



Governing Board Meeting Materials

February 10, 2022

1. Agenda
2. December 8, 2021, Board Meeting Minutes
3. Wet Weather Septic System Impacts to Surface Water Quality Study Contract
4. Water Supply and Water Conservation Action Items Draft Package
5. Benefit-Cost Analysis of Proposed Code Changes
6. 2022 Stormwater Forecast Pilot Grant Memo

Agenda



Metropolitan North Georgia Water Planning District

International Tower | 229 Peachtree St., NE | Suite 100 | Atlanta, GA 30303

BOARD MEETING AGENDA

February 10, 2022 – 9:10 a.m. to 2:00 p.m.
Gwinnett Environmental and Heritage Center
2020 Clean Water Drive, Buford, GA 30519

- I. Welcome New Board Members**
- II. Public Comment Period****
- III. Approve Meeting Minutes (*Action Item*)**
- IV. Approve Wet Weather Septic System Impact to Surface Waters Study Contract (*Action Item*)**
- V. Legislative Update**
- VI. Goals for the Retreat**
- VII. 2022 Water Resource Management Plan Update**
 - *Schedule*
 - *Policy Updates*
 - *Water/Wastewater/Biosolids/Residuals Forecast Results*
 - *Appendix B – County Level Summaries Draft*
 - *Proposed Modifications to Action Items*
 - a. *Summary*
 - b. *Water Supply and Water Conservation*
 - c. *Benefit-Cost Analysis*
 - d. *Proposed Items for Elimination*
 - *Lunch Break*
 - *Septic Policy*
 - *Stormwater Forecast Pilot Grants*
- VIII. ARPA Grant Funding (pending announcement from state) (*Action Item*)**
- IX. Water Supply/Litigation Status**
- X. Wrap-up Discussion**
- XI. Tour of The Water Tower**

**A 10-minute period for public comments is designated as needed at each Governing Board meeting during a time deemed appropriate by the Chairman. Each speaker must sign-up at least two (2) days prior to the meeting start time by emailing Chairman@northgeorgiawater.com. The 10 minute period will be divided by the number of people wishing to address the Board. No single speaker shall have more than five (5) minutes to address the Board. Comments should also be provided in writing, with supporting material. The Chairman reserves the right to limit or extend the speaking time or total number of speakers at any meeting.

December 8, 2021, Board Meeting Minutes



**Metropolitan North Georgia Water Planning District
GOVERNING BOARD
Minutes
December 8, 2021**

The Metropolitan North Georgia Water Planning District Governing Board met on Wednesday, December 8, 2021 at 10:00 a.m. through an online web-conference.

Members Present

Mr. Glenn Page, Chairman
Dr. Mark Berry, Secretary/Treasurer
Hon. Harry Johnston
Hon. Lisa Cupid
Hon. Dub Pearman
Hon. Cindy Jones Mills
Hon. Nicole Love Hendrickson
Ms. Pamela Burnett
Mr. Gerald Pouncey
Mr. Tim Thoms

City of Atlanta Designee: Ms. Mikita Browning
Bartow County Designee: Mr. Sidney Forsyth
Clayton County Designee: Mr. Bernard Franks
Douglas County Designee: Mr. Gil Shearouse
Fulton County Designee: Mr. Nick Ammons
Hall County Designee: Mr. Srikanth Yamala
Henry County Designee: Mr. Tony Carnell
Paulding County Designee: Mr. Boyd Austin
Rockdale County Designee: Mr. Derek Bogan

Members Not Present

Ms. Katie Kirkpatrick, Vice Chair
Hon. Michael Thurmond
Hon. Edward Johnson

Mr. Brad Currey
Ms. Kit Dunlap
Mr. Birdel Jackson

Chairman Glenn Page called the meeting to order.

Welcome New Board Members

Chairman Page welcomed Alfred John, Chairman of the Forsyth County Board of Commissioners, and Richard Higgins, Chairman of the Hall County Board of Commissioners, to the Governing Board. Chairman Page announced that because of Forsyth County and Hall County both having reached the minimum population threshold of 200,000 as of the 2020 census, the commission chairs will now hold the permanent position for their counties.

Public Comment Period

Linda MacGregor provided public comment regarding the welcome to new board members.

Approve Meeting Minutes

Chairman Page presented the September 8, 2021 meeting minutes for approval. No revisions were offered. Mr. Nick Ammons made a motion to approve the meeting minutes. The motion was seconded by Hon. Dub Pearman and passed without opposition.

Chairman's Update

Legislative Policy Committee

Chairman Page provided a list of the named members of the 2022 Legislative Policy Committee. The Legislative Policy Committee members include Chairman Page, Vice Chair Katie Kirkpatrick, Treasurer/Secretary Dr. Mark Berry, Hon. Andre Dickens, Hon. Lisa Cupid, Hon. Ramona Jackson Jones, Hon. Nicole Love Hendrickson, Ms. Pam Burnett, Ms. Kit Dunlap, Mr. Gerald Pouncey, and Mr. Tim Thoms.

District's 20th Anniversary

Board members reflected on the District's 20th Anniversary Celebration Event and viewed videos from the Metro Water District and Governor Brian Kemp.

2021 STREAM Award Winners

Ms. Katherine Zitsch presented the winners of the 2021 STREAM Awards as follows: Water Supply – City of Atlanta Bellwood Quarry and Tunnel Project, Watershed – City of Gainesville's Stormwater Program, Education - DeKalb County Department of Watershed Management's No FOG, No Clog Campaign, Education Honorable Mentions – City of Roswell and Henry County Water Authority.

Schedule for 2022

Chairman Page noted the next Board meeting will be the 2022 Board Retreat on February 10, 2022 in Gwinnett County.

Executive Report

2022 Finance Committee Membership

Chairman Page presented the slate of 2022 Finance Committee Members for board consideration which included Chairman Page, Vice Chair Kirkpatrick, Treasurer/Secretary Dr. Berry (Committee Chair), Hon. Cupid, Hon. Mike Thurmond, Hon. Carlotta Harrell, Hon. Hendrickson, Hon. David Carmichael, and Mr. Pouncey. Mr. Ammons made a motion to approve the 2022 Finance Committee Membership. The motion was seconded by Mr. Tim Thoms and passed without opposition.

2021 Year End Budget Revision

Treasurer Dr. Berry presented the 2021 Year End Budget Revision for approval. Hon. Pearman made a motion to approve the 2021 Year End Budget Revision. The motion was seconded by Hon. Lisa Cupid and passed without opposition.

BAC New Member Approval

Chairman Page announced that five applicants for Basin Advisory Council (BAC) membership were approved during the Executive Committee meeting.

Staff Updates

Education Update

Ms. Sarah Skinner provided an overview of ongoing education activities and contests including the 2022 Calendar Photo Contest, the 2021 Middle School Essay Contest, and the 2022 Water Drop Dash (10th Anniversary).

2022 Water Resource Management Plan Update

Mr. Danny Johnson provided a schedule update for the 2022 Water Resource Management Plan Update and highlighted ongoing coordination efforts with the neighboring regional water councils. Mr. Andrew Morris presented the proposed updated and new water conservation action items under development. Ms. Katherine Atteberry presented an overview of the stormwater forecast. Mr. Johnson presented a list of potential concepts for managing septic flows in relation to water quantity.

Water Supply Status / Litigation Update

Ms. Katherine Zitsch presented an overview of water supply and litigation status.

There being no further business, Chairman Page adjourned the meeting.

Wet Weather Septic System Impacts to Surface Water Quality Study Contract

MNGWPD Contract
No. _____

CONTRACT FOR PROFESSIONAL SERVICES

THIS AGREEMENT, entered into as of this ____ day of _____, 2022 by and between the University of Georgia Research Foundation, Inc., , of Athens, Georgia (hereinafter referred to as the "Consultant") and the Metropolitan North Georgia Water Planning District, (hereinafter referred to as "MNGWPD" or "the District").

WITNESSETH THAT

WHEREAS, MNGWPD, pursuant to O.C.G.A. § 12-5-570 *et.seq.*, is obligated to develop regional and watershed-specific plans; and

WHEREAS, MNGWPD desires to engage the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking or project (hereinafter referred to as the "Project") which is to be wholly or partially financed by funds from the State of Georgia, the United States Government, or participating Local Governments (hereinafter, along with the appropriate auditing agency of the entity providing such funds, referred to as the "Concerned Funding Agency or Agencies"); and

WHEREAS, the Consultant desires to render such services in connection with the Project;

NOW THEREFORE, in consideration of the premises, and the mutual covenants and agreements hereinafter contained, the parties hereto agree as follows:

1. Employment of the Consultant. MNGWPD hereby agrees to engage the Consultant and the Consultant hereby agrees to perform the services hereinafter set forth in accordance with the terms and conditions contained herein.

2. Time of Performance. The services of the Consultant are to commence no later than fifteen (15) days after the execution of this contract and shall be undertaken and pursued in such sequence as to assure their expeditious completion and as may be required in Attachment "A". The period of performance for this project will be from February 15, 2022 through August 31, 2023.

3. Compensation and Method of Payment. The Consultant shall be compensated for the work and services to be performed under this contract as set forth in Attachment "B" which is attached hereto and made a part hereof. Compensation will be based on a fixed price agreement. In no event, however, will the total compensation and reimbursement, if any, to be paid the Consultant under this contract exceed the amount as further described in Attachment "B" of this contract.

4. Scope of Services. The Consultant shall do, perform and carry out in a satisfactory and proper manner, with the skill and diligence normally employed by Consultants performing similar work and services, the work and services described in Attachment "A", which is attached hereto and made a part hereof. The Consultant shall insure adequate review, coordination and approval of the work with MNGWPD's Chief Executive Officer (CEO) or his authorized agent (as used herein the CEO's "authorized agent" shall mean that person designated by MNGWPD's CEO in Paragraph 27 of this contract).

5. Progress Payments. Unless otherwise provided in Attachment "B", the Consultant shall be entitled to receive progress payments on the following basis: As of the last day of each calendar month during the existence of this contract, the Consultant shall submit to MNGWPD an invoice for payment based on the percentage of completion of the Project through the invoice period. Subject to MNGWPD's right to verify the accuracy of the invoice and the satisfactory performance of the work evidenced thereby, MNGWPD will make payments to the Consultant as the work progresses but not more often than once a month. Invoices must cover a period ending with the end of a month and shall be received within thirty (30) days following the end of the invoice period. The Consultant will be paid an amount which bears the same ratio to the total compensation to be paid to the Consultant under this contract as the work and services actually performed as of the end of the invoice period bear to the total work and services to be performed by the Consultant under this contract, less all previous progress payments made pursuant hereto, and less an established retainage. Upon completion and acceptance by MNGWPD of the work, including the receipt of any final written submission of the Consultant, MNGWPD shall pay the Consultant a sum equal to one hundred per cent (100%) of the compensation to be paid under this contract, less the total of all previous payments made. Such payment shall be made no later than thirty days after MNGWPD's acceptance of the Consultant's invoice and MNGWPD's receipt of such funds from the Concerned Funding Agency.

6. Consultant's Personnel. The Consultant represents that he has, or will secure at his own expense, all personnel required in performing the services under this contract. Such personnel shall not be employees of MNGWPD, nor shall such personnel have been employees of MNGWPD during any time within the twelve-month period immediately prior to the date of this contract, except with the express prior written consent of MNGWPD's CEO or his authorized agent. Further, the Consultant agrees that no such personnel shall be involved in any way with the performance of this contract, without the express prior written approval of MNGWPD's CEO or his authorized agent.

7. Approval of Subcontracts. None of the work or services to be performed under this contract by the Consultant shall be subcontracted without the prior written approval of MNGWPD's CEO or his authorized agent with the understanding that the Consultant will subcontract performance of the project to the University of Georgia. If such subcontracting is authorized as herein provided, all subcontract documents shall be submitted to MNGWPD's CEO or his authorized agent, for his review and approval prior to the execution of such subcontract. Further, if requested by MNGWPD's CEO or his authorized agent, the Consultant shall provide such documentation as MNGWPD shall require, regarding the method the Consultant used in selecting its subcontractor. The Consultant acknowledges that if the work or services to be performed under this contract is financed solely or partially through Federal funds, the selection of subcontractors is governed by regulations requiring competition between potential subcontractors or adequate justification for sole source selection. The Consultant agrees to abide

by such regulations in its selection procedure.

8. Review and Coordination. To insure adequate review and evaluation of the work, and proper coordination among interested parties, MNGWPD shall be kept fully informed concerning the progress of the work and services to be performed hereunder. MNGWPD may require the Consultant to meet with designated officials of MNGWPD and the Concerned Funding Agency from time to time to review the work. Reasonable prior notice of such review meeting shall be given the Consultant.

9. Reports. The Consultant shall furnish MNGWPD with a monthly narrative progress report, in such form as may be specified by MNGWPD's CEO or his authorized agent, outlining the work accomplished by the Consultant during the month of such report and the current status of the Project, including the percentage of the work which has been completed as of the end of the month of such report. Such report shall be furnished within fifteen (15) days of the end of the month of such report.

10. Inspections. Authorized representatives of MNGWPD and the Concerned Funding Agency may at all reasonable times review and inspect the Project activities and data collected pursuant to this contract. All reports, drawings, studies, specifications, estimates, maps and computations prepared by or for the Consultant shall be made available to authorized representatives of MNGWPD and the Concerned Funding Agency for inspection and review at all reasonable times in the Consultant's office where data is normally accumulated. Approval and acceptance of such material shall not relieve the Consultant of his professional obligation to correct, at his expense, any errors found in the work.

11. Maintenance of Cost Records. The Consultant shall maintain all books, documents, papers, accounting records and other evidence pertaining to costs incurred on the Project and shall make such material available at all reasonable times during the period of the contract, and for three years from the date of final payment under the contract, for inspection by MNGWPD, the Concerned Funding Agency, and if the work and services to be performed under this contract is wholly or partially funded with Federal funds, the Comptroller General of the United States, or any other party as may be directed by MNGWPD. Notwithstanding this Section 11 or any other provisions of this contract and pursuant to the Georgia Open Records Act, O.C.G.A. § 50-18-70 *et seq.*, all records received or maintained by Consultant or any other private entity in the performance of work and services under this contract shall be subject to disclosure to the same extent that such records would be subject to disclosure if received or maintained by MNGWPD or any other agency, public agency, or public office. The Consultant shall include the provisions of this paragraph in any subcontract executed in connection with this Project.

12. Data to be Furnished Consultant. All information, data, reports, records and maps which are existing, readily available and reasonably necessary, as determined by MNGWPD's CEO or his authorized agent, for the performance by the Consultant of the work and services required by this contract shall be furnished to the Consultant without charge by MNGWPD. MNGWPD, its agents and employees, shall fully cooperate with the Consultant in the performance of the Consultant's duties under this contract.

13. Rights in Documents Materials and Data Produced. Consultant agrees that all reports,

drawings, studies, specifications, estimates, maps, computations and other data prepared by or for it under the terms of this contract shall be delivered to, become and remain the property of MNGWPD upon termination or completion of the work. MNGWPD shall have the right to use same without restriction or limitation and without compensation to the Consultant other than that provided for in this contract. For the purposes of this contract, "data" includes writings, sound recordings, or other graphic representations and works of a similar nature. No materials or data produced in whole or in part under this contract shall be the subject of an application for copyright by or on behalf of the Consultant or its subcontractors. If the work to be performed under this contract is financed wholly or partially by Federal funds, the Consultant acknowledges that matters regarding the rights to inventions and materials generated by or arising out of this contract may be subject to certain regulations issued by the Concerned Funding Agency. Information regarding these relevant regulations may be obtained upon written request to MNGWPD's CEO or his authorized agent. If this contract provides for the development of systems analysis products, models, electronic data processing systems, software and related services, the methods, material, logic and systems developed under this contract shall be the property of Consultant. However, MNGWPD, and the Concerned Funding Agencies shall retain the right, in perpetuity, to use, and to authorize others within the State of Georgia to use the systems analysis products, models, electronic data processing systems, software and related services, the methods, material, logic and systems without restriction or limitation and without compensation to the Consultant other than that that provided for in this contract.

14. Identification of Documents. Unless otherwise provided in Attachment "A", all reports, maps and other documents completed as a part of this contract shall bear on the title page of such report, map or document, the following legend: "Prepared by (insert name of Consultant) under Contract with the Metropolitan North Georgia Water Planning District. The preparation of this (insert either report, map or document, as appropriate) was financed in part by funds provided by (insert name of the Concerned Funding Agency and an identification of the grant program)." The date (month and year) in which the document was prepared shall also be shown.

15. Publication and Publicity. MNGWPD acknowledges and agrees that UGARF, UGA, and/or the Principal Investigator shall have the sole and unrestricted right to publish or otherwise disclose the Project protocol and results of the Project, but only to the extent doing so does not impermissibly disclose Confidential Information disclosed by MNGWPD to UGARF and/or UGA hereunder. To avoid loss of patent rights from premature public disclosure, Consultant shall require the Principal Investigator to deliver to MNGWPD all proposed articles, manuscripts, presentations, or any other publication of the Project prior to public disclosure. MNGWPD may review and provide comment, if any, for a period of thirty (30) days after receipt of the proposed publication or other public disclosure. Upon MNGWPD's notice to Consultant that MNGWPD's desires to file an application to protect certain Project Intellectual Property related to the proposed publication, Consultant shall require Principal Investigator to delay publication until the first of the following has occurred: (i) a patent application has been filed on such Project Intellectual Property; or (ii) the Parties agree not to pursue protection for such Project Intellectual Property; or (iii) sixty (60) days have expired after MNGWPD's notice to Consultant. "Confidential Information" shall be defined as all Project Intellectual Property and descriptions thereof shared by one Party (the "Provider") to the other ("the Recipient"), and also means all information embodied in written, electronic, biological, chemical, or any other tangible form, which is disclosed or provided under this Agreement by one Party (the "Provider") to the

other Party (the “Recipient”) and is marked confidential at time of disclosure. “Confidential Information” also includes all orally disclosed information where Provider declares such information to be confidential at the time of initial disclosure and confirms such declaration by written notice to the Recipient within thirty (30) days of initial disclosure. All articles, paper, bulletins, reports or other material reporting plans, progress, analysis or results and findings of the work conducted under this contract are subject to Georgia’s Open Records Act, O.C.G.A. § 50-18-70 *et. seq.* Consultant shall notify MNGWPD of the receipt of any and all requests to review any such articles, paper, bulletins, reports or other material.

16. Interest of Consultant. The Consultant covenants that neither the Consultant, nor anyone controlled by the Consultant, controlling the Consultant, or under common control with the Consultant, nor their agents, employees or subcontractors, presently has an interest, nor shall acquire an interest, direct or indirect, which would conflict in any manner or degree with the performance of its service hereunder, or which would prevent or tend to prevent, the satisfactory performance of the Consultant's service hereunder in an impartial and unbiased manner. The Consultant further covenants that in the performance of this contract no person having any such interest shall be employed by the Consultant as an agent, subcontractor or otherwise. If the Consultant contemplates taking some action which may constitute a violation of this paragraph 17, the Consultant shall request in writing the advice of MNGWPD's CEO or his authorized agent, and if MNGWPD's CEO or his authorized agent shall notify the Consultant in writing that the Consultant's contemplated action will not constitute a violation hereof, then the Consultant shall be authorized to take such action without being in violation of this paragraph.

17. Interest of Member of MNGWPD and Others. No officer, member or employee of MNGWPD, and no public official of any local government which is affected in any way by the Project, who exercises any function or responsibilities in the review or approval of the Project or any component part thereof, shall participate in any decision relating to this contract which affects his personal interest or the interest of any corporation, partnership or association in which he is, directly or indirectly, interested; nor shall any such officer, member or employee of MNGWPD, or public official of any local government affected by the Project, have any interest, direct or indirect, in this contract or the proceeds arising therefrom.

18. Official Not to Benefit. No member of or delegate to the Congress of the United States of America, resident Commissioner or employee of the United States Government shall be admitted to any share or part of this contract or to any benefit to arise here from.

19. Nondiscrimination.

(A) The Consultant will not discriminate against any qualified employee, applicant for employment or subcontractor because of age, handicap, religion, creed or belief, political affiliation, race, color, sex or national origin. The Consultant shall take affirmative action to insure that qualified applicants are employed and qualified subcontractors are selected, and that qualified employees are treated during employment, without regard to their age, handicap, religion, creed or belief, political affiliation, race, color, sex or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotions, or transfers; recruitment or recruitment advertising; layoffs or terminations; rates of pay or other forms of compensation; selection for training including apprenticeship; and participation in recreational

and educational activities. If the Consultant has fifty or more employees and if the total compensation and reimbursement to be paid to the Consultant as specified in paragraph 3 of this contract is Fifty Thousand Dollars (\$50,000) or more, the Consultant certifies that: (1) It has developed a written Affirmative Action Program (AAP) which includes: (a) an analysis of the Consultant's work force showing by job category the extent to which minorities and females are being underutilized, and (b) where minorities and females are being underutilized, realistic goals and timetables in each job category for correcting the underutilization; and (2) It presently has such a plan in effect and such plan will remain in effect at least until the Project completion date specified in paragraph 2 of the contract. The Consultant agrees to post in a conspicuous place available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause. The Consultant will in all solicitations or advertisements for subcontractors or employees placed by or on behalf of the Consultant, state that all qualified applications will receive consideration for employment without regard to age, handicap, religion, creed or belief, political affiliation, race, color, sex or national origin. The Consultant will cause the foregoing provisions to be inserted in all subcontracts for any work covered by this contract so that such provisions will be binding upon each subcontractor provided that the foregoing provisions shall not apply to subcontracts for less than \$10,000.00.

(B) The Consultant shall keep such records and submit such reports concerning the racial and ethnic origin of employees and applicants for employment as MNGWPD or the Concerned Funding Agency may require.

(C) The Consultant agrees to comply with such rules, regulations or guidelines as MNGWPD or the Concerned Funding Agency may issue to implement the requirements of this paragraph 20.

20. Changes. MNGWPD may require changes in the work and services that the Consultant is to perform hereunder. Such changes, including any increase or decrease in the amount of the Consultant's compensation which are mutually agreed upon by and between MNGWPD and the Consultant, shall be incorporated in written amendments to this contract.

21. Assignability. The Consultant shall not assign, sublet or transfer all or any portion of its interest in this Agreement without the prior written approval of MNGWPD's CEO or his authorized agent, except the Consultant to the University of Georgia.

22. Insurance. Consultant is insured under policies of insurance issued by the State of Georgia, Department of Administrative Services against tort claims, in the amount of \$1,000,000 per person and \$3,000,000 per occurrence; Consultant maintains workers' compensation insurance through the State of Georgia.

23. Termination of the Contract for Cause. If the Consultant, due to its action or failure to act, shall fail to fulfill in a timely and proper manner his obligations under this contract, or if the Consultant has or shall violate any of the covenants, agreements, representations or stipulations of this contract, MNGWPD shall thereupon have the right to terminate this contract by giving written notice to the Consultant of such termination and specifying the effective date thereof, at least five (5) days before the effective date of such termination. In such event, all finished or unfinished documents and other materials collected or produced under this contract (as more fully described in paragraph 14 hereof) shall, at the option of MNGWPD, become its

property and the Consultant shall be entitled to receive just and equitable compensation for any satisfactory work completed on such documents or materials.

24. Termination for Convenience. MNGWPD may terminate this contract at any time by giving written notice to the Consultant of such termination and specifying the effective date thereof, at least thirty (30) days before the effective date of such termination. In that event, all finished or unfinished documents and other materials produced or collected under this contract (as more fully described in paragraph 14 above) shall, at the option of MNGWPD, become its property. If this contract is terminated by MNGWPD as provided in this paragraph 26, the Consultant will be paid either (a) an amount which bears the same ratio to the total compensation to be paid to the Consultant under this contract as the services actually performed prior to the termination of this contract bear to the total services to be performed by the Consultant under this contract, less payments of compensation previously made, provided, however, that if less than sixty percent (60%) of the services covered by this contract have been performed by the effective date of such termination, the Consultant shall be reimbursed (in addition to the foregoing payment) for that portion of the actual out of pocket expenses (not otherwise reimbursed under this contract) incurred by the Consultant during the contract period, which are directly attributable to the uncompleted portion of the services covered by this contract; or if payment under this contract is on a cost reimbursement basis, (b) the actual expenses incurred by the Consultant prior to the effective date of such termination, as authorized in Attachment "B", plus any profit shown in Attachment "B". Provided, however, if this contract is terminated due to the fault of the Consultant, the provisions of paragraph 25 hereof shall prevail.

25. Consultant Termination for Convenience. Consultant may terminate this contract at any time by giving written notice to MNGWPD of such termination and specifying the effective date thereof, at least thirty (30) days before the effective date of such termination.

26. Designation of Authorized Agent: Under an existing agreement between the MNGWPD and the Atlanta Regional Commission (ARC) certain administrative, financial and technical staff support functions are performed by ARC for the MNGWPD. The following terms apply to this contract:

- a. ARC shall administer this contract on behalf of the MNGWPD, including but not limited to approval and acceptance of work or services, approval of subcontracts, and authorization of payment.
- b. ARC's Manager, Natural Resources Division is designated as the Authorized Agent for such administration.

27. Georgia Security and Immigration Compliance: The Consultant agrees and hereby certifies that it will comply with the Georgia Security and Immigration Compliance requirements of O.C.G.A. § 13-10-91.

28. Applicable Law. This contract shall be deemed to have been executed and performed in the State of Georgia, and all questions of interpretation and construction shall be construed by the laws of such State.

IN WITNESS WHEREOF, the Consultant and MNGWPD have executed this Agreement as of the day first above written.

ATTEST:

By: _____

Title: _____

EIN: _____

METROPOLITAN NORTH GEORGIA
WATER PLANNING DISTRICT

ATTEST:

Secretary - Treasurer

By: _____
Chairperson & CEO

**ATTACHMENT A
SCOPE OF WORK
WET WEATHER SEPTIC SYSTEM IMPACT TO
WATER QUALITY STUDY**

General

The work to be accomplished by the consultant is in support of the following work program components:

Cost Center	203 DDU	2022 Water District Dues
	303 DDU	2023 Water District Dues

Overview

The Metropolitan North Georgia Water Planning District (the District) was created by the Georgia General Assembly in 2001 as the designated agency for water resource planning in the fifteen county metropolitan Atlanta area. The District represents 15 counties (Bartow, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Hall, Henry, Paulding and Rockdale), 95 cities and includes over 50 water and wastewater providers. In its 15 years of existence, the District has produced three rounds of water resource planning documents with the first release of the Water Supply and Water Conservation Management Plan, the Wastewater Management Plan, and the Watershed Management Plan in 2003 and the most recent update in [2017](#).

As these water resource management plans were developed, the District Governing Board and its Technical Coordinating Committee and Basin Advisory Councils have discussed management policies surrounding on-site sewage management systems or septic systems. The Water Resource Management Plan addresses many aspects of septic management including land use planning, coordination among multiple jurisdictional departments and the local boards of health, management of septic systems in critical areas, as well as proper planning for septage disposal. Moving forward, the District Governing Board has considered implementing additional required actions to improve surface water quality across the region. In order to assess what, if any, measures would provide benefits to water quality, the District Governing Board directed the District to execute a [Septic System Impact to Surface Water Quality Study](#) in 2019 (2019 Study). Since the 2019 Study only assessed septic system impacts on water quality during dry weather, a second septic study is being commissioned to assess impacts during wet weather. Specifically, the 2022 Study should assess the potential connection between septic systems and poor surface water quality during wet weather using technology and sampling methods focused on nutrients, fecal indicator bacteria and microbial source tracking (MST) markers. While new approaches and technologies may be available to perform the 2022 Study, the consultant should consider how these can be compared to the 2019 Study results to ensure continuity and comparison between dry and wet weather sampling results.

Work Plan and Deliverables

The work plan and deliverables are included in the following pages.

WET WEATHER SEPTIC SYSTEM IMPACT TO WATER QUALITY STUDY SCOPE OF WORK

University of Georgia

Dr. Krista Capps, Odum School of Ecology & the Savannah River Ecology Laboratory

Dr. Rebecca Abney, Warnell School of Forestry and Natural Resources

Dr. Nandita Gaur, Department of Crop and Soil Sciences

Dr. Erin Lipp, Department of Environmental Health Sciences

SCOPE OF WORK:

Purpose: The purpose of this study is to support the District in evaluating the impact of septic infrastructure on surface water quality in streams within the 15-county metro Atlanta area. Specifically, this study will employ time-sensitive sampling techniques to assess the effects of rain events on interactions between septic system characteristics (e.g., system age and density) on surface water conditions that compromise human health and the environment.

Research Questions:

Though they will change with input from the District, we propose to conduct a study that will address several questions. The methods to accomplish this goal are detailed in the methods section below. Our tentative research questions include:

1. Can we attribute declines in surface water quality with rainfall events in watersheds dominated by septic infrastructure and is there evidence that such declines are derived from human wastewater (i.e., increases in fecal coliform bacteria and the HF₁₃₈ marker)?
2. If increases in fecal coliform bacteria and the HF₁₃₈ marker are detected, are they related to corresponding changes in conductivity, nitrogen, and phosphorus concentrations?
3. If additional system specific data (e.g., exact location, age, etc.) are integrated into the data collected from the 2019 study and analyzed using our proposed methods, what else can we learn about the relationships between surface water quality parameters and septic infrastructure from the data collected in that study?
4. If changes in water quality due to rainfall events are documented in the watershed, are they maintained long enough to forgo the need for immediate sample collection in response to changing discharge (i.e., ISCO samplers)?

Questions 1-3 will address key points detailed in the project solicitation. The primary motive of this project is to relate wet weather to septic-derived surface water pollution. This will be addressed through questions 1 and 2. The District also hopes to relate data collected in the new project to data collected in the 2019 study. We propose to enhance the power of the data collected in 2019 by adding additional information to the dataset and then applying additional statistical analysis to the data. In consultation with the District, the results from the re-analysis of the 2019 data may also inform our study design for the proposed study. In addressing question 4, we hope to inform future management and monitoring programs of the District. We propose to separate the effects of the “first flush” of pollution moving through the system during a rain event from baseflow conditions. If our data document that there are significant relationships between rain events and declining water quality and they provide support that these changes are rapid and short-lived, the District may want to consider investing in real-time monitoring and sampling technology.

Study Sites and Number of Sampling Events: We propose to collect data in Stamp Creek (control <5 systems per km²), Byrd Creek (control <5 systems per km²), West Fork Little River (Low <25 systems per km²), and Pond Fork (Medium 25-50 systems per km²). We will collect samples in four sites in each watershed during 10 sampling periods, four under baseflow conditions and six during wet weather conditions. Sample collection during baseflow will allow us to assess the influence of rain events on surface water quality and to support data comparison between the two studies (Table 1). We have also budgeted up to 10 additional trips to the sample locations to evaluate site characteristics using the

Rapid Bioassessment Protocol developed by the US EPA¹, update site-specific land use conditions, and maintain in-situ sampling equipment (e.g., conductivity sensors, pressure transducers, ISCOS).

Field & Laboratory Methods: Our research approach is designed to investigate relationships between septic systems and surface water quality, including, but not limited to conductivity, nitrogen and phosphorus concentrations, and fecal coliform bacteria in surface water. We will also employ conduct microbial source tracking (MST) in the study watersheds to evaluate the contribution of human waste to fecal coliform concentrations. We will employ the same analytical methods to analyze surface water nutrients, fecal coliform concentrations, and microbial source tracking detailed in the Final Report for the Septic System Impact to Surface Water Quality Study in Metropolitan Atlanta that was prepared by Geosyntec in 2019² (2019 study) to support direct comparisons of data collected in both studies. Specifically, we will measure nitrate+nitrite as N using EPA Method 353.2 and dissolved phosphorus using EPA Method 365.1. We will estimate fecal coliform concentrations using Standard Method 9222D and will quantify human fecal marker (HF183) using ddPCR. Handheld multiparameter probes will be used to measure pH, temperature, dissolved oxygen, turbidity, and conductance using standard methods. We will also measure stream flow using a flow meter at each site during each sampling event. Additionally, we will supply and deploy continuous weather sensors and conductivity sensors (supplied by UGA \$750 each) in each of the study watersheds. We will deploy six ISCO samplers (\$7,100 each; five supplied by us and one supplied through proposed budget) and pressure transducers (\$650 each; supplied by UGA) to estimate changes in discharge in the study watersheds. In each watershed, one ISCO sampler will be deployed at the furthest downstream sampling point. In two of the study watersheds (one of the control watersheds and in Pond Fork, we will also deploy an ISCO sampler in the furthest upstream sampling location to estimate changes along the reach through time.

Table 1: Sampling Locations and Descriptions of Samples to be Collected

Septic System Density (Reported in 2019 Study)	Name of Subwatershed	Number of Sampling Locations	Number of Events	Dry or Wet Weather Sampling	Replicates	Total Number of Samples
<5 systems per km ²	Stamp Creek	4	6	Wet	3	72
<5 systems per km ³	Byrd Creek	4	6	Wet	3	72
<25 systems per km ²	West Fork Little River	4	6	Wet	3	72
25-50 systems per km ²	Pond Fork	4	6	Wet	3	72
<5 systems per km ²	Stamp Creek	4	4	Dry	3	48
<5 systems per km ³	Byrd Creek	4	4	Dry	3	48
<25 systems per km ²	West Fork Little River	4	4	Dry	3	48
25-50 systems per km ²	Pond Fork	4	4	Dry	3	48
					Total number of samples	480

To comprehensively evaluate the impact of wet weather on stream water quality and identify the causes of poor stream water quality, we will perform additional sampling to separate the effects of runoff and baseflow. First, we will collect rainfall data in each watershed using a rain gauge and the data will be recorded on a cloud to enable near real time monitoring of rainfall. Continuous stream gauge data will be collected using a pressure transducer and we will run hydrograph analysis on the data for

¹ Barbour, M. T. (1999). Rapid bioassessment protocols for use in wadeable streams and rivers: periphyton, benthic macroinvertebrates and fish. US Environmental Protection Agency, Office of Water.

² <https://northgeorgiawater.org/wp-content/uploads/2019/08/2019-Septic-System-Surface-Water-Quality-Study.pdf#page%3D132>

each storm to identify the start and end times of runoff to streams and the amount of runoff to streams. This will be done using the Web-Based Hydrograph Analysis Tool^{3,4}. We also propose to collect time-based stream water samples during and after a storm event using an automated ISCO sampler. Again, four of the samplers would be deployed in the lower reaches of all the study watersheds. This will enable us to estimate the amount of nutrients and bacteria (described above) carried in runoff and baseflow. To separate the contribution of first flush, flow data will be analyzed based on Bertrand-Krajewski JL et al.⁵ During each rainfall event, time-based samples will be collected for the duration of the storm (10-minute samples for the first hour and subsequently one composite sample every day for 5 days). The 10-minute samples will be composited based on the first flush analysis above and analyzed for the same analytes. The statistics (described below) will be run on 1) the nutrients, bacteria, and other physicochemical parameters (described above) that will be collected during first flush; 2) data collected during baseflow conditions; 3) composite stream water quality data. We will follow the procedure described in the dry weather sampling report to determine discharge areas for each sampling location and retain the number of sampling locations identified in the 2019 study for comparing between the two sampling periods.

Statistical Analysis: We propose to integrate system-specific age and location with the existing dry weather data and reanalyze the findings of the initial study. We will also use these data to enhance our ability to detect septic-specific influence on surface water quality. In addition to the analysis run on the wet weather events, we will complete factorial ANOVA on the different analytes to determine the impact of septic system density, cumulative rainfall, septic system age and distance to stream (in isolation and their interaction effect) to determine whether combinations of rainfall amounts and septic system age or septic system density, age, and cumulative rainfall make the streams more susceptible to pollution from septic systems. The ability to perform these analysis will depend upon access to data that will be supplied by the District. All the statistics will be run in R and the codes will be provided for repeatability of the analysis in different sites. While all the factors mentioned above are important for proper septic effluent discharge, often the interaction between them can create conditions for system failure. Thus, we will perform a comprehensive two-way ANOVA to test the interaction of all these factors on stream water quality. The null hypothesis that we will test would be that the interaction of two factors (we will test all combinations) is significant in determining the amount of pollutant loading to the stream. Depending on the factors that are found to be significant in the factorial ANOVA, we will create a Generalized Linear Model to predict stream water quality as a function of the significant factors.

Task-Specific Methods and Activities:

Task 1: Develop a Wet Weather Monitoring Plan: We will work with representatives from the District to develop and finalize a 2022 Wet Weather Monitoring Plan (Plan). The plan will include:

- re-analysis of the 2019 study and a detailed description of how the 2019 data will be integrated into the findings of the wet weather study. By including system-specific data including location and estimated age into the analyses, we may be able to obtain a better understanding of the

³ Lim, K. J., Engel, B. A., Tang, Z., Choi, J., Kim, K. S., Muthukrishnan, S., & Tripathy, D. (2005). Automated web GIS based hydrograph analysis tool, WHAT 1. JAWRA Journal of the American Water Resources Association, 41(6), 1407-1416.

⁴Lim, K. J., Park, Y. S., Kim, J., Shin, Y. C., Kim, N. W., Kim, S. J., ... & Engel, B. A. (2010). Development of genetic algorithm-based optimization module in WHAT system for hydrograph analysis and model application. Computers & Geosciences, 36(7), 936-944.

⁵ Bertrand-Krajewski JL, Chebbo MG, Saget A (1998) Distribution of pollutant mass vs volume in stormwater discharges and the first-flush phenomenon. Water Res 32(8):2341–2356

impacts of septic infrastructure on water quality. We will couple these methods with the sample analysis used in the previous study so that the results of both studies could be analyzed together.

- discussion of updated land use conditions that will be developed using in-person site visits and the 2019 National Land Cover Database. Existing land use conditions will be mapped using Arc GIS.
- monitoring schedule, definition of wet and dry weather events, rationale for dry weather sampling, and mutually agreed upon modifications or expansions of the project beyond the activities described in this Scope of Work.
- alternative plans for the study if no qualifying weather events occur during the approved project timeframe.

Deliverables:

- Draft Monitoring Plan in PDF and Word format
- Final Monitoring Plan in PDF and Word format

Assumptions:

- The District will provide raw data collected during the “Septic System Impact to Surface Water Quality Study in Metropolitan Atlanta” that was conducted by Geosyntec
- The District will provide the coordinates for the septic systems and the approximate system ages for the systems in the dry study watersheds and help gather data from the Georgia Department of Public Health for any systems that have been installed or repaired as available from the Environmental Health Information System
- UGA will communicate with any private landowners for sampling access and installation of ISCO samplers in study watersheds
- In-person data collection of individual septic system permits from local health departments to access additional data related to septic system design and installation date as well as failure logs is not included within this scope of work.

Task 2: Implement Water Quality Monitoring and Lab Testing: The water quality monitoring will be supervised by Dr. Capps and primarily carried out by Mr. Thibodeaux and the ecology-based graduate student. All laboratory analysis will be conducted by the University of Georgia in Athens, GA.

- Nutrient samples will be processed in the Center for Applied Isotope Studies and overseen by Dr. Capps.
- Fecal Coliform Analysis will be conducted in the Lipp Lab by the public-health based graduate student. HF183 analysis will be completed in the Georgia Genomics and Bioinformatics Core and overseen by Dr. Lipp.
- Continuous data collection (i.e., conductivity, pressure transducer, weather station) and time-sensitive sampling (i.e., ISCO samplers) will be overseen and managed by Dr. Gaur and the ecology-based graduate student.

Deliverables:

- Each month, the results from samples that were analyzed during that month will be provided in PDF format, acknowledging that sampling is weather dependent, and we may not collect samples each month. Data from continuous sensors will be provided quarterly rather than monthly.
- Results compilation in Excel format

Task 3: Perform Statistical Assessment and Develop Draft Report: Drs. Capps, Abney, Gaur, and Lipp will meet to finalize the statistical analyses of all the data generated by this study and the 2019 study. Drs. Capps and Gaur will be primarily responsible for analysis and data visualization. Dr. Capps will draft the final report. The statistical analyses will evaluate relationships between septic system characteristics and surface water quality. The assessment will include:

- a visualization and interpretation of the findings from the 2019 study and this study
- discussion about the limits of the study and the applicability of the results to regions outside of the study watersheds.

The draft report will include:

- a summary of the project approach
- statistical assessment data visualization and discussion
- recommendations for future work.

Drs. Capps, Gaur, and Lipp will hold one meeting with the District to review the findings and obtain initial feedback about the draft.

Deliverable:

- Draft report in Word format

Task 4: Final Report and Delivery: Dr. Capps will prepare the final report by integrating comments and recommended changes from the District into the draft report. Drs. Capps and Gaur will present the final data to the District Governing Board.

Deliverables:

- One in-person presentation to the District Governing Board
- Presentation slides in PowerPoint format
- Final report in Word and PDF format

Research Schedule, Interim Deliverables, & Milestones:

The proposed research schedule, interim deliverables, and milestones are detailed in Table 2. We shall provide monitoring and lab test results in digital form to the District on a monthly basis, acknowledging that sampling is weather dependent and that we may not collect samples each month. Data from continuous sensors will be provided quarterly, as we may not download and process continuous sensor data each month.

Table 2: Project Timeline

Date	Proposed Activity or Milestone
20-Feb-22	Begin developing wet weather monitoring plan with the Metro District staff
21-Mar-22	Completion of wet weather monitoring plan
1-Apr-22	Begin water quality monitoring program and lab testing*
10-Apr-22	Collect baseline data and habitat descriptions of all sampling locations
20-Apr-22	Deploy ISCO sensors, conductivity loggers, and weather monitoring stations
31-Aug-22	Submit statistical re-analysis of dry weather data and system specific characteristics
31-Dec-22	Submit a mid-project report and video recording of a PowerPoint presentation of data collected between April and October.
28-Apr-23	Complete water quality monitoring and lab testing
1-May-23	Begin statistical analyses and drafting final report
15-Jun-23	Complete draft report that will, at minimum, include a comparison to the 2019 dry weather study and an analysis relating weather, septic system characteristics, and surface water quality
16-Jun-23	Begin preparing final report and final presentation
28-Jul-23	Deliver final report and presentation to the District Governing Board

*We shall provide all monitoring and lab test results in digital form to the District on a monthly basis, acknowledging that sampling is weather dependent, and we may not collect samples each month. Data from continuous sensors will be provided quarterly rather than monthly.

ADDITIONAL USAGE OF DATA BEYOND THE SCOPE OF WORK:

As an additional research effort beyond the scope of work, we plan to work to publish the data presented in the final report in peer-reviewed academic journals. If we can acquire the additional resources needed, we may also conduct additional source tracking on the bacteria to assess contribution for bird, ruminants, and dogs. We may also analyze samples for the diversity of bacteria and for the presence of antibiotic resistance genes in the bacterial population. If we are able to acquire detailed soils data for each site, we may also incorporate it into the statistical analysis to assess the impact of soils in combination with septic system age, density and rainfall on stream water quality.

ATTACHMENT B

COMPENSATION AND METHOD OF PAYMENT

I. Compensation: The total lump-sum compensation to be paid by the Metro Water District to the Contractor for the Project as described in "Attachment A" is \$199,062. A breakdown of this compensation is shown in Exhibit B-1, "Contract Budget", which is attached to and made part of this contract for financial reporting, monitoring and audit purposes.

II. Method of Payment: The following method of payment replaces that specified in the main body of the contract.

A. Progress Payments: The Contractor shall be entitled to receive progress payments on the following basis. As of the last day of each month during the existence of this contract, the Contractor shall submit to the Metro Water District an invoice for payment documenting work performed during the invoice period. Any work for which payment is requested may be disallowed at the Metro Water District's discretion if not properly documented, as determined by the Metro Water District, in the required monthly narrative progress report.

Upon the basis of its audit and review of such invoice and its review and approval of the monthly reports called for in the paragraph concerning "Reports" in the main body of the contract, the Metro Water District will, at the request of the Contractor, make payments to the Contractor as the work progresses but not more often than once a month. Invoices shall be numbered consecutively and submitted each month until the project is completed.

The Contractor's monthly invoices and monthly narrative progress reports are to be submitted to the Manager of the Metro Water District or his authorized agent and must be received by him not later than the 30th day of the following month. The Metro Water District may, at its discretion, disallow payment of all or part of an invoice received after this deadline.

B. Final Payment: Final payment shall only be made upon determination by the Metro Water District that all requirements hereunder have been completed. Upon such determination and upon submittal of a final invoice, the Metro Water District shall pay all compensation due to the Contractor, less the total of all previous progress payments made.

The Contractor's final invoice and final narrative progress report must be received by the Metro Water District no later than 30 days after the project completion date specified in Paragraph 2 of the contract. The Metro Water District may, at its discretion, disallow payment of all or part of a final invoice received after this deadline.

III. Completion of Project: It is agreed that in no event will the maximum compensation and reimbursement, if any, to be paid to the contractor under this contract exceed \$199,062 and that the contractor expressly agrees that he shall do, perform and carry out in a satisfactory and proper manner, as determined by the Metro Water District, all of the work and services described in Attachment A.

IV. Access to Records: The contractor agrees that the Metro Water District, the Concerned Funding Agency or Agencies and, if appropriate, the Comptroller General of the United States, or any of their duly authorized representatives, shall have access to any books, documents, papers and records of the contractor which are directly pertinent to the project for the purpose of making audit, examination, excerpts and transcriptions.

The contractor agrees that failure to carry out the requirements set forth above shall constitute a breach of contract and may result in termination of this agreement by the Metro Water District or such remedy as the Metro Water District deems appropriate.

EXHIBIT B-1
CONTRACT BUDGET

Task Item	Budget (\$)
Task 1: Develop Wet Weather Monitoring Plan	<u>\$ 2,136</u>
Task 2: Implement Water Quality Monitoring and Lab Testing	<u>\$ 165,892</u>
Task 3: Perform Statistical Assessment and Develop Draft Report	<u>\$ 26,625</u>
Task 4: Final Report Preparation and Delivery	<u>\$ 4,409</u>
Total Contract Amount	<u>\$ 199,062</u>

Note: The estimates for Tasks 1-4 listed above are preliminary and actual costs by task may vary so long as the total contract value does not increase. Any change to the budget estimates shown above must be requested in writing and approved by the Metro Water District Project Manager.

Cost Center Distribution: \$199,062 203DDU, 303DDU

Water Supply and Water Conservation
Action Items Draft Package

DRAFT WSWC Action Item Revisions for the 2022 District Plan
February 2022

5.2 Water Supply and Water Conservation Action Items

Since 2000, Metro Atlanta's per capita water demands in the region have declined by more than 30%. The District has been recognized for its water conservation and efficiency efforts by the US EPA's WaterSense program for seven years in a row, most recently winning their fourth Sustained Excellence Award in October 2021. To build on these successes and to ensure the region's needs are met for years to come, the District is committed to building on its national leadership on water conservation and to preparing better for drought.

Through the action items in this plan, the District and local water providers will take actions to put continued downward pressure on per capita water demands by requiring the use of proven water efficient technologies, to promote new and innovative water efficient technologies through voluntary programs, and to improve the region's readiness to educate and implement watering restrictions when needed during times of drought.

The following new and expanded action items are included in this plan:

- **Residential Customer Leak Reduction Programs (WSWC-5).** Reducing behind the meter water leaks presents a good opportunity to reduce water use and improve customer service. Policies offering credits to customers who repair leaks in a timely manner, are already in place for many local water providers. This new action item will instate this best practice regionwide. Advanced metering infrastructure and new behind the meter smart leak detection technologies offer another way for local water providers and their customers to work together on reducing leaks. Based on regional progress on AMI installation, completed feasibility studies, and extensive good faith efforts of local water providers since the 2017 District Plan, the AMI action item is being deleted and replaced with the Residential Customer Leak Reduction Programs as the new WSWC-5.
- **Metro Atlanta Plumbing Code Efficiency Requirements (WSWC-8).** Georgia established itself as a national leader when the state passed the Water Stewardship Act of 2010, which directed the Georgia Department of Community Affairs to set more efficient state-wide minimums for indoor water efficiency. In the past 11 years, new water efficient technologies and standards have been developed, and more efficient technologies have become widely available at comparable prices in the marketplace. The Metro Atlanta Plumbing Code Efficiency Requirements require the use of these new water efficient technologies in new and renovated buildings, and these technologies will reduce the water use in more and more buildings each and every year.
- **Metro Atlanta Landscape Irrigation System Efficiency Requirements (WSWC-10).** This action item expands and adds to the landscape system irrigation system design requirements from the 2017 Plan by applying many of the requirements to all systems and not just large landscapes. The requirements now include pressure regulation, either through a WaterSense labeled spray sprinkler body or other devices, which helps improve system performance, reduce misting and overspray, and reduces the number and size of leaks.
- **Local Drought Response and Water Waste Ordinance/Policy (WSWC-13).** As a complement to the requirement in the 2017 Plan to have a water waste ordinance or policy, the 2022 Plan is enhancing the model water waste provisions and adding a requirement for a drought response ordinance or

Commented [AM1]: This draft Section 5.2 is the proposed replacement for Section 5.2 in the 2017 Plan. Some items from Section 5.2 in the 2017 Plan will be moved to Sections 3 and 4, which cover existing facilities and conditions and future conditions.

policy. These ordinance and policies can form the basis of water conservation education programming, and when drought conditions merit, local water providers will be ready to enforce these restrictions as necessary. While education should be the primary approach, being ready to respond to drought quickly will improve the resiliency of the region's water supplies. By responding quickly and achieving early results, local water providers reduce the likelihood that more stringent watering restrictions may be needed during a drought.

- **Water Loss Control and Reduction (WSWC-15).** Compared to the 2017 District Plan, new data grades are now required for key inputs. This renewed focus on both water loss and data is based on the implementation work completed since the 2017 District Plan. Improving the data grades for these key inputs is important because they are associated with some of the largest volumes of water and are heavily weighted in the overall data validity score. Improving these scores will help identify the best ways to achieve the real water loss goals and therefore help utilities prioritize expenditures on real water loss. The deadline for demonstrating progress contained in the 2017 District Plan has been extended to 2028 and new data grades are now required for key inputs.

Based on these nation-leading water conservation efforts and the water supply planning in Appendix B, existing or planned water supply infrastructure will be in place to meet the District's 2040 water demands. As a result, there are no water supply action items needed at this time.

Some changes have been made to the action items in the 2022 Plan to address items that are out of date or that are duplicative of state and federal requirements. Focusing on the most impactful local actions and avoiding redundancy of efforts is essential to an effective program. Recognizing the successes achieved over the last 20 years of planning, some action items have been sunset. This allows local water providers and local governments to be recognized for what they've achieved thus far and to focus their energy on the new and expanded action items in the 2022 Plan. More explanation is included below where action items have been deleted. While not achieved in all the same ways or with all the same action items, the new and expanded action items are intended to improve and increase the overall level of water conservation and related savings.

WSWC-1: WATER CONSERVATION PROGRAM

Responsible Parties: Local Water Provider
Local Government

Intent: To maintain and sustain a water conservation program meeting national standards.

Action Item: Provide sufficient funding and staffing to implement the required water conservation measures in this Plan.

Sub-Tasks: Each local government and local water provider shall:

1. Provide for sufficient funding to implement the required water conservation measures in this Plan; funding levels will vary from jurisdiction to jurisdiction.
2. Provide for dedicated, conservation-focused staffing to implement the required water conservation measures in this Plan; staffing levels will vary from jurisdiction to jurisdiction.

Description and Implementation: The water conservation measures in this Plan require coordinated planning and action by local water providers and local governments. Many water conservation measures involve interdepartmental coordination for effective implementation and enforcement.

Funding and staffing needs for water conservation implementation will vary from jurisdiction to jurisdiction. Implementation may require existing staff to assume new responsibilities or additional staff to be hired. Each jurisdiction should determine, in its judgment, what staffing and funding levels are sufficient to meaningfully implement and enforce the conservation measures in this Plan.

Need Assistance? Contact the District at TechnicalAssistance@northgeorgiawater.com or visit our website at www.northgeorgiawater.org/technicalassistance.

Resources:

- ~~AWWA G480-13 Water Conservation Program Operation and Management, 2013, <http://www.awwa.org/store/productdetail.aspx?productid=35009354>~~
- ~~Alliance for Water Efficiency, Resource Library, <http://www.allianceforwaterefficiency.org/resource-library/default.aspx>~~
- ~~Alliance for Water Efficiency, Checklist for G480 Standard, <http://www.allianceforwaterefficiency.org/WorkArea/DownloadAsset.aspx?id=9236>~~
- ~~EPA WaterSense Partnership Program, https://www3.epa.gov/watersense/partners/become_a_watersense_partner.html~~
- ~~San Antonio Water System, Commercial Water Efficiency Fee, http://www.saws.org/latest_news/NewsDrill.cfm?news_id=43~~

Commented [AM2]: Deleted because aspects of this G480 Standard conflict with the regionally specific conservation action items in this plan. For example, the water waste provisions in this plan are different than those in the Standard. Local water providers should focus on implementing the action items in this plan.

WSWC-2: CONSERVATION PRICING

Responsible Party: Local Water Provider

Intent: To reduce discretionary water use by increasing the cost of water as the volume of use increases.

Action Item: Implement water conservation pricing rate structures as a means to reduce discretionary water use.

Sub-Tasks: Each local water provider shall:

1. Institute a minimum three-tiered water conservation pricing schedule for single-family residential customers.
2. Determine appropriate rates for commercial, multi-family, industrial, and institutional categories that encourage conservation by reducing discretionary water use.
3. If irrigation meters are allowed, develop an irrigation meter pricing schedule that recognizes the impact on peak demand from irrigation. The irrigation rate should be significantly higher than the rate for indoor use. At a minimum, the rate for irrigation use by all customer classes should be equal to or greater than 200 percent of the first tier rate for single-family residential customers.
4. ~~Review and adjust pricing schedule to respond to changes in demand and ensure sufficient operation and maintenance funds are available on an as needed basis.~~

Description and Implementation: In general, tiered rate structures that charge higher rates for higher levels of water use encourage conservation. A rate and revenue analysis can help determine the rates to assign each tier, evaluate the effect on the revenue stream and maintain equitable billing rates. By meeting the requirements of this Action Item, each local water provider satisfies its obligation under Georgia EPD's Drought Management Rule (391-3-30) to develop a drought surcharge plan.

Water providers shall perform the necessary analysis to select the most appropriate pricing scenarios. The Metro Water District has developed [guidance](#) to help local water providers determine appropriate rate structures for various customer classes. Local water providers should perform a rate and revenue analysis to determine what percent of customers will typically fall into each tier to produce an estimated revenue stream over time, including fixed charges. It is important to note that local water providers may elect to create more than three tiers to further enhance water conservation and revenue needs. Each local water provider should establish rate structures based on a local rate study and an understanding of the local customer base. It is recommended that local water providers periodically review rates to determine the effectiveness of the conservation pricing schedule and adjust conservation pricing to respond to changes in demand. ~~As part of this process, local water providers should review and adjust pricing schedule to respond to changes in demand and ensure sufficient operation and maintenance funds are available on an as needed basis.~~

In some communities, water conservation by commercial, multi-family, institutional and industrial customers may be encouraged by adopting a tiered rate structure for these customers. In other communities, commercial, multi-family, institutional and industrial customers may have water use patterns that are more appropriate for uniform rates. While the rate structure for these customer categories is left to the discretion of the local water provider, declining block rate structures are not allowed within the Metro Water District.

The Metro Water District recognizes as a best practice using non-potable reuse water for irrigation for existing outdoor landscapes when offsetting an existing potable water supply source and combined with a conservation pricing strategy consistent with this Action Item. See [Section 2.1](#) for more on the Metro Water

Commented [AM3]: Propose moving this to the description and implementation guidance because this is difficult for EPD to audit. Local water providers already do this review and are in the best position to determine revenue sufficiency.

SECTION 5 ACTION ITEMS

District's reclaimed water policy. The Metro Water District must balance its own needs with the needs of instream water quality and downstream uses. While non-potable reuse water is currently offered by a handful of utilities in the Metro Water District, usually for irrigation, the Metro Water District discourages these and other uses when they increase net consumption.

Need Assistance? Contact the District at TechnicalAssistance@northgeorgiawater.com or visit our website at www.northgeorgiawater.org/technicalassistance.

Resources:

- AWWA M1 Principles of Water Rates, Fees and Charges, 6th Edition, 2012, <http://www.awwa.org/store/productdetail.aspx?productid=28731>
- ~~GEFA and, UGA Carl Vinson Institute for Government, and UNC~~ Environmental Finance Center, Georgia Water and Wastewater Rates, [Dashboard and Reports](#)
- ~~AWWA/Raftelis Biannual Water and Wastewater Rate Structures and Connection Fees Project,~~ <http://www.efc.sog.unc.edu/project/georgia-water-and-wastewater-rates-and-rate-structures-Surveys>

WSWC-3: BILLING CYCLES AND BILLING SYSTEM FUNCTIONALITY

Responsible Party: Local Water Provider

Intent: To facilitate water conservation through improved billing system functionality.

Action Item: Implement billing systems that communicate usage with customers, bill on a monthly basis and provide regionally consistent water consumption data.

Sub-Tasks: As billing software is replaced or upgraded, each local water provider shall:

1. Sub-divide customers into the following minimum principal customer categories where appropriate: single family residential, multi-family residential, commercial, industrial, and institutional.
2. Bill monthly to allow customers to track water use more effectively.
3. Provide historical and current data on bills and when customers pay online.
4. Clearly identify the billing units, with preference given towards gallon-based units. Most customers are familiar with gallons as a unit of measure and less familiar with other units.
5. Include explanation of conservation pricing to customers on their bills or a link on their bills to such information on the website.

Description and Implementation: Billing systems that are capable of providing frequent and current information about usage allows customers and water providers to identify sudden changes that might be attributed to leaks or changes in use patterns. Systems that have monthly billing allow customers, especially those on fixed incomes, to manage their monthly budget more effectively. Additionally, systems that incorporate customer billing categories can provide information on customer equity, cost of serving the customer class, average consumption volume by customer class and impact of rate changes on affected customers. Regionally consistent customer classes would also allow for more accurate analyses and assessments of future water demands and needs. In addition to the minimum principal categories, utilities may include additional principal categories and further expand them into subcategories as recommended in Table 5.1 of Water Research Foundation Project 4527, if they help meet local utility needs for water use or rate analysis.

It is important to note that water providers are not required to update existing billing software. However, as software is replaced or upgraded, local water providers shall include the functionality described in the sub-tasks and monthly billing cycles to facilitate conservation. Local water providers shall assess the feasibility, time and cost to implement a monthly billing program. Water bills, in both paper and electronic formats, should show the amount and cost of water used separately from wastewater and other charges and also provide monthly consumption history.

Need Assistance? Contact the District at TechnicalAssistance@northgeorgiawater.com or visit our website at www.northgeorgiawater.org/technicalassistance.

Resources

- ~~Metro Water District, Resources, [http://northgeorgiawater.org/education-awareness/technical-resources/Evaluation of Customer Information and Data Processing Needs for Water Utility Planning and Management](http://northgeorgiawater.org/education-awareness/technical-resources/Evaluation-of-Customer-Information-and-Data-Processing-Needs-for-Water-Utility-Planning-and-Management), Water Research Foundation Project 4527~~
- ~~GAWP, Georgia Water Use and Efficiency Reporting Guidance for Public Water Systems, October 2012.~~
- Water Research Foundation, Evaluation of Customer Information and Data Processing Needs for Water Demand Analysis, Planning, and Management, Project 4527, 2016, <http://www.waterrf.org/Pages/Projects.aspx?PID=4527>

WSWC-4: PRIVATE FIRE LINES METERING REQUIREMENT

Responsible Party: Local Water Provider

Intent: Identify and reduce unmetered water losses by metering private fire lines in commercial buildings.

Action Item: Adopt and maintain an ordinance or policy to meter private fire lines supplying new or substantially renovated commercial buildings to identify avoidable system leakage and non-fire related water consumption.

~~**Sub-Tasks:** Each local water provider shall:~~

~~Adopt an ordinance or policy by January 1, 2019 to require private fire lines supplying all new commercial buildings to have through full flow meters or double detector checks.~~

~~6. Adopt an ordinance or policy by January 1, 2019 to require private fire lines supplying any commercial building that is undergoing a substantial renovation to have full flow meters or double detector checks.~~

~~7. Incorporate these private fire line metering requirements by January 1, 2019 into the development review process.~~

Description and Implementation: Metering all possible water uses, including private fire lines, reduces the inaccuracies when identifying the potential sources of water system losses.

A private fire line is a commercial customer connection supplying water to a fire sprinkler system or private fire hydrant. Once connected, private fire lines are not used very often, but they need to be tested and maintained. As a best practice, fire lines should be kept in good repair and not interconnected with other service pipes. Water drawn from fire lines is for fire protection purposes and should not be used for other non-fire related purposes.

The purpose of this Action Item is to meter private fire lines. Although meters that measure flow are preferred, meters can be simple detector check valves that indicate the presence of flow. An option would be to adopt a policy to require a meter for any private fire line that shows use on a detector check for some specified period of time (for example, over three consecutive months).

Annual flushing maintains water quality in a private fire line between the public water main and the backflow prevention assembly. The private fire line is flushed through the system main drain or private fire hydrant. During this period, the private fire line is fully opened, and the amount of water to be discharged (from the tap on the public water main to the backflow prevention assembly) through the flushing apparatus is equivalent to five times the volume of water in the private fire line. Metering these maintenance events would provide the property owner and the local water provider with an accurate measure of the amount of water used during maintenance and testing. If private fire service lines are not metered, the water used in testing is not measured and can be improperly categorized.

Each local government shall determine what constitutes substantial renovation thereby triggering the requirement that meters or double detectors checks be installed on existing commercial buildings. However, the threshold for substantial renovation should be at such a level that it will be reasonable to expect that new meters or double detector checks will be installed in at least some existing commercial buildings each year.

Local water providers that are part of a local government should pass an ordinance, and local water providers that are authorities should establish written policies. All policies must be written policies that either include their date of adoption or are accompanied by other documents (letters, emails, memoranda, etc.) that establish when the written policy was adopted.

Commented [AM4]: Deleted subtasks and simplified action item because initial deadlines have been met and all that remains is for local water providers to keep the ordinance/policy on the books.

Need Assistance? Contact the District at TechnicalAssistance@northgeorgiawater.com or visit our website at www.northgeorgiawater.org/technicalassistance.

Resources:

- [Metro Water District Memorandum re: Optional Model Language Provided as Technical Assistance for Meeting the Requirements of Action Item WSWC – 4 \(Metering Private Fire Lines\)](#)
- City of Atlanta, Code of Ordinances, Chapter 154 Utilities, Article III Water, Division 2 Fire Hydrants, Section 154.91, Installation of detector meter or fire line meter on private unmetered fire service systems having fire hydrants,
- Cobb County, Code of Ordinances, Chapter 54 Fire Prevention and Protection, Article III Fire Safety Standards, Section 54.57, Installation mutual fire line meter on unmetered fire service systems; https://www.municode.com/library/ga/cobb-county/codes/code-of-ordinances?nodeId=PTIOFCOCOC OGE_CH54FIPRPR_ARTIIIIFISAST_S54_57INMUFILIMEUNFISESY
- ~~AWWA, Opflow, Reduce Apparent Water Loss, September 2008, <http://www.awwa.org/publications/opflow/abstract/articleid/18361.aspx>~~

WSWC-5: AMI BENEFIT AND FEASIBILITY STUDIES RESIDENTIAL CUSTOMER LEAK REDUCTION PROGRAMS

Responsible Party: Local Water Provider

Intent: ~~To facilitate accurate~~ Identify and reduce leaks on the customer metering and side of residential meters in order to reduce wasted water conservation through better and more timely information about customer, surprise increases in water use, bills, and property damage.

Action Item: Implement two programs to assist separately metered residential customers in identifying and repairing leaks in a timely manner.

Sub-Tasks: Each local water provider shall:

1. Adopt a policy providing for a bill reduction credit to any residential customer with an unusually high water bills when the customer demonstrates they timely repaired a behind-the-meter leak. Such policy shall be referenced and made available on the local water provider's website and on customer bills.
2. Implement one of the following two programs:
 - a. Offer rebates to customers that install smart leak detection devices starting as soon as practicable after January 1, 2023 and continuing until the sunset date of December 31, 2025, OR
 - b. For systems that use AMI for a significant portion of their residential customer meters, offer a constant consumption notification program, which can be a voluntary, customer-initiated program through a web-based portal or a centrally administered program with periodic notices for AMI customers.

Description and Implementation: This action item is focused on reducing leaks on the customer side of the water meter of residential customers with separate utility meters. A leak for the purpose of this action item includes, but is not limited to, running toilets, dripping plumbing fixtures, breaks in water service lines and irrigation systems, malfunctioning pool and spa fill lines and equipment, burst pipes in the home, and constant consumption by water filters, humidifiers, and water softeners.

Some local water providers in the District already have policies offering bill reduction credits when a customer can show they had a high water bill attributed to a leak that was repaired in a timely fashion. While these programs are often focused on customer assistance, offering a customer a bill reduction credit for timely repairs also helps reduce the number and duration of leaks. For example, by incentivizing customers with a bill reduction credit, they are more likely to purchase replacement parts or professionally repair the leak. Local water providers remain free to set and determine the details of their policies locally so long as they provide a bill reduction credit, require timely repair of the leak, and are made available on the local water provider's website. Components of a good program typically include clear eligibility guidelines, promotion to reach customers with unusually higher water bills, stated limits on the maximum dollar value or percentage of any discount on the amount in excess of normal use, a standard number of days for what constitutes timely repair, what evidence of the repair must be submitted, and a process for the local water provider to evaluate and improve the program over time based on experience.

Commented [AM5]: Based on regional progress on AMI installation, completed feasibility studies, and extensive good faith efforts of local water providers since the 2017 District Plan, the AMI action item is being deleted and replaced with the Residential Customer Leak Reduction Programs as the new WSWC-5.

NOTE – Local water providers should consider establishing policy and educating customers on whether they are allowed to install smart leak detection devices on the utility meters or otherwise within the meter box. With or without a rebate program, a small group of customers have already started installing smart leak detection devices, so proactively addressing any installation-related concerns is advisable.

A smart leak detection device is a technology that enable a home’s occupant to monitor and respond to water usage and/or leaks in real time. As part of the internet of things, these technologies are connected to the internet and can send and in many cases receive data and communications. Several types of smart leak detection devices are available in the marketplace, including devices that strap on to the utility meter, devices that strap on to the water service line near where it enters into the home, devices that are installed in line with the water service line that contain automatic shut-off valves, and devices that can be placed near pipes and plumbing fixtures that detect moisture following a leak. Given the real-time information, customers can avoid surprise water bills and may be able to avoid or limit property damage caused by leaks. The District may create a regionally administered smart leak detection device rebate program if requested by local water providers. Otherwise, each local water provider will need to create their own rebate programs unless they are relying upon AMI notification programs. In either case, the District will provide technical assistance and convene interested local water providers to assist in the creation of accessible, high-quality rebate programs. Local water providers may set the rebate amount at whatever level they determine is appropriate based on the cost of the technologies, the size of the incentive needed to drive some customers to install them, and the budgets of the local water providers. Local water providers must be able to show that at least some rebates were funded and made publicly available each calendar year. The District encourages funding levels sufficient to meet demand, and the District can recommend upon request funding levels and rebate amounts for each local water provider upon request based on the District’s experience and research.

Local water providers using AMI for their residential accounts have the option to create constant consumption notification programs using the hourly meter data they collect. The term constant consumption is used here because it is harder to identify leaks with the hourly data from AMI compared to the instantaneous data available from smart leak detection devices. Local water providers may offer customers a web-based portal where customers can choose to sign up for alerts or they may offer a centrally administered program where local water provider staff periodically review, flag, and notify customers with constant consumption that exceeds a certain threshold level of use for a defined number of hours. Many programs offer customer notifications by text, email, or robocall. Some programs also provide in-person visits for exceptionally high volumes of continuous usage.

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Action Item: Evaluate the improvement of customer metering technologies to improve accuracy, notify customers of suspected leaks, enhance customer service and provide other benefits. This includes metering technology with the capability to store hourly readings (or more frequently) and transmit these readings daily to the local water provider, which is known as AMI.

Sub-Tasks: Each local water provider shall:

8. Except for those local water providers that have already completed or are currently installing AMI system wide or that have completed an AMI pilot program pursuant to Action Item 5.15 of the 2009 Plan (as amended), all other local water providers shall conduct a system specific study by December 31, 2018 on the benefits and feasibility of the system wide installation of AMI.
9. If a local water provider determines that such system specific study has shown that system wide implementation is feasible and yields sufficient benefits, then develop a plan, schedule and budget to implement AMI system wide.

10. If a local water provider has already completed or is installing AMI system-wide whether based on a pilot program or benefits and feasibility study, then implement a program to identify, notify and track customers with continuous usage, if not already completed.

Description and Implementation: Metering technology has advanced greatly over the last five years in terms of the accuracy of the measuring devices and the ability to acquire readings. Installation of AMI systems can improve the accuracy of information used to support water management and conservation.

AMI is the complete automation of the metering process which includes meter reading, distribution and monitoring. AMI is the next evolution of what many utilities have implemented over the last several decades: Automated Meter Reading (AMR). AMI has many advantages over AMR, such as the ability to obtain hourly interval meter reads on a daily basis, flag a customer side leak when it occurs (rather than only at the monthly reading) and support proactive customer service capabilities. The method of transmitting the readings to the local water provider can vary depending on the AMI provider and is often proprietary. Some use base stations or towers to collect readings, others use a mesh network and others use cellular networks. Additionally, some AMI systems feature two-way technologies for remote disconnect or distribution sensing technologies, such as leak detection, pressure sensors and other operational data. New metering technology includes solid state technology using ultrasonic or magnetic flow measuring elements for improved low flow accuracy, as opposed to the moving parts of traditional metering technologies.

Some water providers that use direct meter reading are considering AMR, and this Action Item strongly recommends moving directly to AMI implementation. The cost difference may be insignificant, and the benefits of AMI may far exceed those of AMR. Installing AMI system-wide can be done in stages over time, and phasing may include installation of AMI in certain areas of the system first and/or installation of meters with encoder registers first, with remaining communications infrastructure coming later. The AMI technology to be adopted in the Metro Water District should have encoder registers that can be equipped with a Meter Interface Unit in the future without changing the register.

AMI benefits and feasibility studies should consider the cost effectiveness and costs and benefits of implementing AMI technology and should consider costs and benefits that are both quantifiable and non-quantifiable. The studies shall conclude with a recommendation regarding AMI implementation: begin, continue, or delay AMI implementation system-wide or begin or implement a pilot program for compliance with EPD audits. Local water providers should prepare and maintain in its records a written feasibility study report.

Some financial benefits of AMI to consider include the following:

- Increased low flow meter accuracy (through new metering technology)
- Improved registration (through replacement of older meters)
- Eliminating estimates and rereads
- Reducing potential theft of service, meter tampering issues and bad debt
- Reducing operating expenses associated with reading meters and vehicles

Some non-financial benefits to consider include the following:

- Operational benefits from reducing call center costs, improving staff morale, reducing tampering by using alarms and improving backflow detection
- Other benefits from improved customer usage data for hydraulic modeling, water loss assessment calculations, water rate studies, meter degradation, etc.
- Customer service improvements including:

- More prompt responses to customer inquiries
- Elimination of long and short reading periods
- Ability to address billing and usage concerns more accurately
- Fewer home and yard intrusions
- On-demand access to consumption information
- High usage and demand response notice
- Leak detection notification
- Budget tracking/setting

Need Assistance? Contact the District at TechnicalAssistance@northgeorgiawater.com or visit our website at www.northgeorgiawater.org/technicalassistance.

Resources:

- AWWA, M6: Water Meters – Selection, Installation, Testing, and Maintenance, Fifth Edition, 2012, <http://www.awwa.org/store/productdetail.aspx?productid=28471>
- AWWA, M22: Sizing Water Service Lines and Meters, Third Edition, 2014, <http://www.awwa.org/store/productdetail.aspx?productid=44766350>
- Water Research Foundation, AMR/AMI Standardization for Water Utilities, Report #4467, April 2016, <http://www.waterrf.org/Pages/Projects.aspx?PID=4467>
- Alliance for Water Efficiency, AMI ABLE Committee, resources to support AMI/AMR implementation, <http://www.allianceforwaterefficiency.org/AMIAbleCommittee.aspx>

DRAFT

WSWC-6: TOILET REPLACEMENT PROGRAM

Responsible Party: Local Water Provider

Intent: To reduce indoor water use and speed the conversion of older, inefficient toilets toward WaterSense labeled high-efficiency toilets in single- and multi-family homes.

Commented [AM6]: The District has applied for a grant from the state for additional funding of rebates for adopting innovative water efficiency practices. If the District is awarded the grant, WSWC-6 would be removed because local governments and water providers will be providing matching local funds and staffing support for the larger, region-wide rebate program for ultra-high efficiency toilets. This larger, region-wide program run by the District with local support is expected to result in greater levels of ultra-high efficiency toilet deployment.

Action Item: Implement a program to replace older, inefficient toilets with WaterSense labeled high-efficiency toilets using 1.1 gpf or less (WaterSense UHET) in single- and multi-family homes. WaterSense labeled toilets using 1.28 gpf will no longer be eligible for rebates after July 1, 2021.

Sub-Tasks: Each local water provider shall: until toilet replacement program sunset date of December 31, 2025:

1. Establish a program to replace each year 3.5 gpf or greater toilets in single- and multi-family homes constructed prior to 1994 with WaterSense UHETs.
2. Provide information on opportunities to recycle any toilet being discarded pursuant to the toilet replacement program by linking to the Metro Water District website or other local resources.

Description and Implementation: Single- and multi-family homes built prior to 1994 may contain inefficient toilets. While new toilets meet high efficiency standards, the replacement of older, inefficient toilets is needed to address existing stock and reduce indoor water use.

Before the 1950s, new toilets typically used 7 gpf. By the end of the 1960s, new toilets typically used 5.5 gpf; in the 1980s, new toilets typically used 3.5 gpf. The federal Energy Policy Act of 1992 required all new toilets use no more than 1.6 gpf by 1994. In 2010 the Georgia Water Stewardship Act required that local governments adopt or amend local ordinances to require, among other things, that all new construction, on or after July 1, 2012, use WaterSense labeled toilets. WaterSense is a voluntary program of the EPA designed to identify and promote water efficient products and practices. WaterSense labeled toilets are independently certified to meet rigorous criteria for both performance and efficiency. Today, WaterSense UHETs are increasingly available with efficiency levels of 1.1 gpf or less.

This Action Item calls for a program to replace toilets in single and multifamily homes constructed prior to 1994 with WaterSense UHETs.

The toilet replacement program must specifically address toilet replacement rather than provide toilet retrofit devices. Local water providers must be able to show that rebates were funded and made publicly available each calendar year to both single-family and multi-family customers. For rebate programs, the District encourages funding level sufficient to meet all demand, and the District can recommend funding levels for each local water provider upon request based on the District's experience.

Examples of acceptable toilet replacement programs include the following:

- Rebate incentive program: Customer receives a water bill credit, cash or voucher to offset the cost of a new WaterSense UHET to be installed in a pre-1994 single- or multi-family home. Rebates shall be \$75.
- Direct install program: Customer exchanges a toilet from pre-1994 single- or multi-family homes for a WaterSense UHET with discounted installation through the local water provider.
- Other: Local water providers may create their own programs as long as the program actually results in the replacement of toilets in pre-1994 single- and multi-family homes with WaterSense UHETs. These programs may take a variety of forms, including but not limited to on-bill financing programs for toilet

replacements and programs requiring that toilets using 3.5 gpf or more be replaced as a condition of a customer establishing water service.

If a local water provider chooses to have a single replacement program covering both single and multi-family homes, funds may be made available on a first come, first served basis.

As a matter of customer service, rebates of 1.28 gpf may still be allowed as a hardship exception when a customer in good faith purchases a dual-flush toilet with one flush at 1.1 gpf or less or uses an outdated paper rebate application form provided by a retailer.

Due to the high value of rebate programs for multi-family homes, it is recommended that the local water provider include an inspection element in any multi-family rebate program to prevent possible fraud. This can be done through a physical inspection or by reviewing billing data post-installation.

The local water provider should provide information on available toilet recycling opportunities. There are recycling facilities in the region that will recycle crushed porcelain for various uses, such as a concrete aggregate or bathroom tile. Many homeowners may not be aware of recycling options when replacing a toilet.

Need Assistance? Contact the District at TechnicalAssistance@northgeorgiawater.com or visit our website at www.northgeorgiawater.org/technicalassistance.

Resources:

- EPA, WaterSense Toilets, information page, <https://www3.epa.gov/watersense/products/toilets.html>
- ~~Cobb County, toilet recycling information (see Item No. 16), https://cobbcounty.org/index.php?option=com_content&view=article&id=3445&Itemid=1544~~
- MaP Testing Premium Ultra-High-Efficiency Toilet page, <http://www.map-testing.com/content/info/menu/map-premium.html>

Commented [CB7]: This site no longer exists.

WSWC-7: ~~HIGH~~ RESERVED.

Based on completed retrofits by local water providers and local governments in the District, the action item requiring retrofitting government buildings with high efficiency Toilets and Urinals in Government Buildings toilets and urinals from the 2017 District Plan is no longer a required action item in the 2022 District Plan. All new and renovated government buildings will be required, like all buildings, to meet the new, Metro Atlanta Water Efficiency Plumbing Code Standards included in the 2022 District Plan as WSWC-8. WSWC-7 is being reserved in the 2022 Plan as a placeholder for potential, future action items in the 2027 District Plan update and beyond.

WSWC-8: METRO ATLANTA PLUMBING CODE EFFICIENCY REQUIREMENTS

<p>Responsible Party: Local Government</p>	<p>Intent:</p> <p>To speed <u>increase</u> the conversion <u>water efficiency</u> of older toilets <u>new</u> and urinals in existing government <u>renovated</u> buildings.</p> <p>Points of Integration</p> <p>This measure should result in decreased water demands, <u>through new requirements adopted</u> as well as decreased wastewater flows. <u>local plumbing code amendments.</u></p>
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Action Item: ~~Replace toilets using 3.5 gpf or more and urinals using 1.0 gpf or more with WaterSense labeled high-efficiency toilets and urinals in local government buildings.~~

Sub-Tasks: ~~Each local government and local water provider shall:~~

- ~~3.—Develop a written list for all remaining buildings owned by the local water provider and local government (excluding buildings owned by the local public school system, sheriff's office or tax commissioner's office) that still have toilets using 3.5 gpf or more and urinals using more than 1.0 gpf by adopt by January 1, 2018.~~
- ~~4.—Develop a retrofit schedule and funding mechanism to replace all the inefficient toilets and urinals in the buildings on the retrofit list by January 1, 2020 with high-efficiency WaterSense labeled toilets and urinals.~~
- ~~5.—Replace all the inefficient toilets and urinals in the buildings on the retrofit list by January 1, 2020; based on the 2009 Plan, local government and local water providers should be able to show that this retrofitting is underway.~~
- ~~6.—For all buildings owned by the local public school system, sheriff's office or tax commissioner's office, the local water provider serving these buildings shall coordinate regarding these buildings with the appropriate elected officials and staff to perform each of the subtasks above with a target start date for retrofits of January 1, 2019 and completion date of January 1, 2025.~~

Description: ~~This Action Item will improve the efficiency of toilets and urinals in all government buildings in an effort to conserve water and demonstrate leadership in conservation.~~

Implementation Guidance: ~~As described in Action Item WSWC-6, toilet efficiencies have improved substantially in the past several decades. Urinal efficiencies have also improved. In 2010 the Georgia Water Stewardship Act required that local governments adopt or amend local ordinances to require, among other things, that all new construction on or after July 1, 2012 use WaterSense labeled toilets and urinals. However, older, less efficient fixtures are still commonly in use in existing buildings.~~

~~WaterSense is a voluntary program of the EPA designed to identify and promote water efficient products and practices. WaterSense labeled toilets and urinals are independently certified to meet rigorous criteria for both performance and efficiency.~~

SECTION 5 ACTION ITEMS

This Action Item calls for a program to replace older, inefficient toilets and urinals in local government buildings with WaterSense labeled toilets and urinals. As of the date of this Plan, the WaterSense efficiency criteria is 1.28 gpf or less for toilets and 0.5 gpf or less for urinals, and in the future, the WaterSense label standards may become more stringent. If more stringent criteria are adopted, they will apply as of the date of adoption for the purposes of this Plan. Non-flushing (or waterless) urinals are not EPA WaterSense-certified and not recommended for this measure due to maintenance and existing plumbing concerns.

It is recommended that local water providers begin replacement programs with their own administration buildings to demonstrate leadership and then proceed to work with the local governments it serves to develop a retrofit list, schedule and funding for replacements in other local government buildings. Options for implementation of this Action Item include: direct replacement programs, rebates for government building retrofits or establishment of a new toilet replacement line item in department.

Coordination with the local public school system, sheriff's office or tax commissioner's office shall be initiated by the local water provider serving their buildings. Coordination shall include inviting appropriate elected officials and staff to meetings on at least an annual basis and explaining to them the role of 2024 and thereafter maintain the Metro Water District, the Atlanta Plumbing Code Efficiency Requirements without modification to the substantive water efficiency requirements of this Action Item and the financial and water supply benefits of implementation. In the meeting, the local water provider should share lessons learned and best practices based on the local water provider's experience retrofitting its old buildings. If a local water provider can show reasonable and persistent efforts to coordinate with these parties, it is not the local water provider's responsibility if the local public school system, sheriff's office or tax commissioner's do not complete Subtask 4 or the effective date as a local amendment to the Georgia State Minimum Plumbing Code.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Assisting communities in developing draft meeting materials. District staff may also be available to attend coordination meetings.
- Facilitating discussions between responsible parties and the local public school system, the sheriff's office and the tax commissioner's office.

Resources:

- Metro Water District, Local Community Choices Implementation Assistance, <http://www.atlantaregional.com/local-government/community-choices-implementation-assistance-program>
- EPA, WaterSense Toilets, information page, <https://www3.epa.gov/watersense/products/toilets.html>
- EPA WaterSense Water Efficient Urinals, information page, <http://www3.epa.gov/watersense/products/urinals.html>
- MaP Testing Premium Ultra High Efficiency Toilet page, <http://www.map-testing.com/content/info/menu/map-premium.html>

WSWC 8: COMMERCIAL WATER USE ASSESSMENTS

Responsible Party: Local Water Provider

Effective January 1, 2021: Due to COVID-19 business impacts and public health considerations, this action item has been suspended and no action is required by the responsible party. Education materials will be available by the District upon request by commercial water users.

Intent: To reduce water use from commercial water users, by site-specific assessments of use and identification of potential for improved efficiency.

Commented [AM8]: Commercial water use assessment requirement deleted because the Metro Atlanta Plumbing Code Efficiency Requirements include a number of requirements related to commercial water efficiency. These code changes will lead to incremental, long-term improvements in commercial water efficiency.

Action Item: Develop or participate in a commercial water use assessment program that targets highest commercial customers or other groups of commercial customers that may have significant water savings potential.

Sub-Tasks: Each local water provider shall:

7. Target highest commercial customers, or other groups of commercial customers identified by the local water provider that may have significant water savings potential, and advertise water use assessment program.
8. Establish a program or participate in the District's regional program to conduct water use assessments with interested commercial customers and report results with recommendations to these customers with cost-beneficial water conservation measures.

Description and Implementation: A commercial water use assessment program includes on-site water assessments at commercial facilities, characterization of existing water uses and recommended changes to process and operations to reduce water usage. Commercial customers will typically provide basic water use information about the facility prior to an onsite assessment. Local water providers may want to ask commercial facilities to make an early commitment to reduce water consumption.

Commercial water uses are variable and complex. Examples of types of facilities may include, but are not limited to, commercial and retail centers, office buildings, hotels and motels, coin and card operated laundries, auto service and repair shops, restaurants and fast food, bakery and pastry shops, commercial printers, fuel service stations and convenience stores, vehicle washes, schools, grocers, hospitals, bakers, laundries and dry cleaners, water features and pools and landscapes. A facility's water use is related to the type and number of commercial customers that they service. Different types of facilities will have different water use characteristics and potential efficiencies; however, efficiency may also vary within the same type of facility. Therefore, an on-site water use assessment provides a more accurate assessment than estimating efficiencies based on type of facility.

Local water providers may develop their own program that they offer to their interested commercial customers with some, all or none of the costs being paid for by the local water provider. The level of funding, the use of staff or contractors and the program scope may vary from local water provider to local water provider based on local desires, needs and expressed interest from customers. Alternatively, local water providers may participate in and assist in promoting the Metro Water District's commercial water use assessment program. Local water providers shall identify their highest commercial water customers, or other groups of commercial customers that may have significant water savings potential, document the methodology used for selecting the customers, and advertise the availability of a water use assessment program.

All commercial water use assessments on buildings with cooling towers shall evaluate and, where feasible based on the equipment and local conditions, make recommendations to improve their efficiency, including by increasing the cycles of concentration from two to six or more. All commercial water use assessments on buildings with pre-rinse spray valves shall consider their replacement.

If a local water provider has expressed an interest in participating in the District's regional program (pending its review of the final program structure and costs), then such local water provider is not required to create a local program until the District establishes its regional program and the local water provider has made a timely decision about its participation in the regional program.

All commercial water use assessments involving irrigation shall evaluate the replacement of simple clock timers with WaterSense-labeled irrigation controllers. Replacing standard clock timers with WaterSense labeled irrigation controllers can provide an average annual water savings of 15 percent. These controllers use prevailing weather conditions, current and historic evapotranspiration, soil moisture levels and other relevant factors to adapt water applications to meet the actual needs of plants. Additionally, water-efficient landscapes can help reduce irrigation runoff, reduce pollution of waterways and limit property damage.

The EPA WaterSense program has developed WaterSense at Work, a compilation of commercial water-efficiency best management practices. This program helps commercial customers understand and better manage their water use, establish an effective water management program and identify projects and practices that can reduce water use.

Description and Implementation: Georgia established itself as a national leader when the state passed the Water Stewardship Act of 2010, which directed the Georgia Department of Community Affairs to set more efficient state-wide minimums for indoor water efficiency. In the past 11 years, new water efficient technologies and standards have been developed, and more efficient technologies have become widely available at comparable prices in the marketplace. The fixture requirements in the Metro Atlanta Plumbing Code Efficiency Requirements are based detailed market research on cost, availability, performance, and customer satisfaction performed by the Metro Water District staff. Other requirements are based on cost-benefit analyses performed during the plan update process.

The latest WaterSense standards are included as part of the requirements, and while the EnergyStar program is primarily focused on energy use, it is included in the requirements because it also addresses water use in appliances connected to water sources. The requirements are also consistent with other nation-leading mandatory codes adopted by other states and local governments and other green codes and standards like IAPMO 2020 Water Efficiency and Standard for the Built Environment and the ICC 700-2020 National Green Building Standard.

Local governments must follow the procedural requirements provided in O.C.G.A. § 8-2-25(c) for establishing local requirements that are more stringent than the state minimum standard code.

To reduce excessive outdoor water use, the Metro Atlanta Plumbing Code Efficiency Requirements also prohibit irrigation with reclaimed water sourced from any new private reclaimed wastewater treatment system except for those irrigating golf courses and commercial agriculture operations.

Need Assistance? Contact the District at TechnicalAssistance@northgeorgiawater.com or visit our website at www.northgeorgiawater.org/technicalassistance.

Resources:

- EPA, WaterSense Commercial, information page, <https://www.epa.gov/watersense/commercial-buildings>
- EPA, WaterSense Commercial, Best Management Practices page, <https://www.epa.gov/watersense/best-management-practices>

- ~~Energy.gov, Federal Energy Management Program Water Efficiency, Best Management Practice #10: Cooling Tower Management, <http://energy.gov/eere/femp/best-management-practice-10-cooling-tower-management>~~

DRAFT

Resources: Metro Atlanta Plumbing Code Efficiency Requirements – Local Amendment to Plumbing Code, Model Findings Resolution, and Model Adoption Resolution.

Commented [CB9]: This will be moved up in regards to spacing

DRAFT

WSWC-9: ~~Pre-rinse Spray Valve Replacement Program~~ RESERVED.

<p>INTENT</p> <p>TO REDUCE WATER USE IN FACILITIES WITH COMMERCIAL AND INSTITUTIONAL KITCHENS BY REPLACING OLDER PRE-RINSE SPRAY VALVES.</p> <p>POINTS OF INTEGRATION</p> <p>THIS MEASURE SHOULD RESULT IN DECREASED WATER DEMANDS, AS WELL AS DECREASED WASTEWATER FLOWS.</p>	<p>RESPONSIBLE PARTY</p> <p>LOCAL WATER PROVIDER</p>	<p>IN COORDINATION WITH</p> <p>COUNTY BOARD OF HEALTH</p>
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Action Item: ~~Based on new, mandatory high-efficiency standards, this action item will for pre-rinse spray valves at the national level, the action item requiring a replacement program for pre-rinse spray valves in the 2017 District Plan sunset effective January 1, 2021. No further action is required by local water providers regarding this action item. WSWC-9 is being reserved in the plan as a placeholder for potential, future action items in the 2027 District Plan update and beyond.~~

WSWC-10: ~~OUTDOOR WATER~~ METRO ATLANTA LANDSCAPE IRRIGATION SYSTEM EFFICIENCY REQUIREMENTS ~~FOR LARGE LANDSCAPES~~

Responsible Party: Local Water Providers

Intent: To reduce discretionary water use by requiring water efficient irrigation systems ~~on large landscapes~~ design standards.

Action Item: Each local water provider shall adopt ~~an ordinance or policy~~ by January 1, ~~2019~~ requiring all new irrigation systems for large landscapes (greater than one acre or 43,560 square feet) ~~and excluding single-family homes~~ thereafter maintain the Metro Water District Model Ordinance/Policy for Metro Atlanta Landscape Irrigation Efficiency Requirements without changes to include Sections 1 through 5.

- ~~Pressure regulators and master shut-off valves~~
- ~~Flow sensors that detect and report high flow conditions due to broken pipes and/or popped sprinkler heads~~

Description and Implementation: Outdoor water efficiency ~~on large landscapes~~ for landscape irrigation systems can be improved by maintaining optimum pressure with regulators, rain-sensor shutoffs, WaterSense irrigation controllers (non single-family only), and monitoring the system for high flow conditions. ~~(non single-family only). There are also design practices that avoid water waste from landscape irrigation systems.~~

This Action Item ~~does not apply to irrigation systems for single-family homes, however the policy or ordinance adopted should cover large landscapes (greater than one acre or 43,560 square feet) irrigated on property owned by homeowner associations. This Action Item does not apply to irrigation systems that use water withdrawn from private wells or surface water by an owner or operator of a property if such well or surface water is solely on the owner/operator's property (i.e., the irrigated property). To calculate the area of irrigated landscapes, all irrigated areas included in a development should be added together. When implementing this action item, it is recommended that:~~ applies to landscape irrigation systems connected to the local water provider that water ground cover, trees, shrubs, or other plants such as grasses. This action item does not apply to landscape irrigation systems (a) used for commercial agricultural operations as defined in the Official Code of Georgia Section 1-3-3, (b) used for golf courses, and (c) dependent upon a nonpublic water source.

~~The enacted ordinance or policy requires a post-installation inspection.~~

~~The local water provider coordinates with the~~ When implementing this action item, it is recommended that local water providers use one of the options in Section 6 of the model ordinance/policy for Compliance Self-Certifications for New Service Connections and require inspections in accordance with Section 7 of the model ordinance/policy. However, local water providers may create their own requirements and processes for ensuring compliance.

~~Local water providers that are part of a~~ local government to educate staff on enacted ordinances or should pass an ordinance, and local water providers that are authorities should establish written policies.

~~The local water provider should develop outreach materials regarding smart irrigation controllers and target distribution to owners and managers of properties with large landscapes.~~

~~All policies must be written policies that either include their date of adoption or are accompanied by other documents (letters, emails, memoranda, etc.) that establish when the written policy was adopted.~~

SECTION 5 ACTION ITEMS

The local water providers should confirm compliance with this Action Item when it reviews site plans and as part of providing meters.

Need Assistance? Contact the District at TechnicalAssistance@northgeorgiawater.com or visit our website at www.northgeorgiawater.org/technicalassistance.

Resources:

- EPA, WaterSense Labeled Irrigation Controllers, ~~information page,~~
~~<http://www3.epa.gov/watersense/products/controltech.html>~~ ~~Information Webpage~~
- ~~California Department of Water Resources, Water Efficient Landscape Ordinance, Technical Assistance,~~
~~<http://www.water.ca.gov/wateruseefficiency/landscapeordinance/technical.cfm>~~
- ~~Alliance for Water Efficiency, Resource Library, Landscape, Irrigation and Outdoor Water Use,~~
~~http://www.allianceforwaterefficiency.org/Landscape_and_Irrigation_Library_Content_Listing.aspx~~
- [EPA, WaterSense Labeled Spay Sprinkler Bodies Information Webpage](#)
- [IAPMO, Water Efficiency Standard \(WESTAND\), Section 415 Landscape Irrigation Systems](#)

WSWC-11: RESERVED.

The action item from the 2017 District Plan titled “State Water Conservation and ~~drought response~~Drought Response Requirements” was deleted in the 2022 District Plan because these issues are now covered in WSWC-8 Metro Atlanta Water Efficiency Plumbing Code, in WSWC-10 Metro Atlanta Landscape Irrigation System Efficiency Requirements, in WSWC-13 Local Drought Response and Water Waste Ordinance/Policy, through existing state law, and through the District’s current and planned Technical Assistance offering.

Responsible Parties:

Local Water Provider
Legal Counsel
Local Government

Intent: To ensure local water providers, local governments and citizens are aware of the existing state laws related to water conservation and drought response.

Action Item: Continue adopting, implementing and complying with existing state laws related to water conservation and drought response.

Sub-Tasks: Each local government shall:

9. ~~Adopt and implement the Georgia State Minimum Standard Plumbing Code that requires high efficiency plumbing fixtures in all new construction.~~
10. ~~Implement existing Georgia state law requiring that new irrigation systems in the Metro Water District be installed with a rain shutoff sensor.~~
11. ~~Coordinate with and provide support to the local water provider as necessary to implement all responsibilities pursuant to the Drought Management Rule, and if any inconsistencies are identified, then update such plans to ensure they are consistent with the Drought Management Rule.~~

Each local water provider shall:

12. ~~Adopt and implement an ordinance or policy to measure the use of each unit in new multi-unit residential, retail and light industrial buildings based on the measured quantity of water used by each unit, as required by and subject to the exceptions in O.C.G.A. § 12-5-180.1.~~
13. ~~Comply with water conservation plan and drought contingency plan prepared in connection with any application for a new or modified surface or ground water withdrawal permit. See Georgia Rules and Regulations, Chapter 391-3-6-.07(4)(b)(8) and (9) and 391-3-2-.04(11).~~
14. ~~Review the water conservation plan and drought contingency plan for consistency with the Drought Management Rule, and if any inconsistencies are identified, then update such plans to ensure they are consistent with the Drought Management Rule.~~
15. ~~Coordinate with and request support from local government(s) as necessary to implement all responsibilities under the drought management rule, including applicable drought response strategies under drought response level 1, 2, 3 or 3 plus pursuant to the Drought Management Rule (Georgia Rules and Regulations, Chapter 391-3-30).~~

Description and Implementation: This Action Item consists of existing state laws related to water conservation. These measures help improve water system efficiency, encourage water conservation and promote consistent and uniform responses to droughts.

Each local government and local water provider retains an independent obligation to identify, understand and comply with state laws. The laws listed in this action item may be amended, replaced or repealed from time to time, and the list in this Action Item may not be a complete list of laws related to water conservation and drought response.

Commented [AM10]: Deleted because local governments are now required under WSWC-8 to adopt the Metro Atlanta Water Efficiency Plumbing Code.

Commented [AM11]: Deleted because this requirement is included in the model ordinance/policy in WSWC-10 for Metro Atlanta Landscape Irrigation System Efficiency Requirements.

Commented [AM12]: Deleted because coordination is now clearly spelled out in the model ordinance/policy for drought response and water waste required to be adopted by local water providers in WSWC-13.

Commented [AM13]: Deleted because this is already a requirement under state law, and the District has learned that practices vary around the region in terms of whether this is managed by local water providers, local governments, or both. The District plans to support local implementation and adoption of best practices through its technical assistance program following adopt of the 2022 District Plan.

Commented [AM14]: Deleted because these subtasks are difficult to audit, have separate EPD processes for compliance reviews, and are covered in the District’s Local Drought Planning Guide.

SECTION 5 ACTION ITEMS

For Sub-Task 4, sub-metering is now covered by state law instead of a stand-alone Action Item in this Plan. The terms “new multi-unit residential, retail and light industrial buildings” likely refer to zoning classifications as opposed to customer classifications that a local water provider uses for billing. Much of the public information available on this sub-metering requirement focuses on its applicability to new multi-unit residential buildings, but local water providers should consider how to apply this requirement to retail and light industrial buildings, in accordance with and subject to the exceptions in O.C.G.A. § 12-5-180.1.

All policies adopted for this Action Item must be written policies that either include their date of adoption or are accompanied by other documents (letters, emails, memoranda, etc.) that establish when the written policy was adopted.

~~Need Assistance? Contact the District at TechnicalAssistance@northgeorgiawater.com or visit our website at www.northgeorgiawater.org/technicalassistance.~~

Resources:

- ~~Georgia EPD, Existing Rules and Corresponding Laws, <https://epd.georgia.gov/existing-rules-and-corresponding-laws>~~
- ~~Georgia State Minimum Standard Plumbing Code, <http://www.dca.state.ga.us/development/constructioncodes/programs/codeAmendmentsPlumbing.asp>~~

WSWC-12: REQUIRE NEW CAR WASHES TO RECYCLE WATER

Responsible Party: Local Government

Intent: Reduce water use by conveyor car wash facilities.

Action Item: Each local government shall adopt and maintain an ordinance that requires all new conveyor car washes to install operational recycled water systems. A minimum of 50 percent of water used must be recycled.

Description and Implementation: Substantial water savings can be realized by improving the efficiency of commercial car wash water use through the adoption of water recycling systems.

There are three main types of car washes: self-service, roll-over/in-bay and conveyor. Self-service car washes are typically coin-operated with spray wands and brushes operated by the customer. Roll-over/in-bay automatic car washes are characterized by a wash bay in which the customer stays in the car as the carwash equipment uses either spray nozzles or brushes, or a combination of both, to process the individual cycles. A conveyor car wash is usually installed in a tunnel and includes a series of cloth brushes or curtains and arches from which water is sprayed while the car is pulled through the tunnel on a conveyor chain. Self-service car washes typically use 15 gallons per wash, while the in-bay and conveyor washes typically use 50 and 35 gallons per wash, respectively.

The adopted ordinance should set a minimum standard that 50 percent of water used by conveyor car washes should be recycled. The Metro Water District has developed a [model ordinance](#) on new car wash water recycling as a resource for local governments. Local water providers that are part of a local government should pass an ordinance, and local water providers that are authorities should establish written policies. All policies must be written policies that either include their date of adoption or are accompanied by other documents (letters, emails, memoranda, etc.) that establish when the written policy was adopted.

Local governments should take appropriate steps to ensure all car wash wastewater is connected to the sanitary sewer system and not the stormwater system.

Need Assistance? Contact the District at TechnicalAssistance@northgeorgiawater.com or visit our website at www.northgeorgiawater.org/technicalassistance.

Resources:

- Metro Water District, Model Ordinance to Require New Car Washes to Recycle Water, September 2, 2010, http://documents.northgeorgiawater.org/Car_Wash_Ordinance_9-02-10.pdf
- Georgia EPD, Water Conservation Best Management Practices and Certification, Chapter 391-3-31, <https://epd.georgia.gov/water-conservation-best-management-practices-and-certification-chapter-391-3-31>

WSWC-13: LOCAL DROUGHT RESPONSE AND WATER WASTE ORDINANCE/POLICY

Responsible Party: Local ~~Government~~Water Provider

Intent: To reduce water waste ~~such as outdoor leaks during non-drought periods~~ and ~~improper irrigation~~ to implement and enforce water use restrictions during declared drought under the EPD Drought Rule.

Action Item: Each local ~~government water provider~~ shall adopt ~~a water waste ordinance or policy to reduce outdoor water waste.~~

Description and Implementation: ~~Water waste means and maintain the excessive application of water that results in water flowing down any curb and gutter, street or storm drain or onto an adjacent property. Metro Water District Model Ordinance/Policy for Local Drought Response and Water Waste, or equivalent ordinance(s) or policy(ies) at least as effective.~~

~~Water waste policies and ordinances can range from simple statements that prohibit the waste of outdoor water to more detailed policies and ordinances that specify types of outdoor water waste. Non-compliance with such provisions may be treated as a municipal code violation. Violators should be warned and could potentially be subject to monetary penalties or termination of water service. Action Item WSWC-11 addresses water waste and conservation, and~~ **Description and Implementation:** Local water providers ~~should be prepared to address water waste and respond to droughts. Water waste includes excessive application of water beyond what is needed or other uses of water that are intended, unnecessary, or uncontrolled. The model ordinance specifies what activities will be considered water waste. Education is the recommended approach for addressing water waste by customers during non-drought periods, and warning and enforcement are more appropriate once a drought response level has been declared. The EPD Drought Rule in 391-3-30-.07(4)(c) and (5)(i) together provide that drought restrictions and water waste prohibitions must be enforceable to implement this drought response strategy, which is required under drought response level 3. Specifically, the EPD Drought Rule requires that local water providers "[i]mpose monetary penalties or terminate water services to customers to reduce outdoor water waste due to excessive application, outdoor leaks, improper irrigation, or other similar reasons." When, whether, and how to enforce any drought restrictions and water waste prohibitions is at the discretion of each local water provider based on their local circumstances.~~

~~Using this model ordinance/policy on drought response or something substantially similar will be helpful because it will allow for coordinated implementation of these two Action Items is advised., regional education, training, and public relations. Given local water providers in the District largely share a common media market for TV, radio, and newspapers, differences across jurisdictions are likely to cause public confusion. All District education materials, training, forms, and technical assistance will be based on this model ordinance. The District strongly encourages local water providers to adopt this model ordinance/policy with as few discretionary local modifications as possible. Nonetheless, Local Water Providers may make modifications to this model ordinance/policy on drought response provided they are at least as effective as the District model ordinance and are consistent with the EPD Drought Rule and other relevant state and federal laws. Local water providers may also adopt more than one policy or ordinance to address local drought response and water waste.~~

~~When preparing the model ordinance/policy for local adoption, the local jurisdiction must make some edits. Mandatory edits are highlighted within the Model Ordinance by mandatory edit prompts shown as bold text with brackets (e.g. [local jurisdiction]). These items are bracketed because they are jurisdiction specific~~

concepts, and you should review these and insert the jurisdiction's name and other jurisdiction-specific names, titles, boards, etc.

Adopting a model ordinance/policy gives local water providers the ability to enforce either through monetary penalties or by terminating water service, but it does not obligate them to specific enforcement actions. It is recommended that education, written warnings, and then enforcement be prioritized in order, and that enforcement be limited to drought or other repeated or egregious violations. Local water providers should modify Section [Y]-13 of the model ordinance to reflect local plans for issuing warnings, imposing monetary fines, and/or terminating water service as well as any local process for disputing administrative penalties.

Drought restrictions and water waste prohibitions are included in a single model ordinance/policy for convenience of implementation and enforcement, and this is consistent with the most common practice in the District and nationwide. However, local water providers that have adopted them as two separate ordinances/policies may continue to do so at their discretion.

The declaration of drought response levels and corresponding water use restrictions are set forth in the EPD Drought Rule (see Drought Management Rules, Ga. Comp. R. & Regs. 391-3-30 available at <http://rules.sos.ga.gov/gac/391-3-30> All policies and ordinances). All drought response efforts by local water providers must be consistent with the EPD Drought Rule. All local water providers should review this model ordinance/policy with their legal counsel and rely on their legal advice. Because the onset of drought can be sudden, having a model ordinance/policy in place allows local water providers to respond quickly if needed. This is consistent with the January 2020 Alliance for Water Efficiency report titled "Use and Effectiveness of Municipal Irrigation Restrictions During Drought." Specifically, the report made the following recommendation for water providers: "Prepare and pass ordinances necessary to implement and enforce the plan when the time comes. This study found that plans need codified rulemaking to include provisions that are enforceable on non-compliant customers and to target water waste, such as irrigation runoff and excessive use."

For more information and recommendations on how to plan ahead for and respond to drought, please see the District's Local Drought Planning Guide, which is offered as a tool for local water providers but does not impose any additional requirements beyond what's in this action item.

Local water providers that are part of a local government should pass an ordinance, and local water providers that are authorities should establish written policies. All policies must be written policies that either include their date of adoption or are accompanied by other documents (letters, emails, memoranda, etc.) that establish when the written policy was adopted.

Need Assistance? Contact the District at TechnicalAssistance@northgeorgiawater.com or visit our website at www.northgeorgiawater.org/technicalassistance.

Resources:

- Metro Water District, ~~Model Ordinance/Policy for Local Drought Response and Water Waste Policy or Ordinance, March~~
- Metro Water District, Local Drought Planning Guide
- Report on Use and Effectiveness of Municipal Irrigation Restrictions During Drought, Alliance for Water Efficiency, January 2020
- EPD Drought Rule (391-3-30-.01 et seq.) and O.C.G.A. 12-5-7(a.1, 2012, <http://northgeorgiawater.org/education-awareness/technical-resources/>)(3).

WSWC-14: WATER SYSTEM ASSET MANAGEMENT

Responsible Party: Local Water Provider

Intent: To facilitate effective operation and maintenance of the system to minimize water system leakage and to ensure proper functioning.

Action Item: Develop an asset management program that ensures proper management of the water system.

Sub-Tasks: Each local water provider shall:

1. Develop a map of the water distribution system and assets. All local water providers shall develop digital GIS water system mapping by January 1, 2021.
2. Develop a written asset management program to prioritize and implement activities to inspect, maintain and rehabilitate the local water system components.

Description and Implementation: The condition of water infrastructure in the Metro Water District varies greatly from new systems in outlying counties to systems over 100 years old. Aging water system infrastructure affects the safety, efficiency and reliability of the water systems. Aging infrastructure can also cause financial challenges, including putting operational funds at risk of being diverted to cover emergency repair costs. Asset management is a framework that can support sustainable infrastructure through planned and prioritized maintenance to minimize life-cycle costs, prevent water loss and ensure proper system functioning.

Asset management approaches to the maintenance of water infrastructure involve managing and maintaining the water system in a way that minimizes the life-cycle costs. Asset management for local water providers includes regular inspections and maintenance from the source to the water treatment facility through the water distribution system up to customer meters. Regular maintenance can extend the lifespan of water system assets as well as prevent customer service interruptions.

Asset management plans are developed to maintain an optimal level of service at best appropriate cost for rehabilitating, repairing or replacing assets. Asset management is a framework being widely adopted as a means to pursue and achieve sustainable infrastructure. A well-developed asset management program incorporates detailed asset inventories, operation and maintenance tasks and long-range financial planning to build water system capacity, and it puts water systems on the road to sustainability. The GAWP Asset Management Committee has developed a guidance document on Asset Management for Small Systems that may be used as a reference by Metro Water District water providers.

The water system map, at a minimum, should include survey and inventory of the water distribution system and horizontal and vertical locations of critical components. Comprehensive maps can help to determine which parts of the system need inspection, track ongoing, mostly unscheduled, maintenance work, and help determine appropriate resources for annual inspection and maintenance. Ongoing map maintenance is also critical to ensuring information is up-to-date and incorporates data on new lines and connections. Information collected as a part of water system mapping will vary based on the local water system and may include:

- Pipe information: size, material, age, condition, direction of flow and slope
- Valve information: location, diameter, depth, age and condition
- Pump station information: location, capacity, number of pumps, condition, method of alarm indication and method of backup power
- Elevated tanks: location, capacity, condition, normal level and method of alarm indication

In addition, water providers should identify critical infrastructure based on risk and consequence of failure. Risk can be defined as the combination of the likelihood of failure and the consequence of failure. The likelihood of failure can be determined or estimated by assessing the condition of the asset or by evaluating historic performance. The consequence of failure can be determined or evaluated on a case by case basis, depending on the type of asset. If the condition of assets is not known, such as for buried assets like pipes, the consequence of failure determination can be used to prioritize condition assessment activities.

Most local water providers, especially those in communities with a significant level of new development, already use a GIS-based water distribution system map. Water distribution system maps should be kept current and any water system changes should be made to the system map in a timely manner. It is recommended that local water providers coordinate the asset management program with the local water master plan (Action Item [WSWC-2](#)) and water loss control program (Action Item [WSWC-15](#)).

Need Assistance? Contact the District at TechnicalAssistance@northgeorgiawater.com or visit our website at www.northgeorgiawater.org/technicalassistance.

Resources:

- GAWP, Asset Management Committee, A Guide to Asset Management for Small Water Systems, July 2015 http://c.ymcdn.com/sites/www.gawp.org/resource/collection/244A5665-6A99-4A34-BD64-AAC465A2DB88/Small_Water_Systems_Guide_2015.docx
- GAWP, 2015 Pamphlet, 10 Questions A Small System Should be Asking About Asset Management Planning, http://c.ymcdn.com/sites/www.gawp.org/resource/collection/244A5665-6A99-4A34-BD64-AAC465A2DB88/2015_Pamphlet_for_Small_Water_Systems.pdf

WSWC-15: WATER LOSS CONTROL AND REDUCTION

Responsible Party: Local Water Provider

Intent: To control and reduce local water provider's real losses.

Action Item: Develop and implement program to identify and reduce real water losses.

Sub-Tasks: Each local water provider serving at least 3,300 individuals shall:

~~3. Comply with Georgia EPD's Water Supply Efficiency Rule (see Georgia Rules and Regulations, Chapter 391-3-33 and any related guidance that may be issued from time to time [the "Water Supply Efficiency Rule"]), including but not limited to the requirements for water loss audits, reporting and demonstration of progress.~~

1. Track key metrics from the AWWA water audit annually as The Qualified Water Loss Auditor who validates a local water provider's water loss audit shall not be the same person that compiles the audit; however, both people may work for the same local water provider.

2. By 2025 take the actions required by the Georgia to meet or exceed the following data grades for key inputs using AWWA Free Water Audit Software v6.0:

a. A data grade of 7 or greater for Volume from Own Sources if not a purchase water only system;

~~a.b. A data grade of 7 or greater for Water Stewardship Act and the Imported if imports are greater than 25% of Water Supply Efficiency Rule-Supplied;~~

c. A data grade of 7 or greater for Water Exported if exports are greater than 25% of Volume from Own Sources; and

d. A data grade of 6 or greater for Customer Metering Inaccuracies.

4.3. For each local water provider with density greater than 32 connections per mile of main and real losses above 60 gallons per day per connection (based on 2013 water loss audit results), adopt a ~~2025~~2028 goal to reduce real losses to less than 60 gallons per day per connection and demonstrate progress in the interim years toward meeting this goal. Systems that achieve this goal prior to ~~2025~~2028 should continue cost-effective water loss controls and initiate progress toward 35 gallons per day per connection.

5.4. For each local water provider with density greater than 32 connections per mile of main and real losses are between 35 and 60 gallons per day per connection (based on 2013 water loss audit results), adopt a ~~2025~~2028 goal to reduce real losses to less than 35 gallons per day per connection and demonstrate progress in the interim years towards meeting this goal. Systems that achieve this goal prior to ~~2025~~2028 should continue cost-effective water loss controls by setting new individualized goals and demonstrating progress as required by the Water Supply Efficiency Rule.

~~6. If a local water provider required to adopt a target pursuant to Sub-Tasks (3) and (4) above reasonably believes after detailed analysis that the applicable 2025 goal exceeds its system-specific economic level of leakage, then the local water provider may send a notice to the District Chairperson by no later than July 1, 2018 establishing a new 2025 goal. See implementation guidance below for details on this notice.~~

Description and Implementation: Audits of real water losses provide information that can be used to set goals to improve water system management and reduce water losses.

The Georgia Water Stewardship Act requires that all local water providers serving at least 3,300 individuals complete an annual local water provider audit using the AWWA Free Water Audit Software® and submit the

Commented [AM15]: Date extended for the reasons set forth below in the Description and Implementation section.

Commented [AM16]: Deleted because no utilities took advantage of this option, and the deadline has passed.

audit results to Georgia EPD by March 1 of each year. Additionally, the Metro Water District has required local water providers to assess leakage by performing water loss audits since the adoption of the 2003 Plan. In June 2015, the Georgia DNR board passed the Water Supply Efficiency Rule (Georgia Rules and Regulations, Chapter 391-3-33) as prescribed by the Georgia Water Stewardship Act of 2010. The rule states that audits must be annually reviewed, validated, and certified by a Qualified Water Loss Auditor prior to submitting to Georgia EPD. Another provision is that all local water providers must have a water loss control program by July 1, 2016. The rule also states that local water providers shall establish individual goals to set and improve water supply efficiency and demonstrate progress toward those goals.

The Water Research Foundation's Level 1 Water Audit Validation Guidance Manual, 2nd Ed., Project No. 5057 provides the following insight: "The process of water audit review is made more effective when the validator approaches the water audit with fresh eyes, having not been intimately involved in its assembly. Nonetheless, the validator may be a part of the same organization as the auditor, and a validator may validate the audit of their own utility."

The AWWA Free Water Audit Software[®] uses the IWA/AWWA methodology which is applied in an Excel spreadsheet. Within IWA/AWWA methodology, no water is considered "unaccounted for," as it is allocated as either a consumption or loss. Local water providers should use the version of the software required by EPD. Water loss programs can then target the categories of losses, which will vary for every local water provider. The water audit software calculates the following local water provider performance metrics for water loss that can be tracked annually:

- Apparent Losses per connection per day (gallons per day)
- Real Losses per connection per day (gallons per day)
- Real Losses per mile of main per day (gallons per day)

These metrics are identified in the AWWA M36 Manual and in the Georgia Water Loss Manual as recommendations for tracking progress and setting goals.

The use of percentage indicators is not recommended to track progress over time, due to the unrelated factors that can skew such numbers from year-to-year. Using volumes that are normalized for local water provider-specific factors is more applicable for individual local water providers tracking of water losses. The ~~20252028~~ goals in the Sub-Tasks (32) and (43) are based on an analysis of the ~~latest published water audit results~~ (2013 calendar year) for local water providers in the Metro Water District. In 2013, the median real water losses for local water providers with densities of greater than 32 connections per mile of main was 34.5 gallons per day per connection. Progress towards meeting the ~~20252028~~ goals can be reviewed and demonstrated by tracking the key metrics from consecutive audit years using the AWWA Water Audit Compiler tool. This tracking tool is freely available from the AWWA website, and can be used to create graphics showing the trends of these metrics over several years. The trend can be used to demonstrate progress, and for purpose of Sub-Tasks (32) and (43), demonstrating progress will be based on gallons per day per connection.

The water audit software also calculates the water audit data validity to provide a level of reliability of the water audit results for the purposes of implementing water loss control activities. The water audit software requires the application of "data grades" to each input based on very specific data quality and operational criteria. These data grades are compiled into an overall data validity score and Data Validity Tiers, which provides the overall reliability of the results. Target and goal setting is not recommended in the software or by AWWA until Data Validity Tier III is achieved (i.e. the data validity score is between 50 and 70-). The inputs are not weighted equally, and as a result, those water systems with data validity scores below 50 should consider activities to improve their data grades ~~on key inputs. Key inputs include Volume From Own Sources (or Water Imported), Master Meter Error Adjustments, Billed Metered and Customer Metering~~

Inaccuracies. Specific activities that can be performed to improve the data grades are listed in the water audit software.

The ~~2025~~2028 goals in Sub-Tasks (32) and (43) apply regardless of a local water provider's data validity score, but a local water provider with a data validity score below 50 may prioritize taking action to improve its score before other activities necessary to meet the ~~2025 goals as demonstration of progress~~2028 goals as demonstration of progress. Compared to the 2017 District Plan, new data grades are now required for key inputs. This renewed focus on both water loss and data is based on the implementation work completed since the 2017 District Plan. Improving the data grades for these key inputs is important because they are associated with some of the largest volumes of water and are heavily weighted in the overall data validity score. All documentation required to meet or exceed the required data grades for key inputs shall be submitted to EPD as part of the 2022 Plan compliance audits. Improving these scores will help identify the best ways to achieve the real water loss goals and therefore help utilities prioritize expenditures on real water loss.

~~Local~~The deadline for demonstrating progress contained in the 2017 District Plan has been extended to 2028 and new data grades are now required for key inputs. Experience implementing water loss control requirements in the Metro Water District has shown that improved data collection is needed to identify areas with the greatest potential for reduction and to maximize return on investments in water loss control programs. Further, given the potentially significant costs associated with capital-intensive water loss improvement efforts, equity concerns require that programs be targeted to provide the greatest benefit. Improving data quality consistent with this action item and modifying the compliance deadline best serves these interests.

Consistent with this, local water providers should consider the costs and benefits of their water loss activities in order to implement the most cost-effective programs to reduce water losses and meet the ~~2025~~2028 goals. For example, local water providers should compare the cost of implementing a water loss reduction activity to the value of the water losses recovered. The value of recovered real and apparent losses can be represented by the variable production cost and customer retail unit cost, respectively, found in the water audit.

~~For any local water provider sending notice of a new 2025 goal under Sub-Task (5), the new 2025 goal and the form and substance of the related notice to the Metro Water District must be approved by the local water provider's governing body. The notice must include a detailed summary of their analysis and attach detailed data supporting their determination of their system-specific economic level of leakage. If a local water provider does not send a notice changing its 2025 goal by the deadline of July 1, 2018, then the 2025 goal shall apply.~~

Need Assistance? Contact the District at TechnicalAssistance@northgeorgiawater.com or visit our website at www.northgeorgiawater.org/technicalassistance.

Resources:

- AWWA, M36: Water Audits and Loss Control Programs, Fourth Edition, 2016, <http://www.awwa.org/store/productdetail.aspx?productid=51439782>
- Water Research Foundation, Level 1 Water Audit Validation Guidance Manual, 2nd Ed., Project No. 5057
- Water Research Foundation, Water Audits and Real Loss Component Analysis, 4372a, 2015,
- AWWA, Water Loss Control Resource Community, Free Water Audit Software v5.0 and Water Audit Software and Compiler v5.0, 2014, http://www.awwa.org/resources_tools/water_knowledge/water_loss_control.aspx

- GAWP, Water Loss Auditing and Efficiency Reporting Guidance, Georgia Water Loss Control Manual, Version 2.0, March 2016, <http://www.gawp.org/?page=WaterLossAudits>

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WSWC-16: LOCAL PUBLIC EDUCATION PROGRAM

Responsibility Party: Local Water Provider

Intent: To increase knowledge and awareness of the importance of water efficiency and conservation with the goal of building public support for local actions and activities as well as long term behavior change.

Action Item: Develop and implement a local water efficiency and conservation education program.

Sub-Tasks: Each local water provider shall:

1. Implement education activities as outlined in Action Item [PUBLIC EDUCATION-1](#).
2. Distribute high-efficiency retrofit kits to residential water customers.
3. Provide residential water assessment information to residential water customers.

~~4. Promote the EPA WaterSense New Homes program.~~

~~5.4. Provide information on water efficient landscape practices to residential water customers.~~

Description and Implementation: Public education and outreach is crucial for fostering broad public support for water conservation and efficiency. Involving the public is crucial to developing an ethic of stewardship, and it enables to the public to make informed choices about water resources management. Additionally, education and outreach can encourage changes in basic behavior and practices that are necessary to achieve maximum and long-term objectives to protect our shared water resources. At the local level, water providers must implement education and public awareness programs that help individual citizens, businesses and organizations to become aware of their role in how water is used and what they can do to support sustainable use and drought mitigation.

[Section 5.5](#) provides more detail on public education programs and Action Item [PUBLIC EDUCATION-1](#) provides more detail on local public education program requirements. Specific guidance for Sub-Tasks lists above includes:

- Local water providers should identify and purchase high-efficiency retrofit kits appropriate for the local water service area and target the distribution to customers in pre-1994 properties. It is recommended that the retrofit kit include a WaterSense certified showerhead. Instead of offering standard retrofit kits to customers, one or more water conservation items from the kit may be offered a la carte to customers based on their needs and preferences.
- Local water providers may use the [Do It Yourself Household Water Assessment](#) and the [MyDropCounts pledge](#) developed by the Metro Water District to educate customers on their water use through a self-water assessment.
- ~~• Local water providers may distribute information developed through the EPA WaterSense New Homes program to local developers, architects, engineers and builders interested in building higher water efficient homes.~~
- Water providers and local governments may use the [Water-Wise Landscape Guide for the Georgia Piedmont](#) developed by the Metro Water District and UGA Extension to educate customers on water efficient landscape practices.

Need Assistance? Contact the District at TechnicalAssistance@northgeorgiawater.com or visit our website at www.northgeorgiawater.org/technicalassistance.

Commented [AM17]: Deleted because the District will monitor and promote high-quality water efficiency home programs from time to time as appropriate.

Resources:

- Metro Water District, Public Education and Awareness Resources List, <http://northgeorgiawater.org/education-awareness/technical-resources/>
- Metro Water District, Do It Yourself Household Water Assessment, <http://documents.northgeorgiawater.org/HouseholdWaterAudit.pdf>
- ~~EPA, WaterSense Labeled Homes, information page, https://www3.epa.gov/watersense/new_homes/~~
- ~~My Drop Counts Conservation Pledge, mydropcounts.org~~
- UGA Extension, Water-Wise Landscape Guide for the Georgia Piedmont, June 2015, Bulletin 144, http://extension.uga.edu/publications/files/pdf/B%201444_1.PDF

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Metro Atlanta Plumbing Code Efficiency Requirements
Local Amendment to Plumbing Code

[NOTE: The redlines in this local amendment show the changes included in the Metro Atlanta Plumbing Code Efficiency Requirements compared to the current Georgia State Minimum Standard Plumbing Code. To adopt this local ordinance, the tracked changes should all be accepted.]

Amendment to local code of ordinances [Chapter X, Article Y, Section Z-Z]. Effective January 1, 2024, the Georgia State Minimum Standard Plumbing Code has been amended by the **[local government]** as follows:

Chapter 2, Section 202 General Definitions. Revise the following definitions to read as follows:

Kitchen faucet or kitchen faucet replacement aerator. A kitchen faucet or kitchen faucet replacement aerator that allows a flow of no more than 1.82-0 gallons of water per minute at a pressure of 60 pounds per square inch and conforms to the applicable requirements in ASME A112.18.1/CSA B125.1.

* * * * *

Lavatory faucet or lavatory faucet replacement aerator. A lavatory faucet or lavatory faucet replacement aerator that allows a flow of no more than 1.25 gallons per minute at a pressure of 60 pounds per square inch and is listed to the WaterSense High Efficiency Lavatory Faucet Specification.

* * * * *

Shower head. A shower head that allows a flow of no more than the average of 2.05 gallons of water per minute at 860 pounds per square inch of pressure, and is listed in the WaterSense Specification for Showerheads, and meets the US Department Energy definition of showerhead.

* * * * *

Chapter 6, Section 604.4 Maximum Flow and Water Consumption. Revise Section 604.4 to read as follows:

Consistent with the general approach taken in Georgia, these Maximum Flow and Water Consumption requirements and related definitions in Section 604.4 of the plumbing code shall apply to all plumbing systems, including those in one- and two-family dwellings. The maximum water consumption flow rates and quantities for all plumbing fixtures and fixture fittings shall be in accordance with Table 604.4. If the WaterSense program updates the maximum flow rates, then new fixtures must meet the updated maximum instead of the maximum flow rate listed in Table 604.4.

Exceptions:

1. Blowout design water closets having a water consumption not greater than 3¹/₂ gallons (13 L) per flushing cycle.
2. Vegetable sprays.
3. Clinical sinks having a water consumption not greater than 4¹/₂ gallons (17 L) per flushing cycle.
4. Laundry tray sinks and ~~S~~service sinks.

5. Emergency showers and eye wash stations.

TABLE 604.4
 MAXIMUM FLOW RATES AND CONSUMPTION FOR
 PLUMBING FIXTURES AND FIXTURE FITTINGS

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY ^b
Lavatory <u>faucet and replacement aerators</u> , private	<u>WaterSense Labeled & 1.25</u> gpm at 60 psi ^{f, B}
Lavatory faucet, public (metering)	0.25 gallon per metering cycle ^g
Lavatory, public (other than metering)	0.5 gpm at 60 psi ^g
Showerhead ^a	<u>WaterSense Labeled & 2.5</u> 2.0 gpm at <u>80</u> 60 psi ^f
<u>Kitchen Sink</u> -faucet <u>and replacement aerators</u>	<u>2.0</u> 1.8 gpm at 60 psi ^{f, h}
Urinal	0.5 gallon per flushing cycle ^f
Water closet	1.28 gallons per flushing cycle ^{c, d, e, f}

For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m,
 1 pound per square inch = 6.895 kPa.

a. A hand-held shower spray is a shower head. As point of clarification, multiple shower heads may be installed in a single shower enclosure so long as each shower head individually meets the maximum flow rate, the WaterSense requirements, and the US Department of Energy definition of showerhead. However, multiple shower heads are not recommended for water efficiency purposes.

b. Consumption tolerances shall be determined from referenced standards.

c. For flushometer valves and flushometer tanks, the average flush volume shall not exceed 1.28 gallons.

d. For single flush water closets, including gravity, pressure assisted and electro-hydraulic tank types, the average flush volume shall not exceed 1.28 gallons.

e. For dual flush water closets, the average flush volume of two reduced flushes and one full flush shall not exceed 1.28 gallons.

f. See 2014 GA Amendment to Section 301.1.2 'Waiver from requirements of high efficiency plumbing fixtures'.

g. Private lavatory faucet means those installed in residences, apartments, and private bathrooms in lodging, hospitals, and patient care facilities (including skilled nursing and long-term care facilities. Public lavatory faucet means those installed in all other bathrooms of buildings or occupancies.

h. Kitchen faucets are permitted to temporarily increase the flow above the maximum rate, but not to exceed 2.2 gpm (8.3 L/m) at 60 psi (414 kPa) and must revert to a maximum flow rate of 1.8 gpm (6.8 L/m) at 60 psi (414 kPa) upon valve closure.

604.4.1 Clothes Washers. Residential clothes washers shall be in accordance with the Energy Star program requirements.

604.4.2 Cooling Tower Water Efficiency.

604.4.2.1 Once-Through Cooling. Once-through cooling using potable water is prohibited.

604.4.2.2 Cooling Towers and Evaporative Coolers. Cooling towers and evaporative coolers shall be equipped with makeup water and blow down meters, conductivity controllers and overflow alarms. Cooling towers shall be equipped with efficiency drift eliminators that achieve drift reduction to 0.002 percent of the circulated water volume for counterflow towers and 0.005 percent for crossflow towers.

604.4.2.3 Cooling Tower Makeup Water. Water used for air conditioning, cooling towers shall not be discharged where the hardness of the basin water is less than 1500 mg/L. **Exception:** Where any of the following conditions of the basin water are present: total suspended solids exceed 25 ppm, CaCO₃ exceeds 600 ppm, chlorides exceed 250 ppm, sulfates exceed 250 ppm, or silica exceeds 150 ppm.

604.4.3 Lawn Irrigation Systems. When connected to a municipal public water system, lawn irrigation systems shall comply with all applicable landscape irrigation system efficiency requirements of such system subject to its terms, conditions, and exceptions.

Chapter 13 NONPOTABLE WATER SYSTEMS, Section 1304 Reclaimed Water Systems. Revise Section 1304.3.2 to read as follows:

1304.3.2 Connections to water supply. Reclaimed water provided from a reclaimed wastewater treatment ~~system~~ facility permitted by the Environmental Protection Division may be used to supply water closets, urinals, trap primers for floor drains and floor sinks, water features and other uses approved by the Authority Having Jurisdiction, in motels, hotels, apartment and condominium buildings, and commercial, industrial, and institutional buildings, where the individual guest or occupant does not have access to plumbing. Also, other systems that may use a lesser quality of water than potable water such as water chillers, carwashes or an industrial process may be supplied with reclaimed water provided from a reclaimed wastewater treatment facility permitted by the Environmental Protection Division. The use of reclaimed water sourced from any new private reclaimed wastewater treatment system for outdoor irrigation shall be limited to golf courses and commercial agriculture operations as defined in the Official Code of Georgia Section 1-3-3, and such reclaimed water shall not be approved for use for irrigating any other outdoor landscape such as ground cover, tree, shrubs, or other plants. These limitations do not apply to reclaimed water sourced from existing private reclaimed water systems or from existing or new, governmentally-owned reclaimed wastewater treatment systems.

Appendix E, Section E101.1.2. Revise Section E.101.1.2 to read as follows:

Because of the variable conditions encountered in hydraulic design, it is impractical to specify definite and detailed rules for sizing of the water piping system. Accordingly, other sizing or design methods conforming to good engineering practice standards are acceptable alternatives to those presented herein. Without limiting the foregoing, such acceptable design methods may include for multi-family buildings the Peak Water Demand Calculator from the IAPMO/ANSI 2020 Water Efficiency and Sanitation Standard for the Built Environment, which accounts for the demands of water-conserving plumbing fixtures, fixture fittings, and appliances. If future versions of the Peak Water Demand Calculator including other building types, such as commercial, such updated version shall be an acceptable design method.

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Model Findings Resolution

RESOLUTION NO. [] OF [Local Government] FINDINGS ON PROPOSED LOCAL AMENDMENT TO PLUMBING CODE FOR WATER EFFICIENCY SUBMISSION OF PROPOSED AMENDMENT TO DCA

WHEREAS, the current minimum water efficiency requirements for buildings in the [Local Government's] jurisdiction is the Georgia State Minimum Standard Plumbing Code ("Georgia Plumbing Code") as approved and adopted by the Georgia Department of Community Affairs ("DCA") from time to time;

WHEREAS, the [Local Government], like all local governments in the State of Georgia, is authorized under O.C.G.A. § 8-2-25(c) to adopt local requirements when needed that are more stringent than the Georgia Plumbing Code based on local climatic, geologic, topographic, or public safety factors;

WHEREAS, the long-term availability, reliability, and resiliency of water supplies is a critical need of the [Local Government] and water efficiency is essential to meeting this need;

WHEREAS, the "Local Amendments to Plumbing Code" shown in the redline in Attachment A are more stringent than the Georgia Plumbing Code on water efficacy because the amendments require even more efficient uses of water and provide clarifications on existing allowable practices;

WHEREAS, based on its local climatic, geologic, topographic factors included in the regional water resources plan prepared by the Metropolitan North Georgia Water Planning District ("Metro Water District"), of which the [Local Government] is a part, water conservation is especially important to [Local Government] and the Metro Water District;

WHEREAS, the [Local Government] has become aware that more water efficient technologies have become widely available at comparable prices and performance to the water efficient technologies currently required as the minimum in the Georgia Plumbing Code;

NOW, THEREFORE, BE IT RESOLVED THAT:

1. The governing body of the [Local Government] finds that, based on local climatic, geographic, topographic, and public safety factors included in the Metro Water ~~Distiret's~~District's plans, it is justified in adopting local water efficiency requirements more stringent than the Georgia Plumbing Code;
2. The [Local Government] is considering codifying these water efficiency requirements in local code as an amendment to Georgia Plumbing Code in the form of the Local Amendments to Plumbing Code shown in the redline in Attachment A; and
3. The [Local Government] is directing its staff to submit this resolution and the Local Amendments to Plumbing Code to DCA for review and comment within 60 days as required by O.C.G.A. § 8-2-25(c)(1).

Attachment A
LOCAL AMENDMENT TO PLUMBING CODE FOR WATER EFFICIENCY

[Insert the local amendment to plumbing code redline]

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Model Adoption Resolution

RESOLUTION NO. [_____] of [Local Government] ADOPTION OF LOCAL AMENDMENT TO PLUMBING CODE FOR WATER EFFICIENCY

WHEREAS, the current minimum water efficiency requirements for buildings in the *[Local Government's]* jurisdiction is the Georgia State Minimum Standard Plumbing Code ("Georgia Plumbing Code") as approved and adopted by the Georgia Department of Community Affairs ("DCA") from time to time;

WHEREAS, the *[Local Government]*, like all local governments in the State of Georgia, is authorized under O.C.G.A. § 8-2-25(c) to adopt local requirements that are more stringent than the Georgia Plumbing Code based on local climatic, geologic, topographic, or public safety factors;

WHEREAS, the *[Local Government]* has followed the required procedures in O.C.G.A. § 8-2-25(c) for local adoption of the Local Amendments to Plumbing Code for water efficiency, and DCA has *[recommended that / made no recommendation as to whether / has failed to respond as to whether]* they be adopted. **[NOTE - Please note that if the DCA Codes Section recommends that the Water Efficiency Plumbing Code Amendments should not be adopted, District staff will work with the local government on a resolution that addresses the concerns expressed by the DCA Codes Section and sets forth the basis for the local government voting to proceed as allowed pursuant to O.C.G.A. § 8-2-25(c)(3).]**

WHEREAS, the long-term availability, reliability, and resiliency of water supplies is a critical need of the *[Local Government]* and water efficiency is essential to meeting this need;

WHEREAS, the *[Local Government]* is adopting the Local Amendments to Plumbing Code to meet this critical need and to comply the requirements of Metropolitan North Georgia Water Planning District's 2022 Water Resources Plan in the WSWC-8 Action Item on Metro Atlanta Plumbing Code Efficiency Requirements.

NOW, THEREFORE, BE IT RESOLVED THAT:

1. The governing body of the *[Local Government]* finds that, based on local climatic, geographic, topographic, and public safety factors, it is justified in adopting the water efficiency requirements in the Local Amendments to Plumbing Code that are more stringent than the Georgia Plumbing Code;
2. The *[Local Government]* has followed the required procedures in O.C.G.A. § 8-2-25(c).
3. The *[Local Government]* hereby adopts the Local Amendments to Plumbing Code, which will take effect on January 1, 2024.

WSWC-10 - Model Language Ordinance/Policy
Metro Atlanta Landscape Irrigation System Efficiency Requirements

Article X – Landscape Irrigation System Requirements.

Section 1 – Purpose and Intent. The purpose of this Article is to reduce discretionary outdoor water use and avoid wasting water by adopting more efficient landscape irrigation system design requirements.

Section 2 – Definitions.

(a) “flow sensor” means an inline device that produces a repeatable signal proportional to flow rate.

(b) “landscape irrigation system” means an assembly of component parts that is permanently installed for the controlled distribution of water to irrigate landscapes.

(c) “landscape” means ground cover, trees, shrubs, and other plants.

~~(d) “large landscape” means the landscape areas associated with a development (excluding single family homes) served by one or more landscape irrigation systems where all irrigated areas added together total more than 1 acre (or 43,560 square feet).~~

~~(e)(d)~~ “master shut-off valve” is an automatic valve such as a gate valve, ball valve, or butterfly valve) capable of being automatically closed by the WaterSense controller. When this valve is closed water will not be supplied to the landscape irrigation system.

~~(e) “pressure regulating device” means a device designed to maintain pressure within the landscape irrigation system at the manufacturer’s recommended operating pressure and that protects against sudden spikes or drops from the water source.~~

(f) “rain sensor shut-off” means an electric device that detects and measures rainfall amounts and overrides the cycle of a landscape irrigation system so as to turn off such system when a predetermined amount of rain has fallen.

(g) “WaterSense irrigation controller” means either weather-based or soil moisture-based irrigation controllers labeled under the U.S. Environmental Protection Agency’s WaterSense program, which includes standalone controllers, add-on devices, and plug-in devices that use current weather data as a basis for scheduling irrigation.

~~(h) “WaterSense spray sprinkler bodies” means a sprinkler body with integral pressure regulation, generating optimal water spray and coverage.~~

Section 3 – Applicability and Exceptions. The Article applies to all new landscape irrigation systems connected to the [local water provider] after [INSERT DATE OF ADOPTION] except those (a) used for commercial agricultural operations as defined in the Official Code of

Georgia Section 1-3-3, (b) used for golf courses, and (c) dependent upon a nonpublic water source. This application is based on the [local water provider's] water service area and, therefore, applies regardless of whether a new landscape irrigation system is located within or outside of the [local jurisdiction]'s general [county / city limits].

Section 4 – Avoiding Water Waste through Design. All new landscape irrigation systems shall beadhere to the following:

(a) Be designed, installed, maintained, serviced and operated to promote the most efficient use of water, have and prevent runoff from leaving the target landscape due to low-head drainage, excessive flow rates, overspray, improper spacing of head-to-head coverage, or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways, parking lots, or structures.

(b) Prevent water in the supply-line drainage from draining out between irrigation events.

(c) The irrigation design or installation shall not require the use of any components in a manner that exceeds manufacturer's published performance limitations or recommendations.

(d) Pop-up type sprinkler heads shall pop-up to a height above vegetation level of not less than four (4) inches above the soil level when emitting water.

(e) Pop-up spray heads or rotary sprinkler heads must direct flow away from any adjacent surfaces and must not be installed closer than four inches from impervious surfaces.

(f) Areas less than ten (10) feet in width in any direction shall be irrigated with subsurface irrigation or by other means that produces no overspray or runoff.

(g) Narrow or irregular shaped landscaped areas, less than four (4) feet in any direction across opposing boundaries shall not be irrigated by any irrigation emission device except sub-surface or low flow emitters with flow rates not to exceed 6.3 gallons per hour.

This requirement helps ensure compliance with, and is in addition to, the [local water provider's] more general prohibitions against water waste.

Section 5 – ~~General~~ Landscape Irrigation System Requirements. [Note – Remove Section 5 if requirements for rain sensor shut-off adequately covered in another policy or ordinance.] Regardless of whether an irrigation meter is used, all new landscape irrigation systems ~~for single family residences shall~~ will be checked to ensure they include the following components:

(a) A backflow prevention assembly if required by the applicable backflow prevention requirements;

~~(b) A WaterSense controller; and~~
(b)

~~(c)~~ (c) A rain sensor shut-off installed in an area that is unobstructed by trees, roof overhangs, or anything else that might block rain from triggering the rain sensor shutoff.

~~(c)~~

~~Section 6 – Large Landscape Irrigation System Requirements. Regardless of whether an irrigation meter is used, new landscape irrigation systems for large landscapes shall include the following:~~

~~(a) – Applicable backflow prevention, a WaterSense controller, and the rain sensor shut off as required of all new landscape irrigation systems;~~

~~(b) – WaterSense spray sprinkler bodies operating at the optimum or recommended sprinkler head pressure as indicated by the manufacturer for the nozzle and head spacing that is used.~~

~~(d)~~ (d) A master shut-off valve for each controller installed as close as possible to the point of connection of the water but downstream of the backflow prevention assembly;

~~(e) – e~~ (e) Pressure-regulating devices such as valve pressure regulators, sprinkler head pressure regulators, inline pressure regulators, or other devices shall be installed as needed to achieve the manufacturer’s recommended pressure range at the emission devices for optimal performance; and

~~(d) – At(f)~~ (d) Except for landscape irrigation systems serving a single-family home, all other systems must also include:

(i) a WaterSense irrigation controller.

(ii) at least one flow sensor, which must be installed at or near the supply point of the landscape irrigation system, that when connected to the WaterSense controller will detect and report high flow conditions to such controller and automatically shut master valves.

Section 76 – Compliance Self-Certifications for 1" and Larger New Service Connections.
[Option 1: *As a condition of selling a new water meter or irrigation meter for any new service connection of 1" or larger, the purchaser of such meter shall submit a certification of compliance along with any other required paperwork and project information as may be required.*

(a) Such certification of compliance shall include a certification that one of the following is true and correct:

~~(1) the development will not include any landscape irrigation systems; or~~

~~(2) the development will include a landscape irrigation system that does not serve a large landscape, and as a result the system will only include applicable backflow prevention, a WaterSense controller, and the rain sensor shut off; or~~

~~(3) the development will include a landscape irrigation system that does serve a large landscape, and as a result all requirements in Section 65 will be met.~~

(b) For all new ~~services connection of 1" or larger~~service connections, the [local water provider] shall receive the signed certification of compliance and determine whether all required information has been provided. If the certification of compliance has not been completed with all required information, the [local water provider] shall return the certificate of compliance to the purchaser specifying what information is missing and ask that a complete certificate be resubmitted.]

[Option 2: All plans for development involving any new service connection ~~of 1" or larger~~ shall include a certification, through written statements in plan documents or on drawings, that the following is true and correct:

(a) ~~(a)~~ the development will not include any landscape irrigation systems; or

(b) the development will include a landscape irrigation system ~~that does not serve a large landscape, and as a result the system will only include applicable backflow prevention, a WaterSense controller, and the rain sensor shut off; or~~

~~(c) the development will include a landscape irrigation system that does serve a large landscape, and as a result all requirements in Section 65 will be met.~~

If the certification is not included with all required information, the [local water provider] shall notify the purchaser specifying what information is missing and ask that documentation with the complete certification be submitted.]

Section 7. Inspections. The [local water provider] may inspect the landscape irrigation system for compliance with this Article prior to completion of the development, issue written notices specifying any non-compliance, and condition continued water service on the correction of any material noncompliance within 60 days of such notice.

Attachment B

Options for Compliance Self-Certifications for New Service Connections of 1" or Greater

Option 1 for 1" and Larger for New Service Connections

The undersigned as the purchaser of the new meter certifies, by marking the appropriate boxes with an X and signing below, that:

1. the development will not include any landscape irrigation systems; or

3. ~~2.~~ the development will include a landscape irrigation system ~~that does not serve a large landscape,~~ and as a result the system will include ~~the following~~:

~~_____ Total irrigated landscapes including all areas = _____ sq. ft.*~~

~~_____ Backflow prevention assembly;~~

~~_____ WaterSense controller; and~~

~~_____ Rain sensor shut-off;~~

3. ~~the development will include a landscape irrigation system that does serve a large landscape, and as a result the system will include:~~

~~_____ Total irrigated landscapes including all areas = _____ sq. ft.*~~

~~_____ Backflow prevention assembly;~~

~~[] WaterSense controller; spray sprinkler bodies~~

~~_____ Rain sensor shut-off;~~

~~_____ Master shut-off valve;~~

~~_____ Pressure regulating devices as needed; and~~

~~_____ WaterSense controller (non-single-family only);~~

~~_____ Flow sensor(s) (non-single-family only).~~

~~*NOTE — It is recommended that you measure and total all areas of irrigated landscapes in connection with the development. If you do not perform and submit these measurements, then you must meet the large landscape requirements.~~

Signature: _____.

Name: _____.

Title: _____.

Company: _____.

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Option 2 for 1" and Larger New Service Connections

The appropriate plan document or drawing for developments with new connections ~~of 1" or larger~~ must include one of the following:

No Landscape Irrigation System: This development does not include a landscape irrigation system.

~~Landscape Irrigation System—No Large Landscape~~: This development will include a landscape irrigation system ~~that does not serve a large landscape~~, and as a result the system will include ~~the following~~: (1) ~~total irrigated landscapes combining all areas is 1 acre or less~~, (2) backflow prevention assembly, (3) ~~WaterSense controller~~, and (4) ~~spray sprinkler bodies~~, (3) rain sensor shut-off.

~~Landscape Irrigation System—Large Landscape~~: This development will include a landscape irrigation system ~~that does serve a large landscape~~, and as a result the system will include: (1) ~~total irrigated landscapes combining all areas is greater than 1 acre~~ (2) backflow prevention assembly, (3) ~~WaterSense controller~~, and (4) rain sensor shut-off; (5) ~~(4) master shut-off valve~~, (6) ~~pressure regulating devices, as needed~~, (6) WaterSense spray sprinkler body (non-single-family only), and (7) flow sensor(s) (non-single-family only).



Metropolitan North Georgia Water Planning District

International Tower | 229 Peachtree St., NE | Suite 100 | Atlanta, GA 30303

MEMORANDUM

TO: Local Water Providers in the Metropolitan North Georgia Water Planning District (“District”)

FROM: District Staff

DATE: **[INSERT]**

SUBJECT: WSWC-13: Model Ordinance/Policy on Local Drought Response and Water Waste Ordinance/Policy

Model Ordinance/Policy: See Attachment A to this memorandum for the Metro Water District Model Ordinance/Policy for Local Drought Response and Water Waste.

[NOTE – The text below matches the language in the body of the plan]

Action Item: Each local water provider shall adopt and maintain the Metro Water District Model Ordinance/Policy for Local Drought Response and Water Waste, or equivalent ordinance(s) or policy(ies) at least as effective.

Description and Implementation: Local water providers should be prepared to address water waste and respond to droughts. Water waste includes excessive application of water beyond what is needed or other uses of water that are intended, unnecessary, or uncontrolled. The model ordinance specifies what activities will be considered water waste. Education is the recommended approach for addressing water waste by customers during non-drought periods, and warning and enforcement are more appropriate once a drought response level has been declared. The EPD Drought Rule in 391-3-30-.07(4)(c) and (5)(j) together provide that drought restrictions and water waste prohibitions must be enforceable to implement this drought response strategy, which is required under drought response level 3. Specifically, the EPD Drought Rule requires that local water providers “[i]mpose monetary penalties or terminate water services to customers to reduce outdoor water waste due to excessive application, outdoor leaks, improper irrigation, or other similar reasons.” When, whether, and how to enforce any drought restrictions and water waste prohibitions is at the discretion of each local water provider based on their local circumstances.

Using this model ordinance/policy on drought response or something substantially similar will be helpful because it will allow for coordinated, regional education, training, and public relations.

Given local water providers in the District largely share a common media market for TV, radio, and newspapers, differences across jurisdictions are likely to cause public confusion. All District education materials, training, forms, and technical assistance will be based on this model ordinance. The District strongly encourages local water providers to adopt this model ordinance/policy with as few discretionary local modifications as possible. Nonetheless, Local Water Providers may make modifications to this model ordinance/policy on drought response provided they are at least as effective as the District model ordinance and are consistent with the EPD Drought Rule and other relevant state and federal laws. Local water providers may also adopt more than one policy or ordinance to address local drought response and water waste.

When preparing the model ordinance/policy for local adoption, the local jurisdiction must make some edits. Mandatory edits are highlighted within the Model Ordinance by mandatory edit prompts shown as bold text with brackets (e.g. **[local jurisdiction]**). These items are bracketed because they are jurisdiction specific concepts, and you should review these and insert the jurisdiction's name and other jurisdiction-specific names, titles, boards, etc.

Adopting a model ordinance/policy gives local water providers the ability to enforce either through monetary penalties or by terminating water service, but it does not obligate them to specific enforcement actions. It is recommended that education, written warnings, and then enforcement be prioritized in order, and that enforcement be limited to drought or other repeated or egregious violations. Local water providers should modify Section [Y]-13 of the model ordinance to reflect local plans for issuing warnings, imposing monetary fines, and/or terminating water service as well as any local process for disputing administrative penalties.

Drought restrictions and water waste prohibitions are included in a single model ordinance/policy for convenience of implementation and enforcement, and this is consistent with the most common practice in the District and nationwide. However, local water providers that have adopted them as two separate ordinances/policies may continue to do so at their discretion.

The declaration of drought response levels and corresponding water use restrictions are set forth in the EPD Drought Rule (see Drought Management Rules, Ga. Comp. R. & Regs. 391-3-30 available at <http://rules.sos.ga.gov/gac/391-3-30>). All drought response efforts by local water providers must be consistent with the EPD Drought Rule. All local water providers should review this model ordinance/policy with their legal counsel and rely on their legal advice.

Because the onset of drought can be sudden, having a model ordinance/policy in place allows local water providers to respond quickly if needed. This is consistent with the January 2020 Alliance for Water Efficiency report titled “Use and Effectiveness of Municipal Irrigation Restrictions During Drought.” Specifically, the report made the following recommendation for water providers: “Prepare and pass ordinances necessary to implement and enforce the plan when the time comes. This study found that plans need codified rulemaking to include provisions that are enforceable on non-compliant customers and to target water waste, such as irrigation runoff and excessive use.”

For more information and recommendations on how to plan ahead for and respond to drought, please see the District’s Local Drought Planning Guide, which is offered as a tool for local water providers but does not impose any additional requirements beyond what’s in this action item.

Local water providers that are part of a local government should pass an ordinance, and local water providers that are authorities should establish written policies. All policies must be written policies that either include their date of adoption or are accompanied by other documents (letters, emails, memoranda, etc.) that establish when the written policy was adopted.

Need Assistance? Contact the District at TechnicalAssistance@northgeorgiawater.com or visit our website at www.northgeorgiawater.org/technicalassistance.

Resources:

- Metro Water District, Model Ordinance/Policy for Local Drought Response and Water Waste
- Metro Water District, Local Drought Planning Guide
- Report on Use and Effectiveness of Municipal Irrigation Restrictions During Drought, Alliance for Water Efficiency, January 2020
- EPD Drought Rule (391-3-30-.01 et seq.) and O.C.G.A. 12-5-7(a.1)(3).

Attachment A
Metropolitan North Georgia Water Planning District
Model Ordinance/Policy for Local Drought Response and Water Waste

Article [X]. Ordinance for Local Drought Management and Response.

Section [Y]-1. Purpose and Intent.

- (a) *Purpose.* The purpose of this Article is to protect the public health, safety, environment, and general welfare by adopting and enforcing water use restrictions that ensure adequate supplies of water for customers of the public water system and avoid or relieve any local water shortages during declared periods of drought.
- (b) *Intent.* It is the policy of the **[local jurisdiction]** to comply with the laws and regulations imposed by the State of Georgia and any local variances restricting water use, particularly during times of declared drought. The water use restrictions and exceptions in this Article are consistent with the EPD Drought Rule. Codifying these water use restrictions and exceptions is required by O.C.G.A. §12-5-7(a.1)(3) and is necessary to consistently, fairly, and lawfully enforce water use restrictions at the local level as part of the public water system’s drought response efforts.
- (c) *Delegation to [public water system director].* The **[board of commissioners / city council]** of the **[local jurisdiction]** hereby delegates to the **[public water system director]** the authority and responsibility under this Article for the implementation of drought response efforts, for seeking local variances for additional or fewer drought restrictions as needed, and for the enforcement of water use restrictions.

Section [Y]-2. Authority. The **[local jurisdiction]** has the authority to adopt this ordinance pursuant to applicable home rule provisions of Article 9, Section 2 of the Constitution of the State of Georgia and Title 36 of the Official Code of Georgia Annotated, Section 7 of Chapter 5 of Title 12 of the Official Code of Georgia Annotated, the EPD Drought Rule, and Section **[X]** of the **[local jurisdiction]**’s Charter.

Section [Y]-3. Applicability.

- (a) *Applicable to Customers.* The water use restrictions in this Article apply to all retail customers of the **[local jurisdiction]**’s public water system. This application is based on the public water system’s water service area and, therefore, applies regardless of whether a given retail customer is located within or outside of the **[local jurisdiction]**’s general **[county / city limits]**.
- (b) *Condition of Water Service.* As a condition of receiving continued water service from the public water system, customers agree to familiarize themselves with and comply by the water use restrictions for the applicable declared drought response level.

- (c) *Customer Responsibility for Third-Party Usage.* The customer is responsible for ensuring third-party water usage from their account complies with the restrictions in this Article, and all notices of violation and administrative fines resulting from violations of water use restrictions by third parties with water from the customer’s account will be the responsibility of the customer. This applies whether such third-party is a tenant, property management company, landscaping contractor, lawncare company, employee, independent contractor, or any other person or legal entity that customer allows to use water from its account.

Section [Y]-4. Definitions.

“affected drought area” means any area subject to a drought declaration made by the EPD Director in accordance with EPD Drought Rule.

“customer” means any person or legal entity that has established an account with, and makes retail water purchases from, the public water system.

“declared drought response level” means the applicable drought response level 1, 2, 3, or 3 plus as declared by the EPD director or pursuant to a local variance, if any.

“drip irrigation” means the use of an irrigation system manufactured and sold specifically for delivering water through small flexible pipes and emitters slowly and directly to the soil around the base of individual plants in a manner that minimizes evaporative losses, pooling, runoff and wetting of plant foliage. This type of system may be part of a larger automated irrigation system or may operate as a stand-alone system connected to a typical outdoor faucet.

“drought contingency plan” means the **[local jurisdiction]** plan submitted to, and approved by EPD, as part of the [local jurisdiction’s] most recent new or modified water withdrawal permit. As required by Ga. Comp. R. & Regs. Ch. 391-3-6-.07(4)(b)(9), such plan includes drought condition indicators, potable water use priorities, surface water low flow protections, and water storage availability analyses (if applicable).

“EPD” means the Environmental Protection Division of the Georgia Department of Natural Resources.

“EPD Director” means the director, or his/her designee, of the EPD.

“EPD Drought Rule” Georgia Department of Natural Resources Rules for Drought Management, Ga. Comp. R. & Regs. Ch. 391-3-30.

“even-numbered address” means an address number ending with the number 0, 2, 4, 6, 8, or no address number.

“Golf Irrigation Prediction and Estimation Worksheet” is an Excel spreadsheet tool that EPD has developed for drought response that a mathematical calculation that takes into account local evapotranspiration, distribution uniformity of irrigation, efficiency of the water application, crop coefficients, and local average rainfall to determine the annual irrigation needed to maintain healthy turf grass.

“landscape” means ground cover, trees, shrubs, or other plants such as grasses.

“odd-numbered address” means an address number ending with the number 1, 3, 5, 7, or 9.

“ornamental purposes” refers to when water is used outdoors for the purpose of adding beauty, aesthetic appeal, visual, or auditory appeal. Water used for ornamental purposes does not include fountains that must be operated to sustain aquatic animals or splash pads and other outdoor water features used primarily for recreation.

“pool covers” means a solid track, foam, or bubble cover which can be placed over the water area of a swimming pool and is intended for use during the open swim season. Pool covers may be automatically, semi-automatically, or manually controlled, and pool covers may, but are not required to be, safety pool covers. Pool covers do not include solar rings, liquid barriers, or chemical barriers.

“public water system” means the system owned and operated by **[local jurisdiction]** for the provision to the public of piped water for human consumption among other purposes.

“**[public water system director]**” means the **[local jurisdiction]** staff member who is responsible for the management and direction of the public water system.

“soaker hose” means a hose that is connected to a typical outdoor faucet and that is manufactured and sold specifically for delivering water slowly and directly to the soil around the base of individual plants by allowing water to seep from it in a manner that minimizes evaporative losses, pooling, runoff and wetting of plant foliage.

Section [Y]-5. Non-drought restrictions on watering hours and water waste.

- (a) *Year-round restrictions on watering hours.* Subject to further limitations under any applicable declared drought response levels, customers may irrigate outdoor ground cover, trees, shrubs, or other plants such as grasses only before 10 a.m. and after 4 p.m. subject to the following exceptions:
- i. Commercial agricultural operations as defined in O.C.G.A. § 1-3-3,
 - ii. Capture and reuse of cooling system condensate or stormwater in compliance with applicable local ordinances and state guidelines,
 - iii. Reuse of gray water in compliance with O.C.G.A. § 31-3-5.2 and applicable local board of health regulations adopted pursuant thereto,

- iv. Use of reclaimed wastewater by a designated user from a system permitted by the Environmental Protection Division of the department to provide reclaimed wastewater,
- v. Irrigation of personal food gardens,
- vi. Irrigation of new and replanted plant, seed, or turf in landscapes, golf courses, or sports turf fields during installation and for a period of 30 days immediately following the date of installation,
- vii. Drip irrigation or irrigation using soaker hoses,
- viii. Hand watering with a hose with automatic cutoff or handheld container,
- ix. Use of water withdrawn from private water wells or surface water by an owner or operator of property if such well or surface water is on said property,
- x. Irrigation of horticultural crops held for sale, resale, or installation,
- xi. Irrigation of athletic fields, golf courses, or public turf grass recreational areas,
- xii. Installation, maintenance, or calibration of irrigation systems, and
- xiii. Hydroseeding.

(b) *Restriction on Water Wasting Activities.* The following are prohibited everyday and all the time under non-drought and all declared drought response levels as water wasting activities:

- i. Operating a landscape irrigation system under the following conditions:
 1. with visible leaks,
 2. with broken or missing sprinkler heads,
 3. during the rain or shortly thereafter when the landscape is visibly wet, or
 4. in a manner that results in pooling or flowing water on hard surfaces such as streets, gutters, sidewalks, and driveways.
- ii. Failing to install correctly, maintain, or use the legally required rain-sensor shutoff for a landscape irrigation system,
- iii. Failing to repair a water service line, customer-side connection to the water meter, outdoor water spigot, or yard hydrant with a visible leak within 30 days after being notified by the public water system,
- iv. Using a water hose without a water shut-off nozzle,
- v. Operating water features as fountains, reflecting pools, and waterfalls, when water is regularly misting, splashing, or otherwise escaping outside the areas designed to be part of such water feature, and
- vi. Failing to offer and explain to hotel and motel guests the option of using their towels and linens for more than one day during multi-day stays.

Section [Y]-6. Declared Drought Response Levels by the EPD Director and through Local Variances.

(a) *Compliance with Water Use Restrictions.* The public water system and its customers shall comply with the water use restrictions imposed based on the declared response level by the EPD Director or by local variance. A variance is required before the public water system may impose additional or fewer water use restrictions at a local level.

- (b) *Drought Response Levels Declared by the EPD Director.* The EPD Director may declare drought response levels for affected drought area(s) based upon the severity of drought conditions and their impacts on water supplies and the factors established in the EPD Drought Rule. If the public water system is in an affected drought with a declared drought response level, the public water system shall implement the water use restrictions for the declared drought response level in this Article.
- (c) *Local Variance for Additional Restrictions.*
- i. If the **[public water system director]** determines based on the drought condition indicators that additional water use restrictions are needed to avoid or relieve a local water shortage, then the **[public water system director]** may submit a variance request to the EPD director to impose additional restrictions. The local drought condition indicators are set forth in the **[local jurisdiction's]** drought contingency plan.
 - ii. For variance requests for drought response level 3 plus, the **[public water system director]** must first submit the proposed water use restrictions to the public water system's governing body for consideration and approval.
 - iii. The request shall include the information required under the EPD Drought Rule including but not limited to a statement of which drought response (level 1, level 2, level 3, or level 3 plus) the public water system seeks to declare, the duration of those restrictions, and a description of why such restrictions are necessary.
 - iv. Such variance shall be effective and become the declared drought response level for the public water system upon approval by the EPD director.
- (d) *Emergency Restrictions.* In the case of an emergency which immediately threatens the public health, safety, or welfare as determined by the **[public water system director]**, the **[public water system director]** may impose additional emergency restrictions on water use; provided, however, that such emergency restrictions shall be valid for a period not to exceed seven days unless a variance request is submitted and approved in accordance with Section [Y]-6(c) of this Article. Emergency water use restrictions shall be consistent with the water use priorities in the **[local jurisdiction's]** drought contingency plan.
- (e) *Local Variance for Fewer Restrictions.* If the **[[public water system director] determines]** based on drought condition indicators that the water use restrictions under the declared drought response level are not needed to avoid or relieve a local water shortage, then the **[public water system director]** may submit a variance request to the EPD director to impose fewer restrictions. The local drought condition indicators are set forth in the **[local jurisdiction's]** drought contingency plan. The request shall include the information required under the EPD Drought Rule including but not limited to a statement of which drought response level (non-drought, level 1, or level 2) the public water system seeks to apply, the duration of the less stringent restrictions, and a

description of why the restrictions described in the Rule are not needed. Such variance shall be effective upon approval by the EPD director.

Section [Y]-7. Drought Response Level 1. During a declared drought response level 1, the public water system will implement a public information campaign that will include, at a minimum, public notice regarding drought conditions and drought specific public-service messages. The restrictions on water wasting activities and the watering hours and exceptions in Section [Y]-5 of this Article continue to apply, but there are otherwise no additional water use restrictions under a declared drought response level 1.

Section [Y]-8. Drought Response Level 2. During a declared drought response level 2, the following restrictions apply:

- (a) *Outdoor Irrigation Limited to Two Days Per Week.* Customers may irrigate outdoor ground cover, trees, shrubs, or other plants such as grasses only two days a week on an odd-even schedule. Customers with even numbered addresses may irrigate on Wednesday and Saturday and customers with odd numbered addresses may irrigate on Thursday and Sunday. The restrictions on watering before 10:00 am and after 4:00 pm and the exceptions in Section [Y]-5 of this Article continue to apply.
- (b) *Restrictions on other Outdoor Water Uses.* The following outdoor water uses are not allowed:
 - i. Washing hard surfaces such as streets, gutters, sidewalks and driveways, except when necessary for public health and safety,
 - ii. Using water outdoors for ornamental purposes, such as fountains, reflecting pools, and waterfalls,
 - iii. Use of fire hydrants, except for the purposes of firefighting, public health, safety, or flushing,
 - iv. Non-commercial washing of vehicles, such as cars, boats, trailers, motorbikes, airplanes, or golf carts,
 - v. Non-commercial washing, or pressure washing, of buildings or structures, except for immediate fire protection, and
 - vi. Charity, or non-commercial fund-raiser, car washes.
- (c) *Drought Response Strategies.* The public water system shall select and implement four or more of the drought response strategies listed in the EPD drought rule. Most of the drought response strategies involve internal operational actions by the public water system and, therefore, do not involve restrictions on customers that must be set forth in this ordinance. However, the following drought response strategies are included in this ordinance because they impose additional water use restrictions on customers. The public water system shall post on their website and make known by public notice if they select any of the following water use restrictions:

- i. Restaurant shall serve glasses of water only upon request by their patrons and shall provide drought education materials from their public water system to patrons either on tabletop placards or in another location highly visible to patrons;
- ii. Customers responsible for private and public pools must place pool covers over the water area of their swimming pools when not in use whether day or night during the open swim season; and
- iii. Customers, including but not limited to local governments, shall suspend their street cleaning programs that use water.

Section [Y]-9. Drought Response Level 3. During a declared drought response level 3, the following restrictions apply:

- (a) *Outdoor Irrigation Ban.* Customers shall not irrigate outdoor ground cover, trees, shrubs, or other plants such as grasses subject to the exceptions in Section [Y]-5 of this Article modified as follows:
 - i. Irrigation of personal food gardens and hand-watering with an automatic cutoff or handheld container may be conducted only before 10:00 a.m. and after 4:00 p.m.,
 - ii. Irrigation of athletic fields or public turf grass recreational areas may be conducted only before 10:00 a.m. and after 4:00 p.m. and subject to the two days a week odd-even schedule described in drought response level 2,
 - iii. Irrigation of golf courses shall be conducted in accordance with the "Golf Irrigation Prediction and Estimation Worksheet" and only before 10:00 am and after 4:00 p.m., provided, however, irrigation of golf course greens may occur at any time of day,
 - iv. Installation, maintenance, or calibration of irrigation systems is allowed provided it is done by professional landscapers or golf course superintendents, and
 - v. Reclaimed wastewater shall not be used for irrigating outdoor ground cover, trees, shrubs, or other plants such as grasses subject only to the exceptions in Section [Y]-5 of this Article as modified in (i) through (iv) above.
- (b) *Restrictions on other Outdoor Water Uses.* The restrictions in Section [Y]-8 of this Article continue to apply.
- (c) *Drought Response Strategies.* The public water system shall implement all ten of the drought response strategies listed in the EPD drought rule, including strategies involving operational changes and those water use restrictions on customers in Section [Y]-8(c) of this Article.

Section [Y]-10. Drought Response Level 3 Plus.

- (a) *Creating Additional Water Use Restrictions.* Under a declared drought response level 3 plus, public water systems may create and implement water use restrictions in addition to those set forth in the EPD drought rule. Additional water use restrictions should be based on an evaluation of areas where the greatest water savings potential exists among and within its customer classes.
- (b) *Water Use Priorities.* Unless modified based on local conditions in the public water system’s local drought contingency plan, the following order of potable water use priorities provided in EPD rule 391-3-6-.07(9)(ii)(I) should be followed:
- i. Emergency facilities for essential life support measures;
 - ii. Domestic and personal uses, including drinking, cooking, washing, sanitary and health related;
 - iii. Farm uses;
 - iv. Industrial uses;
 - v. Other uses such as lawn sprinkling, non-commercial car washing, garden watering, etc.; and
 - vi. Outdoor recreational uses.
- (c) *Approvals and Notice of Additional Water Use Restrictions.* The **[public water system director]** is responsible for creating and then seeking approval from the local governing board and from EPD for a variance to impose any necessary, additional water uses restrictions. Upon local and EPD approval, the public water system shall post the additional water use restrictions on their website and make them known by public notice, and then such additional water use restrictions may be implemented and enforced as water use restrictions under this Article.

Section [Y]-11. Signage, Notice and Registration Required to Claim Exceptions for New and Replanted Landscapes and Reuse, Reclaimed, and Privately Sourced Water.

- (a) *New and Replanted Landscapes.* To claim the exception from restrictions under this Article on outdoor irrigation for new or replanted landscapes being irrigated within 30 days following installation, the customer shall post one or more signs that list the date of planting and the date the 30-day period ends. The customer shall send notice on or before the date of planting to the public water system to claim the exception.
- (b) *Reuse, Reclaimed, and Privately Sourced Water.* To claim the exceptions from restrictions under this Article on outdoor landscape irrigation using reuse, reclaimed, and privately sourced water, the customer shall post one or more signs that state as applicable: “This landscape is irrigated with [reuse water / reclaimed water / private well / private surface waters]”. The customer shall register their alternative water source with the public water system to claim the exception. The registration shall be made using the paper or electronic forms provided by the public water system and include the customer number, customer address, brief description of the alternative source, its intended use and estimated volumes, and a picture of the required signage.

- (c) *Signage Requirements.* Each sign required under this section shall be at least 24-inches wide and 18-inches tall and shall be visible and readable from all rights-of-way from which outdoor landscape irrigation is visible to passersby. If such irrigation is visible from two or more right-of-ways, then one sign shall be placed along each right-of-way.
- (d) *Grace Period.* Customers shall have 30-day grace period from the date of the declared drought response level imposing the outdoor water use restrictions to post the required signage, provide notice, and register with the public water system. This 30-day grace period applies regardless of whether a customer is given individual notice of the applicable water use restrictions.

Section [Y]-12. Professional Exemptions; Applications Required for Essential Business Use Exception.

- (a) *Professional Exemptions.* The following commercial outdoor water uses are exempt from the outdoor water use restrictions of this Article:
 - i. Pressure washing;
 - ii. Permanent car wash facility, provided that it is connected to a sanitary sewer system of a political subdivision or local government authority or recycles used wash water;
 - iii. Water use at construction sites;
 - iv. Watering-in of pesticides and herbicides on turf grasses; and
 - v. Other water using activities essential to daily business as established pursuant to Section [Y]-12(b) of this Article.
- (b) *Required Application for Professional Exemptions.* To claim the exemption in Section [Y]-12(a)(v) of this Article for water use activities essential to daily business, a customer must first apply in writing to the public water system with information and supporting materials showing why an otherwise restricted outdoor water use is essential to daily business. The public water system shall approve such outdoor water use as essential if there are no reasonable alternatives and the customer could not operate without such water use. Otherwise, the public water system shall deny the application. The public water system shall make its determination within 14 days of receiving each application.
- (c) *Grace Period.* Customers shall have 30-day grace period from the date of the declared drought response level imposing the outdoor water use restrictions to submit the required application to the public water system. This 30-day grace period applies regardless of whether a customer is given individual notice of the applicable water use restrictions.

- (d) *Dispute*. Following a denial of its application, a customer may dispute the determination through the same process used for disputing administrative fines set forth in Section [Y]-13(e) of this Article.
- (e) *Water Use While Application or Dispute Resolution Pending*. The customer may use water as if its application will be approved while waiting for a decision on their application and during any dispute resolution process. If the application is denied and following the resolution of any dispute, if initiated, the customer must cease the water use in question within 14 days.

Section [Y]-13. Enforcement and Administrative Fines.

- (a) *Enforcement Authority*. The public water system is the enforcement authority for this Article. The **[county manager / city manager / mayor]** may also authorize other **[local jurisdiction]** departments as may be deemed necessary to support enforcement.
- (b) *Warning and Administrative Fines for Violations*.
 - i. Customers that violate the water use restrictions in this Article shall be subject to the following schedule of administrative penalties:
 - a. First Violation – Written warning,
 - b. Second Violation – An administrative fine of \$125,
 - c. Third Violation – An administrative fine of \$250, and
 - d. Fourth Violation – An administrative fine of \$500.
 - e. Fifth Violation – An administrative fine of \$1,000.
 - f. Sixth and Subsequent Violations – An administrative fine of \$1,000 and water shut-off.
 - ii. Violations shall be counted from the first violation after the first drought response level is declared and shall not reset until such time as there is no longer any declared drought response level for the public water system and the non-drought conditions in Section [Y]-5 of this Article once again apply. After and except for the first violation, one violation may be issued per day of noncompliance with the applicable water use restrictions.
- (c) *Notices of Violation*. Notices of violation for the first and all subsequent violations of the water use restrictions in this Article shall be posted at the property where the violation occurred and sent by first class mail to the customer. These notices shall be in writing, include the address of where the violation occurred, the restriction which has been violated, and the consequences of subsequent violations.
- (d) *Payment of Administrative Fine*. All administrative penalties shall become a part of the customer's regular bill for service. Failure to remit payment of the regular bill plus the

administrative fine shall be subject to the public water system’s rules, procedures, and penalties for nonpayment, including water shut-off.

- (e) *Disputing Administrative Penalties.* Customers desiring to dispute an administrative fine must file a written request for the **[public water system director]** to reconsider the administrative fine along with full payment of the fine amount plus a \$25 processing fee within 14 days of the notice of violation. The **[public water system director]** will convene an administrative hearing on the matter where the customer will have the opportunity to show cause as to why an administrative fine under this Article should not be assessed. The **[public water system director]** shall establish reasonable procedures for conducting such hearings and appointing members to decide customer disputes. Until such time as these procedures are established and members of general public are appointed, Customers disputes shall instead be referred to the local **[magistrate / municipal court]**. If the customer’s appeal is successful, the payment of the fine and processing fee shall be returned to the customer.

DRAFT

Benefit-Cost Analysis of Proposed Code Changes



Memorandum

Subject	Water Conservation Action Item Benefit-Cost Analysis	Project Name	2022 Plan Update
Attention	Benefit-Cost Committee of the Metropolitan North Georgia Water Planning District (District) Governing Board	Project No.	EEXI5803
From	Andrew Morris, District Staff Celine Benoit, District Staff John Davis, Jacobs Brian Skeens, Jacobs		
Date	[INSERT FINAL DATE]		

1. Introduction

This memorandum presents benefit-cost analyses of several water conservation measures under consideration by the Metropolitan North Georgia Water Planning District (District) for implementation by local water providers and local governments in the District. This analysis was developed to conform to the guidelines outlined in the board approved Benefit-Cost Framework for the 2022 Plan Update (Benefit-Cost Framework) included as Attachment 1 to the memorandum. This analysis was prepared by Jacobs and District staff in coordination with the District board committee on cost-benefit analysis.

It is important to note that this analysis of benefits and costs informs the District in its selection of new and expanded water conservation measures, but this analysis is only one consideration among many. Other considerations include, but are not limited to, the considerations excluded from this analysis as summarized in Section 3 such as impacts to water and wastewater systems and product performance. Based on these broader considerations and others that may arise during review by the board, the technical coordinating committees, and basin advisory councils, it is expected that not all water conservation measures with benefits-to-cost ratios of 1 or more will be adopted. Furthermore, some measures that have benefits-to-costs ratios less than 1 may still be adopted.

The water conservation measures being considered include:

1. Showerhead – Change from 2.5 to 2.0 gpm and WaterSense
2. Mandate Energy Star efficiency standards for select appliances
 - a. Residential Front- and Top-Loading Clothes Washers
 - b. Residential Dishwashers



Memorandum: Benefits-Cost Analysis

3. Mandate water conservation measures for air conditioning cooling towers
4. WaterSense labeled irrigation controllers
5. Water-conserving and pressure-reducing sprinkler heads

2. Analysis Approach

2.1 Economic Benefit-to-Cost Analysis

The water conservation measures considered in this memorandum are code requirement changes to mandate water-conserving standards for new fixtures, appliances, and landscape irrigation systems. These measures are being proposed for all local governments within the District planning area as part of the 2022 regional water plan update process. These proposed code requirement changes were selected based on their potential to reduce water use. The cost of each measure for a code change is the added cost of the water-conserving product over the standard alternative. In existing housing units, replacement of existing products with the new, more efficient, products will happen naturally over time as homeowners choose to replace these items. New housing units and buildings will conform to the new standards when products are initially installed. If adopted, the new requirements would be effective as of January 1, 2024. The driving focus of these measures is water savings, but in many cases, there will be a substantial energy savings associated with the measures as well in the form of reduced hot water heating costs, for example. These energy savings are quantifiable in economic terms and are included in the economic benefit-cost analysis for each conservation measure. This is consistent with the governing board approved cost-benefit framework, which requires consideration of monetary benefits and costs to both utilities and customers. Furthermore, there are also indirect benefits in terms of avoided carbon emissions and improved air quality. Summaries of the benefit-cost analysis results are provided in this memorandum and calculation details and assumptions are presented in [Attachment 2](#).

2.2 Direct Economic Benefits

The potential direct savings associated with a gallon of reduced water use is composed of variable cost savings realized due to reduced use of electricity, chemicals and other operating expenditures, and capital cost savings associated with opportunities to avoid future, incremental capacity-related costs. As detailed in the sections below, the direct economic benefit of each conservation measure evaluated was calculated on a present value basis as the sum of the capital cost savings per gallon of capacity and the present value of variable cost savings over the life of the water conserving equipment or fixture.

2.2.1 Discount Rate for Present Value Calculations

When the federal government performs benefit-cost analysis of regulations affecting household consumption, it uses 3%, and when regulation affects private sector investment, it uses 7%. See the September 17, 2003 Circular A-4 from the federal Office of Management and Budget. Because the water conservation measures being proposed by the District affect consumer costs and savings, the District has chosen to use 3%. See OMB's Circular A-4. It should be noted that there is significant debate among regulators, industry, environmentalist, and economists on the best discount rate for such regulatory analyses.¹ Nonetheless the benefits-costs in this analysis follows the prevailing practice at the federal level, and even if one were to use 7%, 5% or 2%, it would not significantly change this analysis.

¹ See, e.g., *The Real World of Cost-Benefit Analysis: Thirty-Six Questions (and Almost as Many Answers)*, Cass R. Sunstein, *Columbia Law Review*, Vol. 114:167



2.2.2 Variable Cost Savings for Water

At a minimum, most costs for electric power and treatment chemicals of water systems would be expected to be adjustable in proportion to reduced water use. Georgia water utilities provide estimates of their variable production costs (mostly associated with power and chemicals) as part of the state water audit process. The average variable cost for the years 2011 to 2019 cited by the largest utilities in the District is provided in Table 2.1. An average of the Table 2.1 values, weighted based on the population served for the overall District, is \$0.039/gallon. This average value was used in this analysis to calculate the benefit of avoided variable water production costs.

Table 2.2 – Average Variable Production Cost of District

Large Utilities without Significant Water Imports	Approximate Population Served	Variable Production Costs
City of Cartersville	24,800	0.0002 \$/gal
Cherokee County Water and Sewerage Authority	189,500	0.0003 \$/gal
City of Canton	16,400	0.0005 \$/gal
Clayton County Water Authority	289,600	0.0005 \$/gal
Newnan Utilities	50,000	0.0004 \$/gal
DeKalb County	743,000	0.0003 \$/gal
Douglasville-Douglas County Water and Sewer Authority	141,800	0.0004 \$/gal
Fayette County	77,100	0.0005 \$/gal
City of Cumming	60,400	0.0004 \$/gal
Fulton County	437,000	0.0007 \$/gal
Gwinnett County	944,100	0.0002 \$/gal
City of Gainesville	155,400	0.0005 \$/gal
Henry County Water Authority	218,700	0.0003 \$/gal
Rockdale County	85,200	0.0008 \$/gal
Weighted Average	3,433,000	0.00039 \$/gal

Note: Utilities in table include major District utilities that primarily serve customers through their own permitted water sources. Utilities that purchase significant volumes after withdrawal are not included because purchased water tends to artificially inflate variable costs.

2.2.3 Avoided Capacity Costs

One benefit of water conservation is that it allows utilities to avoid future, incremental capacity costs, and so while the capacity fees used in this analysis for estimating avoided capacity costs were prepared for a different purpose, they serve as a reasonable estimate for the benefits of avoided capacity costs from water conservation. In a region with a growing population and increasing water demands, avoided future capital costs for increasing capacity will help keep rates lower than they would otherwise be absent water conservation. Conceptually, the approach taken in the analysis detailed below is similar to the approach in



the June 2017 report from the Alliance for Water Efficiency titled: “Water Conservation Keeps Rates Low in Tucson, Arizona: Demand Reductions Over 30 Years Have Dramatically Reduced Capital Costs in the City of Tucson.”² The avoided cost analysis in the Tucson report looks backward at what additional capital investments in system capacity would have been needed if per capita water demands had remain unchanged. The benefits-cost analysis in this memo looks instead at what additional capital costs would be needed in the future if further water conservation practices are not adapted. Again, this is conceptually similar except that it is forward looking and uses a shortcut by relying on capacity fees instead of performing new, detailed analysis of utility capital improvement plans.

For calculating the benefit of avoided capacity costs on a forward-looking basis, this analysis looked at capacity fees charged by utilities in the District for new water service. These fees are intended to cover the future, incremental capital cost of the capacity needed to serve a new connection based on the meter size and anticipated peak demand. These fees are referred to by various names in Georgia such as system development charges, impact fees, capacity fees, tap fees, etc. This benefits-cost analysis includes the fees from utilities that clearly labeled and explained their capacity-related fees. The utilities used in this analysis often broke down separately their new meter cost, meter installation cost, and capacity fees such that it was clear that the capacity fee included only the future, incremental capital cost of the capacity needed to serve a new connection. Table 2.2 presents the capacity fees used in developing capital cost savings estimates.

Table 2.2 – Average Volumetric Water Billing Rate of District

County	Major Water Utilities	Approximate Population Served	Capacity Fee for New 5/8 Inch Connection	Estimate of Fee per gallon of capacity ¹
Bartow	Cartersville*	24,800	\$1,745	\$6.42
Douglas	Douglasville-Douglas County Water and Sewer Authority	141,800	\$1,250	\$4.59
Fulton	Fulton Co.	437,000	\$1,175	\$4.32
Gwinnett	Gwinnett Co.	944,100	\$1,128	\$4.15
Rockdale	Rockdale Co.	85,200	\$1,400	\$5.15
Total/Weighted Average		1,632,900	\$1,229	\$4.31

¹ Fee per gallon based on estimated District average of 272.4 gal/household/day peak usage (64 gal/person/day x 2.66 persons/household x 1.6 peak factor = 272.4 gal/household/day).

*Cartersville only lists a 3/4-inch connection; all others are 5/8-inch connections

Table 2.2 includes District utilities that have capacity fees. Though this does not include all utilities in the District, the fees are relatively consistent with the highest being 50 percent above the weighted average and the lowest being 8 percent under the weighted average. Based on the intent of these values to reflect the capacity cost of service and the consistency among utilities using this type of fee, the weighted average of \$4.31 per gallon of capacity was taken as representative of the capital cost to provide water service across the District.

² Available at [FINAL_AWE_tucson-consrates-az-web2.pdf \(waterdm.com\)](https://www.waterdm.com/FILES/FINAL_AWE_tucson-consrates-az-web2.pdf).

2.2.4 Avoided Natural Gas Retail Cost

For fixtures like showerheads, there are substantial energy-related benefits based on reduced hot water usage that have been included in this analysis. Natural gas was assumed as the hot water heating energy source because natural gas heating is common in metro Atlanta and it is less expensive on average based on current energy prices and technology, which also results in lower, more conservative cost savings estimates. WaterSense formulas and assumptions from the WaterSense Specification for Showerheads Supporting Statement dated March 2010 were used to calculate the number of therms of natural gas avoided, and the average retail natural gas rate per therm from retail providers in Georgia in September 2021 was used at the retail price.

2.2.5 Avoided Electricity Retail Cost

For products like appliances, there are substantial energy-related benefits based on reduced electricity usage. EnergyStar and other industry data and research were used to calculate the electricity saved on a kWh basis. For simplicity, the Georgia Power residential retail rate per kWh was used given the size of Georgia Power's customer base and that the primary beneficiaries of the proposed efficiency standards are residential customers. Including the retail electricity rates from electric cooperatives and municipal electricity utilities as well as the numerous rate schedules offered by all these electric utilities would significantly increase the complexity of this analysis. Furthermore, because the proposed new efficiency standards generally have benefits that clearly outweigh the costs, a more complex analysis is unlikely to change the end result.

2.3 Indirect Economic Benefits – Avoided CO₂ Emissions and Air Quality Impacts

The District Board approved Benefit-Cost Framework included the concept of accounting for non-monetary benefits and costs to society at large and the environment ranked on a scale. With further research on the potential benefits of water conservation to society and the environment, two opportunities were identified to monetize some of the benefits from reducing emissions of CO₂, ozone, and particulate matter less than 2.5 microns diameter (PM 2.5). This benefits-cost analysis includes benefits from CO₂ emission reductions and other air quality benefits consistent with how benefits-costs analysis are typically performed at the federal level. The assumptions, estimates, and resulting dollar amounts for these benefits are of course imprecise but using dollar figure estimates still provides a clearer picture of the benefits compared to ranking them on a scale as initially contemplated by the framework. It is recognized that these benefits are indirect and difficult to estimate and so the analysis breaks these benefits out separately from the more certain and readily calculable direct benefits.

Once calculations have been performed on water, water heating, and electricity savings, this presents an opportunity to calculate avoided CO₂ emissions and other air quality benefits. The EPA Green House Gas Equivalencies Calculator was used to calculate metric tons of CO₂ per therm and per kWh,³ and then the value of \$51 per metric ton was used from the February 2021 document titled "Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order

³ Available at [Greenhouse Gas Equivalencies Calculator | US EPA](#).



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13990.”⁴ Based on limited available data and complexity, the benefits from any reductions in methane and nitrous oxide were not included in this benefits-cost analysis. National-level estimates for the emissions per kWh and therm were used because Georgia and District-specific estimates were not readily available.

For electricity used to treat and distribute water on the utility side of the meter, which is referred to as water embedded electricity usage, data was obtained from a June 2015 ACEE white paper titled “A Survey of Energy Use in Water Companies.” Mean survey data on a kWh/MG basis was used for treatment and distribution and given the District’s relatively simple sourcing and conveyance arrangements, the minimum value from the survey was used.

Air quality benefits were calculated based on estimated reductions in ozone (O₃) and PM 2.5. National-level estimates of these emissions on a per kWh were used from "Air Quality-Related Health Benefits of Energy Efficiency in the US" Abel et. al, Journal of Environmental Science and Technology, 2019, 53, 3987-3998. Based on limited available data and complexity, any air quality benefits associated with avoided natural gas usage were not included.

2.4 Simple Payback

As another way of looking at the economics of the proposed code changes, the simple payback to customers has also been calculated and analyzed. This analysis focuses on the avoided water and sewer retail costs by the customer instead of the avoided variable production costs and capacity costs of the utility. Direct natural gas and electricity avoided costs are still considered. While any decision based on the benefits-costs analysis should be focused on the full benefits-costs analysis consistent with the governing board approved cost-benefit framework, these simple payback calculations are provided here for stakeholders such as home builders, customer advocacy groups, and others that may desire to consider things with only a customer-based lens.

Table 2.4 – Simple Payback

Proposed Code Changes	Simple Payback in Years
Showerheads Fixture (2.0 gpm & WaterSense)	0.34
Residential Clothes Washers - Front-Loading (EnergyStar)	1.25
Residential Clothes Washers - Top-Loading (EnergyStar)	4.03
HVAC Cooling Towers (Conservation Features)	1.10
Commercial Landscape Irrigation Controller (WaterSense)	0.47
Residential and Commercial Pressure Regulated Spray Sprinkler Bodies	0.40

For Simple Payback details and sources, see [Attachment 2](#) of this memorandum

⁴ Available at [Technical Support Document: Social Cost of Carbon, Methane, \(whitehouse.gov\)](https://www.whitehouse.gov/technical-support-document-social-cost-of-carbon-methane).



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2.5 Non-Economic Benefits and Costs - Value of Water

This benefits-cost analysis focuses on benefits in terms of avoided water capacity costs, water variable production costs, energy use, and emissions. Estimates of these benefits can all be calculated and compared to costs in present dollars. These monetized benefits encompass much of the anticipated benefits from the proposed water conservation code changes, but the value of water itself remains hard to monetize or even subjectively rank or describe. In thinking about the value of water one should think about the long-term availability of water in lakes, streams, and reservoirs for human use and for the support of the broader natural environment. Being good stewards of the regions water is important to the District's policy goal in its plan of improving regional resiliency.

3. Considerations Excluded from Analysis

To focus analyses of conservation measures on the criteria that most clearly reflect their economic costs and benefits, some potential considerations were excluded because they were judged to be hard to calculate in dollar terms, uncertain, or likely of negligible impact. These exclusions are identified below in separate subsections and the rationale for their exclusion is presented.

3.1 Wastewater System Cost Reductions from Water Conservation

Wastewater systems will not see significant cost reductions from water conservation compared to water systems. This is mainly due to wastewater treatment costs being primarily a function of waste loads. Waste loads, in turn, are mainly a function of population served rather than water use. In rough terms, with water conservation and an equivalent population, average wastewater strength would be expected to increase with water demand reductions and wastewater treatment costs would be expected to remain unchanged. In addition, average wastewater flows will be reduced by conservation to a smaller degree than water flows because a significant portion of wastewater flows (20 to 50 percent on average) come from infiltration and inflow, which is not tied to water demand.

This impact of conservation on peak flows and associated collection system and pumping costs was judged as not being significant compared to the large volumes of infiltration and inflow associated with wastewater peak flows. Conservation would also have a small positive impact by decreasing pumping related costs in the collection systems and treatment process, but given that collection systems are designed to be primarily gravity driven, these cost savings would not be significant.

Additionally, the decreases in indoor water usage and sewage flows resulting from a code change will be gradual and incremental as new homes are built and existing homes are renovated. The gradual nature of these changes provides an opportunity to observe and adjust management practices as needed. Compared to the current code, the proposed code changes would reduce the indoor daily demand for the average household from 141 to 128 gallons per household per day. This reduction is already well within the typical variation from home to home and what you might see in communities with fewer people per household, like age 55+ and other senior living neighborhoods. Lastly, the proposed code includes technologies already in wide usage around the United States, and there is no quantifiable data showing that there are any adverse impacts to sewer collection systems.

For these reasons, neither costs nor benefits associated with wastewater collection and treatment systems were included in the calculation of the potential cost savings from water conservation in this memorandum.

3.2 Impact of Conservation on Customer Drainline Transport

Flows from fixtures and appliances assist in transporting wastewater solids through drains in homes and buildings. The impact of reduced background flows due to water conservation on solids transport is a question that has been evaluated by others with satisfactory results. Consideration of customer drainline transport, has not been included in this analysis as either a cost or benefit because the data suggest that there are no impacts to customer drainline transport when using products meeting the proposed efficiency standards. Fixtures and appliances do provide some supplemental flows in residential settings, but it is notable that when WaterSense developed its standard for tank-type toilets of 1.28 gpf, its testing did not

include ANY supplemental flows. In describing its test set-up, WaterSense reported that: “[t]o be conservative, and to keep in line with the “more difficult than average” requirement, no simulated supplemental flows (i.e., from showers, baths, laundry, etc.) were introduced to the drainline during testing.”⁵ If 1.28 gpf toilets are sufficient for drainline transport without any supplemental flows, then reductions to supplemental flows resulting from the proposed efficiency standards should not pose problems. Furthermore, other states and cities have adopted one or more of the proposed efficiency standards or even more efficient standards, and there is no literature or other evidence of drainline transport problems based on the experiences of these earlier adopters.

3.3 Product Performance

Product performance has not been included in this analysis as either a cost or benefit because the data suggest that products that meet the proposed efficiency standards have comparable performance to those that meet the current code. Additionally, both WaterSense and EnergyStar products must meet established standards, which includes several aspects of product performance. For example, the document titled *WaterSense Fixture Certification System Version 2.1* dated January 31, 2016⁶ lays out the overall WaterSense certification process. The individual WaterSense fixture specifications provide the substantive performance requirements for each fixture. For example, the WaterSense specification for showerheads requires that showerheads meet both spray force criteria (Section 4.0) and spray coverage criteria (Section 5.0).⁷ In addition to verifying a fixture’s efficiency, fixture performance is independently tested by a third-party as part of the WaterSense certification process. Requiring that all showerheads and lavatory faucets (private) be WaterSense certified will ensure that fixtures are both efficient and high performing.

In its *Water Efficiency Management Guide – Residential Kitchen and Laundry* dated November 2017,⁸ WaterSense highlights the option of replacing inefficient kitchen faucets with those using 1.8 gpm or less. WaterSense has not chosen to label kitchen faucets because kitchen faucets are used to fill pots and containers, which can take longer with high-efficiency fixtures. However, this potential drawback has been addressed in both a recent model plumbing code⁹ and a California efficiency standard¹⁰ by allowing kitchen faucets to be designed to temporarily increase the flow above the maximum rate (but not to exceed 2.2 gpm) and then revert automatically to a maximum flow rate of 1.8 gpm upon valve closure. This optionality is included in the proposed efficiency standards. It’s worth noting that based on the District retail store data and review of manufacturers’ kitchen faucet product lines, most of the kitchen faucets District staff reviewed

⁵ WaterSense Response to Issues Raised During Public Comment on April 2006 Draft Specifications for WaterSense labeling of Tank-Type High Efficiency Toilets, November 15, 2006, [Attachment 2 – WaterSense Drainline Carry Testing Results](https://www.epa.gov/sites/fixtureion/files/2017-02/documents/ws-background-toilets-comment-response.pdf), p. A-3. Available at: <https://www.epa.gov/sites/fixtureion/files/2017-02/documents/ws-background-toilets-comment-response.pdf>.

⁶ Available at <https://www.epa.gov/sites/fixtureion/files/2017-02/documents/ws-certification-fixture-system-v2.1.pdf>.

⁷ Available at <https://www.epa.gov/sites/fixtureion/files/2017-01/documents/ws-fixtures-spec-showerheads.pdf>.

⁸ Available at <https://www.epa.gov/sites/fixtureion/files/2017-10/documents/ws-commercialbuildings-waterscore-residential-kitchen-laundry-guide.pdf>.

⁹ See Chapter 402.4 of the International Association of Plumbing and Mechanical Officials, 2017 Water Efficiency and Sanitation Standard for the Built Environment.

¹⁰ See 20 CA ADC § 1605.3(h)(3).

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are 1.8 gpm or even 1.5 gpm without this option. This suggests that the potential drawback of slower filling times has not been a practical barrier to consumer adoption and acceptance.

To increase their sales and profits, retailers have an obvious motivation to stock fixtures and appliances that consumers want to purchase and that are unlikely to be returned. Given that retailers are not required to sell fixtures and appliances that are more efficient than the current efficiency standards, retailers could change the mix of fixtures they are offering if these more efficient fixtures were not satisfying consumers. The large number and variety of efficient fixtures and appliances already being stocked by Home Depot, Lowe's, and Walmart based on District data collection efforts strongly suggests that consumers are buying fixtures and appliances that meet the proposed efficiency standards and are not returning them in significant numbers.

The District's retail store data also suggests that many consumers are likely unaware of, and not choosing fixtures and appliances based on, water usage rates because finding flowrates on fixture packaging or water usage information on appliances is often extremely difficult based on the size, location, and water saving formulas listed on the packaging.

3.4 Lavatory Faucets (Private) and Kitchen Faucets

New standards for lavatory faucets of 1.2 gpm and kitchen faucets of 1.8 gpm are being proposed. However, faucets have been excluded from this benefits-cost analysis because the marketplace has nearly completely transitioned to these new standards. For example, using 2019 Georgia retail store data the District collected, 329 out of 331 lavatory faucets already used 1.2 gpm or less and 1019 out of 1025 kitchen faucets already used 1.8 gpm or less. Based on the nearly complete market transition, cost data for faucets that exceed the proposed standard are very limited and are likely unrepresentative of real cost differences, if any, based on levels of efficiency. Furthermore, the fact that the market has already transitioned without a code change suggests there is no meaningful difference in price.



4. Showerheads Fixture Standard

4.1 Description

A new standard is considered for water-conserving showerheads that would entail lowering the current water consumption standard for showerheads from the current 2.5-gpm as currently prescribed by the Georgia Plumbing Code to 2.0 gpm or less with the WaterSense label.

4.2 Direct Benefit-Cost Analysis (Showerhead Standard from 2.5 gpm to 2.0 gpm)

Table 4.2 – Present Value Direct Benefit-to-Cost Summary for 2.0-gpm Showerheads

Cost-Benefit Item	Cost-Benefit Results
Cost per Household of Proposed Change ((\$51.58 avg Proposed Code - \$44.48 avg Current Code) x 2.36 shower/house)	\$16.76
Avoided Water Use Per Household (0.5 gpm x 8.2 min/shower x 0.67 shower/person/day x 2.66 person/household)	7.31 gal/day 2,667 gal/year
Avoided H2O Capacity Costs (\$4.31/gal/day x 7.31 gal/day)	\$31.49
Avoided H2O Variable Production Cost (0.039 ¢/gal, 15-year life, 5.38% Inflation, 3% Discount)	\$20.71
Annual Avoided Natural Gas Use per Household (for Hot Water) (2,667 gal/year x 0.009 therm/gal hot water x 0.73 gal hot water/gal)	17.52 therm/year
Avoided Natural Gas Retail Cost per Household (\$0.63/therm, 15-year life, 2.46% Inflation, 3% Discount)	\$163.02
Total Estimated Present Value Direct Benefit (= \$31.49 + \$20.71 + \$163.02)	\$215.22
Direct Benefit-to-Cost Ratio (= \$215.22/\$16.76)	12.84

Note: For Benefit-to-Cost Analysis details and sources, see [Attachment 2](#) of this memorandum



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4.3 Indirect Benefit-Cost Analysis (Showerhead Standard from 2.5 gpm to 2.0 gpm)

Table 4.3 – Present Value Direct + Indirect Benefit-to-Cost Summary for 2.0-gpm Showerheads

Cost-Benefit Item	Cost-Benefit Results
Cost per Household of Proposed Change	\$16.76
Total Estimated Present Value Direct Benefit	\$215.22
Avoided Natural Gas CO ₂ Emission Cost (Hot Water Heating) (17.52 therm/year x 15 yr x 0.0053 mt CO ₂ /therm x \$51/mt CO ₂)	\$71.05
Avoided H ₂ O Embedded CO ₂ Emission Cost (2,667 gal/year x 15 yr x 0.002 kWh/gal x 0.000709 mt CO ₂ /kWh x \$51/mt CO ₂)	\$2.89
Avoided Air Quality Costs (Ozone and PM 2.5) (2,667 gal/year x 15 yr x 0.002 kWh/gal x \$0.0163/kWh)	\$1.31
Total Estimated Present Value Direct + Indirect Benefit (= \$215.22 + \$71.05 + \$2.89 + \$1.31)	\$290.47
Direct + Indirect Benefit-to-Cost Ratio (= \$290.47/\$16.76)	17.34

Note: For Benefit-to-Cost Analysis details and sources, see [Attachment 2](#) of this memorandum

5. Residential Clothes Washers (Front-Loading)

5.1 Description

This conservation measure would entail a code change mandating that new front-loading clothes washers meet Energy Star standards rather than less stringent Department of Energy (DOE) minimum standards. Table 5.1 compares the two sets of standards for water and energy use.

Table 5.1 - DOE and Energy Star Standards for Typical Top-Loading Clothes Washer (> 2.5 ft³ Capacity)

Efficiency Measures	DOE Minimum Standard	Energy Star Standard
Integrated Modified Energy Factor (IMEF), ft ³ /kWh/load	> 1.84	> 2.76
Integrated Water Factor (IWF), gal/load/ft ³	< 4.7	< 3.2

5.2 Direct Benefit-Cost Analysis (Front-Loading Clothes Washer from DOE to Energy Star)

Table 5.2 – Present Value Direct Benefit-to-Cost Summary for Front-Loading Clothes Washers

Cost-Benefit Item	Cost-Benefit Results
Cost per Household of Proposed Change (\$997.16 avg Proposed Code - \$942.49 avg Current Code)	\$54.67
Avoided Water Use Per Household((4.7 – 3.2) gal/load/ft ³ x 4.5 ft ³ /washer x 0.798 loads/day/washer)	5.39 gal/day 1,966 gal/year
Avoided H2O Capacity Costs (\$4.31/gal/day x 5.39 gal/day)	\$23.22
Avoided H2O Variable Production Cost (0.039 ¢/gal, 11-year life, 5.38% Inflation, 3% Discount)	\$10.67
Avoided Electricity Use per Household ((1/1.84 – 1/2.76) kWh/ft ³ /load x 4.5 ft ³ /washer x 291.27 loads/year/washer)	237.45 kWh/year
Avoided Electricity Retail Cost per Household (\$0.0656/kWh, 11-year life, 1.24% Inflation, 3% Discount)	\$154.73
Total Estimated Present Value Direct Benefit (= \$23.22 + \$10.67 + \$154.73)	\$188.62
Direct Benefit-to-Cost Ratio (= 188.62/\$54.67)	3.45

Note: For Benefit-to-Cost Analysis details and sources, see [Attachment 2](#) of this memorandum

5.3 Indirect Benefit-Cost Analysis (Front-Loading Clothes Washer from DOE to Energy Star)

Table 5.3 – Present Value Direct + Indirect Benefit-to-Cost Summary for Front-Loading Clothes Washers

Cost-Benefit Item	Cost-Benefit Results
Cost per Household of Proposed Change	\$54.67
Total Estimated Present Value Direct Benefit	\$188.62
Avoided Electricity CO ₂ Emission Cost (237.45 kWh/year x 11 yr x 0.000709 mt CO ₂ /kWh x \$51/mt CO ₂)	\$94.44
Avoided H ₂ O Embedded CO ₂ Emission Cost (Embedded in Water Use) (1,966 gal/year x 11 yr x 0.002 kWh/gal x 0.000709 mt CO ₂ /kWh x \$51/mt CO ₂)	\$1.56
Avoided Air Quality Costs (Ozone and PM 2.5) (237.45 kWh/year x 11 yr x \$0.0163/kWh)	\$42.66
Total Estimated Present Value Direct + Indirect Benefit (= \$188.62 + \$94.44 + \$1.56 + \$42.66)	\$327.28
Direct + Indirect Benefit-to-Cost Ratio (= \$327.28/\$54.67)	5.98

Note: For Benefit-to-Cost Analysis details and sources, see [Attachment 2](#) of this memorandum

6. Residential Clothes Washers (Top-Loading)

6.1 Description

This conservation measure would entail a code change mandating that new top-loading clothes washers meet Energy Star standards rather than less stringent Department of Energy (DOE) minimum standards. Table 6.1 compares the two set of standards for water and energy use.

Table 6.1 - DOE and Energy Star Standards for Typical Top-Loading Clothes Washer (> 2.5 ft³ Capacity)

Efficiency Measures	DOE Minimum Standard	Energy Star Standard
Integrated Modified Energy Factor (IMEF), ft ³ /kWh/load	> 1.57	> 2.06
Integrated Water Factor (IWF), gal/load/ft ³	< 6.5	< 4.3

6.2 Direct Benefit-Cost Analysis (Top-Loading Clothes Washer from DOE to Energy Star)

Table 6.2 – Present Value Direct Benefit-to-Cost Summary for Top-Loading Clothes Washers

Cost-Benefit Item	Cost-Benefit Results
Cost per Household of Proposed Change (\$926.65 avg Proposed Code - \$707.05 avg Current Code)	\$219.60
Avoided Water Use Per Household ((6.5 – 4.3) gal/load/ft ³ x 4.5 ft ³ /washer x 0.798 loads/day/washer)	7.90 gal/day 2,884 gal/year
Avoided H2O Capacity Costs (\$4.31/gal/day x 7.90 gal/day)	\$34.05
Avoided H2O Variable Cost (0.039 ¢/gal, 11-year life, 5.38% Inflation, 3% Discount)	\$15.65
Avoided Electricity User per Household ((1/1.57 – 1/2.06) kWh/ft ³ /load x 4.5 ft ³ /washer x 291.27 loads/year/washer)	198.58 kWh/year
Avoided Electricity Retail Cost (\$0.0656/kWh, 11-year life, 1.24% Inflation, 3% Discount)	\$129.40
Total Estimated Present Value Direct Benefit (= \$34.05 + \$15.65 + \$129.40)	\$179.10
Direct Benefit-to-Cost Ratio (= \$179.10/\$219.60)	0.82

Note: For Benefit-to-Cost Analysis details and sources, see [Attachment 2](#) of this memorandum

6.3 Indirect Benefit-Cost Analysis (Top-Loading Clothes Washer from DOE to Energy Star)

Table 5.3 – Present Value Direct + Indirect Benefit-to-Cost Summary for Top-Loading Clothes Washers

Cost-Benefit Item	Cost-Benefit Results
Cost per Household of Proposed Change	\$219.60
Total Estimated Present Value Direct Benefit	\$179.10
Avoided Electricity CO ₂ Emission Cost (198.58 kWh/year x 11 yr x 0.000709 mt CO ₂ /kWh x \$51/mt CO ₂)	\$78.99
Avoided H ₂ O Embedded CO ₂ Emission Cost (2,884 gal/year x 11 yr x 0.002 kWh/gal x 0.000709 mt CO ₂ /kWh x \$51/mt CO ₂)	\$2.29
Avoided Air Quality Costs (Ozone and PM 2.5 Emission Cost) (198.58 kWh/year x 11 yr x \$0.0163/kWh)	\$35.68
Total Estimated Present Value Direct + Indirect Benefit (= \$179.10+ \$78.99 + \$2.29 + \$35.68)	\$296.06
Direct + Indirect Benefit-to-Cost Ratio (= \$296.06/\$219.60)	1.35

Note: For Benefit-to-Cost Analysis details and sources, see [Attachment 2](#) of this memorandum

7. Air Conditioning Cooling Towers

7.1 Description

Cooling towers used for building air conditioning systems rely on recirculating and evaporating water to remove heat from air-conditioned spaces. As water is evaporated from the recirculation loop, concentrations of total dissolved solids (TDS) in the recirculating water increase. At a high enough level, TDS can cause corrosion problems and scaling in the cooling tower and recirculation loop. Water is continually lost by the system from the evaporation, but high TDS water must also be purged (blowdown water) from the system to keep it operating properly.

Makeup water to replace water lost to evaporation and blowdown typically comes from public potable water systems. The need for makeup water to compensate for evaporation is unavoidable, however keeping water in the system at higher, though acceptable, TDS levels can reduce water consumption by these systems significantly. Often the feeding of makeup water to such systems is done with little monitoring of TDS levels or attempt to regulate makeup water consumption.

This conservation measure would entail a code change for new air conditioning cooling towers requiring the monitoring of conductivity levels (a measurement convertible to dissolved solids concentration) in recirculating water and maintaining dissolved solids concentrations at or above 1,500 mg/L (~conductivity of 2000 $\mu\text{S}/\text{cm}$). It is thought that blowdown water is typically discharged at significantly lower TDS levels than 1,500 mg/L. Based on the TDS monitoring, blowdown discharges would be controlled and managed.

In addition to evaporation and blowdown, cooling tower recirculation systems can lose water through drift. Drift is the loss of small water droplets blown entrained by wind when water falls through the cooling tower. Because water lost to drift does not evaporate it does not contribute to the heat removal of the system. On the other hand, drift does carry TDS contained in droplets away from the system and therefore losses to drift should not require increases in blowdown discharges if those discharges are managed based on TDS concentrations (i.e., drift and blowdown accomplish the same goal of purging high TDS water from the system). There are many reasons to minimize drift for the smooth effective operation of a cooling tower. Most significantly, droplets from drift can be a nuisance and can in some cases cause damage to property where droplets land. For this evaluation, however, minimization of drift is not regarded as a water conservation goal.

Implementation of this conservation measure would entail installation of several improvements to most cooling tower systems, including:

- Blowdown Controller
- Conductivity Sensor
- Makeup Water Flow Meter
- Blowdown Water Flow Meter
- Overflow Alarm

7.2 Estimation of Reduced Water Use¹¹

7.2.1 Evaporation Rate

Cooling towers reject heat to the atmosphere through evaporation of water. Evaporation of 1 pound of water rejects 1000 British Thermal Units (Btu) of heat. Cooling tower unit sizes are measured in tons of cooling capacity, with each ton equaling 15,000 Btu/hr. It takes 0.03 gpm of water evaporation to provide 1 ton of cooling calculated as follows:

$$\frac{15,000 \text{ Btu/hr}}{1 \text{ ton cooling}} \times \frac{1 \text{ pound water evaporated}}{1000 \text{ Btu}} \times \frac{1 \text{ gal water}}{8.33 \text{ pound water}} \times \frac{1 \text{ hour}}{60 \text{ min}} = 0.03 \text{ gpm/ton}$$

A ton of cooling capacity is enough to cool 100 to 400 ft² of commercial building space, depending on the use of the space. A middle size cooling tower for a typical commercial building application would be about 350 tons. The evaporation rate for such a unit would be 10.5 gpm (=350 tons x 0.03 gpm/ton).

7.2.2 Recirculation Rate

The recirculation rate must be adequate to carry the heat away from the building. The recirculation water is at a low temperature leaving the cooling tower and its temperature rises when it picks up heat from the building through an air conditioning system heat exchanger. A typical temperature increase would be 10 degrees Fahrenheit (F). A Btu is defined as the heat needed to raise the temperature of 1 pound of liquid water by 1 degree F. The calculation of the recirculation rate for 350 tons of cooling is as follows:

$$350 \text{ tons} \times \frac{15,000 \text{ Btu/hr}}{1 \text{ ton cooling}} \times \frac{1}{10 \text{ deg F} \times 1 \text{ Btu/pound/deg F}} \times \frac{1 \text{ gal water}}{8.33 \text{ pound}} \times \frac{1 \text{ hour}}{60 \text{ min}} = 1,050 \text{ gpm}$$

7.2.3 Cycles of Concentration

As has been described, TDS can only leave the recirculation water in blowdown water and to a lesser degree in water lost to drift, while it enters the system in makeup water. The cycles-of-concentration ratio is defined as the ratio of the low TDS water entering the system (makeup water) to the high TDS water leaving the system (blowdown plus drift). The equal mass of TDS entering and leaving the system ensures that the ratio of recirculation TDS to makeup water TDS will also equal the cycles of concentration.

$$\text{Cycles of Concentration} = \frac{\text{Makeup Flow}}{\text{Blowdown Flow} + \text{Drift}} = \frac{\text{Recirculation TDS}}{\text{Makeup TDS}}$$

7.2.4 Reduced Water Use

Makeup water must replace the water lost to evaporation, blowdown, and drift, so another way to calculate cycles of concentration is as follows:

¹¹ Based on information at: <https://spxcooling.com/wp-content/uploads/AE-AS-24-1.pdf> and <https://dev-spx-cooling.pantheonsite.io/water-calculator/>

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$$\text{Cycles of Concentration } (C) = \frac{\text{Makeup Flow}}{\text{Blowdown} + \text{Drift}} = \frac{\text{Evaporation } (E) + \text{Blowdown } (B) + \text{Drift } (D)}{\text{Blowdown } (B) + \text{Drift } (D)}$$

Using the equation above to solve for the blowdown, results in the following:

$$B = \frac{E + D - (C \times D)}{C - 1}$$

The evaporation rate is set by the heat rejection requirements of the system. The drift is a function of the cooling tower design and wind conditions. The blowdown can be reduced by operating the system a higher cycles-of-concentration ratio. The proposed standard is to run systems at 1,500 mg/L TDS. In the District, potable water has low TDS, and with cooling system chemicals added it is expected that feed water TDS would typically be less than 150 mg/L. It is assumed that cooling tower systems not operated to conserve water would run at around 5 cycles of concentration, whereas they could run at 10 cycles of concentration under the proposed standard (= 1,500 mg/L / 150 mg/L).

The evaporation rate was calculated above as 10.5 gpm. The drift for a well-designed cooling tower can be as low as 0.005 percent of the recirculation flow or 0.0525 gpm in this case (= 1,050 gpm x 0.005%). It should be remembered that reducing drift is a could housekeeping practice, but it will not reduce water consumption because drift is also carrying TDS out of the system and, therefore, higher drift means blowdown would be lower to meet TDS requirements.

Based on the case illustrated above, the blowdown flow while operating at 5 and 10 cycles of concentration would be calculated as follows:

$$B = \frac{E + D - (C \times D)}{C - 1}$$

$$B \text{ (at 5 cycles of concentration)} = \frac{10.5 + 0.0525 - (5 \times 0.0525)}{5 - 1} = 2.572 \text{ gpm}$$

$$B \text{ (at 10 cycles of concentration)} = \frac{10.5 + 0.0525 - (10 \times 0.0525)}{10 - 1} = 1.114 \text{ gpm}$$

With evaporation and drift the same in the two cases, the difference in the makeup water use will equal the difference in the blowdown flow of 1.458 gpm (= 2.572 gpm – 1.114 gpm). This estimate of water use reduction, based on assumptions for a typical Atlanta-region case, is used in the cost-benefit analysis that follows.

7.3 Direct Benefit-Cost Analysis (Cooling Tower Standards to Reduce Water Use)

Table 7.3 – Present Value Direct Benefit-to-Cost Summary for Cooling Towers

Cost-Benefit Item	Cost-Benefit Results
Added Cost of Proposed Features <ul style="list-style-type: none"> - \$1,400 for Blowdown Controller - \$600 for Conductivity Sensors (3 over 10 years) - \$800 for Makeup Water Flow Meter - \$800 for Blowdown Flow Meter - \$400 for Overflow Alarm 	\$4000.00
Avoided Water Use per HVAC Cooling Tower ((2.572 – 1.114) gpm x 1,440 min/day) and (120 cooling days/year)	2,100 gal/day 252,000 gal/year
Avoided H2O Capacity Costs (\$4.31/gal/day x 2,100 gal/day)	\$9,051.00
Avoided H2O Variable Production Cost (0.039 ¢/gal, 10-year life, 5.38% Inflation, 3% Discount)	\$1,228.99
Total Estimated Present Value Direct Benefit (= \$9,051.00 + 1,228.99)	\$10,279.99
Direct Benefit-to-Cost Ratio (= \$10,279.99/\$4000)	2.57

Note: For Benefit-to-Cost Analysis details and sources, see [Attachment 2](#) of this memorandum

7.4 Indirect Benefit-Cost Analysis (Cooling Tower Standards to Reduce Water Use)

Table 7.4 – Present Value Direct + Indirect Benefit-to-Cost Summary for Cooling Towers

Cost-Benefit Item	Cost-Benefit Results
Added Cost of Proposed Features	\$4000
Total Estimated Present Value Direct Benefit	\$10,279.99
Avoided H2O CO ₂ Emission Cost (252,000 gal/yr x 10 yr x 0.002 kWh/gal x 0.000709 mt CO ₂ /kWh x \$51/mt CO ₂)	\$182.24
Avoided Air Quality Costs (Ozone and PM 2.5) (252,000 gal/yr x 10 yr x 0.002 kWh/gal x \$0.0163/kWh)	\$82.32
Total Estimated Present Value Direct + Indirect Benefit (= \$10,279.99 + \$182.24 + \$82.32)	\$10,544.55
Direct + Indirect Benefit-to-Cost Ratio (= \$10,544.55/\$4000)	2.64

Note: For Benefit-to-Cost Analysis details and sources, see [Attachment 2](#) of this memorandum

7.5 Non-Economic Considerations (Cooling Tower Standards to Reduce Water Use)

The cooling tower improvements outlined are focused on water use reductions and do not offer energy use reductions. The concept for the proposed cooling tower improvements is to operate these systems at a higher, but still acceptable, TDS level, which will reduce makeup water consumption. This method of operation may result in increased scaling issues for some systems. On the other hand, the TDS monitoring



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associated with the proposed improvements will in some cases prevent very high TDS levels that could occur without monitoring.

8. Landscape Irrigation –WaterSense Irrigation Controllers

8.1 Description

This conservation measure entails a code change requiring WaterSense labeled irrigation controllers for landscape irrigation systems other than single-family residential that adjust lawn and landscape irrigation based on weather or moisture sensors. In taking a more conservative approach to estimating water savings, the lower water savings from weather-based controllers were used for this benefits-cost analysis.

8.2 Direct Benefit-Cost Analysis (WaterSense Irrigation Controllers)

Table 8.2 – Present Value Direct Benefit-to-Cost Summary for Moisture-Based Control

Cost-Benefit Item	Cost-Benefit Results
Cost per Installation of Proposed Change (\$148.76 avg Proposed Code- \$97.31 avg Current Code)	\$51.45
Avoided Water Use per Installation (50,500 gal/yr x 15% anticipated savings (Water Sense))	20.75 gal/day 7,575 gal/year
Avoided H2O Capacity Costs (\$4.31/gal/day x 20.75 gal/day)	\$89.45
Avoided H2O Variable Production Cost (0.039 ¢/gal, 15-year life, 5.38% Inflation, 3% Discount)	\$58.83
Total Estimated Present Value Direct Benefit (= \$89.45 + \$58.83)	\$148.28
Direct Benefit-to-Cost Ratio (= \$148.28/\$51.45)	2.88

Note: For Benefit-to-Cost Analysis details and sources, see [Attachment 2](#) of this memorandum

8.3 Indirect Benefit-Cost Analysis (WaterSense Irrigation Controllers)

Table 8.3 – Present Value Direct + Indirect Benefit-to-Cost Summary

Cost-Benefit Item	Cost-Benefit Results
Cost per installation of Proposed Change	\$51.45
Total Estimated Present Value Direct Benefit	\$148.28
Avoided H2O Embedded CO ₂ Emission Cost (7,575 gal/year x 15 yr x 0.002 kWh/gal x 0.000709 mt CO ₂ /kWh x \$51/mt CO ₂)	\$8.22
Avoided Air Quality Costs (Ozone and PM 2.5) (7,575 gal/year x 15 yr x 0.002 kWh/gal x \$0.0163/kWh)	\$3.71
Total Estimated Present Value Direct + Indirect Benefit (= \$148.28 + \$8.22 + \$3.71)	\$160.21
Direct + Indirect Benefit-to-Cost Ratio (= \$160.21/\$51.45)	3.11

Note: For Benefit-to-Cost Analysis details and sources, see [Attachment 2](#) of this memorandum

9. Landscape Irrigation WaterSense Controller+ Regulating Sprinkler Bodies

9.1 Description

This conservation measure entails a code change for new WaterSense labeled sprinkler heads reducing irrigation operating pressure at the sprinkler heads to an optimum level (~30 psi) to avoid overwatering and reduce runoff. As a conservative approach to water savings estimates, this evaluation assumes that the installation also includes the moisture-based control evaluated in Section 8. As an alternative, pressure regulation may be achieved with in-line pressure regulation of individual zones, but given the available data, this analysis focuses on spray sprinkler bodies labeled by WaterSense.

9.2 Direct Benefit-Cost Analysis (Pressure Regulating Sprinklers)

Table 9.2 – Present Value Direct Benefit-to-Cost Summary for Regulating Sprinklers

Cost-Benefit Item	Cost-Benefit Results
Cost per Household of Proposed Change (Proposed Code: \$5.33 x 25 sprinklers) – (Current Code: \$3.05 x 25 sprinklers))	\$57.00
Avoided Annual Water Use per Household (Starting use assumes WaterSense control in place) (42,925 gal/yr x 23% anticipated savings (Water Sense based on 60 psi))	27.04 gal/day 9,873 gal/year
Avoided H2O Capacity Costs (\$4.31/gal/day x 27.04 gal/day)	\$116.58
Avoided H2O Variable Production Cost (0.039 ¢/gal, 5-year life, 5.38% Inflation, 3% Discount)	\$22.70
Total Estimated Present Value Direct Benefit (= \$116.58 + \$22.70)	\$139.28
Direct Benefit-to-Cost Ratio (= \$139.28/\$57.00)	2.44

Note: For Benefit-to-Cost Analysis details and sources, see [Attachment 2](#) of this memorandum

9.3 Indirect Benefit-Cost Analysis (Pressure Regulating Sprinklers)

Table 9.3 – Present Value Direct + Indirect Benefit-to-Cost Summary for Regulating Sprinklers

Cost-Benefit Item	Cost-Benefit Results
Cost per Household of Proposed Change	\$57.00
Total Estimated Present Value Direct Benefit	\$118.64
Avoided H2O Embedded CO ₂ Emission Cost (9,873 gal/year x 5 yr x 0.002 kWh/gal x 0.000709 mt CO ₂ /kWh x \$51/mt CO ₂)	\$3.57
Avoided Air Quality Costs (Ozone and PM 2.5) (9,873 gal/year x 5 yr x 0.002 kWh/gal x \$0.0163/kWh)	\$1.61
Total Estimated Present Value Direct + Indirect Benefit (= \$139.28 + \$3.57 + \$1.61)	\$144.46
Direct + Indirect Benefit-to-Cost Ratio (= \$144.46/\$57.00)	2.53

Note: For Benefit-to-Cost Analysis details and sources, see [Attachment 2](#) of this memorandum

Cost-Benefit Framework for the 2022 Plan Update

This cost benefit framework will be included in the scope of work for the 2022 plan update. This cost benefit framework should also be revisited after the 2022 plan update based on experience, data, and lessons learned to improve the framework and process for the 2027 plan update.

Consideration of all new / expanded action items in the 2022 plan update will include a cost-benefit analysis whenever reasonably possible. Potential new and expanded action items will be identified at the beginning of the 2022 plan update process by the District Board, District staff, hired consultant, the technical coordinating committees, the basin advisory councils, and other interested stakeholders, and those action items subject to this cost-benefit analysis will be identified. As the cost benefit analyses are performed, the details of such analyses and the results will be presented for review, comment, and direction to the District Board, the technical coordinating committees, the basin advisory councils, and other stakeholders.

The cost-benefit analysis should account for the following concepts:

1. Monetary benefits and costs to utilities and customers measured in dollars
2. Benefits and costs measured incrementally
3. Benefits and costs measured over period that matches either (a) the planning horizon (expected to be 2050) for long-term structural changes or (b) a multi-year period of abnormally dry weather and drought for any action items intended to address these episodic challenges
4. The time value of money
5. Data and assumptions clearly stated with sources cited
6. Non-monetary benefits and costs to society at large and the environment ranked on a scale
7. Reasonable and supportable estimates are acceptable when actual data is unavailable
8. Balance between available District funding, available data, and additional efforts to improve accuracy of cost-benefit analysis.

For new action items, the cost-benefit analysis will be used to determine whether to include the action item in the plan at all. Evaluation of these action items will use average incremental costs and benefits or the District as a whole.

Additionally, and subject to available District funding, for new action items that may result in varying levels of local effort (e.g. rebate programs) a cost-benefit tool will be made available to each utility upon plan adoption for their optional use in determining the appropriate level of effort using local incremental cost and benefit data.

A cost-benefit analysis will not be required for (1) new and enhanced data collection and studies included in the 2022 plan update with the intent of informing future action items and planning in 2027 and beyond or (2) minor updates and corrections to action items to account for the passage of time, the availability of new information resources, and to conform to updated laws and practices.

2022 Stormwater Forecast Pilot Grant Memo



Metropolitan North Georgia Water Planning District

International Tower | 229 Peachtree St., NE | Suite 100 | Atlanta, GA 30303

MEMORANDUM

DATE: February 2, 2022
TO: Metro Water District Governing Board
FROM: Metro Water District Staff
RE: Stormwater Forecast Pilot Grant Program

The 2022 Plan update includes a Stormwater Forecast (Forecast) that provides a new metric for stormwater and watershed planning. While individual elements of the Forecast have been used in local and national stormwater/watershed planning, the Forecast is the first time multiple elements have been combined into a water quantity-based indicator. Specifically, the Forecast:

- is a planning-level estimate
- provides the total estimated potential runoff management volume from developed land
- is calculated at the basin-scale
- uses site-scale post-construction stormwater performance standards: Water Quality Volume, Channel Protection Volume, and Overbank Flood Protection Volume
- is presented under four scenarios: a predevelopment condition, 2019 (present day), 2030 (future), and 2040 (future).

The goals of the Forecast are to support decision-making with additional information that identifies existing and future stormwater management gaps at both the site-scale and basin-scale, to support a better understanding of overall stormwater management needs, and to potentially generate new solutions and policies that address ongoing stormwater management challenges. Expanding the District's focus beyond water quality for stormwater management solutions may also bring new stakeholders together (public and private; industrial and residential) around a metric that is more easily understood.

Pilot Grant Program

Since the Forecast is a new tool for stormwater managers, it is important to support local jurisdictions' interest and use of the Forecast. District staff proposes the following opportunity to partner with local jurisdictions to explore different ways the Forecast might inform new approaches to local stormwater challenges through a grant program. A Stormwater Forecast Pilot Grant (Grant) could be administered by the District to encourage use of the Forecast at the local level and to test the Forecast under real-world scenarios.

All District Members in good standing during their most recent Georgia EPD audit would be eligible. Applicants would submit their idea for using the Forecast in their jurisdiction and include any information or time they would be able to contribute to the effort (e.g., stormwater system inventory in GIS format). The District would rank the submittals based on criteria outlined in the Grant application.

District staff recommends allocating up to \$100,000 in funding to the Grant. This work would be completed by Jacobs and District staff as a support service to individual applicants under Jacobs' current contract for the 2022 Plan Update. The funding would be shifted to this task from remaining contract funds keeping the total dollar amount of the contract the same.

Benefits

Each Grant project would create a deliverable that is specific to the winning applicant and a template for other District Members to replicate the project within their jurisdiction. The grant projects would build a "How To" guide for the Forecast with a menu of project ideas and opportunities for local jurisdictions to implement. Additionally, testing the Forecast under real-world scenarios will provide new insights about its functionality as a stormwater metric. The application to a variety of planning scenarios will identify opportunities and constraints for the Forecast at the local level as well as inform potential improvements for the Forecast for the District's 2027 Plan update.