



ASSESSING BACTERIA LEVELS AT SAN DIEGO REGION BEACHES

MONITORING & ASSESSMENT

SAN DIEGO WATER BOARD

February 2018

Are ecosystems healthy

IS IT SAFE TO SWIM

Are fish and shellfish safe to eat

Is water safe to drink

This status sheet reports on current water quality conditions for beaches in the San Diego Region in terms of their ability to support water-contact recreation, such as swimming or surfing. Numeric bacteria water quality standards are commonly used to determine if waters are safe for human contact. The San Diego Water Board uses fecal indicator bacteria such as *Enterococcus* spp. (*Enterococcus*) to evaluate if waters are safe for human contact. *Enterococcus* are an indicator for various pathogens commonly associated with sewage (or human fecal matter). The San Diego Water Board evaluates *Enterococcus* levels in two ways:

- * the Geometric Mean (GM), to assess long-term safety
- * the Statistical Threshold Value (STV), which includes short-term spikes

When *Enterococcus* levels in water exceed standards deemed safe for human water contact, the potential risk of contracting a water-borne illness increases.

PART I. GENERAL CONDITIONS

We evaluated Beach Watch Program data (i.e., *Enterococcus* levels) from May 2012 to April 2017 to determine if concentrations exceeded the water quality standards. As *Enterococcus* concentrations increase in the waters, people are more likely to get sick from water contact. The data were assessed under “dry” condition (zero to “< 0.1 inch” rain intensity) for “summer-dry” (May through October) and “winter-dry” (November through April the following year) periods, and “wet” (storm day of “≥ 0.1 inch” rain and the following three days) conditions, over evaluation periods of a month, a quarter, or a half year. Results were classified into three categories: “Clean,” “Fail (to meet) Standard,” and “Not Enough Samples.” The percentages of clean stations are greater in summer than in winter (see “Evaluation by quarter”), and in dry weather than in wet weather, suggesting adverse impacts from storm water runoff on beach water quality during/following rain events. In wet weather, more than half of the stations across the region were not adequately sampled and so their status cannot be assessed.

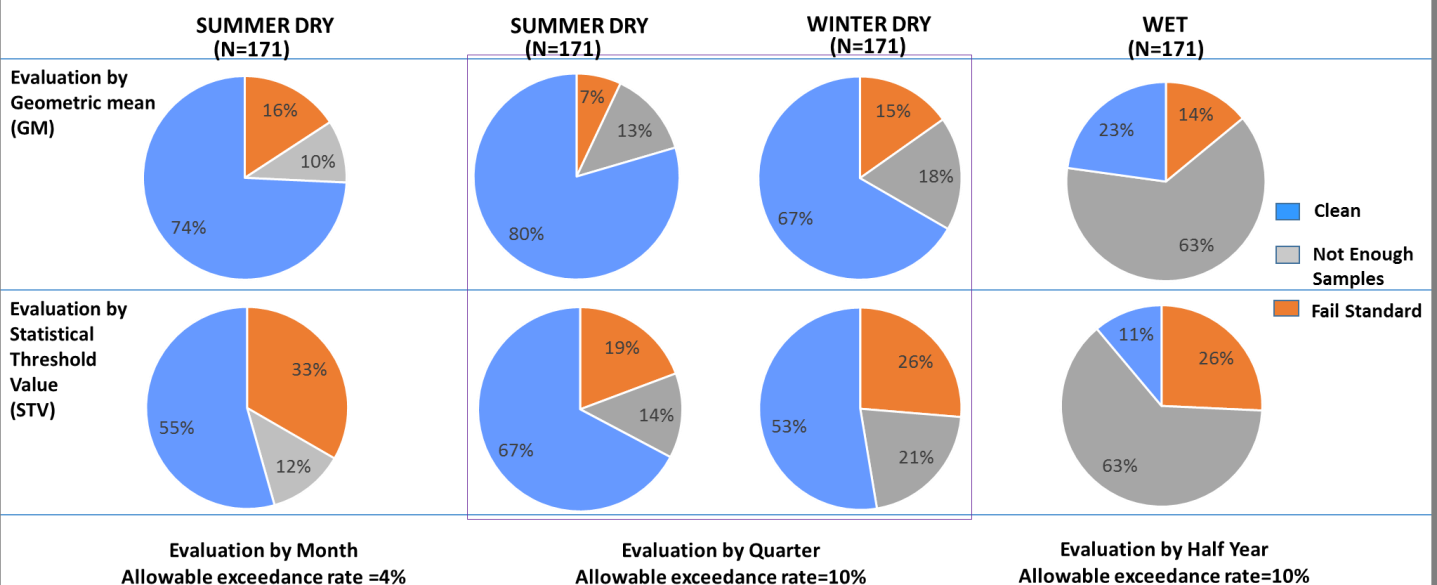
PRACTICAL VISION PROJECT I — Assessing Key Beneficial Uses in Key Areas

The San Diego Water Board strives to focus efforts on what is most important for protecting and restoring the health of regional waters. To support its [Practical Vision](#) (2013), the Board identified key beneficial uses of the region’s waters and the key areas for those uses ([Resolution R9-2017-0030](#)). This status sheet represents an initial assessment of conditions for one of the key uses. Focused assessments on key uses of waters will help the Board set region-wide strategic priorities and measurable goals for protecting and restoring the integrity of waters through regulatory and collaborative efforts.

Figure 1. Five-Year Beach Water Quality Conditions across the San Diego Region (May 2012- April 2017)

Under Dry Weather, Water Quality at Most Beaches Support Water Contact Recreation Activities

PERCENTAGE OF STATIONS



PART II. EFFECTS OF BEACH CHARACTERISTICS

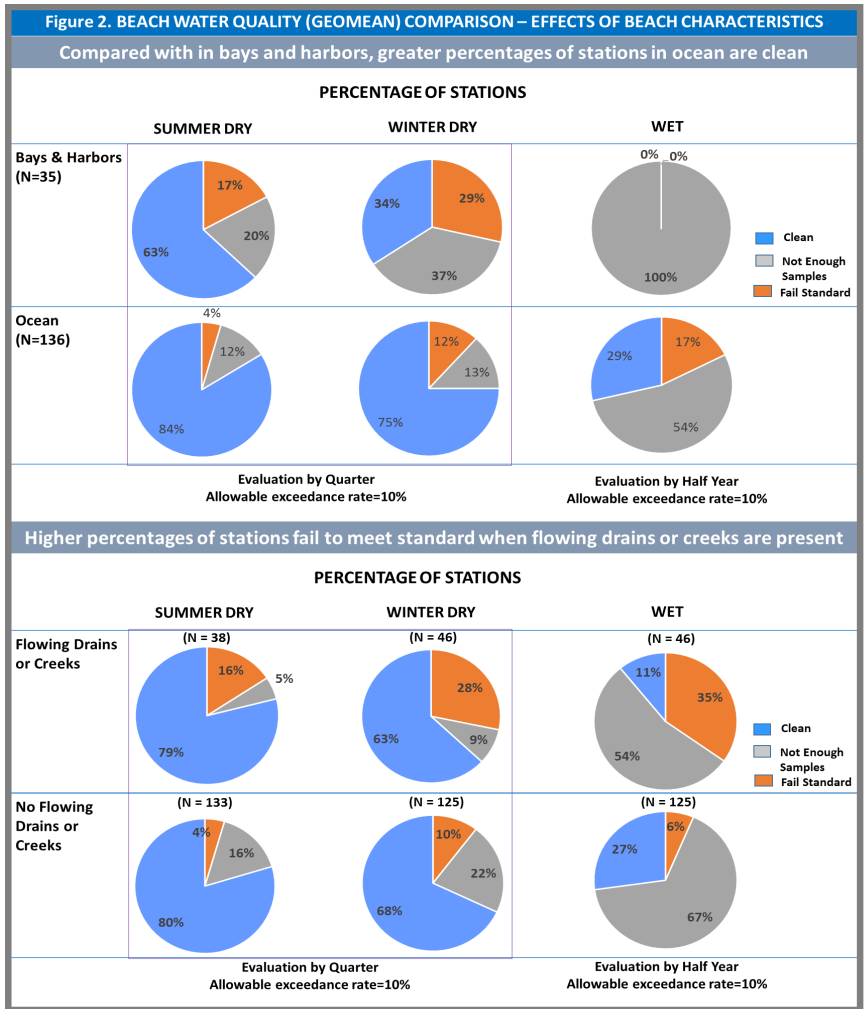
Many factors can affect beach water quality for water contact. These include

- * Beach Location (bays and harbors vs. ocean)
- * Presence of flowing storm drains or creeks

Figure 2 summarizes the status of beach water quality stratified by these factors. After big rain events, stations in bays were generally not sampled and hence their status could not be assessed accurately. In dry weather, more stations in open ocean showed good water quality than in bays and harbors. In small rain events of winter, stormwater runoff carrying pollutants from urbanized areas further impact water quality in bays, increasing the percentages of “fail (to meet) standard” stations while reducing “clean” stations from 63 to 34 percent.

Higher percentages of beach stations near flowing drains “failed (to meet) standard” in both dry and wet weather (Figure 2, bottom panel), suggesting negative impacts of surface water runoff on beach water quality. This supports the use of the standard warning to avoid water contact during and 72 hours following rain events until stormwater management can deliver clean runoff to beaches and bays.

However, not all stations near flowing drains have bad water quality. For instance, Station EN-010 (near Poinsettia Lane) at South Carlsbad State Beach met water quality standards under all assessed conditions.



In the San Diego Region, the greatest percentage of clean stations were observed along the shoreline between the Cities of Oceanside and Del Mar (Figure 3, Table insert).

