

WATER CONSERVATION PLAN

For

**GALVESTON COUNTY
WATER CONTROL & IMPROVEMENT DISTRICT No. 1
DICKINSON, TEXAS**



**Approved by the
Galveston County WCID #1 Board of Directors
On
July, 2021**

INTRODUCTION

The purpose of a Water Conservation Plan is to reduce the quantity required for each water using activity, insofar as is economically feasible and physically practical, through the implementation of efficient water use practices. Many communities throughout the United States have used conservation measures to successfully cope with various water and wastewater problems.

The District's service area is located within the Region H Regional Water Planning Area of the Texas Water Development Board, and the District shall report to the Region H Regional Water Planning Group annually to assure consistency with the regional water plan, including providing the planning group a copy of this plan.

Reduction in water use of as much as 25% or more has been achieved, but the normal range is from 5 to 15%. As a result of reduced water use, wastewater flows have also been reduced by 5 to 10%.

Nine (9) principal water conservation methods to be considered in preparing a water conservation plan are as follows:

- Education and Information
- Plumbing codes for new construction
- Retrofit programs
- Conservation oriented water rate structures
- Universal metering and meter repair and replacement
- Water conserving landscaping
- Leak detection and repair
- Recycling and reuse
- Means of implementation and enforcement

CONSERVATION GOALS

The 5 and 10-year conservation goals for the District is shown in the table below and in Appendix C. The Historic 5-year average was used as the baseline to project goals. The 5-year average is based on data from 2016 to 2020 and is contained in the Water Utility Profile previously submitted to the TWDB.

The Total GPCD and Residential GPCD goals are based on a 0.05%/year reduction in GPCD values. The values for the District are already extremely low compared to other utilities.

The Water Loss GPCD goals were established in order to maintain water loss in the system to less than 12% in ten years.

Water Conservation Plan				
5- and 10-YR Goals for Water Savings				
	Historic 5-yr Average	Baseline	5-yr Goal for Year 2026	10-yr Goal for Year 2031
Total (GPCD) ¹	94	94	92	89
Residential (GPCD) ²	63	63	61	60
Water Loss (GPCD) ³	15	15	12	10
Water Loss (Percentage) ⁴	16%	16%	13%	11%
1. Total GPCD = (Total Gallons in System / Permanent Population) / 365				
2. Residential GPCD = (Gallons Used for Residential Use / Residential Population) / 365				
3. Water Loss GPCD = (Total Water Loss / Permanent Population) / 365				
4. Water Loss Percentage = (Water Loss GPCD / Total GPCD) x 100				

Conservation is expected to be a long-term program, with a time frame of at least ten (10) years. It is expected to take ten (10) years to obtain the full benefits of applying retrofits and replacing fixtures in the community, as well as getting the community to practice water conservation techniques.

The planned implementation schedule for each water conservation practice contained in the plan is shown below. It can be seen that the District has already implemented many of the water conservation practices contained in this plan. Those practices will continue to be in place and possible enhanced as conditions dictate. In addition, the District will implement new water conservation measures throughout the next 10-year period.

BMP Description	Already Implemented	Planned Implementation in the Next 5-Years	Planned Implementation in Years 5 through 10
Public Education and Information	X		
Plumbing Codes	X		
Retrofit Programs		X	
Non-Promotional Water Rate Structure	X		
Water Conserving Landscaping			X
Metering Devices and Universal Metering	X		
Leak Detection and Repair	X		
Water Loss Control Measures		X	
Recycling and Reuse	X		
Aquifer Recovery	X		
Water Conservation Coordinator	X		

The District will encourage all new construction or substantial modification to use water saving plumbing fixtures, e.g. low flow toilets, showerheads, and faucets. Owners of existing structures will be encouraged to retrofit with water-saving devices. High consumption users will be identified and encouraged to retrofit with water-saving devices. The District will investigate and identify uses for recycled water for public and institutional irrigation. Owners of new construction or substantial modification will be encouraged to use xeriscape landscaping incorporating the seven basic principles that lead to saving water:

- Planning & Design
- Soil Analysis
- Practical Turf Areas
- Appropriate Plant Selection
- Efficient Irrigation
- Use of Mulches
- Appropriate Maintenance

Low flow designs will be encouraged for new irrigation systems. High consumption irrigation users will be identified and encouraged to modify their designs to reduce consumption. The following percentage reductions can be used for estimating projected consumption:

Costing and pricing	3% reduction
Conservation practices	2% reduction
Retrofits (toilets, showerheads, faucets)	2% reduction
Outdoor irrigation reduction	2% reduction
Fixture replacements	1% reduction
Total	10% reduction

The basis for estimates of savings is the USEPA Water Conservation Guidelines. However, the recorded per capita use in the District is very low compared with the state average, and it would be difficult to achieve reductions as high as 10%.

The District will monitor monthly the efficiency and effectiveness of the Water Conservation Plan by comparing with previous consumption patterns. The success of the Water Conservation Plan can thus be gauged, and any necessary changes made.

PUBLIC INVOLVEMENT

The District holds regular Board Meetings on the third Monday of each month at 5:00 P.M. Meetings are open to the public, and citizens are free to speak on any subject during the portion of the meeting designated for this purpose. The draft Plan will be posted on The District's Internet Web Site and a press release advertising the internet posting will be made to the local news agencies.

WATER CONSERVATION METHODS

Water conservation methods are typically divided into two (2) categories, Demand Management Methods and Supply Management Methods. Demand Management Methods deal with water use on the downstream side of a customer's meter. Demand management provides for education or incentives to reduce water use by the consumer. This method of conservation generally results in a decrease in water revenues because less water is purchased from The District.

Supply Management Methods deal with the utility's water system upstream of the customer's meter. The goal of Supply Management is to improve efficiency and reduce waste within the production, treatment, and distribution system. Supply management usually results in decreased costs to the utility as water losses in the system are reduced.

DEMAND MANAGEMENT METHODS

Demand Management Methods considered in the GCWCID#1 Conservation Plan include the following:

- Public Education and Information
- Plumbing Codes
- Retrofit Programs
- Non-Promotional Water Rate Structure
- Water Conserving Landscaping

Public Education and Information

The most readily available and lowest cost method of promoting water conservation is to inform water users about ways to save water inside homes and other buildings, in landscaping and lawn uses, and in recreational uses. An effective education and information program can be easily and inexpensively administered by The District. Materials available from the Texas Water Development Fund, American Water Works Association, American Public Works Association and other similar associations can easily be made available to The District for distribution to its customers, through handouts, mailouts, and other sources. The District publishes its own newsletter which is distributed bi-annually. This newsletter, called the Water Supply, keeps customers informed about what is happening in The District. This publication can be used to print articles concerning water conservation. The District also maintains a Web Site (www.wcid1.com) which is updated on a regular basis which has a page dedicated to Water Conservation. The Water Conservation Plan will be published on the Web Site.

Various radio stations in the area, together with public and cable television systems, can also be utilized for this purpose. Educational materials will be made available twice a year. The semi-annual distribution will be timed to correspond with the peak summer and winter demand periods. The pamphlet will explain the purpose of the Conservation Plan, and will coincide with a published article which will present various water conserving methods, including plumbing fixtures and devices available for retrofit or addition, water conserving methods in landscaping and irrigation, and good water use practices to conserve water. The District will develop and acquire sufficient educational materials for district-wide distribution. The materials will be made available on request by all users.

The program will cover the Water Conservation Tips listed in Attachment B. The District will put special emphasis on the need to insulate pipes to prevent freezing in cold weather, retrofitting of plumbing fixtures and devices, and landscaping conservation methods. The energy savings associated with a water conservation program will also be emphasized.

The District sponsors the Water Smart Education Program taught by the Subsidence District in two Junior High schools in the District. District staff also conducts water conservation education opportunities at the Junior High Level. The District also sponsors a water conservation book cover art contest at one of the Junior High schools in the District and considering a water conservation themed poster contest to grade school students K-12.

Plumbing Codes

Water saving plumbing codes for new construction and for replacement of plumbing in existing structures has been adopted. The standards recommended by the Texas Water Development Board represent readily available technologies and do not involve additional costs when compared with "standard" fixtures. The District contracts with the City of Dickinson for enforcement of the plumbing code. The City of Dickinson has adopted the 2015 International Plumbing Code.

Retrofit Programs

The District will make information available through its education program for plumbers and customers to use when purchasing and installing plumbing fixtures, lawn watering equipment, or water using appliances. Information regarding retrofit devices such as low-flow shower heads or toilet dams that reduce water use by replacing or modifying existing fixtures or appliances will also be provided. Kits containing retrofit devices may be made available for distribution to customers.

Non-Promotional Water Rate Structure

A water conservation oriented rate structure usually takes the form of an increasing block rate, although continuously increasing rate structures, peak or seasonal load rates, excess use fees, and other rate forms can be used. Separate rate structures are usually used for commercial, institutional, and industrial customers. The District will continue to support a conserving water rate structure and, when appropriate, review its rates for policy consistency. The rate is reviewed annually to insure that it still fits the standard for conservation as proposed by the TCEQ.

Water Conserving Landscaping

In order to reduce the demands placed on a water system by landscape watering, The District should consider methods that either encourage, by education and information, or require, by code or ordinance, water conserving landscaping by residential customers and commercial establishments engaged in the sale or installation of landscape plants or watering equipment. Although not made a specific section of the Conservation Plan, water conserving landscaping information will be made available through the Public Education and Information Section found later in this plan.

SUPPLY MANAGEMENT METHODS

Supply Management Methods considered in the GCWCID#1 Water Conservation Plan include the following:

- Metering Devices and Universal Metering
- Leak Detection and Repair
- Water Loss Control Measures
- Recycling and Reuse
- Aquifer Recovery

Metering Devices and Universal Metering

The District has installed and maintains master meters on all sources. All sales by The District are metered. The District has a regular meter replacement program and all master meters are calibrated annually to $\pm 3\%$. Any meter registering 95% or less on a meter test is replaced. Groups of meters are spot tested. All meters are scheduled for replacement with each annual budget preparation in groups by those that have 95% or less accuracy, by age and by volume of water metered.

Leak Detection and Repair

A continuous leak detection, location and repair program is an important part of our water conservation plan. An annual water accounting is performed each year. Sources of unaccounted-for water are, once located, corrected when practicable and economical.

District utility employees periodically check for leaks when reading meters and when driving around The District during regular maintenance. Major leaks are usually quickly detected by either District employees or customers and are repaired within 24 hours. Leak detection technology in the form of electronic sonic devices is also being considered.

Water Loss Control Measures

The District uses a 12-month moving total of water treated and pumped versus water sold in order to assess more accurately the amount of water losses in the system. The average water loss has ranged from 5% to 19% in previous years, with the five-year average being 15%. Leaks that go unreported for extended periods of time or large pipe failures make that make for difficult estimates of total water loss can skew these numbers from year to year. The District will continue

to refine our methods of calculating water loss due to these issues to better understand our actual water loss. The District will also complete a detailed water system audit following Texas Water Development Board (TWDB) guidelines annually. In addition to these measures, the District maintains an active leak detection program described above.

Recycling and Reuse

The District reuses water at the WWTP saving approximately 1 MG per month. The District has reviewed the potential for other reuse, and it is currently not considered economically feasible at this time.

Aquifer Recovery

The District has implemented a program to generate a very positive effect on the area aquifer. At the direction of the Harris-Galveston Coastal Subsidence District, The District has entered into a contract with the GCWA to purchase surface water. The Subsidence District has mandated that The District use only 10% of its potable water from deep wells and purchase the remaining 90% from a surface water source, in this case the GCWA. Such purchases began in 1983.

IMPLEMENTATION/ENFORCEMENT

IMPLEMENTATION

The District will administer its own Water Conservation Program. In this capacity, it will oversee the execution and implementation of all elements of the program. The District will also oversee record keeping for program verification.

The District has designated a Water Conservation Coordinator. The Conservation Coordinator is responsible for preparation, implementation, and enforcement of the water conservation plan, as well as the preparation and submittal of annual conservation status reports and implementation of the District's conservation program.

In addition, The District will be responsible for the submission of an annual report to the Texas Commission on Environmental Quality on the Water Conservation Plan. The report will include the following elements:

- Progress made in the implementation of the program
- Response to the program by the public
- Quantitative effectiveness of the program
- Proposed administration and goals of plan for the following year

In order to track the implementation and effectiveness of the plan, the District calculates water consumption annually and tracks changes in customer use in terms of gpcd. These values will be compared to the goals set forth in this plan to determine if the BMPs contained in the plan are helping to achieve the desired water conservation goals. The water conservation plan will be adjusted as needed to account for new conservation opportunities and customer response patterns. A program may be expanded if doing well or discontinued or changed to make it more attractive to customers while achieving conservation results.

The program will be initiated through adoption of the Water Conservation Plan by Ordinance by the GCWCID#1 Board of Directors.

The budget for the Water Conservation Plan should be approximately \$5,000 annually to be funded by The District.

ENFORCEMENT

Enforcement will be carried out through proper passage of appropriate Ordinances. Any violation of the mandatory provisions of the Drought Contingency Plan may result in a penalty and/or interruption of water service. The District Manager is empowered to enforce the mandatory provisions and may interrupt water service based upon repeated violations. Penalties shall be paid before water service is restored. Violations will be reported by all District personnel to the General Manager.

APPENDIX A

WATER CONSERVATION & DROUGHT MANAGEMENT INFORMATION SOURCES

Texas Water Development Board
P.O. Box 13231
1700 N. Congress Ave.
Austin Tx 78711-3231
(512) 463 7847 voice
(512) 4752053 fax
www.twdb.state.tx.us

Texas Commission on Environmental Quality
P.O. Box 13087
Austin Tx 78711-3087
(512) 239 1000
www.tceq.state.tx.us

Water Resource Center
U.S. EPA
Mail Code RC-41 00
401 M Street, S.W.
Washington, D.C. 20460
Telephone: (202) 260-7786
Fax: (202) 260-0386
e-mail: waterpubs@epamail.epa.gov
www.epa.gov/ow

American Water Works Association
6666 West Quincy Ave.
Denver Co 80235
(303) 794 7711
www.awwa.org

APPENDIX B

WATER CONSERVATION TIPS

Suggestions on ways to save water which may be included in public information are listed below.

A. Bathroom

- a. Take a shower instead of filling the tub and taking a bath. Showers usually use less water than tub baths.
- b. Install a low-flow shower head which restricts the quantity of flow at 60 psi to no more than 3.0 gallons per minute.
- c. Take short showers and install a cutoff valve or turn the water off while soaping and back on again only to rinse.
- d. Do not use hot water when cold will do. Water and energy can be saved by washing hands with soap and cold water; hot water should only be added when hands are especially dirty.
- e. Reduce the level of the water being used in a bath tub by one or two inches if a shower is not available.
- f. Turn water off when brushing teeth until it is time to rinse.
- g. Do not let water run when washing hands. Instead, hands should be wet, and water should be turned off while soaping and scrubbing and turned on again to rinse. A cutoff valve may also be installed on the faucet.
- h. Shampoo hair in the shower. Shampooing in the shower takes only a little more water than is used to shampoo hair during a bath and much less than shampooing and bathing separately.
- i. Hold hot water in the basin when shaving instead of letting the faucet continue to run.
- j. Test toilets for leaks. To test for a leak, a few drops of food coloring can be added to the water in the tank. The toilet should not be flushed. The customer can then watch to see if the coloring appears in the bowl within a few minutes. If it does, the fixture needs adjustment or repair.
- k. Use a toilet tank displacement device. A one-gallon plastic milk bottle can be filled with stones or with water, recapped, and placed in the toilet tank. This will reduce the amount of water in the tank but still provide enough for flushing. (Bricks, which some people use for this purpose, are not recommended, since they crumble eventually and could damage the working mechanism. Displacement devices should never be used with new low-volume flush toilets.

- l. Install faucet aerators to reduce water consumption.
- m. Never use the toilet to dispose of cleaning tissues, cigarette butts, or other trash. This can waste a great deal of water and also places an unnecessary load on the wastewater treatment plant.
- n. Install a new low-volume toilet that uses 1.6 gallons or less per flush when building a new home or remodeling a bathroom.

B. Kitchen

- a. Use a pan of water (or place a stopper in the sink) for rinsing pots and pans and cooking implements when cooking rather than turning on the water faucet each time a rinse is needed.
- b. Never run the dishwasher without a full load. In addition to saving water, expensive detergent will last longer and a significant energy saving will appear on the utility bill.
- c. Use the sink disposal sparingly, and never use it for just a few scraps.
- d. Keep a container of drinking water in the refrigerator. Running water from the tap until it is cool is wasteful. Better still, both water and energy can be saved by keeping cold water in a picnic jug on a kitchen counter to avoid opening the refrigerator door frequently
- e. Use a small pan of cold water when cleaning vegetables rather than letting the faucet run.
- f. Use only a little water in the pot and put a lid on it for cooking most food. Not only does this method save water, but food is more nutritious since vitamins and minerals are not poured down the drain with the extra cooking water.
- g. Use a pan of water for rinsing when hand-washing dishes rather than running the faucet.
- h. Always keep water conservation in mind, and think of other ways to save in the kitchen. Small kitchen savings from not making too much coffee or letting ice cubes melt in a sink can add up over a year's time.

C. Laundry

- a. Wash only a full load when using an automatic washing machine (32 to 59 gallons are required per load).
- b. Use the lowest water level setting on the washing machine for light loads whenever possible.

- c. Use cold water as often as possible to save energy and to conserve the hot water for uses which cold water cannot serve. (This is also better for clothing made of today's synthetic fabrics.)

D. Appliances and Plumbing

- a. Check water requirements of various models and brands when considering purchasing any new appliance that uses water. Some use less water than others.
- b. Check all water connections and faucets for leaks. A slow drip can waste as much as 170 gallons of water EACH DAY, and can add as much as \$10.00 per month to the water bill.
- c. Learn to replace washers so that drips can be corrected promptly. It is easy to do, costs very little, and can represent a substantial amount saved in plumbing and water bills.
- d. Check for water leakage you may be unaware of, such as a leak between the water meter and the house. To check, all indoor and outdoor faucets should be turned off, and the water meter should be checked. If it continues to run or turn, a leak probably exists and needs to be located.
- e. Insulate all hot water pipes to avoid the delays (and wasted water) experienced while waiting for the water to turn hot.
- f. Be sure the hot water heater thermostat is not set too high. Extremely hot settings waste water and energy because the water often has to be cooled with cold water before it can be used.
- g. Use a moisture meter to determine when house plants need water. More plants die from over-watering than from being on the dry side.

E. Out-of-Doors Use

- a. Water lawns between the hours of 8:00 pm to 6:00 am during the hotter summer months. Much of the water used on the lawn can simply evaporate between the sprinkler and the grass.
- b. Use a sprinkler that produces large drops of water, rather than a fine mist, to avoid evaporation.
- c. Turn soaker hoses so the holes are on the bottom to avoid evaporation.
- d. Water slowly for better absorption, and never water in high winds.
- e. Forget about watering the streets, walks, and driveways. They will never grow a thing.

- f. Condition the soil with compost before planting grass or flower beds so that water will soak in rather than run off.
- g. Fertilize lawns at least twice a year for root stimulation. Grass with a good root system makes better use of less water.
- h. Learn to know when grass needs watering. If it has turned a dull gray-green or if footprints remain visible, it is time to water.
- i. Do not water too frequently. Too much water can overload the soil so that air cannot get to the roots and can encourage plant diseases.
- j. Do not over-water. Soil can absorb only so much moisture and the rest simply runs off. A timer will help, and either a kitchen timer or an alarm clock will do. An inch and one-half of water applied once a week will keep most Texas grasses alive and healthy.
- k. Operate automatic sprinkler systems only when the demand on the town's water supply is lowest. Set the system to operate between 4 and 6 am.
- l. Do not scalp lawns when mowing during hot weather. Taller grass holds moisture better. Rather, grass should be cut fairly often, so that only 1 to 2 inches is trimmed off. A better looking lawn will result.
- m. Use a watering can or hand water with the hose in small areas of the lawn that need more frequent watering (those near walks or driveways or in especially hot, sunny spots).
- n. Learn what types of grass, shrubbery, and plants do best in the area and in which parts of the lawn, and then plant accordingly. If one has a heavily shaded yard, no amount of water will make roses bloom. In especially dry sections of the state, attractive arrangements of plants that are adapted to arid or semi-arid climates should be chosen.
- o. Consider decorating areas of the lawn with rocks, gravel, wood chips, or other materials now available that require no water at all.
- p. Do not "sweep" walks and driveways with the hose. Use a broom or rake instead.
- q. Use a bucket of soapy water and use the hose only for rinsing when washing the car.

Appendix C
5- and 10-Year Water Conservation &
Water Loss Goals

Title 31 TAC Chapter 363, Rule §363.15 (B)

WATER CONSERVATION PLAN 5- AND 10-YR GOALS FOR WATER SAVINGS

Name: _____

Water Conservation Plan Year: _____

	Historic 5-yr Average	Baseline*	5-yr Goal for year _____	10-yr Goal for year _____
Total (GPCD) ¹				
Residential (GPCD) ²				
Water Loss (GPCD) ³				
Water Loss (Percentage) ⁴	%	%	%	%

1. Total GPCD = (Total Gallons in System ÷ Permanent Population) ÷ 365

2. Residential GPCD = (Gallons Used for Residential Use ÷ Residential Population) ÷ 365

3. Water Loss GPCD = (Total Water Loss ÷ Permanent Population) ÷ 365

4. Water Loss Percentage = (Total Water Loss ÷ Total Gallons in System) x 100; or (Water Loss GPCD ÷ Total GPCD) x 100

GPCD - Gallons Per Capita Per Day

**A base use figure, or baseline, should be included to calculate your estimated savings. Consider state and regional targets and goals, local climate, and demographics (i.e. wet year versus dry year, high usage versus low usage)*