



Morro Bay National Estuary Program's  
Implementation Effectiveness Program  
For the Morro Bay Watershed

**Stormwater Monitoring Report  
2015**

Loan Agreement Number  
12-810-550  
Task 3.4

Submitted by  
Morro Bay National Estuary Program  
601 Embarcadero, Suite 11  
Morro Bay, CA 93442

September 22, 2015

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## Executive Summary

The Morro Bay National Estuary Program (Estuary Program) conducts monitoring in the Morro Bay estuary and watershed to gather data to track long-term ambient trends, to study project effectiveness, and to guide future implementation efforts. Program-collected data also supports the stormwater management efforts of local municipalities and agencies. As part of this report, data was compiled for eight bay sites and for three creek sites, two of which are tidally-influenced.

- Six bay sites had little to no indication of bacterial contamination compared to safe swimming levels: Coleman Beach, Tidelands Park, Windy Cove and State Park Marina in Morro Bay; and Cuesta Inlet and Sharks Inlet in Los Osos. When compared to the stricter standards for the protection of shellfish growing areas, all sites had some exceedances of *E. coli*, varying from 7 to 31% of the total *E. coli* samples, a slight increase from last year. When compared to the EPA's Recreational Water Quality Criteria for enterococcus, only Coleman Beach had an exceedance during the sampling period (one of the 12 samples).
- Two sites continue to have elevated bacteria levels: Baywood Pier and Pasadena Point, both in Los Osos. Historical bacteria levels are in line with the current analysis, with 17% of the enterococcus samples exceeding the regulatory standard for safe swimming at both Baywood Pier and Pasadena Point. Baywood Pier did decrease from last year (25%).
- On Chorro Creek at Twin Bridges, no samples exceeded the safe swimming level for *E. coli*.
- There were two sites monitored this year on Los Osos Creek: GS1 and SYB. Neither site exceeded the safe swimming level for *E. coli*, but one enterococcus sample at SYB exceeded the standard.

## Introduction

The Morro Bay National Estuary Program (Estuary Program) works to restore, understand and educate to help protect and preserve the Morro Bay estuary and its watershed. To that end, the program maintains a Monitoring Program which trains and coordinates staff and volunteers to conduct different types of monitoring in the estuary and the lands that drain into it.

The Estuary Program is a non-profit organization that is non-regulatory in nature. The monitoring data collected has three primary goals: to provide a long-term ambient data set; to provide data on the effectiveness of various implementation efforts; and to help identify potential problem areas that might be addressed by future projects.

Stormwater management is a regulatory area that is currently in flux. Local municipalities are working to effectively manage stormwater with limited budgets and resources. An area where the Estuary Program can contribute to this effort is through monitoring. Estuary Program data is collected monthly at sites throughout the bay and at the creek mouths. The city of Morro Bay

collects data every other month from bay receiving waters. The county monitoring plan includes run-off from county-run facilities throughout the watershed. Estuary Program data, in combination with data from municipalities, provides a more well-rounded picture of water quality.

In addition to supporting local stormwater management efforts, Estuary Program data also supports the following efforts:

- Assessment of the Morro Bay Pathogen Total Maximum Daily Load (TMDL)
- Updating of the 303(d) list of impaired waterbodies
- Assessment of the TMDL Wasteload Allocation Attainment Plan for San Luis Obispo County
- Assessment of the TMDL Wasteload Allocation Attainment Plan for the City of Morro Bay
- Tracking of stormwater management efforts by the Los Osos Community Services District (LOCSO)
- Regulation of shellfish growing waters by the California Department of Public Health (CDPH)
- Assessment of safety of waters for swimming by the County of San Luis Obispo Environmental Health Services

The Estuary Program conducts bacteria monitoring at additional sites throughout the watershed. Information on these additional sites was not included in this report since they are outside of the jurisdiction of the municipalities responsible for stormwater management. Details on these sites and results will be available in the Estuary Program's *Data Summary Report 2015*, which will be issued in January 2016 and available on the Estuary Program website.

## Monitoring Background

The Estuary Program's Monitoring Program has been conducting regular on-going monitoring throughout the estuary and watershed for over ten years. Program volunteers conduct on-going monitoring of water quality in the bay and creeks. Bacteria monitoring in Morro Bay and the watershed has been a component of this effort. Program staff train volunteers to collect samples and process them for various bacterial indicators.

Analysis methods and detection limits for the various indicators are presented in the following table.

Table 1. Bacteria Indicators and Frequency of Monitoring for Estuary Program Effort

Analyte	Type of Water	Frequency	Organization Conducting Analysis	Analytical Method	Detection Limit for Reporting	Sample Hold Times
Total coliform	Freshwater (creeks)	Monthly	MBNEP volunteers	IDEXX, Colilert-18	2 MPN/100 mL	8 hours preferred, 24 hours is acceptable
<i>E. coli</i>	Freshwater (creeks)	Monthly	MBNEP volunteers	IDEXX, Colilert-18	2 MPN/100 mL	8 hours preferred, 24 hours is acceptable
	Marine water (bay and tidally-influenced creeks)	Monthly	MBNEP volunteers	IDEXX, Colilert-18	2 MPN/100 mL	8 hours preferred, 24 hours is acceptable
Enterococcus	Marine water (bay and tidally-influenced creeks)	Monthly	MBNEP volunteers	IDEXX, Enterolert	2 MPN/100 mL	8 hours preferred, 24 hours is acceptable
Fecal coliform	Freshwater (creeks)	Monthly	SLO County Public Health Laboratory	Standard Method 9221 E.2.A-1	2 MPN/100 mL	24 hours
	Freshwater (creeks) during storm flows	When feasible	SLO County Public Health Laboratory	Standard Method 9221 E.2.A-1	2 MPN/100 mL	24 hours
	Marine water (bay)	Quarterly	SLO County Public Health Laboratory	Standard Method 9221 E.2.A-1	2 MPN/100 mL	24 hours

The majority of monitoring is conducted by Estuary Program volunteers. These volunteers typically have a background in science or laboratory work, although some do not. Volunteers are trained and coordinated by program staff. Volunteers undergo extensive training in sterile technique, sample collection technique, lab analysis methods, and sample result interpretation. Program staff oversee the operation of the lab space, which is housed in the Morro Bay Wastewater Treatment Plant laboratory. WWTP staff support the program by running the autoclave to provide sterile glassware and water for the analysis.

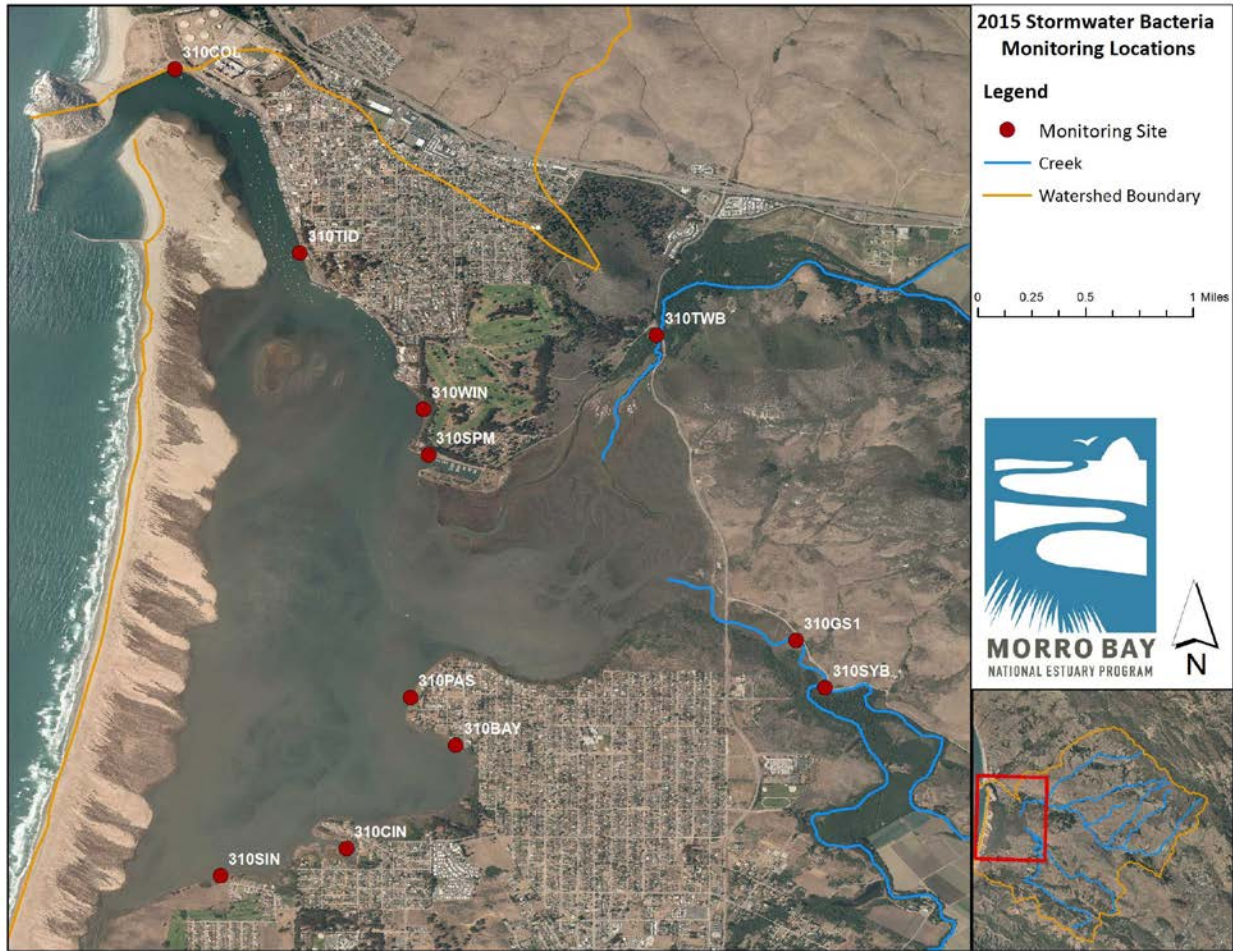
Protocols describing sample collection, analysis and interpretation are contained in the program's Quality Assurance Project Plan (QAPP). This plan follows the 24-section Surface Water Ambient Monitoring Program (SWAMP) format for QAPPs. It is updated on an annual basis and reviewed by the EPA's Office of Quality Assurance, as well as the QA Officer for the Central Coast Regional Water Quality Control Board (CCRWQCB). For full details of the monitoring protocols, please refer to the most recent version of the Morro Bay National Estuary Program's QAPP.

## **Monitoring Sites**

When selecting bacteria monitoring sites, several factors were taken into account:

- Locations of historical monitoring
- Locations of implementation projects
- Landowner permission
- Safe access
- Areas with recreational use such as swimming, wading and boating

The monitoring sites are illustrated on the following map.



The sites, analytes, monitoring frequency and entities making use of the data are summarized in the following table.

Table 2. Monitoring Site Details for Estuary Program Monitoring Effort

Site Code	Site Description	Analytes	Frequency of Monitoring	Stormwater Regulatory Jurisdiction	Entity Using Data
COL	Coleman Beach	<i>E. coli</i> , enterococcus	Monthly	City of Morro Bay	CDPH, city of Morro Bay, SLO County Public Works, SLO County Public Health Dept
TID	Tidelands Park	<i>E. coli</i> , enterococcus	Monthly	City of Morro Bay	CDPH, city of Morro Bay, SLO County Public Health Dept
		Fecal coliform	Quarterly	City of Morro Bay	CDPH
WIN	Windy Cove	<i>E. coli</i> , enterococcus	Monthly	City of Morro Bay	CDPH, city of Morro Bay, SLO County

Site Code	Site Description	Analytes	Frequency of Monitoring	Stormwater Regulatory Jurisdiction	Entity Using Data
					Public Health Dept
SPM	State Park Marina	<i>E. coli</i> , enterococcus	Monthly	City of Morro Bay	CDPH, city of Morro Bay, SLO County Public Health Dept
		Fecal coliform	Quarterly	City of Morro Bay	CDPH
PAS	Pasadena Point	<i>E. coli</i> , enterococcus	Monthly	County of SLO, LOCSO	CDPH, SLO County Public Works, SLO County Public Health Dept, LOCSO
		Fecal coliform	Quarterly	County of SLO, LOCSO	CDPH
BAY	Baywood Pier	<i>E. coli</i> , enterococcus	Monthly	County of SLO, LOCSO	CDPH, SLO County Public Works, SLO County Public Health Dept, LOCSO
CIN	Cuesta Inlet	<i>E. coli</i> , enterococcus	Monthly	County of SLO, LOCSO	SLO County Public Works, SLO County Public Health Dept, LOCSO
SIN	Sharks Inlet	<i>E. coli</i> , enterococcus	Monthly	State Parks	SLO County Public Works, SLO County Public Health Dept
TWB	Chorro Creek	<i>E. coli</i> , Total coliform	Monthly	State Parks	CDPH, city of Morro Bay, SLO County Public Works, SLO County Public Health Dept
		Fecal coliform	Monthly	State Parks	CDPH
	Chorro Creek during storm flows	Fecal coliform	As needed	State Parks	CDPH
SYB	Los Osos Creek	<i>E. coli</i> , enterococcus	Monthly	State Parks	CDPH, SLO County Public Works, SLO County Public Health Dept
GS1	Los Osos Creek	Fecal coliform	Monthly	State Parks	CDPH
	Los Osos Creek	Fecal coliform	As needed	State Parks	CDPH



Site Code	Site Description	Analytes	Frequency of Monitoring	Stormwater Regulatory Jurisdiction	Entity Using Data
	during storm flows				
	Los Osos Creek	<i>E. coli</i> , enterococcus	Monthly	State Parks	CDPH, SLO County Public Works, SLO County Public Health Dept

## Data Analysis

The data was compiled and compared to various applicable standards for receiving waters from sources including the CCRWQCB's Basin Plan, EPA guidance documents, and CDPH regulations for shellfish growing waters.

### Bay Data for *E. coli* and Enterococcus

Analysis was conducted for bay bacteria data for *E. coli* and enterococcus from July 2014 through June 2015. In this analysis, the data was compared to the following criteria:

- For *E. coli*, standards do not exist for marine waters. In previous analyses conducted with Estuary Program data, the results were compared to the REC-1 standard from the EPA's Ambient Water Quality Criteria for Bacteria Guidance, 1986. The current analysis uses EPA's 2012 Recreational Water Quality Criteria and its Recommendation 1 Statistical Threshold Value (STV) standard of 410 MPN/100 mL to determine how many samples exceeded this value. This is a freshwater criterion that has been adapted for marine waters, upon the advice of the CCRWQCB. The geomean of the data is compared to an EPA criterion of 126 MPN/100 mL.
- For enterococcus, the results are compared to an STV of 130 MPN/100 mL to determine how many samples exceeded this value. Again, this criterion is from EPA's 2012 Recreational Water Quality Criteria for freshwater. The geomean of the data is compared to an EPA criteria of 35 MPN/100 mL.

The percent of samples exceeding each of these STV criteria are presented in the following table.

Table 3. Geomean and Percent of Samples Exceeding STV Standards for *E. coli* and Enterococcus for July 2014 to June 2015

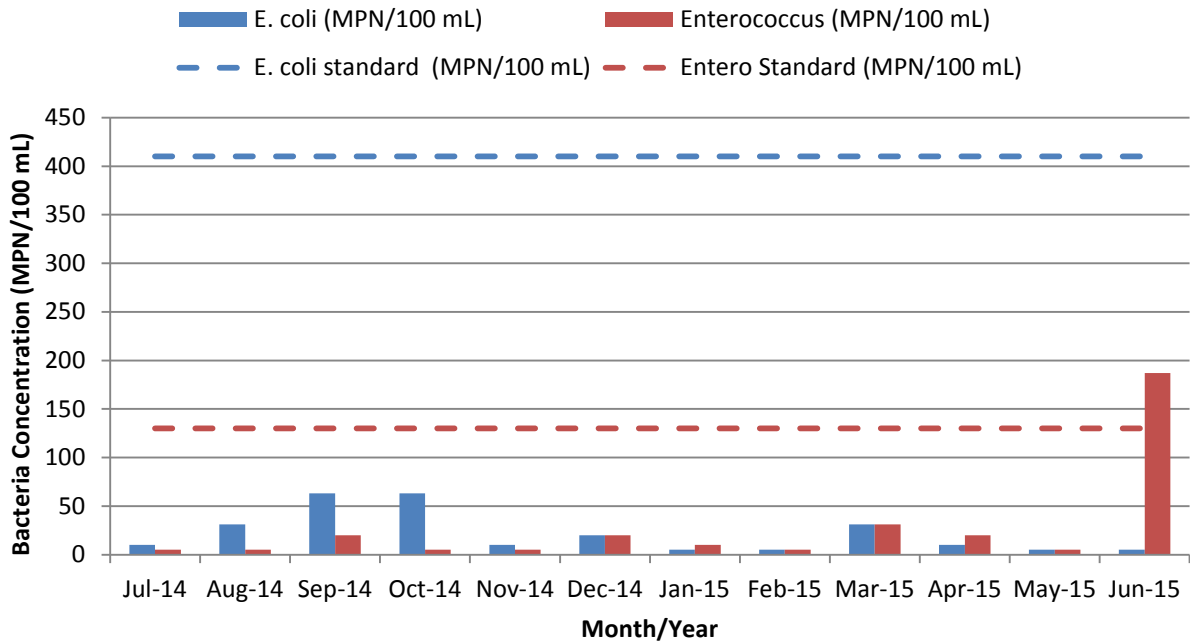
Site	<i>E. coli</i> Geomean (MPN/100 mL)	% <i>E. coli</i> samples >410 MPN/100 mL)	Enterococcus Geomean (MPN/100 mL)	% Enterococcus samples >130 MPN/100mL)
310COL	13.8	0%	11.8	8%
310TID	16.1	0%	7.5	0%
310WIN	38.0	0%	11.6	0%
310SPM	20.7	0%	8.7	0%
310PAS	28.1	0%	19.1	17%
310BAY	66.1	0%	22.8	17%
310CIN	14.4	0%	9.4	0%
310SIN	13.1	0%	9.1	0%

Site	<i>E. coli</i> Geomean (MPN/100 mL)	% <i>E. coli</i> samples >410 MPN/100 mL)	Enterococcus Geomean (MPN/100 mL)	% Enterococcus samples >130 MPN/100mL)
310COL	13.8	0%	11.8	8%
310TID	16.1	0%	7.5	0%
310WIN	38.0	0%	11.6	0%
310SPM	20.7	0%	8.7	0%
310PAS	28.1	0%	19.1	17%
310BAY	66.1	0%	22.8	17%
310CIN	14.4	0%	9.4	0%
310SIN	13.1	0%	9.1	0%

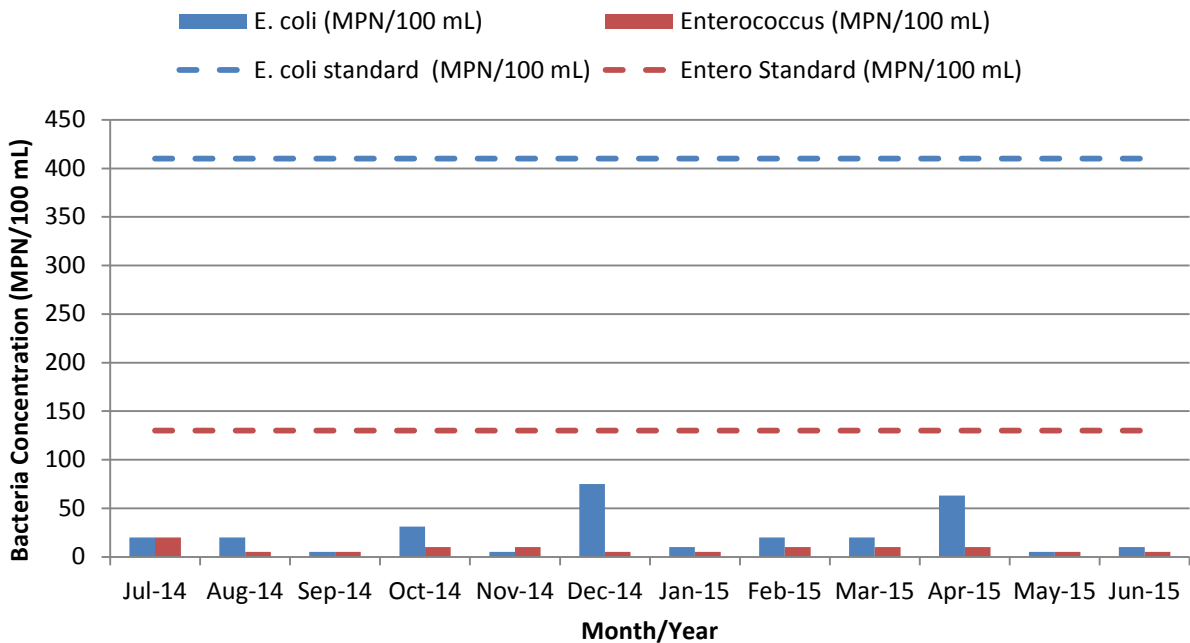
*Note: Generally, each site is monitored every month. However, due to logistics of scheduling and site access, some sites were not monitored for a given month and/or some sites were monitored twice for a given month. Please refer to the graphs below for the specific monitoring frequency for each site.*

The graphs of *E. coli* and enterococcus for each site are as follows. Each graph contains a dotted blue line indicating the regulatory standard of interest for the STV of *E. coli* and a dotted red line indicating the regulatory standard of interest for the STV of enterococcus.

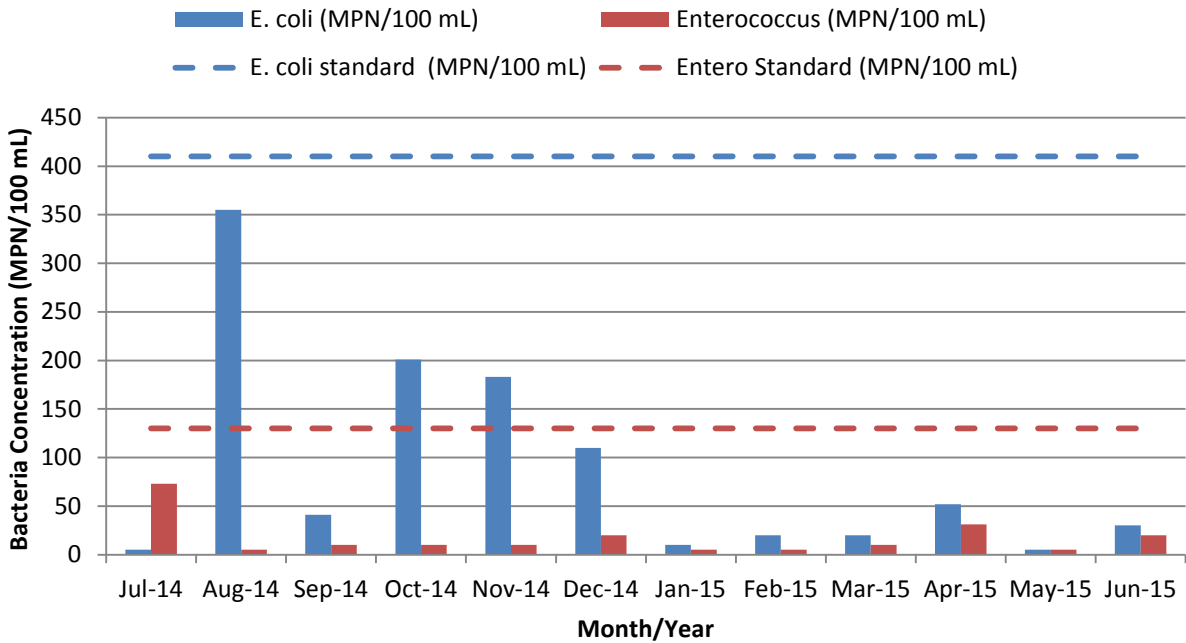
### Coleman Beach (310COL) Bacteria, July 2014 to June 2015



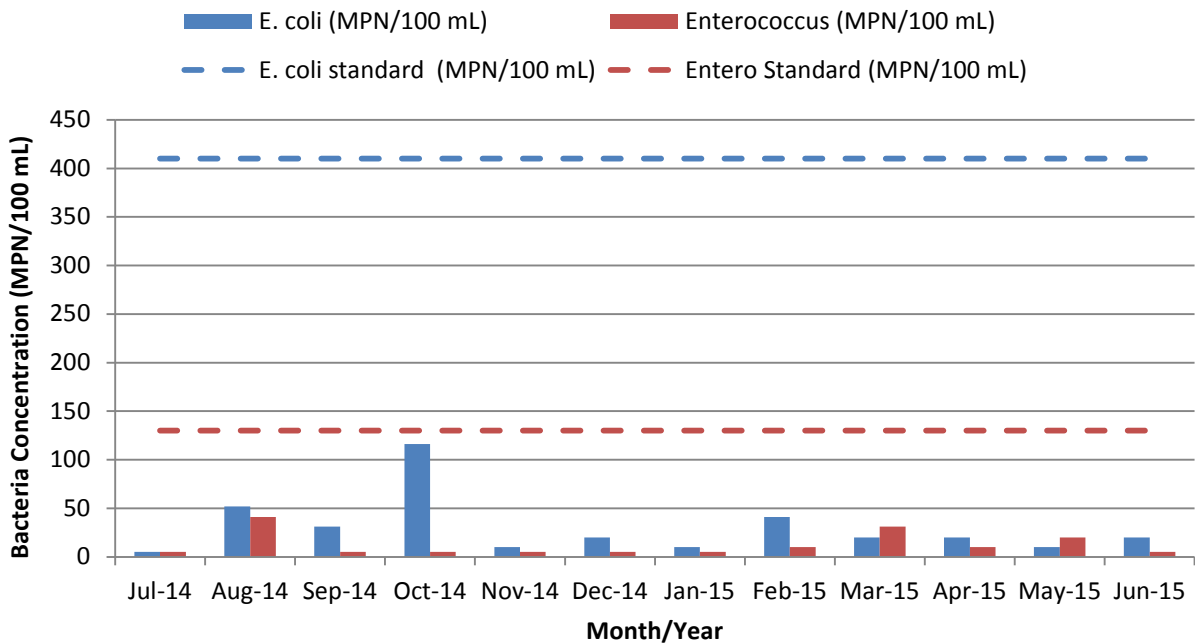
### Tidelands Park (310TID) Bacteria, July 2014 to June 2015



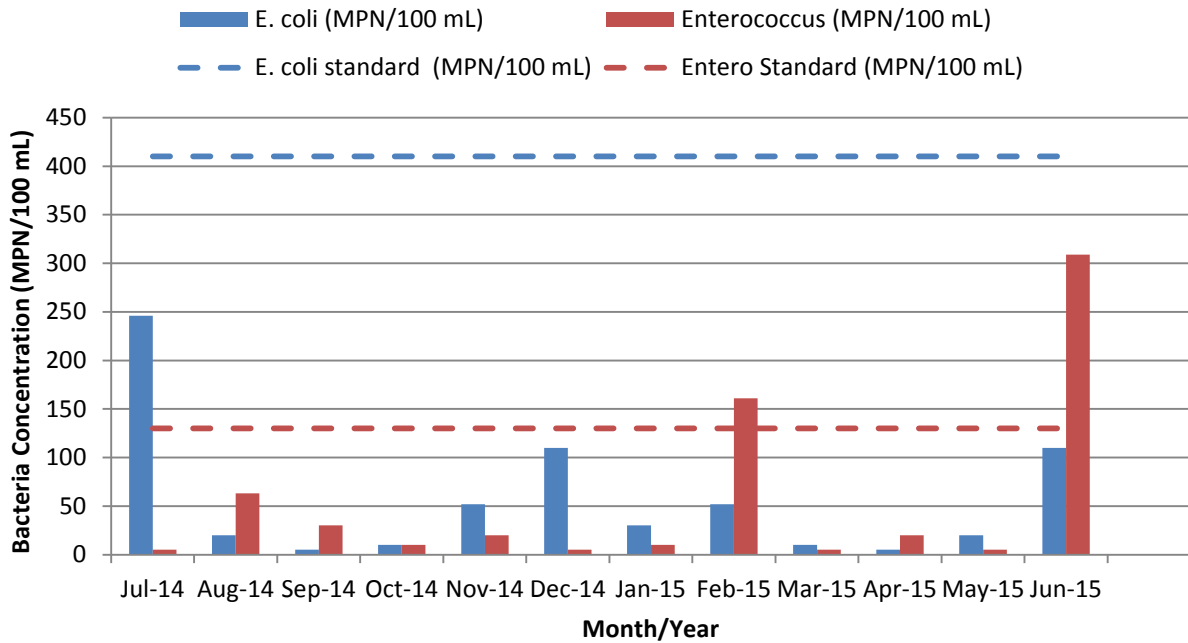
### Windy Cove (310WIN), July 2014 to June 2015



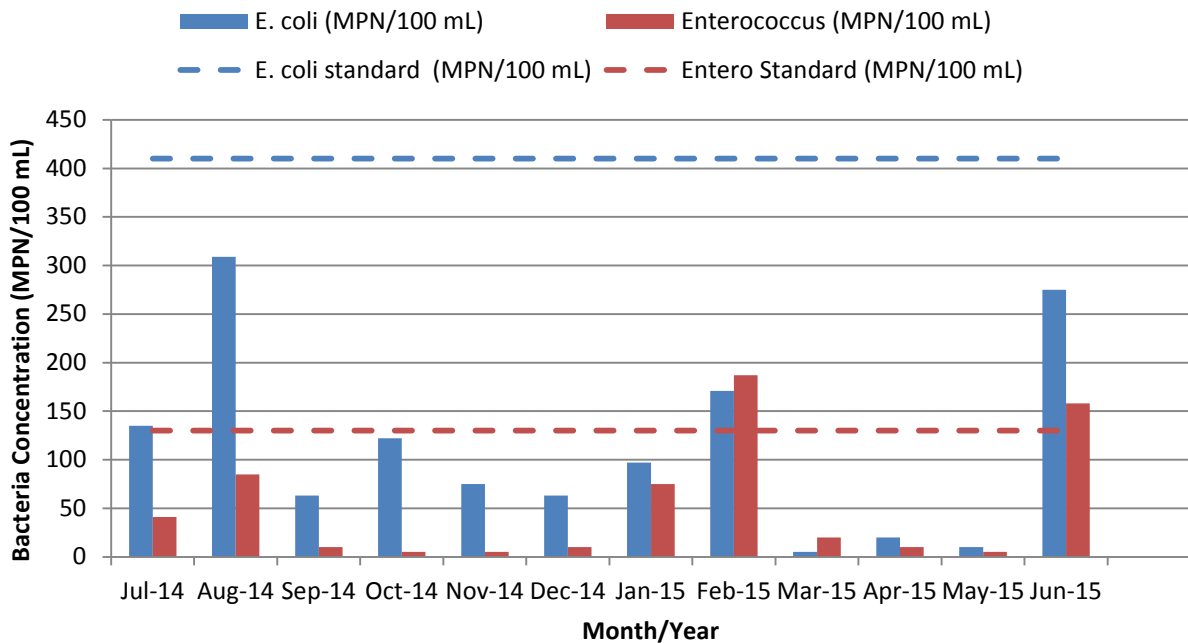
### State Park Marina (310SPM) Bacteria, July 2014 to June 2015

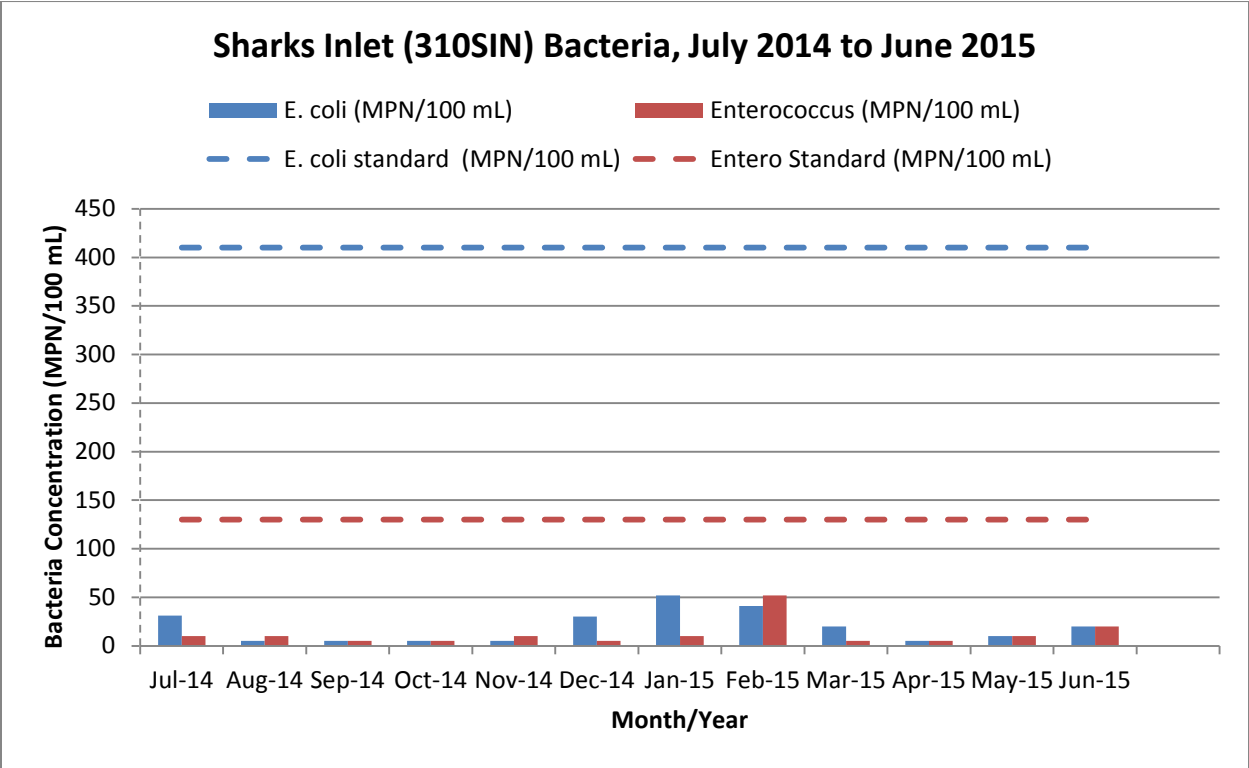
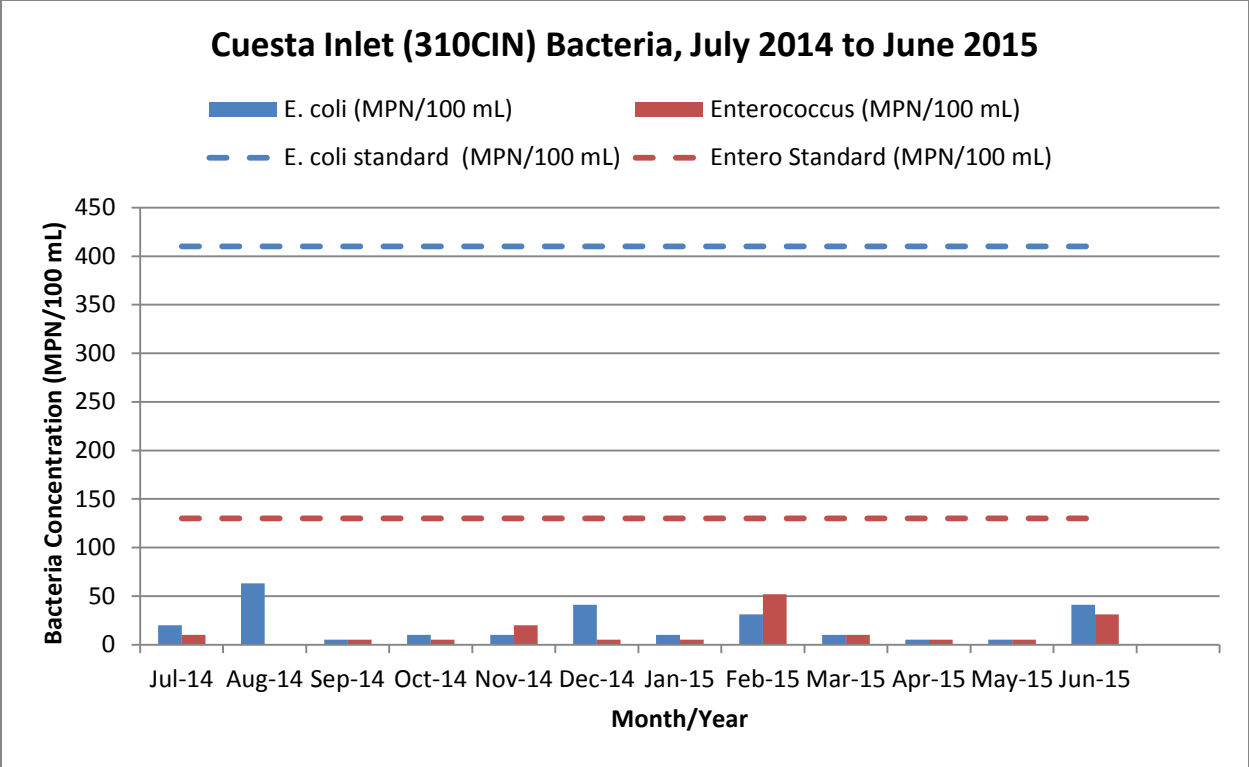


### Pasadena Point (310PAS) Bacteria, July 2014 to June 2015



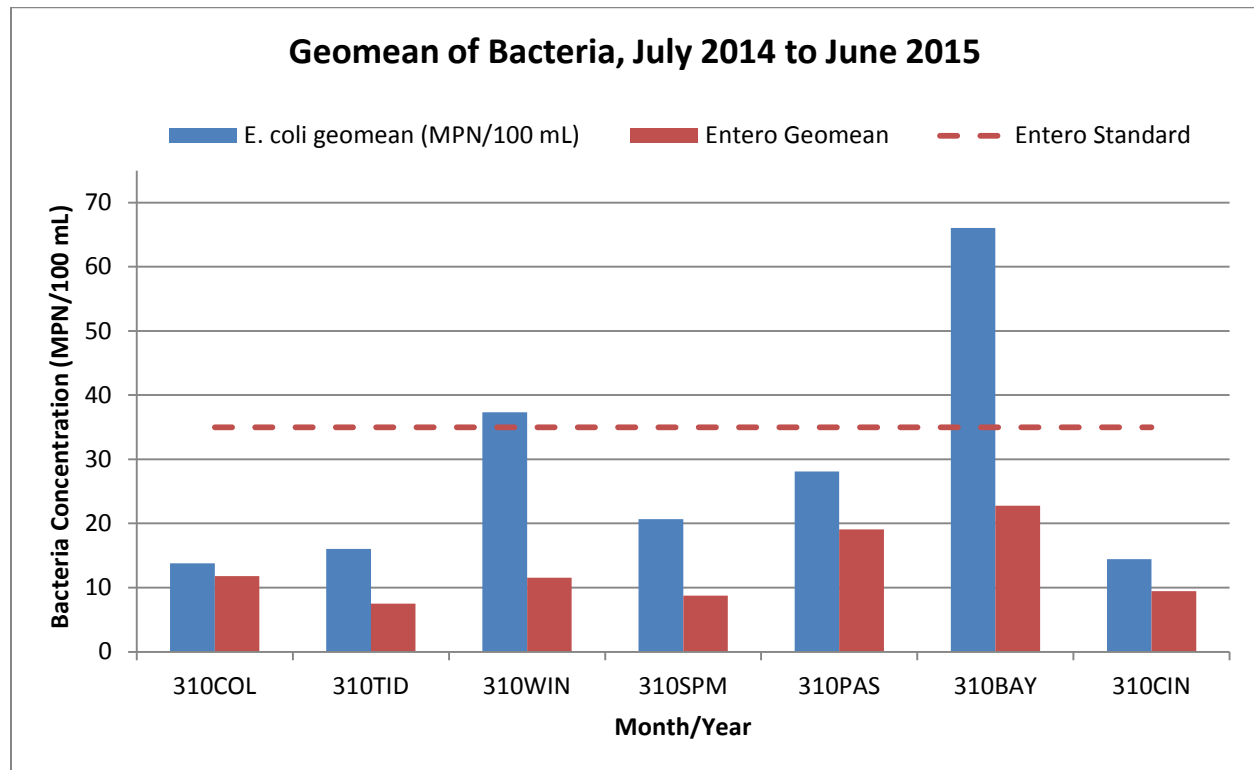
### Baywood Pier (310BAY) Bacteria, July 2014 to June 2015





The 2012 Recreational Water Quality Criteria also contains criterion for the geometric mean of the data. The Recommendation 1 criterion for enterococcus is 35 MPN/100 mL, and for *E. coli* in freshwater is 126 MPN/100 mL. The geometric mean value for each site for each indicator are

presented in the following graph. The dotted red line represents the target geomean for enterococcus. The target geomean for *E. coli* is not shown on the graph because none of the samples exceeded that standard.



Overall, no exceedances of either indicator occurred at Tidelands Park, State Park Marina, Cuesta Inlet or Sharks Inlet during the analyzed time period. Coleman Beach had one enterococcus result that exceeded the 126 MPN/100 mL *enterococcus* standard, and Windy Cove had three *E. coli* results that exceeded the 410 MPN/100 mL *E. coli* standard. More frequent exceedances for both indicators were seen at Baywood Pier and Pasadena Point.

### Creek Data for Total coliform, *E. coli* and Enterococcus

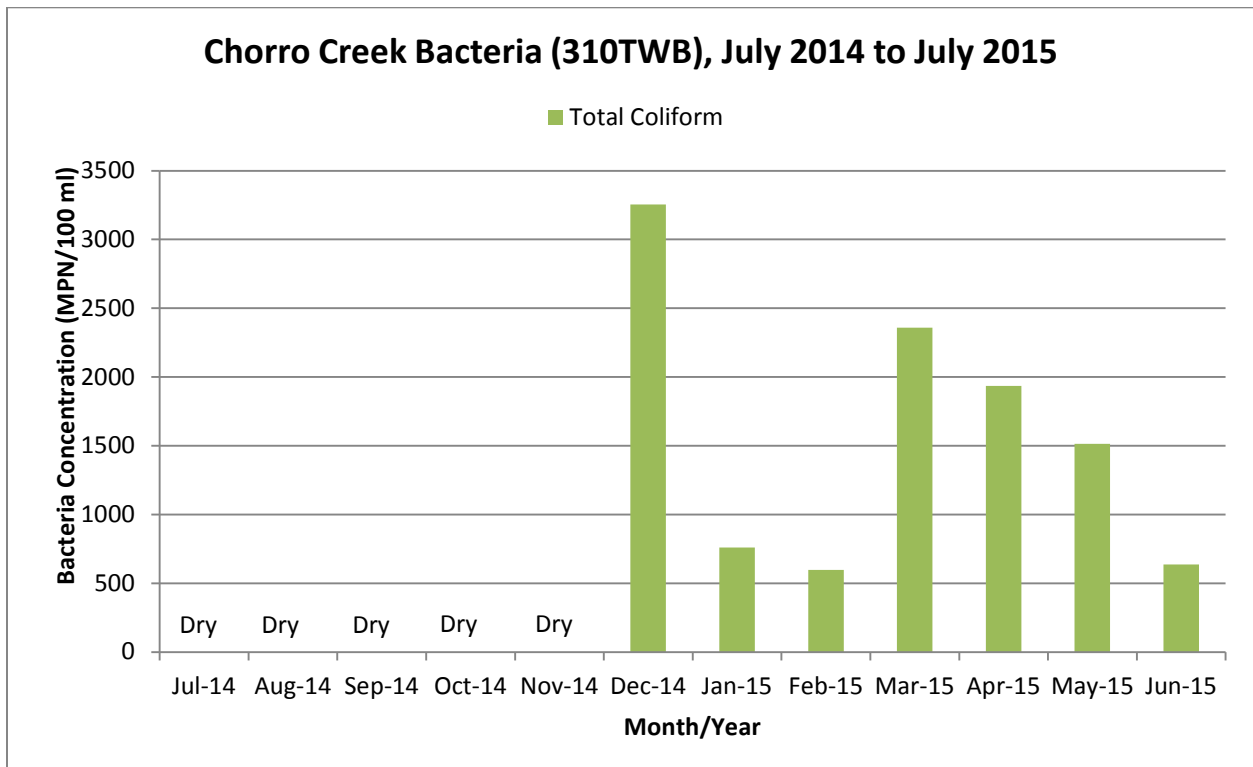
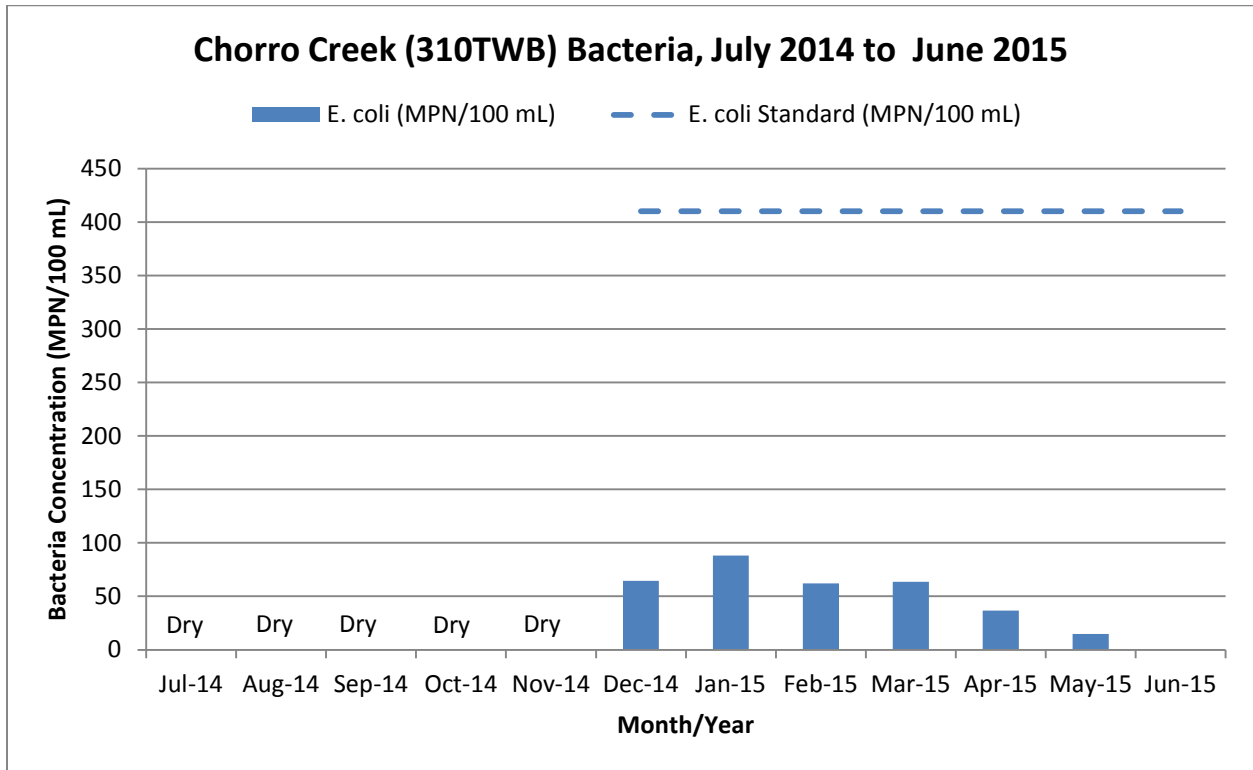
Analysis conducted for data from Chorro Creek at Twin Bridges (310TWB) and Los Osos Creek (310SYB and 310GS1) is included in this report.

#### Chorro Creek

Creek samples were analyzed for total coliform and *E. coli*. Although total coliform results are generally not of interest when assessing safety of waters for swimming, a graph of total coliform values is presented for 310TWB. The *E. coli* results are presented in the graphs with a dotted line indicating the Recommendation 1 STV standard of 410 MPN/100 mL.

310TWB only had surface flow from December 2014 to May 2015. The geomean of the *E. coli* data for July 2014 to June 2015 was 25.0 MPN/100 mL, which is well below the 126 MPN/100

mL geomean criteria set forth by EPA. The *E. coli* graph below contains monthly results compared to the relevant STV standard for *E. coli*. The EPA guidance does not contain a recommended value for total coliform.

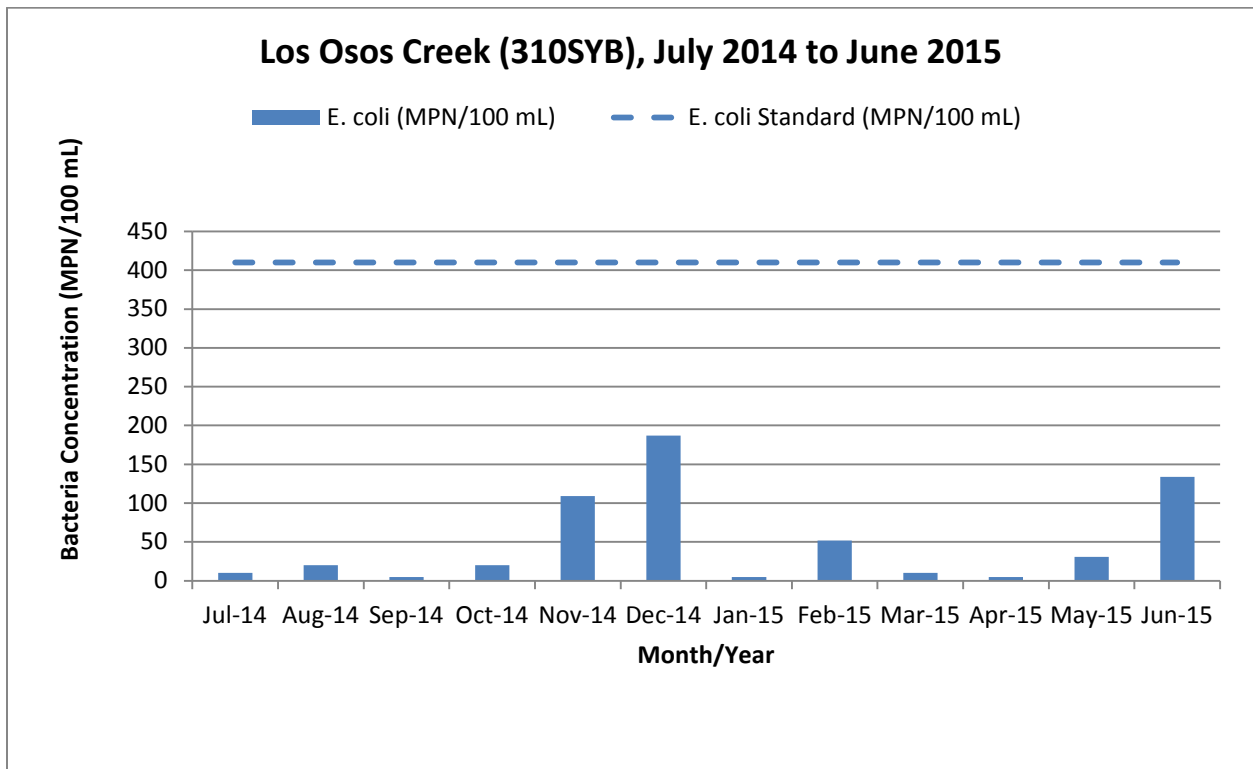




*E. coli* exceedances of the Recommendation 1 STV standard are rare at this site on Chorro Creek, with none of the six samples exceeding the 410 MPN/100 mL STV standard from July 2014 to June 2015.

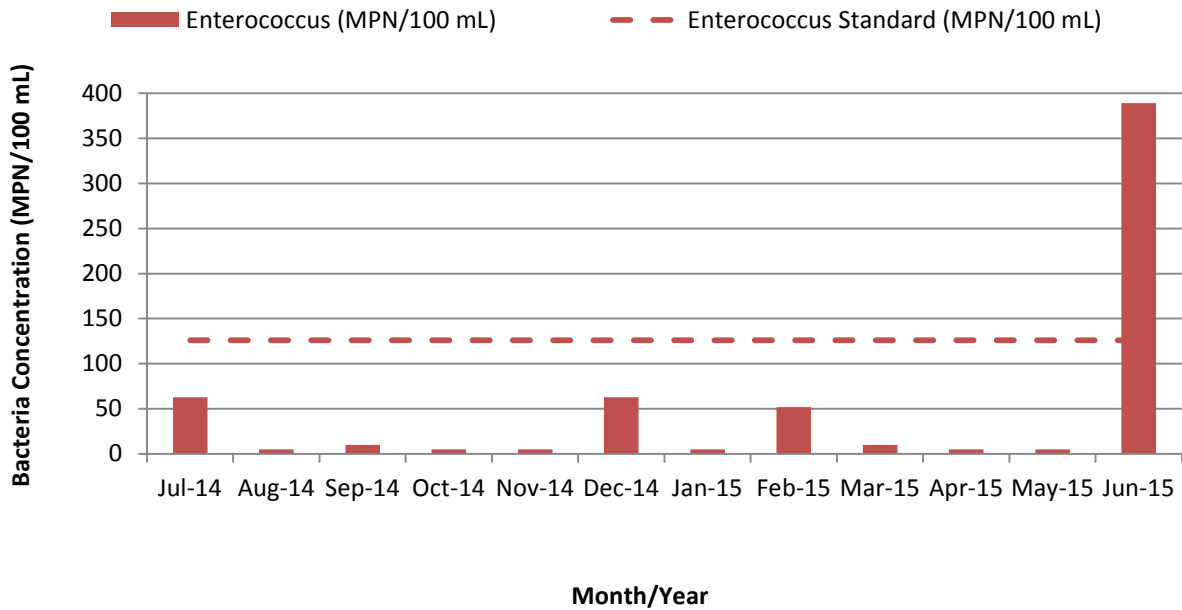
### Los Osos Creek (310SYB)

None of the monthly samples had *E. coli* levels that exceeded the 410 MPN/100 mL STV standard. The geomean of the *E. coli* data from July 2014 to June 2015 was 23.0 MPN/100 mL, well below the 126 MPN/100 mL criteria set forth by EPA. Due to the tidal influence of 310SYB, total coliform analysis was not conducted.



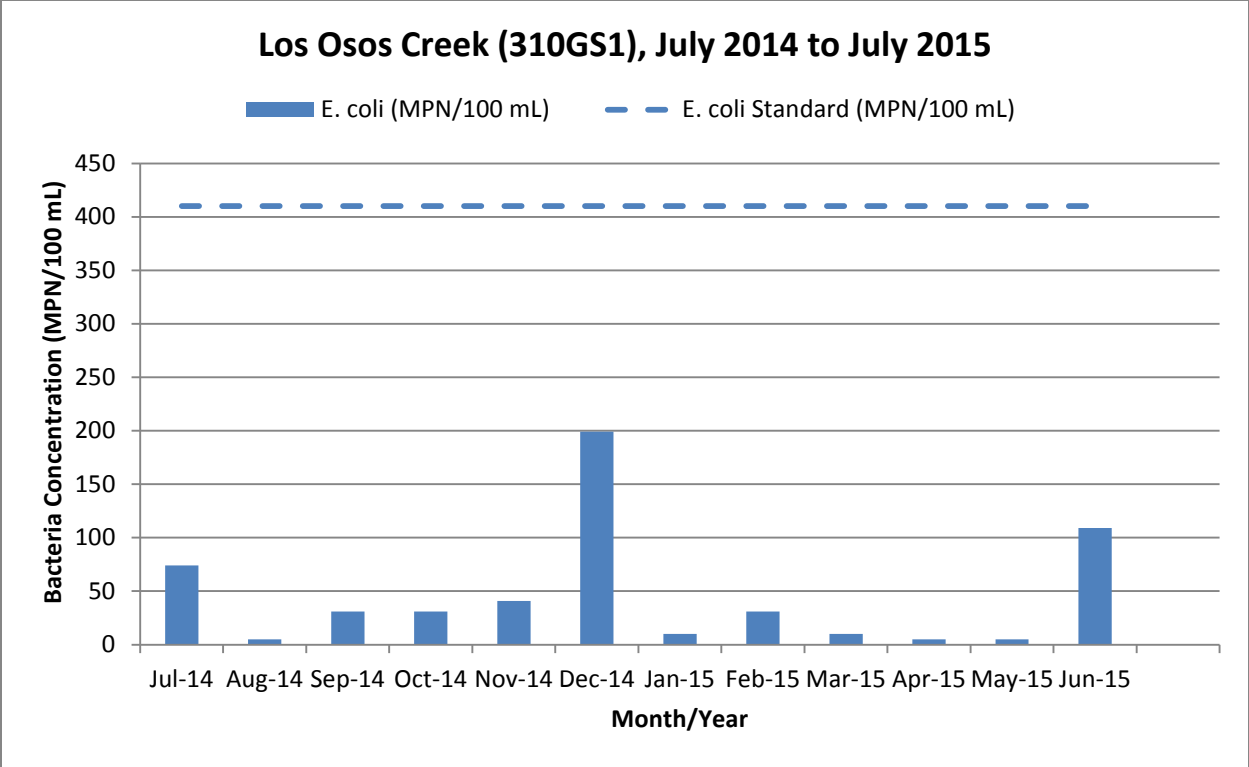
Los Osos Creek is tidally-influenced and thus is treated like a bay site. In addition to *E. coli* analysis, the site is tested for enterococcus levels. The geomean for the enterococcus data from July 2014 to June 2015 was 15.0 MPN/100 mL, well below the 35 MPN/100 mL geomean standard protective of human health. One enterococcus sample did exceed the 130 MPN/100 mL STV standard.

### Los Osos Creek (310SYB), July 2014 to July 2015

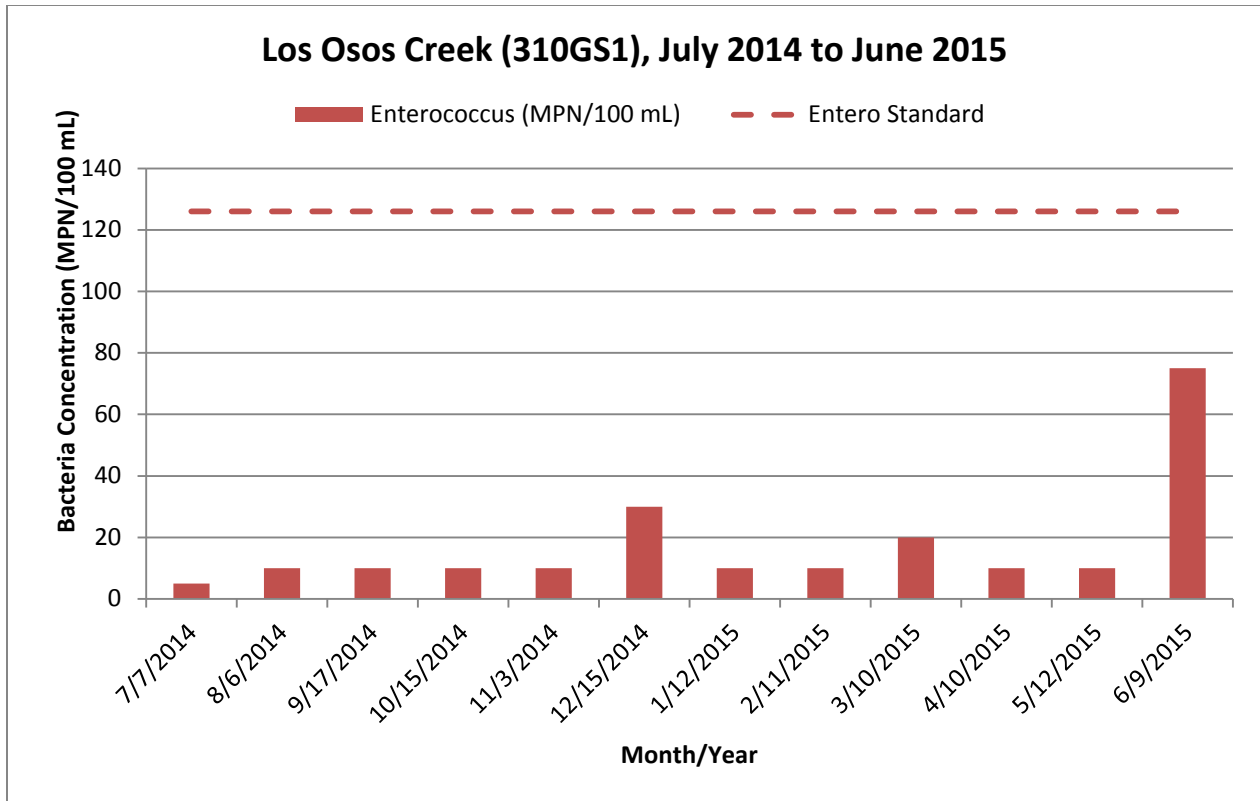


### Los Osos Creek (310GS1)

310GS1, which is downstream of 310SYB, was added during this sampling period. None of the monthly samples had *E. coli* levels that exceeded the 410 MPN/100 mL STV standard. The geomean of the *E. coli* data from July 2014 to June 2015 was 23.1 MPN/100 mL, well below the 126 MPN/100 mL criteria set forth by EPA. Due to the tidal influence of 310SYB, total coliform analysis was not conducted.



Los Osos Creek is tidally-influenced and thus is treated like a bay site. In addition to *E. coli* analysis, the site is tested for enterococcus levels. The geomean for the enterococcus data from July 2014 to June 2015 was 13.0 MPN/100 mL, well below the 35 MPN/100 mL geomean standard protective of human health. None of the enterococcus samples exceeded the 130 MPN/100 mL STV standard.



### TMDL Wasteload Allocation Attainment Plan

For both the city of Morro Bay and the county of San Luis Obispo, TMDL Wasteload Allocation Attainment Plans (WAAPs) were developed as part of their Stormwater Management Plans. Both of these WAAPs were written by Geosyntec Consultants. The documents describe the existing data and monitoring to occur in the future. The WAAP for the city of Morro Bay contained an analysis of Estuary Program data for 2002 through 2010. To further assist local municipalities with stormwater management, this analysis was repeated with Estuary Program data from January 2011 through June 2015.

Estuary Program bay monitoring is conducted with *E. coli* and enterococcus as the indicators. The city of Morro Bay WAAP compared Estuary Program *E. coli* data to REC-1 thresholds for fecal coliform. The explanation for this assumption was provided in the WAAP document, as follows:

*“...For simplicity, measured E. coli concentrations are compared with the fecal coliform objective by assuming a 1:1 E. coli to fecal coliform ratio consistent with approaches used in (SDRWQCB, 2008)... However, even if the MBNEP beach E. coli results were adjusted based on a lower E. coli to fecal coliform ratio (such as 0.6:1), the exceedance rates for all four beaches relative to the 400 MPN/100 mL REC-1 objective would still be less than... the 10% allowed REC-1 exceedance rate...”*

The document referenced in Geosyntec’s explanation is the San Diego Regional Water Quality Control Board’s *Amendment to the Water Quality Control Plan for the San Diego Basin (9) to Incorporate Implementation Provisions for Indicator Bacteria Water Quality Objectives to Account for Loading from Natural Uncontrollable Sources Within the Context of a Total Maximum Daily Load*, May 2008.

These same assumptions were applied for this analysis of recent data. The table contains the number of samples for each site, the number of *E. coli* results that exceed the 400 MPN/100 mL fecal coliform standard, and the percent of samples that exceeded the standard.

The results in the following table are for city of Morro Bay sites, located in the northern portion of the bay.

Table 4. *E. coli* Results Compared to Fecal Coliform Standard of 400 MPN/100 mL for Morro Bay Sites from January 2011 to June 2015

Site	Sample Count	No. > 400 MPN/100 mL	% Exceedance
310COL	53	0	0%
310TID	55	0	0%
310WIN	54	3	6%
310SPM	55	0	0%
<b>Total</b>	<b>217</b>	<b>3</b>	<b>1%</b>

*This analysis assumes a 1:1 E. coli to fecal coliform ratio consistent with the approach used by Geosyntec Consultants in the city of Morro Bay WAAP.*

The results in the following table are for Los Osos sites, located in the southern portion of the bay.

Table 5. *E. coli* Results Compared to Fecal Coliform Standard of 400 MPN/100 mL for Los Osos Sites from January 2011 to June 2014

Site	Sample Count	No. > 400 MPN/100 mL	% Exceedance
310PAS	54	2	4%
310BAY	54	3	6%
310CIN	54	0	0%
310SIN	53	0	0%
<b>Total</b>	<b>215</b>	<b>5</b>	<b>2%</b>

*This analysis assumes a 1:1 E. coli to fecal coliform ratio consistent with the approach used by Geosyntec Consultants in the city of Morro Bay WAAP.*

The WAAP noted the relatively low bacteria concentrations in the data analyzed, relative to the 90<sup>th</sup> percentile REC-1 objective for fecal coliform of 400 MPN/100 mL. The additional analysis in this report indicates a similar trend of few exceedances of the REC-1 standard for fecal coliform.

The WAAP analysis also compared the Estuary Program *E. coli* data to the aquaculture beneficial use (designated as SHELL) water quality objective of an estimated 90<sup>th</sup> percentile value of 43 MPN/100 mL. Making use of the same assumption as Geosyntec Consultants of a 1:1 *E. coli* to fecal coliform ratio, this analysis was repeated with recent Estuary Program data.

Table 6. *E. coli* Results Compared to Fecal Coliform Standard of 43 MPN/100 mL for Morro Bay Sites from January 2011 to June 2015

Site	Sample Count	No. > 43 MPN/100 mL	% Exceedance
310COL	53	9	17%
310TID	55	4	7%
310WIN	54	17	31%
310SPM	54	8	15%
<b>Total</b>	<b>216</b>	<b>38</b>	<b>18%</b>

*This analysis assumes a 1:1 E. coli to fecal coliform ratio consistent with the approach used by Geosyntec Consultants in the city of Morro Bay WAAP.*

Table 7. *E. coli* Results Compared to Fecal Coliform Standard of 43 MPN/100 mL for Los Osos Sites from January 2011 to June 2015

Site	Sample Count	No. > 43 MPN/100 mL	% Exceedance
310PAS	54	21	39%
310BAY	54	35	65%
310CIN	54	8	15%
310SIN	53	4	8%
<b>Total</b>	<b>215</b>	<b>68</b>	<b>32%</b>

*This analysis assumes a 1:1 E. coli to fecal coliform ratio consistent with the approach used by Geosyntec Consultants in the city of Morro Bay WAAP.*

The WAAP analysis looked at three of the monitoring sites in Morro Bay and noted that the SHELL threshold was exceeded in 10 to 15% of samples. For the sites in the Los Osos area, exceedances are frequent at Baywood Pier (65% of 54 samples) and Pasadena Point (39% of 54 samples).

When assuming a 1:1 ratio of *E. coli* to fecal coliform, all sites have less than 10% of the samples exceeding the 400 MPN/100 mL standard. When compared to the more stringent SHELL objectives, between 7 and 65% of the samples exceeded.

### CDPH Fecal Coliform Data

In conjunction with CDPH, the Estuary Program has been collecting fecal coliform data from bay and creek sites. The sites and frequency are contained in Table 2.

This monitoring effort provides CDPH with additional information for managing shellfish growing waters in Morro Bay. Two active shellfish growing operations exist in the bay. CDPH is responsible for monitoring water quality in the lease areas where shellfish farming is permitted and for classifying areas for their suitability for shellfish aquaculture. CDPH will use the additional data to identify bacteria sources in the bay and evaluate the classification of areas currently classified as prohibited to commercial harvest.

The fecal coliform monitoring effort began in February of 2013. Monthly monitoring occurs at one site on Chorro Creek (site code 310TWB) and at one site on Los Osos Creek (site code 310GS1). Quarterly fecal coliform monitoring occurs at three bay shoreline sites (site codes 310PAS, 310SPM, 310TID). Samples are also collected from 310TWB and 310GS1 during storm flows, as logistics allow. Analysis of this data will be conducted by CDPH and included in the Estuary Program's upcoming *Data Summary Report 2015*, which will be issued in January 2016.

## Conclusions and Next Steps

This stormwater report presents Estuary Program data in comparison to various regulatory standards and guidance documents. Some conclusions are clear, regardless of how the data is analyzed:

- **Sites with little to no indication of bacterial contamination:** Coleman Beach, Tidelands Park, Windy Cove and State Park Marina in Morro Bay; and Cuesta Inlet and Sharks Inlet in Los Osos. Only two results (one each at Coleman Beach and Windy Cove) from these sites indicated unsafe conditions for recreational contact from July 2014 through June 2015. When compared to the stricter standards for the protection of shellfish growing areas, these sites had some exceedances, varying from 7 to 31% of the total samples (2011 to 2015). Although Windy Cove was showing an increase in bacterial contamination in the analysis conducted in 2013, there were no exceedances of safe standards for enterococcus in the most recent year of data. However, Windy Cove has the third highest percent exceedance of the 43 MPN/100 mL SHELL criterion, with 31% of *E. coli* samples exceeding.
- **Sites with continued elevated bacterial levels:** Baywood Pier and Pasadena Point in Los Osos. These sites have historically had elevated bacteria concentrations that are in line with the current analysis. Enterococcus data from 2008 through 2012 showed 15% exceedances of the Enterococcus standard at Pasadena Point and 25% exceedances at Baywood Pier. From July 2014 through June 2015, both sites had two enterococcus samples (17%) that exceeded the 130 MPN/100 mL STV criteria. For the SHELL beneficial use, Pasadena Point had 39% exceedances of the criteria and Baywood Pier had 65% exceedances from July 2014 through June 2015, the highest value of all of the monitoring sites.

The Estuary Program will continue with the data collection efforts outlined in this report.

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