office	217 Commerce Street	Manning	SC	29102
33	Mr.	Rick	Neuherz	Service Hydrologist	National Weather Service - Wilmington NC	2015 Gardner Dr.	Wilmington	NC	28405
34	Major	Robert	Woods	Emergency Traffic Management Unit	SC Department of Public Safety - Highway Patrol	10311 Wilson Boulevard	Blythewood	SC	29016
35	Mr.	Charles	Kramer	Safety Director	US Navy - NIWC Atlantic	P.O. Box 190022	N. Charleston	SC	29419-9022
36	Mr.	Brandon	Ellis	Director	Georgetown County EPD	2222-C Highmarket Street	Georgetown	SC	29440
37	Mr.	Steve	Gottula	Installation Emergency Manager	Joint Base Charleston	330 North Davis Dr.	Joint Base Charleston	SC	29404
38	Mr.	Aaron	Dale	Director Regular Renewable Operations	Duke Energy	9550 Research Drive	Charlotte	NC	28262
39	Mr.	Ben	Webster	Emergency Manager Director	Charleston County EMD	8500 Palmetto Commerce Parkway	N. Charleston	SC	29456
40	Mr.	John	McCain	Manager	SCDHEC Dam Safety Program	2600 Bull Street	Columbia	SC	29202
41	Ms.	Vivian	Bufkin	EMD Director	Williamsburg County EMD	2086 Thurgood Marshall Highway	Kingstree	SC	29556
42	Ms.	Vivian	Bufkin	EMD Director	Williamsburg County EMD	2086 Thurgood Marshall Highway	Kingstree	SC	29556
43	Mr.	Raymond	Ammarell	Mgr. Dam Safety & Emergency Preparedness	Dominion Energy	220 Operation Way M/C A221	Cayce	SC	29033-3701
44	Mr.	Scott	Glass	Chief of Operations	USACE - Charleston District	69A Hagood Avenue	Charleston	SC	29403
45	Mr.	William	Brown	Regional Engineer	Federal Energy Regulatory Commission	3700 Crestwood Parkway, Suite 950	Duluth	GA	30096
46	Mr.	William	Brown	Regional Engineer	Federal Energy Regulatory Commission	3700 Crestwood Parkway, Suite 950	Duluth	GA	30096
47	Major	John	Downer	Law Enforcement - Staff Operations	S.C. Department of Natural Resources	1000 Assembly Street	Columbia	SC	29202-0167
48	Capt.	Benjamin	Thomas	Law Enforcement - Staff Operations	S.C. Department of Natural Resources	1000 Assembly Street	Columbia	SC	29202-0167
49	Mr.	William	Rochester	Emergency Management: Director	Berkeley County Emergency Preparedness Department	1003 U.S. Highway 52	Moncks Corner	SC	29461
50	Capt.	William	White	Command Staff	Charleston County Sheriff's Office	3691 Leads Avenue	North Charleston	SC	29405-7789
51	Ms.	Lauren	Benjamin	Exuctive Assistant to the Deputy Secretary of Engineering Office	SCDOT - Executive Division	955 Park Street	Columbia	SC	29202
52	Mr.	Raymond	Ammarell	Mgr. Dam Safety & Emergency Preparedness	Dominion Energy	220 Operation Way M/C A221	Cayce	SC	29033-3701
53	Mr.	Tom	Allen	Director of Safety and Regulation, ESF 12	S.C. Office of Regulatory Staff	1401 Main Street, Suite 900	Columbia	SC	29201
54	Mr.	Raymond	Ammarell	Mgr. Dam Safety & Emergency Preparedness	Dominion Energy	220 Operation Way M/C A221	Cayce	SC	29033-3701

Reprint Book #	Title	First Name	Last Name	Job Title	Company	Address1	City	State	Postal Code
113	Ms.	Lucia	Wimberly	Dam Safety Program Manager	USACE Charleston and Savannah District	100 W. Oglethorpe Ave	Savannah	GA	31401
116	Mr	Tom	McNeal	Director of Emergency Management	Dorchester County Emergency Management Department	212 Deming Way, Suite 3	Summerville	SC	29483

APPENDIX D: SITE SPECIFIC CONCERNS

Appendix D.1 Select Evacuation Routes

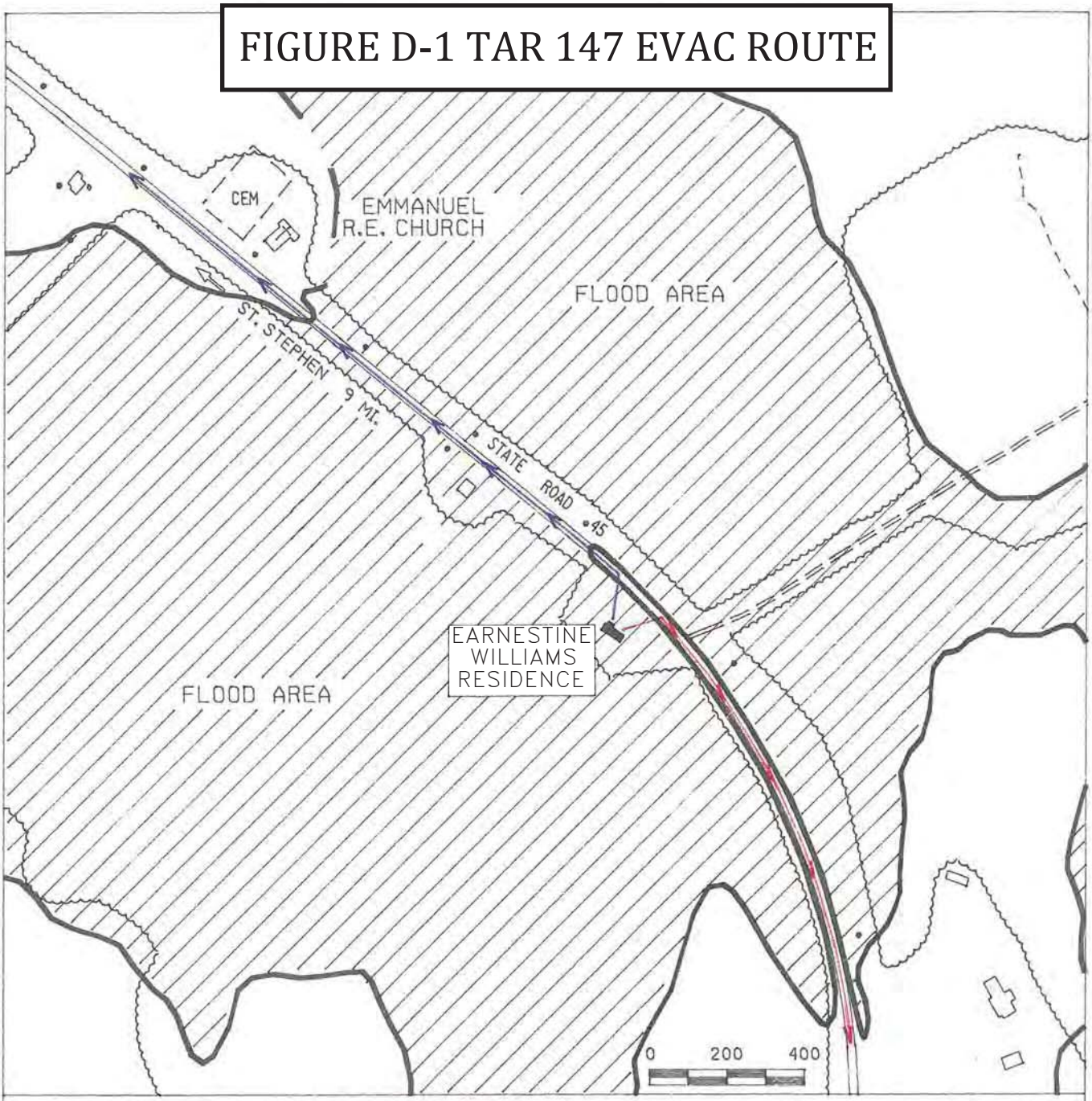
As required by FERC, Santee Cooper has prepared evacuation routes for four residences in Zone 1 of the Santee River floodplain. Evacuation routes were prepared only for those residents in Zone 1 whose finished floor and evacuation route are expected to receive flooding following a breach of the Santee North Dam. The number has recently been reduced from six because of houses being built with first floors above the maximum flood level and houses being removed.

The evacuation maps provided in *Figures D-1* through *Figure D-4* below show the potential flood inundation around each residence with possible evacuation route(s) to high ground. For most residents, more than one route is shown; however, the route outlined in red should be considered the quickest and safest route. Pertinent evacuation and flood data specific to each residence is provided in the lower left corner of each figure.

Figure D-1 Evacuation Route TAR 147

See Figure D-1 enclosed.

FIGURE D-1 TAR 147 EVAC ROUTE



EVACUATION INSTRUCTIONS: **1ST CHOICE (RED)** EXIT THROUGHT THE FRONT OF YOUR HOUSE AND WALK DOWN YOUR DRIVEWAY AND ONTO HWY. 45. GO RIGHT ON HWY. 45 TOWARD HWY. 17A UNTIL YOU REACH HIGH GROUND. **2ND CHOICE (BLUE)** GO LEFT ON HWY. 45 TOWARD ST. STEPHEN UNTIL YOU REACH THE JUNCTION OF SECONDARY RD. 134.

FLOOD DATA

TAR NO. - 147
TAX MAP NO. - 061-00-00-063
TIME TO INITIAL FLOOD - 26 HR.
TIME TO SAFE RETURN - 5 DAYS
FIRST FLOOR ELEV. - 36.4 FT.
PEAK FLOOD ELEV. - 37.0 FT.
DEPTH OF MAX. FLOOD IN HOUSE - 1.1 FT.
COUNTY - BERKELEY

DATE: JUNE 1991	BY: MSR	CHECKED: JJH/MMC

Santee Cooper

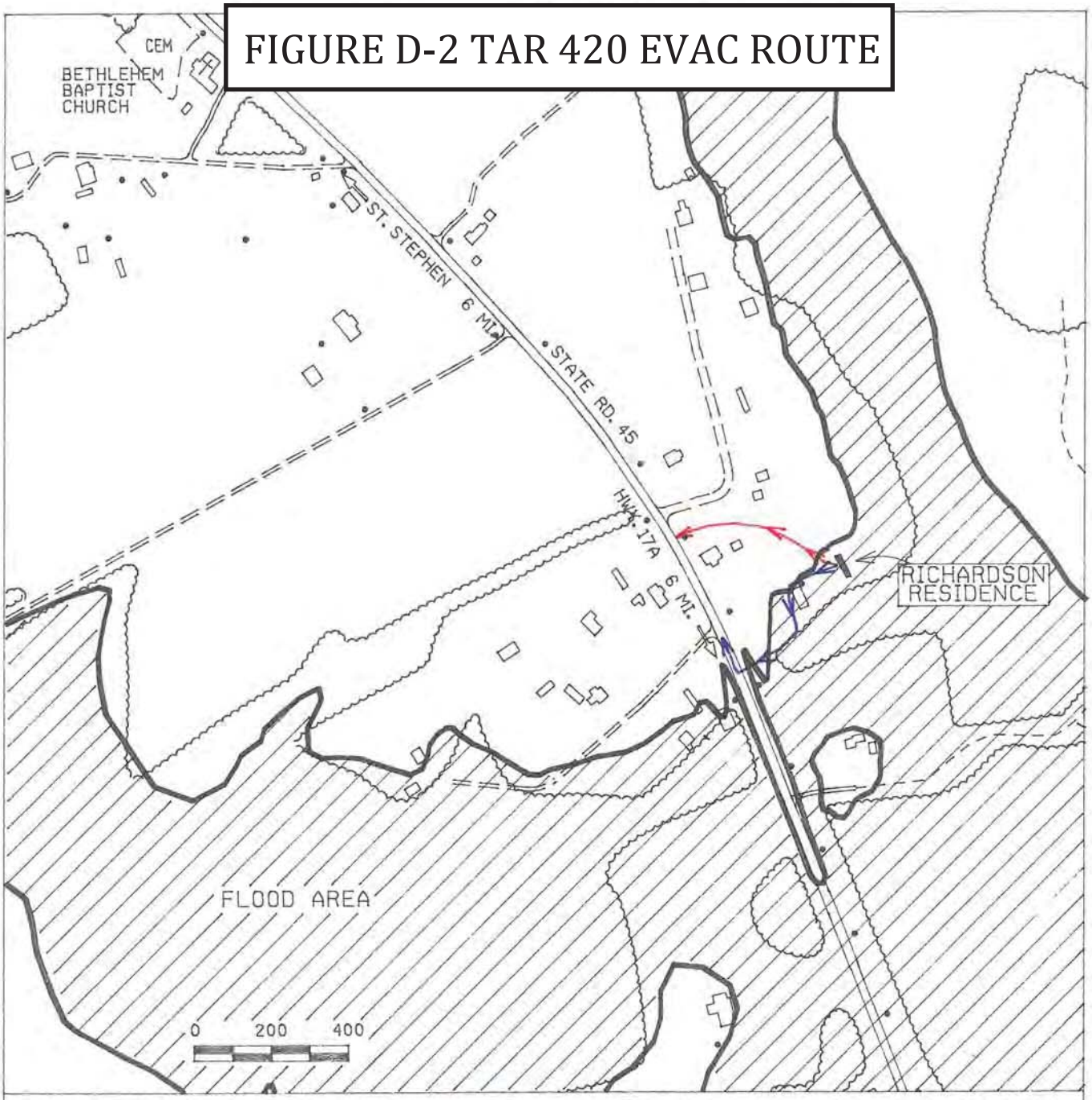
EMERGENCY ACTION PLAN
EVACUATION ROUTE
FOR
EARNESTINE WILLIAMS
TAR NO. 147

QSA6:[70,70]TAR143147.DGN

Figure D-2 Evacuation Route TAR 420

See Figure D-2 enclosed.

FIGURE D-2 TAR 420 EVAC ROUTE



EVACUATION INSTRUCTIONS: **1ST CHOICE (RED)** - EXIT HOME THROUGH FRONT DOOR. WALK ACROSS FIELD AT THE RIGHT UNTIL YOU REACH HIGHWAY 45.
2ND CHOICE (BLUE) - WALK DOWN DRIVEWAY UNTIL YOU REACH HIGHWAY 45. WHEN YOU REACH HIGHWAY 45 WALK SEVERAL HUNDRED FEET TO THE RIGHT TOWARD ST. STEPHEN.

FLOOD DATA

TAR NO. - 420
TAX MAP NO. - 049-00-02-060
TIME TO INITIAL FLOOD - 26 HR.
TIME TO SAFE RETURN - 5 DAYS
FIRST FLOOR ELEV. - 39.3 FT.
PEAK FLOOD ELEV. - 40.0 FT.
DEPTH OF MAX. FLOOD IN HOUSE - 0.7 FT.
COUNTY - BERKELEY

DATE:JUNE 1991	BY:MSR	CHECKED:JJH/MMC

Santee Cooper

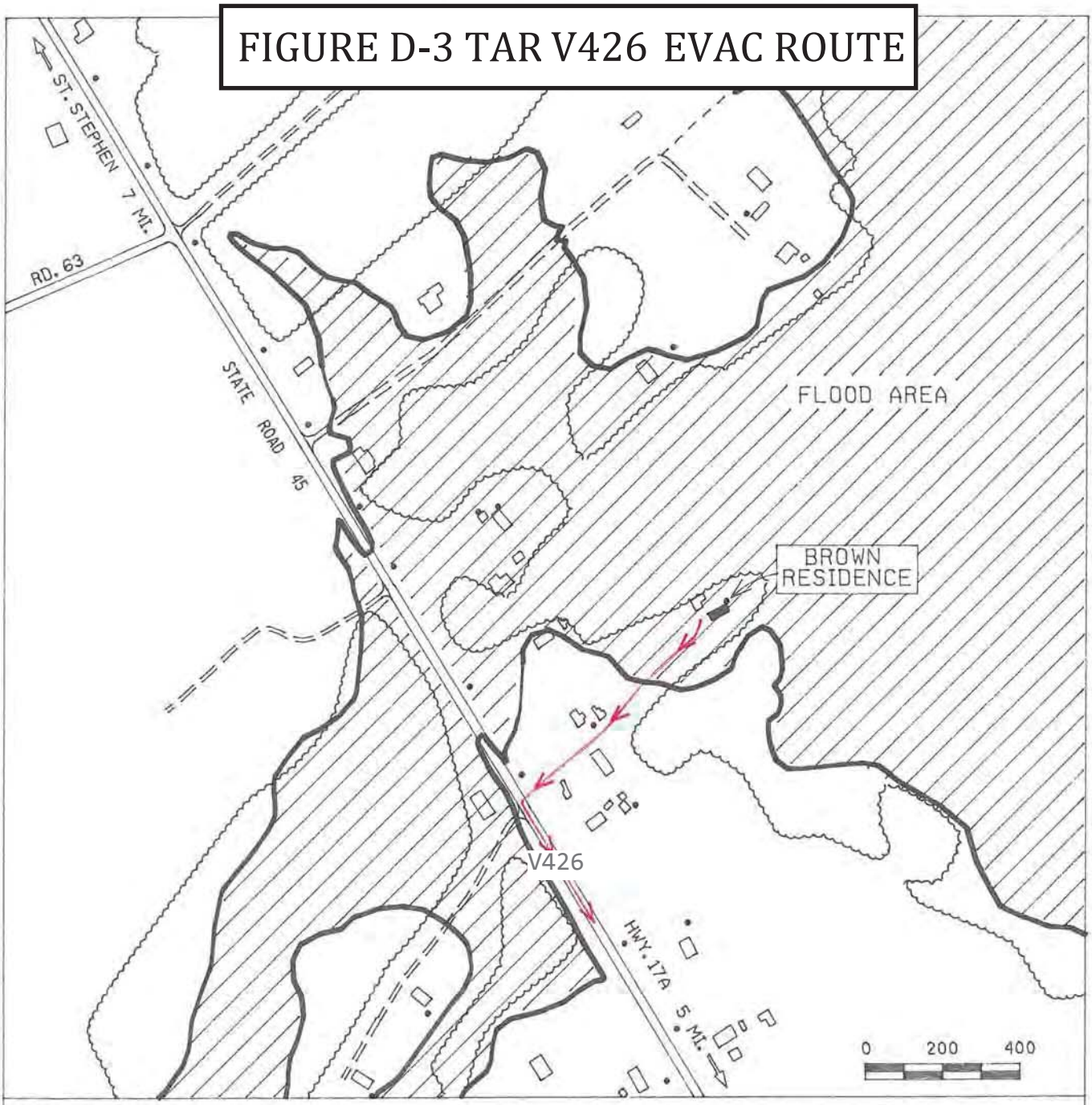
EMERGENCY ACTION PLAN
EVACUATION ROUTE
FOR
ALFONZO RICHARDSON
TAR NO. 420

QSA6:[70,70]TAR420422.DGN

Figure D-3 Evacuation Route TAR V426

See Figure D-3 enclosed.

FIGURE D-3 TAR V426 EVAC ROUTE



EVACUATION INSTRUCTIONS: EXIT HOME THROUGH THE FRONT DOOR AND WALK UP THE ROAD UNTIL YOU REACH HWY. 45. GO LEFT ON HWY. 45 AND WALK SEVERAL HUNDRED FEET UNTIL YOU REACH THE HIGHEST GROUND. DO NOT GO RIGHT ON HWY. 45 INTO THE FLOOD.

FLOOD DATA

TAR NO. -V426
TAX MAP NO. - 050-00-00-003
TIME TO INITIAL FLOOD - 22 HR.
TIME TO SAFE RETURN - 5 DAYS
FIRST FLOOR ELEV. - 36.7 FT.
PEAK FLOOD ELEV. - 38.0 FT.
DEPTH OF MAX. FLOOD IN HOUSE - 1.3 FT.
COUNTY - BERKELEY

DATE: JUNE 1991	BY: MSR	CHECKED: JJH/MMC

Santee Cooper

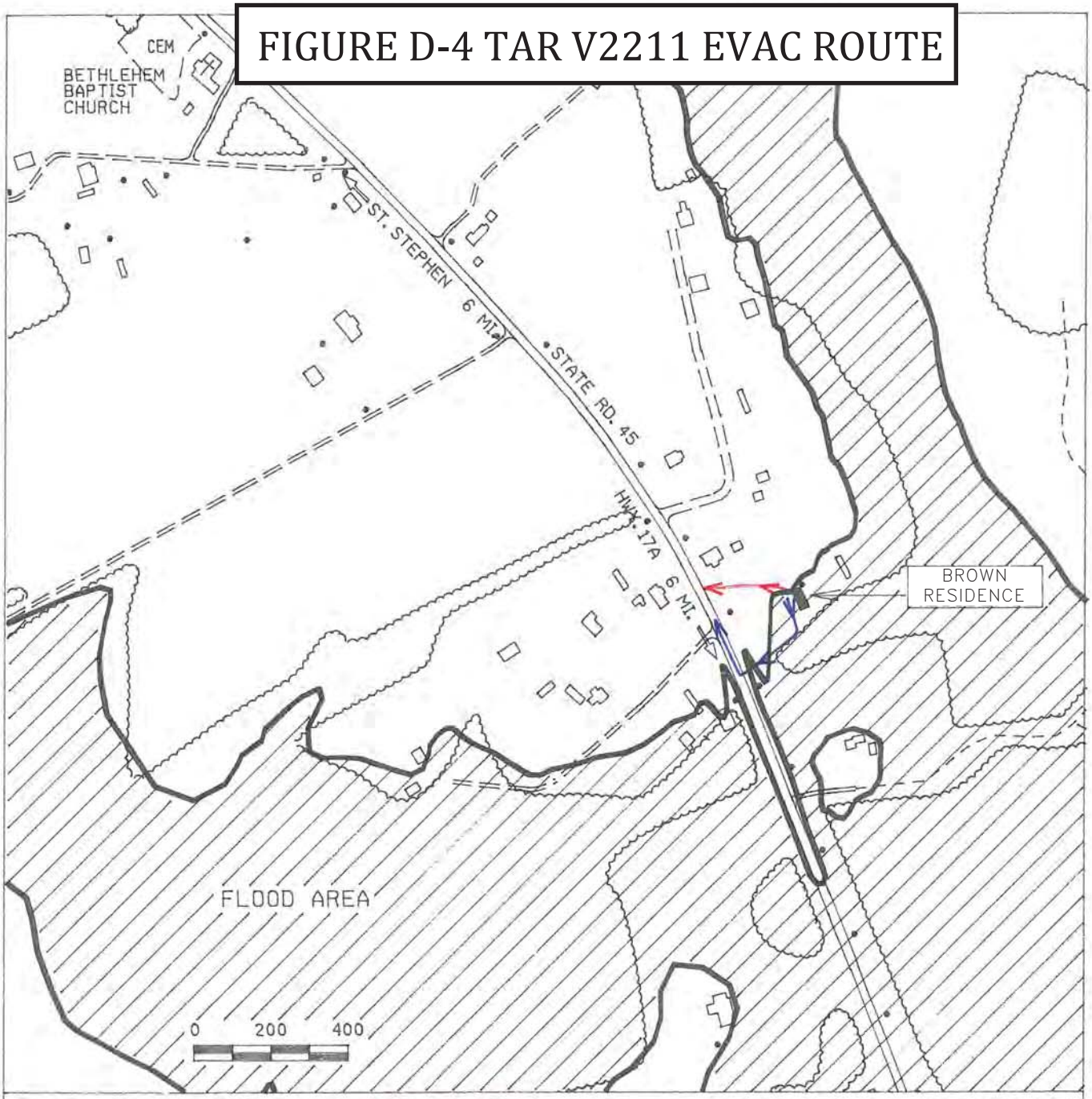
EMERGENCY ACTION PLAN
EVACUATION ROUTE
FOR
MAGALIEN BROWN
TAR NO. V426

QSA6:[70,70]TAR426429.DGN

Figure D-4 Evacuation Route TAR V2211

See Figure D-4 enclosed

FIGURE D-4 TAR V2211 EVAC ROUTE



EVACUATION INSTRUCTIONS: **1ST CHOICE (RED)** - EXIT HOME THROUGH FRONT DOOR. WALK ACROSS FIELD AT THE RIGHT UNTIL YOU REACH HIGHWAY 45.
2ND CHOICE (BLUE)- WALK DOWN DRIVEWAY UNTIL YOU REACH HIGHWAY 45. WHEN YOU REACH HIGHWAY 45 WALK SEVERAL HUNDRED FEET TO THE RIGHT TOWARD ST. STEPHEN.

FLOOD DATA

TAR NO. - V2211
TAX MAP NO. - 049-00-02-060
TIME TO INITIAL FLOOD - 26 HR.
TIME TO SAFE RETURN - 5 DAYS
FIRST FLOOR ELEV. - 39.8 FT.
PEAK FLOOD ELEV. - 40.0 FT.
DEPTH OF MAX. FLOOD IN HOUSE - 0.2 FT.
COUNTY - BERKELEY

DATE:JUNE 1991	BY:MSR	CHECKED:JJH/MMC

Santee Cooper

EMERGENCY ACTION PLAN
EVACUATION ROUTE
FOR
CLETISHA BROWN
TAR NO. V2211

OSA6:[70,70]TAR420422.DGN REVISED: JULY 2012

Figure D-5 Evacuation Route TAR V2233

Figure D-5 has been removed.

Appendix D.2 Diversion Canal Closure Structure

This appendix provides guidance to construct a complete closure of the Diversion Canal.

Background

The FERC Order approving Santee Cooper's Comprehensive Emergency Action Plan required that Santee Cooper develop a method for the closing of the Diversion Canal should the North Dam fail during an earthquake. In response to this requirement, Santee Cooper has placed a rock weir on the bottom of the Diversion Canal to serve as a foundation for closure. In addition, Santee Cooper has stockpiled sufficient materials on the banks to enable a full closure of the canal. The closure location is approximately one-half mile southeast of the location at which SC Highway 45 crosses over the Diversion Canal. A location map is provided in this appendix as *Figure D-6*. A layout of the stockpiles located on both banks of the canal is provided as *Figure D-7*. The stockpiles have been fenced to protect them from theft, and Dam and Dike locks have been placed on each gate. Should a closure be necessary, the last material to be placed will be the fine sand as indicated in the closure cross-section provided as *Figure D-8*. This sand is not stored in the stockpile areas. Rather, it will be borrowed from the existing spoil banks located just downstream of the closure site as indicated on the location map provided in *Figure D-6*.

Canal Closure Procedure

Rock gradation was determined using scaled laboratory tests performed to ensure the effectiveness of the closure structure. The final closure must be made using the rock sizes and placement limits indicated on the elevation view provided in *Figure D-9*. Various internal Santee Cooper equipment sources are listed in *Table D-1* and personnel operating the equipment are identified in the repair personnel table provided in *Section VI.B.3*. The senior member of the closure force will be responsible for the mobilization of the equipment necessary to complete the closure. Research has shown that Santee Cooper's in-house equipment is suitable for placement of all materials. Should additional equipment be required, the names and phones numbers of companies that can readily respond are provided below.

A patrol dozer will be used to maintain the working surfaces traversed by the other equipment. These surfaces should be covered with soil removed from the existing spoil banks. The following methods should be used to place each material:

Closure Boundary Markers

Four-inch steel posts have been installed on the banks of the Diversion Canal adjacent to the stockpiles to identify the upstream and downstream boundaries of the closure structure. All construction should be confined within these boundaries to ensure that proper dimensions of the closure are attained.

d1 Rock

The d1 rock stockpiles are located immediately adjacent to the canal bank near the centerline of the final closure. This rock should be placed using a combination of pushing with dozers or loading onto dump trucks for end dumping.

d2 Rock

The d2 rock stockpiles are located immediately adjacent to the d1 stockpiles. This rock should be loaded onto trucks for end dumping or ferried by the rubber-tired loaders from the stockpiles to the placement location.

d3 Rock

The d3 rock stockpiles are located immediately adjacent to the d1 stockpiles. This rock should be ferried by the rubber-tired loaders from the stockpiles to the placement location. The d3 rock should be placed into the flow approximately 45 degrees upstream from the centerline of the closure.

d4 Rock

The d4 stockpiles are located immediately adjacent to the d1 stockpiles. This rock should be ferried by rubber-tired loaders from the stockpiles to the placement location. The d4 rock should be placed into the flow approximately 45 degrees upstream from the centerline of the closure.

Coarse Filter, Fine Filter, and Sand Filter

The coarse filter, fine filter, and sand filter should be loaded onto trucks for dumping. Dozers should be used to complete the push toward Lake Moultrie.

In-House Equipment Sources

A partial list of the in-house equipment readily available for use during the closure of the Diversion Canal and dam repair efforts is provided in *Table D-1*.

Commercially Available Equipment

The following companies own or have access to large loaders, portable lighting equipment and provide hauling services which could possibly be obtained during an emergency:

Company	Location	Phone Number
Blanchard Machinery	Summerville, SC	(843) 871-2000
Hertz Equipment Rental Corp.	N. Charleston, SC	(843) 572-5904
ASC Construction Equipment	N. Charleston, SC	(843) 414-1120
National Equipment Dealers	Summerville, SC	(843) 501-0566
Dobbs Equipment (JD)	Summerville, SC	(843) 572-0400
Hanson Aggregates-Jefferson	Jefferson, SC	(843) 672-6181
Martin Marietta – Cayce Quarry	Cayce, SC	(803) 796-8320
Martin Marietta – Berkeley Quarry	Cross, SC	(843) 753-2132
Linder Industrial Machinery	W. Columbia, SC	(803) 794-6150
Linder Industrial Machinery	N. Charleston, SC	(843) 486-8080
United Rentals	Columbia, SC	(803) 771-0037
United Rentals	N. Charleston, SC	(843) 747-9002

Portable Lighting Equipment (4000 watt units)

United Rentals	Columbia, SC	(803) 771-0037
United Rentals	N. Charleston, SC	(843) 747-9002
Hertz Equipment Rental Corp.	N. Charleston, SC	(843) 572-5904
Sunbelt Rentals	Ladson, SC	(843) 797-8881

Rock and Fill Haulers

SEFA	Georgetown, SC	(843) 546-8460
Glasscock Company	Sumter, SC	(800) 800-6840
Extreme Materials	Summerville, SC	(843) 821-7600
Randolph Trucking	Gaffney/Ridgeville, SC	(843) 843-7778
NW White Company	Columbia, SC	(803) 216-7000
Jones Brothers	Florence, SC	(843) 665-4442
Heritage Hauling	Conway, SC	(843) 369-7355
Blue Max Trucking	Summerville, SC	(843) 225-0620

Figure D-6 Diversion Canal Closure Structure Location Map

See Figure D-6 enclosed.

FIGURE D-6 DIVERSION CANAL CLOSURE STRUCTURE LOCATION MAP

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Figure D-7 Closure Structure Stockpile Area Layout

See Figure D-7 enclosed.

FIGURE D-7 CLOSURE STRUCTURE STOCKPILE AREA LAYOUT

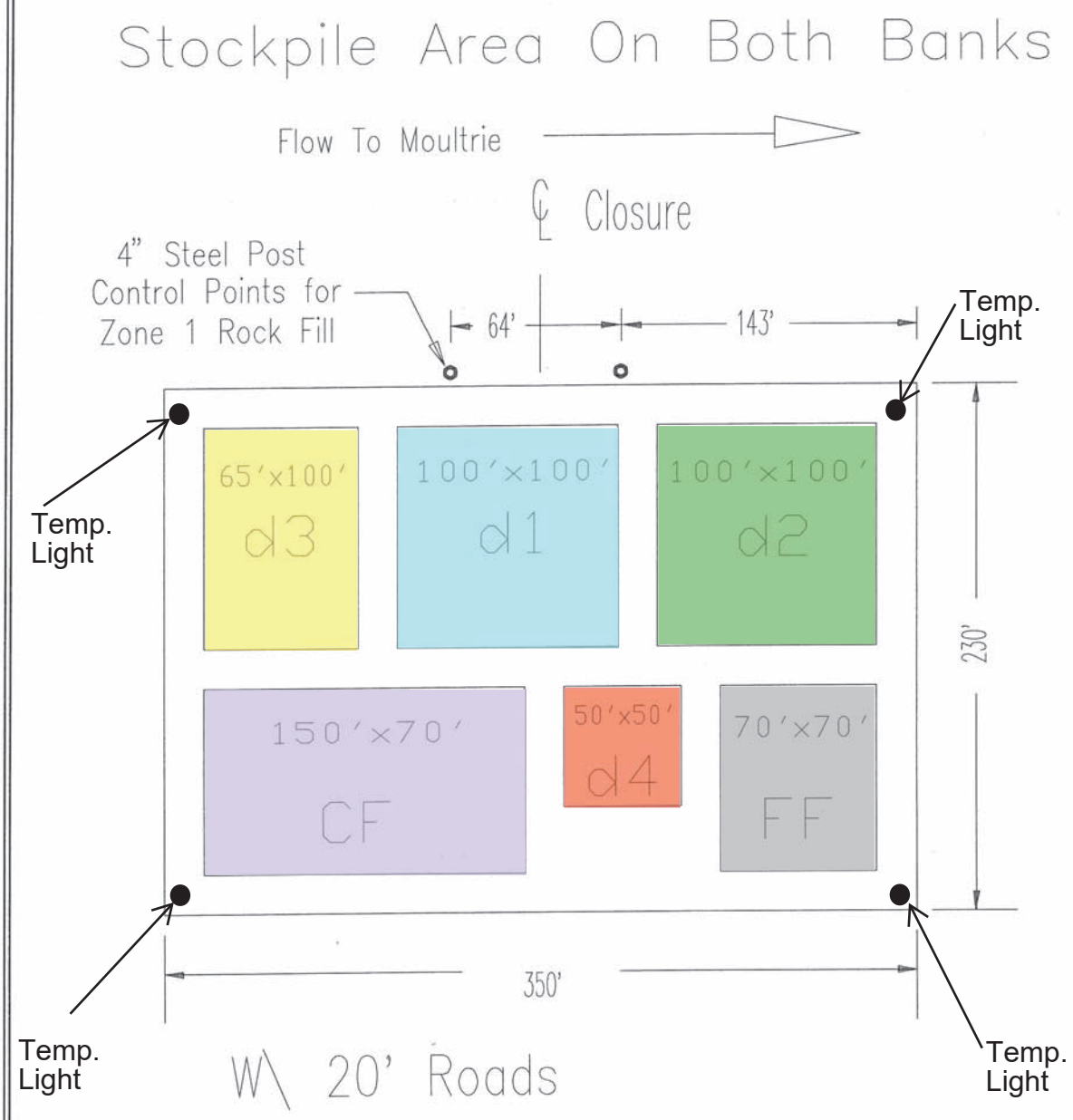

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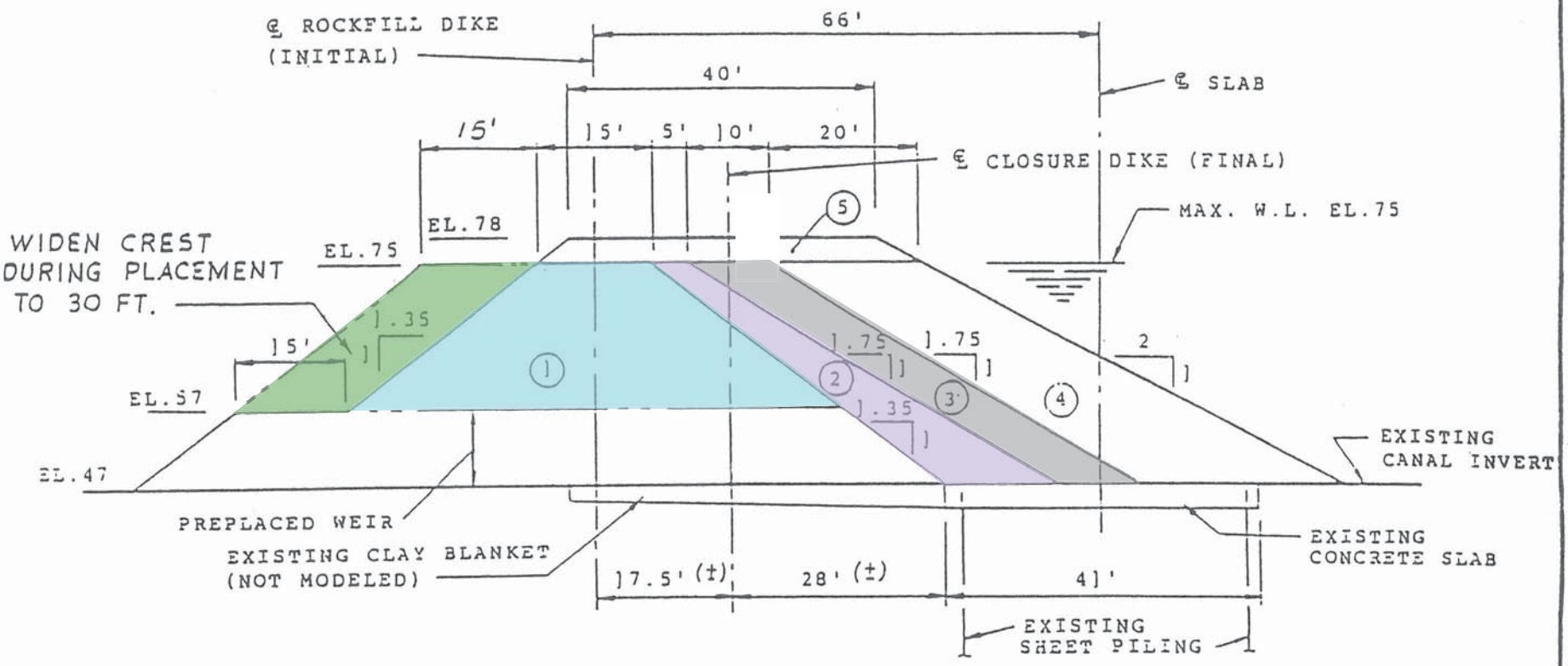
Figure D-8 Canal Closure Structure Final Geometry

See Figure D-8 enclosed.

FIGURE D-8 CANAL CLOSURE STRUCTURE FINAL GEOMETRY



CROSS SECTI - CLOSURE DIKE

ZONES:

1. ROCKFILL
2. COARSE FILTER
3. FINE FILTER
4. FINE SAND
5. CANAL BANK SPOIL

HARZA ENGINEERING COMPANY FEB. 1989.

SANTEE COOPER

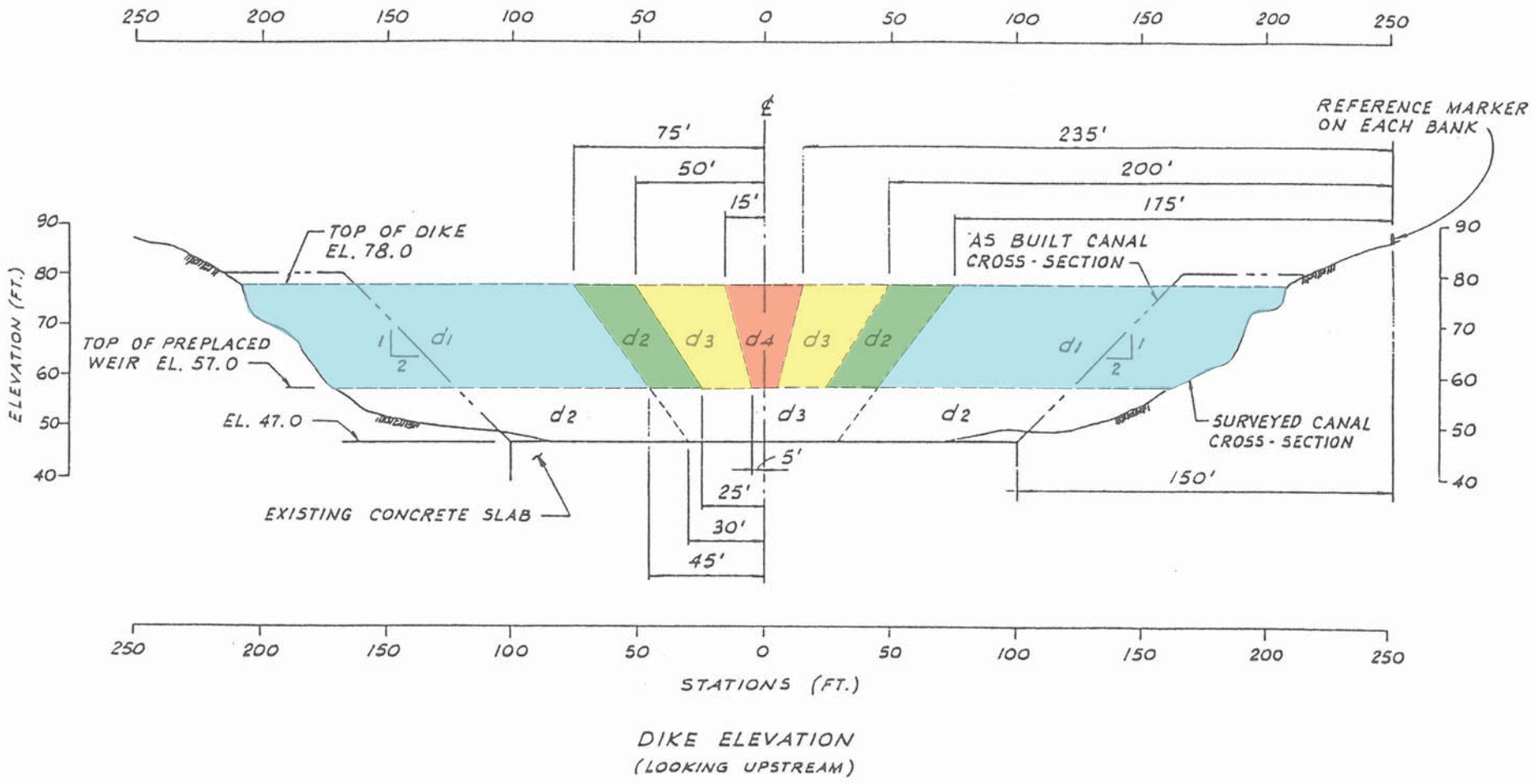
CANAL CLOSURE STRUCTURE
FINAL GEOMETRY

7/2020

Figure D-9 End Dump Rockfill Closure Method Rockfill Zones

See Figure D-9 enclosed.

FIGURE D-9 END DUMP ROCKFILL CLOSURE METHOD ROCKFILL ZONES



DIKE ELEVATION
(LOOKING UPSTREAM)

SANTEE COOPER
END DUMP ROCKFILL CLOSURE METHOD ROCKFILL ZONES
HARZA ENGINEERING CO., CHICAGO
APPROVED.....
DATE MAY, 1989 DWG.NO.

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Table D-1 In-House Equipment Sources

See Table D-1 enclosed.

Table D-1 In-House Equipment Sources

The following is a list of the equipment readily available in-house for use during the closure of the Diversion Canal and dam repair efforts.

Fleet	Equipment Description	Location
T0998 2023 CATERPILLAR 745C	ARTICULATED DUMP TRUCK	ASH POND
T0999 2023 CATERPILLAR 745C	ARTICULATED DUMP TRUCK	ASH POND
T1003 2022 CATERPILLAR 745C	ARTICULATED DUMP TRUCK	ASH POND
T1004 2022 CATERPILLAR 745C	ARTICULATED DUMP TRUCK	ASH POND
T1026 2024 BELL B45E	ARTICULATED DUMP TRUCK	ASH POND
T0977 2022 CAT 972N	ARTICULATED LOADER >4 CY	ASH POND
T1025 2024 CAT 972M	ARTICULATED LOADER >4 CY	ASH POND
T1029 2024 CAT 972M	ARTICULATED LOADER >4 CY	ASH POND
T0610 2006 JOHN DEERE 624J	ARTICULATED LOADER 2-4 CY	OVT
T0517 2002 CATERPILLAR 938G	ARTICULATED LOADER 2-4 CY	LM2
T0979 2022 CATERPILLAR 972M	ARTICULATED LOADER >4 CY	ASH POND
T1015 2023 VOLVO EQUIPMENT A40g	ARTICULATED WATER TRUCK	ASH POND
T1000 2023 CATERPILLAR 745	ARTICULATED WATER TRUCK	ASH POND
B5135 1983 MOBRO MOBRO	BARGE	LM2
B5156 2008 DETYENS DETYENS	BARGE	LM2
T1016 2023 CATERPILLAR D5 LGP	DOZER D-6 & D-7	ASH POND
T0644 2007 CATERPILLAR D5G	DOZER D-4 & D-5	OVT
T0582 2005 CATERPILLAR D5G	DOZER D-4 & D-5	LM2
T0978 2022 CATERPILLAR D5G	DOZER D-6 & D-7	ASH POND
T0538 2003 CATERPILLAR D6R XW	DOZER D-6 & D-7	ASH POND
T0832 2015 JOHN DEERE 850K LGP	DOZER D-6 & D-7	ASH POND
T0943 2020 CATERPILLAR D6NLGP	DOZER D-6 & D-7	ASH POND
T0602 2005 MASTER CRAFT CM1211118	FORKLIFT 8,001 - 20,000LBS CAPACITY	LM2
T0771 2012 JLG G9-43A LULL	FORKLIFT 8,001 - 20,000LBS CAPACITY	LM2
T0552 2003 VOLVO EQUIPMENT G80	GRADER COMPACT	OVT
T0408 1997 FIAT ALLIS FG65T	GRADER COMPACT	LM2
T0704 2010 LEEBOY 685B	GRADER COMPACT	LM2
T0322 1992 JOHN DEERE 670B	GRADER STANDARD	ASH POND
T0569 2004 VOLVO EQUIPMENT G726B	GRADER STANDARD	OVT
T0658 2001 JOHN DEERE 770CH	GRADER STANDARD	LM2
T0794 2013 JOHN DEERE 310SK	LOADER/BACKHOE (MEDIUM)	ASH POND
T0750 2011 CATERPILLAR 416E	LOADER/BACKHOE (MEDIUM)	OVT
T0769 2012 BOBCAT BOBCAT - T190	SKID STEER LOADER	ASH POND
T0753 2011 CATERPILLAR 277C	SKID STEER LOADER	OVT
T0870 2015 CATERPILLAR 299 XHP	SKID STEER LOADER	OVT
T0585 2005 CATERPILLAR 257B	SKID STEER LOADER	LM2

Fleet	Equipment Description	Location
T0556 2004 TEREX AMERICAN HC60	TRACK CRANE	LM2
T0982 2022 CATERPILLAR 336	TRACKED EXCAVATOR	ASH POND
T0983 2022 CATERPILLAR 336	TRACKED EXCAVATOR	ASH POND
T0873 2016 JOHN DEERE 210G	TRACKED EXCAVATOR	ASH POND
T0891 2017 JOHN DEERE 380G	TRACKED EXCAVATOR	ASH POND
T0905 2018 CATERPILLAR 336F	TRACKED EXCAVATOR	ASH POND
T0944 2019 CATERPILLAR 349 RNNN	TRACKED EXCAVATOR	ASH POND
T0958 2021 CATERPILLAR 349	TRACKED EXCAVATOR	ASH POND
T0872 2016 CATERPILLAR 330FL	TRACKED EXCAVATOR	OVT
T0980 2022 VOLVO EC250ELR	TRACKED EXCAVATOR	OVT
T0992	FORKLIFT 8,001 THRU 20,000LBS CAPACITY	OVT
T1007	TRACTOR AG 91-150 HP	OVT
T1008	TRACTOR AG 91-150 HP	OVT
T1033	DOZER D-4 & D-5	OVT
T0757 2011 KOMATSU KOMATSU - 160LC-8	TRACKED EXCAVATOR	LM2
T0953 2020 CATERPILLAR 304E2	TRACKED MINI-EXCAVATOR	OVT
T0959	SLOPE MOWER	OVT
T1042	SKID STEER LOADER	OVT
T0738 2011 KUBOTA U35	TRACKED MINI-EXCAVATOR	LM2
T0890 2017 CATERPILLAR 326	LONG BASED LONG-ARM TRACKED EXAVATOR	ASH POND
T0640 2007 JOHN DEERE 4720	TRACTOR AG 30-50 HP	LM2
T0316 1992 JOHN DEERE 2355	TRACTOR AG 51-80 HP	ASH POND
T0580 2005 JOHN DEERE 6715	TRACTOR AG 91-150 HP	OVT
T0698 2009 CHALLENGER MT475B	TRACTOR AG 91-150 HP	OVT
T0760 2011 CHALLENGER MT475B	TRACTOR AG 91-150 HP	OVT
T0847	TRACTOR AG 91-150 HP	OVT
T0836	RIDING MOWER SLOPE	OVT
T1051 2024 JOHN DEERE 6130M	TRACTOR AG 91-150 HP	ASH POND
T1050 2024 JOHN DEERE 6175M	TRACTOR AG 175 HP	ASH POND
T0878 2016 JOHN DEERE 6120M	TRACTOR AG 91-150 HP	OVT
T0889 2017 JOHN DEERE 6130M	TRACTOR AG 91-150 HP	ASH POND
C6320 2024 THUNDER CREEK TC0690M	TRAILER- NURSE TANK/FUEL >10,001 GVW	ASH POND
C632 2024 THUNDER CREEK TC0690M	TRAILER- NURSE TANK/FUEL >10,001 GVW	ASH POND
C6290 2021 THUNDER CREEK TCO690M	TRAILER- NURSE TANK/FUEL >10,001 GVW	ASH POND
+C6026 2006 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6172 2015 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6173 2015 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6175 2015 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2

Fleet	Equipment Description	Location
+C6176 2015 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6178 2015 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6179 2015 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6180 2015 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6181 2015 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6182 2014 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6184 2015 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6185 2015 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6079 2009 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6187 2015 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6203 2016 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
C5800 1992 DORSEY DORSEY	TRAILER-DUMP BDY SEMI	LM2
C6034 2006 EAST STEEL TUB	TRAILER-DUMP BDY SEMI	LM2
+C6025 2006 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6029 2006 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6030 2006 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6174 2015 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6177 2015 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6183 2015 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6045 2007 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6077 2008 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6078 2008 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6081 2009 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6082 2008 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6143 2013 MAC TRAILER TNAR30AA600-2013	TRAILER-DUMP BDY SEMI	LM2
+C6186 2015 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6189 2015 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6188 2015 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
+C6242 2017 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
C5996 2005 EAST T-16DT	TRAILER-DUMP BDY SEMI	LM2
C6167 2014 CAROLINA TRAILERS 612TD7T	TRAILER-DUMP BODY >10,001 GVW	LM2
C5931 2003 HAULMARK G816B4-102	TRAILER-ENCLOSED >10,001 GVW	LM2
C5953 2003 HAULMARK	TRAILER-ENCLOSED 6001-10,000 GVW	LM2
C5904 2001 PEREGRINE QS1-2M	TRAILER-FLAT BED <6000 GVW	LM2
+C5966 2004 SAUBER 1550	TRAILER-FLAT BED <6000 GVW	LM2
C5694 1985 BAME 9T	TRAILER-FLAT BED >10,001 GVW	LM2
C5948 2003 TRAIL-EZE TE18AH	TRAILER-FLAT BED >10,001 GVW	LM2
C5987 2005 TOWMASTER T50	TRAILER-FLAT BED >10,001 GVW	LM2

Fleet	Equipment Description	Location
C6003 2005 TOWMASTER C20	TRAILER-FLAT BED >10,001 GVW	LM2
C5891 2000 SUPERIOR 26518-7	TRAILER-FLAT BED 6001-10,000 GVW	LM2
C6137 2012 FONTAINE MAGNITUDE 50	TRAILER-LOWBOY 50-60TON	LM2
C5775 1991 CROSS TLS1000M	TRAILER-TANK TRAILER <6000 GVW	LM2
C5801 1992 COMPANY MADE	TRAILER-TANK TRAILER <6000 GVW	LM2
C6200 2015 CAROLINA TRAILERS T14DT	TRAILER-TILT BED >10,001 GVW	LM2
C6303 2023 MAC TRAILER 64977	TRAILER-TILT BED >10,001 GVW	LM2
F4336	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4251	TRUCK >33,000 CLASS-8 TRI AXLE TRUCK TRACTOR	OVT
F3194 1998 GMC C8500	TRUCK >33,000 CLASS-8 FLAT BED	ASH POND
F3686 2005 GMC C8500	TRUCK >33,000 CLASS-8 FLAT BED	LM2
F4263 2013 PETERBILT 386	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR (HOURS)	LM2
F4416 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4418	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4417 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR (HOURS)	LM2
F4419 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
C-6032 20K GOOSENECK – 2022		
C-6312 ARISING INDUSTRIES ENCLOSED TRAILER - 2023		
F4420 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4421	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4422 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4423 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4424 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4425 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4426 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR (HOURS)	LM2
F4427	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4428 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4429 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR (HOURS)	LM2
F4430	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4431	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4432	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4433 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR (HOURS)	LM2
F4612 2018 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR (HOURS)	LM2

Fleet	Equipment Description	Location
F4613 2018 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR (HOURS)	LM2
F4332 2013 KENWORTH T800	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR (HOURS)	LM2
F4336 2013 FREIGHTLINER CA 125DC	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR (HOURS)	LM2
F4418 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR (HOURS)	LM2
F4421 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR (HOURS)	LM2
F4427 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR (HOURS)	LM2
F4430 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR (HOURS)	LM2
F4431 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR (HOURS)	LM2
F4432 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR (HOURS)	LM2
F4473 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4474 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4475 2015 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4508 2016 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4612	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4613	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4614 2018 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR (HOURS)	LM2
F4615 2018 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR (HOURS)	LM2
F4616 2018 FREIGHTLINER CASCADIA	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR (HOURS)	LM2
F4641	PICKUP <8500 1/2TON 4WD EXT CAB	LM2
F4688	PICKUP <8500 1/2TON 4WD CREW CAB	LM2
F4790	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4809	PICKUP <8500 1/2TON 4WD CREW CAB	LM2
F4896	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4897	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4903	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4904	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4915	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4916	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4917	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4918	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4919	TRUCK >33,000 CLASS-8 TANDEM AXLE TRACTOR	LM2
F4211 2012 KENWORTH T800	TRUCK >33,000 CLASS-8 TRI AXLE DUMP	OVT

Fleet	Equipment Description	Location
F3830 2007 KENWORTH T800	TRUCK >33,000 CLASS-8 TRI AXLE DUMP	OVT
F3831 2007 KENWORTH T800B	TRUCK >33,000 CLASS-8 TRI AXLE DUMP	OVT
F3965 2009 KENWORTH T800	TRUCK >33,000 CLASS-8 TRI AXLE DUMP	OVT
F4347 2013 KENWORTH T800	TRUCK >33,000 CLASS-8 TRI AXLE DUMP	OVT
F4348 2013 KENWORTH T800	TRUCK >33,000 CLASS-8 TRI AXLE DUMP	OVT
F4509 2015 FREIGHTLINER 122SD	TRUCK >33,000 CLASS-8 TRI AXLE DUMP	OVT
F4580	PICKUP <8500 1/2TON 4WD CREW CAB	OVT
F4681	PICKUP 10,0001-14,000 1TON 4WD CREW CAB	OVT
F4719	PICKUP 8501-10,000 ¾ & 1TON 4WD CREW CAB	OVT
F4805	PICKUP 16,001-19,500 2TON STAKE BDY/PICKUP	OVT
F4839	PICKUP 8501-10,000 ¾ &1TON 4WD CREW CAB	OVT
F4212 2012 KENWORTH T800	TRUCK >33,000 CLASS-8 TRI AXLE DUMP	LM2
F4256 2013 KENWORTH T800	TRUCK >33,000 CLASS-8 TRI AXLE DUMP	LM2
F4257 2013 KENWORTH T800	TRUCK >33,000 CLASS-8 TRI AXLE DUMP	LM2
F4572 2017 KENWORTH T800	TRUCK >33,000 CLASS-8 TRI AXLE DUMP	LM2
F3543 2003 KENWORTH T800	TRUCK >33,000 CLASS-8 TRI AXLE TRUCK TRACTOR	LM2
F2605 1991 GMC TOPKICK - SKIDDER	TRUCK 26,001-33,000 CLASS-7 TRUCK CRANE	LM2
T0912 2018 CATERPILLAR CS44B	VIBRATORY ROLLER	LM2
T0244 1989 LINK-BELT HSP 8028S 28TON	WHEELED CRANE	LM2

APPENDIX E: DOCUMENTATION

Coordination of Santee Cooper's EAP is handled primarily with the affected counties, SCEMD, and the National Weather Service. All current documents of this coordination are maintained in Construction Services' files at Santee Cooper. In preparation for annual exercises, Santee Cooper coordinates meetings with various counties, SCEMD, and the National Weather Service. The frequency of these meetings depends on the needs of the counties, SCEMD, the National Weather Service, and Santee Cooper.

APPENDIX F: APPROVAL OF THE EAP

Memorandum of Agreement
between
South Carolina Public Service Authority ("Authority")
and the following organizations:
Berkeley, Clarendon, Williamsburg, Georgetown and
Charleston County Disaster Preparedness Agencies and
the South Carolina Emergency Management Division

A. Local Disaster Preparedness Agencies (DPA's) and the State Emergency Management Division (EMD) will assist/support implementation of the comprehensive Emergency Action Plan (EAP) should there be a dam failure at Santee Cooper Project 199-037 ("Project"). The Federal Energy Regulatory Commission (FERC) has modified the Authority's EAP to improve its workability and emergency notification of inhabitants located downstream of the Santee North Dam. These modifications, officially transmitted in an Order to the Authority dated July 18, 1986, have been attached to this Memorandum of Agreement (MOA).

B. The modifications in the Order in which the State EMD and local DPA's will be directly involved will include:

(1) Page 14, Mod. No. 3, part 3;
(2) Page 14, Mod. No. 5;
(3) Page 16, Mod. No. 13;
(4) Page 17, Mod. No. 14 and
(5) Page 18, Mod. No. 22.

C. Ramifications of these five modifications on the relationship between the Authority and the state EMD and local DPA's are discussed here.

(1) Due to Modification No. 3, part 3:

(a) The Authority will meet with the State EMD and local DPA's and discuss the benefits of a siren system and
(b) The Authority will purchase, install, and maintain sirens and bullhorns.

(2) Due to Modification No. 5:

(a) The Authority will coordinate the establishment of escape routes with the local DPA's.

(3) Due to Modification No. 13:

(a) An annual test of the EAP will be performed and
(b) The local DPA's, in conjunction with the Authority, will coordinate drills in their respective counties which will not involve actual evacuation of the affected inhabitants. The Authority will ensure residents are aware of appropriate actions to be taken during an actual emergency.

(4) Due to Modification No. 14:

(a) The Authority will provide State EMD and local DPA's a list of equipment available that would facilitate access to the affected areas in the event of a Project dam failure. This list shall be provided within 30 days after the signing of this MOA and
(b) The Authority will assist with any evacuation support the State EMD and local DPA's may need in the event of a North Dam breach.

(5) Due to Modification No. 22:

(a) This is the impetus behind this MOA.

D. This MOA shall be subject to written approval of the Authority, the South Carolina State EMD, the Berkeley County DPA, the Clarendon County DPA, the Williamsburg County DPA, the Georgetown County CDA, and the Charleston County EPD.

Exhibit F-1 Signed Memorandum Agreement

See Exhibit F-1 enclosed.

EXHIBIT F-1 SIGNED MEMORANDUM AGREEMENT

APPROVED BY:

Robert E Rainear PE
Vice President, South Carolina Public Service Authority
Robert E. Rainear, P.E.
10/24/86
Date

Joshua P. Moore
Director, South Carolina State EPD
Joshua P. Moore
6 November 1986
Date

Paul H. Cooper
Director, Berkeley County DPA
Paul H. Cooper
11/30/86
Date

Emilee L Hemingway
Director, Clarendon County DPA
Emilee Hemmingway
10/30/86
Date

Director, Williamsburg County DPA
Sammie Stewart
11/5/86
Date

Director, Georgetown County CDA
Eddie Carraway
11/5/86
Date

Dennis L. Clark
Charleston County EPA
Dennis Clark
10/30/86
Date

APPENDIX G: REVISION SUMMARY TABLE

REV. DATE	PAGE	SECTION	DESCRIPTION
7/01/21	i		Updated notary and year
7/01/21	I-4	I.A	Updated FERC Contact Information
7/01/21	I-5	I.A	Updated FERC Contact Information
7/01/21	I-6	I.A	Updated FERC Contact Information
7/01/21	I-9	I.A	Updated FERC Contact Information
7/01/21	I-10	I.A	Updated FERC Contact Information
7/01/21	V-5	V.B.3	Formatting moved text to next page
7/01/21	V-6	V.B.3	Formatting moved text to next page
7/01/21	V-7	V.B.3	Formatting moved text to next page
7/01/21	V-8	V.B.3	Formatting moved text to next page
7/01/21	V-9	V.B.3	Updated Repair Personnel List
7/01/21	V-10	V.B.3	Updated Repair Personnel List
7/01/21	V-11	V.B.3	Updated/Deleted Repair Personnel List
7/01/21	C-4	Appendix C	Updated Table C-2
7/01/21	C-5	Appendix C	Updated Table C-3
7/01/21	D-14	Appendix D	Updated Table D-1
7/01/21	D-15	Appendix D	Updated Table D-1
7/01/21	D-16	Appendix D	Updated Table D-1
7/01/21	D-17	Appendix D	Updated Table D-1
7/01/21	D-18	Appendix D	Updated Table D-1
7/01/21	D-19	Appendix D	Updated Table D-1
7/01/21	D-20	Appendix D	Updated Table D-1
7/01/21	G-1	Appendix G	Added Revisions
9/29/21	V-5	V.B.3	Updated contact & contact information
9/29/21	G-1	Appendix G	Added Revisions
10/14/21	I-4	I.A	Updated COE EM Contact Information
10/14/21	I-5	I.A	Updated COE EM Contact Information
10/14/21	I-6	I.A	Updated COE EM Contact Information
10/14/21	I-10	I.A	Updated COE EM Contact Information
10/14/21	V-9	V.B.3	Updated Repair Personnel List
10/14/21	V-10	V.B.3	Updated Repair Personnel List
10/14/21	C-4	Appendix C	Updated Table C-2
10/14/21	C-5	Appendix C	Updated Table C-3
10/14/21	G-1	Appendix G	Added Revisions
10/18/21	V-5	V.B.3	Updated contact & contact information
7/13/22	i		Updated notary and year
7/13/22	I-3	I.A	Updated Contact Information

REV. DATE	PAGE	SECTION	DESCRIPTION
7/13/22	I-4	I.A	Updated Contact Information
7/13/22	I-5	I.A	Updated Contact Information
7/13/22	I-6	I.A	Updated Contact Information
7/13/22	I-9	I.A	Updated Contact Information
7/13/22	I-10	I.A	Updated Contact Information
7/13/22	IV-4	Table IV-1	Updated Flows
7/13/22	V-4	V.B.3	Updated Personnel and Contact Information
7/13/22	V-5	V.B.3	Updated Personnel and Contact Information
7/13/22	V-6	V.B.3	Updated Personnel and Contact Information
7/13/22	V-9	V.B.3	Updated Repair Personnel List
7/13/22	V-10	V.B.3	Updated Repair Personnel List
7/13/22	VI-5	VI.G	Updated FEOC telephone numbers
7/13/22	VII-2	VII.A	Updated Maps
7/13/22	C-4	Appendix C	Updated Table C-2
7/13/22	C-5	Appendix C	Updated Table C-3
7/13/22	D-14	Appendix D	Updated Table D-1
7/13/22	D-15	Appendix D	Updated Table D-1
7/13/22	D-16	Appendix D	Updated Table D-1
7/13/22	D-17	Appendix D	Updated Table D-1
7/13/22	D-18	Appendix D	Updated Table D-1
7/13/22	D-19	Appendix D	Updated Table D-1
7/13/22	D-20	Appendix D	Updated Table D-1
7/13/22	G-1	Appendix G	Added Revisions
7/13/22	G-2	Appendix G	Added Revisions
11/02/22	I-3	I.A	Figure I-1 – Added False Alarm note
11/02/22	I-3	I.A	Figure I-1 – Updated Contact for Berkeley County
11/02/22	I-4	I.A	Figure I-2 – Updated Contact for Berkeley County
11/02/22	I-4	I.A	Figure I-2 – Updated Contacts for FERC
11/02/22	I-5	I.A	Figure I-3 – Updated Contact for Berkeley County
11/02/22	I-5	I.A	Figure I-3 – Updated Contacts for FERC
11/02/22	I-6	I.A	Figure I-4 – Updated Contact for Berkeley County
11/02/22	I-6	I.A	Figure I-4 – Updated Contacts for FERC
11/02/22	I-8	I.B	Figure I-5 – Added False Alarm note
11/02/22	I-8	I.B	Figure I-5 – Updated Contact for Berkeley County
11/02/22	I-9	I.B	Figure I-6 – Updated Contact for Berkeley County
11/02/22	I-9	I.B	Figure I-6 – Updated Contacts for FERC
11/02/22	I-10	I.B	Figure I-7 – Updated Contact for Berkeley County
11/02/22	I-10	I.B	Figure I-7 – Updated Contacts for FERC

REV. DATE	PAGE	SECTION	DESCRIPTION
12/07/22	I-2	I.A	Figure I-2 – Updated Mgr. Generating Station
12/07/22	I-3	I.A	Figure I-3 – Updated Mgr. Generating Station
12/07/22	I-4	I.A	Figure I-4 – Updated Mgr. Generating Station
12/07/22	I-6	I.B	Figure I-6 – Updated Mgr. Generating Station
12/07/22	I-7	I.B	Figure I-7 – Updated Mgr. Generating Station
02/07/23	IV-1	IV.A.2	Remote Sensors and Early Warning Devices
02/07/23	IV-2	IV.A.2	Remote Sensors and Early Warning Devices
02/07/23	IV-3	IV.A.3	Emergency Verification and Conditions Classification
02/07/23	G-3	Appendix G	Added Revisions
12/05/23	i		Updated notary and year
12/07/23	I-4	Figure I-2	Figure I-2 – Updated CIMT
12/05/23	I-5	Figure I-3	Figure I-3 – Updated CIMT
12/05/23	I-6	Figure I-4	Figure I-4 – Updated CIMT
12/05/23	I-6	Figure I-4	Figure I-4 – Updated CIMT
12/05/23	I-9	Figure I-6	Figure I-6 – Updated CIMT
12/05/23	I-10	Figure I-7	Figure I-7 – Updated CIMT
12/05/23	III-1	III	Added Revisions
12/05/23	III-2	III	Updated Structures Table
12/05/23	III-3	III-1	Added Revisions
12/05/23	IV-1	IV.A.2.	Added Revisions
12/05/23	IV-2	IV.A.2.	Added Revisions
12/05/23	IV-3	IV.A.2.	Added Revisions
12/05/23	V-4	V.B.3.	Updated Corporate Communications Table
12/05/23	V-5	V.B.3.	Updated Public Affairs Table
12/05/23	V-6	V.B.3.	Updated Public Affairs Table
12/05/23	V-7	V.B.3.	Updated General Construction Services Table
12/05/23	V-9	V.B.3.	Updated Repair Personnel Table
12/05/23	V-10	V.B.3.	Updated Repair Personnel Table
12/05/23	VI-5	VI.G.	Updated Table
12/05/23	VI-7	VI.G.	Updated Satellite Telephones
12/05/23	C-2	Appendix C.3	Updated Table C-1
12/05/23	C-4	Table C-2	Updated Table C-2
12/05/23	C-5	Table C-3	Updated Table C-3
12/05/23	D-9	Appendix D-2	Updated Commercially Available Equipment
12/05/23	D-15	Table D-1	Updated Table D-1

REV. DATE	PAGE	SECTION	DESCRIPTION
12/05/23	D-16	Table D-1	Updated Table D-1
12/05/23	D-17	Table D-1	Updated Table D-1
12/05/23	D-18	Table D-1	Updated Table D-1
12/05/23	D-19	Table D-1	Updated Table D-1
12/05/23	D-20	Table D-1	Updated Table D-1
12/05/23	G-3	Appendix G	Added Revisions
12/2024	I		Updated notary and year
12/2024	I-1	I.A.1	Updated Typical Messages
12/2024	I-2	I.A.1	Figure I-1 – Updated Engr Tech & Clarendon Co.
12/2024	I-3	I.A.1	Figure I-2 – Updated Message & 2,4,5,7,9,15 on Chart
12/2024	I-4	I.A.1	Figure I-3 – Updated Message & 2,4,6,11 on Chart
12/2024	I-5	I.A.1	Figure I-4 – Added Message & updated 2,3,4,7,8,12 on Chart
12/2024	I-5	I.A.1	Figure I-4 – Updated Message & 4,8,10,13 on Chart
12/2024	I-6	I.B.1	Updated Typical Messages
12/2024	I-7	I.B.1	Figure I-5 – Updated Engineer
12/2024	I-8	I.B.1	Figure I-6 – Updated Message & 2,6,10,14,15 on Chart
12/2024	I-9	I.B.1	Figure I-7 – Updated Message & 2,4,5 on Chart
12/2024	III-1 – 3	III	Updated Text Format
12/2024	IV-1-10	IV	Updated Text Format
12/2024	V-2-4	V	Updated Text Format and CIMT Table
12/2024	V-7	V.B.3	Updated General Construction Table
12/2024	V-9-10	V.B.3	Updated Repair Personnel Table
12/2024	V-11-12	V.C. – V.E.	Updated Text Format
12/2024	VI-1-15	VI	Reformatted Text and Added Maps to Directions
12/2024	A-1-9	Appendix A	Reformatted Text
12/2024	C-4	Table C-2	Updated Table
12/2024	C-5	Table C-3	Updated Table
12/2024	D-11	Figured D-7	Included Lights
12/2024	D-15-20	Table D-1	Updated Table