



**Quality Assurance Project Plan**  
**U.S. Environmental Protection Agency**  
 Science and Ecosystem Support Division  
 980 College Station Road  
 Athens, GA 30605

SESD Project ID No.: 11-0321  
 SESD Category 3 QAPP

<b>SECTION A: Project Planning Elements</b>		
<b>A1. Title (Project Name):</b>	Yadkin River Sediment Sampling	
Project Location:	Yadkin River from High Rock Lake to Lake Tillery located in Rowan, Davidson, Stanly and Montgomery County, North Carolina	
Project Requestor and Organization:	Ken Rhame, OSC, Superfund Division, 61 Forsyth St. S. W., Atlanta, GA 30303-8960	
Project Leader's Name, Position, and Organization:	Jonathan Vail, Environmental Scientist, SESD, 980 College Station Rd., Athens, GA 30605	
Project Leader's Signature:		Date:
Technical Reviewer's Name and Position:		
Technical Reviewer's Signature:		Date:
Section Chief's Name and Position:	Laura Ackerman, Chief Superfund and Air Section, SESD	
Section Chief's Signature:		Date:
<b>A2. Table of Contents</b>	N/A	
<b>A3. Distribution List</b>	Ken Rhame and file	
<b>A4. Project Personnel</b>	<b>Organization</b>	<b>Responsibilities</b>
Jonathan Vail	SESD	Project Leader / Sampling
Mark Stanley	ESAT-ILS	Sampling, COC
NCDNER Staff	NCDNER	Boat driver



**Quality Assurance Project Plan**  
**U.S. Environmental Protection Agency**  
 Science and Ecosystem Support Division  
 980 College Station Road  
 Athens, GA 30605

SESD Project ID No.: 11-0321  
 SESD Category 3 QAPP

<p><b>A5. Problem Definition – Investigation Objectives and Background Information:</b></p>	<p>This investigation is a joint project with the North Carolina Department of Environment and Natural Resources (NCDENR) and the EPA. This is a site assessment focusing on pcb aroclors (pcb's) in sediment in the Yadkin River. NCDENR has detected pcb's in fish on Baden Lake, one of four reservoirs on the Yadkin. There is a state park downstream and several boat ramps up and down the Yadkin River. This assessment will focus on locations where direct contact is likely to occur (beach and boat ramps) as well as depositional areas. The objective is to determine whether there is human health risk from exposure to sediments at swimming locations and boat ramps.</p>
<p><b>A6. Project Description:</b></p>	<p>The Yadkin River Sediment Sampling is the first of a two part project to investigate pcbs in sediment and fish tissue. The first part of this project is to collect sediment samples where there is dermal exposure to sediment at boat ramps and swimming locations. The sediment sampling locations were selected by EPA and NCDENR and are shown in the figures and the access (by boat or road) is listed in the table accompanying this QAPP. During the first part of this project, the EPA and NCDENR will collect the samples and EPA will conduct the laboratory analysis.</p> <p>The second part of this project is the collection of fish samples to determine the risks associated with ingestion and will be conducted by NCDENR. EPA will conduct the laboratory analysis. The fish collection part of this project will take place about mid 2011.</p> <p>The sample identification will be YR (for Yadkin River) - the station identification (example: SD01) – followed by SD (for Sediment) = YRSD01SD. The stations and identification (including duplicates) are listed in the table “Yadkin River Draft Sediment Sample Locations” on page 7. The sampling stations are shown in the figures “Yadkin River Proposed Sample Locations” starting on page 8.</p>
<p>Applicable regulatory information, action levels, etc.</p>	<p>The NOAA Screening Quick Reference Tables for Organics – Sediment lists the PCBs (sum) threshold effects level (TEL) at 34.1 ppb and the probable effects level (PEL) at 277 ppb.</p>
<p>Decision(s) to be made based on data:</p>	<p>Any decisions will be determined by Ken Rhame.</p>



**Quality Assurance Project Plan**  
**U.S. Environmental Protection Agency**  
 Science and Ecosystem Support Division  
 980 College Station Road  
 Athens, GA 30605

SESD Project ID No.: 11-0321  
 SESD Category 3 QAPP

Field Study Date:	Week of April 18, 2011
Projected Lab Completion Date:	21 days after sample receipt
Projected Final Report Completion Date:	30 days after sample results are received from the laboratory.
<p><b>A7. Quality Objectives and Criteria</b>          All samples/sample locations meet the field investigation objectives and purposes summarized in Sections A5 and A6 of this QAPP.</p>	
<p><b>A8. Special Training/Certifications</b>          N/A.</p>	
<p><b>A9. Documents and Records</b>          For this project, SESD will implement the following procedures pertaining to Documents and Records:  <i>SESD Operating Procedure for Report Preparation and Distribution, SESDPROC-003-R3.</i>  <i>SESD Operating Procedure for Logbooks, SESDPROC-010-R4.</i>  <i>SESD Operating Procedure for Control of Records, SESDPROC-002-R5.</i></p>	

**SECTION B: Data Generation and Acquisition**

**B1. Sampling Design**

The following matrix lists the proposed numbers and types of samples to be collected. Sample locations are described in Section A6 of this QAPP.

Media:	Number of Samples:	Analyses:
Sediment	20	PCB Aroclors



**Quality Assurance Project Plan**  
**U.S. Environmental Protection Agency**  
 Science and Ecosystem Support Division  
 980 College Station Road  
 Athens, GA 30605

SESD Project ID No.: 11-0321  
 SESD Category 3 QAPP

**B2. Sampling Methods, General Procedures**

The following SESD field measurement and sampling procedures will be followed during this field study, as applicable:

- Global Positioning System (SESDPROC-110-R2)
- Sediment Sampling (SESDPROC-200-R2)
- Field Equipment Cleaning and Decontamination (SESDPROC-205-R1)

**B3. Sampling Handling and Custody**

All samples will be collected and handled according to the procedures listed in Section B2 of this QAPP. After collection, samples will be managed according to the following:

- SESD Analytical Support Branch Laboratory Operations and Quality Assurance Manual*, January 2010.
- SESD Operating Procedure for Sample and Evidence Management*, SESDPROC-005-R1.
- SESD Operating Procedure for Packing, Labeling and Shipping of Environmental and Waste Samples* SESDPROC-209-R1.

**B4. Analytical Methods**

The following is a brief description of the analytical methods for this field investigation.

<b>SESD:</b>	Samples will be prepped by method 3545A and analyzed by method 8082A for pcb aroclors by the Athens SESD laboratory in accordance with the <i>SESD Analytical Support Branch Laboratory Operations and Quality Assurance Manual</i> , January 2010.
<b>CLP:</b>	N/A
<b>Other:</b>	N/A

**B5. Quality Control**

The following is a brief description of field and laboratory quality control measures to be implemented during this field investigation.



**Quality Assurance Project Plan**  
**U.S. Environmental Protection Agency**  
 Science and Ecosystem Support Division  
 980 College Station Road  
 Athens, GA 30605

SESD Project ID No.: 11-0321  
 SESD Category 3 QAPP

<b>Field:</b>	<p>Field quality control measures will be in accordance with the <i>SESD Operating Procedure for Field Sampling Quality Control</i>, SESDPROC-011-R3, and/or <i>40 CFR Part 136.3, Table II-Required Containers, Preservation Techniques, and Holding Times</i>, as applicable.</p> <p>The number and type of field quality control samples proposed for this investigation are as follows:</p> <p>Of the 20 samples, two samples will be split (called duplicate in Table and Figures) to determine if sample mixing was sufficient. In addition, extra volume of one sample will be collected for matrix spike and matrix spike duplicated analyses. All samples and a temperature blank will be stored in a cooler with ice and a will accompany the samples when custody is turned over to the laboratory.</p>
<b>Laboratory:</b>	<p>Specific laboratory quality control measures are specified in the <i>SESD Analytical Support Branch Laboratory Operations and Quality Assurance Manual</i>, January 2010.</p>
<p><b>B6. Instrument/Equipment Testing, Inspection and Maintenance</b>          All field measurement instruments and equipment will be maintained in accordance with the <i>SESD Operating Procedure for Equipment Inventory and Management</i>, SESDPROC-108-R3.</p>	
<p><b>B7. Instrument/Equipment Calibration and Frequency</b>          All field measurement instruments and equipment are calibrated according to the <i>SESD Operating Procedure for Equipment Inventory and Management</i>, SESDPROC-108-R3 and according to specific procedures included within the defined operating procedures for each instrument (see specific field measurement procedures in Section B2 of this QAPP).</p>	
<p><b>B8. Inspection/Acceptance for Supplies and Consumables</b>          All critical supplies and consumables for this field investigation are inspected and maintained in accordance with the following procedures:</p> <p><i>SESD Operating Procedure for Purchasing of Services and Supplies</i>, SESDPROC-015-R3.  <i>SESD Operating Procedure for Equipment Inventory and Management</i>, SESDPROC-108-R3  <i>SESD Operating Procedure for Field Sampling Quality Control</i>, SESDPROC-011-R3.</p> <p>The SESD Field Quality Manager and the Branch Quality Assurance Officers are responsible for ensuring that these requirements are met.</p>	



Quality Assurance Project Plan  
U.S. Environmental Protection Agency  
Science and Ecosystem Support Division  
980 College Station Road  
Athens, GA 30605

SESD Project ID No.: 11-0321  
SESD Category 3 QAPP

**B9. Non-direct Measurements:** N/A for this category.

**B10. Data Management**

The field project leader will be responsible for ensuring that all requirements for data management are met. All data generated for this field investigation, whether hand-recorded or recorded and stored in an electronic data logger will be recorded, stored and managed according to the following procedures:

*SESD Operating Procedure for Control of Records, SESDPROC-002-R5.*  
*SESD Operating Procedures for Logbooks, SESDPROC-010-R4.*

**SECTION C: Assessment/Oversight and SECTION D: Data Validation/Usability**

The *SESD Field Branches Quality Management Plan (QMP)* and the *SESD Operating Procedures* address the Assessment/Oversight and Data Validation/Usability elements as required. Please consult those documents for more detailed information concerning the *SESD Field Branches Quality System*.

**\*\*Footnotes:** This Quality Assurance Project Plan (QAPP) has been prepared and approved according to the EPA *Requirements for Quality Assurance Project Plans (EPA QA/R5 EPA/240/B-01/003)*, U.S. Environmental Protection Agency, Office of Environmental Information, Washington, DC, March 2001(USEPA, 2001). This document will be used to ensure that the environmental data collected for this project are of the type and quality for the intended purposes. **This document is for SESD use only.**



**Quality Assurance Project Plan**  
**U.S. Environmental Protection Agency**  
 Science and Ecosystem Support Division  
 980 College Station Road  
 Athens, GA 30605

SESD Project ID No.: 11-0321  
 SESD Category 3 QAPP

**Yadkin River Proposed Sediment Sample Locations**

Station_ID	X_Coord	Y_Coord	Reservoir	Access	Description
SD001	486966	219044	High Rock	Boat	Downstream from power plant Outfall
SD101	486966	219044	High Rock	Boat	Downstream from power plant Outfall (Duplicate)
SD002	488277	220599	High Rock	Boat	Downstream from rail yard outfall
SD003	496436	214490	High Rock	Road	Shallow bottom downstream from Duracell NPL Site
SD004	491048	206981	High Rock		Boat ramp - southwest arm High Rock Lake
SD005	495505	211135	High Rock	Road	Boat ramp Highway 8
SD006	497614	206170	High Rock	Boat	Channel near west bank above High Rock Dam
SD007	498123	205549	Tuckertown	Road	Boat ramp downstream from High Rock Dam
SD008	499720	200313	Tuckertown	Road	Boat ramp
SD009	501881	194310	Tuckertown	Road	Surface water intake upstream from Tuckertown Dam
SD010	505748	191696	Narrows (Badin Lake)	Road	Surface water intake downstream from Tuckertown Dam
SD011	510659	192986	Narrows (Badin Lake)	Road	Badin swimming beach
SD012	508353	185144	Narrows (Badin Lake)	Road	Boat ramp - upper Badin Lake - north arm
SD112	508353	185144	Narrows (Badin Lake)	Road	Boat ramp - upper Badin Lake - north arm (Duplicate)
SD013	511030	183035	Falls	Road	Shallow bottom downstream from Narrows Dam
SD014	513107	181524	Tillery	Road	Recreational access - Morrow Mountain State Park
SD015	511922	173114	Tillery	Road	Boat ramp
SD016	509909	171695	Tillery	Road	Boat ramp
SD017	508146	166562	Tillery	Road or Boat	Boat ramp
SD018	511833	164207	Tillery	Boat	Channel Lake Tillery
SD019	512929	164821	Tillery	Road or Boat	Boat ramp
SD020	512767	161454	Blewett Falls Lake	Road	Shallow bottom downstream from Norwood Dam

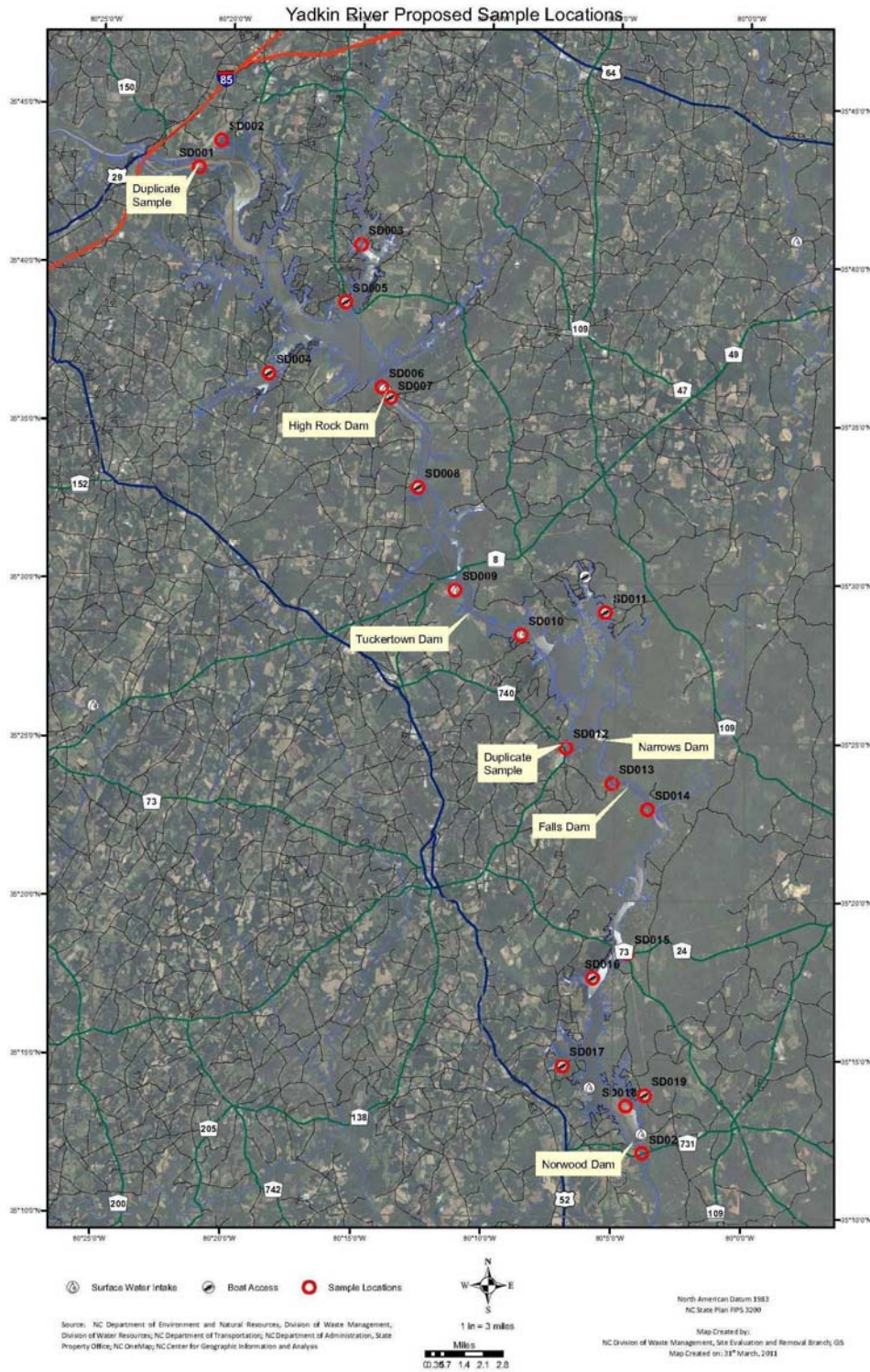
XY Coordinates are State Plane - Meters





Quality Assurance Project Plan  
 U.S. Environmental Protection Agency  
 Science and Ecosystem Support Division  
 980 College Station Road  
 Athens, GA 30605

SESD Project ID No.: 11-0321  
 SESD Category 3 QAPP





SESD Project ID No.: 11-0321  
SESD Category 3 QAPP



Surface Water Intake

Boat Access

Sample Locations

Department of Environment and Natural Resources, Division of Waste Management,  
Water Resources; NC Department of Transportation; NC Department of Administration, State  
Geographic Information System; NC Center for Geographic Information and Analysis



1 in = 0 miles



North American Datum 1983  
NC State Plan FPS 3200

Map Created by:  
NC Division of Waste Management, Site Evaluation and Removal Branch; GIS  
Map Created on: 31<sup>st</sup> March, 2011

SESD Project ID No.: 11-0321  
SESD Category 3 QAPP



③ Surface Water Intake    Boat Access    Sample Locations

© NC Department of Environment and Natural Resources, Division of Waste Management, Division of Water Resources, NC Department of Transportation, NC Department of Administration, State University of NC; NC On-Map; NC Center for Geographic Information and Analysis



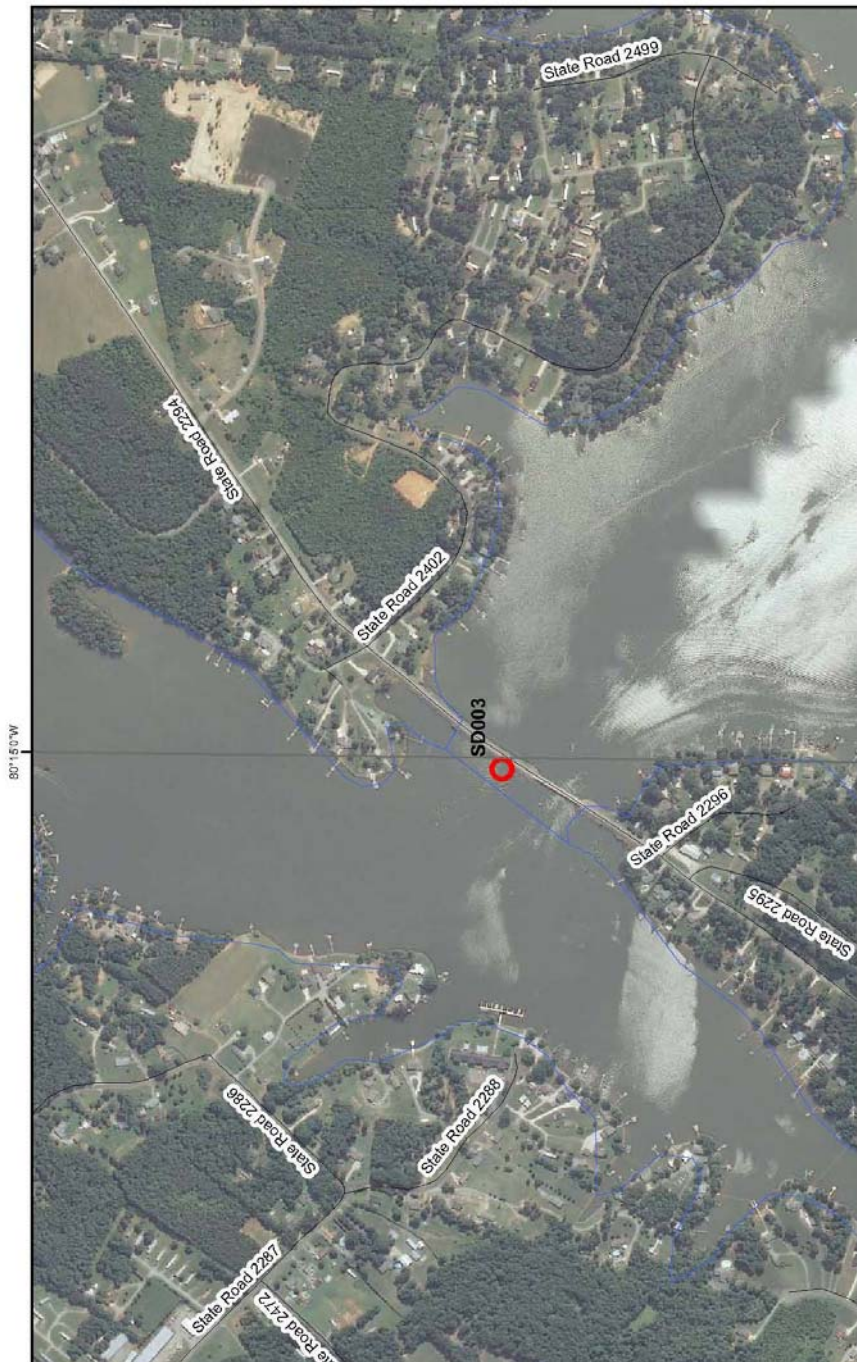
1 in = 0 miles  
Miles  
0.05 1 0.2 0.3

North American Datum 1983  
NC State Plan PPS 3220  
Map Created by:  
NC Division of Waste Management, State University and Research Triangle System  
Map Created on: 31st March 2011



SESD Project ID No.: 11-0321  
SESD Category 3 QAPP

College Station Road  
Athens, GA 30605



80°15'0"W

80°15'0"W



1 in = 0 miles



00.03507 0.14 0.21

Surface Water Intake

Boat Access

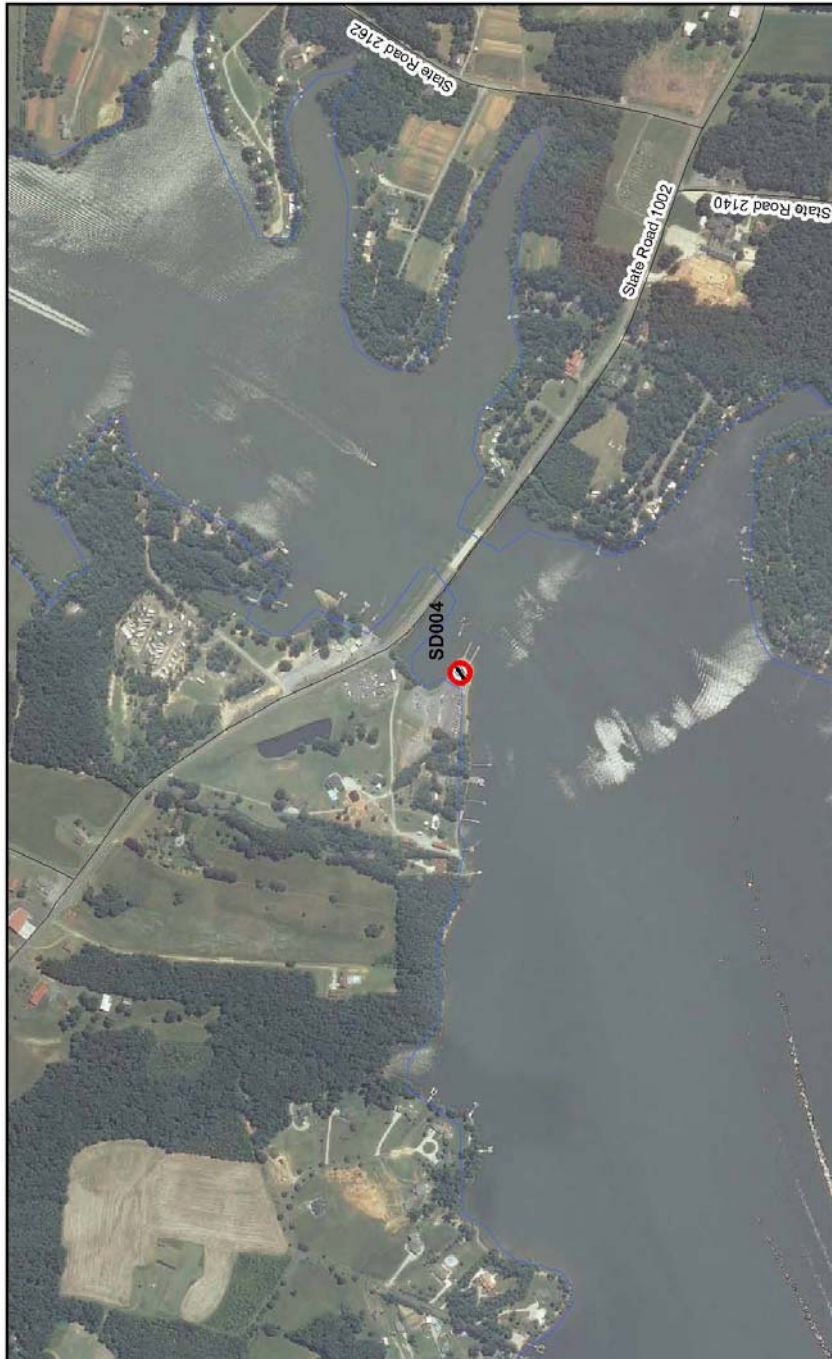
Sample Locations

North American Datum 1983  
NC State Plan FIPS 3200

Map Created by:  
NC Division of Waste Management, Site Evaluation and Removal Branch; G'S  
Map Created on: 31<sup>st</sup> March, 2011

Department of Environment and Natural Resources, Division of Waste Management,  
Waste Management Services, NC Department of Transportation; NC Department of Administration, State  
Geographic Information System; NC OneMap; NC Center for Geographic Information and Analysis

SESD Project ID No.: 11-0321  
SESD Category 3 QAPP



Surface Water Intake

Boat Access

Sample Locations



1 in = 0 miles



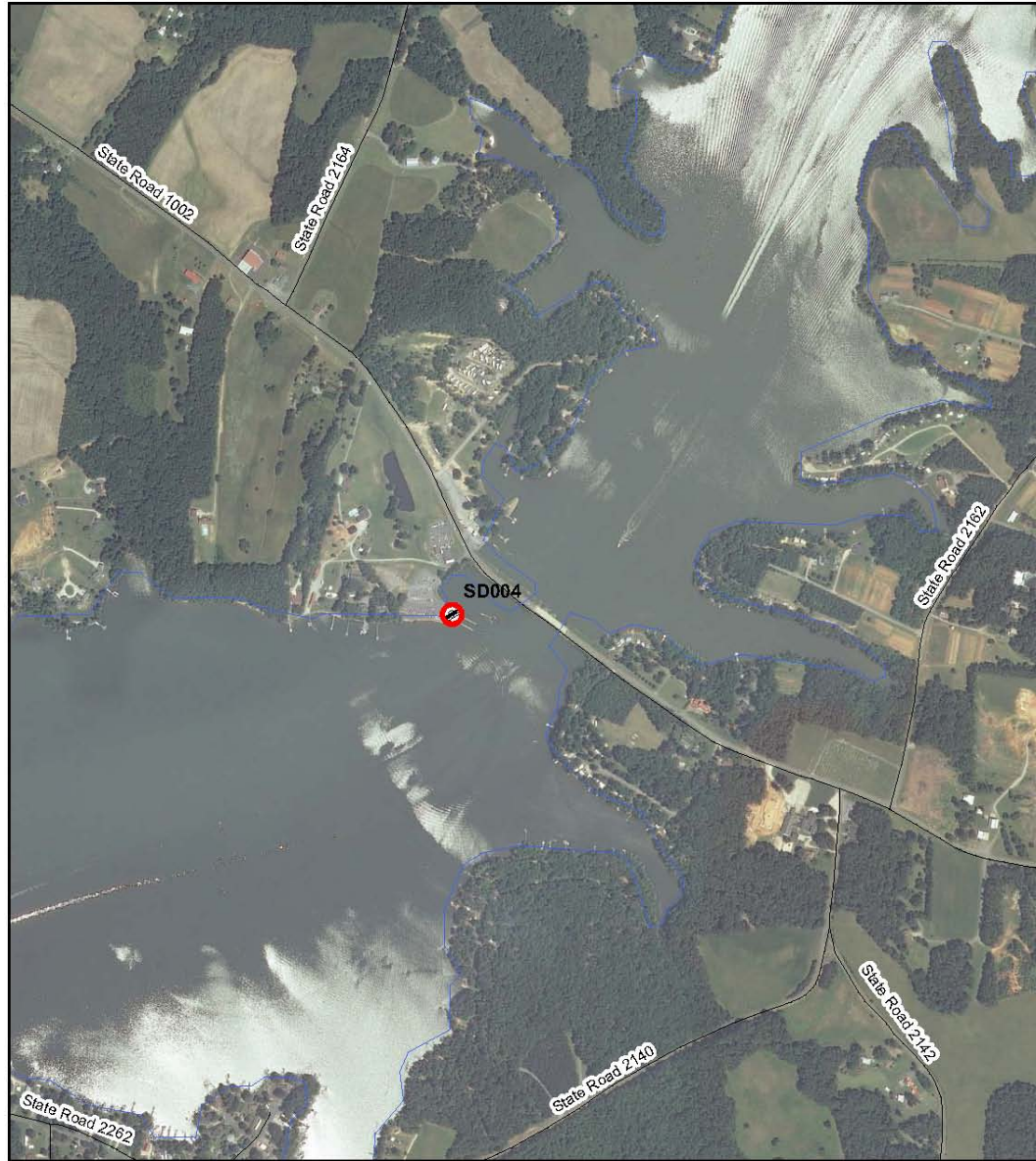
North American Datum 1983  
NC State Plan FIPS 3200


Map Created by:  
NC Division of Waste Management, Site Evaluation and Removal Branch; G/S  
Map Created on: 31<sup>st</sup> March, 2011


Department of Environment and Natural Resources, Division of Waste Management,  
Waste Management Services Section, 100 North Salisbury Street, Raleigh, NC 27601  
© 2011, NC OneMap, NC Center for Geographic Information and Analysis



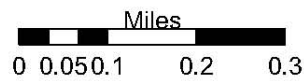
SESD Project ID No.: 11-0321  
SESD Category 3 QAPP



 Surface Water Intake

 Boat Access

 Sample Locations

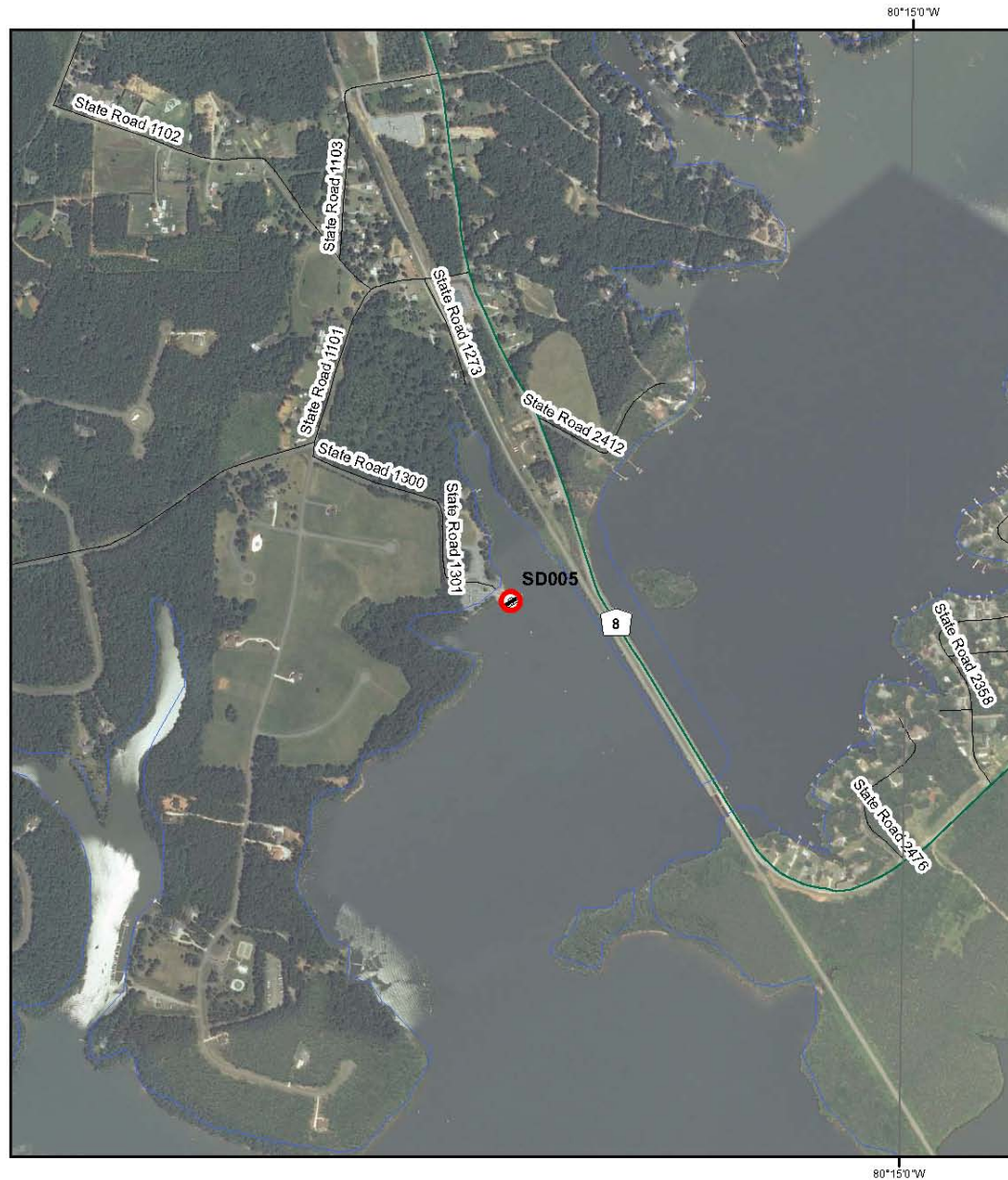





North American Datum 1983  
NC State Plan FIPS 3200

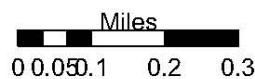
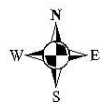
Map Created by



SESD Project ID No.: 11-0321  
SESD Category 3 QAPP



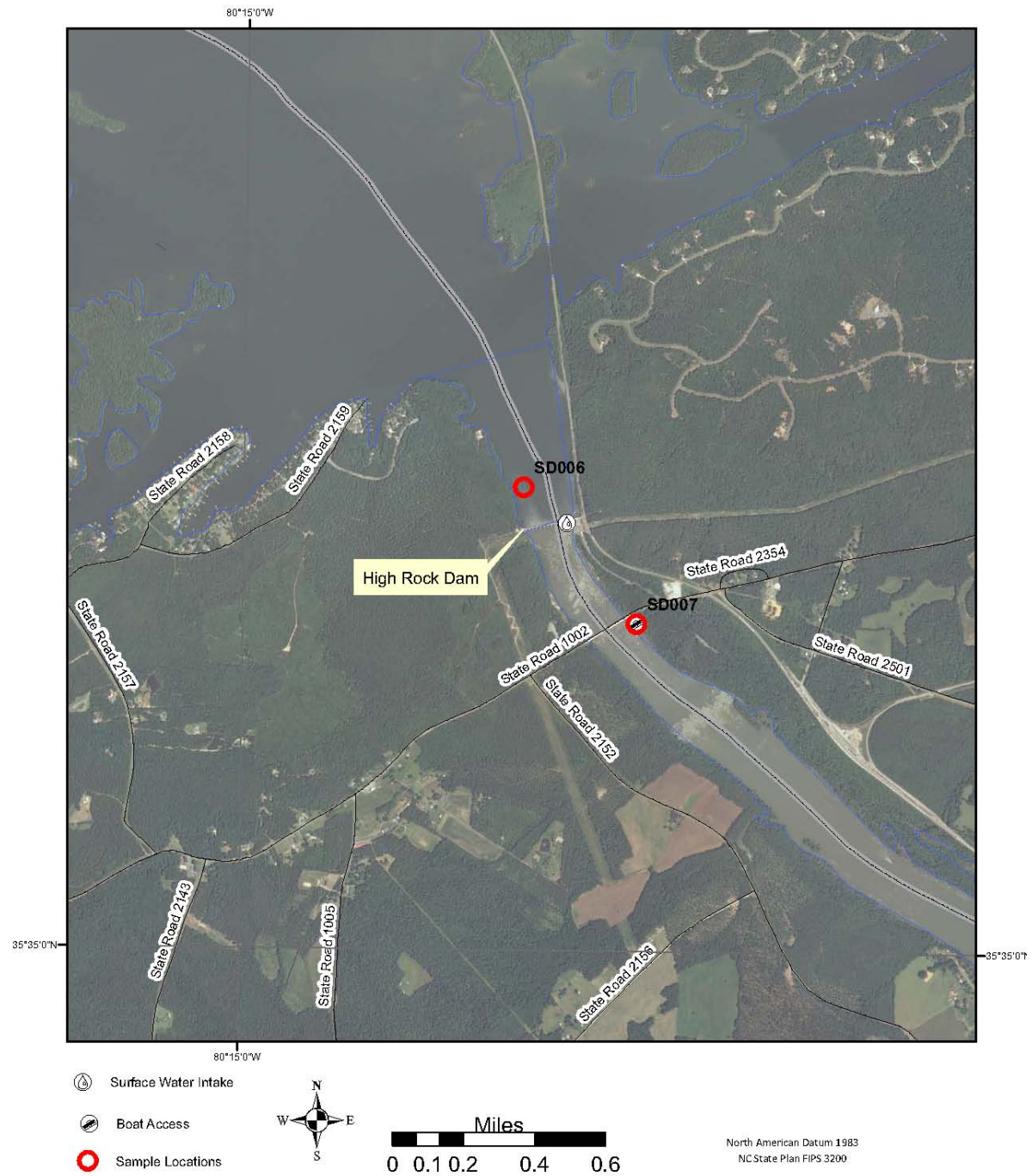
-  Surface Water Intake
-  Boat Access
-  Sample Locations



North American Datum 1983  
NC State Plan FIPS 3200

Map Created by:

SESD Project ID No.: 11-0321  
SESD Category 3 QAPP

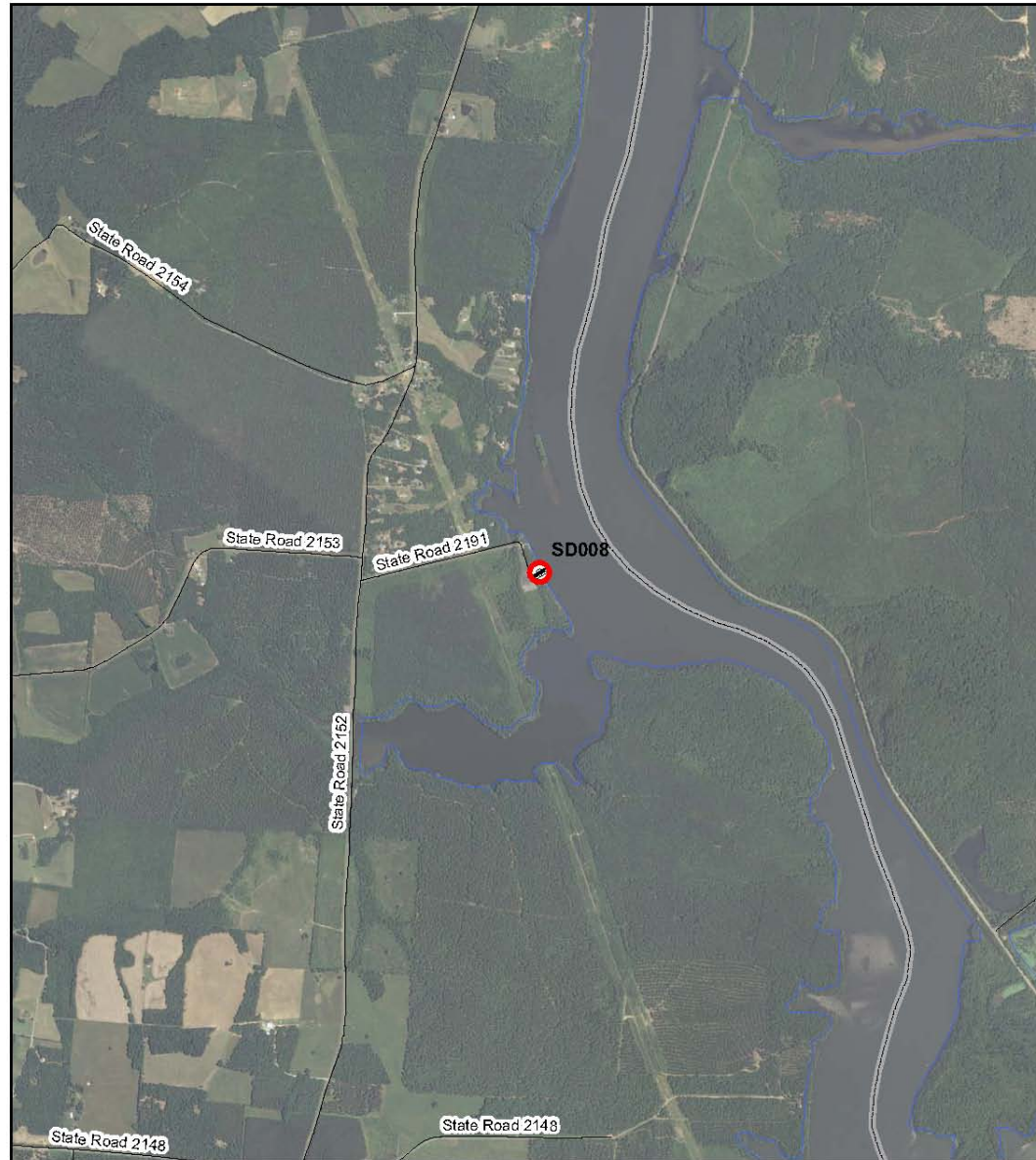


North American Datum 1983  
NC State Plan FIPS 3200

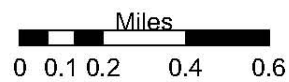
Map Created by:



SESD Project ID No.: 11-0321  
SESD Category 3 QAPP



- Ⓐ Surface Water Intake
- Ⓢ Boat Access
- Ⓢ Sample Locations





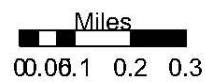
North American Datum 1983  
NC State Plan FIPS 3200

SESD Project ID No.: 11-0321  
SESD Category 3 QAPP

College Station Road  
Athens, GA 30605



-  Surface Water Intake
-  Boat Access
-  Sample Locations

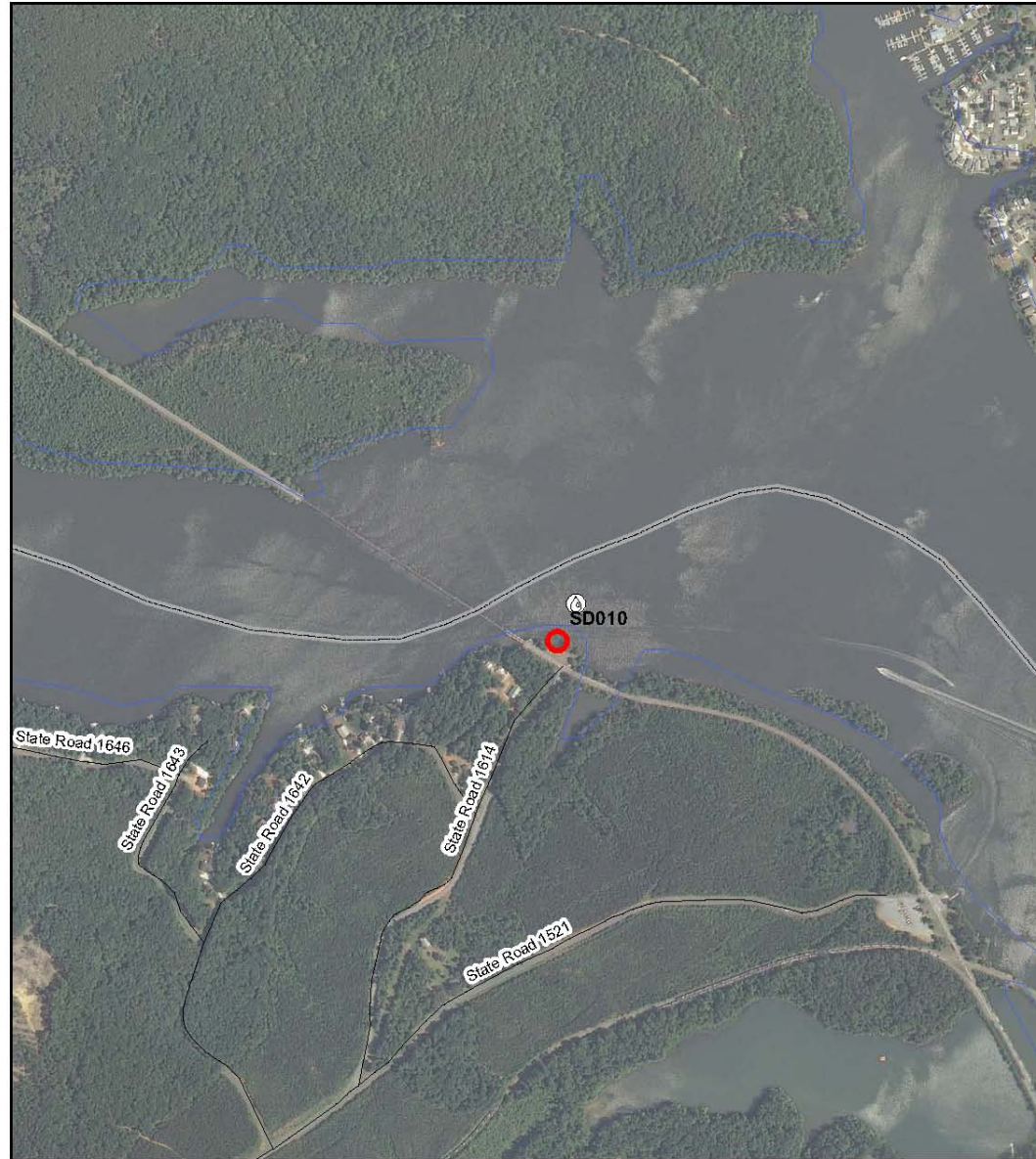





North American Datum 1983  
NC State Plan FIPS 3200

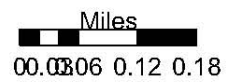


SESD Project ID No.: 11-0321  
SESD Category 3 QAPP

College Station Road  
Athens, GA 30605



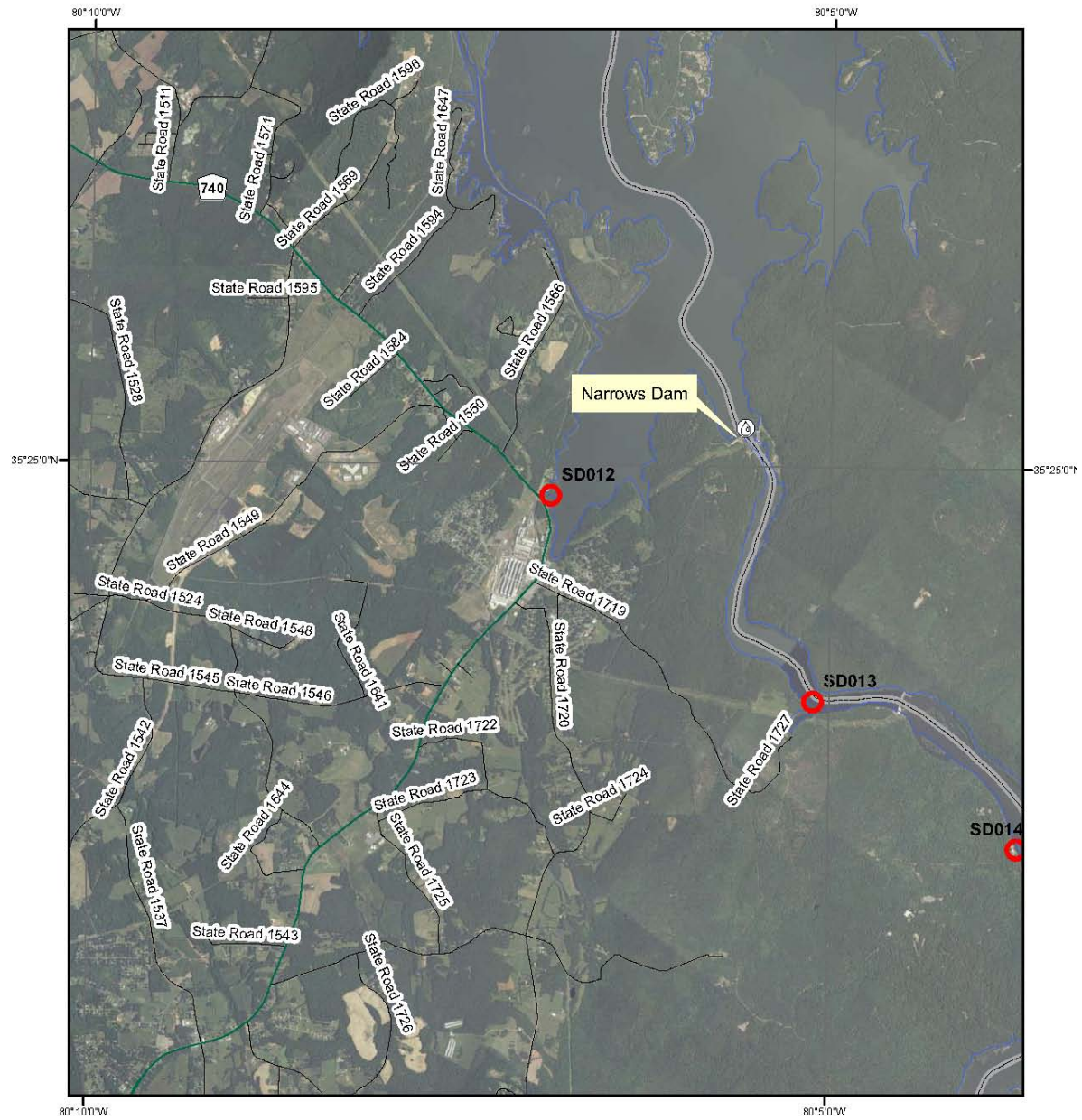
-  Surface Water Intake
-  Boat Access
-  Sample Locations



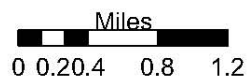
North American Datum 1983  
NC State Plan FIPS 3200



SESD Project ID No.: 11-0321  
SESD Category 3 QAPP



- Surface Water Intake
- Boat Access
- Sample Locations



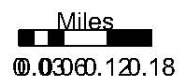
North American Datum 1983  
NC State Plan FIPS 3200

SESD Project ID No.: 11-0321  
SESD Category 3 QAPP

College Station Road  
Athens, GA 30605



-  Surface Water Intake
-  Boat Access
-  Sample Locations

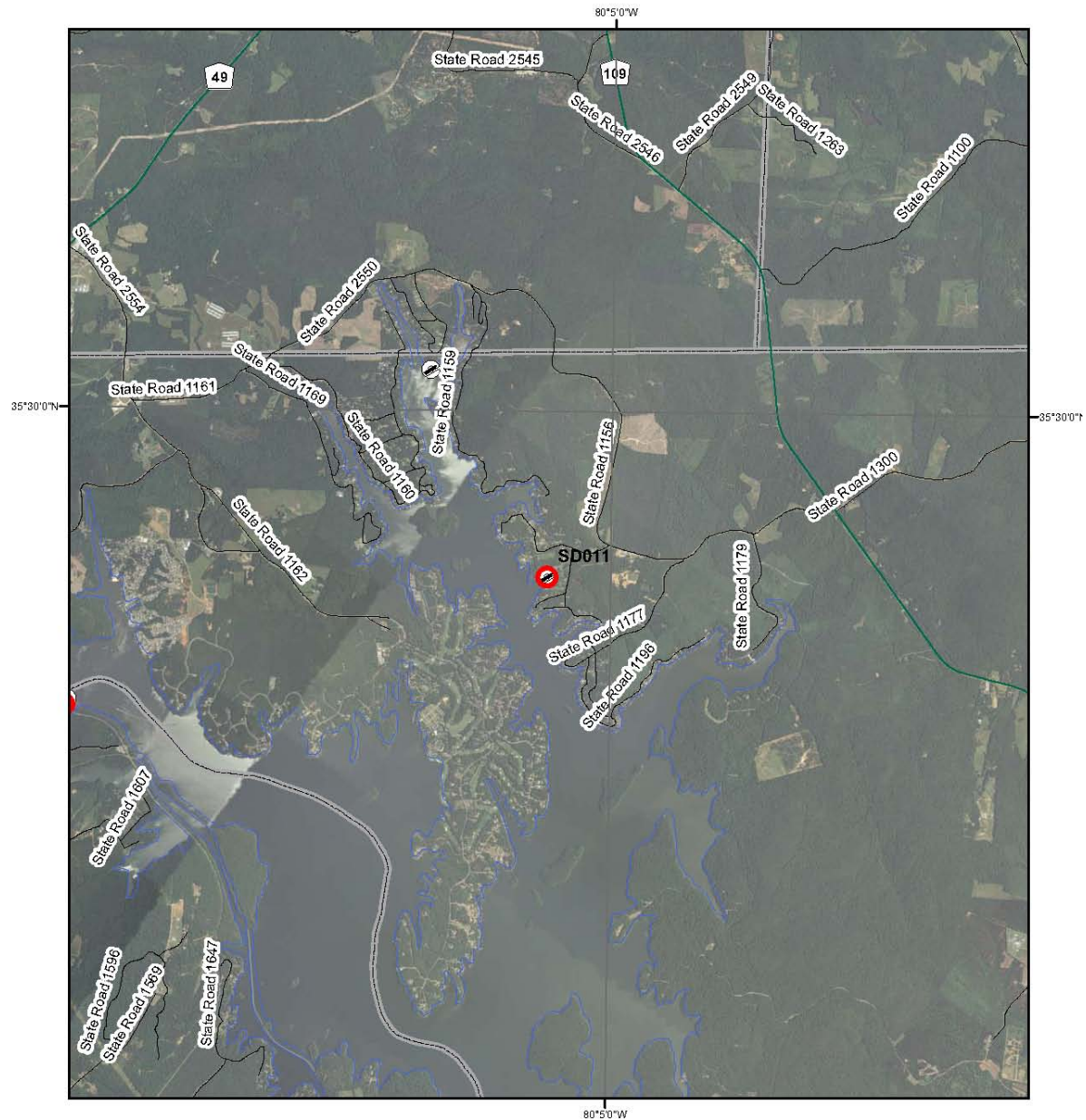


North American Datum 1983  
NC State Plan FIPS 3200

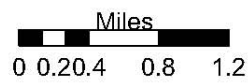
Map Created by



SESD Project ID No.: 11-0321  
SESD Category 3 QAPP



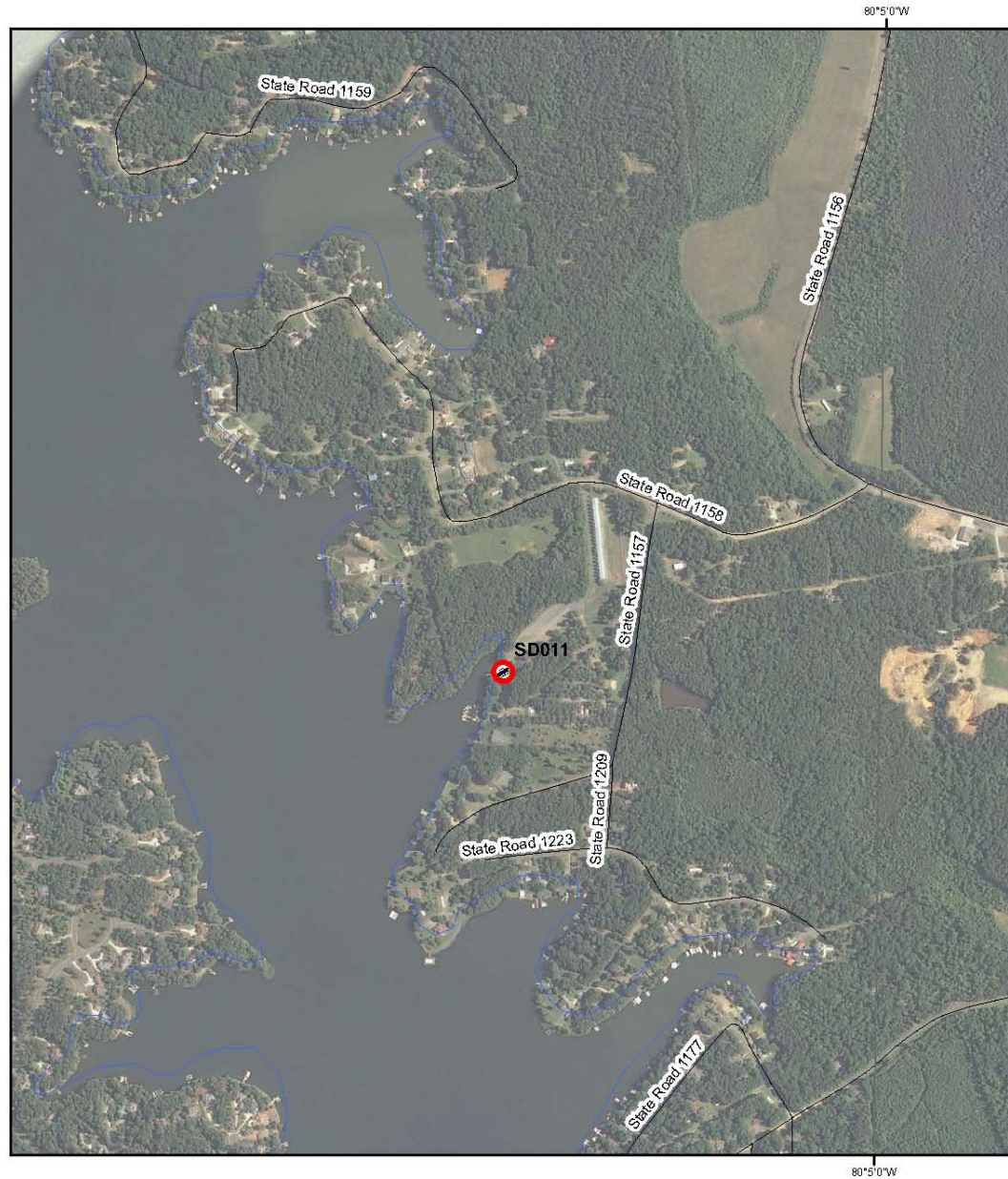
-  Surface Water Intake
-  Boat Access
-  Sample Locations






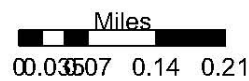
North American Datum 1983  
NC State Plan FIPS 3200

Map Created by:

SESD Project ID No.: 11-0321  
SESD Category 3 QAPP



-  Surface Water Intake
-  Boat Access
-  Sample Locations



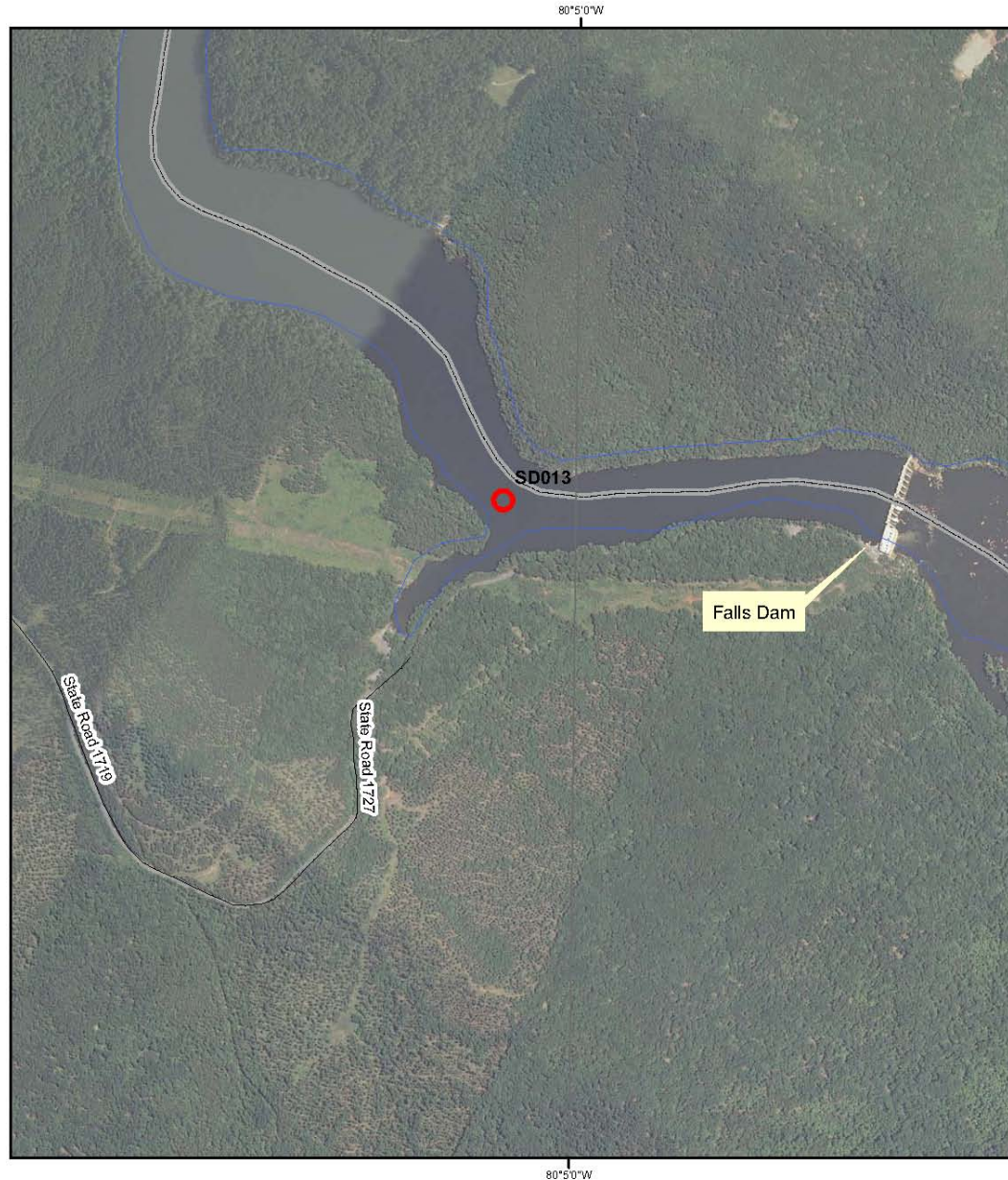
North American Datum 1983  
NC State Plan FIPS 3200




Map Created by

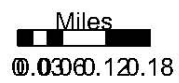


SESD Project ID No.: 11-0321  
SESD Category 3 QAPP

College Station Road  
Athens, GA 30605



-  Surface Water Intake
-  Boat Access
-  Sample Locations

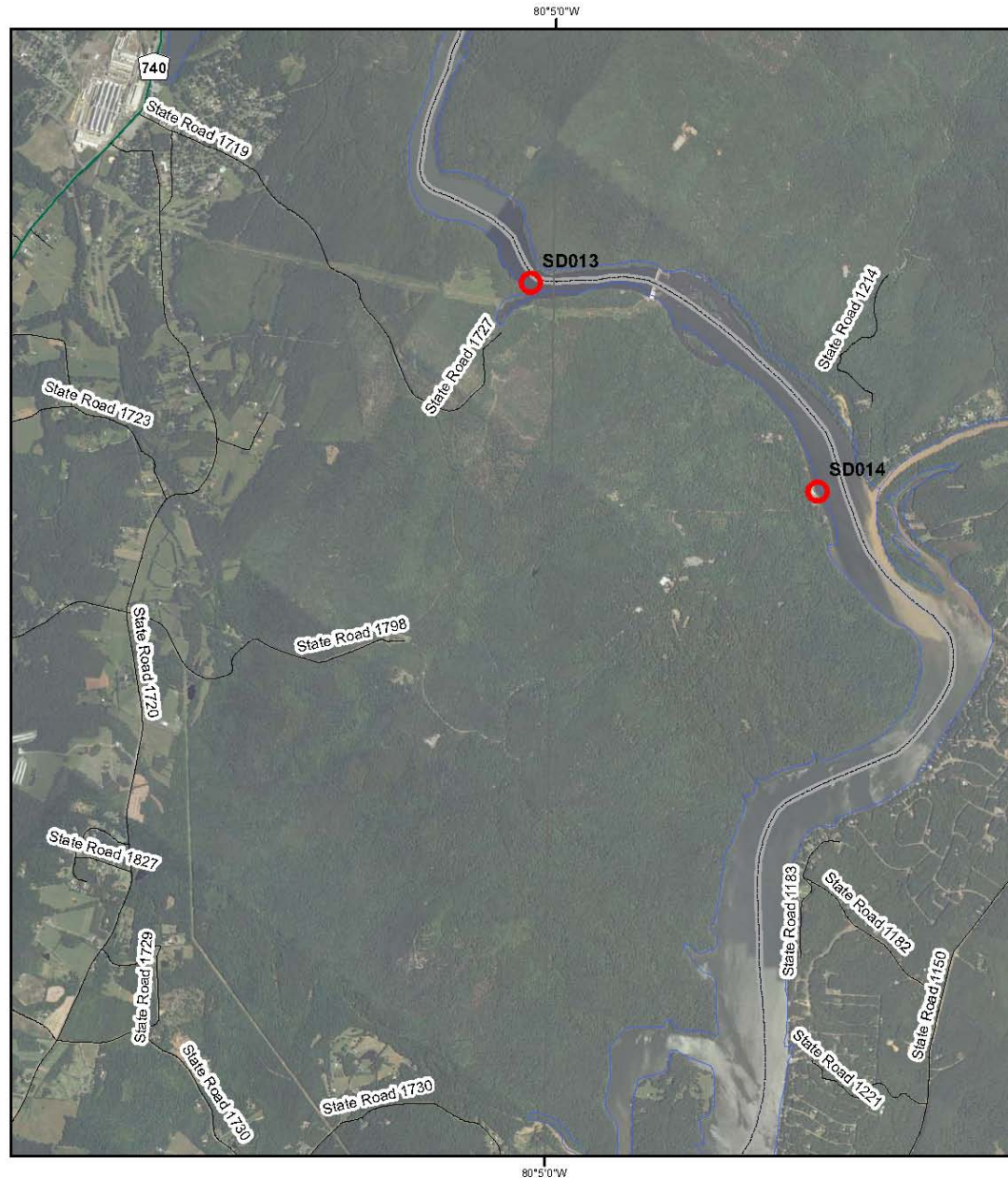



North American Datum 1983  
NC State Plan FIPS 3200

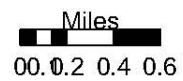
Map Created by



SESD Project ID No.: 11-0321  
SESD Category 3 QAPP

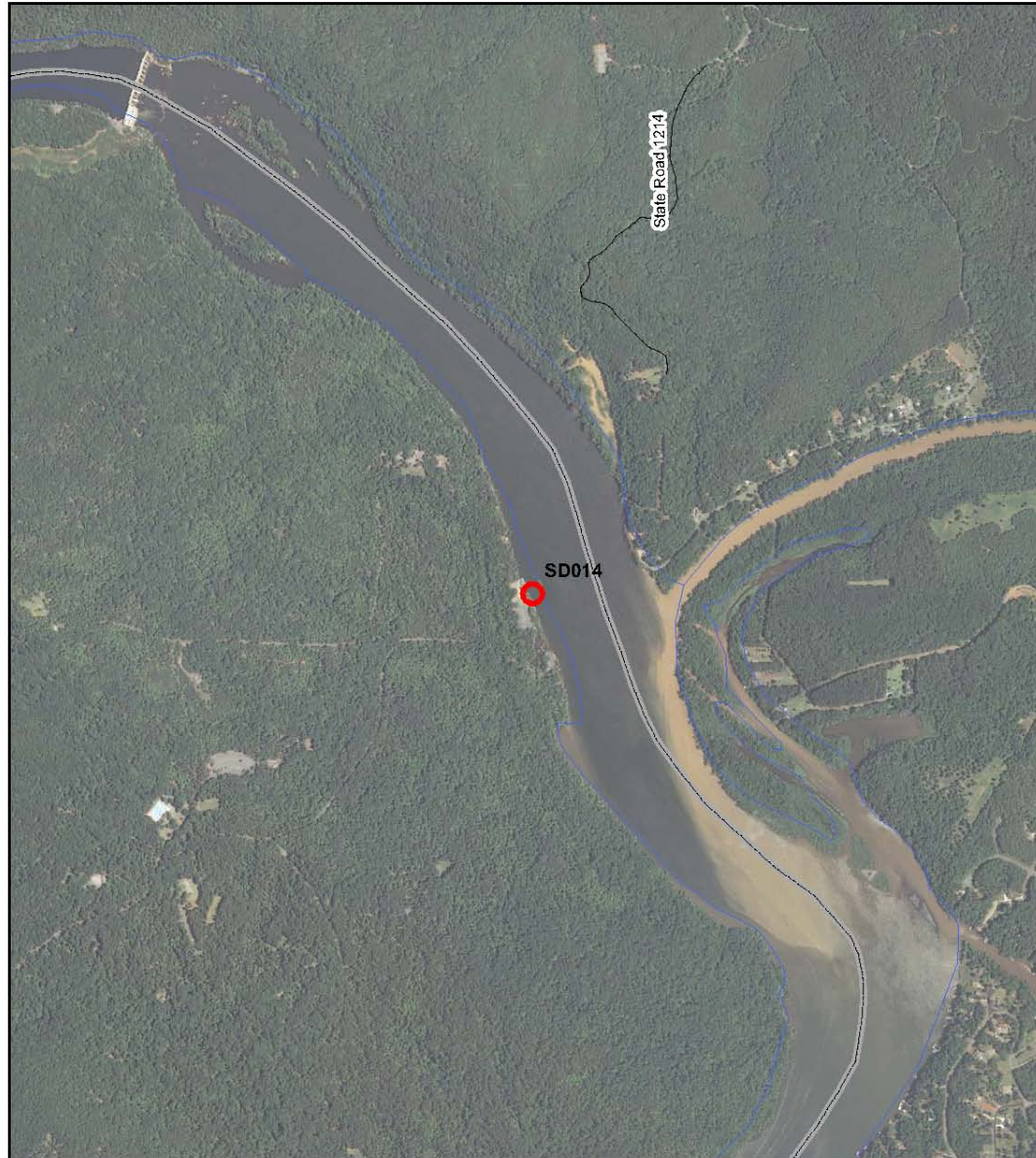


-  Surface Water Intake
-  Boat Access
-  Sample Locations

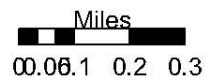
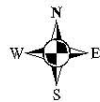


North American Datum 1983  
NC State Plan FIPS 3200

SESD Project ID No.: 11-0321  
SESD Category 3 QAPP



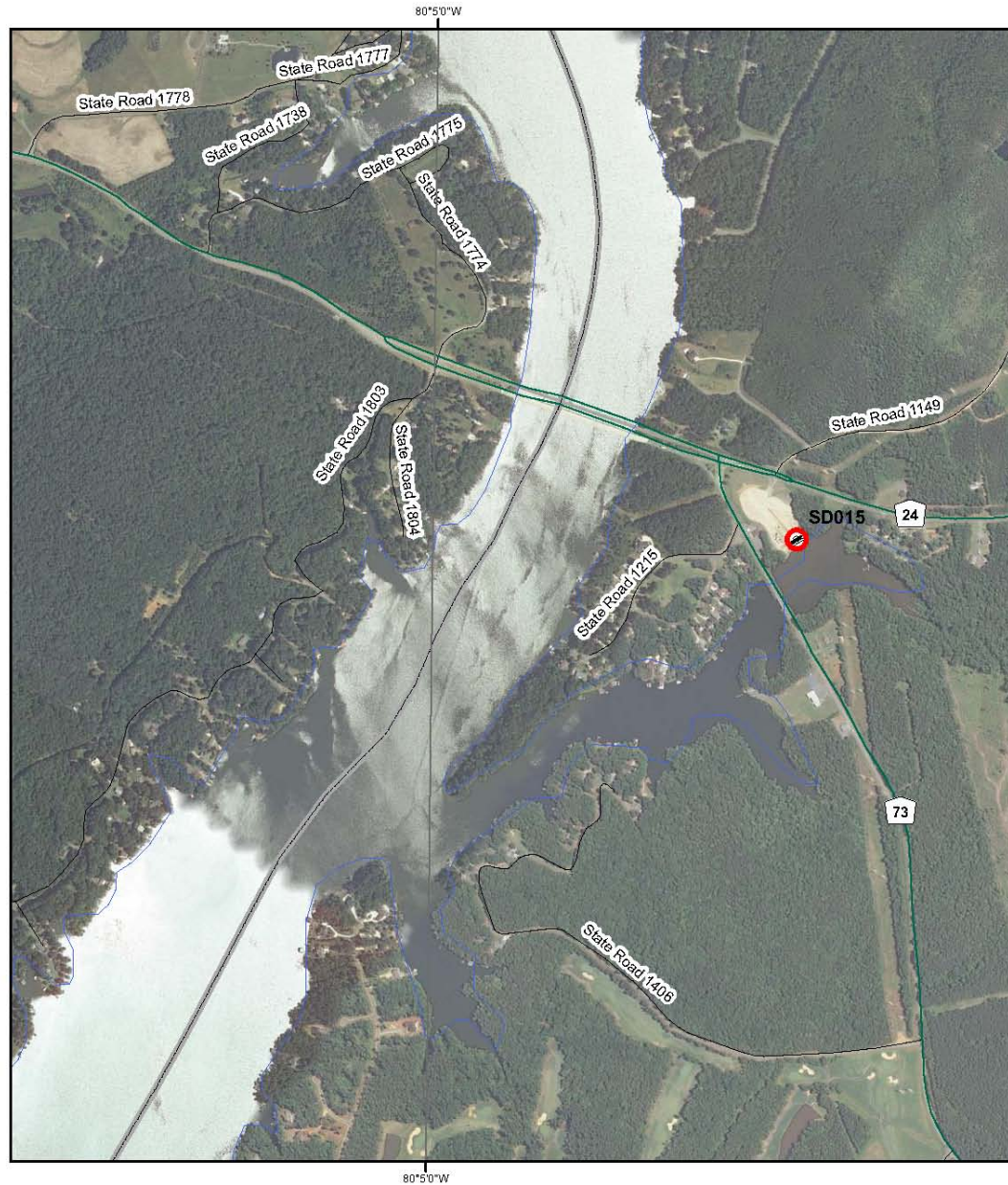
-  Surface Water Intake
-  Boat Access
-  Sample Locations






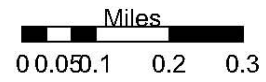
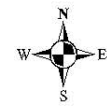
North American Datum 1983  
NC State Plan FIPS 3200



SESD Project ID No.: 11-0321  
SESD Category 3 QAPP



-  Surface Water Intake
-  Boat Access
-  Sample Locations



North American Datum 1983  
NC State Plan FIPS 3200

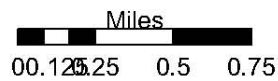
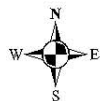
SESD Project ID No.: 11-0321  
SESD Category 3 QAPP



Surface Water Intake

Boat Access

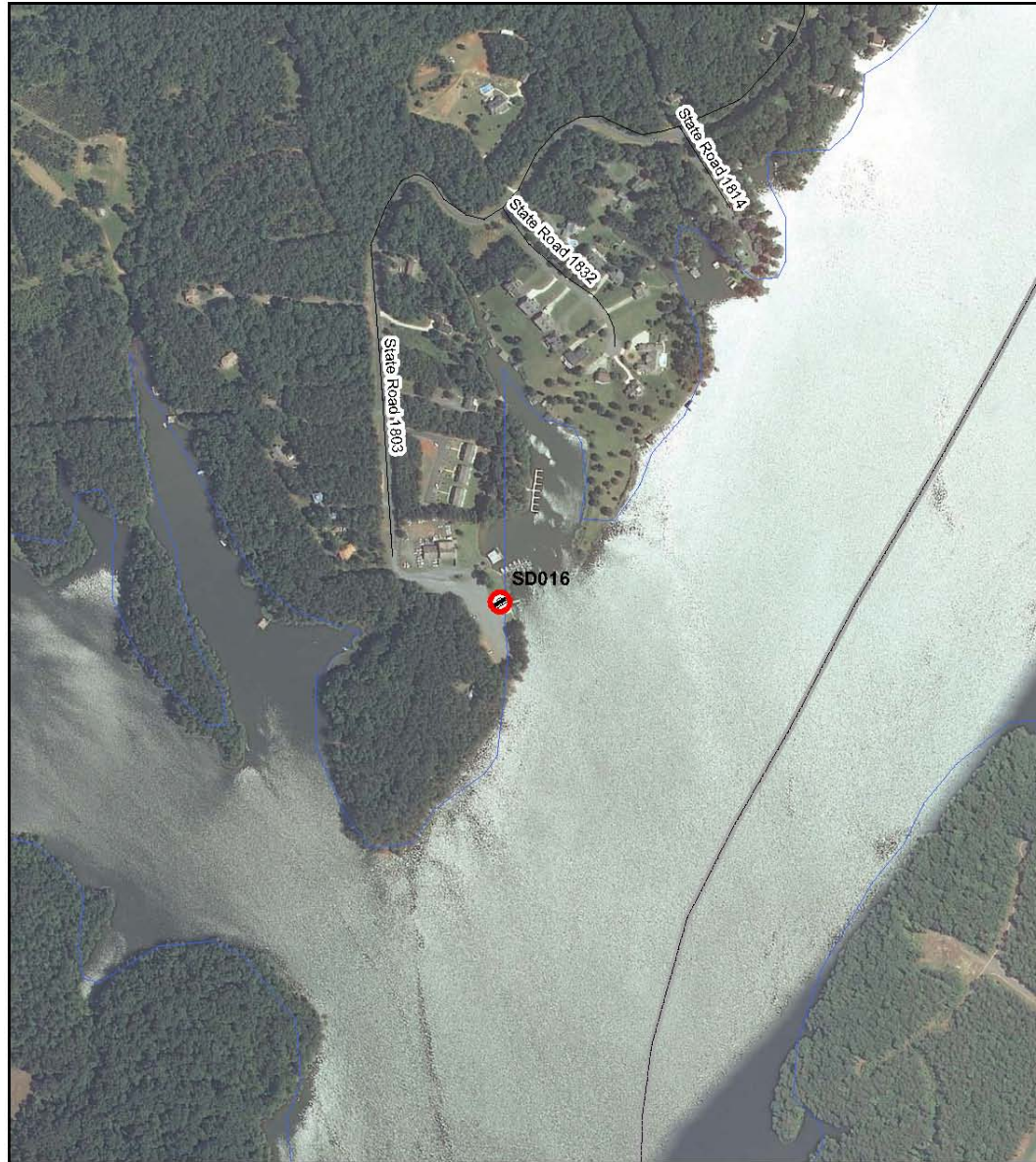
Sample Locations





North American Datum 1983  
NC State Plan FIPS 3200



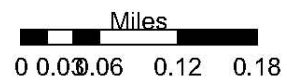
SESD Project ID No.: 11-0321  
SESD Category 3 QAPP



 Surface Water Intake

 Boat Access

 Sample Locations

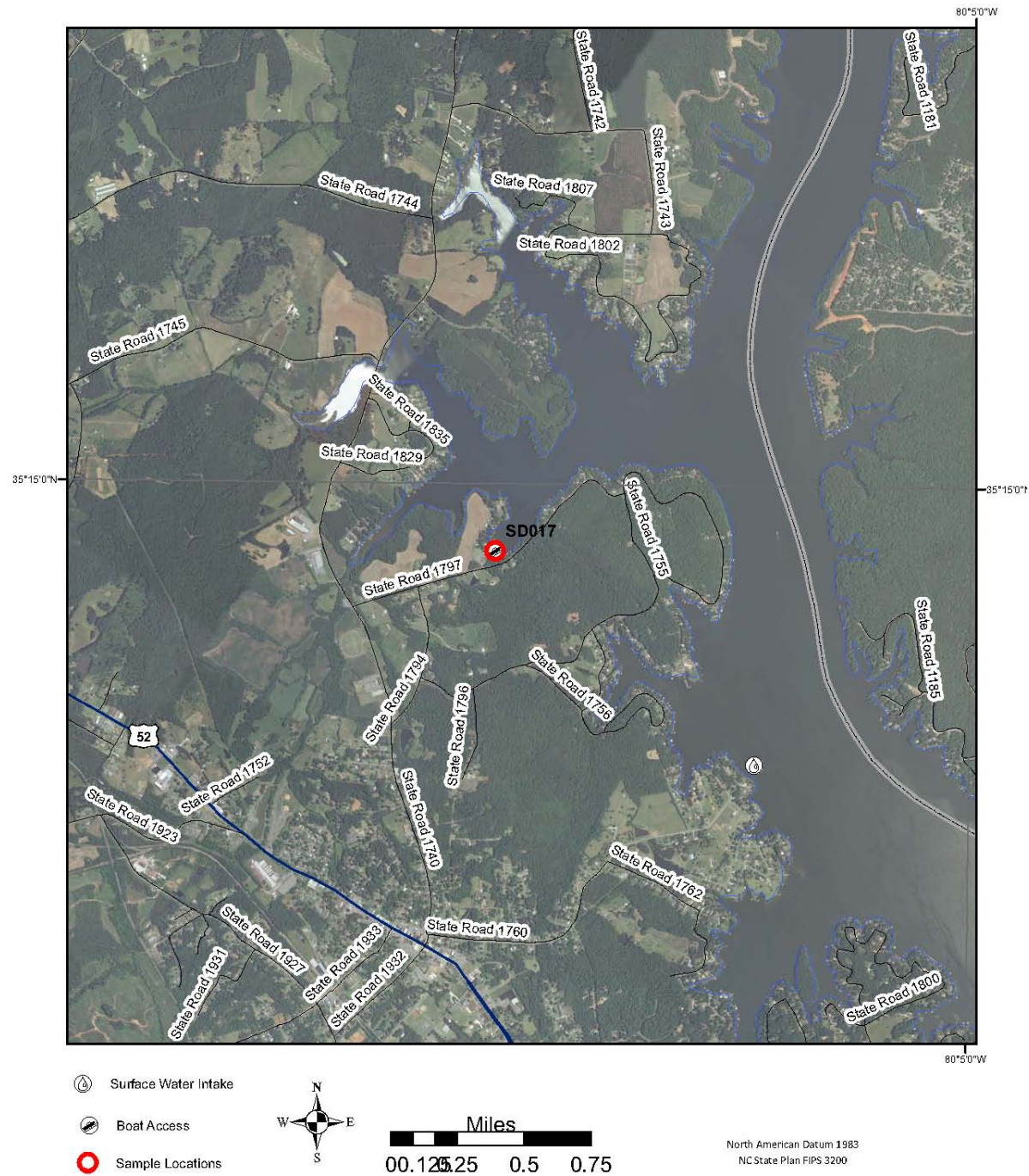


North American Datum 1983  
NC State Plan FIPS 3200

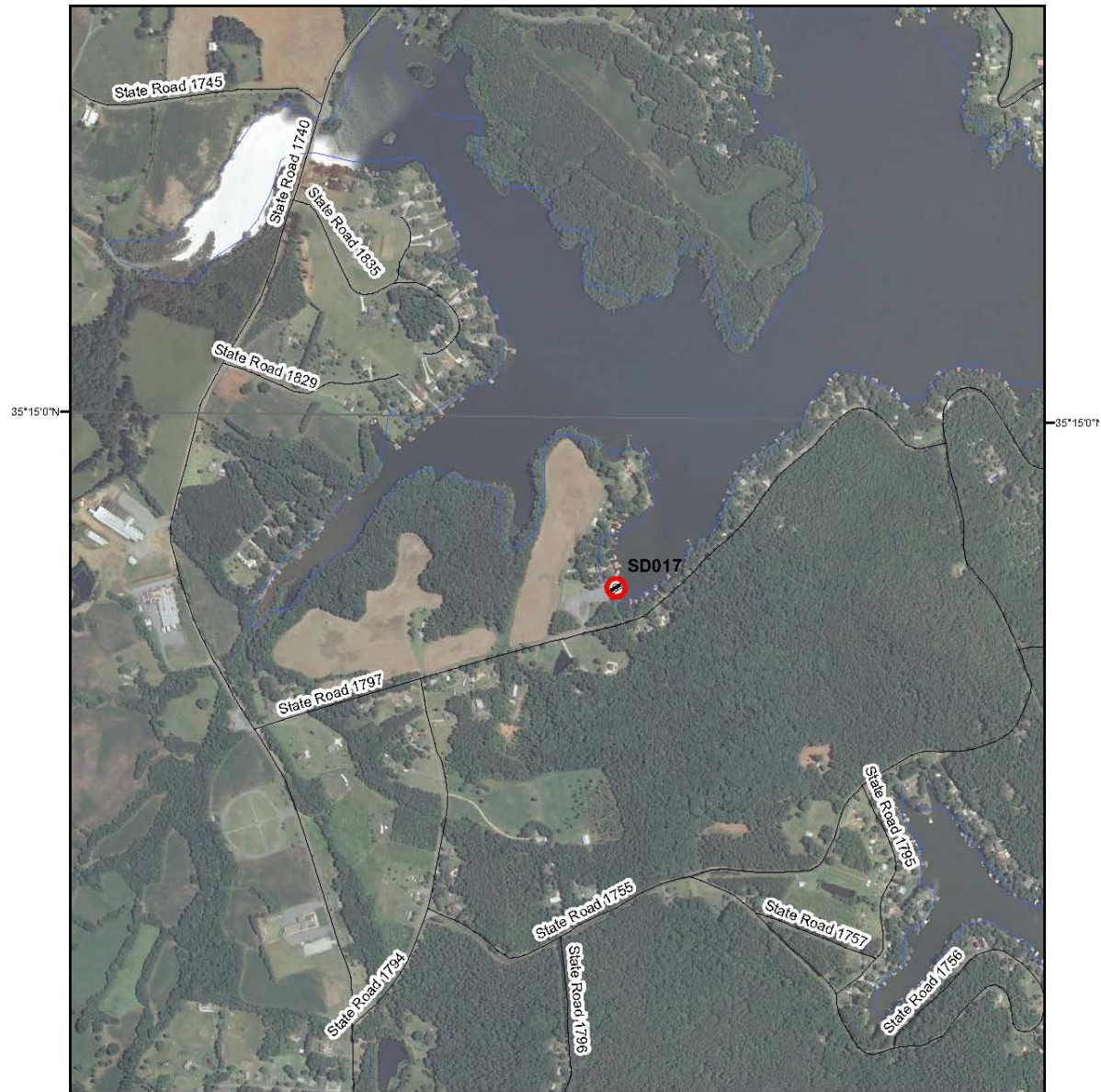


SESD Project ID No.: 11-0321  
SESD Category 3 QAPP

College Station Road  
Athens, GA 30605



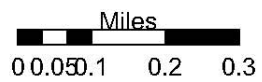
SESD Project ID No.: 11-0321  
SESD Category 3 QAPP



Surface Water Intake

Boat Access

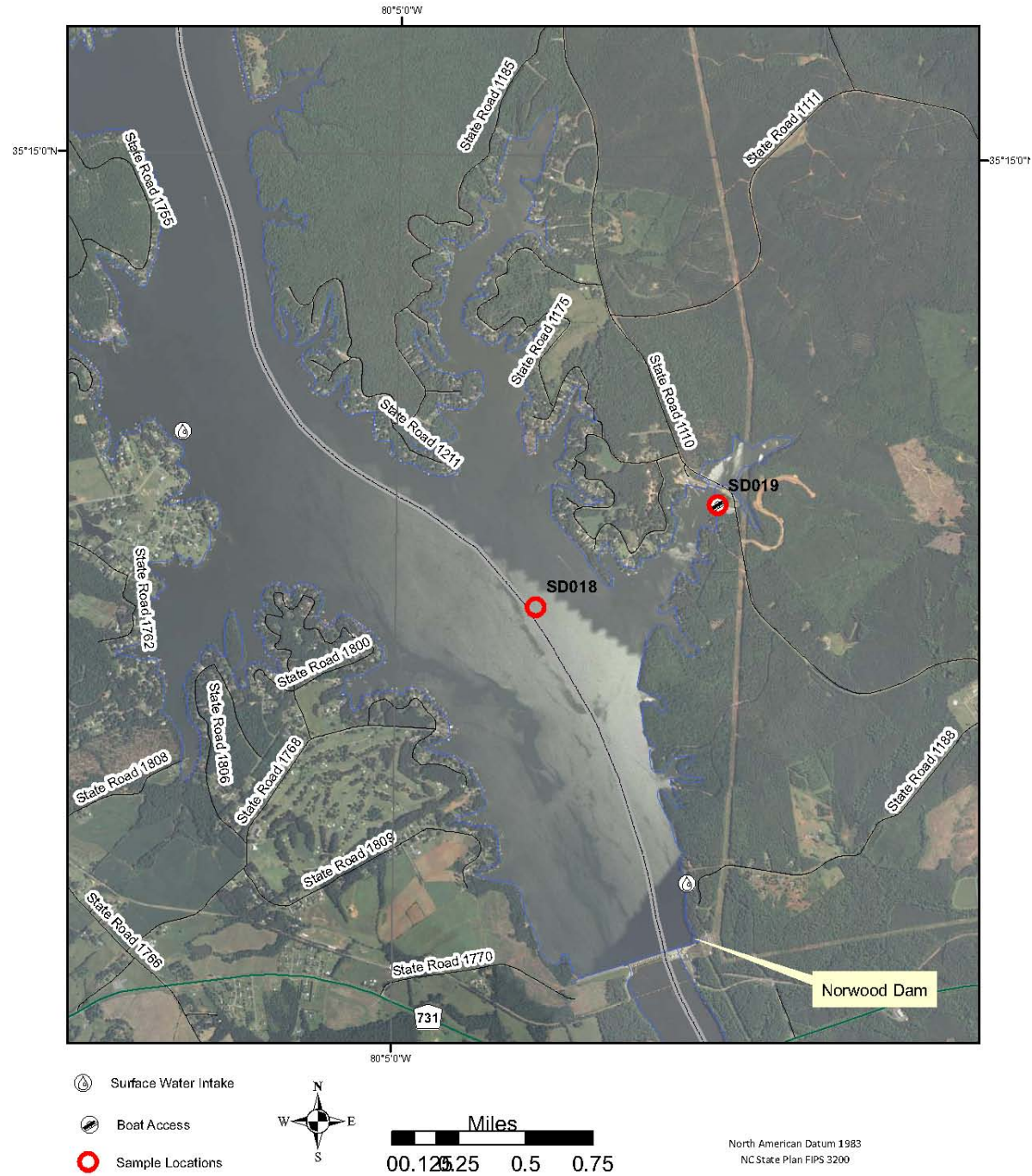
Sample Locations



North American Datum 1983  
NC State Plan FIPS 3200

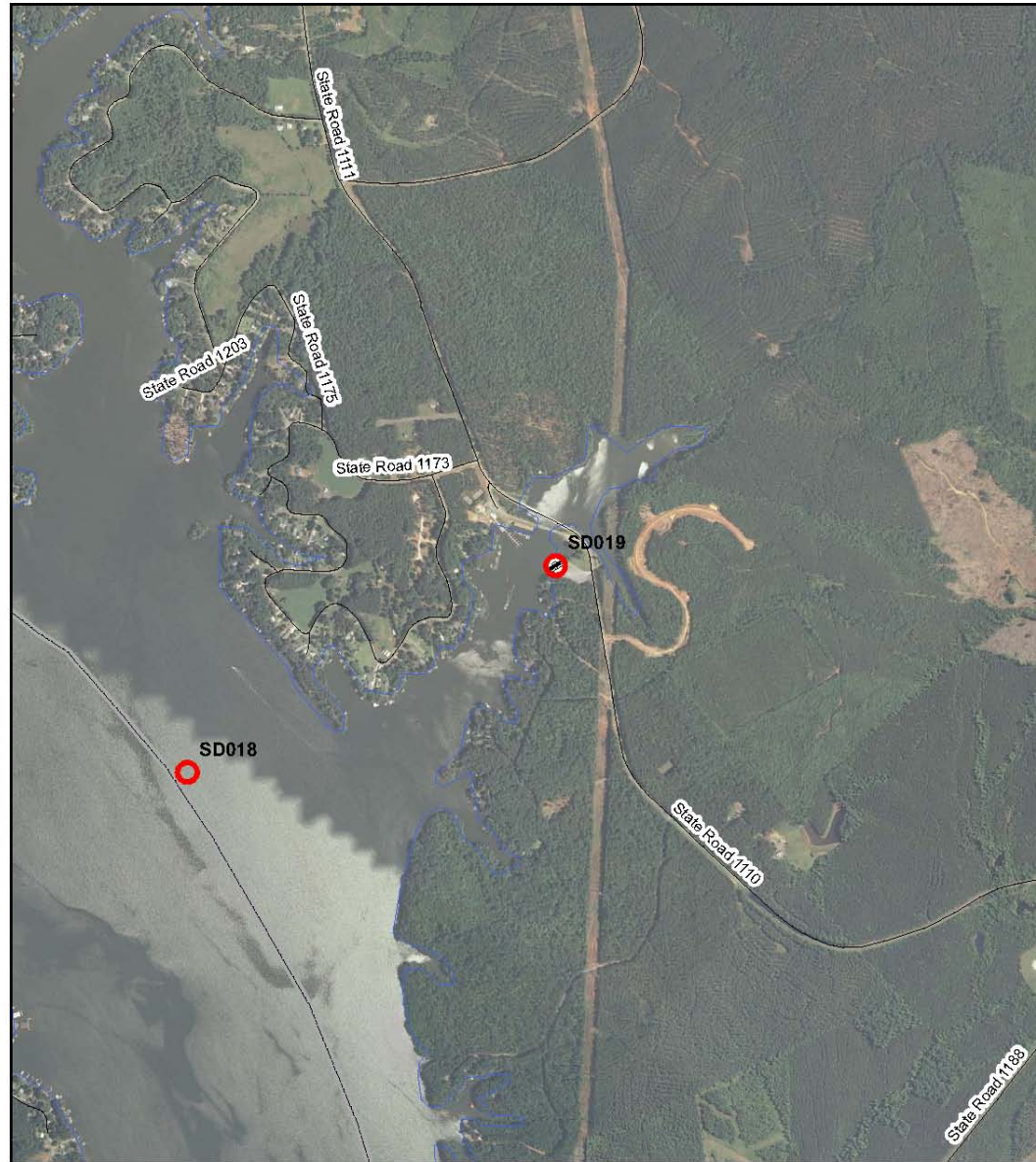





SESD Project ID No.: 11-0321  
SESD Category 3 QAPP

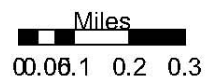




SESD Project ID No.: 11-0321  
SESD Category 3 QAPP



-  Surface Water Intake
-  Boat Access
-  Sample Locations






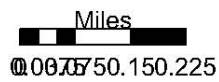
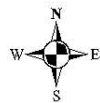
North American Datum 1983  
NC State Plan FIPS 3200

SESD Project ID No.: 11-0321  
SESD Category 3 QAPP

300 College Station Road  
Athens, GA 30605



-  Surface Water Intake
-  Boat Access
-  Sample Locations



North American Datum 1983  
NC State Plan FIPS 3200