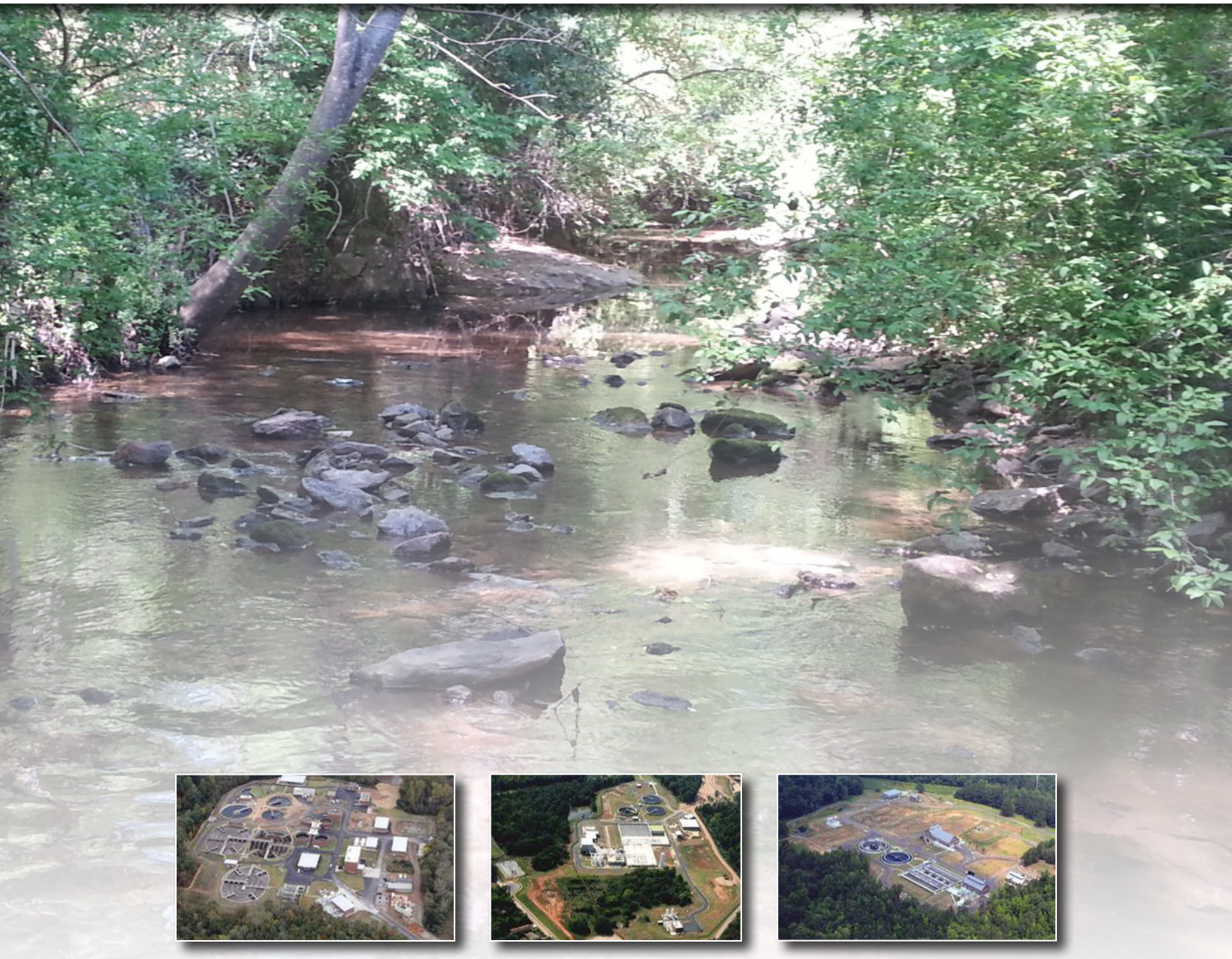
Ensuring Quality Water and Wastewater Services for Our Community

SERVICE DELIVERY PLAN | 2015 UPDATE | SUMMARY

ATHENS - CLARKE COUNTY UNIFIED GOVERNMENT
PUBLIC UTILITIES DEPARTMENT



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UNIFIED GOVERNMENT
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SUMMARY

SERVICE DELIVERY PLAN
2015 UPDATE

The Public Utility Department's (PUD's) Service Delivery Plan (SDP) is the strategy for providing water and wastewater services to all residents, as required by the Charter of the Unified Government of Athens-Clarke County (ACCUG). Originally adopted in 1995, the objective is to update the plan every five years. The plan consists of three major elements: the Infrastructure, Capital Improvements, and Financial Elements.

The **Infrastructure Element** includes an assessment of existing system components, identifies system needs, recommends construction projects to meet those needs, and estimates project costs.

The **Capital Improvements Element** prioritizes the recommended improvements.

The **Financial Element** outlines a schedule and financial plan for implementing the improvements.

Mayor and Commissioners, 2015 *(left to right):* ***Diane Bell*** *(District 7),* ***Jerry NeSmith*** *(District 6),* ***Sharyn Dickerson*** *(District 1),* ***Jared Bailey*** *(District 5),* ***Andy Herod*** *(District 8),* ***Nancy Denson*** *(Mayor),* ***Harry Sims*** *(District 2),* ***Kelly Girtz*** *(District 9),* ***Mike Hamby*** *(District 10),* ***Allison Wright*** *(District 4), and* ***Melissa Link*** *(District 3).*

Cover Photos:
Top: Bobby M. Snipes Water Resources Center. Middle: Brooklyn Creek near West Lake Drive. Bottom (left to right): Middle Oconee Water Reclamation Facility (WRF), North Oconee WRF, and Cedar Creek WRF.

Goals for the Service Delivery Plan

- To comply with the Unification Charter that requires the ACCUG to adopt a plan to provide water and sewer services to all residents.
- To develop a Service Delivery Plan that supports the Future Development Map as adopted by the Mayor and Commission (M&C) and associated fire protection services.
- To provide water and wastewater services to the current and future ACC population utilizing an infrastructure design that will protect or improve water quality, avoid impact on environmentally sensitive areas such as wetlands, buffers, floodplains, and prior public investments such as land conservation, recreational green spaces, etc.
- To plan expansion and extension of service in conjunction with the Future Development Map, recognizing that infrastructure influences long-term development patterns.
- To support existing Watershed Protection Programs with the intent to maintain or improve water quality standards.

Strategies to Accomplish Service Goals

Water System

- To provide appropriate water service to 100 percent of the ACC population by installing Transmission and Distribution Lines along the major roadways, funded by the Water and Sewer Enterprise Fund and other available appropriate resources.
- To provide water service through Feeder Lines, typically funded by the property owner/developer.
- To construct additional elevated water storage to support enhanced water system operations and fire protection, funded by the Water and Sewer Enterprise Fund and other appropriate resources.

Wastewater System

- To provide appropriate wastewater service through the installation of Trunk Lines, Interceptor Lines, and/or major pump stations, funded by the Water and Sewer Enterprise Fund and other available appropriate resources, within the service area as approved by the M&C.
- To provide wastewater service through Collector Lines, typically funded by the property owner/developer.
- To provide wastewater service to approximately 90 percent of ACC residents (approximately 10 percent of residents, located in rural land use areas, may be better served by onsite systems, based on population density and cost effectiveness).

The 1995 Service Delivery Plan included the following specific definitions which are still valid for the 2015 Plan Update:

Water Service *is the provision of treated (potable) water supply through ACCUG owned, operated, and maintained Transmission and Distribution Lines located outside of the developments along identified major roadways.*

Wastewater Service *is the provision of ACCUG owned, operated, and maintained sewage treatment facilities and Trunk and Interceptor Lines within identified major drainage basins and specified sub-basins. In areas planned for low-density development, privately owned treatment systems, such as septic tanks that comply with the requirements of the Clarke County Health Department, may satisfy the provision of wastewater service.*

Service Delivery Plan Update

The ACCUG PUD's goal is to update the SDP on a 5-year cycle. The Plan covers a 20-year period and is based on anticipated regulatory drivers and on Future Development Maps adopted by the M&C.

The **Infrastructure Element** is updated using a phased approach. First the county reviews the existing systems and estimates future water demands and wastewater flows. These estimates are based on the Future Development Map and Planning Department growth estimates using the most recent census data. Next, the capability of the existing infrastructure is evaluated. In the final phase, system alternatives and improvements are identified and recommended.

The **Capital Improvements Element** is updated by defining capital projects necessary to accomplish Infrastructure Element recommendations, estimating costs, and prioritizing these projects using a process approved by the M&C. Due to funding or financing availability, project prioritization may be modified and identified in future Service Delivery Plan Updates.

The **Financial Element** identifies the source of funds and schedule necessary to implement the projects (near-future and long-term) outlined in the Capital Improvements Element. The schedule for projects in the near-future is crucial for calculating necessary water and wastewater rates.

The ACCUG PUD water system provides high-quality drinking water to more than 97 percent of ACC residents, and to all ACC commercial, governmental, and industrial customers.

Where are we today?

Water System

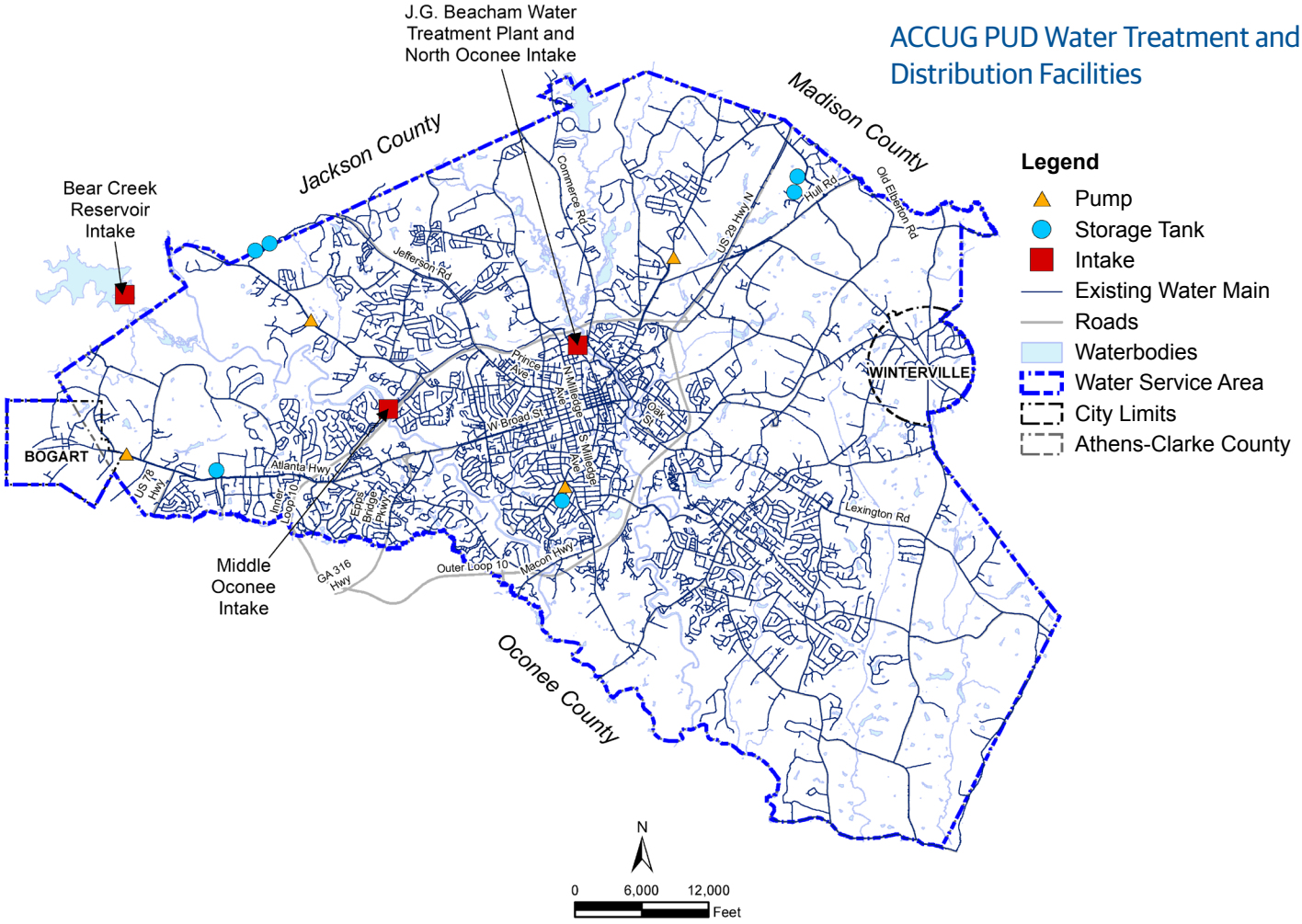
The ACCUG PUD water system provides high-quality drinking water to more than 97 percent of ACC residents, and to all ACC commercial, governmental, and industrial customers. Approximately two percent of the population maintains private wells for water supply, and another small portion receives water from one of ten private community water systems. Between 2007 and 2008, ACCUG PUD water production substantially decreased, due to water conservation efforts taken in response to drought conditions, as well as an economic downturn. Since that time, water production has remained fairly stable. In 2015, the average day production was 12.1 million gallons per day (MGD), and the peak day production was 16.2 MGD.

Raw water for the ACCUG PUD water system is withdrawn from the North Oconee and Middle Oconee Rivers and, during periods of low flow, from the Bear Creek Reservoir. The Bear Creek Reservoir was constructed in June 2002 to provide low-flow protection to the Middle and North Oconee Rivers, and off-stream storage for Athens-Clarke, Barrow, Jackson, and Oconee Counties. During periods of low flow, PUD is only permitted to withdraw raw water from the Bear Creek Reservoir, with a monthly average withdrawal limit of 25.5 MGD.

The ACCUG PUD operates one facility for potable water treatment—the J.G. Beacham Water Treatment Plant (WTP), located adjacent to the North Oconee River on Barber Street. The plant was originally constructed in 1935 and has been expanded and upgraded several times. In 2009, major improvements to the WTP were completed, including expansion to peak day design capacity of 36 MGD. The WTP currently has a permitted peak day capacity of 34.75 MGD.

The ACCUG PUD water distribution system consists of approximately 805 miles of water lines and supplies service to approximately 40,000 customer accounts. The water system has five elevated storage tanks (two Northwest Tanks, two Northeast Tanks, and the Atlanta Highway Tank) and one ground storage tank (Five Points Tank), with a cumulative storage volume of 4.25 MG. One pump station (Five Points Pump Station) is located at the ground storage tank, two pump stations (Northeast and Northwest Pump Stations) deliver water to the elevated tanks located in the northeastern and northwestern portions of the service area, and one station (Bogart Pump Station) serves the Bogart area.

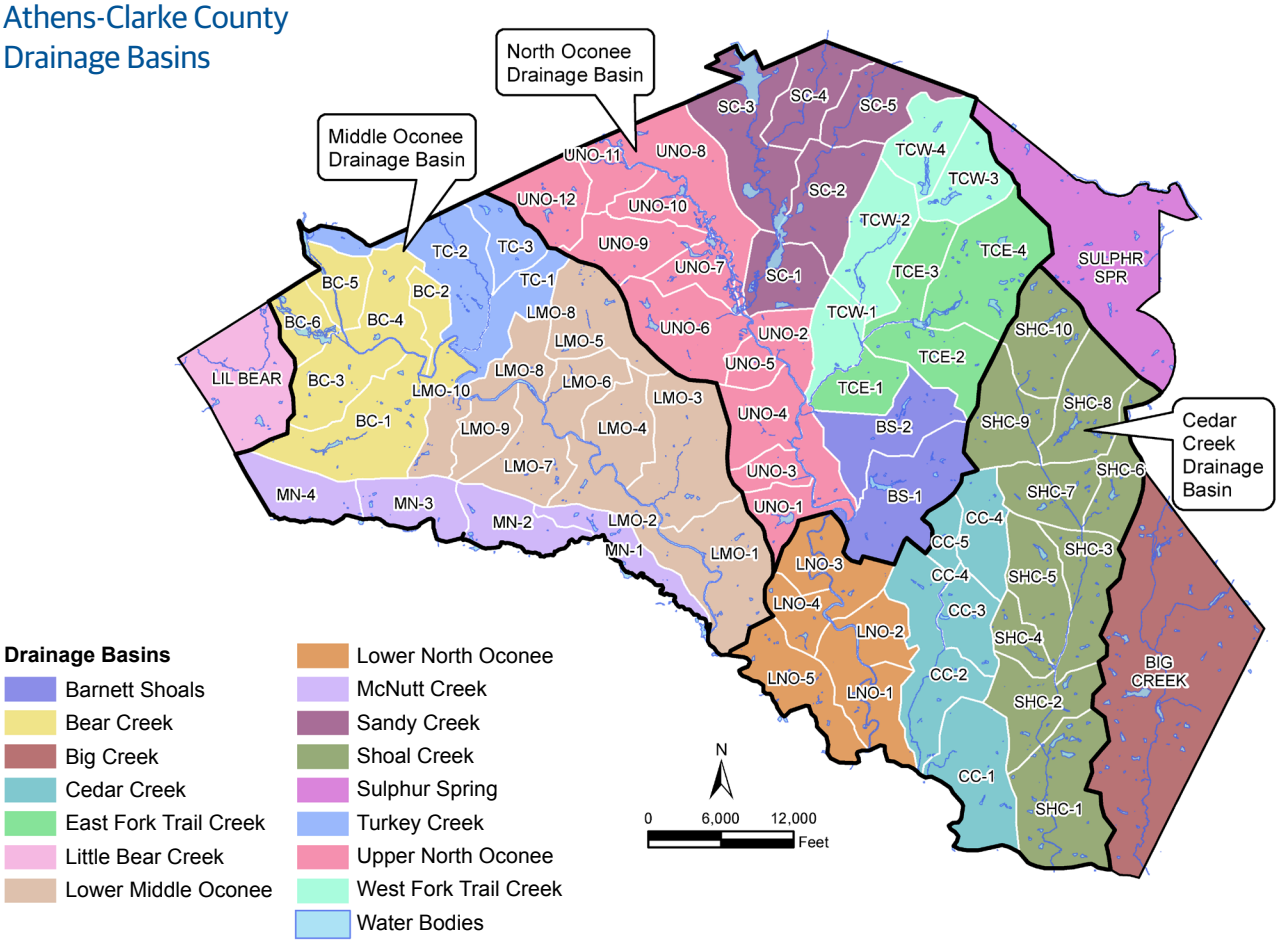
ACCUG PUD Water Treatment and Distribution Facilities



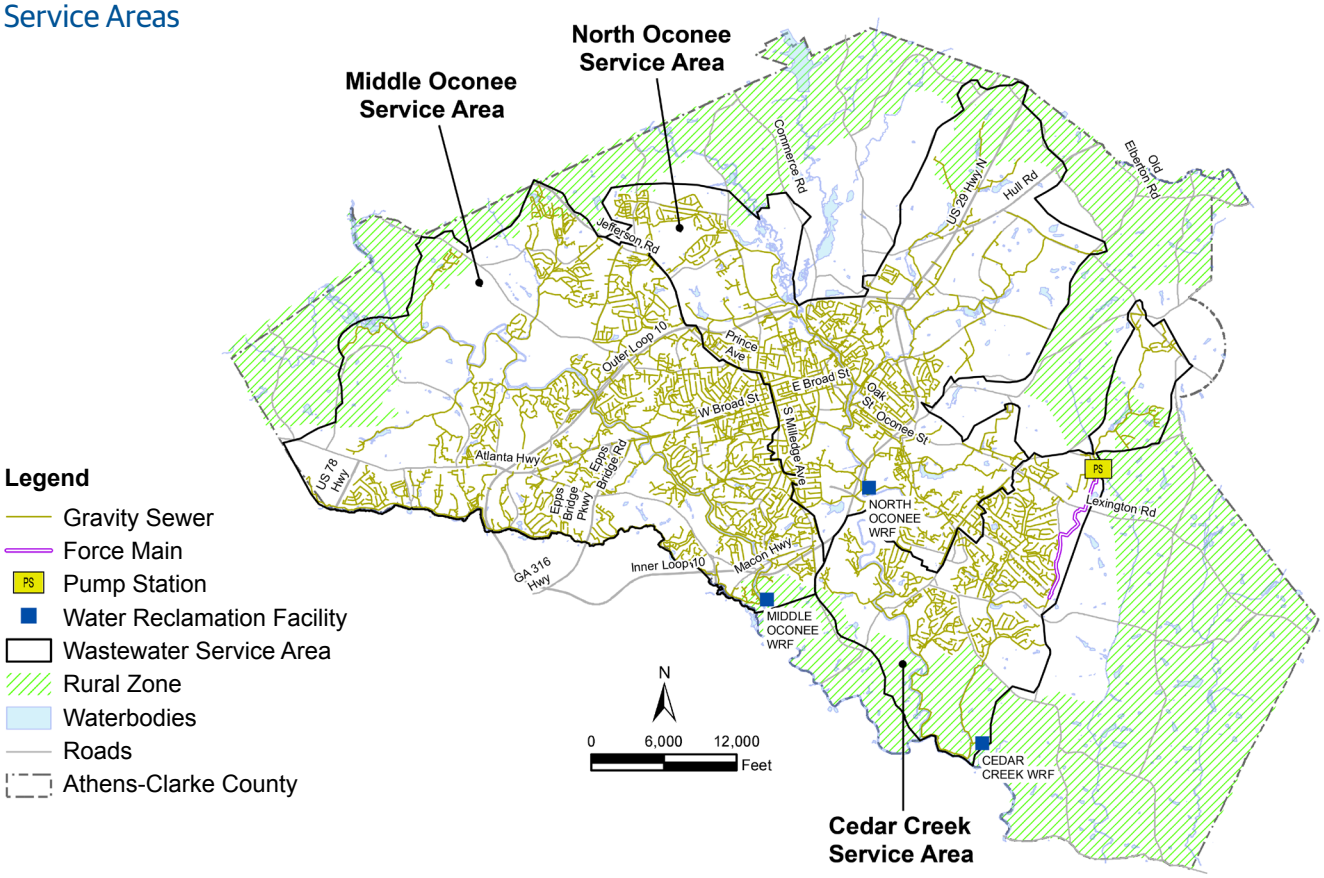
Wastewater System

With the exception of a small portion in the northeastern corner, land within ACC drains to the Oconee River Basin. Topography separates ACC into 73 drainage sub-basins, 70 of which are included in the North Oconee, Middle Oconee, or Cedar Creek drainage basins. The North Oconee drainage basin includes approximately 50,000 people (based on 2010 census data) and encompasses 40 square miles. The drainage basin includes the ACC Downtown Business District, the University of Georgia (UGA), and all of the major industrial districts. The Middle Oconee drainage basin includes approximately 43,000 people and encompasses 33 square miles. The drainage basin includes mostly residential and commercial developments. The population of the Cedar Creek drainage basin is nearly 22,500 people, and it encompasses 31 square miles. It is the least populated of the three basins and is comprised primarily of residential areas. The ACCUG PUD's wastewater Service Area is divided by three major drainage basins, forming the Middle Oconee Water Reclamation Facility (WRF) Service Area, the North Oconee WRF Service Area, and the Cedar Creek WRF Service Area.

Athens-Clarke County Drainage Basins



Existing Wastewater Service Areas



The ACCUG PUD currently provides wastewater collection and treatment to ACC industrial and commercial users and to approximately 75 percent of the residential population. There are three private oxidation ponds in ACC, with a combined capacity of 0.14 MGD. Wastewater in the remainder of the unsewered areas is treated onsite by privately owned treatment systems (septic tanks), which may satisfy the provision of wastewater service in areas planned for low-density development. The area designated as the ACC Rural Zone, which includes Little Bear Creek, Sulphur Springs, and Big Creek drainage basins, as well as portions of other sub-basins, is a low-density development area that has been identified as being better served by onsite septic system.

The ACCUG PUD wastewater collection system consists of approximately 480 miles of gravity sewers, one pump station, and 2.5 miles of force main piping. The ACCUG PUD maintains three WRFs, with a total capacity of 28 MGD. Following the completion of major improvements (renovations and new construction) during 2011 and 2012, the North Oconee WRF capacity is 14 MGD, Middle Oconee WRF capacity is 10 MGD, and Cedar Creek WRF capacity is 4 MGD. All three WRFs treat wastewater using screening and grit removal; biological treatment through advanced activated sludge systems that provide biological degradation, nitrification, and phosphorus

The ACCUG PUD wastewater system serves all industrial and commercial development and approximately 75 percent of the residential population.

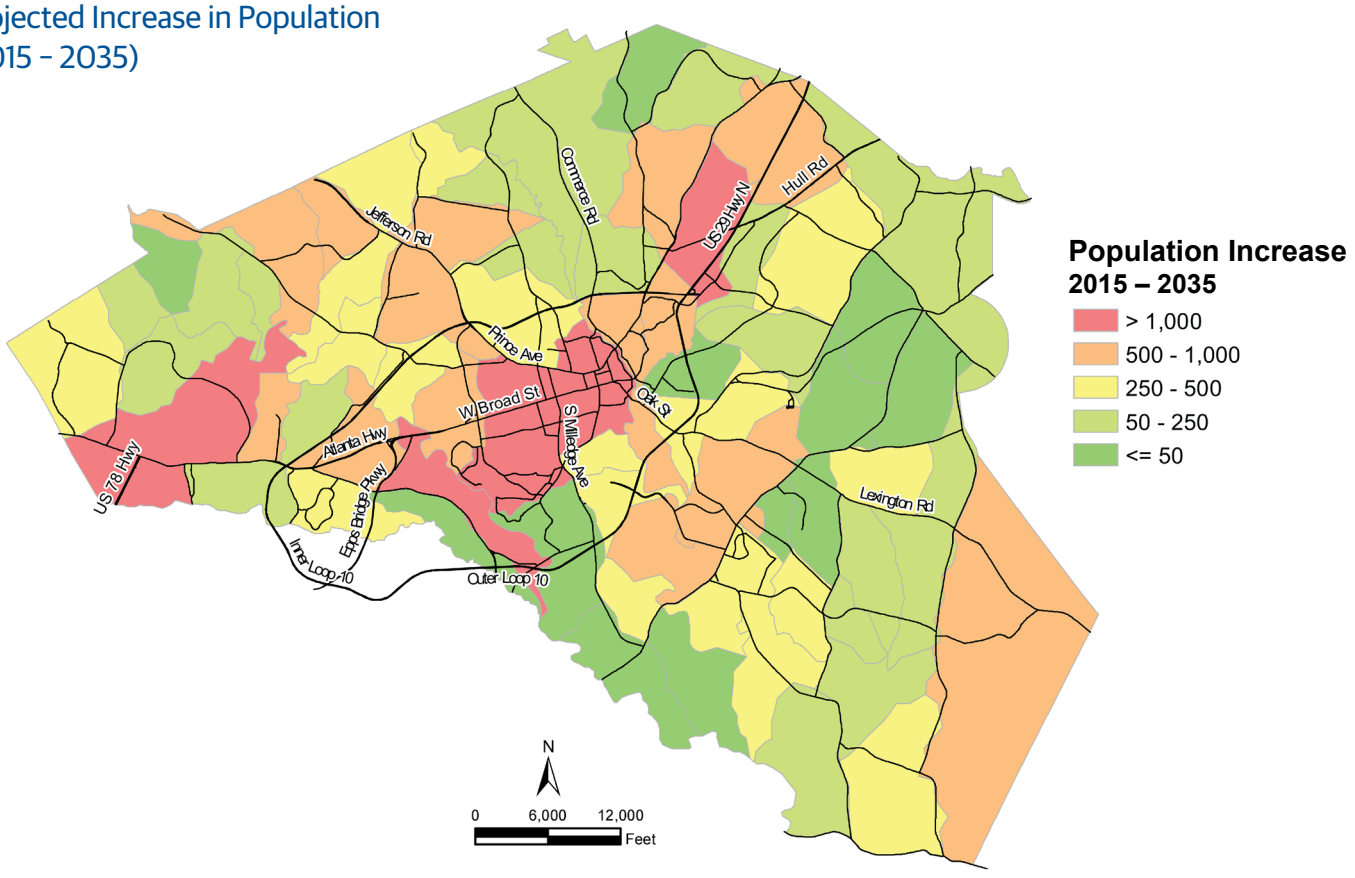
removal; settling and clarification; and UV disinfection. Cascade re-aeration is used at the North Oconee and Cedar Creek WRFs. Odor control and noise abatement systems have been implemented at each plant because of proximity to institutions and residential areas. Wastewater solids from the three WRFs are dewatered and then transported to the ACCUG Municipal Solid Waste Landfill compost facility.

How will we meet our future water and wastewater needs?

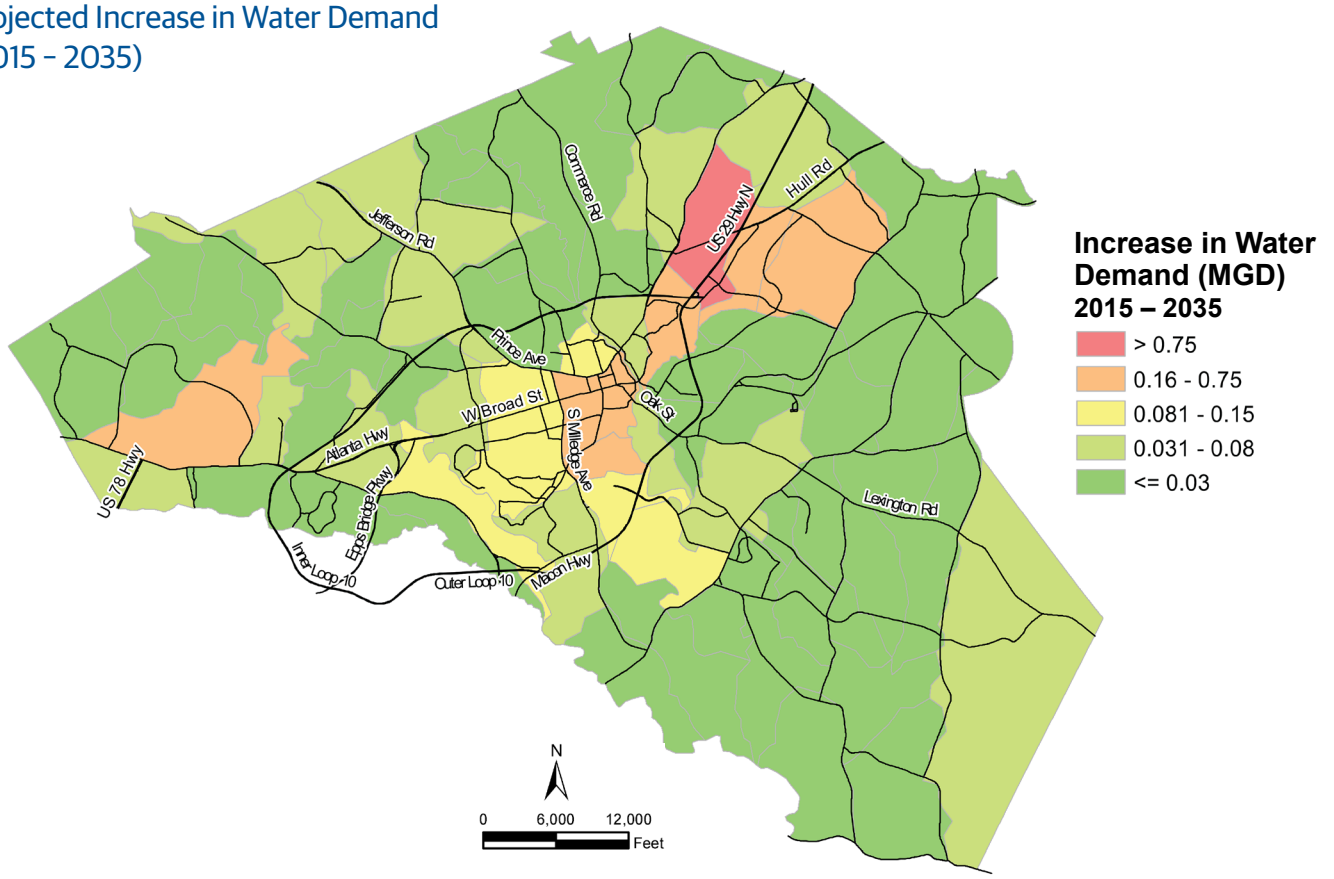
Future Growth

Projecting future conditions is a critical activity to determine a water/wastewater utility's need to plan, design, and construct capital-intensive infrastructure. Projected population growth is the basis for projecting future water demands and wastewater flows in a region. For the 2015 SDP Update, the ACCUG Planning Department developed residential population projections for ACC's 73 drainage sub-basins. Historical census-based population data provided by the ACCUG Planning Department indicate the overall population in ACC has been growing at a rate of approximately 1 percent annually. This trend is expected to continue, with an average annual growth of 1.2 percent projected for the next 20 years.

Projected Increase in Population (2015 – 2035)



Projected Increase in Water Demand (2015 – 2035)



Water System

The ACCUG PUD collaborated with staff from the ACCUG Planning Department and UGA to estimate future water demands. Projected future demands account for water conservation measures implemented in ACC over the past 10 years. Between 2007 and 2008, water production substantially decreased, due to water conservation efforts taken in response to drought conditions, as well as an economic downturn. Since that time, water production has remained fairly stable, demonstrating the significant strides that ACC has made in water conservation.

Despite water conservation efforts, there is a 50 percent chance that the monthly average day withdrawal limit for the Bear Creek Reservoir (25.5 MGD) will be exceeded before the year 2050 (see table to right). There is a 25 percent chance that the monthly average day withdrawal limit for the Bear Creek Reservoir will be exceeded by the year 2029, and that the maximum day demand for raw water will exceed the cumulative permit limit (34.75 MGD) by the year 2042.

The ACCUG PUD is collaboratively developing a risk-based tool to evaluate the needs for future water supply enhancements. The risk-based tool considers factors beyond future water demands, such as the risk of entering drought conditions requiring strict water reductions, additional water conservation, water reuse, and additional raw water storage. The ACCUG PUD plans to present the results of the risk-based tool

Projected Future Raw Water Needs (MGD) (50th Percentile)

	Annual Average Day	Maximum Month Average Day	Maximum Day
2015	15.2	18.0	20.9
2020	16.4	19.5	22.7
2025	17.5	20.8	24.2
2030	18.5	22.0	25.6
2035	19.4	23.1	26.9
2040	20.2	24.0	27.9
2045	21.0	25.0	29.1
2050	21.6	25.7	29.9

to M&C upon completion. These results will provide further basis for determining whether water reuse facilities, water conservation measures, and/or a water supply source or storage is needed for ACC residents.

The capacity of the J.G. Beacham WTP is sufficient to meet future water demands, and recent improvements to the WTP leave the facility in need of few improvements. Depending on future operating philosophies and future state and federal regulations related to backwash water and sludge removal, a solids handling facility at J.G. Beacham WTP may be desired and/or required. In addition, if solids generation begins to require dredging of the lagoon more frequently, it may be more cost-efficient to develop and operate a solids handling facility.

The ACCUG PUD will continue to replace water mains, eliminate dead-end feeder lines, and rehabilitate aging water mains, in accordance with its goals for water service.

Due to recent improvements, the distribution system can meet projected future 2035 demands without pressure problems. Improvements identified in the 2015 SDP Update include developing a high-pressure zone west of Loop 10 to provide more consistent water pressures to the western portion of Atlanta Highway and the City of Bogart, and to provide additional storage. The ACCUG PUD will continue to replace water mains, eliminate dead-end Feeder Lines, upgrade/replace small-diameter mains, and rehabilitate aging water mains, in accordance with its goals for water service. The ACCUG PUD also plans to initiate a leak detection program to minimize system water loss.

Wastewater System

Projected wastewater flows were developed using water demand projections and basin-specific factors to determine the portion of water returned to the wastewater system. Trends in projected wastewater flows are similar to trends in projected water demand. Based on these projections, there is a high probability that the ACCUG PUD has sufficient permitted capacity to treat wastewater beyond 2035. In the SDP 2015 Update, recommended improvements include construction of an urban water reuse system, changes to improve WRF operations and efficiency, evaluation of alternative energy sources, construction of a solar facility at the Cedar Creek WRF, and updates to address total phosphorus effluent limits that may be imposed by the Georgia Environmental Protection Division in the near future.

Summary of Recommended Wastewater Improvements

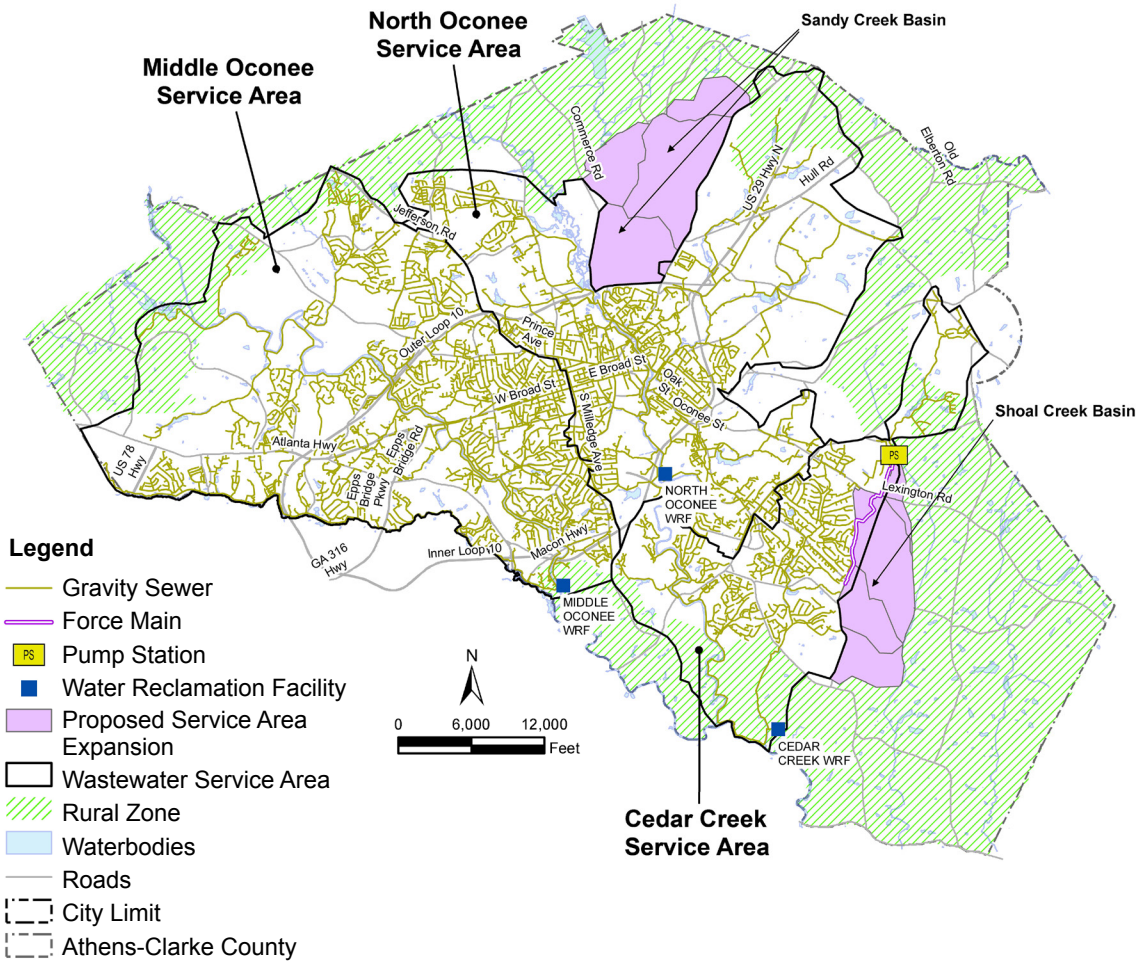
Project Type	Estimated Cost
Sewer Rehabilitation (473 miles)	$79,910,000
Sewer Replacement (10 miles)	$22,160,000
Extended/Expanded Sewer Service	$17,070,000
Water Reclamation Facility Improvements	$30,120,000
Total	**$149,260,000**

The ACCUG PUD's goal is to conduct sanitary sewer evaluation surveys and rehabilitation, where needed, on all of its collection system assets; however detailed analyses allowed the assets to be prioritized for improvements in the 2015 SDP Update. Collection system improvements were identified through dynamic wet-weather modeling, capacity analyses, and a comprehensive flow monitoring study. Approximately 10 miles of sewer pipe were identified as needing to be replaced, either due to capacity or condition issues, and 35 miles of sewer pipe (9 miles in Cedar Creek, 23 miles in Middle Oconee, and 3 miles in North Oconee) were identified as a high priority for evaluation for rehabilitation. Needed pipe repairs would be identified in the field using methods such as smoke tests and pole camera recordings. Where necessary, pipes would be relined to minimize inflow, infiltration, or leaks. Pipe rehabilitation would improve the efficiency of PUD's reclamation facilities by restoring plant capacity.

For the SDP 2015 Update, two types of future wastewater collection projects were identified: those that extend wastewater collection lines within the service area and

Recommended improvements include construction of an urban water reuse system, changes to improve WRF operations and efficiency, evaluation of alternative energy sources, construction of a solar facility at the Cedar Creek WRF, and updates to address total phosphorus effluent limits that may be imposed by the state in the near future.

Existing and Proposed Wastewater Service Areas



The expansion of public wastewater service to existing developments in the Sandy Creek and Lower Shoal Creek drainage basins, if septic tank failures occur, will address potential future public health and water quality issues.

those that expand the existing wastewater service area. Extension projects identified include extending wastewater service in 3,050 acres of the Trail Creek, Bear Creek, Turkey Creek, Lower Middle Oconee, and Upper North Oconee drainage basins for future customers. Additionally, the expansion of public wastewater service to existing developments in the Sandy Creek and Lower Shoal Creek drainage basins is recommended, if septic tank failures are to occur. This expansion will address potential future public health and water quality issues. These service areas were removed by the M&C during previous SDP updates and are recommended to be included in the SDP 2015 Update to address potential future public health and water quality issues. Based on the motion approved by the M&C in 2015, expanded service in these areas shall utilize solutions other than gravity sewer lines, shall avoid environmentally sensitive areas, and shall serve only existing structures or lots of record. Expanded service would be implemented only after approval by the M&C.

What construction and improvement projects are needed?

The following specific projects have been identified to meet community needs for water and wastewater services through 2035. These projects have been categorized, evaluated, and prioritized based on the goals, values, and objectives approved by the M&C for the 1995 SDP.

Priority 1 Regulatory Requirement Projects

SDP No.	Project	Estimated Cost
1-201	North Oconee WRF - Total Phosphorus Polishing	$8,950,000
1-202	Middle Oconee WRF - Total Phosphorus Polishing	$7,850,000
1-203	Cedar Creek WRF - Total Phosphorus Polishing	$4,250,000
Total		**$21,050,000**

Priority 2 System Renewal Projects

SDP No.	Project	Estimated Cost
2-201	Middle Oconee East Trunk Improvements	$7,840,000
2-202	Tanyard Creek Interceptor Improvements	$1,620,000
2-203	Brooklyn Creek Interceptor Improvements	$6,390,000
2-204	Water and Sewer Building – Short-term Renovations	$866,000
2-205	Leak Detection Program	$1,000,000
2-206	North Oconee WRF - Aeration Basins	$170,000
2-207	Cedar Creek Interceptor Improvements	$2,490,000

Priority 2 System Renewal Projects *(continued)*

SDP No.	Project	Estimated Cost
2-208	Turkey Creek Interceptor	$690,000
2-209	Kingswood Collector	$930,000
2-210	Small Diameter Water Main Replacement	$10,800,000
2-211	Targeted RDII Reduction - SSES and Rehabilitation	$35,470,000
2-212	Water Main Connections for Improved Water Quality and Improved Fire Protection	$1,600,000
2-213	Upper North Oconee West Trunk Improvements	$1,300,000
2-214	Lower North Oconee Trunk Improvements	$2,670,000
2-215	Middle Oconee WRF - Sludge Thickening Building	$100,000
2-216	Re-lining Aging Water Mains	$23,400,000
2-217	Middle Oconee West Trunk Improvements	$9,490,000
2-218	Sanford Stadium Interceptor	$2,550,000
2-219	Middle Oconee WRF - Enhanced Biological Phosphorus Removal (EBPR) Basin Cover	$500,000
2-220	North Oconee WRF - Secondary Clarifier Launder Covers	$1,200,000
2-221	Cedar Creek WRF – Solar Energy	$1,000,000
2-222	McNutt Interceptor Improvements	$2,730,000
2-223	Cedar Creek WRF - Influent Grinder	$270,000
2-224	Middle Oconee WRF - Influent Grinder	$440,000
2-225	North Oconee WRF - Influent Grinder	$860,000
2-226	North Oconee Reuse Facility	$4,600,000
2-227	Combined Meter Management/Water and Sewer Facility	$8,500,000
2-228	J.G. Beacham Water Treatment Plant (WTP) Solids Handling	$16,800,000
2-229	System-wide Flow Monitoring	$400,000
2-230	Long-term SSES and Rehabilitation Program	$19,740,000
2-231	Alternative Energy Source Evaluation	$100,000
Total		**$166,516,000**

Priority 3 Public Health Projects

SDP No.	Project	Estimated Cost
3-201	Sandy Creek Basin	$5,000,000
3-202	Shoal Creek Basin	$3,000,000
Total		**$8,000,000**

Priority 4 DOT Relocations, Extensions, or Improvement Projects

Priority 5 Economic/Industrial Development Projects

No projects currently assigned to these categories by the Mayor and Commission.

Priority 6 System Expansion Projects

SDP Proj. No.	Project	Estimated Cost
6-201	Atlanta Highway Elevated Storage Tank and Booster Pump Station	$8,300,000
6-202	Hampton Park Interceptor	$850,000
6-203	Upper North Oconee Interceptor - Phase 2C	$4,260,000
6-204	Upper North Oconee/Highway 29 Interceptor	$2,480,000
6-205	Future Water Supply Enhancements	$20,000,000
Total		**$35,890,000**

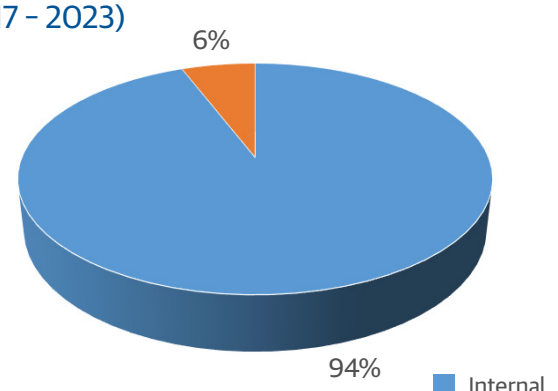
Priority 7 System Extension Projects

SDP Proj. No.	Project	Estimated Cost
7-201	Lower Middle Oconee Extension (LMO-8)	$1,860,000
7-202	Trail Creek East/West – Project 4 (TCE-2, TCE-4)	$1,290,000
7-203	Turkey Creek Extension (TC-2)	$2,060,000
7-204	Bear Creek Extension (BC-2)	$960,000
7-205	Trail Creek East/West – Project 3 (TCE-3)	$1,020,000
7-206	Upper North Oconee/North Oconee River East Extension (UNO-8)	$1,880,000
Total		**$9,070,000**

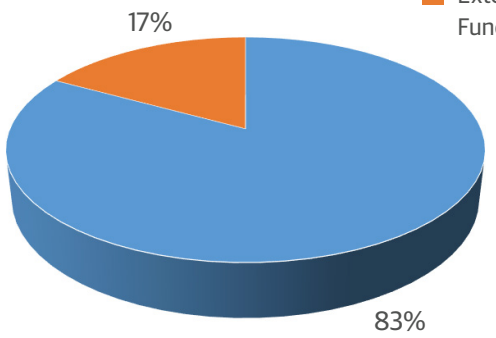
Where will the necessary funds come from?

The Financial Element of the 2015 SDP Update included a financial analysis to identify the source of funds, financing mechanisms, and near-future and long-term schedules necessary to implement the capital improvement projects. The ACCUG PUD's financial goal is to use ratepayers' money wisely through responsible spending and minimizing the loans needed to complete the capital projects. Over the previous 5 years, the ACCUG PUD has worked toward more self-funding and less borrowing, by using internal revenues to pay for capital projects. The projected rate increases summarized below would allow for the ACCUG PUD to fund 94 percent of its near-term spending with internal capital. These rate projections have been calculated based on conservative estimates of population growth. The rate increases and timeline for completing projects may change if actual community growth differs from these estimates. With the projected rate increases, ACC's typical residential water and sewer rates are comparable to many nearby communities, as show in the chart on the following page.

Near-Term Funding Sources (FY 2017 – 2023)



Long-Term Funding Sources (FY 2024 – 2036)

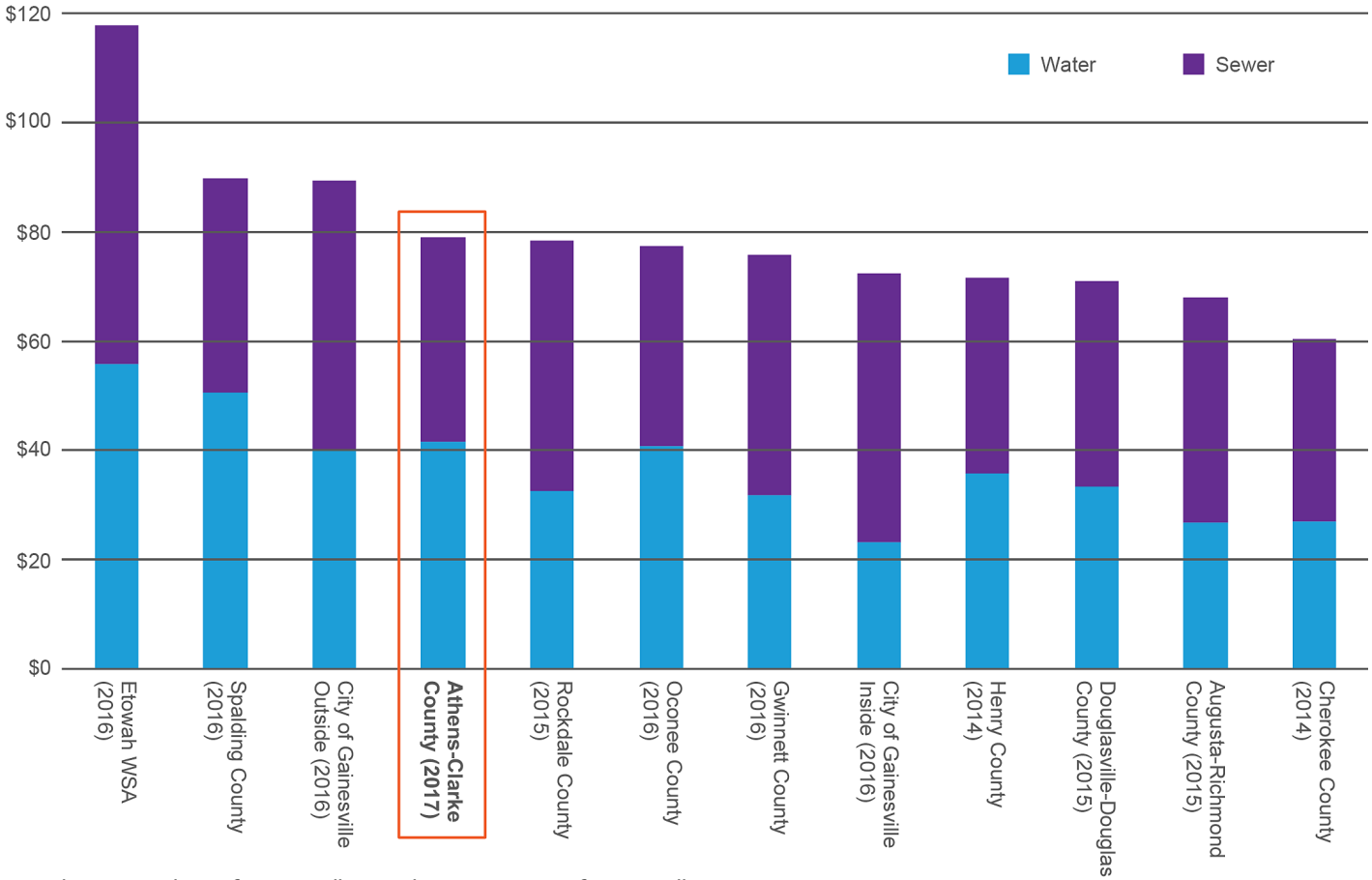


Typical Monthly Residential Bill Under Projected Rates

Water Bill	**FY 2016 (Actual)**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**
Monthly Service Charge	$8.65	$8.65	$8.65	$8.90	$9.16	$9.42	$9.69	$9.97
Water Use TIER 1	$17.82	$18.35	$18.90	$19.47	$20.05	$20.65	$21.27	$21.91
Water Use TIER II	$2.22	$2.29	$2.36	$2.43	$2.51	$2.58	$2.66	$2.74
Water Use TIER III	$4.01	$4.13	$4.25	$4.38	$4.51	$4.65	$4.79	$4.93
Water Use TIER IV	$7.95	$8.19	$8.44	$8.69	$8.95	$9.22	$9.50	$9.78
Total	**$40.65**	**$41.61**	**$42.60**	**$43.87**	**$45.18**	**$46.52**	**$47.91**	**$49.33**
Sewer Bill	**FY 2016 (Actual)**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**
Monthly Service Charge	$8.30	$8.30	$8.30	$8.55	$8.81	$9.07	$9.34	$9.62
Sewer Use	$27.80	$29.19	$30.65	$32.18	$33.79	$35.48	$37.25	$39.12
Total	**$36.10**	**$37.49**	**$38.95**	**$40.73**	**$42.60**	**$44.55**	**$46.59**	**$48.74**
Combined Bill	**FY 2016 (Actual)**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**
Total	**$76.75**	**$79.10**	**$81.55**	**$84.60**	**$87.78**	**$91.07**	**$94.50**	**$98.07**
Increase in Dollars		$2.35	$2.45	$3.05	$3.18	$3.29	$3.43	$3.57

Based on a monthly usage of 5,000 gallons and a winter average of 3,500 gallons.

Monthly Residential Rate Comparison Under Projected Rates

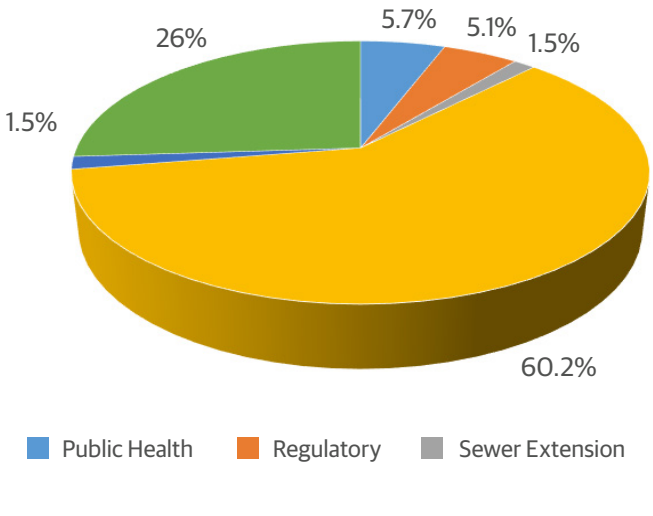


Based on a typical use of 5,000 gallons and winter average of 3,500 gallons.

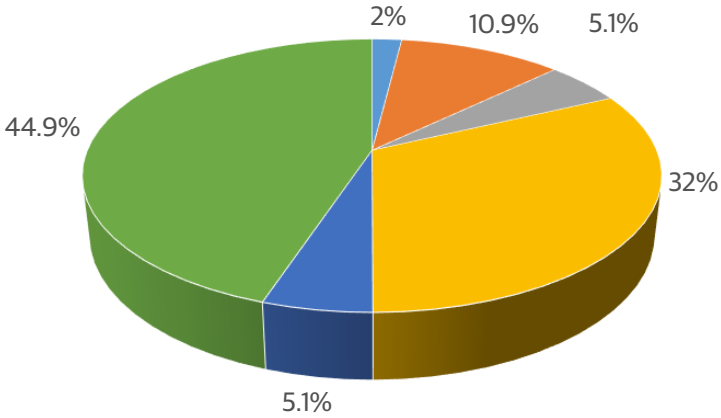
How will the utility funds be used?

The 2015 SDP Update places higher emphasis on system reliability and sustainability over projects involving expansion or extension of service. Projects were selected in order for the water and wastewater systems to operate in consistency with existing permit conditions. To this end, the ACCUG PUD's goal is to conduct sanitary sewer system studies (SSES) and rehabilitation, where needed, on its entire system. A majority (60%) of near-term (FY 2017-2023) spending and 32% of long-term (FY 2024-2036) spending will focus on sewer rehabilitation and replacement, to maintain the existing sewer system. The majority (45%) of long-term spending is focused on the improvements to the water system, including water main rehabilitation and replacement, pressure system improvements, and potential future water supply enhancements to protect the local community from drought impacts. The charts below summarizes the ACCUG PUD's anticipated near- and long-term spending.

Near-Term Total Spending (Projected FY 2017 – 2023)



Long-Term Total Spending (Projected FY 2024 – 2036)



Public Health | Regulatory | Sewer Extension | Sewer Rehabilitation/ Replacement | Water Reclamation Facility Improvement | Water System Improvement

PROJECT IMPLEMENTATION GUIDELINES

The ACCUG PUD plans, designs, and constructs water and wastewater infrastructure with the goal of being dependable, safe, operationally efficient, and easily maintained. Throughout this process, multiple approvals are required by the M&C, including project concept and design development, engineering consultant selection, preliminary construction plans, easement acquisitions, and construction bid award. As such, the PUD has developed engineering guidelines/recommended practices for various phases of project implementation. These guidelines, summarized below, build upon lessons learned from past projects and from PUD's commitment to avoiding, minimizing, and mitigating environmental impacts.

Conceptual Planning

The ACCUG PUD utilizes the following guidelines during conceptual planning for water and wastewater improvements:

- The SDP provides for flexibility to deliver wastewater service. Gravity sewers are preferred as the long-term, most cost-effective design option for wastewater systems. Alternative designs (including pump stations and force mains) may be considered to avoid environmentally sensitive areas or other constraints on a project-by-project basis.
- Design options for wastewater service will be evaluated during the Preliminary Engineering Design phase. The results of this evaluation will be subsequently presented to the M&C for approval.
- Pump stations, cluster septic systems, or other decentralized wastewater treatment systems may be considered as a service solution in areas where public wastewater is not available and existing developments are currently experiencing or are expected to experience septic system failures. For communities with failing septic systems, the PUD will develop a specific method of providing wastewater service to the subject area, though property owners are responsible for funding their connection to the wastewater system, through collector or service lines.

Preliminary Engineering Design

The ACCUG PUD utilizes the following guidelines during the preliminary engineering design phase for water and wastewater improvements:

- Design infrastructure improvements in such a way as to avoid or minimize impacts to environmentally sensitive areas, public investments such as land conservation or recreational green spaces, and to protect the overall water quality. Proposed routes will be surveyed under the guidance of an ecologist or other environmental professional to identify these sensitive areas. Environmental impacts that cannot be avoided will be mitigated.
- Review pump station and force main design options that may apply to the project.

- Review alternative construction strategies and technologies to minimize areas of impact.
- Conduct a Public Outreach Program to solicit input from impacted property owners and the community.
- Conduct coordination meetings with ACCUG departments, the University of Georgia, and other appropriate agencies.
- Develop a funding recommendation for the project.

Final Engineering Design

The ACCUG PUD utilizes the following guidelines during the final engineering design phase for water and wastewater improvements:

- Continue the coordination of design activities with ACCUG departments, UGA, and other appropriate agencies.
- Stream crossing design goals are to:
  - Evaluate the potential to relocate aerial crossings to below the streambed.
  - Minimize the impact area by using appropriate construction strategies and technologies.
  - Restore stream banks to a condition that is equal or superior to the previous existing conditions prior to construction.
  - Purchase any required mitigation credits.
- Wetlands encroachment goals are to:
  - Minimize the impact area through the evaluation and implementation of appropriate construction strategies and technologies.
  - Purchase any required mitigation credits.
- Land disturbance goals are to:
  - Minimize the impact area by limiting the constructed width and length of open trenches and other excavations.
  - Use Best Management Practices for erosion, sedimentation, and pollution control in compliance with permit requirements.

Construction

During the construction phase, the ACCUG PUD not only meets permit requirements, but also places more stringent limitations on the contractor (e.g., restrictions of no more than 1,000 feet of simultaneous construction disturbance and a construction width of no more than 50 feet). The PUD complies with the ACCUG Community Tree Management Ordinance (ACCUG Code Title 8, Chapter 8-7) and completes additional riparian restoration efforts, including grassing and tree planting where construction encroaches on protected buffers.

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