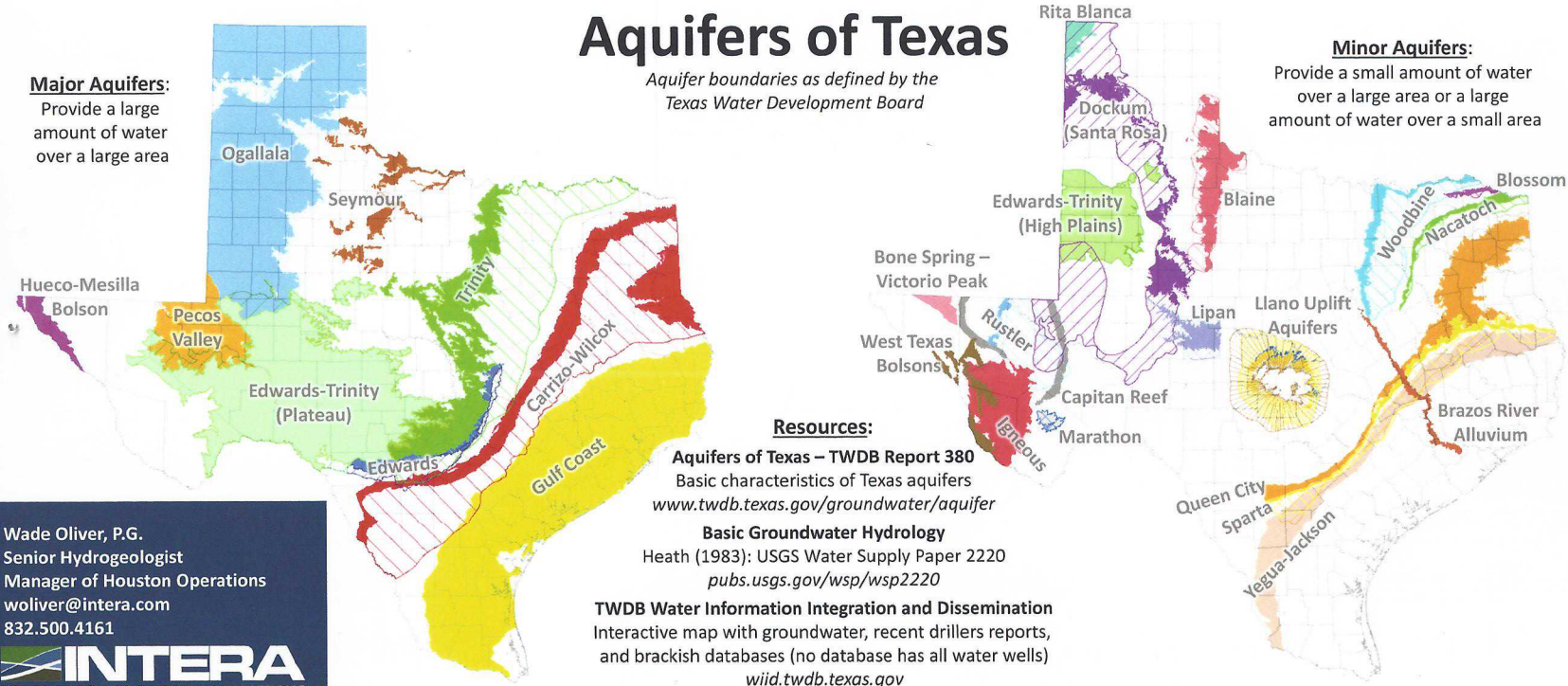
# Aquifers of Texas

*Aquifer boundaries as defined by the Texas Water Development Board*

**Major Aquifers**:
Provide a large amount of water over a large area

**Minor Aquifers**:
Provide a small amount of water over a large area or a large amount of water over a small area




**Resources:**

**Aquifers of Texas – TWDB Report 380**
Basic characteristics of Texas aquifers
*www.twdb.texas.gov/groundwater/aquifer*

**Basic Groundwater Hydrology**
Heath (1983): USGS Water Supply Paper 2220
*pubs.usgs.gov/wsp/wsp2220*

**TWDB Water Information Integration and Dissemination**
Interactive map with groundwater, recent drillers reports, and brackish databases (no database has all water wells)
*wiid.twdb.texas.gov*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# Texas Groundwater Basics

## Definitions

**Aquifer**: A rock unit that will yield economically usable quantities of water to a well

**Porosity**: The ratio of openings (voids) to the total volume of rock

**Water Level (Head)**: The level to which water rises in a well. A measure of pressure in an aquifer.

**Drawdown**: A water level change (usually drop) at a well or on a regional basis

**Specific Capacity (gpm/ft)**: The pumping rate in a well divided by the drawdown it produces. An indicator of well efficiency and aquifer productivity.

**Hydraulic Conductivity (ft/d)**: A property of an aquifer that describes how easily water can flow. Analogous to permeability: viscosity dependent. (1 ft/d ≈ 400 mD)

**Storage Coefficient**: The volume of water an aquifer releases from storage for a unit change in head.

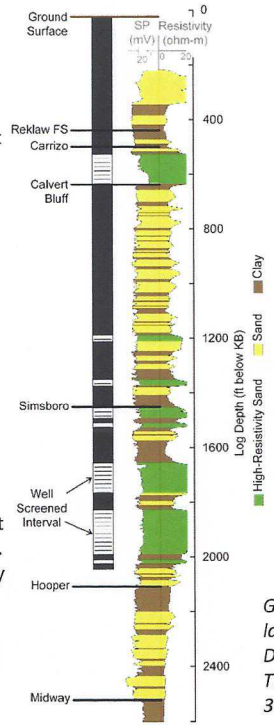
**Specific Yield**: The fraction of an aquifer (rock + water) that contains water that can drain by gravity.

## Acronyms

| | |
|---|---|
| **GCD**: | Groundwater Conservation District |
| **GMA**: | Groundwater Management Area |
| **GAM**: | Groundwater Availability Model |
| **DFC**: | Desired Future Condition |
| **MAG**: | Modeled Available Groundwater |
| **RWPA**: | Regional Water Planning Area |
| **TWDB**: | Texas Water Development Board |
| **TCEQ**: | Texas Commission on Environmental Quality |
| **TERS**: | Total Estimated Recoverable Storage |

## Well Completions →

Geophysical well log showing stratigraphic boundaries, dominant lithology and high-resistivity sands. When combined with water quality data, this information allows users to design a well that optimizes productivity and water quality.



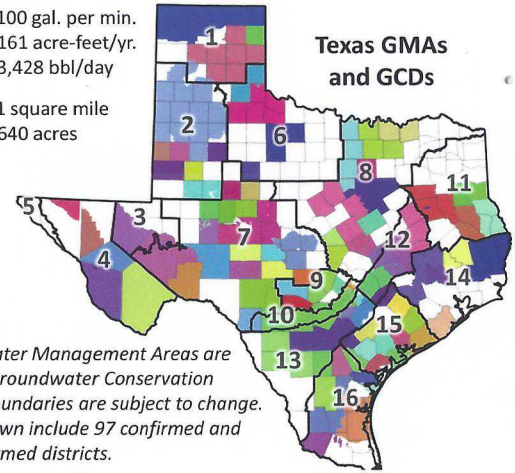

## Groundwater Management

The GCDs within each GMA meet every 5 years to set DFCs for each aquifer over the next 50+ years. TWDB then uses the GAM or best available tool to estimate the MAG for each aquifer consistent with the DFC. The MAG is then used to define the groundwater availability in each RWPA for developing the State Water Plan. GCDs are required to manage their aquifers to achieve their adopted DFCs.

## Conversions

**Flow** 100 gal. per min.
161 acre-feet/yr.
3,428 bbl/day

**Area** 1 square mile
640 acres




*Groundwater Management Areas are labeled. Groundwater Conservation District boundaries are subject to change. Those shown include 97 confirmed and 3 unconfirmed districts.*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