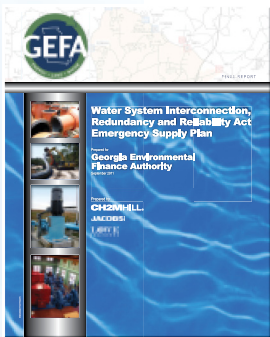
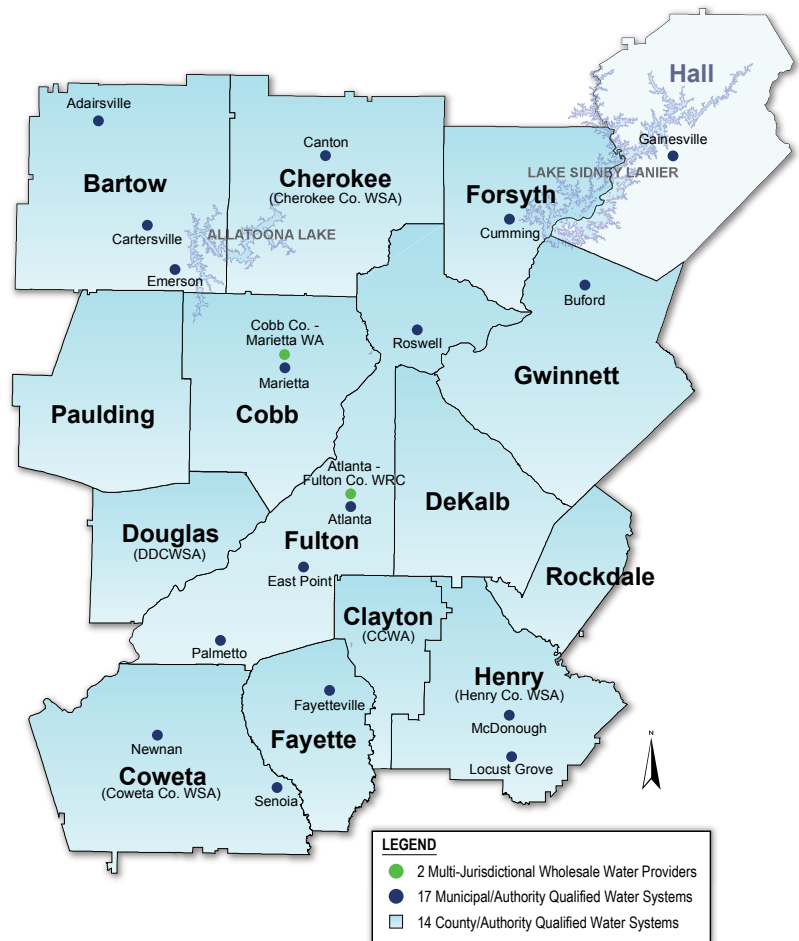


Water System Interconnection, Redundancy and Reliability Act Emergency Supply Plan



In May 2010, former Gov. Perdue signed into law the Water System Interconnection, Redundancy and Reliability Act. In accordance with the law, the Georgia Environmental Finance Authority (GEFA) contracted with CH2M HILL to conduct a “thorough and detailed engineering study and develop a District-wide emergency plan” allowing for water systems to accept or share water

with adjacent providers during emergencies. The study was conducted to evaluate the interconnections, redundancy and reliability of 33 water systems in the District that were qualified as having surface water withdrawal permits or supplying water to more than 20,000 customers. This document is a companion to the final report, and describes the study process and recommended projects identified as a result. This study will be updated on the same schedule as the District’s Water Supply and Water Conservation Management Plan. GEFA is pleased to present the results of this study.



STUDY TASKS

- **Understand each system** – Information and data, including existing plans, detailed mapping data and hydraulic models were collected from each of the 33 qualified systems.
- **Define planning targets** – The water supply and demand for each system were examined to quantify the water needed during various emergency scenarios.
- **Evaluate emergency readiness** – Existing interconnection capacity, storage and emergency measures were compared against the water supply demands to determine water supply readiness and to identify any water deficits under the various emergency scenarios.
- **Develop potential projects** – Using advanced hydraulic modeling, interconnection and redundancy projects were identified to respond to potential emergencies.
- **Identify possible financing approaches and develop model agreements** – Financing options and a model intergovernmental agreement were explored to provide potential funding for identified projects.



System Preparedness

Water systems in the District have performed emergency planning for years to provide the redundancy and reliability needed for the public water supply. The qualified systems provided information about their emergency planning and system infrastructure that indicates good reliability and redundancy are already in place. Most systems have multiple water sources and/or multiple water treatment plants, many of which are equipped with backup power generators. In addition, every system has interconnections (connecting pipelines) with at least one adjacent water system. Thus, all systems have prepared for basic emergencies, such as power outages, pipeline breaks and pump failures. They can quickly restore or continue water supply during these emergencies and minimize the impact to their customers.

The purpose of the study was to evaluate the preparedness of the qualified systems for a range of emergency scenarios and to recommend practical and cost-effective projects that could strengthen system reliability and help ensure the District will continue to experience dependable delivery of drinking water into the future.

Emergency Scenarios Evaluated

- Failure of the largest water treatment facility
- Short-term catastrophic failure of a water distribution system
- Short-term contamination of a water supply within a distribution system
- Short-term contamination of a raw water source
- Full unavailability of major raw water sources due to federal or state government actions
- Limited or reduced availability of major raw water sources due to federal or state government actions
- Failure of an existing dam of a raw water supply
- Short-term water supply reduction due to drought

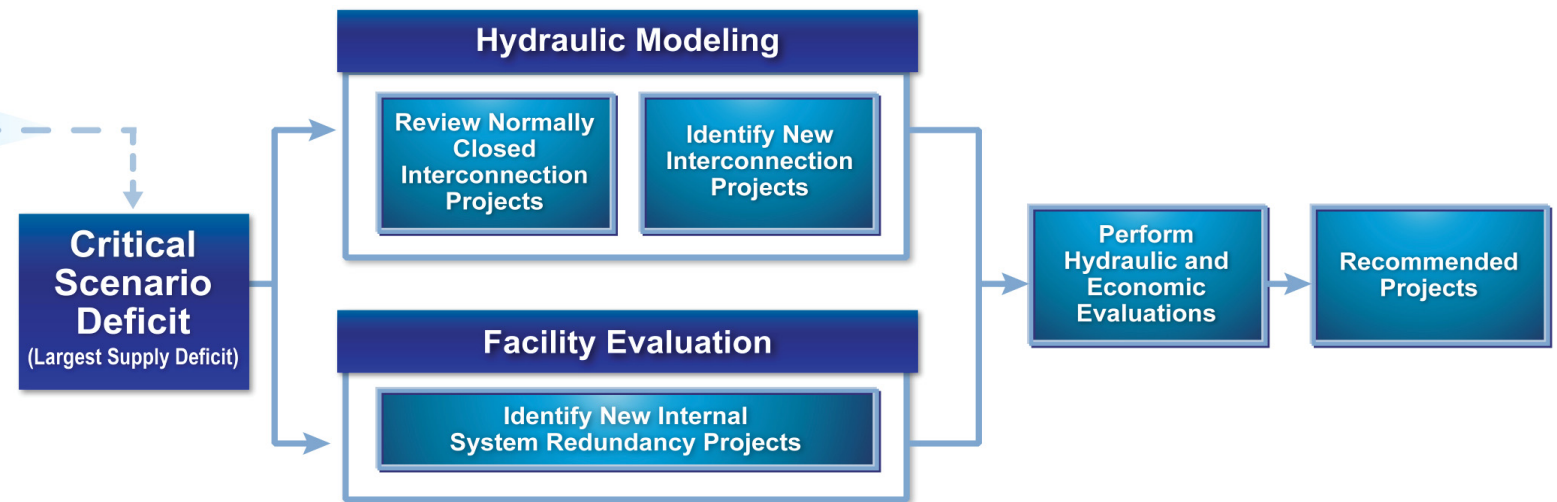
Emergency Scenario Deficits

The study evaluated the ability of water systems to meet 35 percent and 65 percent of their current (2006) and future (2035) water demands during various emergency scenarios. Each water system's available water supply was compared with the emergency scenario demands to determine whether deficits or surpluses would result. For each water system the emergency scenario that created the largest supply deficit (i.e., the critical scenario) was evaluated further through hydraulic and economic analyses to identify projects to eliminate the deficit.

Hydraulic and Economic Evaluations

Some water systems regularly purchase water through open interconnections with adjacent water systems in order to





supplement their own water supply. However, many other closed interconnections exist between water systems throughout the District, specifically for emergency purposes. Although basic calculations can be made about the interconnection capacities based on pipeline sizes, the results do not give a complete measure of the available water supply, because of the complex hydraulic relationships that exist between interconnected water systems. Therefore, hydraulic models were used in the study to evaluate and confirm the hydraulic capacities of existing interconnections and to identify and size new interconnections, as needed, to eliminate the water supply deficits.

Identified projects include upgrades to existing closed interconnections, new interconnections and infrastructure redundancy projects. The interconnection and redundancy projects were compared using cost criteria to prioritize projects needed to meet the emergency water demands.

Recommended Projects

After the projects were identified and evaluated, and the costs were estimated, the most appropriate and cost-effective projects were selected for each qualified water system with deficits. The list of recommended projects is shown on the back page.

Emergency Water Supplies

The availability of emergency water supplies was also evaluated as a part of the study to determine potential water sources within the District to help meet the supply deficit. Two water supply categories were examined and evaluated based on limiting factors, such as water quality, conveyance and permitting. The results indicate that:

- *Excess capacity from existing surface water sources is fairly limited, because water systems do not build significant excess capacity above their water demand needs;*
- *Recent plans and studies have identified potential sources*

of additional water supply, such as reservoirs identified in the District's Water Supply and Water Conservation Management Plan, small flood control dams, other potential reservoir sites, quarries and groundwater, but significant costs are associated with developing these supplies for use.

Creative Financing and Intergovernmental Agreements

Various financing options are available to help finance the projects. Traditional financing approaches use state loans or municipal or commercial bonds. Non-traditional financing options include public-private partnerships and asset transfer. Each individual project should be assessed to determine the most appropriate funding and financing option.

A model intergovernmental agreement was developed as a guide for water systems to use in creating emergency water sharing agreements. Priority areas for discussion between water systems developing such an agreement include governance, financial and technical issues.



Recommended Projects Help Ensure the Reliability of the District's Public Water Supply

The study has thoroughly assessed the emergency readiness of the qualified water systems and developed an emergency plan that helps ensure their continued reliability. System-specific projects are recommended for eliminating the deficits associated with various emergency scenarios, including upgrades to existing interconnections, new interconnections and infrastructure redundancy projects. The projects identified as a result of the study will increase the redundancy and reliability of the District's qualified water systems.

Qualified Water System	Critical Scenario	Critical Scenario Deficit (MGD)	Recommended Project
Adairsville, City of	Failure of the largest water treatment facility	2.3	Upgrade existing/New interconnection with Calhoun
Atlanta, City of			No projects are needed
Atlanta-Fulton Co. WRC			No projects are needed
Bartow County			No projects are needed
Buford, City of	Failure of the largest water treatment facility	1.9	Upgrade existing interconnections with Gwinnett County
Canton, City of	Failure of the largest water treatment facility	6.3	Redundancy project at water treatment facility
Cartersville, City of	Failure of the largest water treatment facility	15.5	Redundancy project at water treatment facility
Cherokee Co. WSA	Failure of an existing dam of a raw water supply	15.3	Permit variance to withdraw from the Etowah River
Clayton County Water Authority			No projects are needed
Cobb County Water System			No projects are needed
Cobb County-Marietta WA			No projects are needed
Coweta County WSA	Short-term water supply reduction due to drought	4.1	Upgrade existing interconnections with Atlanta
Cumming, City of	Failure of the largest water treatment facility	13.5	Upgrade existing interconnections with Forsyth County; Redundancy project at water treatment facility
DeKalb County	Failure of the largest water treatment facility	68.9	Redundancy project at water treatment facility
Douglasville-Douglas Co. WSA	Failure of the largest water treatment facility	14.4	Upgrade existing/New interconnections with Cobb County-Marietta Water Authority; Upgrade existing interconnection with Cobb County Water System
East Point, City of	Failure of the largest water treatment facility	6.5	New interconnections with Atlanta
Emerson, City of	Failure of the largest water treatment facility	0.2	Upgrade existing interconnection with Bartow County
Fayette County Water and Sewer			No projects are needed
Fayetteville, City of	Short-term water supply reduction due to drought	0.8	Use existing interconnections with Fayette County to receive water from other water systems
Forsyth County Water and Sewer	Failure of the largest water treatment facility	19.6	Upgrade existing interconnection with Fulton County; Redundancy project at water treatment facility
Fulton County Water System	Failure of the largest water treatment facility	15.2	Upgrade existing interconnections with Gwinnett County and Forsyth County; Redundancy project at water treatment facility
Gainesville, City of	Short-term contamination of raw water source	1.5	Upgrade existing interconnection with Gwinnett County
Gwinnett County	Failure of the largest water treatment facility	14.1	Redundancy project at water treatment facility
Henry Co. WSA	Short-term water supply reduction due to drought	9.3	Upgrade existing interconnections with DeKalb County and Clayton County; New interconnection with Clayton County
Locust Grove, City of	Short-term water supply reduction due to drought	0.1	Utilize new Henry County interconnection with Clayton County
Marietta Power and Water			No projects are needed
McDonough, City of	Short-term water supply reduction due to drought	0.4	Utilize new Henry County interconnection with Clayton County
Newnan Utilities	Failure of the largest water treatment facility	8.1	Upgrade existing interconnections with Coweta County
Palmetto, City of	Failure of the largest water treatment facility	1.4	Upgrade existing interconnection with Coweta County; New interconnection with Atlanta
Paulding County Water System	Failure of the largest water treatment facility	2.6	Upgrade existing interconnection with Cobb County-Marietta Water Authority
Rockdale Water Resources	Failure of the largest water treatment facility	11.1	Upgrade existing interconnection with Gwinnett County and DeKalb County; New interconnection with Henry County
Roswell, City of			No projects are needed
Senoia, City of	Short-term water supply reduction due to drought	0.1	Use existing interconnections with Coweta County to receive water from other water systems