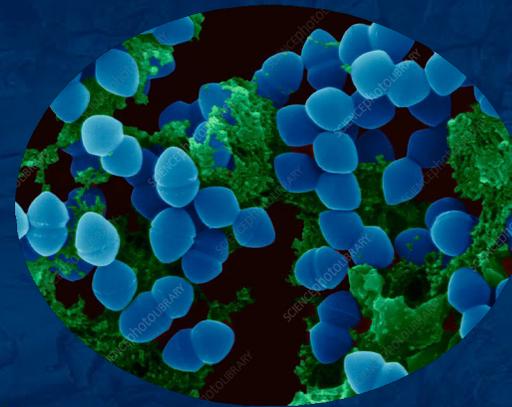


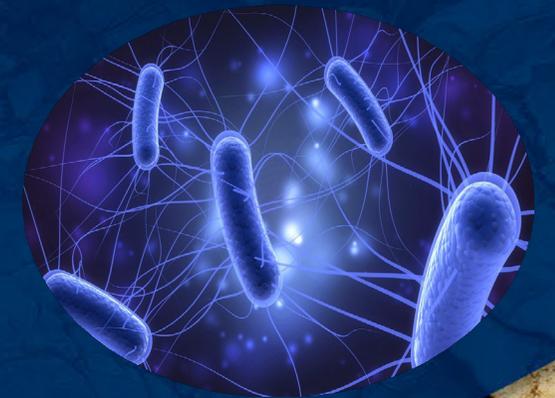
# Methods of Setting Targets for Bacteria in TMDLs in the Los Angeles Region

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*Enterococcus*



*E. coli*



# Outline

- Goal of the Workshop
- History of Bacteria Objectives in the Los Angeles Region
- Review Reference System/Antidegradation Approach
- Review U.S. EPA 2012 Recreational Criteria
- Key Issues from Public Comments
- Challenges and Opportunities

# Resolution R22-002 - Los Cerritos Channel and Estuary, Alamitos Bay, and Colorado Lagoon Bacteria TMDL

*The Executive Officer is directed to hold a public workshop within six months following the adoption of this TMDL to solicit additional input on the approach for implementing the statewide Bacteria Provisions through TMDLs in the region. Based on additional information, including the input received at the workshop, the Los Angeles Water Board directs the Executive Officer to consider whether revisions to the TMDL approach are appropriate. If so, the Los Angeles Water Board directs the Executive Officer to develop and present such recommendations.*

# Fecal Indicator Bacteria Water Quality Objectives (WQOs) in the Los Angeles Region

- 2001: Los Angeles Region - bacteria WQOs updated to include both single sample maximum (SSM) and geometric mean (GM) objectives
- 2002: Los Angeles Region – added bacteria implementation provisions *reference system/antidegradation*
- 2010: Los Angeles Region removed fecal coliform objectives for freshwaters
- 2012: US EPA - updated Recreational Water Quality Criteria
- 2018: State Water Board - new statewide bacteria WQOs and implementation options
- 2020: Los Angeles Region - bacteria WQOs were amended to align with the WQOs contained in the Statewide Bacteria Provisions

# Bacteria TMDLs in the Los Angeles Region

- 2002
  - Santa Monica Bay Beaches Dry Weather/Wet Weather
- 2003
  - Marina del Rey Harbor Mothers' Beach and Back Basins
- 2004
  - Los Angeles Harbor (Inner Cabrillo Beach and Main Ship Channel)
  - Malibu Creek and Lagoon
- 2006
  - Ballona Creek, Ballona Estuary, and Sepulveda Channel
- 2007
  - Harbor Beaches of Ventura County (Kiddie Beach and Hobie Beach)
- 2010
  - Santa Clara River
  - Los Angeles River
- 2015
  - San Gabriel River, Estuary, and its Tributaries
- 2022
  - Los Cerritos Channel and Estuary, Alamitos Bay, and Colorado Lagoon

# Reference System/Antidegradation

- A reference system - an area not impacted by human activities
- A certain frequency of exceedance of the single sample objectives permitted on the basis of the observed exceedance frequency in the selected reference system
- Recognizes that there are natural sources of bacteria, which may cause or contribute to exceedances of the single sample objectives
- Ensures that bacteriological water quality is at least as good as that of a reference system and that no degradation of existing bacteriological water quality is permitted

# US EPA 2012 Recreational Water Quality Criteria

- Includes studies from the 1986 guidance and more recent - including the National Epidemiological and Environmental Assessment of Recreational Water (NEEAR)
- Includes enterococci and *Escherichia coli* (*E. coli*) as indicators of fecal contamination for fresh water and enterococci for marine water
- Includes both a geometric mean (GM) and a statistical threshold value (STV)
- Alternative criteria? site-specific basis, epidemiological studies and quantitative microbial risk assessment (QMRA).
- Methods necessary to distinguish between human and non-human sources? under development

# Recreation Water Quality Standards

## Objectives for Inland Freshwater and Inland Saline Waters

Applicable Waters	Objective Elements	Estimated Illness Rate (NGI): 32/1,000	
		Magnitude	
	Indicator	6-week GM	STV
All waters where the salinity is equal to or less than 1 ppt 95 percent or more of the time	<i>E. coli</i>	100cfu/100mL	320cfu/100mL
All waters where the salinity is greater than 1 ppt more than 5 percent of the time	Enterococci	30cfu/100mL	110cfu/100mL

### Geometric Mean (GM)

- Calculated every six-weeks
- Rolling

### Statistical Threshold Value (STV)

- Calculated every calendar month
- Static
- Shall not be exceeded by more than 10 percent of samples collected

# Recreation Water Quality Standards

## Objectives for Ocean Waters

### Enterococci

Indicator	Estimated Illness Rate (NGI): 32/1,000	
	Magnitude	
	6-week GM	STV
Enterococci	30cfu/100mL	110cfu/100mL

#### Geometric Mean

- Calculated every six-weeks
- Rolling

#### Statistical Threshold Value

- Calculated every calendar month
- Static
- Shall not be exceeded by more than 10 percent of samples collected

### Fecal Coliform

Indicator	Magnitude	
	30-day GM	SSM
Fecal Coliform	200/100mL	400/100mL

#### Geometric Mean

- Calculated every 30 days using five most recent samples

#### Statistical Sample Maximum

- The maximum value not to be exceeded in any single sample

# Los Cerritos Channel and Estuary, Alamitos Bay, and Colorado Lagoon Bacteria TMDL

- Adopted March 10, 2022
- No reference system/antidegradation approach
  - ***No single sample maximum anymore***

# Los Cerritos Channel and Estuary, Alamitos Bay, and Colorado Lagoon bacteria TMDL Reference System/Antidegradation Approach

## Comment:

- Use the reference system/antidegradation approach and allow geometric mean and STV exceedances

## Response:

- Reference System/Antidegradation Approach incompatible with the STV
  - STV already includes a 10% allowable exceedance rate per month
- Geometric mean exceedances are not allowed in Reference System/Antidegradation Approach

# Los Cerritos Channel and Estuary, Alamitos Bay, and Colorado Lagoon bacteria TMDL

## Demonstration of an illness rate as a demonstration of compliance with the TMDL

### Comment:

- If the MS4 permittees conduct a study which demonstrates that an illness rate of 32 per 1000 water contact recreators or less could be achieved in the receiving water, then that would be sufficient to demonstrate compliance with the TMDL.

### Response:

- The revision proposed by LA County and LACFCD is premature and lacks sufficient implementation detail to be considered at this time

# Los Cerritos Channel and Estuary, Alamitos Bay, and Colorado Lagoon Bacteria TMDL Site Specific Criteria

- Quantitative Microbial Risk Assessments
  - QMRA is a tool for estimating human health risks from exposure to pathogens from different sources or via different routes
  - QMRA could be compared to 32 illness per thousand
- Other methods, eg epidemiological studies

# Los Cerritos Channel and Estuary, Alamitos Bay, and Colorado Lagoon bacteria TMDL Can Standards be Changed?

- Yes, rule-making to amend Basin Plan or statewide water quality control plan
- multi-year effort
  - CEQA-equivalent analysis
  - consultations with California Tribes
  - vetting with stakeholders and other agencies
  - careful consideration of public comments



# Challenges & Opportunities

## Challenge

- Protecting beaches, waterbodies now
- Taking advantage of the latest science so objectives ensure best protection of beneficial uses

## Opportunity

- Momentum from State Water Board Bacteria Summit
- Stakeholder ideas and priorities
- Implementation provisions of the USEPA 2012 guidance, the Statewide Bacteria Provisions, the Basin Plan

# Thank you!

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# Questions & Comments

