HEADWATERS

GROUNDWATER

CONSERVATION

DISTRICT

CONSERVATION PLAN 2025

Section One----- Conservation Rules and Policies

Headwaters Groundwater Conservation District (District) has developed a comprehensive Management Plan which has been approved by the Texas Water Development Board to be administratively complete and in compliance with Texas Water Code 36.1071 and 31 TAC 356. The Management Plan has a number of management goals and performance standards to provide for the conservation of all groundwater resources in Kerr County. The District Management Plan is available to the public and can be viewed on the District's website at www.hgcd.org/rules-plans-reports.

The District has adopted rules and policies to implement the Management Plan as required by Texas Water Code 36.1071. Within these rules and policies, the District practices conservation through permitting water for beneficial use, pumping caps, well spacing, and prohibiting waste.

The District has established a Drought Contingency Plan, applicable to all Permitted Wells, that requires an increasing reduction in use during an escalating range of drought stages. Permitted Wells include those used for commercial purposes, crop irrigation purposes, and non-municipal public water systems. The Drought Contingency Plan also recommends a list of best practices to restrict non-essential use during each level of drought.

Water quality is an important component of conservation and is safeguarded by drilling construction standards and well spacing requirements. Additionally, the water from all newly drilled wells is required to be tested by a Board-Certified laboratory.

The District's Management Plan has goals to promote public education for water conservation through newspaper articles and the District website.

Section Two---------- Conservation Practices

A primary conservation practice enacted by the District is conjunctive permitting, which prioritizes the use of surface water. In these instances, surface water that has been permitted by the Texas Water Master is used primarily before withdrawing groundwater.

The District cannot impose drought restrictions on groundwater wells that are exempted by Texas Water Code, Chapter 36.117. As a result, the District encourages all Exempt Well owners to practice water conservation since water level declines, brought on by drought conditions, can damage or impact the performance of their well(s).

The District encourages Rainwater Harvesting by way of newspaper articles, the District website, and handouts.

The District has established a county-wide Monitor Well program, which is comprised of both privately-owned groundwater wells and a selection of groundwater wells drilled and maintained by HGCD. These wells are used to track aquifer water levels across the county and to evaluate the need for establishing, escalating, or reducing a drought stage.

Section Three---------- About Kerr County

Our Climate:

Kerr County has a semi-arid climate, that is prone to long periods of drought and brief periods of flooding rains. Flooding rains create rapid runoff that recharges the local rivers and creeks. However, runoff from flooding does not effectively recharge an aquifer, due to the rapid rate at which the water moves across the surface of the land. Typically, when and if rain occurs in Kerr County, it will usually happen during the late fall, winter, and the early spring months, with prolonged dry periods during the summer and early fall. The average annual rainfall in Kerr County is around 32 inches a year, with record highs and lows ranging from 50 inches to 13 inches. The winter temperatures are usually mild, and the summers are exceptionally hot.

Our Aquifers:

The primary groundwater source in Kerr County is called the Edwards-Trinity Plateau Aquifer. This aquifer is very extensive, covering 41 counties in West and Southwest Texas, extending as far west as Pecos County and as far northwest as Ector, Midland, and Glasscock Counties. Kerr, Gillespie, and Bandera Counties are at the eastern limit of the aquifer.

In Kerr County, the Edwards-Trinity Plateau Aquifer is divided into two portions:

The Edwards Portion (**pink area on the map below**) – In the areas where it is available in Kerr County, the Edwards sits on top of the Trinity Aquifer. It is known to exist where there are higher elevations, primarily in the western half and the northeastern areas of the county.

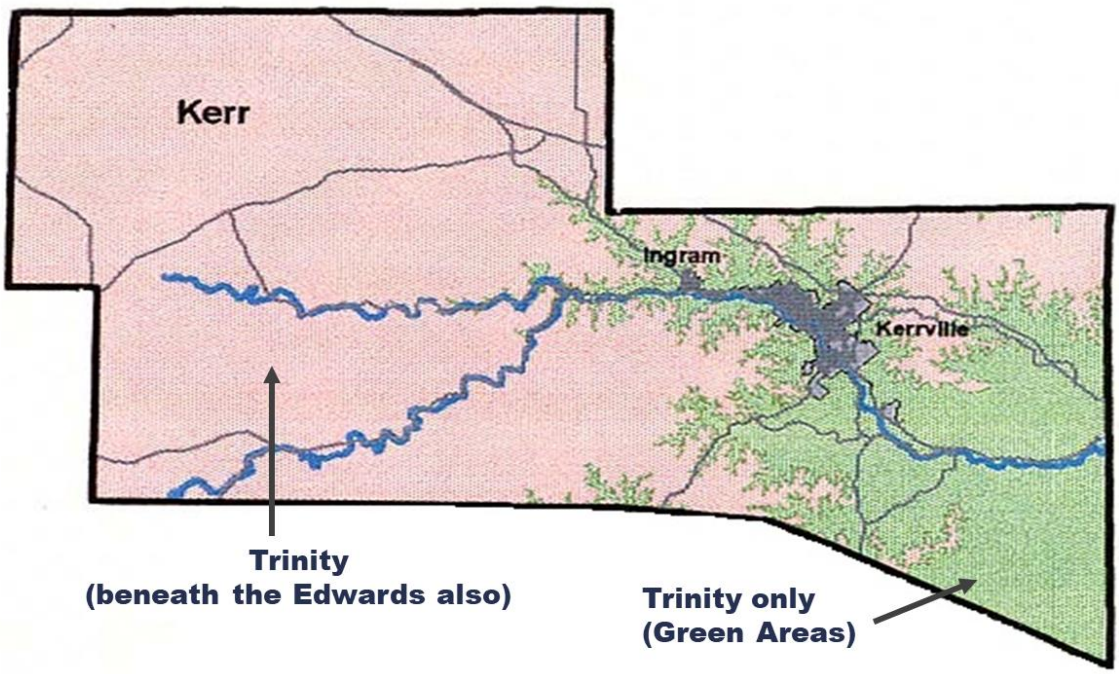
This aquifer is made up of very porous limestone and is known to have small caves within it. Due to this porosity, the aquifer responds well to normal rainfall. During periods of drought, some areas of the aquifer may become temporarily dry but will recharge rapidly when healthy rain occurs. Due to these conditions, many Edwards well owners in Kerr County will use a storage tank(s) to provide a water reserve for themselves during periods of drought.

The quality of the Edwards water is very good, with an average Total Dissolved Solids (TDS) of 100-200 parts per million (PPM). Respectively, treated public water is usually

350-500 PPM.

Springs from the Edwards are what create the headwaters of the Guadalupe River, which originates entirely within western Kerr County from the three branches of the river (Johnson Creek, the North Fork of the Guadalupe, and the South Fork of the Guadalupe).

Note: There is an Edwards Aquifer also located in the Texas Hill Country that is similar in name to the Edwards-Trinity Plateau Aquifer. It is referred to as the Edwards Balcones Fault Zone (BFZ). The Edwards (BFZ) Aquifer extends from Kinney County up through the San Antonio/Austin corridor and extends as far north as Bell County. The Edwards (BFZ) Aquifer is a different geological formation from the Edwards-Trinity Plateau Aquifer that is here in Kerr County. The two aquifers are hydro-geologically connected through the fault zone, but due to the underground flow of the water, the health of the Edwards (BFZ) Aquifer is not an indicator of the health of the Edwards-Trinity Plateau Aquifer in Kerr County.



The Trinity Portion – The Trinity portion of the Edwards-Trinity Plateau Aquifer is available throughout Kerr County, but there are distinct differences between the Trinity in western Kerr County and eastern Kerr County.

In the western area of the county (**the pink area on the map above**), the Edwards portion sits on top of the Trinity, which receives some limited recharge from the Edwards in localized areas where the confining layer between two aquifers subsides in some places. The geology of the Trinity in western Kerr County is typically all one body of sand.

In the eastern area of the county (**the green area on the map above**), there is no Edwards, and instead, the Trinity is separated into the Upper Trinity, the Middle Trinity, and the Lower Trinity. Each of these units is separated by a geological layer, called an aquitard or confining layer, that restricts the water in each section to itself. The Upper, Middle, and Lower Trinity units in eastern Kerr County receive their recharge from an area north of Kerr County rather than from the west. Additionally, the geology in this part of the Trinity is made up of sand and limestone, which has smaller pores and crevices in comparison to the Edwards limestone. This difference in porosity causes the water to move through the Trinity at a slower rate. Therefore, the Trinity in the eastern area of Kerr County experiences a more muted and delayed response to rainfall and takes longer to recharge.

The quality of the Middle and Lower Trinity water is good, with an average Total Dissolved Solids (TDS) of 500-700 parts per million (PPM). Usually, high levels of iron and other minerals are attributed to this higher TDS. The water in the Upper Trinity is high in gypsum. It is not suitable for human consumption and can be corrosive to a steel-cased well. For wells in eastern Kerr County, drilling is completed through the Upper Trinity and, to prevent commingling the water, this layer is sealed off before continuing to the Middle Trinity.

Section Four--------- Conservation Landscaping

The District encourages water-wise landscaping, which is simply a set of landscaping principles that practice responsible plant selection, landscape design, and maintenance.

Use Appropriate Plants. Different plants have different requirements for optimum health. To use water most efficiently, choose plants that do not require much water. Select native plants, trees, and grasses, or varieties that are suited for a drought-prone climate and are known to be non-invasive.

Plan It Before You Plant It. Be sure you are familiar with your landscape's many attributes. For instance, note which areas have more or less shade, which areas have reflected heat from the patio or house, and any other features you may encounter.

Consider Xeriscaping. Xeriscaping is an attractive landscape design that eliminates the need for irrigation through the use of native and drought-tolerate plants, as well as decorative gravel, pavers, and rocks.

Use Grass Wisely. Take into consideration the different activities that will occur in your yard. Use grass only in those areas where it is a functional component of your landscape. A good rule of thumb is *"If the only time you walk on it is to mow it, you probably don't need it"*.

Water Wisely. Group plants according to their water needs. This will help you avoid over-watering some plants and under-watering others. Rather than frequent light

waterings, apply thorough deep waterings less often. Install a drip irrigation system to get maximum benefit from the water used.

Consider Rainwater Harvesting. Rainwater Harvesting can be done on a small scale or large scale, depending on the budget and goals. A small scale project can consist of simply attaching a rainwater barrel to each downspout of your roof, to use during times of drought when watering restrictions are in place. If you do not have gutters or downspouts, then a "rain chain" is an alternate and decorative solution to direct rainwater into a barrel or directly onto nearby landscaping.

"A/C Condensation" Catchment. Condensation Catchment is another method of recycling water. An exterior Air Conditioning Unit during the summer months can collect and store anywhere from 5-20 gallons of water per day, per unit, which can be used as a source of water for plant irrigation during the hot & dry summer seasons.

Just Mulch It. Use mulches to cover the soil and reduce evaporation. Mulching helps prevent the growth of weeds and covers unsightly barren areas.

Keep It Up. While using these principles helps reduce maintenance time, it does not eliminate it entirely. Use of good preventive maintenance will reduce the need for costly and time-consuming maintenance later.

Section Four----------Conservation Education

Develop and Maintain the HGCD website:

The District regularly maintains water awareness and District information on the website for public access and review. This information includes, but is not limited to:

- Information about the Headwaters Groundwater Conservation District.
- Information about the Hill Country Priority Groundwater Management Area.
- Current drought conditions for Kerr County: https://www.Drought.gov/States/Texas/County/Kerr
- Current drought conditions for the State of Texas: https://www.Drought.gov/States/Texas
- A Link to the current Kerr County weather & rain data, documented and provided by the USDA.
- A Link to the historical Kerr County weather & rain data, documented and provided by the USDA.

- The current Drought Stage Level designated for Kerr County by the District.

- The District Drought Contingency Plan, which outlines the required water-use reduction and the recommended practices for all Permitted Well owners during the various Drought Stage levels.

- The Middle Trinity Drought Index Chart and the Lower Trinity Drought Index Chart. These monthly charts are used to determine the average water level in each aquifer and aid the District in determining the necessary Drought Stage level.

- Monthly Water Level Data, which includes:
    - A map of the Monitor Well locations in Kerr County.
    - The water level information for each Monitor Well, to include a change in depth from the previous month.
    - Monitor Well Hydrographs, which is a two-year graph of the monthly water levels for each Monitor Well.

- When Drought Stage changes occur, the District notifies all Permitted Well owners, and provides a press release to all local newspapers.

Section Five---------- Conservation Tips

Indoors:

* Wash only full loads of dishes and laundry.
* Dry scrape dishes instead of rinsing.
* Use the garbage disposal sparingly.
* Take short showers rather than baths.
* When replacing older faucets and toilets, choose high-efficiency fixtures.
* Fix faucet and toilet leaks immediately.
* Don't use "drop-in" chlorine toilet tank tablets without a tablet holder. Dropping chlorine tablets into the tank will cause the dissolved chlorine to concentrate at the bottom of the tank. Over time, the concentrated chlorine will erode the rubber flap in the bottom of the tank, causing a constant leak. Instead, purchase a holder that will secure the tablet at the top of the tank.
* Install water efficient showerheads and aerators.
* Turn off the water faucet while brushing teeth, washing hands, shaving, etc. OR collect the unused running water in empty water bottles or jugs to use for drinking water or for watering plants.

Outdoors:

* Limit landscape watering. One inch a week is enough for most Texas grasses.
* Refresh mulch in flower beds or other landscaped areas to retain soil moisture.
* If you have an automatic sprinkler system:
    - Adjust and limit watering times so that all watering occurs before dawn or after dusk.
    - Check it regularly to ensure that the spouts are functioning properly, aimed in the proper direction, and not watering sidewalks or streets.
    - Turn it off during the colder months or limit it to those zones that require year-round watering. During this time of year, grass is dormant and does not need watering. Additionally, this will prevent damage to the sprinkler system due to freezing weather.
* Reduce evaporation loss by using a drip irrigation system in flower beds or gardens.
* Reduce pool and spa evaporation by covering them with a physical cover when not in use. Alternately, a liquid pool cover can be added to the water to reduce evaporation without restricting access.
* Choose plants and trees that are drought tolerant.
* Collect rainwater to use for landscaping needs when drought restrictions are in effect.
* Don't use water to wash driveways or sidewalks.
* Use a commercial car wash to wash vehicles. These car washes use less water on average than handwashing a vehicle in the driveway.

When building or remodeling:

* Make water-efficiency an overall priority.
* Install water-efficient appliances and plumbing fixtures.
* Install low-flow toilets that require only 1.6 gallons of water per flush or less.
* Consider decorative Xeriscaping vs. a traditional landscape.
* Consider laying artificial turf.
* If live turf is needed or preferred, limit the lawn to a size and area that has a functional purpose.
* Select a type of grass that is suitable for a drought-prone area, such as UC Verde Buffalo Grass, Bermuda Grass, or Bahia Grass for high-sun areas. Alternately, Tall Fescue is a drought-tolerant grass suitable for shaded areas.
* Do not lay sod during the summer when there is no rain. Instead, wait until spring to spread seed or lay sod when rain is more likely to occur.
* Install drip irrigation in flower beds and gardens.
* Add a rainwater harvesting system to use for landscape needs when drought restrictions are in effect.
* Add a catchment system for air-conditioning unit condensation, to use for landscape needs when drought restrictions are in effect.
* Consider porous pavers for sidewalks and driveways, to reduce the amount of impervious cover.

Website Resources

Landscape Water Conservation - Xeriscaping:

- https://AgriLifeExtension.tamu.edu/asset-external/xeriscape-landscape-water-conservation/
- https://www.energy.gov/energysaver/landscaping-water-conservation
- https://www.monrovia.com/be-inspired/xeriscape-design-ideas-are-lush-vibrant.html

Plant Finder with Filters:
https://www.monrovia.com/plantfinder/

Lawn Irrigation Tips:
https://www.savewatertexas.org/2020/10/06/irrigation-tips/

Xeriscape Design Ideas:

- https://www.asla.org/watersavingtips.aspx
- https://www.thespruce.com/xeriscape-garden-ideas-4776580

Take Care of Texas: http://www.takecareoftexas.org/

HVAC Condensation Harvesting:

- https://www.gardenstylesanantonio.com/garden-articles/air-conditioning-condensate-a-hidden-resource/
- https://www.gardeningknowhow.com/garden-how-to/watering/is-irrigating-with-ac-water-safe.htm

National Groundwater Association – Well Owner Training:
https://www.pathlms.com/ngwa/courses/21835