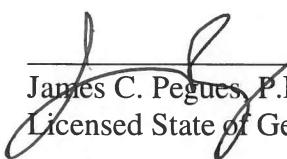



# CCR SURFACE IMPOUNDMENT EMERGENCY ACTION PLAN

## Plant McManus Ash Pond AP-1

I hereby certify that this Emergency Action Plan has been prepared in accordance with the requirements of 40 C.F.R. Part 257.73.

  
James C. Pegues, P.E.  
Licensed State of Georgia, P.E. No. 17419



**ISSUE DATE:** October 16, 2018  
**REVISION #:** 0

## REVISION RECORD

In accordance with 40 C.F.R. Part 257.73, this Emergency Action Plan (EAP) must be amended whenever there is a change in conditions that would substantially affect the EAP in effect. Additionally, the EAP must be evaluated, at a minimum, every five years to ensure the information is accurate. As necessary, this EAP must be updated and a revised EAP placed in the facility's operating record as required by 40 C.F.R. Part 257.105(f)(6).

Revision Number	Date	Sections Affected/Reason
0	10/16/18	Creation of Initial EAP

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# **APPENDICES**

## **Appendix A Figures**

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Figure 2 – Plant McManus Ash Pond AP-1 Overview

## **Appendix B Inundation Maps**

## **Appendix C Incident Response Flowchart**

## **Appendix D Response Notification Flowchart**

## **Appendix E Notification and Documentation Forms**

Data Recording Sheet

## **Appendix F Instructions for the Construction of an Emergency Reverse Filter**

## **ACRONYMS AND ABBREVIATIONS**

CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
E&CS	Engineering & Construction Services
EAP	Emergency Action Plan
EMA	Emergency Management Agency
EPA	Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
GDOT	Georgia Department of Transportation
GEMA	Georgia Emergency Management Agency
GEOP	Georgia Emergency Operations Plan
GPC	Georgia Power Company
H:V	Horizontal:Vertical
HDPE	High-Density Polyethylene
ID	Inside Diameter
SCS	Southern Company Services

# DEFINITIONS

**Adverse Consequences.** Negative impacts that may result from the failure of a dam. The primary concerns are loss of life, economic loss (including property damage), lifeline disruption and environmental impact.

**Category I Dam.** State of Georgia Safe Dams Program designation for Hazard Potential indicating that improper operation or failure would result in a probably loss of human life.

**Category II Dam.** State of Georgia Safe Dams Program designation for Hazard Potential indicating that improper operation or failure would not be expected to result in a probably loss of human life.

**Coal Combustion Residuals (CCR).** Fly ash, bottom ash, boiler slag, and flue gas desulfurization materials generated from burning coal for the purpose of generating electricity by electric utilities and independent power producers.

**CCR Surface Impoundment.** A natural topographic depression, man-made excavation, or diked area which is designed to hold an accumulation of CCR and liquids, and the unit treats, stores, or disposes of CCR.

**Dam/Dike/Embankment.** An artificial barrier that has the ability to impound water, wastewater, or any liquid-borne material for the purpose of storage.

**Dam Failure.** Catastrophic type of failure characterized by the sudden, rapid and uncontrolled release of impounded water or the likelihood of such an uncontrolled release. It is recognized that there are lesser degrees of failure and that any malfunction or abnormality outside the design assumptions and parameters that adversely affect a dam's primary function of impounding water is properly considered a failure. These lesser degrees of failure can progressively lead to or heighten the risk of catastrophic failure. They are, however, normally amenable to corrective action.

**Imminent Failure (Condition A Emergency).** Failure of a dam/dike/embankment is imminent or has occurred.

**Potential Failure (Condition B Emergency).** A potential failure condition of a dam/dike/embankment is a developing condition, but adequate time is available to properly evaluate the problem and implement corrective actions that may alleviate or prevent failure.

**Non-Failure Condition.** A condition that will not, by itself, lead to a failure, but that requires investigation and notification of internal and/or external personnel.

**Emergency.** A condition that develops unexpectedly, endangers the structural integrity of the dam, and requires immediate action. An emergency can lead to Adverse Consequences in the event of Imminent Failure.

**Filter.** One or more layers of granular material graded so as to allow seepage through or within the layers while preventing the migration of material from adjacent zones.

**Inundation Map.** A graphic representation of the inundation zone that shows the potential impact area due to a breach of the Ash Pond. The inundation maps in this procedure are based on a specific computer-modeled dam breach scenario; therefore, the boundaries depicted are estimates for that particular model. *The models are considered conservative but larger floods could potentially occur.* Please refer to Appendix B.

**Inundation Zone.** Area subject to flooding in the event of increased flows due to a dam/dike/embankment failure.

**Piping.** The progressive development of internal erosion of the dam/dike/embankment or foundation material by seepage.

**Probable Maximum Flood.** The flood that may be expected from the most severe combination of critical meteorologic and hydrologic conditions that are reasonably possible in the drainage basin.

**Sunny Day Failure.** A night or day failure that occurs during fair weather or when weather-related flooding is not occurring.

## **1.0 STATEMENT OF PURPOSE**

This Emergency Action Plan (EAP) has been prepared for the Plant McManus Ash Pond AP-1 (AP-1) to meet the requirements of 40 C.F.R. Part 257.73(a)(3). The EAP identifies potential safety emergency conditions at the Plant McManus Ash Pond and specifies actions to be followed to minimize potential loss of life and property damage if such conditions exist.

This EAP will provide responding personnel with:

- Pertinent information and description related to Plant McManus AP-1;
- Definition of events or circumstances that represent a safety emergency;
- Procedures that will be followed to detect a safety emergency;
- Notification procedures in the event of a safety emergency;
- Information to assist in decision making;
- A list of responsible persons and their respective responsibilities;
- Provisions for an annual face-to-face meeting with local emergency responders;
- Contact information for emergency agencies and other emergency responders
- Contact information for additional resources and outside agencies; and
- Maps that delineate the downstream area that could be affected in the event of a failure.



## 2.0 FACILITY DESCRIPTION

The Clifford B. McManus Power Plant (Plant McManus) is located at One Crispin Island Drive in Brunswick, Georgia. Plant McManus was once a two-unit power generation facility. Construction of Unit 1 began in 1951 and the initial startup and commercial operation began in November 1952. Unit 1 was originally designed to operate as an oil-fired generator. Construction on Unit 2 began in 1957 and was declared commercial in 1959. Unit 2 was originally designed with coal as the primary fuel. Unit 1 was converted to coal in 1960. In 1971, both Units 1 and 2 were converted to oil-fired and the use of coal ceased after 1972. Units 1 and 2 have been retired and demolished as of 2017.

AP-1 was constructed in 1957 to receive and store coal combustion residuals and process water produced by Units 1 and 2 during the electric power generating process at Plant McManus. AP-1 has not received ash since 1972 but continued to support plant operations with low volume waste treatment. AP-1 is in the process of being closed through removal of the CCR from the CCR unit. As of March 2018, approximately 60% of the CCR has been removed. AP-1 is dewatered as required to facilitate excavation of ash for removal. All CCR is being excavated, transported, and disposed of in an offsite Solid Waste permitted landfill. Ash removal activities are anticipated to be completed 2<sup>nd</sup> Quarter 2019.

AP-1 encompasses approximately 93.4 acres as shown in Figure 1. AP-1 was constructed by placing an embankment (dam) across an upland marsh area in the northeast corner of the plant property. The primary and secondary spillway are intact and located west of the dam. During ash pond closure, accumulated water is managed by a temporary water treatment system in accordance with a dewatering plan approved by the Georgia Environmental Protection Division. The treated water is then discharged via the NPDES permitted outfall located at the primary spillway. When discharged, the treated water is sampled and monitored in accordance with the approved dewatering plan.

The AP-1 dam is an exempt structure as defined by the Georgia Department of Natural Resources – Environmental Protection Division – Safe Dams Program (Georgia Safe Dams Program). The Georgia Safe Dams Program does not inventory or regulate dams with an exempt classification.

AP-1 has been assigned a Significant Hazard Potential classification under 40 C.F.R. Part 257.73 of the Environmental Protection Agency's (EPA's) Coal Combustion Residuals (CCR) Rule. A significant hazard classification, by definition, indicates that structural failure or misoperation of the CCR unit would result in no probable loss of human life but could potentially result in economic loss and/or environmental damage.

A failure of the dam at AP-1 would inundate the salt water marsh and areas near the dam. There are no other dams located downstream of AP-1 that would be impacted by its failure. The limits of potential flooding in the event of failure of the AP-1 dam can be seen on the Inundation Maps, which are included as Appendix B. The provided inundation maps were developed based on the results of routing the breach wave downstream using the computer software, HEC-RAS. HEC-RAS is a general application one-dimensional hydraulic model that can perform unsteady flow routing through an open channel system that may also include culverts, bridges, levees, tributaries, storage areas, and other dams. Unsteady flow analyses allow for flow conditions that vary temporally and spatially such as a dam breach simulation. Breach parameters such as failure time, breach width, and breach side slopes were selected from industry accepted empirical

formulas. Water surface elevation data was extracted from the hydraulic model and plotted on best available LiDAR topographic information for the downstream areas.

Normal water levels and the flow from simulated dam breaches were superimposed over topographical maps to identify areas subject to flooding. *These flood extents are provided for planning purposes only; actual flooding can vary due to actual conditions present at the time of the failure.*

### 3.0 DETECTION, EVALUATION, AND CLASSIFICATION PROCEDURES FOR EMERGENCIES

#### 3.1 Inspection Schedule and Condition Detection/Evaluation

Trained personnel from Plant McManus inspect the AP-1 dam on a regular basis to preemptively detect conditions, in a timely manner that could indicate a potential issue so that it can be addressed. Personnel from the Plant's Operations group perform weekly inspections; and SCS E&CS Fossil Dam Safety (Fossil Dam Safety) personnel perform an annual inspection. The dam is also inspected daily as part of the closure contractor's quality control practices and is periodically inspected by E&CS construction personnel.

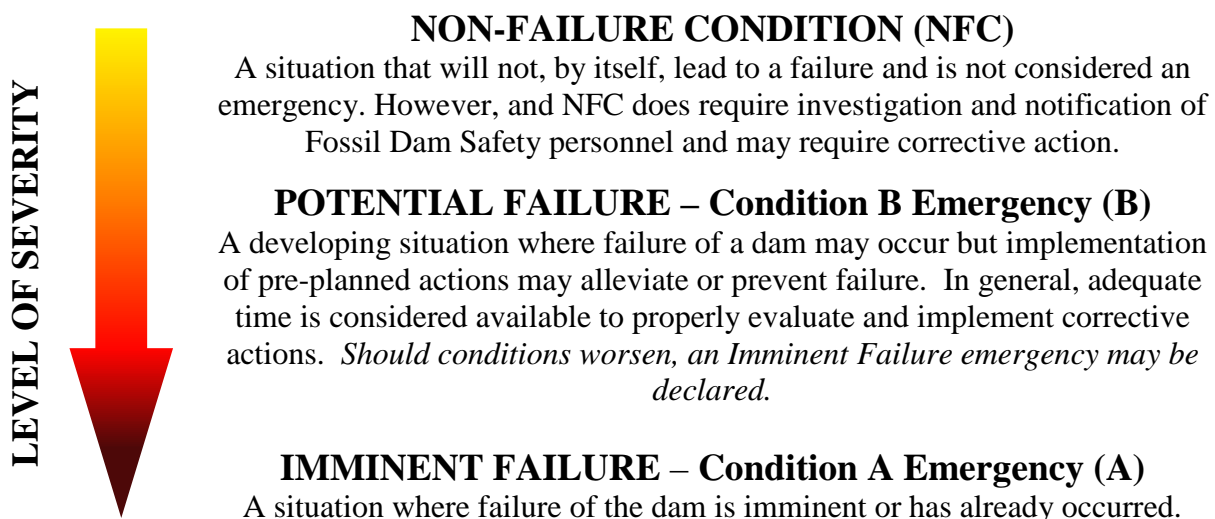
Plant personnel conducting inspections of the dams are trained on an annual basis by engineers from Fossil Dam Safety on the appropriate surveillance and monitoring requirements.

Any issues discovered during an inspection are reported to Fossil Dam Safety as prescribed in the Safety Procedure for Dams and Dikes at Fossil Generation Plants (GEN10004). The Fossil Dam Safety Engineer(s) working with plant personnel will recommend a corrective course of action, as needed.

There is no dam monitoring instrumentation located at AP-1.

#### 3.2 Condition Severity Classifications

AP-1 dam emergencies will be classified based on the type of event, severity of the situation, and the time required to take corrective measures. This procedure covers the following severity classifications:



### 3.3 Guidance for Determining the Condition Severity Level

The following table details potential situations that could occur at the AP-1 dam. *The Condition Level indicated in the right-most column corresponds with the Condition Severity Classifications in Section 3.2 above.*

Event	Situation	Emergency Level
Auxiliary Spillway Flow	AP-1 water surface elevation at auxiliary spillway crest or spillway is flowing with no active erosion	NFC
	Auxiliary spillway flowing with active gully erosion	B
	Auxiliary Spillway flow that could result in flooding of people downstream if the AP-1 level continues to rise	B
	Auxiliary Spillway flowing with an advancing headcut that is threatening the control section	A
	Auxiliary Spillway flow that is flooding people downstream	A
Embankment Overtopping*	AP-1 level is 1 foot below the top of the dam	B
	Water from AP-1 is flowing over the top of the dam	A
	Storm related tidal surge from upstream side of dam	B
Seepage	New seepage areas in or near the dam	NFC
	New seepage areas with cloudy discharge or increasing flow rate	B
	Seepage with discharge greater than 10 gallons per minute	A
Dropouts/ Depressions	Observation of new dropouts or depressions in AP-1 or on the dam	B
	Rapidly enlarging dropout or depression	A
Embankment Cracking	New cracks in the embankment greater than ¼-inch wide without seepage	NFC
	Cracks in the dam with seepage	B
Embankment Movement	Visual movement/slippage of the dam slopes	NFC
	Sudden or rapidly proceeding slides of the dam slopes	A
Instruments	Instrumentation readings beyond predetermined/historic values	NFC
Earthquake	Measurable earthquake felt or reported on or within 50 miles of the dam	NFC
	Earthquake resulting in visible damage to the dam or its appurtenances	B
	Earthquake resulting in uncontrolled release of water from the dam	A
Security Threat	Verified bomb threat that, if carried out, could result in damage to the dam	B
	Detonated bomb that has resulted in damage to the dam or its appurtenances	A
Sabotage / Vandalism	Damage to dam or its appurtenances that could adversely impact the functioning of the dam	NFC
	Modification to the dam or its appurtenances that could adversely impact the functioning of the dam	NFC
	Damage to dam or its appurtenances that has resulted in seepage flow	B
	Damage to the dam or its appurtenances that has resulted in uncontrolled water release	A

\*Does not include normal tidal fluctuations upstream of dam.

## 4.0 INCIDENT RESPONSE

The following situations and conditions should be evaluated when performing condition severity detections and evaluations.

**Overtopping.** AP-1 consists of a 93.4-acre storage area. The inflow design flood consists of the rainfall that falls within the limits of the surface impoundment and runoff from 68.1 acres of adjoining watershed. Stormwater is temporarily stored within the limits of AP-1 and discharged through a primary spillway. The primary spillway is a 4-foot-tall x 8-foot-wide rectangular concrete channel with a 120° “V”-notch spillway. The primary spillway channel discharges into Burnette Creek, a brackish water tributary to the Turtle River. The pond incorporates an auxiliary spillway that is not engaged until rainfall exceeds the 1,000-year design storm.

**Seepage.** Failures due to internal erosion and/or piping resulting from seepage would be detected in the early stages during the regular inspections conducted by plant personnel. Inspectors are trained to look for evidence of seepage. Inspection reports are transmitted to trained dam safety engineers for evaluation. Therefore, the conditions that could lead to failures of this type would likely be discovered and corrected, making an actual failure a remote possibility.

**Slope Instability.** Slope instability would be demonstrated by sloughing of dam/dike slopes, which would be detected by plant or construction personnel in their inspections. The conditions that could potentially lead to a failure of this type would also be detected in advance and corrected making an actual failure a remote possibility.

In the event that conditions are detected that could potentially lead to a dam failure, the flowcharts in Appendices C (Incident Response) and D (Response Notification) will be used to respond to the situation and alert applicable personnel and emergency agencies. In that situation, local emergency management agencies (EMAs) would respond and begin warnings and evacuations as soon as possible following the declaration of a safety emergency.

### 4.1 Access to the Site

Plant personnel are able to access the dam from the north by paved and unpaved roadways from the western end of Hickory Point Road and access the dam from the south by paved or gravel-surfaced roadways from the main portion of Plant McManus at the south end of Crispen Boulevard. Figures 1 and 2 show the location of AP-1 on Plant property.

### 4.2 Response during Periods of Darkness

Plant McManus is operational and/or manned 24 hours a day every day, and personnel and equipment will be able to access the site at any time. Response times would not vary significantly from daylight conditions.

### 4.3 Response during Weekends and Holidays

Plant McManus is operational and/or manned 24 hours a day every day, and personnel and equipment will be able to access the site at any time. The response times of certain personnel

may be affected, but 24-hour contact information is included in the EAP for responsible personnel.

#### **4.4 Response during Adverse Weather**

The dam is accessed by paved and gravel-surfaced roads and is accessible during periods of adverse weather. Response times are not expected to be greatly affected by severe flooding.

## **5.0 RESPONSIBLE PERSONS AND RESPONSIBILITIES**

Designated personnel have been trained in the use of these response procedures and are aware of their responsibilities in making the procedures effective. The chain of command and the individual responsibilities for plant personnel, public officials, and agencies are outlined below.

### **5.1 Plant Manager**

The Plant Manager is ultimately responsible for the content, effectiveness, and implementation of the response procedures. The Plant Manager normally serves as the Incident Commander or designates this person. *Plant Managers have the authority and responsibility to direct all on-site activities.*

The Plant Manager or his designee will assess the conditions, direct the corrective and protective measures necessary to mitigate the condition(s), and, if necessary, declare an emergency condition. The Plant Manager or his designee will also declare the termination of an emergency condition. Once outside agencies are notified, the Plant Manager or his designee is responsible for keeping EMA informed of any changes in conditions. See Incident Commander responsibilities for further details.

### **5.2 Duty Officer**

The Duty Officer is the 24-hour point of contact for all plant emergencies. If the Plant Manager is unavailable and the Duty Officer is on-site, he/she will assume the duties and responsibilities of the Incident Commander until properly relieved by the Plant Manager or other designee.

### **5.3 Incident Commander**

The Plant Manager or his designee is the Incident Commander. If neither is available, Operations Shift Team Leader or the Duty Officer will assume the duties and responsibilities of the Incident Commander until properly relieved by the Plant Manager or ranking member of the Management Team.

The Incident Commander is responsible for:

1. Verifying that an emergency condition exists.
2. Assessing and declaring the emergency condition.
3. Consulting with Fossil Dam Safety to evaluate conditions and determine remediation actions.
4. Emergency Actions
  - a. If necessary, implement actions to lower the water level in the impoundment in consultation with Fossil Dam Safety.
  - b. Call-out of personnel necessary to perform the work required on plant site during the emergency.
5. Ensure the notification process as outlined in the Response Notification Flowchart (Appendix D) is completed in an expedient manner.

6. Other responsibilities include:
  - a. Establishing lines of communication from the plant to the local and state EMAs.
  - b. Ensuring emergency sources of power are available for the operation of essential equipment such as emergency lighting.
  - c. Ensuring the availability of heavy equipment and trained operators to aid in the mitigation effort.

## **5.4 Plant Security Department**

The Plant Security Department is responsible for securing company property and controlling access to company facilities. The Plant Security Department will inform the Incident Commander who will perform emergency notifications to Plant Environmental Compliance, the Georgia System Operator, and outside agencies as shown on Response Notification Flowchart (Appendix D). This consists of local and state EMAs. **These notifications are mandatory when an emergency condition has been declared by the Plant Manager or Incident Commander.**

## **5.5 Plant Environmental Compliance**

Environmental Compliance personnel are responsible for assessing conditions, contacting the Plant Manager, obtaining assistance from Fossil Dam Safety, and for providing technical updates to the Emergency Coordinator. Compliance personnel can also request assistance from GPC Environmental Affairs.

## **5.6 Georgia System Operator**

The Georgia System Operator contacts the National Weather Service to inform them of conditions at the plant that may lead to potential flooding downstream.

## **5.7 Fossil Dam Safety**

Fossil Dam Safety is responsible for coordinating and providing the technical support necessary to mitigate the emergency condition and for notifying the Hydro Services General Manager of the emergency condition. Fossil Dam Safety shall also notify GPC Supply Chain Management and the Georgia Safe Dams Program as shown on the Response Notification Flowchart (Appendix D).

## **5.8 GPC Personnel**

### **Environmental Affairs**

GPC Environmental Affairs is responsible for coordinating long-term environmental response (after the initial response) and to remediate environmental issues and provide the technical support necessary for any remediation needs. Environmental Affairs is also responsible for all communications with environmental regulatory agencies for appropriate reporting of releases to the environment and for securing variances to existing permits, if needed.

If necessary, Environmental Affairs will also help secure approved remediation contractors for the specific emergency condition that may exist. They will also provide additional support, such as emergency manpower, material, equipment, and expertise to assist in mitigation efforts, if needed.



### **Corporate Communications**

GPC Corporate Communications is responsible for coordinating the GPC media response and will schedule news briefings and prepare news releases, as required. GPC Corporate Communications will also work with local and State Public Information Officers to ensure that timely, accurate, and consistent information is made available to media outlets.

### **Corporate Security**

GPC Corporate Security is responsible for supporting Plant Security personnel and contracting with local law enforcement for additional security personnel as needed.

### **Supply Chain Management**

Supply Chain Management is responsible for obtaining additional equipment and materials necessary to mitigate the emergency condition and begin the recovery process.

## **5.9 Emergency Agencies**

Local EMAs are responsible for planning and implementing evacuation and sheltering plans as well as directing search, rescue, and recovery efforts. If additional resources are required, the local agencies can contact the Georgia Emergency Management Agency (GEMA) for assistance.

The local EMAs are the point of contact between plant personnel and local jurisdictions. The EMAs are responsible for the direction and control of emergency operations at the local level and keeping local government officials informed of the status of emergency operations.

GEMA generally becomes involved in an emergency situation if the local agencies are not capable of handling the situation or if assistance is requested by a local agency or by the Governor. Refer to the "Georgia Emergency Operations Plan" (GEOP) for an explanation of specific functions. GEMA has responsibilities similar to the local EMAs but is also responsible for mobilizing state military support as well as State Disaster Center operations.

## **5.10 Law Enforcement**

Local Law Enforcement agencies are notified by the appropriate EMA. GEMA notifies the State Patrol as well as the Georgia Department of Transportation (GDOT). Law Enforcement is responsible for traffic control and can assist with evacuation, mitigation, and rescue activities.

## 6.0 NOTIFICATION PROCEDURES

Communication during an emergency event will primarily be by company phone. In the event of system failure, Southern Linc radios and cell phones would be utilized as an alternate method of communication. These numbers are listed on the Response Notification Flowchart located in Appendix D.

Local and state EMA will be notified in the event of an emergency, and these agencies will be responsible for notifying the public. In the event of an imminent failure, local and state EMA's will be notified to immediately begin evacuation procedures. GPC Corporate Communications will provide information for media outlets and will be responsible for communicating relevant information to the public.

### 6.1 Incident Response Flowchart for Imminent Failure and Potential Failure Emergencies

This Procedure and the following Incident Response Flowchart (below in text and in Appendix C in visual) for Imminent Failure and Potential Failure Emergencies shall be posted at appropriate locations at Plant McManus. Personnel responsible for executing mitigation and/or emergency actions shall be thoroughly familiar with their responsibilities under this EAP.

- A. When a Condition B or Condition A situation is detected, notify plant personnel in accordance with the Incident Response Flowchart (below and in Appendix C). Plant Environmental Compliance should contact Fossil Dam Safety immediately for technical consultation. Fossil Dam Safety will provide the evaluation of the conditions and provide a determination if there is an immediate threat to the dam/dike. If there is an immediate threat of dam/dike or dike failure, declare an **Imminent Failure Emergency** and proceed to Step I.
- B. If no immediate threat is detected, determine if the problem detected could possibly lead to failure of the dam/dike. If there is a potential for failure but corrective measures may be taken to moderate or alleviate failure, declare a **Potential Failure Emergency** (Condition B) and proceed to Step C.
- C. If a **Potential Failure Emergency** has been declared, notify personnel and agencies listed on the Response Notification Flowchart (Appendix D). Document all communications using the appropriate forms contained in Appendix E. Once outside agencies have been notified of an issue or potential problem, plant management is responsible for keeping local EMAs informed of any change in conditions.
- D. Begin corrective measures to attempt to alleviate or prevent failure.
- E. Evaluate the effectiveness of the corrective measures. If the corrective actions are successful, update all personnel/agencies previously contacted of the status of the improved conditions and document relevant communications using the forms provided in Appendix E. At this time, the Emergency Coordinator will end the emergency condition. Fossil Dam Safety will be responsible for preparing the after-action report.

- F. If the corrective measures are not effective, Fossil Dam Safety will determine if there is time to take additional corrective measures.
- G. If there is not time to take additional corrective measures and failure is imminent, declare an **Imminent Failure Emergency** (Condition A) and proceed to Step I.
- H. If there is time to implement additional corrective measures, return to Step E. Additional support can be requested from Civil Field Services or outside contractors, as needed.
- I. If an **Imminent Failure Emergency** has been declared by the Plant Manager or his designee, ensure that all personnel have been moved to a safe area and perform notifications per the Response Notification Flowchart (Appendix D). Document all communications using the appropriate forms contained in Appendix E. Once outside agencies have been notified of a problem or potential problem, the Plant Manager or his designee is responsible for keeping local EMAs informed of any change in conditions. Fossil Dam Safety will be responsible for preparing the after-action report.

## **6.2 Additional Considerations**

All communication shall be documented using the *Data Recording Sheet* located in Appendix E.

## **7.0 PROVISIONS FOR ANNUAL COORDINATION MEETING**

An annual face-to-face meeting will be held with representatives of Plant McManus, GPC, and the emergency response agencies described in this plan. These emergency response agencies may include:

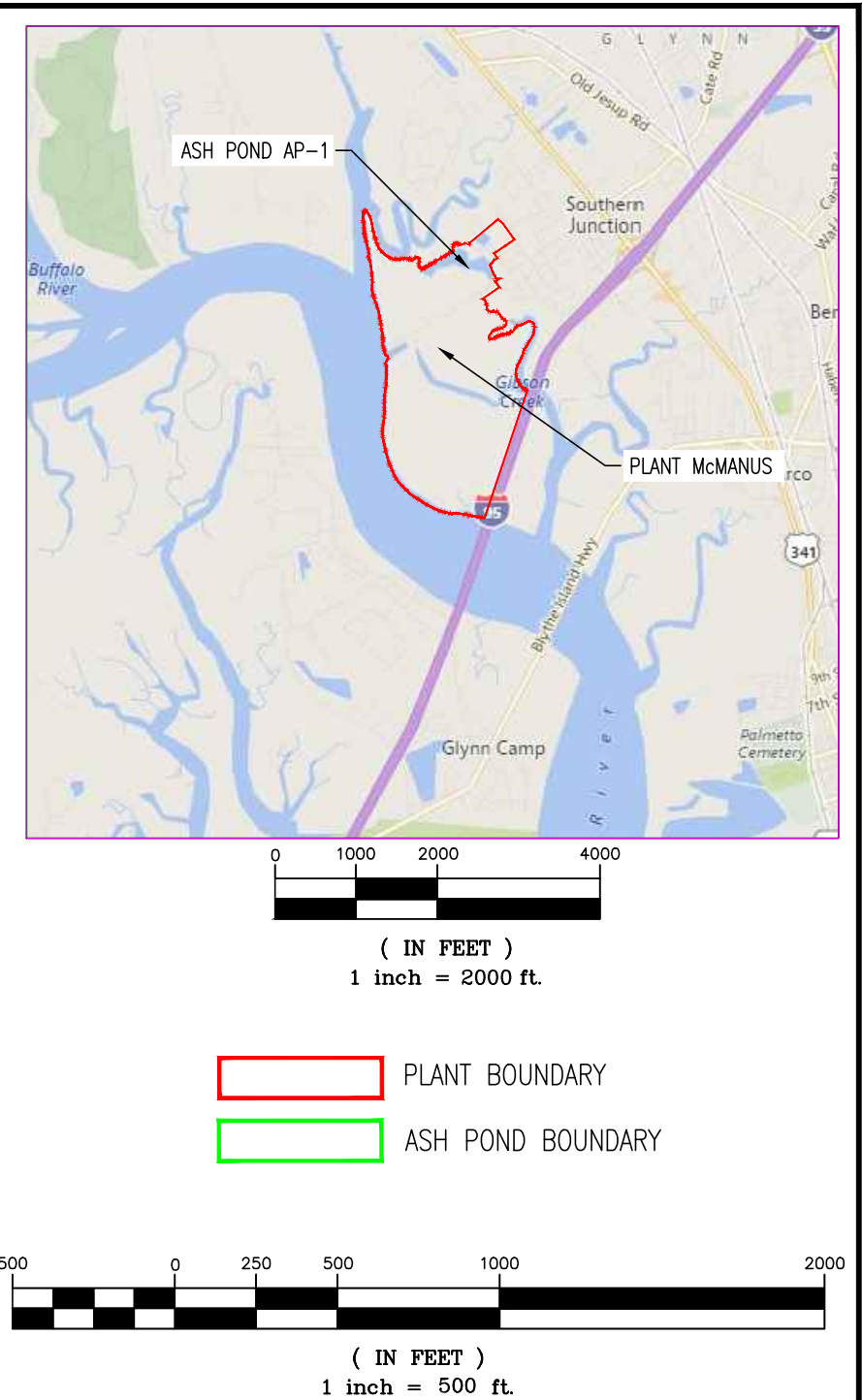
- Glynn County Emergency Management Agency
- Georgia Emergency Management Agency
- Glynn County Sheriff's Department
- Georgia Environmental Protection Division - Safe Dams Program

## **APPENDIX A**

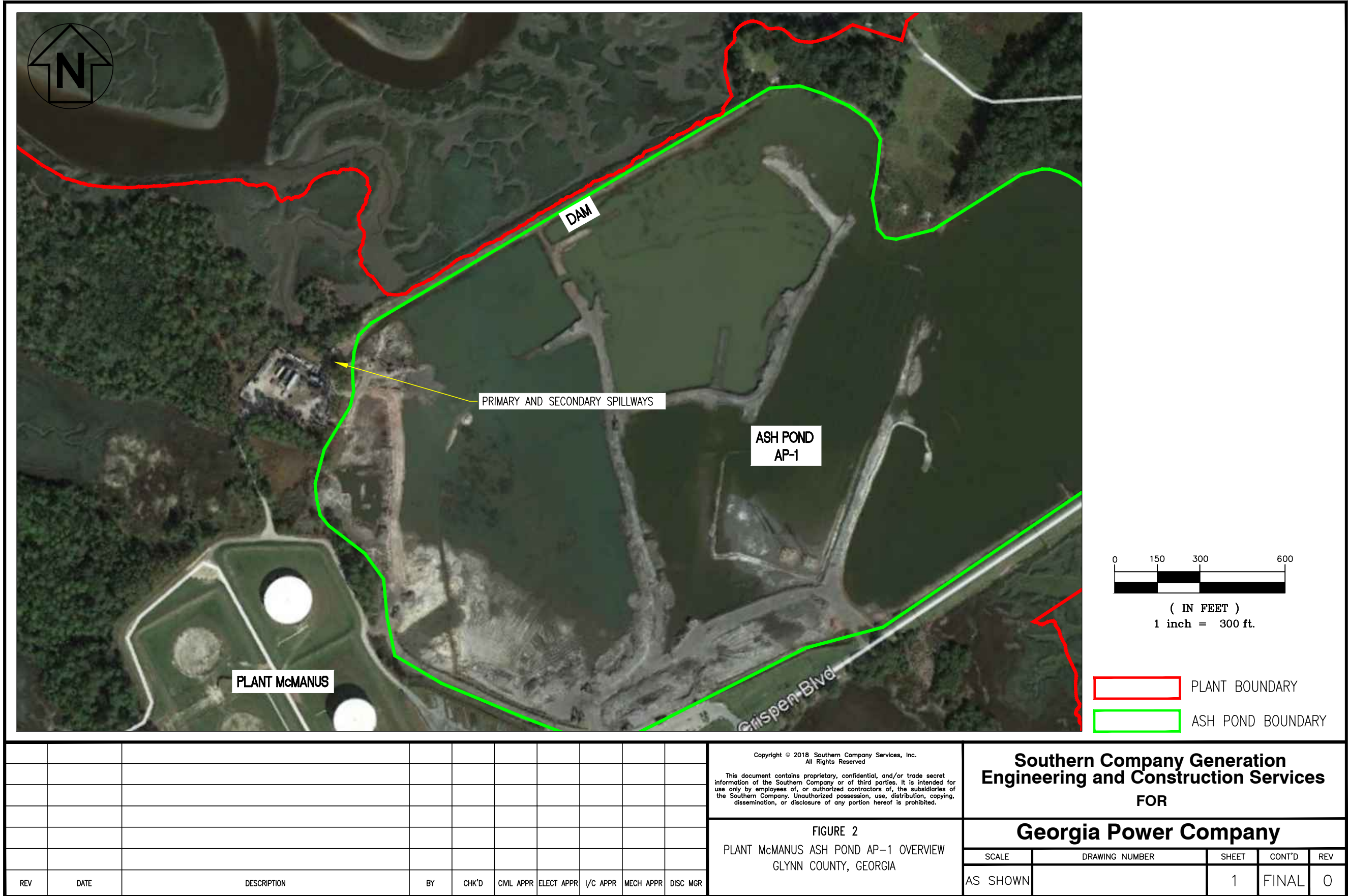
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**Plant McManus Location Map – Figure 1**

**Ash Pond AP-1 Overview – Figure 2**

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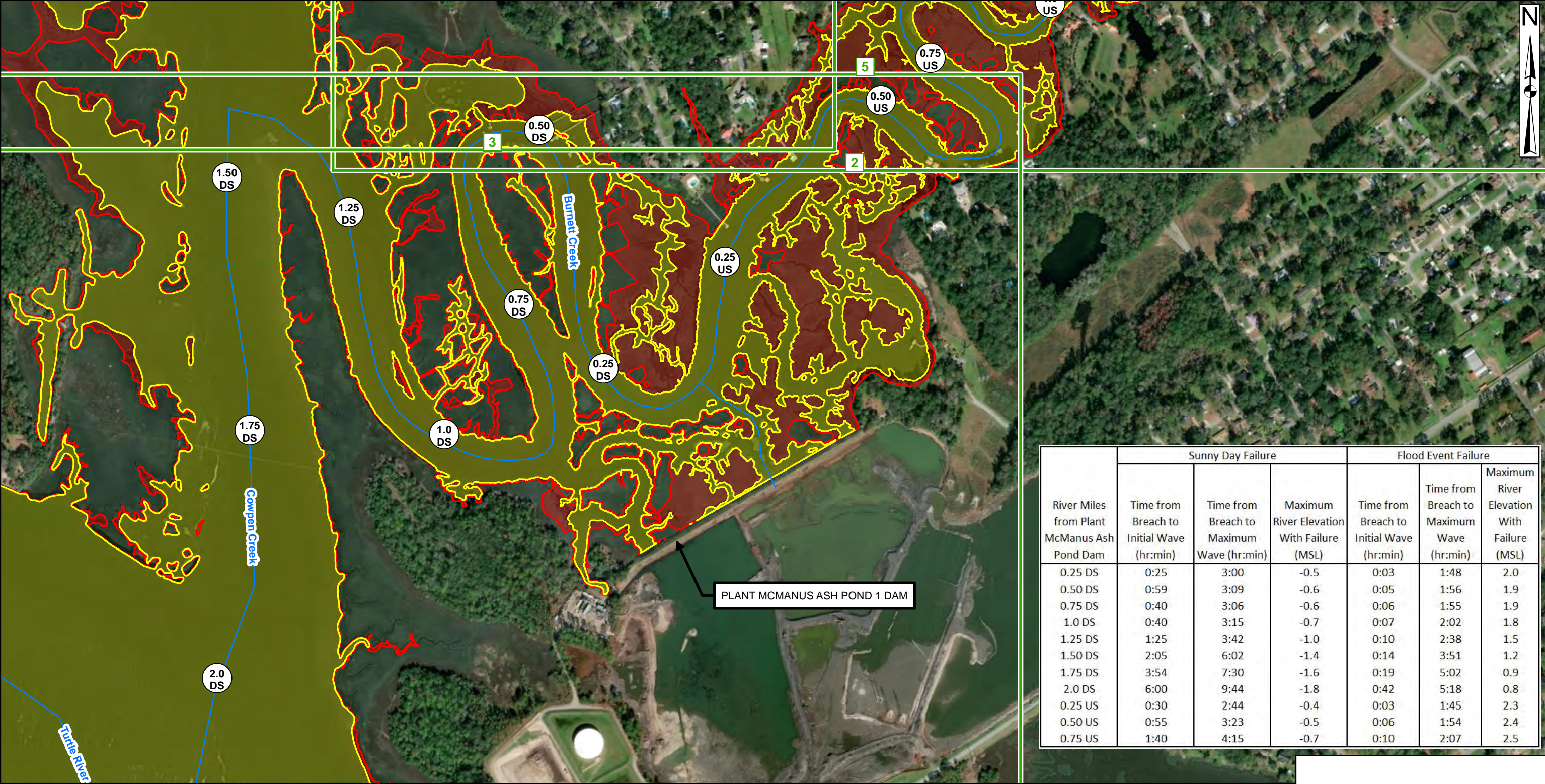


## **APPENDIX B**

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### **Inundation Maps**





River Miles from Plant McManus Ash Pond Dam	Sunny Day Failure			Flood Event Failure		
	Time from Breach to Initial Wave (hr:min)	Time from Breach to Maximum Wave (hr:min)	Maximum River Elevation With Failure (MSL)	Time from Breach to Initial Wave (hr:min)	Time from Breach to Maximum Wave (hr:min)	Maximum River Elevation With Failure (MSL)
0.25 DS	0:25	3:00	-0.5	0:03	1:48	2.0
0.50 DS	0:59	3:09	-0.6	0:05	1:56	1.9
0.75 DS	0:40	3:06	-0.6	0:06	1:55	1.9
1.0 DS	0:40	3:15	-0.7	0:07	2:02	1.8
1.25 DS	1:25	3:42	-1.0	0:10	2:38	1.5
1.50 DS	2:05	6:02	-1.4	0:14	3:51	1.2
1.75 DS	3:54	7:30	-1.6	0:19	5:02	0.9
2.0 DS	6:00	9:44	-1.8	0:42	5:18	0.8
0.25 US	0:30	2:44	-0.4	0:03	1:45	2.3
0.50 US	0:55	3:23	-0.5	0:06	1:54	2.4
0.75 US	1:40	4:15	-0.7	0:10	2:07	2.5

River

1.0 DS

River Miles

Sheet Index

SunnyDay Breach Inundation

FloodEvent Breach Inundation

0

250

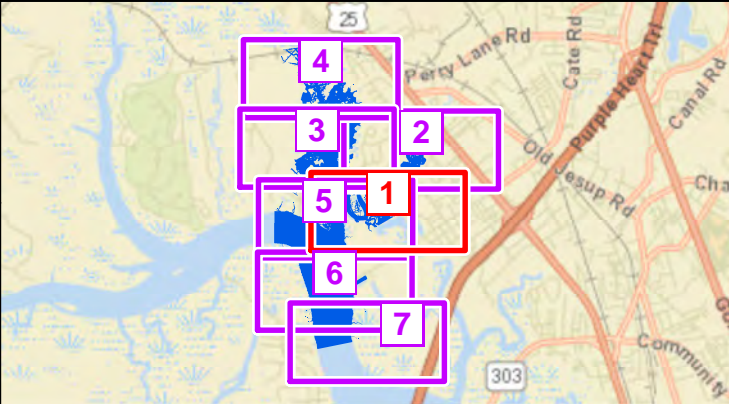
500

1,000

Feet

Scale: 1" = 500'

\*This map depicts the maximum water surfaces from a sunny day breach and flood event breach from the dam. The flood event is the 1000yr-24hr storm. Mapping of flooded areas and flood wave travel times are approximate. Timing and extent of actual inundation may differ from information presented on this map. The information contained in this map is prepared for use in notification of downstream property owners by emergency management personnel.



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Projection: NAD 1983 StatePlane Georgia East FIPS 1001 Feet

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PLANT MCMANUS INUNDATION MAPPING

GLYNN COUNTY, GEORGIA

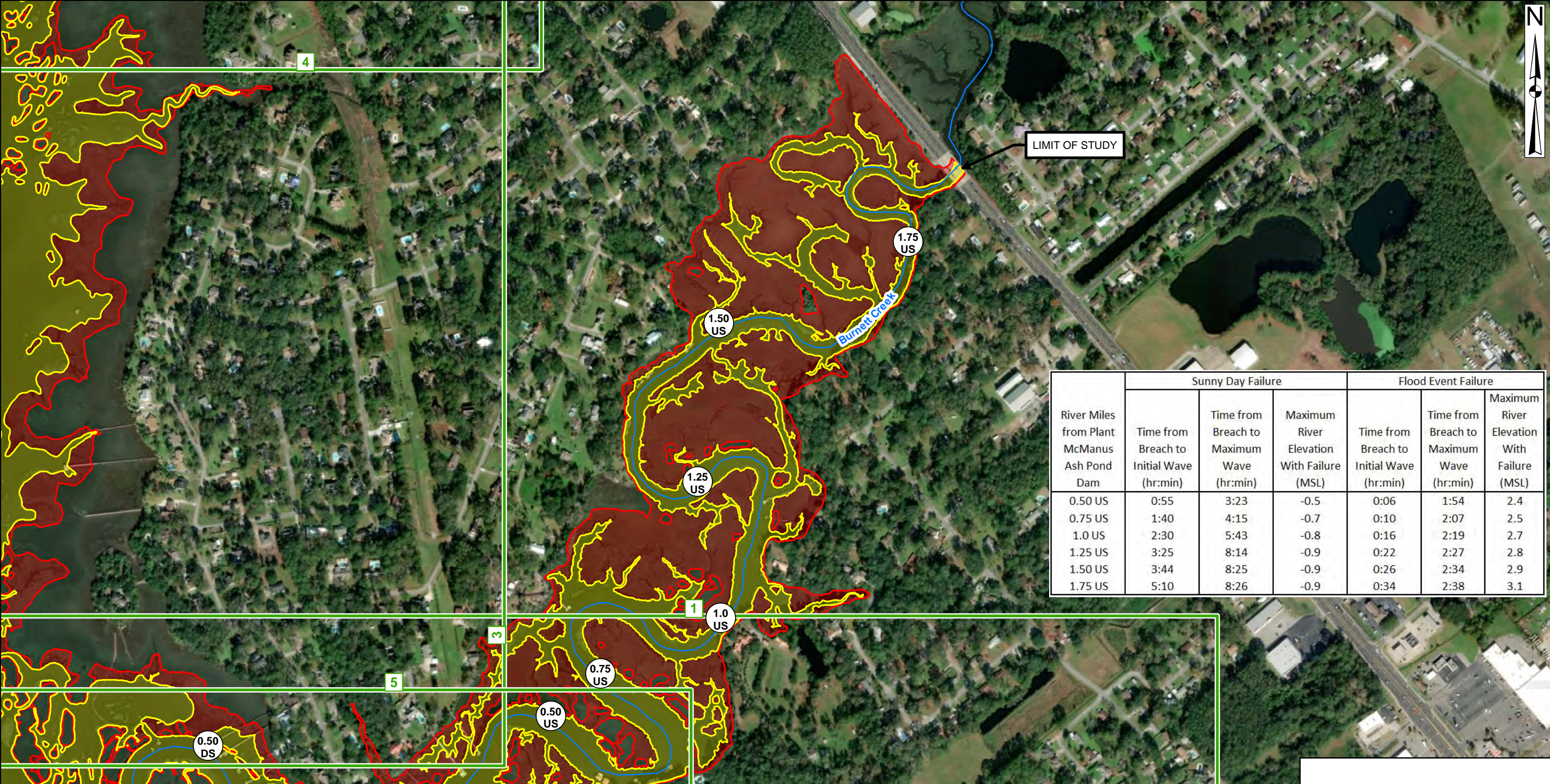
PROJECT NO 18C17077.00

INUNDATION MAPPING

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River Miles from Plant McManus Ash Pond Dam	Sunny Day Failure			Flood Event Failure		
	Time from Breach to Initial Wave (hr:min)	Time from Breach to Maximum Wave (hr:min)	Maximum River Elevation With Failure (MSL)	Time from Breach to Initial Wave (hr:min)	Time from Breach to Maximum Wave (hr:min)	Maximum River Elevation With Failure (MSL)
0.50 US	0:55	3:23	-0.5	0:06	1:54	2.4
0.75 US	1:40	4:15	-0.7	0:10	2:07	2.5
1.0 US	2:30	5:43	-0.8	0:16	2:19	2.7
1.25 US	3:25	8:14	-0.9	0:22	2:27	2.8
1.50 US	3:44	8:25	-0.9	0:26	2:34	2.9
1.75 US	5:10	8:26	-0.9	0:34	2:38	3.1

1.0  
DS

River Miles

Sheet Index

SunnyDay Breach Inundation

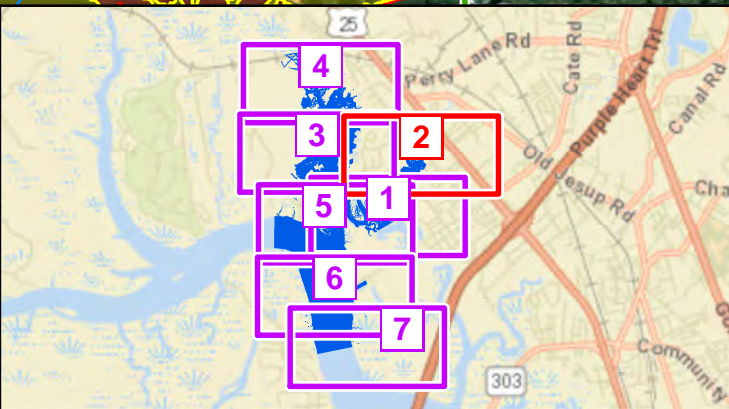
FloodEvent Breach Inundation

02505001,000

Feet

Scale: 1" = 500'

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PLANT MCMANUS INUNDATION MAPPING

GLYNN COUNTY, GEORGIA

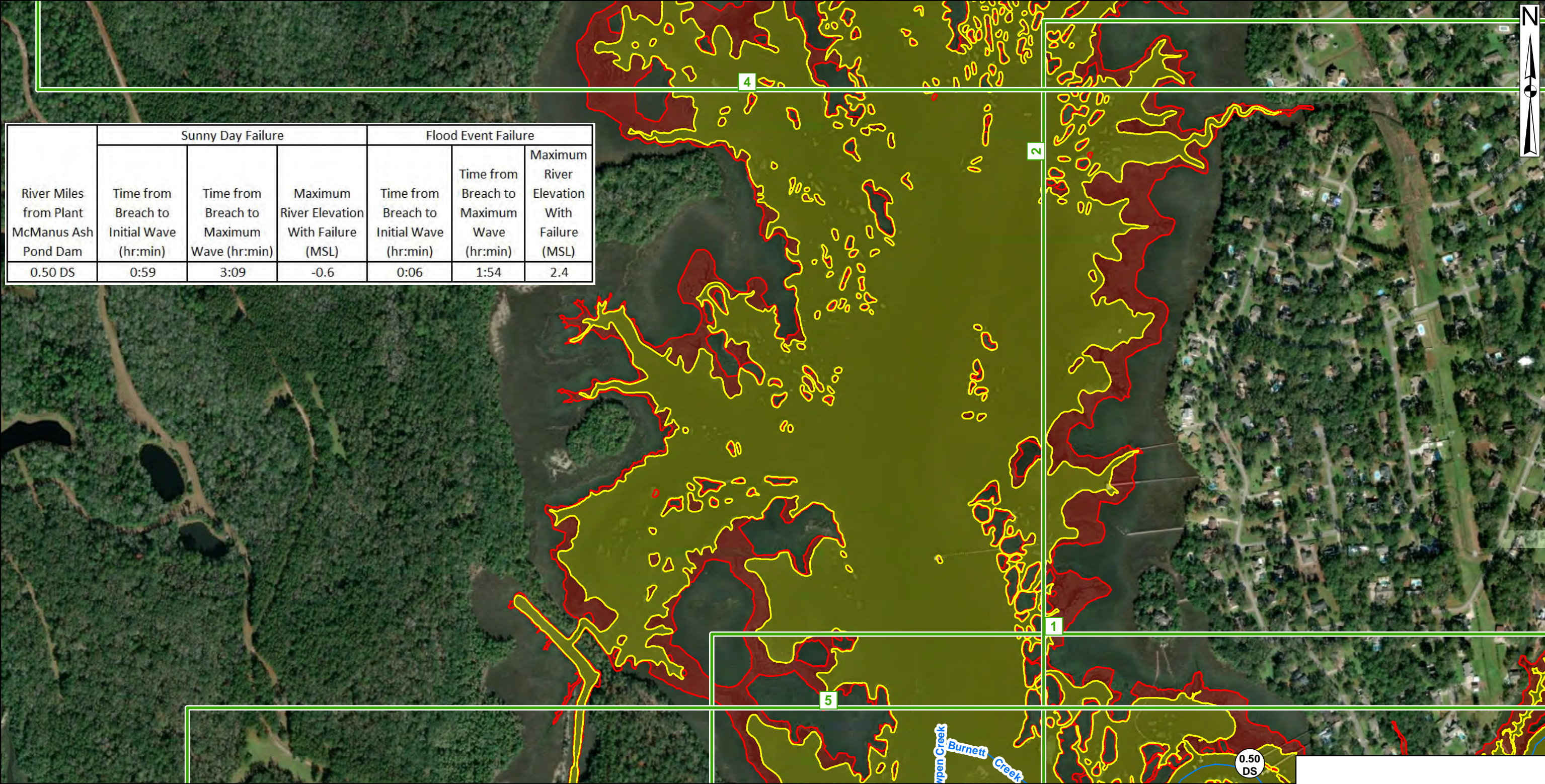
PROJECT NO 18C17077.00

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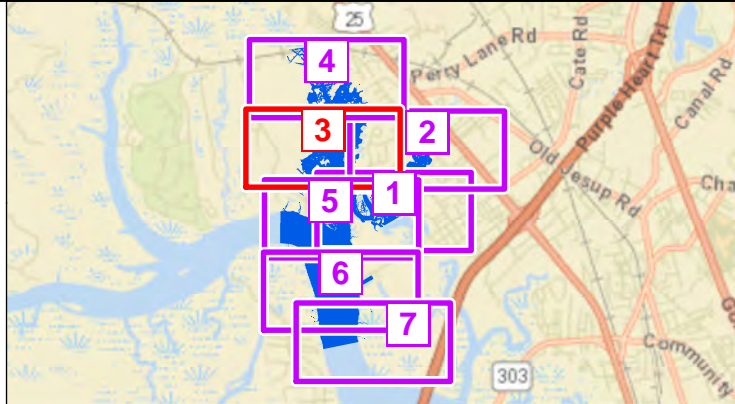


River Miles from Plant McManus Ash Pond Dam	Sunny Day Failure			Flood Event Failure		
	Time from Breach to Initial Wave (hr:min)	Time from Breach to Maximum Wave (hr:min)	Maximum River Elevation With Failure (MSL)	Time from Breach to Initial Wave (hr:min)	Time from Breach to Maximum Wave (hr:min)	Maximum River Elevation With Failure (MSL)
0.50 DS	0:59	3:09	-0.6	0:06	1:54	2.4

— River  
1.0 DS River Miles  
Sheet Index  
SunnyDay Breach Inundation  
FloodEvent Breach Inundation

0 250 500 1,000 Feet  
Scale: 1" = 500'

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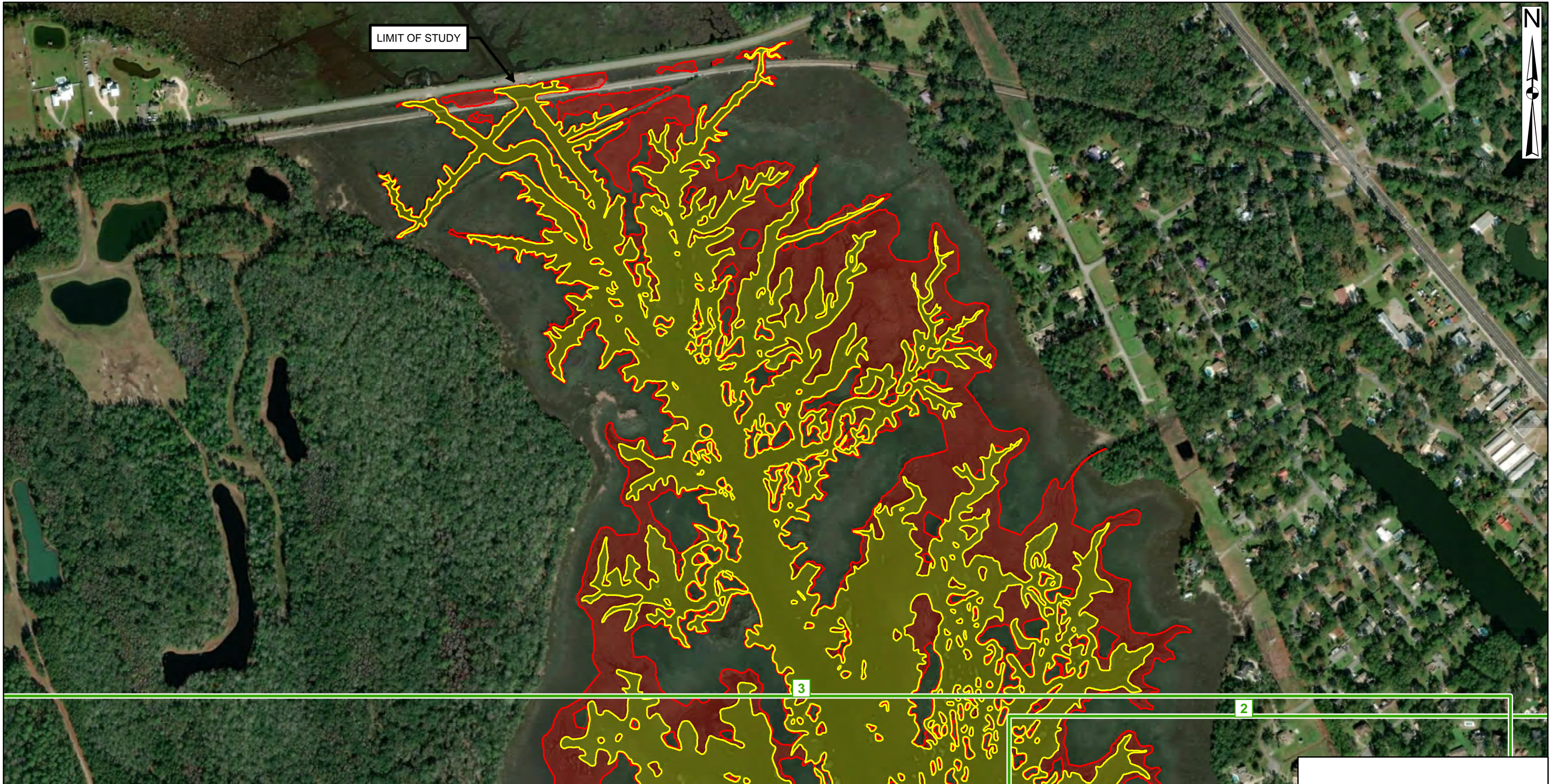
Source: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community  
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Projection: NAD 1983 StatePlane Georgia East FIPS 1001 Feet

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GLYNN COUNTY, GEORGIA  
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INUNDATION MAPPING

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River

1.0  
DS

River Miles

Sheet Index

SunnyDay Breach Inundation

FloodEvent Breach Inundation

0

250

500

1,000

Feet


Scale: 1" = 500'

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River Miles from Plant McManus Ash Pond Dam	Sunny Day Failure			Flood Event Failure		
	Time from Breach to Initial Wave (hr:min)	Time from Breach to Maximum Wave (hr:min)	Maximum River Elevation With Failure (MSL)	Time from Breach to Initial Wave (hr:min)	Time from Breach to Maximum Wave (hr:min)	Maximum River Elevation With Failure (MSL)
0.25 DS	0:25	3:00	-0.5	0:03	1:48	2.0
0.50 DS	0:59	3:09	-0.6	0:05	1:56	1.9
0.75 DS	0:40	3:06	-0.6	0:06	1:55	1.9
1.0 DS	0:40	3:15	-0.7	0:07	2:02	1.8
1.25 DS	1:25	3:42	-1.0	0:10	2:38	1.5
1.50 DS	2:05	6:02	-1.4	0:14	3:51	1.2
1.75 DS	3:54	7:30	-1.6	0:19	5:02	0.9
2.0 DS	6:00	9:44	-1.8	0:42	5:18	0.8
0.25 US	0:30	2:44	-0.4	0:03	1:45	2.3
0.50 US	0:55	3:23	-0.5	0:06	1:54	2.4

River

River Miles

Sheet Index

SunnyDay Breach Inundation

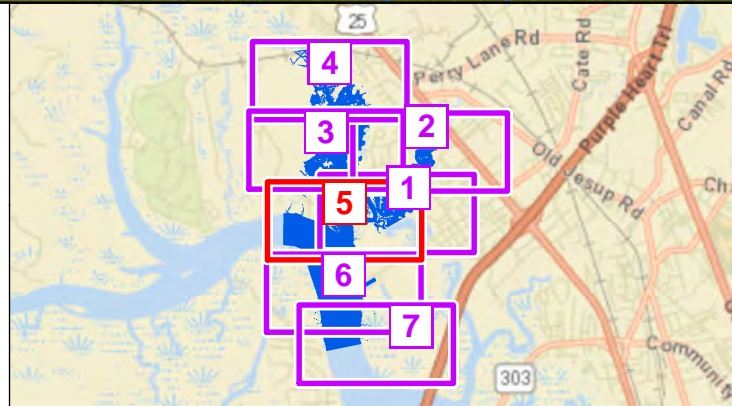
FloodEvent Breach Inundation

02505001,000

Feet

Scale: 1" = 500'

\*This map depicts the maximum water surfaces from a sunny day breach and flood event breach from the dam. The flood event is the 1000yr-24hr storm. Mapping of flooded areas and flood wave travel times are approximate. Timing and extent of actual inundation may differ from information presented on this map. The information contained in this map is prepared for use in notification of downstream property owners by emergency management personnel.



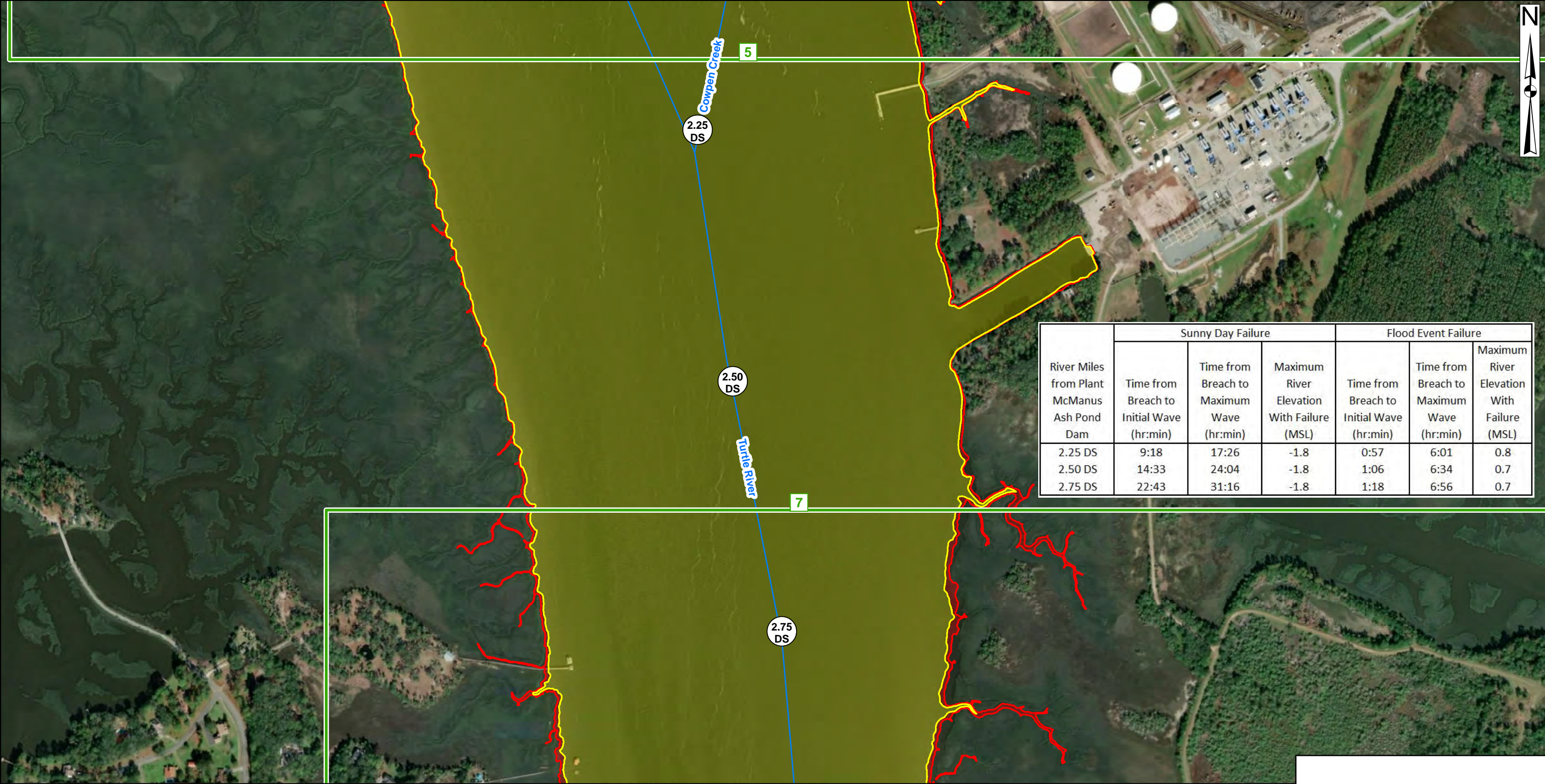
Source: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community  
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 Projection: NAD 1983 StatePlane Georgia East FIPS 1001 Feet

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 GLYNN COUNTY, GEORGIA  
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River Miles from Plant McManus Ash Pond Dam	Sunny Day Failure			Flood Event Failure		
	Time from Breach to Initial Wave (hr:min)	Time from Breach to Maximum Wave (hr:min)	Maximum River Elevation With Failure (MSL)	Time from Breach to Initial Wave (hr:min)	Time from Breach to Maximum Wave (hr:min)	Maximum River Elevation With Failure (MSL)
2.25 DS	9:18	17:26	-1.8	0:57	6:01	0.8
2.50 DS	14:33	24:04	-1.8	1:06	6:34	0.7
2.75 DS	22:43	31:16	-1.8	1:18	6:56	0.7

River

1.0 DS

River Miles

Sheet Index

SunnyDay Breach Inundation

FloodEvent Breach Inundation

0

250

500

1,000

Feet


Scale: 1" = 500'

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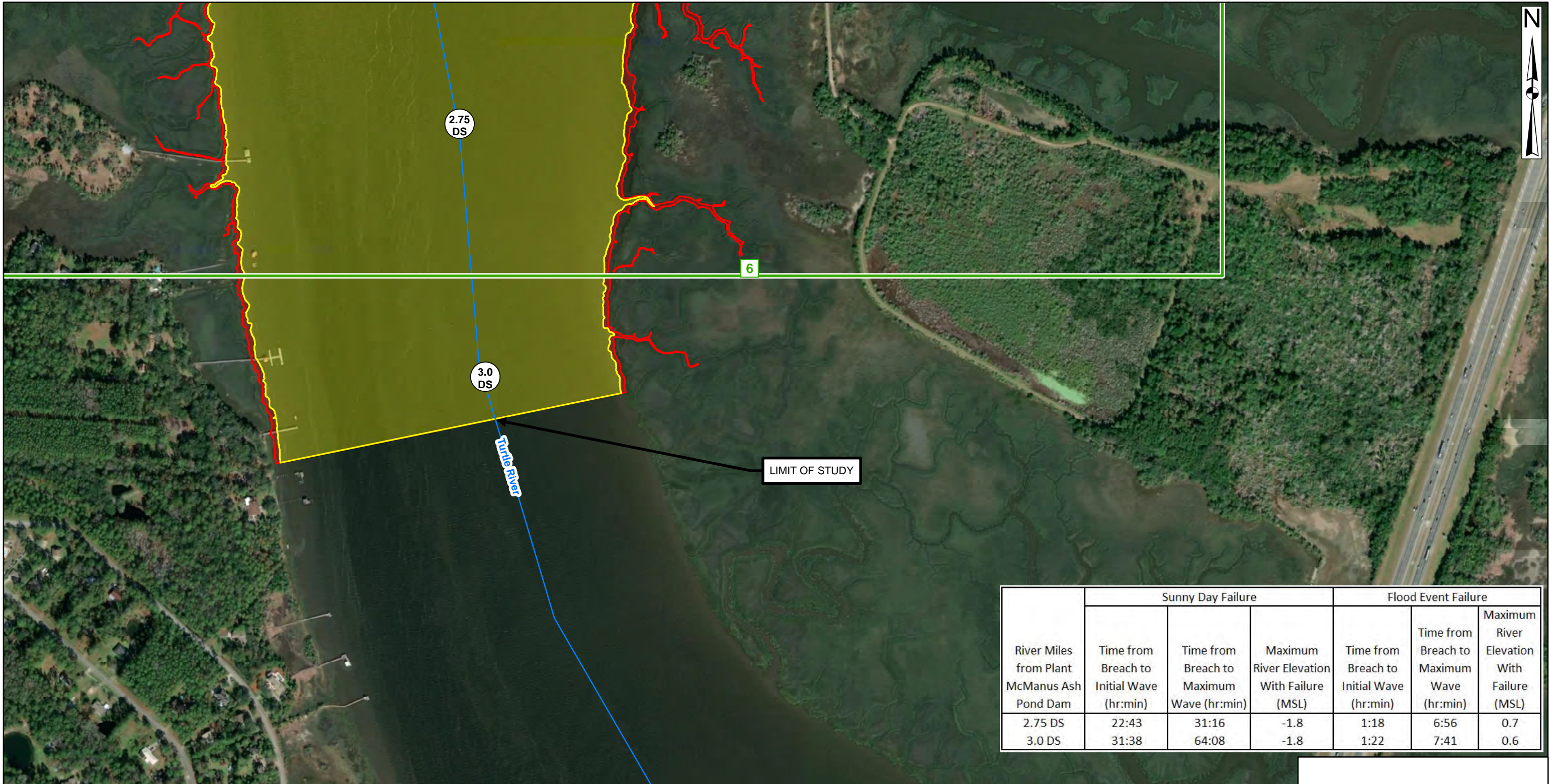
PROJECT NO 18C17077.00

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River Miles from Plant McManus Ash Pond Dam	Sunny Day Failure			Flood Event Failure		
	Time from Breach to Initial Wave (hr:min)	Time from Breach to Maximum Wave (hr:min)	Maximum River Elevation With Failure (MSL)	Time from Breach to Initial Wave (hr:min)	Time from Breach to Maximum Wave (hr:min)	Maximum River Elevation With Failure (MSL)
2.75 DS	22:43	31:16	-1.8	1:18	6:56	0.7
3.0 DS	31:38	64:08	-1.8	1:22	7:41	0.6

River

1.0 DS

River Miles

Sheet Index

SunnyDay Breach Inundation

FloodEvent Breach Inundation

0

250

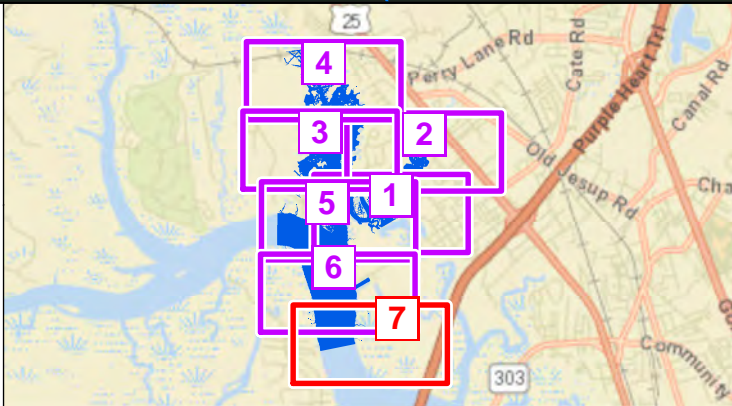
500

1,000

Feet

Scale: 1" = 500'

\*This map depicts the maximum water surfaces from a sunny day breach and flood event breach from the dam. The flood event is the 1000yr-24hr storm. Mapping of flooded areas and flood wave travel times are approximate. Timing and extent of actual inundation may differ from information presented on this map. The information contained in this map is prepared for use in notification of downstream property owners by emergency management personnel.



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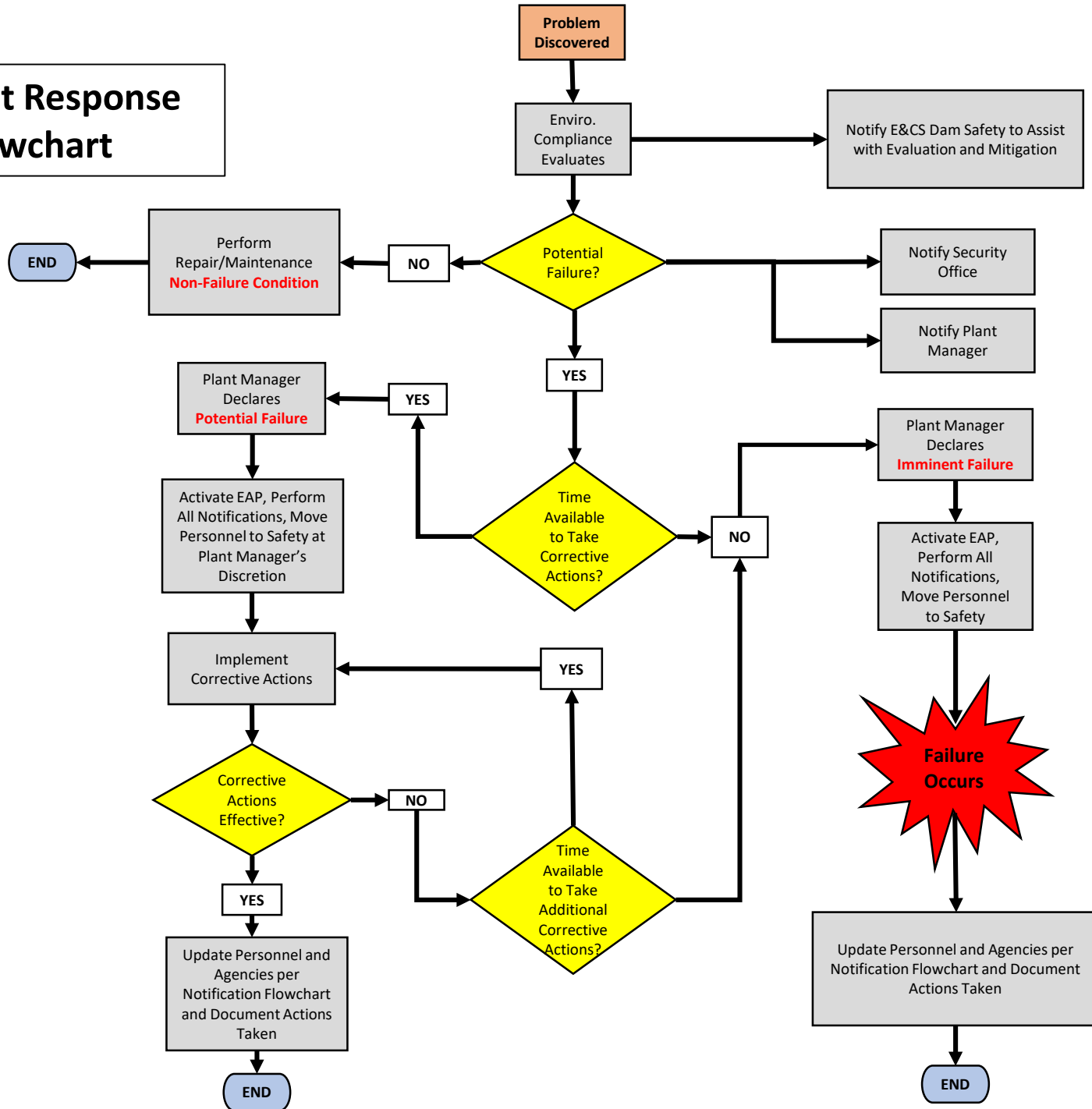
## **APPENDIX C**

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### **Incident Response Flowchart**



# Incident Response Flowchart



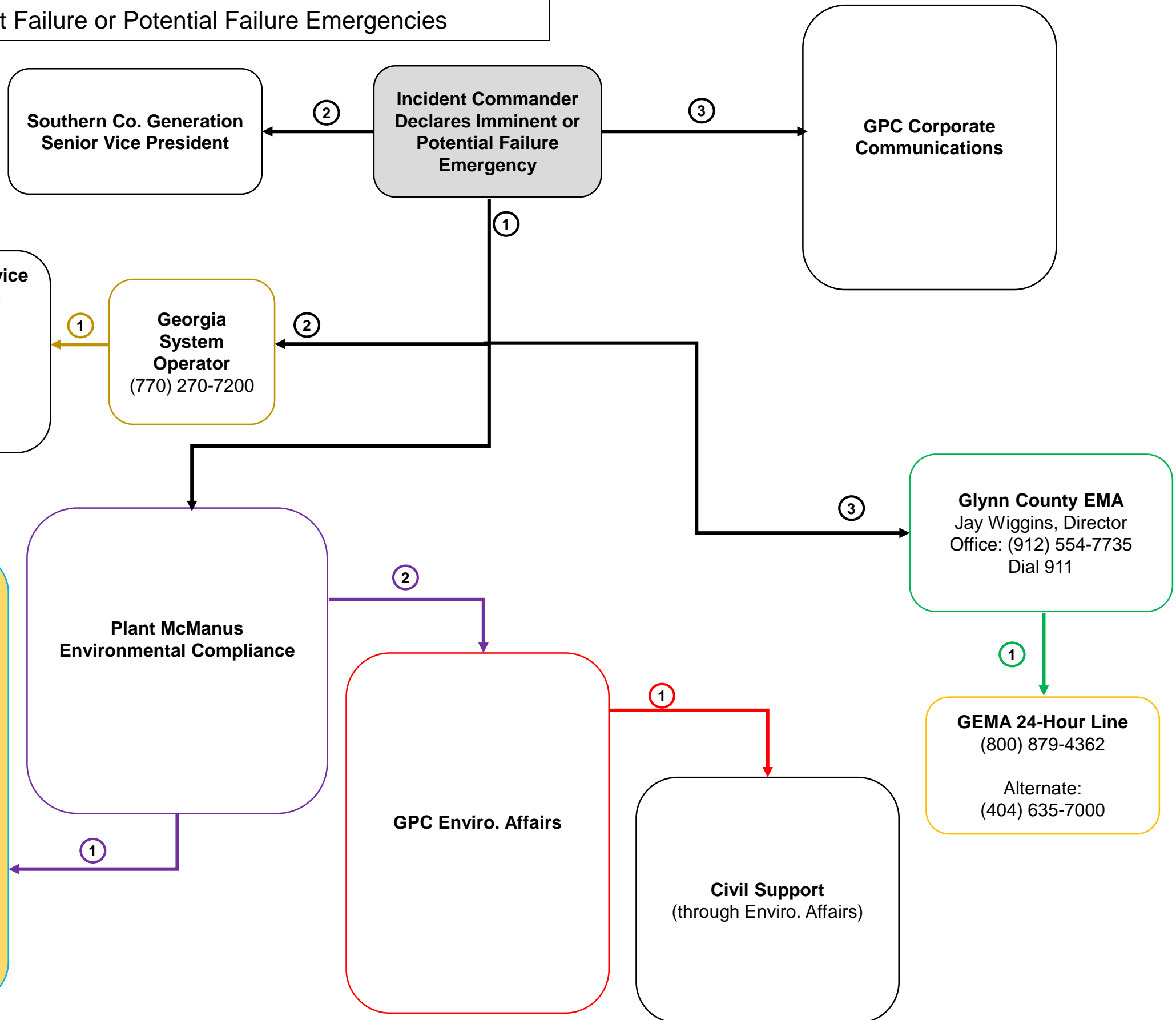
## **APPENDIX D**

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### **Response Notification Flowchart**

# Response Notification Flowchart

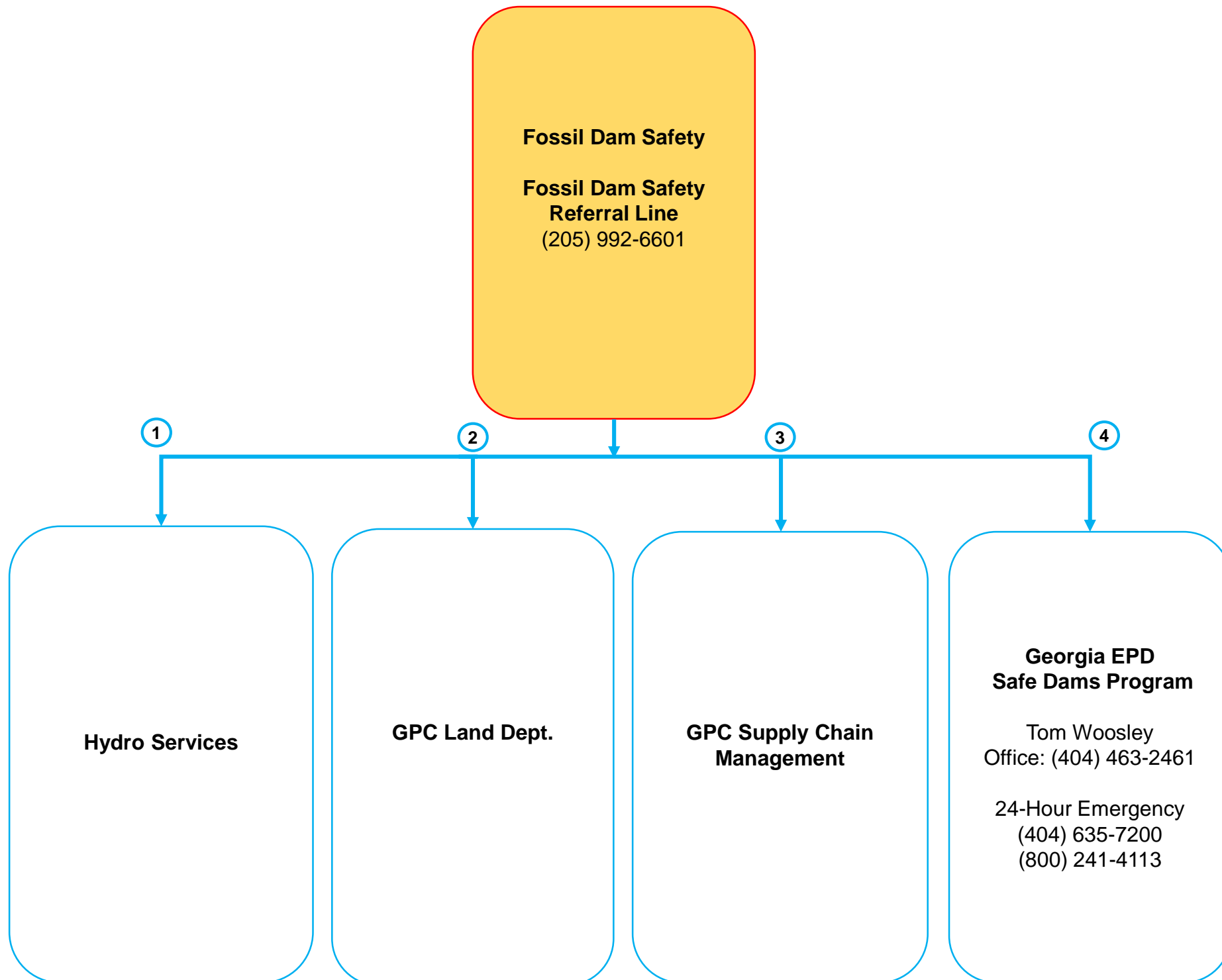
Imminent Failure or Potential Failure Emergencies



# Response Notification Flowchart

Imminent Failure or Potential Failure Emergencies

*Fossil Dam Safety Notifications*



# **APPENDIX E**

---

## **Data Recording Sheet**

# EMERGENCY ACTION PLAN

## DATA RECORDING SHEET

The Data Recording Sheet will be used to record important information relating to dam safety emergency.

**Team Member(s):** \_\_\_\_\_

**Date of Incident:** \_\_\_\_\_

**Time of Incident:** \_\_\_\_\_

**Type of Emergency:** \_\_\_\_\_

**Emergency Coordinator:** \_\_\_\_\_

**Description of Events:\*** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**What is Being Done:\*** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*Attach additional pages as necessary.

**For incoming questions, refer all calls to:**

Media Inquiries: Georgia Power Company Corporate Communications  
*See Response Notification Flowchart for phone numbers.*

EMA Inquiries: Plant Manager/Emergency Coordinator

Environmental Agency Inquiries: GPC Environmental Affairs

## **APPENDIX F**

---

### **Instructions for the Construction of an Emergency Reverse Filter**

# EMERGENCY REVERSE FILTER CONSTRUCTION

The purpose of the reverse filter is to slow down the flow of water in order to reduce the ability of the water to carry soil particles. The size of the soil particle that a flow of water can carry is a function of the 3<sup>rd</sup> power of the velocity of the flow. The slower the velocity, the less soil the water can carry. The other function of the filter is to trap soil particles before they exit.

The usual components of a reverse filter are as follows:

- ) GDOT washed #10 sand (10NS)
- ) # 89 stone
- ) # 57 stone
- ) GDOT Type 3 rip rap

These materials should be stockpiled in a location where they can easily and quickly be moved to the seepage site. Two truckloads of each type of material should be stored in a convenient location that is out of the way. It is best if they are located so that a backhoe or front end loader can pick them up and transfer them directly to the seepage site. Transport schemes that require multiple vehicles and multiple operators are usually impossible to implement at night or on weekends. The stockpiles should be labeled “Granular Filter Stockpile – Emergency Use Only” to keep them from being appropriated for other purposes by those unaware of their purpose.

To build a reverse filter over a boil or area of concentrated seepage, follow the directions below. A cross section of the reverse filter construction is provided on the next page.

- 1) Clear loose material from around the site.
- 2) Place 6” of #10 washed sand over the area of concern, and extend it for at least 12” beyond the seepage limits.
- 3) Place 6” of #89 stone over the sand, and extend it for at least 6” beyond the sand.
- 4) Place 6” of #57 stone over the sand, and extend it for at least 6” beyond the #89 stone.
- 5) If necessary to stabilize the #57 stone, place rip rap on top of the #57 stone. Conditions that may make the rip rap necessary are anticipated surface flows that might wash away the filter or increasing seepage flows that may try to shift the lighter filter materials.

If the flow is too fast for the sand to remain in place, a layer of #57 stone or GDOT Type 3 rip rap may be placed over the boil to slow the flow down. This is followed by a layer of #89 stone, then the sand, and then the #89, #57 and rip rap in succession.

Sometimes a seep will pop out on the edge of a newly applied filter. In this case, it is generally necessary to apply the granular filter as a blanket to the general area rather than as a spot treatment. The layers are as described above but will cover a larger area.

**Filter fabric or geotextile is not acceptable as a substitute for the sand. The fabric tends to smear and clog if applied in a wet situation.**



## CROSS SECTION OF A REVERSE FILTER OVER A SEEP OR BOIL

