

# Groundwater Classification System

## Purpose

The Texas Groundwater Protection Committee and its member agencies recognize that groundwater classification is an important tool to be used in the implementation of the groundwater policy contained in Section 26.401 of the Texas Water Code. Through classification, the groundwaters in the state can be categorized and protection or restoration measures can then be specified by member agencies according to the quality and present or potential use of the groundwater.

## Basis

Four classes are defined based on quality as determined by total dissolved solids content (see table below). The names and concentration ranges are based on traditional nomenclature associated with each class. Quality also determines usability, however, it is implicit in this classification that a water-bearing zone must be able to produce sufficient quantities of water to meet its intended use. The examples of use are intended to describe some of the common uses of these classes and are not meant to be exclusive of other uses which might arise due to unusual circumstances or application of new technology such as desalinization.

## Application

This groundwater classification system applies to all groundwaters in the state. In assigning a classification, the member agencies shall endeavor to use the natural quality of the groundwater that is unaffected by discharges of pollutants from human activities.

All usable and potentially usable groundwaters are subject to the same protection afforded the nondegradation policy goal of the Texas Water Code in Section 26.401. This section further states that nondegradation does not mean zero-contaminant discharge. Starting with this nondegradation policy goal, protection or restoration measures can be varied according to the response level set by the classification and guidance of this narrative so long as the following conditions are met:

- a) Current groundwater uses are not impaired;
- b) Potential groundwater uses are not impaired;
- c) A public health hazard is not created; and
- d) The quality of groundwater is restored if feasible.

In determining protection or restoration measures, the member agencies should consider all beneficial uses to which groundwater of a given quality can currently or potentially be put. Generally, the use of groundwater requiring the highest degree of protection or restoration is human consumption as drinking water. Protection for this use will also be protective of all other current or potential uses in almost all circumstances.

The suitability of a zone for use as a human drinking water supply can be based on the quality and quantity of the water it contains as well as its ability to produce enough water to meet its intended use. These considerations facilitate defining two response levels for purposes of assigning protection or restoration measures that are commensurate with the potential to impact human health and the environment.

- Level I response for the fresh, slightly saline and moderately saline classes should be based on the current or potential use as a human drinking water supply.
- Level II response for the very saline to brine class should be based on indirect exposure (i.e., by means other than drinking) or no human consumption.

## **Evaluations**

In specifying a protection or restoration measure, member agencies must apply best professional judgement on a case-by-case basis. Evaluations to be made include, but are not limited to, such factors as:

- yield,
- the availability of alternate sources of water,
- any background concentrations of naturally occurring constituents,
- the effects of constituents on usability,
- traditional and potential beneficial uses of the water,
- economic and technical feasibility of treatment, and
- projected needs for and types of impacts on these groundwaters.

In instances where there is a likelihood of hydrologic interconnection with resultant potential for contaminant movement from a given groundwater zone to a surface water body or other groundwater zones, protection and restoration measures for that zone should be determined by the quality and current and potential use of the receiving waters.

## **Additional**

This classification system is intended to be implemented by member agencies as integral part of their groundwater quality programs. In addition to its response setting function, the classification system can also serve as a common basis among the various programs to foster consistency. It can also be used as a mapping tool to delineate specific areas in need of more detailed groundwater quality management. Towards this end, the committee recognizes the important contributions of all agencies that compile such data and supports the continuing efforts to enhance the statewide database.

**Texas Groundwater Protection Committee  
Groundwater Classification System**

<b>CLASS</b>	<b>QUALITY</b>	<b>EXAMPLES OF USE</b>	<b>AGENCY RESPONSE</b>
Fresh	Zero to 1,000	Drinking and all other uses.	<p><b>Level I Response:</b></p> <p>Protection or restoration measures based on current use as a human drinking water supply.</p>
Slightly Saline	More than 1,000 to 3,000	Drinking if fresh water is unavailable, livestock watering, irrigation, industrial, mineral extraction, oil and gas production.	<p><b>Level I Response:</b></p> <p>Same as above.</p>
Moderately Saline	More than 3,000 to 10,000	Potential/future drinking and limited livestock watering and irrigation if fresh or slightly saline water is unavailable; industrial mineral extraction, oil and gas production.	<p><b>Level I Response:</b></p> <p>Same as above.</p>
Very Saline to Brine	More than 10,000	Mineral extraction, oil and gas production	<p><b>Level II Response:</b></p> <p>Protection or restoration measures based on indirect exposure or no human consumption.</p>