



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SAVANNAH DISTRICT
100 WEST OGLETHORPE AVENUE
SAVANNAH, GEORGIA 31401-3604

September 7, 2018

Regulatory Branch
SAS-2001-04600
Formerly SAS-2003-00306

JOINT PUBLIC NOTICE
Savannah District/State of Georgia

The Savannah District has received an application for a Department of the Army permit, pursuant to Section 404 of the Clean Water Act (33 U.S.C § 1344), as follows:

Application Number: SAS-2001-04600 (Previously advertised under 2003-00306)

Applicant: Mr. Gilbert Shearouse, Executive Director, Douglasville-Douglas County Water and Sewer Authority, 8763 Hospital Drive, Douglasville, Georgia 30134

Agents: R.J. Wood and Company, Civil and Environmental Consulting Engineers, 652 Arlington Place, Macon, Georgia 31201; and Nelson Environmental, 7380 Spout Springs Road, Suite 210-215, Flowery Branch, Georgia 30542.

Location of Proposed Work: The Dog River Reservoir is located in the southwestern portion of Douglas County on Dog River, with the dam approximately 900' upstream from the confluence of the Chattahoochee River and Dog River, Douglas County, Georgia (Latitude 33.6068, Longitude -84.7881).

Description of Work Subject to the Jurisdiction of the U.S. Army Corps of Engineers: The preferred alternative would include raising the earthen dam, a new reservoir intake pump station, a new labyrinth spillway, an improved access road, earthen borrow areas, relocation of the recreation area, and the increased water surface elevation resulting in the estimated filling and flooding of 12 wetlands (17.4 acres), eight ephemeral streams (0.09 acres), 29 perennial streams (23,238 linear feet), and 24 intermittent streams (4,761 linear feet). The project is hydrologically connected to the Chattahoochee River. The compensatory mitigation proposed in the application used the Savannah District 2004 Mitigation SOP; credits required for any authorized impacts to aquatic resources will be calculated using the current mitigation SOP, implemented in May 2018. See Table 4 enclosure for credit calculations proposed by the applicant.

BACKGROUND

The Douglasville-Douglas County Water and Sewer Authority owns and operates a 232 acre reservoir on Dog River to provide raw water to the Authority's Bear Creek Water Treatment Plant. The Dog River Reservoir, in conjunction with the Bear Creek Water

Treatment Plant, serves as the Authority's water supply for the water system, which includes both Douglas County and the City of Douglasville. Both the Dog River Reservoir and Bear Creek Water Treatment Plant are permitted for 23.0 million gallons per day withdrawal and treatment capacity per Georgia Environmental Protection Division by permit. The existing Dog River reservoir full water surface elevation is 760' elevation MSL (Mean Sea Level) and contains a raw water storage volume of 1.9 billion gallons of water at this full pool elevation. The initial Dog River Reservoir was originally constructed in 1993 at water surface elevation of 750' USGS, with a raw water storage volume of 1.2 billion gallons, to yield a Georgia EPD permitted withdrawal of 16.0 MGD. The water level of this Reservoir was raised to water surface elevation of 760' USGS (increase of 10' in height) to provide a total storage of 1.9 billion gallons, in order to provide a Georgia EPD permitted withdrawal yield of 23.0 MGD.

This Joint Public Notice announces a request for authorizations from both the Corps and the State of Georgia. The applicant's proposed work may also require local governmental approval.

STATE OF GEORGIA

Water Quality Certification: The Georgia Department of Natural Resources, Environmental Protection Division, intends to certify this project at the end of 30 days in accordance with the provisions of Section 401 of the Clean Water Act, which is required for a Federal Permit to conduct activity in, on, or adjacent to the waters of the State of Georgia. Copies of the application and supporting documents relative to a specific application will be available for review and copying at the office of the Georgia Department of Natural Resources, Environmental Protection Division, Water Protection Branch, 2 Martin Luther King, Jr. Drive, Atlanta, Georgia 30334, during regular office hours. A copier machine is available for public use at a charge of 25 cents per page. Any person who desires to comment, object, or request a public hearing relative to State Water Quality Certification must do so within 30 days of the State's receipt of application in writing and state the reasons or basis of objections or request for a hearing. The application can be reviewed in the Savannah District, U.S. Army Corps of Engineers, Regulatory Branch, Albany Field Office, 1104 North Westover Boulevard, Suite 9, Albany, Georgia 31707; or the Piedmont Field Office, 1590 Adamson Parkway, Suite 200, Morrow, Georgia, 30260.

State-owned Property and Resources: The applicant may also require assent from the State of Georgia, which may be in the form of a license, easement, lease, permit or other appropriate instrument.

U.S. ARMY CORPS OF ENGINEERS

The Savannah District must consider the purpose and the impacts of the applicant's proposed work, prior to a decision on issuance of a Department of the Army permit.

Cultural Resources Assessment: In compliance with Section 106 of the National Historic Preservation Act of 1966 and amendments thereto, an analysis for archaeological and historic resources was conducted. R. J. Wood and Company retained R. S. Webb and Associates to conduct a Phase I Cultural Resources Survey of the proposed Dog River Reservoir expansion project consisting of approximately 818 acres. This report will be coordinated with the State Historic Preservation Office.

The Corps has NOT made a determination of no effect, no adverse effect, or adverse effect to archaeological or historical resources listed or eligible for listing in the NRHP.

Endangered Species: Extensive Threatened and Endangered species surveys were conducted for the project area, and consultation with the US Fish and Wildlife service may be required.

The Corps has NOT made a determination with regard to the potential effects to any listed threatened or endangered species.

Pursuant to Section 7(c) of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 et seq.), we request information from the U.S. Department of the Interior, Fish and Wildlife Service, the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service; or, any other interested party, on whether any species listed or proposed for listing may be present in the area and the potential effects this project may have on those species.

Public Interest Review: The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors, which may be relevant to the proposal will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and in general, the needs and welfare of the people.

Consideration of Public Comments: The Corps is soliciting comments from the public; federal, state, and local agencies and officials; Native American Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or

an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Application of Section 404(b)(1) Guidelines: The proposed activity involves the discharge of dredged or fill material into the waters of the United States. The Savannah District's evaluation of the impact of the activity on the public interest will include application of the guidelines promulgated by the Administrator, Environmental Protection Agency, under the authority of Section 404(b) of the Clean Water Act.

Public Hearing: Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application for a Department of the Army permit. Requests for public hearings shall state, with particularity, the reasons for requesting a public hearing. The decision whether to hold a public hearing is at the discretion of the District Engineer, or his designated appointee, based on the need for additional substantial information necessary in evaluating the proposed project.

Comment Period: Anyone wishing to comment on this application for a Department of the Army permit should submit comments in writing to the Commander, U.S. Army Corps of Engineers, Savannah District, Attention: Ms. Holly Ross, 1104 North Westover Boulevard, Suite 9, Albany, Georgia, 31707, no later than 30 days from the date of this notice. Please refer to the applicant's name and the application number in your comments.

If you have any further questions concerning this matter, please contact Ms. Holly Ross, Project Manager, Albany Field Office at 678-422-2727 or via email at holly.a.ross@usace.army.mil.

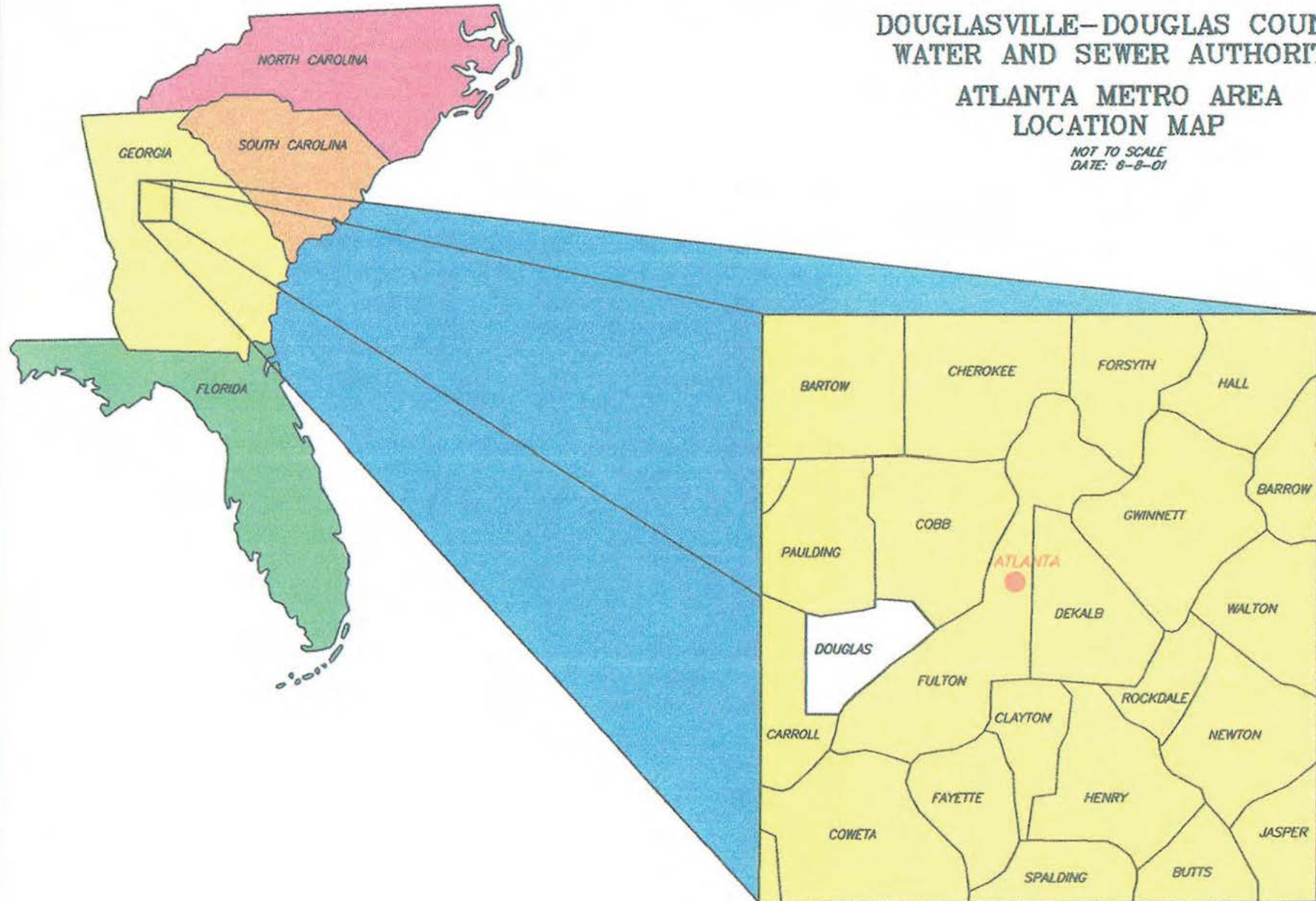
Enclosures:

1. Figures 1 – 3 Location Mapping
2. Alternatives (12 pages)
3. Table 3: Property Area Impacted for Options I and II
4. Table 4: Applicant proposed mitigation for the preferred alternative
5. Aerial map showing preferred alternative and alternative reservoir location
6. Overview of preferred alternative with property parcels

DOUGLASVILLE-DOUGLAS COUNTY
WATER AND SEWER AUTHORITY

ATLANTA METRO AREA
LOCATION MAP

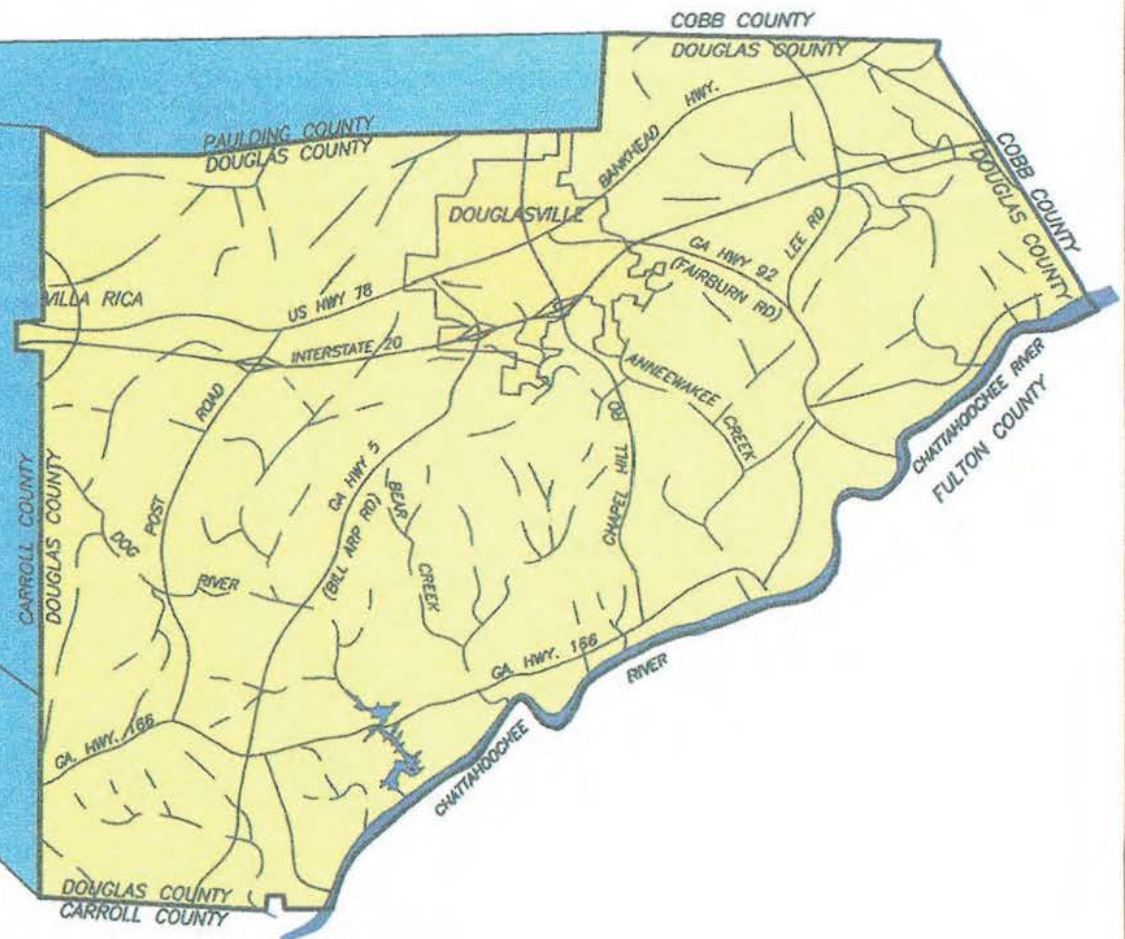
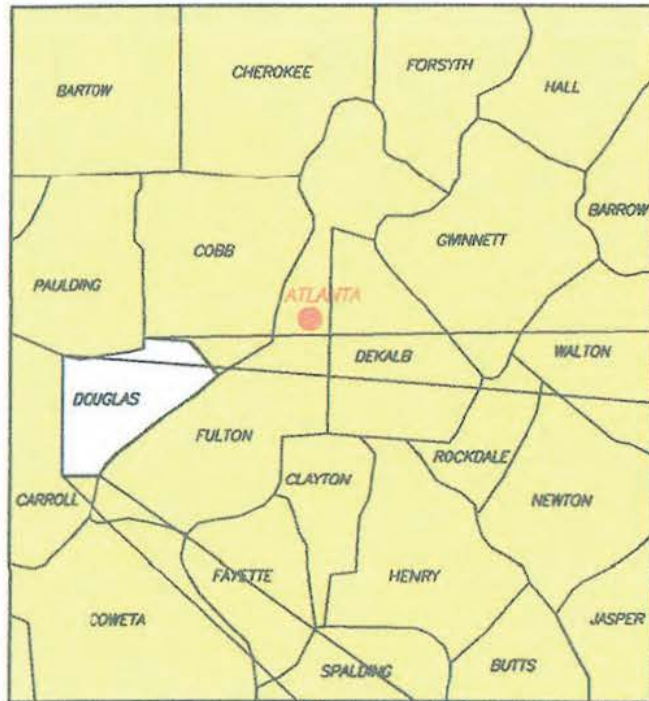
NOT TO SCALE
DATE: 8-8-01



DOUGLASVILLE-DOUGLAS COUNTY
WATER AND SEWER AUTHORITY

DOUGLAS COUNTY
LOCATION MAP

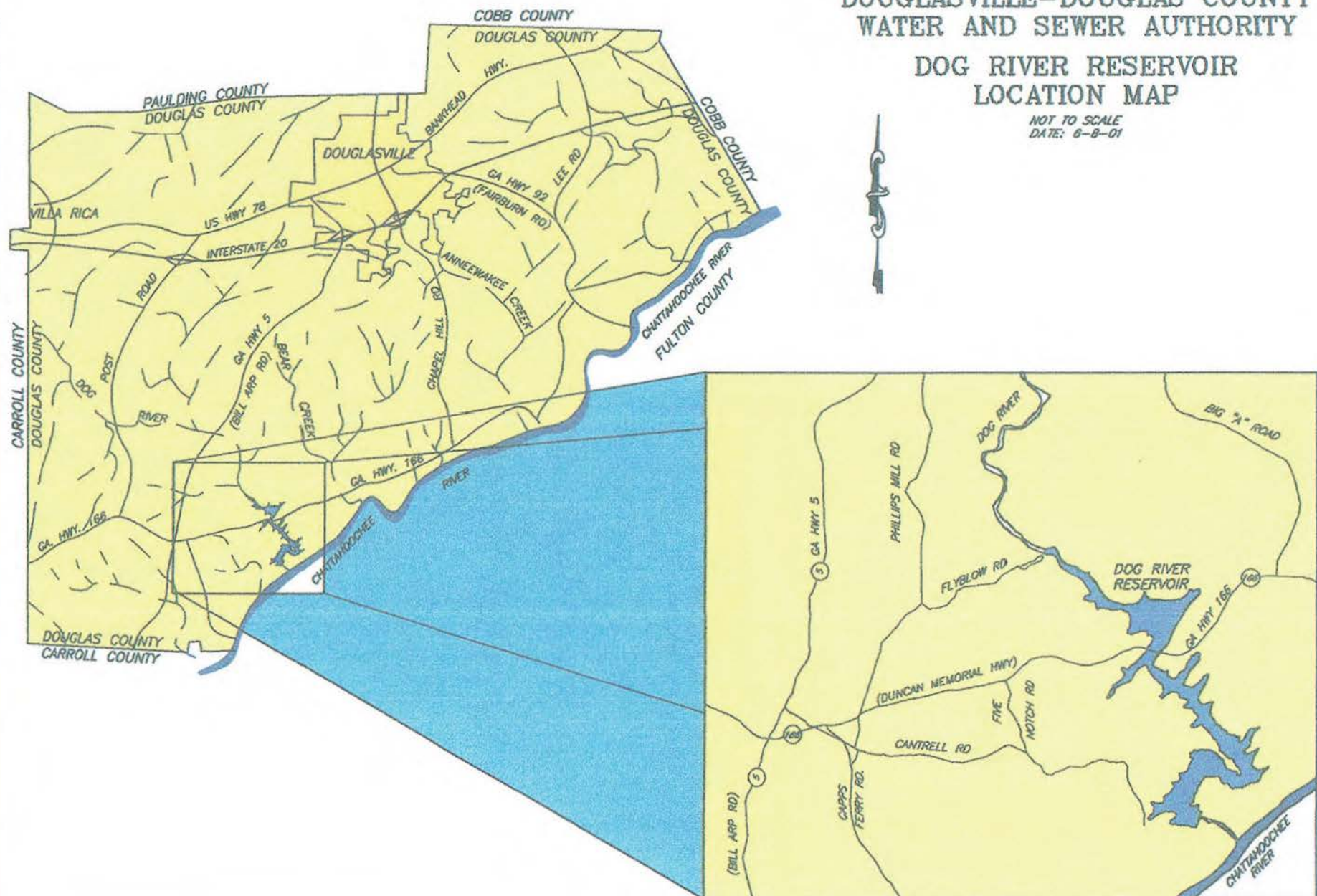
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DOUGLASVILLE-DOUGLAS COUNTY
WATER AND SEWER AUTHORITY

DOG RIVER RESERVOIR
LOCATION MAP

NOT TO SCALE
DATE: 6-8-01



VI. ALTERNATIVE ANALYSIS

This alternative analysis is prepared to identify and evaluate possible actions to be taken, and sources of raw water to meet the Authority's raw water storage requirements for current and future water demands. The following is a list of alternatives considered.

- 1) No Action
- 2) Water Conservation
- 3) Water Reclamation and Reuse
- 4) Ground Water
- 5) Purchase of Water
- 6) Request for Additional Withdrawal at Existing Source
- 7) Upland Constructed Flow Augmentation Lake
- 8) New On Stream Storage
- 9) New Off Stream Storage
- 10) Use of Quarries
- 11) Expansion of Existing Reservoir
- 12) Additional Augmentation
- 13) Use of Existing Private Lakes for Additional Raw Water Storage

The Authority retained Black and Veatch Engineers to prepare a Water System Master Plan. This Master Plan includes a section titled “Final Water Supply Alternatives Study,” dated November 12, 2013. Reference Appendix 14 for this Alternative Analysis.

DISCUSSION OF THE ALTERNATIVES CONSIDERED

(FROM BLACK AND VEATCH ALTERNATIVE ANALYSIS)

1) No Action

Since the existing water demand (per the Bear Creek Water Treatment Plant as shown on Graph #1 exceeds the 100 year drought reliability of 9.0 MGD of the existing Dog River Reservoir No Action is not a practical or reasonable alternative. Reference Hydraulic Model Summary, Appendix 9, Table 7, Dog River Maximum Theoretical Withdrawal Model Assumptions Summary, listing maximum theoretical 100 year drought yield of existing Dog River Reservoir of 9.0 mgd. Reference Appendix 6, Schnabel Engineering memo dated 8/7/15, revised 8/26/15, consisting of 3 pages, listing a 100 year drought reliable yield of the existing Dog River Reservoir of 8.3 MGD.

2) Water Conservation

The 5 year residential average for years 2013 thru 2017 water consumption in gallon per capita per day (GPCPD) is 50.4, which is one of the lowest GPCPD in Metro Atlanta. Reference Appendix 5, Authority email dated 6/19/18, 12:25 to R J Wood. Also reference Black and Veatch report Water

Service Area Population and Water Demand Projections dated 7/10/13, Table 8, Water Demand Factors, 2008-2012, Average gpcpd = 53.8, per Appendix 5.

This low GPCPD is a result of continuous effort by the Authority from presenting water conservation education material and presentations in local schools, civic functions, public functions, and other similar settings. In addition, the Authority promotes and has participated in programs for replacing existing plumbing fixture with new water savings and water conserving fixtures.

For these reasons this option is not considered as a practical or reasonable alternative.

3) Water Reclamation and Reuse

The Authority's Sweetwater Creek Wastewater Treatment plant contains a 3.0 MGD Side Stream Treatment System which processes plant effluent flow from the Sweetwater Creek WWTP effluent to reuse standards. Water from this reuse side stream facility is pumped thru a pipeline to a commercial facility for industrial type water use.

Reference Appendix 16 for the Georgia EPD NPDES permit for the Sweetwater Creek Wastewater Treatment, page 8 of 26 Table B2a footnote (1) of this permit lists the flow limits to the Chattahoochee River and to the Authority (recycle) customers.

The 2017 annual average wastewater treatment plant treatment and pumped to the industry for use was 0.57 mgd. Reference Appendix 16 email from DDCWSA dated 7/2/18, 3.44 pm. Therefore, this Sidestream Treatment Facility reduced the water system demand on the Bear Creek Water Treatment Plant and Dog River Reservoir by this value of 0.57 mgd since, without this recycle facility

potable water would have been supplied from the Authority's Bear Creek WTP and Dog River Reservoir.

4) Ground Water

The Authority retained EGGI in 2001 to perform a County-wide ground water study to determine the availability and feasibility in using and developing groundwater as a water source.

Reference Appendix 17 for a copy of EGGI's report titled "Groundwater Exploration Program Geophysical Surveys, Test Well Drilling, Production Well Development, and Preliminary Pumping Test, Groundwater Development Zones DUG-1 to DUG-6," dated April 30, 2001.

Per this report Appendix 17, page 2, the Executive Summary, letter dated 4/30/01, it was concluded that developing groundwater as a water source in Douglas County is not a viable option, since groundwater could be developed on a limited manner.

For this reason groundwater was not considered as a viable option.

5) Purchase of Water

The Douglasville-Douglas County Water and Sewer Authority purchases water from the Cobb-Marietta Water Authority. A copy of the contract for the purchase of this water is included in Appendix 18. This contract limits the water allocation to the Douglasville-Douglas County Water and Sewer Authority from Cobb-Marietta Water Authority is 3.0 mgd. Reference Appendix 18, contract page 7.

This source of purchased water from Cobb Marietta Water Authority is used to meet Georgia EPD system interconnection requirements of Georgia Legislature Water System Interconnection, Redundancy, and Reliability Act -passed State Senate Bill in 442 in 2010, created by Georgia Code Title 12, Chapter 5, Article 3, Part 6. The goal of this legislation is 35% immediate and 65% planning goal for IRT is specifically noted in202(b) as follows: “(b) The emergency plan shall evaluate risks and where feasible, plan for a district-wide interconnection reliability target for immediately implementation of approximately 35% of the annual average daily demand and a long-range district-wide interconnection reliability planning goal of approximately 65 percent of the annual average daily demand.” Reference Appendix 19, email from the Authority dated December 20, 2017, 11.54 am, addressing this interconnection supply plan requirement..

For this reason purchased water from an adjoining water system is not an available option.

6) Request for Additional Withdrawal at Existing Source

The Dog River Reservoir (current existing withdrawal source) available yield for a 100 year drought condition is 9.0 mgd and the current 2017 average day water demand is 11.48 mgd, as discussed previously in this report. The current water demand exceeds the 100 year drought reliable yield of the existing Dog River Reservoir. Therefore, requesting additional withdrawal at the existing source is not a viable option. Reference Appendix 20 Annual Average Demand and Production from WSA, dated 6/29/18, 2:03 pm.

7) Upland Constructed Flow Augmentation Lake

This option is addressed in Black and Veatch Master Plan, Appendix 14, titled “Final Water Supply Alternatives,” dated November 12, 2013, page 9, Table 2, Proposed OnStream Reservoir Options, proposed a new on stream reservoir options lists data on the onstream alternative (DR2) with a new reservoir on Dog River at Banks Mill Road 10.0 mgd yield.

This option is considered as a viable reservoir site option and is further evaluated in detail under this report Section VII, Detailed Alternatives Analysis titled Site Option II, New Dog River Reservoir on Dog River at Banks Mill Road.

Note although Appendix 14, Table 2, Proposed Onstream Reservoir Options, lists Sweetwater Creek SWC1 near the Chattahoochee this option is not practical or viable since the City of Eastpoint water intake is located on Sweetwater Creek in this area. Reference the above referenced Black and Veatch Master Plan Water Supply Alternatives, Appendix 14, report Section 3.2.1.2, pages 25 thru 27, Sweetwater Creek, for further discussion on the non-availability of additional water withdrawals from Sweetwater Creek.

For this reason Sweetwater Creek is not considered as a viable or practical option.

8) New On Stream Storage

Black and Veatch report in Appendix 14, titled Water Supply Alternatives, dated 11/12/13, Table 11, page 32, Comprehensive Alternate List Summary, and report page 17, Table 5, Reservoir Expansion Options, lists Dog River Expansion 2 (DRE2) as a viable option with a yield of 15.0 mgd.

This option is considered as a viable, reasonable, and practical option and is evaluated in full detail in this report Section VII, Detailed Alternative Analysis Section as Option I, Raising Existing Dog River Reservoir to Water Surface Elevation 795.3 feet'. A discussion of Dog River Reservoir Expansion is presented in Appendix 14 report, Section 5.1, page 36, Dog River Expansion.

9) New Off Stream Storage

Per Black and Veatch report titled Water Supply Alternatives, dated 11/12/13, in Appendix 14, Table 11, page 32, Comprehensive Alternate List Summary, evaluated the options for new off stream storage.

- Hurricane Creek Offstream (HCC01) - 0.3 mgd
- Dog River Offstream 1 (DRO1) - 0.20 mgd
- Dog River Offstream 2 (DRO2) - 0.3 mgd

These three options per this table lists a yield of 0.2 to 0.3 MGD, which is insufficient in meeting the Authority's raw water storage.

For this reason these options were not considered practical or reasonable.

10) Use of Quarries

Black and Veatch Water Supply Alternatives report, Appendix 14, Table 11, page 32, Comprehensive Alternatives List Summary lists 3 quarries . These options range in yield of 0.15 MGD to 1.0 MGD.

- Rock Quarry 1 (RQ1)
- Rock Quarry 2 (RQ2)
- Rock Quarry 3 (RQ3)

Detailed discussion of these options are presented in Report Section 5.5, titled Villa Rica Quarries, Appendix 14, page 44. Due to the yield of these quarries, and time line to develop these sources, these options were not considered practical, reasonable, or viable.

11) Expansion of Existing Reservoir

Per the Black and Veatch report titled Water Supply Alternatives, dated 11/12/13, Appendix 14, page 17, Table 5, Reservoir Expansion Option DRE2, Expansion of the existing reservoir is listed, with a potential yield of 15.0 MGD is listed.

Per this table the single expansion existing reservoir option that can produce the required yield (23.0 MGD required - 9.0 MGD existing = 14.0 MGD additional reservoir yield required) is expanding the existing Dog River Reservoir Option DRE-2.

A discussion of this option is presented in Section 3.1.4, Expansion of Existing Reservoir, Appendix 14, pages 15-17.

This is considered as a viable, reasonable, and practical option and will be evaluated in full detail in this report Section VII, Detailed Alternative Analysis, titled as Option I, Raising the Existing Dog River Reservoir to Water Surface Elevation 795.3'.

12) **Additional Augmentation**

A. Comprehensive Alternatives

Black and Veatch Water Supply Alternatives report, dated 11/12/13, Appendix 14, page 32, Table 11, Comprehensive Alternatives List Summary lists options for additional augmentation of Chattahoochee River 1 (CH1).

Reference Appendix 14, pages 18 thru 26, Black and Veatch study Section 3.2, Additional Augmentation, Report Section 3.2.1, Direct Withdrawal from Chattahoochee River is discussed.

Per Georgia Dept of Natural Resources, Environmental Protection Division Rule 391-3-6-.03, the Chattahoochee River carries different classifications of use at various segments which dictate the level of protection that the particular segment receives. Water use classification for the reaches of the Upper Chattahoochee River are listed in Appendix 14 on page 24. The section of Chattahoochee River thru Douglas County, from Atlanta (Peachtree Creek) to Cedar Creek, the designation is **fishing** (not drinking water).

Therefore the use of Chattahoochee River is not considered as a viable, reasonable, or practical option.

Reference Appendix 21 for a complete copy of Georgia Dept of Natural Resources Environmental Protection Division Standard 391-3-6-.03, Water Use Classification and Water Quality Standards, which includes a list of water classifications for particular segments of the Chattahoochee River.

Reference Appendix 21, page 20, for the listing of the Chattahoochee River from Peachtree Creek to Cedar Creek (the section of the Chattahoochee River thru Douglas County) use as **Fishing**.

B. Dog River Flow Augmentation from South Central Wastewater Treatment Plant

The Authority owns and operates the South Central Wastewater Treatment Plant as presented on the location map titled "Location Map of Flow Augmentation from Existing 36" \varnothing South Central Wastewater Treatment Plant Effluent to Dog River." This plant discharges the treated effluent water to the Chattahoochee River, as presented in Appendix 7.

In 2009 the Authority constructed a 24" \varnothing pipe line from this wastewater treatment plant to discharge into Dog River, downstream of the Dog River Reservoir Dam, in order to provide Dog River flow augmentation.

This augmented wastewater treatment plant flow provides additional flow into the section of Dog River downstream of the Dog River Reservoir Dam to the Chattahoochee River.

The minimum flow discharge from the South Central Wastewater Treatment Plant in 2017 was 0.82 MGD, and in 2018, to date, was 1.68 MGD. Reference email from the Authority dated 8/8/18 (see Appendix 7).

The range of flows from this wastewater treatment plant varies due to plant process conditions. This plant process configuration includes a flow equalization which allows effluent range to vary due to process conditions that occur in the wastewater treatment plant.

As a result of the varying flow ranges in the effluent from the wastewater treatment plant into Dog River, this wastewater treatment plant effluent flow augmentation is not a reliable source.

13) Use of Existing Private Lakes for Additional Raw Water Storage

This option is presented in Black and Veatch Water Supply Alternatives 11/12/13, Report Appendix 14.

A discussion is presented in this report section 3.2.2, Appendix 14, page 27, and a detailed discussion presented in this report Section 5.4, Treasure Lake Augmentation into Dog River, Appendix 14, pages 41-44. This is a private lake with a single family private residence community surrounding the lake.

Per the Black and Veatch report in Appendix 14, page 44, Table 19, the usable storage reliable yield is 3.0 mgd. For this reason, this alternative is not considered as viable, reasonable, or practical.

SUMMARY OF ALTERNATIVE ANALYSIS

From the above presentation of discussions on Alternative Analysis the two alternatives that are considered as viable, practical, and reasonable in providing the additional raw water storage (function with the existing Dog River Reservoir) required to provide a 23.0 mgd reliable yield during a 100 year drought event, as follows:

- 1) Option I, Expansion of Existing Dog River Reservoir (DRE2)

Titled in this report Section VII, Detailed Alternative Analysis Options I and II, as Option I, Raising Dog River Reservoir from W S Elev 760.0' to 795.3'; and,

- 2) Option II, New Reservoir on Dog River (DR2) at Banks Mill Road, Upstream of the Existing Dog River Reservoir at Banks Mill Road with a water surface elevation of 947.0'.

DOUGLASVILLE-DOUGLAS COUNTY WATER AND SEWER AUTHORITY
US ARMY COE SECTION 404 PERMITTING APPLICATION

TABLE 3. OPTION I AND OPTION II PROPERTY AREA IMPACTED

TABLE 3. OPTION I AND OPTION II PROPERTY AREA IMPACTED						
OPTION	FLOODED AREA REQUIRED (ACRES)	100 YEAR FLOOD PLAIN EASEMENT AREA REQUIRED (ACRES)	TOTAL AREA REQUIRED, FLOOD AREA AND FLOOD EASEMENT (ACRES)	NUMBER OF PROPERTY PARCELS IMPACTED	STORAGE VOLUME IN BILLION GALLONS	AUTHORITY'S ATTORNEY ESTIMATED PROPERTY COST (*)
OPTION I, RAISING EXISTING RESERVOIR, W. S. ELEV 795.3' Reference Appendix 30	332.36	64.63	396.99	38	6.58	\$1,900,000 Reference Appendix 32
COST FOR +/- 100 ACRE BORROW SOIL AREA:						<u>\$500,000</u>
OPTION I						\$2,400,000
OPTION II, CONSTRUCTIN G NEW RESERVOIR ON DOG RIVER AT BANKS MILL ROAD, W.S. ELEV 947.0' Reference Appendix 31	1093.91	213.53	1307.44	319	6.63	\$10,483,398 Reference Appendix 33
COST FOR +/- 100 ACRE BORROW SOIL AREA:						<u>\$500,000</u>
OPTION II						\$10,983,398

**TABLE 4. OPTION I RAISING EXISTING DOG RIVER RESERVOIR TO WATER
SURFACE ELEVATION 795.3' MITIGATION COST FOR WETLAND AND STREAMS**

<u>Wetland Credit Cost</u>	OPTION I WETLAND AND STREAM CREDIT MITIGATION COST	
<u># of Credits Required</u>	<u>Cost per Credit</u>	<u>Total</u>
141.3	\$50,000	\$7,065,000.00
<u>Stream Credit Cost</u>		
<u># of Credits Required</u>	<u>Cost per Credit</u>	<u>Total</u>
175,112	\$30	\$5,253,360.00
TOTAL OPTION I WETLAND AND STREAM CREDIT MITIGATION COST		\$12,318,360.00

SEE REPORT APPENDIX 43

OPTION II

NEW RESERVOIR

1093.91 AC NORMAL POOL

OPTION I

ADD 332 AC

TO EXISTING DOG RIVER RESERVOIR
FOR NORMAL POOL

BILL ARP ROAD

SR166

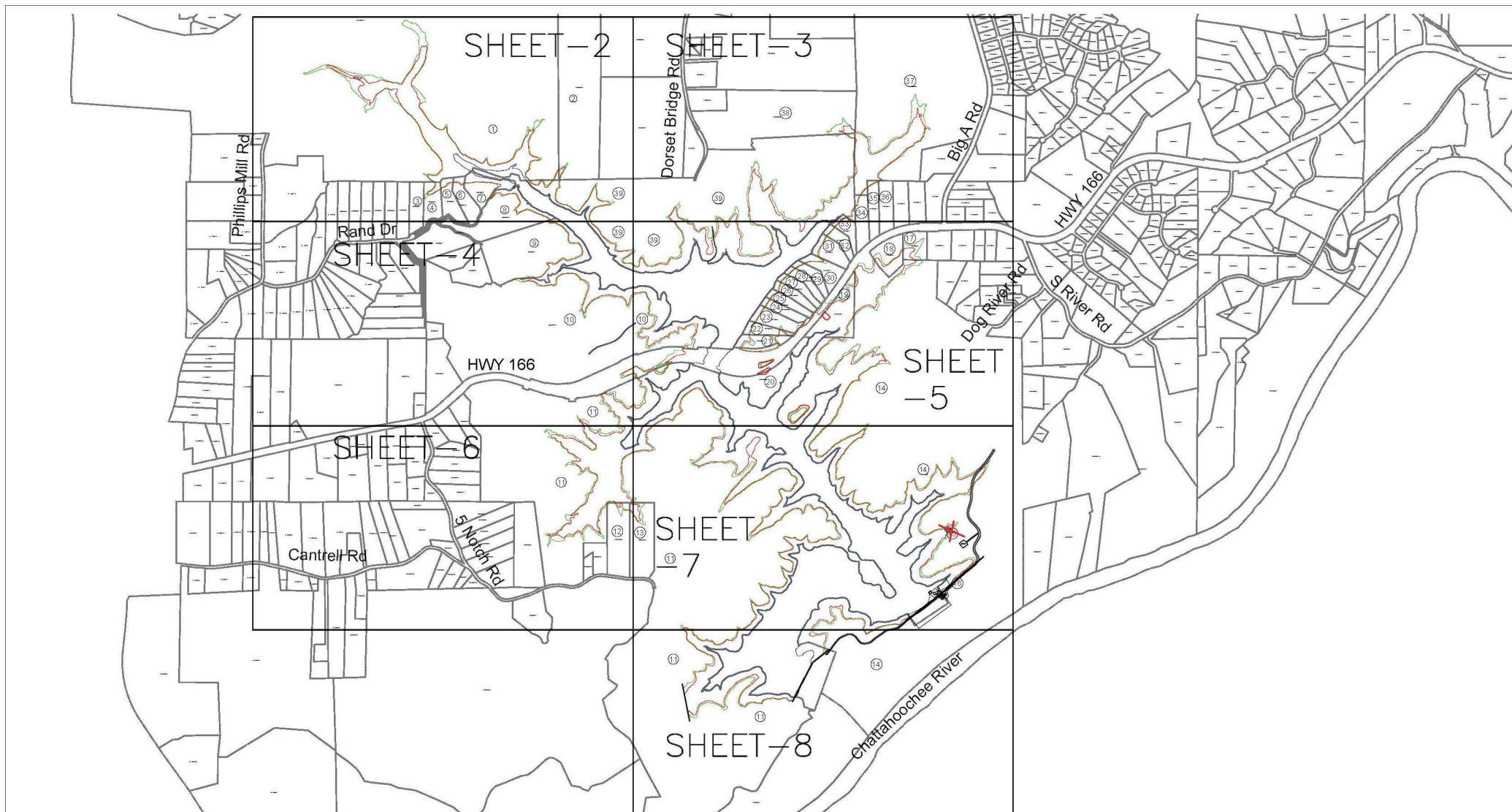
CHATAHOOCHEE RIVER

Prepared 3/11/2016 for;

R. J. WOOD AND COMPANY

CIVIL AND ENVIRONMENTAL CONSULTING ENGINEERS

2.23 mi



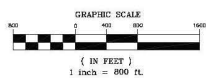
OPTION 1: RESERVOIR
 RAISED RESERVOIR WATER SURFACE ELEVATION 795.30'
 100 YEAR FLOOD WATER SURFACE ELEVATION 800.30'

SHEET 1 OF 8

DOUGLASVILLE-DOUGLAS COUNTY
 WATER AND SEWER AUTHORITY
 RAISING EXISTING DOG RIVER
 RESERVOIR TO YIELD 23.0 MGD

DATE: 7-23-18

R. J. WOOD AND COMPANY
 CIVIL AND ENVIRONMENTAL ENGINEERS
 652 ARLINGTON PLACE, MACON, GEORGIA 31201
 (478)741-7044 Ph - RJWOOD@RJWOODCO.COM



LEGEND	
760 EXISTING WATER SURFACE	—
795.3 RAISED WATER SURFACE	—
800.3 NEW 100 YEAR FLOOD SURFACE	—
⑦ - PROPERTY PARCEL NUMBER	