

Bacteria and Surface Water Quality Standards

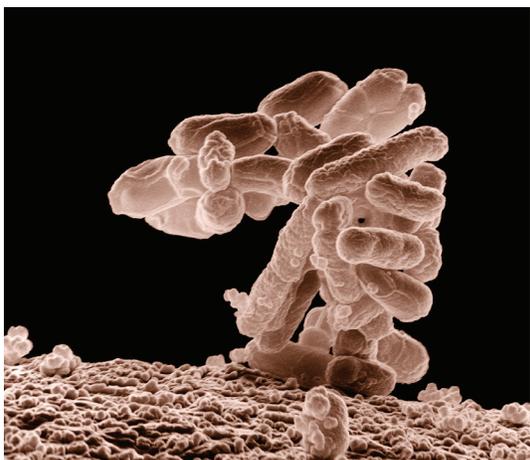
Section 303(d) of the Clean Water Act requires that each state set water quality standards to ensure all uses of a water body have the appropriate water quality. Some of those uses include aquatic life, drinking water, recreation and other general uses. Standards are also used to assess water quality from permitted dischargers such as Municipal Separate Storm Sewer Systems (MS4s) and Wastewater Treatment Plants (WWTPs). If water bodies do not meet water quality standards, as evidenced by monitoring results, then water bodies are placed on the Texas Integrated Report for Clean Water Act Sections 305(b) and 303(d) list.

To assess recreational uses and uses associated with oyster harvesting, several types of bacteria are used as indicators of harmful pathogens, which are disease-causing microorganisms. Those indicators are *E. coli* (for freshwater), *Enterococcus* (for marine waters), and Fecal Coliform (for oyster waters). Different criteria are set for each of the indicator organisms depending on the use being assessed; these are shown in Table 1.

In the Texas Surface Water Quality Standards, four categories of recreational use are based on the type and frequency of recreation as described below. All waterbodies are presumed to have a Primary Contact Recreation Use unless proven otherwise through a recreational use attainability analysis.

- **Primary Contact Recreation** refers to activities such as swimming, water skiing, diving, and surfing.
- A water body may be classified as having a **Secondary Contact Recreation** (1 or 2) use if its physical characteristics limit the potential for aquatic recreation and/or if the water body is never used for Primary Contact Recreation for any other reason. Fishing, canoeing, kayaking, rafting and motor boating are examples of activities that are described as Secondary Contact Recreation. Secondary Contact Recreation activities are the same for both classifications under this use, 1 & 2; however, a Secondary Contact Recreation 2 classification is used when the activities occur less frequently.
- A water body may be classified as supporting only **Noncontact Recreation** if conditions exist in the water body that make it unsafe to engage in the activities described above as contact recreation. This may include physical characteristics, such treacherous rapids, water falls or uses that preclude recreational activities, such as ship or barge traffic. Activities that do not involve a significant risk of water ingestion, such as birding, hiking, and biking along the shoreline are consistent with Noncontact Recreation uses.

To remove a water body from Texas' 303(d) list of impaired water bodies, additional data must be collected illustrating improved water quality or action must be taken to bring the water body into compliance of the Texas Surface Water Quality Standards (TAC Title 30 Chapter 307). Standards can be located at www.tceq.texas.gov/waterquality/standards/2010standards.html.



Similar to recreational uses, water bodies that support oyster harvesting, called oyster waters, have four classifications which determine their use: prohibited areas, restricted areas, conditionally approved areas, and approved areas.

- **Prohibited Areas** are closed to the harvesting of shellfish. All areas that are not specifically listed as restricted or approved areas fall within this category. These areas are also known as Prohibited Harvest Zones, or PHZs.
- **Restricted Areas** are areas where oyster harvesting is allowed, but not for direct marketing. These areas are also known as Restricted Harvest Zones, or RHZs. Oysters harvested in RHZs must undergo “cleansing” (i.e., must be transported to, and allowed to live in, a clean environment for a period of time) prior to marketing.
- **Conditionally Approved Areas** are open to harvesting during periods of limited rainfall. During periods of significant rainfall, these areas may be temporarily closed.
- **Approved Areas** are open to oyster harvesting.

For more information on oyster waters and other seafood harvesting and consumption restrictions, advisories, bans, PHZs, RHZs, and rescinded orders, visit the Texas Department of State Health Services’ seafood and aquatic life group website at: www.dshs.state.tx.us/seafood/classification.shtm

Table 1. Numeric Criteria of bacteria for designated uses of water bodies

Parameter (indicator organism)	Use	Numeric Criteria (geometric mean) ^{a,b}	Numeric Criteria (single sample max) ^a
<i>E. coli</i> (Freshwater)	Primary Contact Recreation	126	N/A
	Secondary Contact Recreation I	630	N/A
	Secondary Contact Recreation II	1,030	N/A
	Noncontact Recreation	2,060	N/A
Enterococci (Marine Waters)	Primary Contact Recreation	35	89
	Secondary Contact Recreation I	175	N/A
	Noncontact Recreation	350	N/A
Fecal Coliform (Highly Saline Waters) ^c	Contact Recreation	200	400
	Secondary Contact Recreation I & II	1,000	N/A
	Noncontact Recreation	2,000	N/A
Fecal Coliform	Oyster Harvesting Waters	14 ^b	N/A

^aAll values are in colony forming units per 100 ml

^bThe standard for Fecal Coliform in Oyster Harvesting Waters is based on the median sample number, not the geometric mean

^cFecal Coliform is no longer used for contact recreation except in high salinity waters

