



THE CITY OF SAN DIEGO

January 10, 2013

Via Email and Hand Delivered

Ms. Joann Lim  
California Regional Water Quality Control Board  
San Diego Region  
9174 Sky Park Court, Suite 100  
San Diego, California 92123-4340

REF: 257831: JLLim  
Comments on Tentative Order R9-2013-0006, NPDES CA0109045

Dear Ms. Lim:

Thank you for the opportunity to present comments relative to Tentative Order No. R9-2013-0006, NPDES Permit No. CA0109045 released on December 11, 2012. Tentative Order R9-2013-0006 would renew NPDES Waste Discharge Requirements of the South Bay Water Reclamation Plant (SBWRP) and South Bay Ocean Outfall (SBOO).

While the requirements proposed within T.O. No. R9-2013-0006 are largely similar to those established in previous Order No. R9-2006-0067, the new T.O. establishes a number of new monitoring, reporting and compliance provisions. To facilitate Regional Board review of the City's comments on Tentative Order No. R9-2013-0006, our comments are divided into three groups: (1) corrections of minor errors (misspellings, typos) and clarification, (2) modifications to the Monitoring and Reporting Program (MRP), and (3) issues the City considers of critical importance. Those comments encompassing (1) and (2) are included in Enclosure 1.

The City submits the following comments of critical importance:

- 1) Section VI. PROVISIONS, ¶ 7. Compliance Schedule should be deleted in its entirety.
- 2) Similarly, delete ¶ 7 of ATTACHMENT F – FACT SHEET, Section VII. RATIONALE FOR PROVISIONS, B. Special Provisions

The City disagrees with the conclusion stated in the above sections that "...that the Discharger cannot immediately comply with this new interpretation of the water quality standards for bacteria." The Regional Board staff based this conclusion on the review of 13-months (May 2010 through May 2011) of monitoring data for near-outfall stations I-12 and I-14 for fecal coliform, total coliform, and enterococcus bacteria (fecal indicator bacteria = FIB). The City also disagrees with the subsequent determination that a time schedule for compliance (e.g., Table 9, page 28 of T.O.) is necessary to ensure that the SBWRP discharge does not cause or contribute



to excursions above receiving water limitations for bacterial characteristics. Instead, the City's present monitoring practices and NPDES permit requirements are fully protective of San Diego coastal recreational waters and are consistent with California Ocean Plan (COP) objectives. The City came to this conclusion after reviewing all of the relevant water quality data collected for the South Bay ocean outfall region. Data summaries, data analyses, supporting figures and tables, and other information are included in Enclosures 2-5. A list of references is included in Enclosure 6.

When evaluating the Regional Board's conclusions regarding near-outfall stations I-12 and I-14, we reviewed all monitoring data collected for these stations over the past three years (January 2010 through December 2012). The review showed that only nine out of 210 samples collected at these two monitoring sites exceeded any of the single sample maximum water contact standards specified in the COP, and that these high FIB counts were restricted to station I-12 located near the end of the southern diffuser leg (see Figure 1 in Enclosure 2). Additionally, only a single of the nine elevated FIB samples occurred during each of the last two years (i.e., one sample in May 2011, one sample in February 2012). The City maintains that the occurrence of a few isolated samples with elevated FIBs should not be construed as being out of compliance. In fact, the 2009 COP already includes provisions to address such events in order to be protective of ocean waters (see SWRQB 2009; section III.D, page 20), which states: "*If a single sample exceeds any of the single sample maximum (SSM) standards, repeat sampling at that location shall be conducted to determine the extent and persistence of the exceedance.*" Consequently, the requirement for such repeat sampling in the new permit should be sufficient to address this issue.

#### Historical Review of All Stations

The City also conducted an extensive, long-term review of all data collected for these stations since monitoring began in 1995. This review also included a 3<sup>rd</sup> near-outfall station (I-16), as well as other water quality monitoring stations for reference. The historical review indicated that water quality conditions in 2011-2012 were the same or better than the period prior to wastewater discharge in 1995-1998 (see Table 1, Enclosure 2). Several other patterns were evident from this review (see Figures 2a and 2b in Enclosure 2). First, there was an apparent impact on the rate of samples meeting FIB standards when the International Wastewater Treatment Plant (IWTP) began operating until the end of 2010. In contrast, there was no increase in the number of samples exceeding FIB standards after the SBWRP began discharging in May 2002. The rate of FIB samples meeting the COP water contact standards remained essentially unchanged until 2011 when a significant improvement occurred. The improvement to background rates for FIB concentrations in 2011 and 2012 clearly corresponds to the inception of secondary treatment at the IWTP. This trend is expected to continue assuming the IWTP effluent quality remains at current levels or further improves. See Enclosure 5 for further detailed information.

#### Other Potential Sources of FIBs

Overall, there remains no evidence that the SBOO wastewater plume reaches nearshore recreational waters (see City of San Diego 2012, and references cited therein and in Enclosure 6). Although elevated FIBs occur along or near the shore, this does not appear related to

shoreward transport of the plume. Instead, most nearshore bacterial contamination has been related to rainfall and associated with turbidly plumes resulting from increased outflows from the Tijuana River (USA) and Los Buenos Creek (Mexico) during and after storm events. For example, the majority of elevated FIBs at the shore and kelp stations in the SBO region occur during the wet season. This relationship between rainfall and high FIB counts in nearshore waters has remained consistent since monitoring began prior to SBOO wastewater discharge. Most elevated FIB counts reported during the dry season also occur south of the international border at stations located near other sources of contamination not associated with the SBOO. In fact, only a single sample with elevated FIBs was collected near (within 1000 m) the SBOO discharge zone in each of the last two years. The overall low incidence of contaminated waters related to the SBOO plume is likely due to continued seasonal disinfection of IWTP effluent and the commencement of full secondary treatment at the IWTP in early 2011.

### **California Ocean Plan Intent**

The City is concerned that an overarching interpretation of the COP has been applied where water contact recreational standards (i.e., REC-1) should apply to the entirety of the Pacific Ocean within the area of state waters. This interpretation has resulted in the application of REC-1 from the shoreline to 3 nautical miles (nm) and at all depths.

The SBOO extends 5.47 km (just within 3 nm) offshore terminating in 93 feet (28m) of seawater. This is well beyond the “...1,000 feet from the shoreline or the 30-foot depth contour, whichever is further from the shoreline, and in areas outside this zone used for water contact sports...” as described in the 2009 California Ocean Plan (COP). The area near the SBOO is not in or adjacent to identified shellfish harvesting areas and the marine substrate is not of the type that supports target shellfish species in the area. We contend that the current discharge point and water quality is consistent with the “...the reasonable protection of beneficial uses...” as described in the COP, including beneficial uses of near-field waters.

Several years of extensive monitoring data clearly show that Water-Contact Standards for bacterial objectives were consistently met. Nearly ninety-five percent (94.7%) of all samples over the past 3 years (2010-2012) show that the samples taken at outfall stations I-12, I-14 and I-16 were well within the Water Quality Objectives of the COP. More significantly, during the last two years (2011 and 2012) over 99% of samples taken met the FIB objectives; only one sample in each year showed elevated FIB and then only for a single indicator organism.

Lastly, the San Diego Regional Water Board has historically applied COP recreational body-contact bacteriological standards to designated kelp beds and nearshore waters within 1000 feet of the shoreline or within the 30-foot depth contour as described in the COP. When reviewing any pre-2008 NPDES permits, the Regional Water Board never applied the Ocean Plan recreational body-contact bacteriological standards to deep offshore ocean waters. All Fact Sheet descriptions, permit findings, effluent limitations, and receiving water requirements established in pre-2008 ocean outfall NPDES permits are consistent with the historic Regional Board

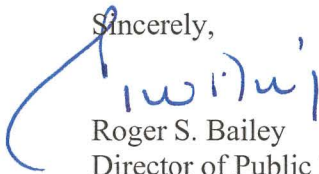
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interpretation that the potential for body-contact recreation in deep offshore ocean waters is negligible or nonexistent.

The City respectfully argues that the extraordinary length of the SBOO was a design feature sensitive to the need and intent of the COP to be protective of public health and safety, environmental protection, and esthetic requirements, i.e. all beneficial uses. The outfall extends well beyond the anticipated water contact areas defined in the COP and the samples taken near the SBOO had a *de minimus* number of elevated FIB samples that do not support a "*persistence of the exceedance*" requiring additional regulatory action.

We appreciate your thoughtful review of our comments provided. If you have any questions please contact Steve Meyer at (619) 758-2300, or email [smeyer@sandiego.gov](mailto:smeyer@sandiego.gov) regarding any questions

Sincerely,



Roger S. Bailey  
Director of Public Utilities

SWM

- Enclosures:
1. Corrections and Clarification to the Tentative Order and Modifications to MRP
  2. Primary Analysis
  3. Supplementary Analyses and Data
  4. SBWRP and IWTP flow data
  5. Background and Attribution of Discharges to the South Bay Ocean Outfall
  6. References

# **ENCLOSURE 1**

## **Corrections and Clarification to the Tentative Order and Modifications to MRP**

## Enclosure 1

### *Minor Corrections, Clarifications, and MRP Modifications*

City of San Diego Public Utilities Department Comments  
Tentative Order No. R9-2013-0006 (NPDES Permit No. CA0109045)

Section	Page	Comment
<b>(1) Corrections of Minor Errors and Clarification</b>		
VI.C.2.c	21	<p><b>Toxicity Reduction Requirements:</b> The T.O. states here on p. 21 that: <i>“If the performance goal for chronic toxicity is exceeded in any one test at Monitoring Location E-002, then <u>within 15 days of the exceedance</u>, the Discharger shall begin conducting six additional tests, bi-weekly, over a 12 week period.”</i></p> <p>In order to further clarify when the additional testing should begin, the City requests that the above underlined language (<i>within 15 days of the exceedance</i>) be replaced with <i>“...within 15 days of receipt of these test results.”</i> This change would be consistent with similar requirements specified in Order No. R9-2009-0001 for the City’s Pt. Loma Wastewater Treatment Plant.</p>
Attachment E of the Monitoring and Reporting Program (MRP) II.A	E-4	<p><b>Table E-1 – Monitoring Station Locations:</b> The depths of 90 ft (27 m) listed for offshore station I-8 are incorrect. The correct depths should be <b>“118 ft (36 m).”</b> This error was also present in previous Order R9-2006-0067, while the original orders for both the SBWRP (No. 2000-129) and IWTP (No. 96-50) had the correct depth of 118 ft listed.</p>
Attachment E (MRP) II.A	E-5	<p><b>Table E-1 – Monitoring Station Locations:</b> The latitude listed for Rig Fishing station RF-3 is incorrect. The correct latitude as listed in previous Order No. R9-2006-0067 should be <b>“32° 32.270’N</b> (not 32.370’N).</p>
Attachment E (MRP) IV.A.1	E-6	<p><b>Table E-3 – Phenolic Compounds:</b> Confirm that Phenolic compounds, both non-chlorinated and chlorinated, should be collected as grabs rather than 24-hour composites. Previous Order R9- 2006-0067 listed sampling type as 24-hour composite. Changing to grabs would result in a material change in the continuity and comparability of the monitoring data.</p>
Attachment E (MRP) IV.A.1	E-6	<p><b>Table E-3 – Endosulfan:</b> Confirm that Endosulfan should be collected as grabs rather than 24-hour composites. Previous Order R9-2006-0067 listed sampling type as 24-hour composite. Changing to grabs would result in a material change in the continuity and comparability of the monitoring data.</p>
Attachment E (MRP) IV.A.1	E-6	<p><b>Table E-3 – Endrin:</b> Confirm that Endrin should be collected as grabs rather than 24-hour composites. Previous Order R9-2006-0067 listed sampling type as 24-hour composite. Changing to grabs</p>

Section	Page	Comment
		would result in a material change in the continuity and comparability of the monitoring data.
Attachment E (MRP) IV.A.1	E-6	<b>Table E-3 – HCH:</b> Confirm that HCH should be collected as grabs rather than 24-hour composites. Previous Order R9-2006-0067 listed sampling type as 24-hour composite. Changing to grabs would result in a material change in the continuity and comparability of the monitoring data.
Attachment E (MRP) – VI	E-12	<b>Taxon Name/Spelling Correction, Table E-6:</b> The correct spelling for the mysid in row 5 is <i>Holmesimysis costata</i> (not <i>Homesimysis</i> – i.e., it's missing an "L" as the 3 <sup>rd</sup> letter).
Attachment E (MRP)	E-17	<b>Benthic Monitoring – Infauna:</b> This section says organisms "...shall be fixed in 15 percent buffered formalin." This should be corrected to <b>10% formalin</b> , which is consistent with methods specified for the Pt Loma Ocean Outfall monitoring program and for the most recent Southern California Bight Regional Monitoring Program (Bight'08: see Coastal Ecology Field Operations Manual, p. 28).
Attachment E (MRP)	E-17	<b>Benthic Monitoring – Infauna:</b> Delete sentence in second paragraph stating " <i>These organisms may be stained using Rose Bengal to facilitate sorting.</i> " This is consistent with current methods specified in the Bight'08 Macrobenthic Sample Analysis Laboratory Manual (see p. 4), which states "Rose bengal may <u>not</u> be used to stain organisms."
Attachment E (MRP) XI.B	E-20 to E-21	<b>Self Monitoring Reports (SMRs):</b> <ul style="list-style-type: none"> <li>• Does the submission of CWIQS data and upload with cover letter, constitute the SMR?</li> <li>• Please clarify spill reporting requirements. SSOs have requirements defined elsewhere in the Order and this appears to conflict with those. If reporting of spills other than SSOs is the intent, please identify types.</li> </ul>
Attachment E (MRP) XI.B.2	E-21	<b>Table E-10. Monitoring Periods and Reporting Schedule:</b> The City strongly suggests replacing Table E-10 (Monitoring Periods and Reporting Schedule) to make the schedule specific and the due dates clear. We suggest using the "Revised Table E-10" included below, which follows the model in Table E-9 of the Pt. Loma NPDES Permit (Order No. R9-2009-0001). We also strongly recommend eliminating the table in section D.7 on page E-24, which appears to be largely duplicative.
Attachment E (MRP) XI.D	E-24	<b>Other Reports – Table:</b> The City also strongly recommends eliminating the then unnumbered table in section XI.D, which appears to be largely duplicative with the intent of the above monitoring & reporting period table.

Section	Page	Comment
<b>(2) Modifications to Monitoring and Reporting Program (MRP)</b>		
Attachment E (MRP)	See next 3 rows below	<p><b><u>General MRP Modifications and Consistency with Regional Board Framework for Monitoring &amp; Assessment:</u></b> In the City’s SBWRP permit renewal application submitted in June 2011 (Part II, Section 1.5), the City requested minor modifications to the MRP to ensure that a single coordinated receiving waters monitoring program is conducted to comply with both the SBWRP and SBIWTP permits. These included changes to (a) Offshore Water Quality Monitoring, (b) Trawling and Rig Fishing Operations, and (c) Benthic Monitoring.</p> <p>City and RWQCB staff also previously agreed further coordination of the South Bay and Pt Loma outfall ocean monitoring efforts would benefit development of a broader, regional, and therefore more protective monitoring approach for San Diego coastal waters. Thus, most of the requested modifications were designed to be consistent with requirements specified in the MRP for the Pt Loma region (Order No. R9-2009-0001). This approach is also consistent with the new <b><i>Framework for Monitoring and Assessment in the San Diego Region</i></b> proposed by the Regional Board.</p> <p>Consequently, we request the general organization, presentation, and standard methodologies of the MRP for the SBWRP follow that of the Pt Loma MRP. We also request the new MRP include language stating that whatever changes are made to the SBWRP requirements also apply to monitoring requirements for the IWTP consistent with Board policy (SDRWQCB Ref = SCR: 257831: MVALD; Letter from John Robertus, RWQCB to Alan Langworthy, City of san Diego, dated June 19, 2007).</p>
Attachment E (MRP)	E-15	<p><b><u>Offshore Water Quality (WQ) Monitoring:</u></b></p> <ul style="list-style-type: none"> <li>a) Change sampling frequency for offshore WQ stations in Table 7, from monthly to quarterly to coincide with the Pt. Loma Offshore WQ Monitoring Program, as well as the Central Bight Water Quality Monitoring effort for Orange, Los Angeles and Ventura counties.</li> <li>b) Eliminate “Total Suspended Solids” and “Oil &amp; Grease” sampling requirements in Table 7 for offshore WQ stations.</li> <li>c) Limit indicator bacteria sampling requirement listed in Table 7 for monthly (i.e., future quarterly) offshore WQ stations to just Enterococcus (i.e., eliminate requirement for total and fecal coliforms at these stations).</li> </ul>
Attachment E (MRP)	E-18 to E-19	<p><b><u>Trawling and Rig Fishing Operations:</u></b></p> <ul style="list-style-type: none"> <li>(a) Reorganize and expand sections to distinguish between community trawl requirements for fishes and invertebrates, and between different types of fish tissue sampling (i.e., follow the Pt. Loma MRP template).</li> </ul>



Section	Page	Comment
		<p>(b) Change sampling frequency for trawls from quarterly to semi-annual (e.g., January and July).</p> <p>(c) Eliminate requirement for measuring invertebrate biomass for trawl samples.</p> <p>(d) Change frequency for collecting fish tissue samples from semi-annual to annual (e.g., October).</p> <p>(e) Eliminate requirement for measuring PAHs in both liver and muscle tissue samples.</p> <p>(f) Redefine trawl sampling requirement for fish tissues (liver) to collect samples zones instead of individual stations. Change liver tissue sample requirement from 3 replicates per station to 3 replicates per zone. See Pt. Loma MRP language for description of zones (e.g., "area within a 1-km radius" of a station or stations). Recommended trawl zones are:</p> <ul style="list-style-type: none"> <li>• Zone 1 (Far North) = station SD21</li> <li>• Zone 2 (North) = stations SD19 and SD20</li> <li>• Zone 3 (Outfall) = stations SD17 and SD18</li> <li>• Zone 4 (South) = station SD16</li> <li>• Zone 5 (Far South) = station SD15</li> </ul>
Attachment E (MRP)	E-18	<p><u>Benthic Monitoring (Random Sampling):</u></p> <p>a) Recommend reducing frequency of annual survey of 40 randomly selected stations from annual to once every two years (biennial). No similar requirement exists in the Pt. Loma MRP, although this survey spans both the South Bay Outfall and Pt. Loma Outfall regions. Regional surveys conducted between 1994 and 2011 have generally shown consistent results and patterns, and it is expected that this modification will not negatively affect assessment of benthic quality off San Diego.</p>

**REVISED Table E-10. Monitoring Periods and Reporting Schedule \***

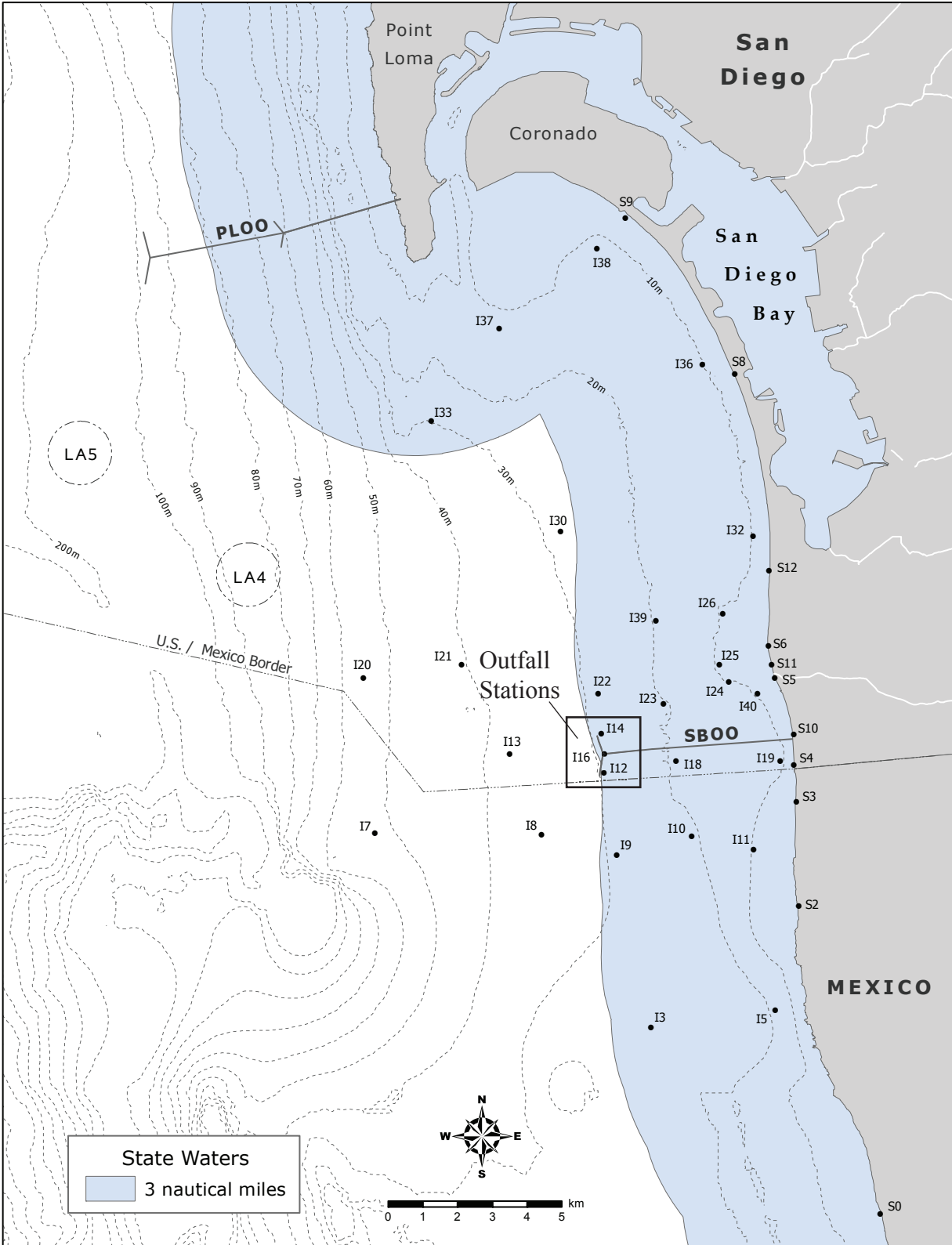
Reports	Report Period	Report Due
MONTHLY REPORTS: * Influent and Effluent * Solids Removal/Disposal * Receiving Water Monitoring	Monthly	First day of second calendar month following month of sampling.
QUARTERLY REPORTS: * Wastewater Monitoring * Toxicity	January-March April-June July-September October-December	June 1 September 1 December 1 March 1
SEMI-ANNUAL REPORTS: * Pretreatment Program * Significant Industrial User Compliance Status Report	January-June July-December	September 1 March 1
ANNUAL REPORTS:  * Pretreatment Report * Biosolids * QA Report * Receiving Waters Monitoring	January-December	Due in the calendar year following the report year on: March 1 April 1 April 1 July 1
* Toxicity Reduction Evaluation Workplan		180 days after adoption of this Order
* Results of any Toxicity Reduction Evaluation/Toxicity Identification (TRE/TIE) Evaluation		Within 30 days of completion of the TRE/TIE

\* Report Due dates in the above table reflect current schedules. Accelerating annual reports to March 1<sup>st</sup> would not permit adequate time to complete the analyses, evaluation, technical interpretation and reporting a year's data. Much of the annual reports' value comes from the summarization, detailed statistical analyses and graphical presentations. Some items, such as the Report of Waste Discharge (for reissuance), have been omitted since they are specifically covered elsewhere in the Tentative Order.

# **ENCLOSURE 2**

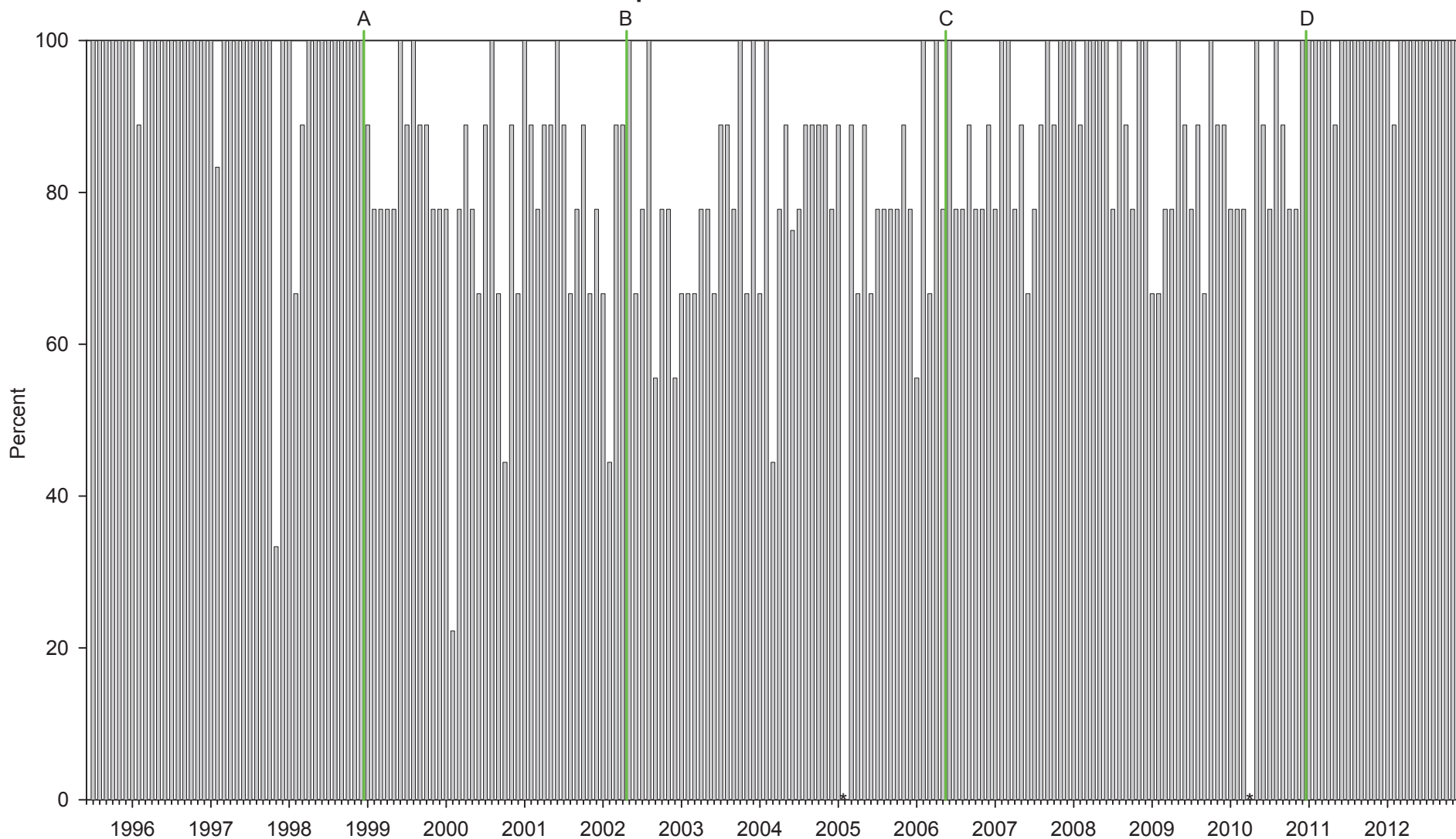
## **Primary Analyses**





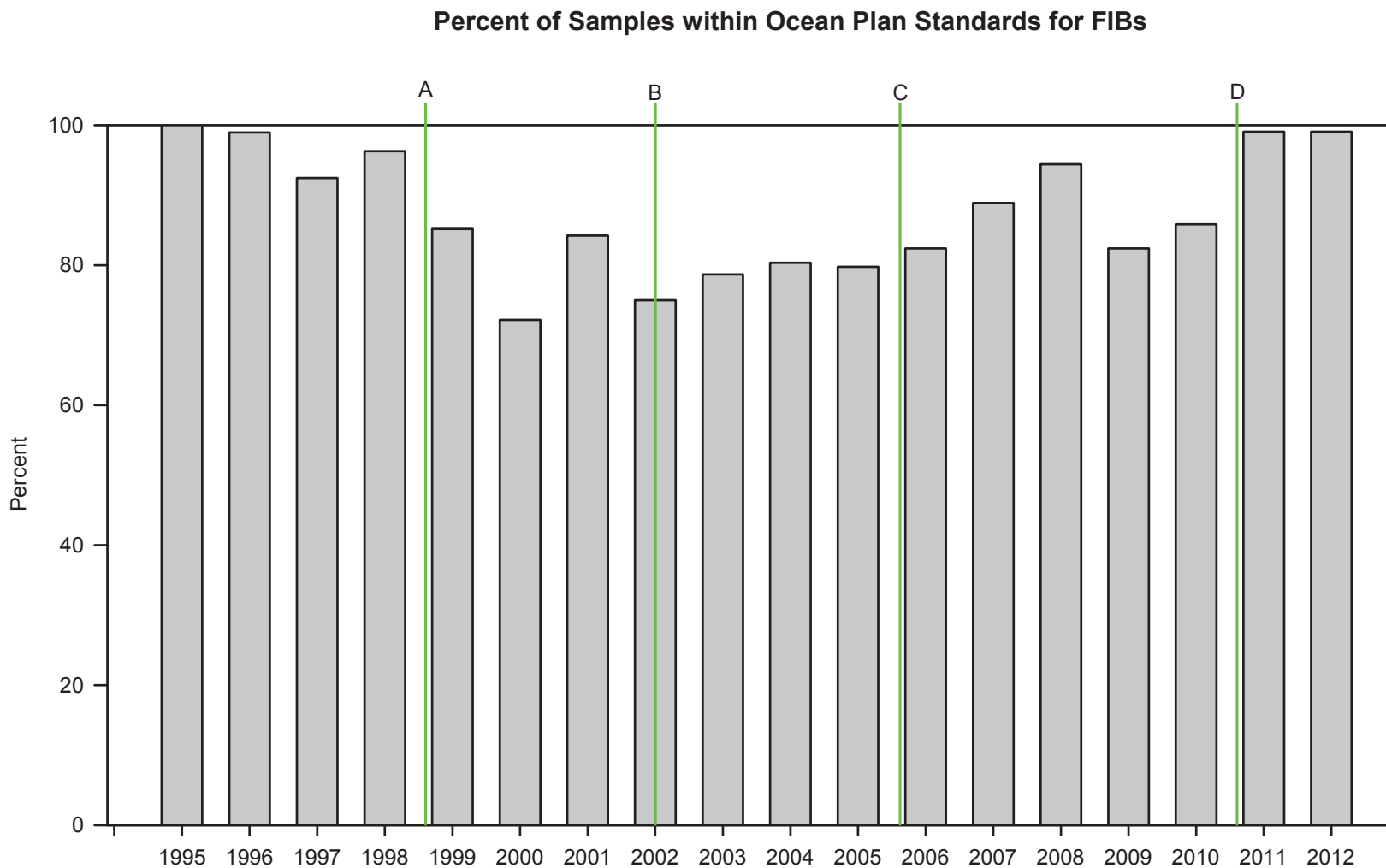
**Figure 1.** Water quality station locations sampled around the South Bay Ocean Outfall as part of the South Bay Water Reclamation Plant monitoring and reporting program.

### Percent of Samples within Ocean Plan Standards for FIBs



**Figure 2a.**

Compliance rates for outfall stations (I12, I14, I16) sampled between July 1995 and December 2012. Vertical lines correspond to the following timeline: A: Wastewater discharge from the IWTP began in January 1999; B: Wastewater discharge from the SBWRP began in May 2002; C: SBWRP discharge started 2<sup>o</sup> treatment in June 2006; D: Full secondary treatment was initiated at the IWTP in January 2011. No samples (\*) were collected at offshore stations in February 2005 and April 2010 due Bight resource exchanges.



**Figure 2b.**

Compliance rates for outfall stations (I12, I14, I16) sampled between July 1995 and December 2012. Vertical lines correspond to the following timeline: A: Wastewater discharge from the IWTP began in January 1999; B: Wastewater discharge from the SBWRP began in May 2002; C: SBWRP discharge started 2<sup>o</sup> treatment in June 2006; D: Full secondary treatment was initiated at the IWTP in January 2011.

**Table 1.**

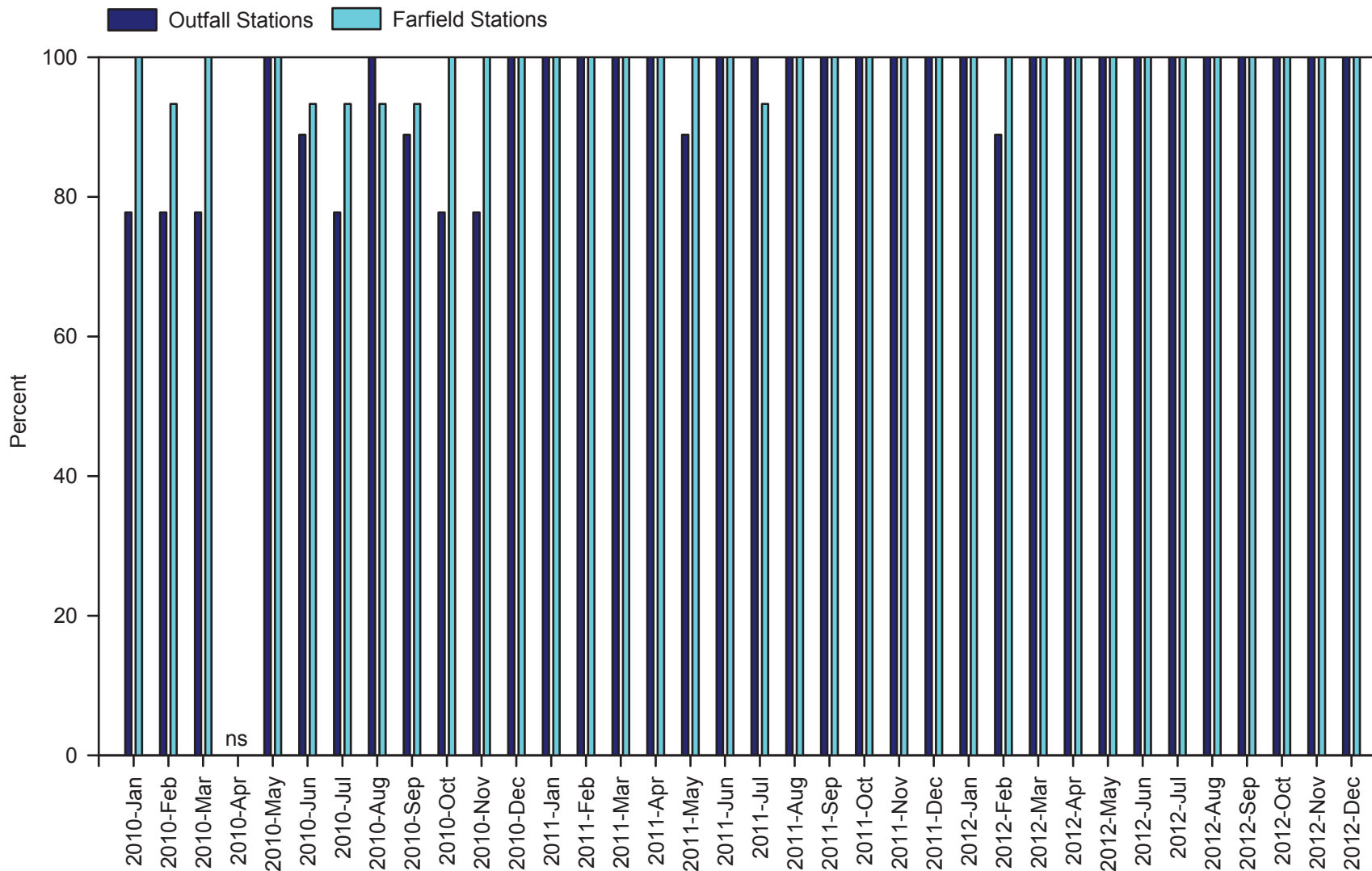
Chi-squared test results for pre- versus post-discharge elevated FIB (eFIB) data from SBOO outfall stations (I12, I14, I16). Data are included, along with the Odds Ratio, Pearson's Chi-Squared value, and the p-value for each test. The percentage of "clean" samples that occurred during each time period is also provided.

These results indicate that when compared to the entire post-discharge period (1999 -2012), it was significantly more likely to collect a clean sample during the pre-discharge period (85 vs 97%, respectively). However, there is no significant difference between compliance rates during the past two years and the pre-discharge period. In fact, the rate of compliance (i.e., percent "clean") is slightly higher now than it was then.

	DATA			TEST RESULTS			Percent Clean
	eFIB	clean	Total	Odds Ratio	$\chi^2$	<i>p</i>	
pre-discharge:	12	339	351	5.03	34.72	<0.0001	97
post-discharge (all yrs)	226	1267	1493				85
pre-discharge:	12	339	351	0.264	3.45	0.06	97
post-discharge (2 yrs)	2	214	216				99



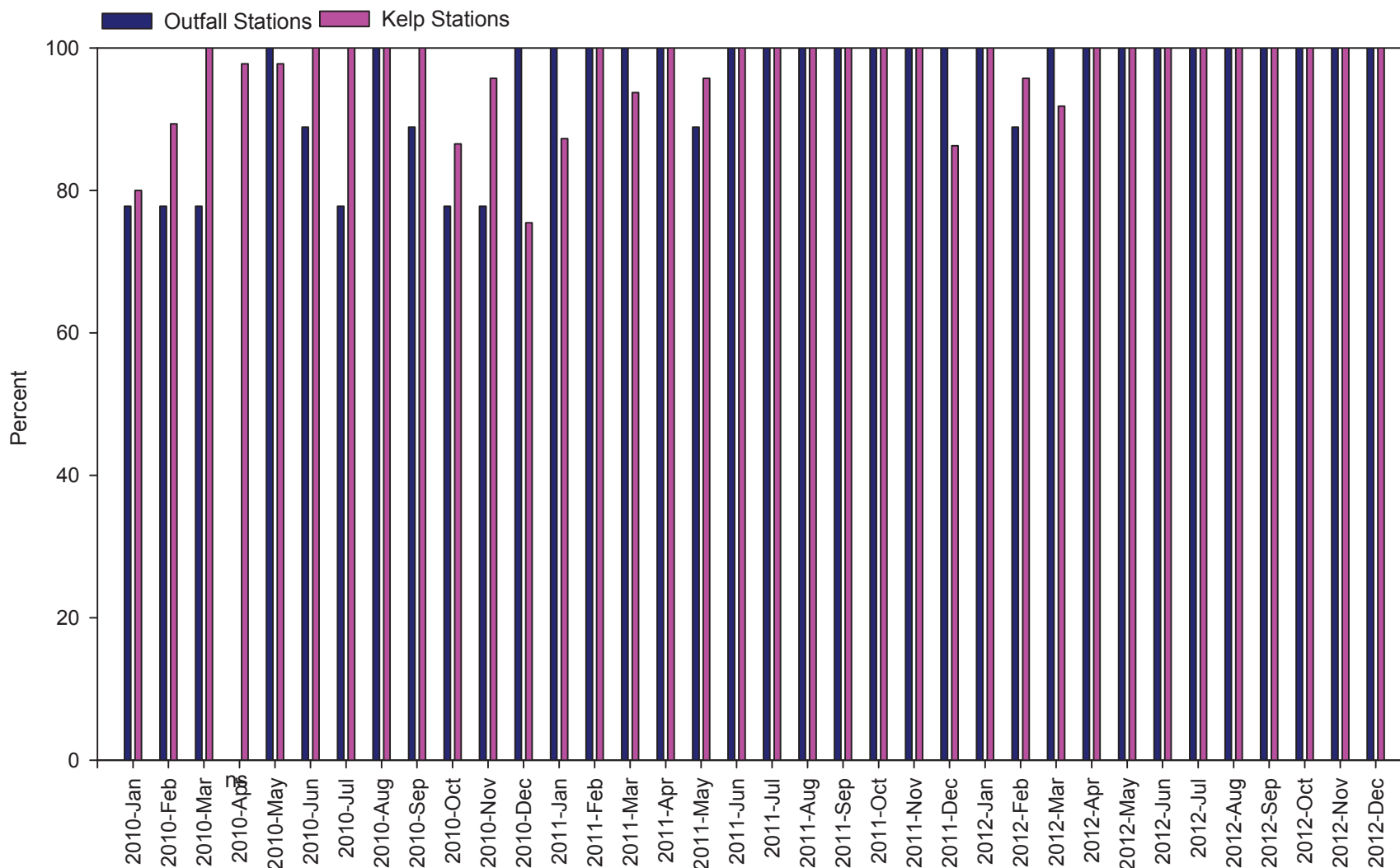
### Percent of Samples within Ocean Plan Standards for FIBs



**Figure 3.**

Comparison of Single Sample Maximum compliance rates at outfall (I12, I14, I16) versus 28-m farfield (I3, I9, I22, I30, I33) stations sampled between 2010 and 2012. Values are the percent of samples within Ocean Plan standards for FIBs (= total “clean” samples/total samples\*100). No samples (ns) were collected at offshore stations in April 2010 due Bight’08 resource exchange.

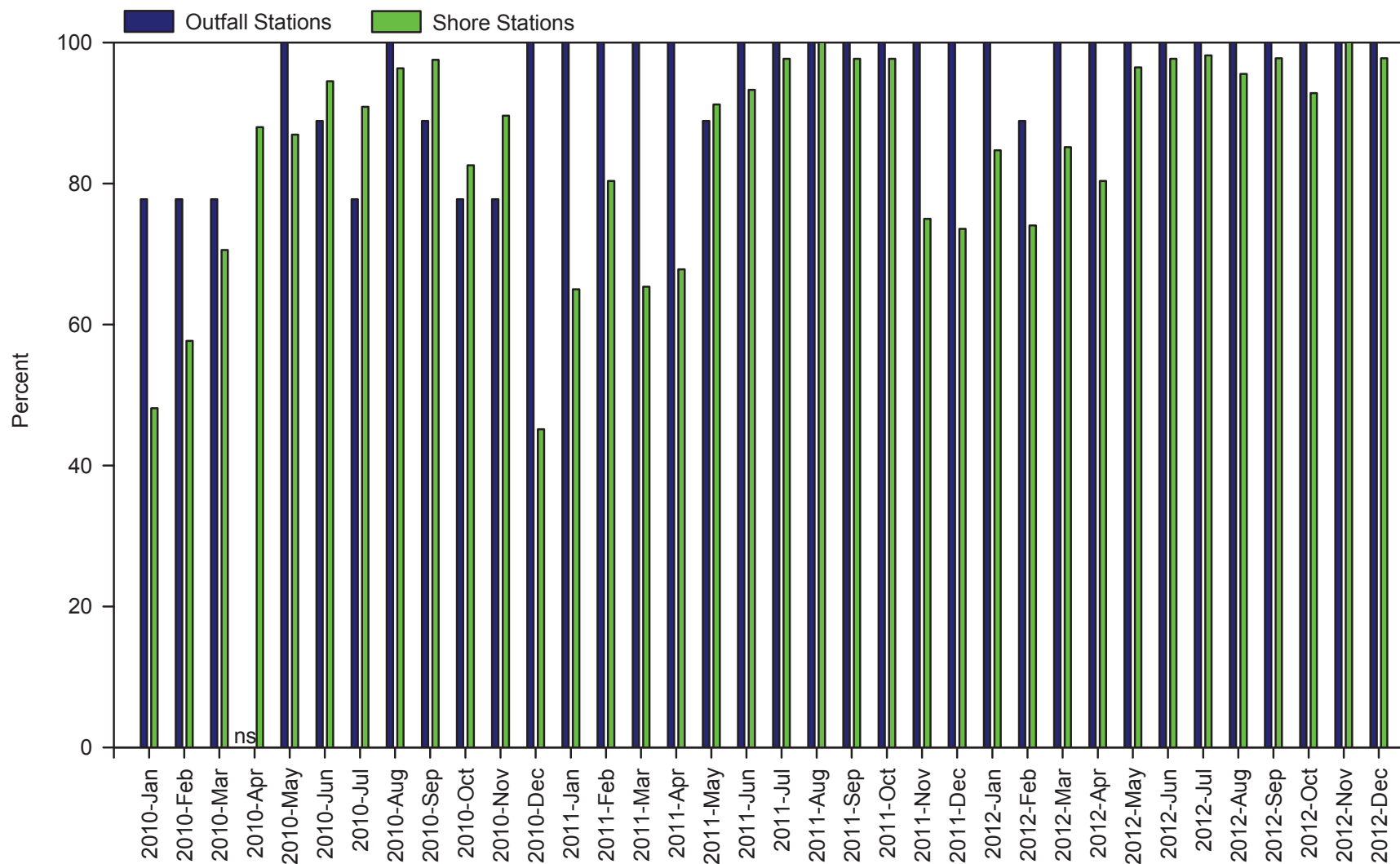
### Percent of Samples within Ocean Plan Standards for FIBs



**Figure 4.**

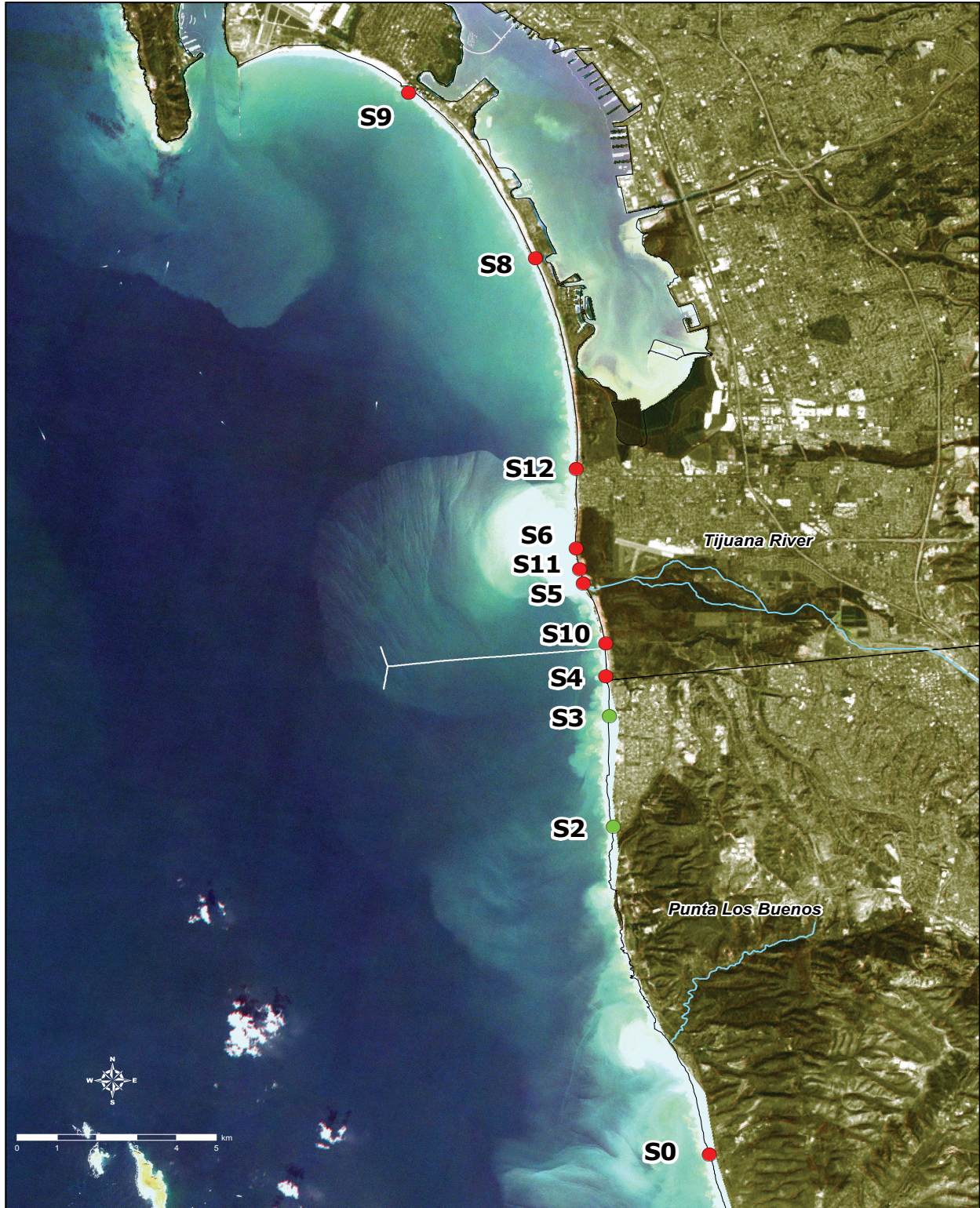
Comparison of Single Sample Maximum compliance rates at outfall (I12, I14, I16) versus kelp (I25, I26, I39) stations sampled between 2010 and 2012. Values are the percent of samples within Ocean Plan standards for FIBs (= total “clean” samples/total samples\*100). No samples (ns) were collected at offshore stations in April 2010 due Bight’08 resource exchange.

### Percent of Samples within Ocean Plan Standards for FIBs



**Figure 5.**

Comparison of Single Sample Maximum compliance rates at outfall (I12, I14, I16) versus shore (S0, S2, S3, S4, S5, S6, S8, S9, S10, S11, S12) stations sampled between 2010 and 2012. Values are the percent of samples within Ocean Plan standards for FIBs (= total “clean” samples/total samples\*100). No samples (ns) were collected at offshore stations in April 2010 due Bight’08 resource exchange.



**Figure 6.**

Rapid Eye satellite image showing the SBOO region on March 24, 2011 (Ocean Imaging 2012) combined with bacteria levels at shore stations sampled on March 22, 2011. Turbid waters from the Tijuana River and Los Buenos Creek can be seen overlapping stations with elevated FIBs (indicated by red circles). These plumes likely originated earlier in the week due to a significant storm event that began March 20, 2011.

# **ENCLOSURE 3**

## **Supplementary Analyses and Data**



**Table 1.**

Summary of samples with elevated fecal bacteria (eFIB) for each of the three outfall stations by year. Data are counts of samples with bacteria levels exceeding any of the four single sample maximums, total number of samples collected, and the overall proportion of samples without elevated bacteria (i.e., Percent "Clean").

Year	I12		I14		I16		Grand Total		Percent "Clean"
	eFIB	Samples	eFIB	Samples	eFIB	Samples	eFIB	Samples	
1995	0	18	0	18	0	18	0	54	100
1996	1	36	0	33	0	27	1	96	99
1997	2	33	3	36	2	24	7	93	92
1998	1	36	2	36	1	36	4	108	96
1999	6	36	4	36	6	36	16	108	85
2000	14	36	6	36	10	36	30	108	72
2001	12	36	2	36	3	36	17	108	84
2002	13	36	5	36	9	36	27	108	75
2003	11	36	4	36	8	36	23	108	79
2004	6	35	3	36	12	36	21	107	80
2005	4	33	7	33	9	33	20	99	80
2006	12	36	1	36	6	36	19	108	82
2007	10	36	0	36	2	36	12	108	89
2008	2	36	1	36	3	36	6	108	94
2009	12	36	3	36	4	36	19	108	82
2010	7	33	0	33	7	33	14	99	86
2011	1	36	0	36	0	36	1	108	99
2012	1	36	0	36	0	36	1	108	99
Grand Total	115	620	41	621	82	603	238	1844	87

**Table 2.**

Summary of samples with elevated FIB (eFIBs) densities at SBOO shore stations during wet and dry seasons between 1995–2011. Wet = January–April and October–December; Dry = May–September. Shore station sampling began in October 1995 so rain totals from 1995 include only October – December. Rain was measured at Lindbergh Field, San Diego, CA. Stations are listed north to south from left to right.

Year	Season	Rain(in)	Number of Samples w eFIBs											Total Samples w eFIBs	Total No. of Samples
			S9	S8	S12	S6	S11	S5	S10	S4	S3	S2	S0		
1995	Wet	14.76	1	0	ns	0	ns	0	ns	0	0	0	ns	1	43
	Dry	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	0
1996	Wet	7.13	2	0	5	3	3	3	1	10	6	8	ns	41	292
	Dry	0.14	0	0	0	0	0	1	0	0	1	1	ns	3	131
1997	Wet	6.15	3	3	5	6	7	21	13	15	9	8	ns	90	598
	Dry	0.85	1	0	3	2	2	1	1	1	0	0	ns	11	423
1998	Wet	15.08	4	2	8	12	13	36	17	15	16	11	ns	134	548
	Dry	0.97	0	1	12	13	13	22	3	5	8	4	ns	81	444
1999	Wet	5.31	0	4	4	6	8	19	11	10	6	4	ns	80	433
	Dry	0.12	0	0	0	0	0	1	0	1	2	1	ns	5	220
2000	Wet	6.89	2	4	7	9	8	14	6	5	5	9	ns	69	322
	Dry	0.01	3	0	2	2	1	1	3	4	3	3	ns	22	224
2001	Wet	8.46	7	6	8	11	11	19	11	14	16	7	ns	110	341
	Dry	0.01	3	0	2	1	1	0	1	3	1	2	ns	14	218
2002	Wet	3.92	1	1	1	1	4	10	9	9	5	5	2	48	341
	Dry	0.31	1	0	0	0	0	0	0	2	2	1	0	6	219
2003	Wet	8.88	1	3	5	9	10	19	12	12	7	5	12	95	362
	Dry	0.3	1	0	2	1	2	3	2	2	4	4	3	24	245
2004	Wet	13.29	3	2	9	13	13	18	11	11	8	4	8	100	337
	Dry	0	1	2	0	0	0	1	0	0	0	0	2	6	242
2005	Wet	13.86	4	5	9	13	19	30	14	13	10	5	7	129	377
	Dry	0.25	0	1	1	4	3	4	2	2	2	2	7	28	250
2006	Wet	5.33	1	1	4	5	7	10	7	7	5	4	7	58	328
	Dry	0.82	0	1	3	2	3	4	2	1	2	0	6	24	242
2007	Wet	4.32	0	0	1	2	1	5	7	6	4	4	6	36	330
	Dry	0.05	0	1	1	0	0	0	0	0	1	1	4	8	242
2008	Wet	10.86	3	4	5	8	10	13	10	6	12	6	8	85	352
	Dry	0.25	0	0	0	0	0	1	0	0	1	1	3	6	231
2009	Wet	5.43	0	3	4	6	5	11	10	9	9	7	12	76	330
	Dry	0.07	0	0	0	0	0	0	0	0	0	0	1	1	242
2010	Wet	16.2	2	2	4	7	6	15	13	9	11	7	14	90	301
	Dry	0.08	0	1	0	0	1	1	0	0	0	2	11	16	239
2011	Wet	8.56	1	2	2	2	5	9	12	9	7	8	12	69	329
	Dry	0.52	0	0	0	0	0	2	0	0	2	1	4	9	242
2012	Wet	6.54	1	0	0	0	2	9	5	4	3	3	6	33	325
	Dry	0.02	1	1	0	0	0	1	1	0	1	0	1	6	239
<b>Total</b>	<b>Wet</b>	<b>160.97</b>	<b>36</b>	<b>42</b>	<b>81</b>	<b>113</b>	<b>132</b>	<b>261</b>	<b>169</b>	<b>164</b>	<b>139</b>	<b>105</b>	<b>94</b>	<b>1344</b>	<b>6289</b>
	<b>Dry</b>	<b>4.77</b>	<b>11</b>	<b>8</b>	<b>26</b>	<b>25</b>	<b>26</b>	<b>43</b>	<b>15</b>	<b>21</b>	<b>30</b>	<b>23</b>	<b>42</b>	<b>270</b>	<b>4293</b>

ns = not sampled



**Table 3.**

Summary of samples with elevated FIB (eFIBs) densities at SBOO kelp stations during wet and dry seasons between 1995–2011. Wet = January–April and October–December; Dry = May–September. Rain was measured at Lindbergh Field, San Diego, CA. Stations are listed north to south from left to right.

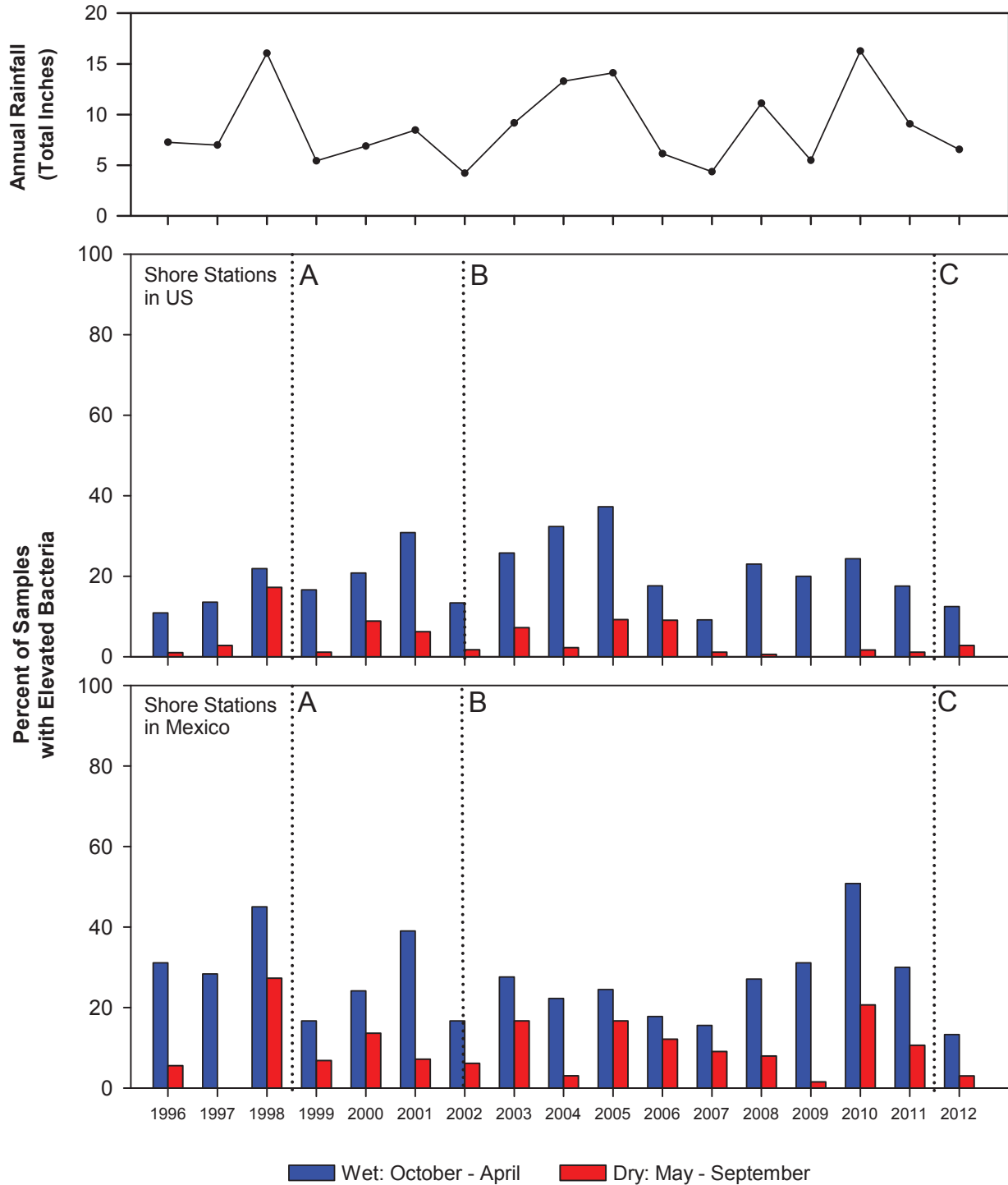
Year	Season	Depth Contour:		9-m		19-m	Total Samples w eFIBs	Total No. of Samples
		Rain(in)	I25	I26	I39			
1995	Wet	14.76	0	0	ns	0	18	
	Dry	0.05	0	0	ns	0	18	
1996	Wet	7.13	0	0	0	0	51	
	Dry	0.14	0	0	0	0	39	
1997	Wet	6.15	4	3	2	9	63	
	Dry	0.85	1	0	0	1	45	
1998	Wet	15.08	6	3	1	10	63	
	Dry	0.97	0	0	1	1	45	
1999	Wet	5.31	6	3	9	18	306	
	Dry	0.12	0	1	6	7	225	
2000	Wet	6.89	16	11	10	37	330	
	Dry	0.01	0	0	3	3	225	
2001	Wet	8.46	25	22	2	49	341	
	Dry	0.01	2	0	3	5	226	
2002	Wet	3.92	3	6	2	11	313	
	Dry	0.31	0	0	1	1	225	
2003	Wet	8.88	9	4	3	16	322	
	Dry	0.3	4	0	1	5	228	
2004	Wet	13.29	21	27	18	66	327	
	Dry	0	0	1	1	2	225	
2005	Wet	13.86	19	16	8	43	323	
	Dry	0.25	0	0	2	2	226	
2006	Wet	5.33	1	2	1	4	315	
	Dry	0.82	0	0	0	0	225	
2007	Wet	4.32	6	1	2	9	315	
	Dry	0.05	1	0	1	2	225	
2008	Wet	10.86	18	13	4	35	315	
	Dry	0.25	0	0	0	0	225	
2009	Wet	5.43	11	6	2	19	315	
	Dry	0.07	0	0	0	0	225	
2010	Wet	16.2	11	10	5	26	315	
	Dry	0.08	0	0	1	1	225	
2011	Wet	8.56	4	8	1	13	315	
	Dry	0.52	0	2	0	2	225	
2012	Wet	6.54	6	0	0	6	315	
	Dry	0.02	0	0	0	0	225	
<b>Total</b>	<b>Wet</b>	<b>160.97</b>	<b>166</b>	<b>135</b>	<b>70</b>	<b>371</b>	<b>4662</b>	
	<b>Dry</b>	<b>4.82</b>	<b>8</b>	<b>4</b>	<b>20</b>	<b>32</b>	<b>3302</b>	

**Table 4.**

Summary of samples with elevated FIB (eFIBs) densities at SBOO offshore stations during wet and dry seasons between 1995–2011. Wet = January–April and October–December; Dry = May–September. Rain was measured at Lindbergh Field, San Diego, CA. Stations are listed north to south from left to right.

Year	Season	Rain (in)	9-m								19-m				28-m							38-m			55-m		Total Samples w eFIBs	Total No. of Samples									
			I37 <sup>a</sup>	I38 <sup>a</sup>	I36 <sup>a</sup>	I32 <sup>a</sup>	I24 <sup>a</sup>	I40 <sup>a</sup>	I19 <sup>a</sup>	I11 <sup>c</sup>	I23 <sup>a</sup>	I18 <sup>a</sup>	I10 <sup>c</sup>	I5 <sup>c</sup>	I33 <sup>a</sup>	I30	I22 <sup>a</sup>	I14 <sup>ab</sup>	I16 <sup>ab</sup>	I12 <sup>ab</sup>	I9 <sup>c</sup>	I3 <sup>c</sup>	I21	I13	I8 <sup>c</sup>	I20			I7 <sup>c</sup>								
1995	Wet	14.76	0	0	0	0	1	ns	1	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	216	
	Dry	0.05	0	0	0	0	0	ns	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	216
1996	Wet	7.13	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	501		
	Dry	0.14	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	369		
1997	Wet	6.15	1	1	0	2	6	7	5	3	2	5	2	4	2	2	1	3	2	2	1	0	3	0	0	3	0	0	0	0	0	0	57	516			
	Dry	0.85	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	5	369		
1998	Wet	15.08	0	0	1	2	6	5	3	0	1	1	1	0	5	2	0	3	2	1	1	2	1	1	1	0	0	0	2	2	0	0	41	525			
	Dry	0.97	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	375			
1999	Wet	5.31	2	0	0	0	1	3	3	1	1	1	3	1	0	1	1	2	5	5	2	3	0	1	0	0	0	0	0	0	0	0	36	525			
	Dry	0.12	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	2	1	1	2	2	0	0	0	0	0	0	0	0	0	0	11	375			
2000	Wet	6.89	0	0	0	0	2	3	3	3	3	0	3	1	0	0	1	4	7	10	3	2	1	1	1	1	0	0	0	0	0	0	48	516			
	Dry	0.01	0	0	0	0	0	0	0	0	1	0	2	0	1	0	2	2	3	4	0	0	0	0	0	0	0	0	0	0	0	0	15	375			
2001	Wet	8.46	0	2	3	3	1	4	5	2	1	0	1	2	0	3	1	1	2	7	2	0	0	0	0	0	0	0	0	0	0	0	40	525			
	Dry	0.01	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	5	0	0	0	0	1	0	0	0	0	0	0	10	375				
2002	Wet	3.92	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	3	5	10	0	1	0	0	0	0	0	0	0	0	0	21	525				
	Dry	0.31	0	0	0	0	0	0	0	0	1	2	1	0	0	0	1	2	4	3	1	0	0	0	0	0	0	0	0	0	0	15	375				
2003	Wet	8.88	0	0	0	0	0	1	1	0	0	0	3	2	1	2	3	3	6	4	1	0	1	0	0	0	0	0	0	0	0	28	525				
	Dry	0.30	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	2	6	1	1	0	0	0	0	0	0	0	0	0	14	375				
2004	Wet	13.29	0	0	0	6	4	5	7	2	0	1	0	3	0	1	1	2	8	4	1	1	0	0	0	0	0	0	0	0	0	46	525				
	Dry	0.00	0	0	0	0	0	0	0	0	0	2	0	0	0	1	1	1	4	2	0	0	0	0	0	0	0	0	0	0	0	11	374				
2005	Wet	13.86	0	1	2	1	5	6	6	3	4	4	3	5	0	3	2	5	3	2	1	0	2	1	1	0	0	0	0	0	0	60	450				
	Dry	0.25	0	0	0	0	0	0	1	0	2	0	0	0	0	1	2	2	6	2	1	0	1	1	1	2	0	0	0	0	22	375					
2006	Wet	5.33	1	0	0	3	2	5	3	0	2	1	0	2	0	0	0	1	4	7	2	1	0	0	0	0	1	0	0	0	35	525					
	Dry	0.82	0	0	0	0	0	0	0	2	0	1	1	2	0	1	1	0	2	5	0	0	0	0	0	0	0	0	0	0	15	375					
2007	Wet	4.32	0	0	0	0	3	4	6	0	1	2	0	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	20	525					
	Dry	0.05	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	6	1	0	1	0	0	0	0	0	0	0	11	375					
2008	Wet	10.86	0	0	0	2	3	3	5	1	3	0	1	2	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	23	525					
	Dry	0.25	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	5	375					
2009	Wet	5.43	0	0	0	2	1	4	7	6	0	1	0	2	2	0	0	1	2	9	2	0	0	0	0	0	0	0	0	0	39	522					
	Dry	0.07	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	2	2	3	1	0	0	0	0	0	0	0	0	0	11	378					
2010	Wet	16.20	0	0	1	3	0	1	1	0	0	1	0	0	0	0	0	0	5	5	1	0	0	0	0	0	0	0	0	0	18	450					
	Dry	0.08	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	2	2	1	0	0	0	0	0	0	0	0	0	8	375					
2011	Wet	8.56	0	0	0	1	1	1	5	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	525					
	Dry	0.52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2	375					
2012	Wet	6.54	0	0	0	0	0	2	0	0	0	0	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	6	525					
	Dry	0.02	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	375					
<b>Total</b>	<b>Wet</b>	<b>160.97</b>	<b>4</b>	<b>4</b>	<b>7</b>	<b>25</b>	<b>36</b>	<b>54</b>	<b>65</b>	<b>23</b>	<b>18</b>	<b>17</b>	<b>18</b>	<b>34</b>	<b>8</b>	<b>12</b>	<b>13</b>	<b>27</b>	<b>53</b>	<b>72</b>	<b>18</b>	<b>9</b>	<b>8</b>	<b>3</b>	<b>2</b>	<b>6</b>	<b>2</b>	<b>538</b>	<b>8946</b>								
	<b>Dry</b>	<b>4.82</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>6</b>	<b>8</b>	<b>7</b>	<b>8</b>	<b>2</b>	<b>8</b>	<b>11</b>	<b>14</b>	<b>29</b>	<b>41</b>	<b>9</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>161</b>	<b>6581</b>								

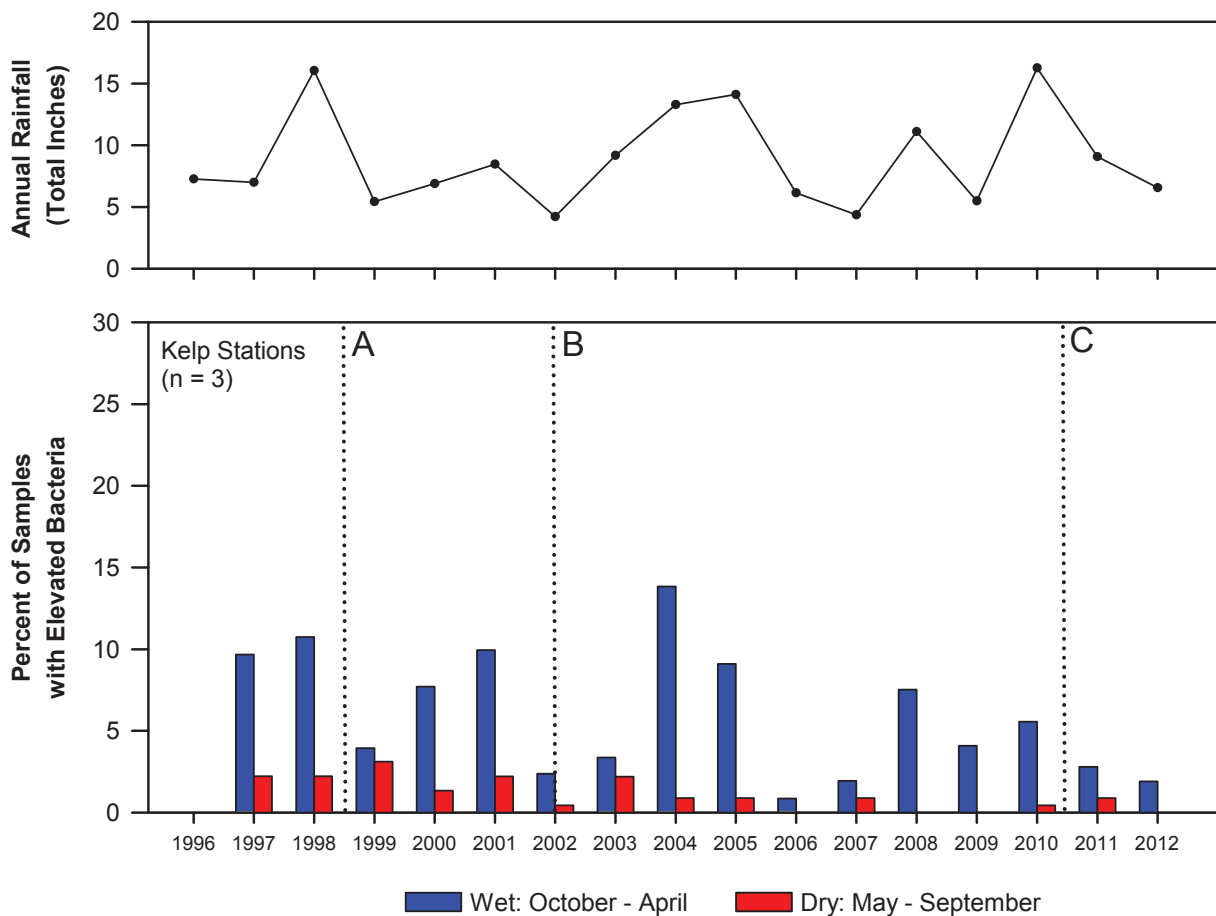
ns = not sample <sup>a</sup> station within 3 nautical miles of shore <sup>b</sup> outfall station <sup>c</sup> station in Mexican waters (Ocean Plan does not apply)



A: Wastewater discharge from the IWTP began in January 1999  
 B: Wastewater discharge from the SBWRP began in May 2002  
 C: Initiation of full secondary treatment at the IWTP began January 2011

**Figure 1.**

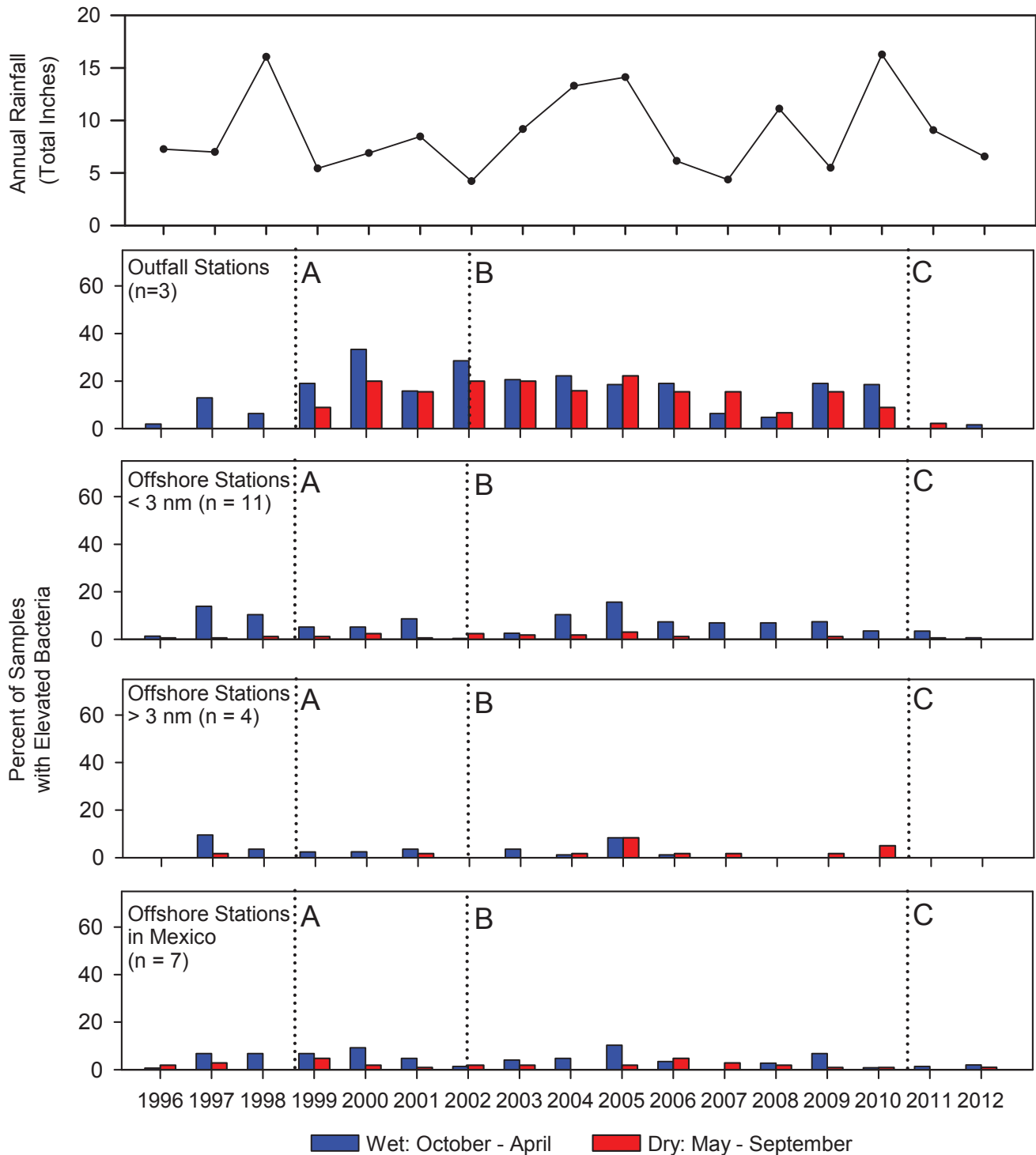
Comparison of annual rainfall to the percent of samples with elevated FIBs in wet versus dry seasons at SBOO shore stations sampled between 1996 and 2012. Data from 1995 were excluded as sampling did not occur the entire year.



A: Wastewater discharge from the IWTP began in January 1999  
 B: Wastewater discharge from the SBWRP began in May 2002  
 C: Initiation of full secondary treatment at the IWTP began January 2011

**Figure 2.**

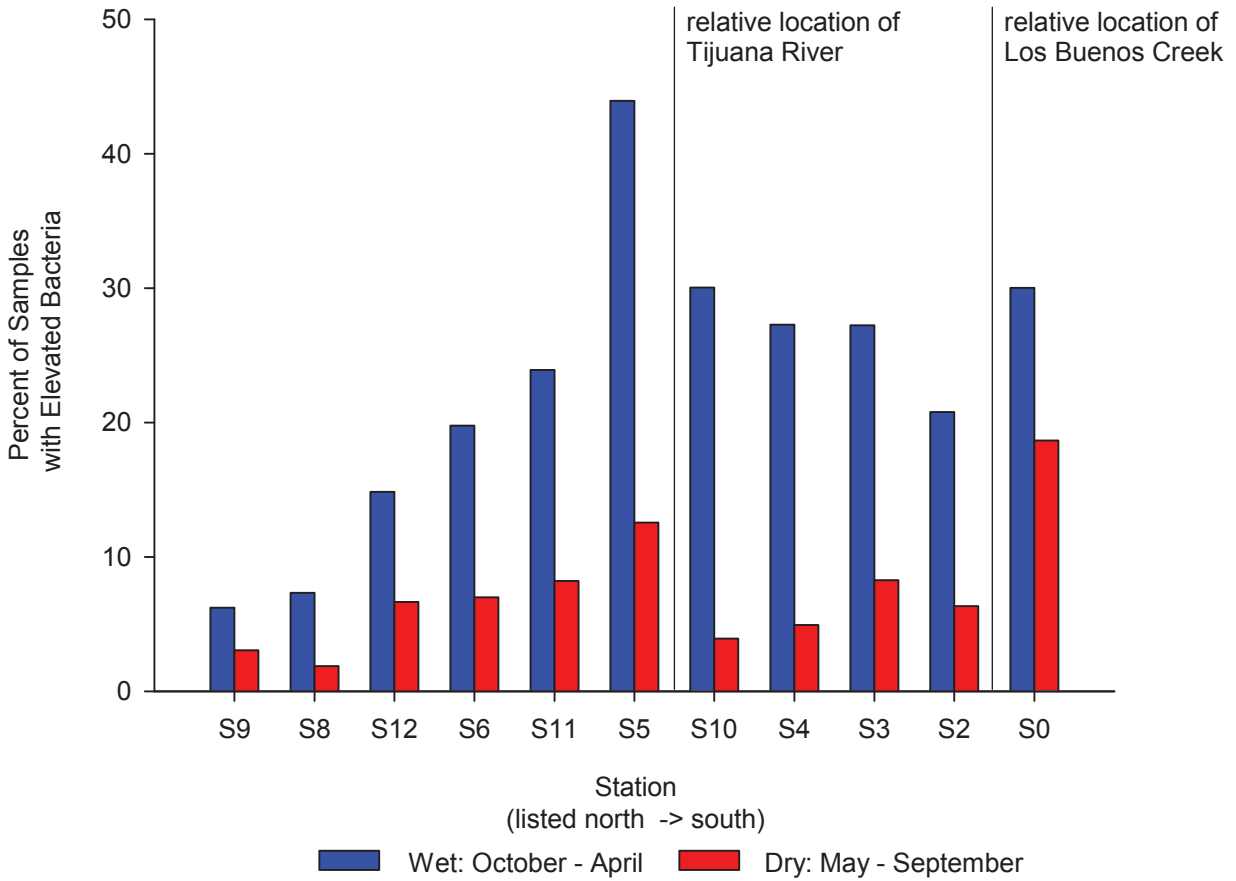
Comparison of annual rainfall to the percent of samples with elevated FIBs in wet versus dry seasons at SBOO kelp stations sampled between 1996 and 2012. Data from 1995 were excluded as sampling did not occur the entire year.



A: Wastewater discharge from the IWTP began in January 1999  
 B: Wastewater discharge from the SBWRP began in May 2002  
 C: Initiation of full secondary treatment at the IWTP began January 2011

**Figure 3.**

Comparison of annual rainfall to the percent of samples with elevated FIBs in wet versus dry seasons at SBOO offshore stations sampled between 1996 and 2012. Data from 1995 were excluded as sampling did not occur the entire year.



**Figure 4.**

The percent of samples with elevated FIBs in wet versus dry seasons at each SBOO shore station over all years combined (1995 - 2012).

**Table 5.**

Summary of bacteria densities in all samples collected from outfall stations I12, I14, and I16 between January 2010 and December 2012. Samples that contain bacteria in exceedance of one or more of the California Ocean Plan Single Sample Maximum (SSM) standards are highlighted in yellow.

Project	Sample	Date	Station	Depth	( ENTERO	FECAL	TOTAL	F:T Ratio	Exceed y/n
SBOO	105101561	5-Jan-10	I12	2	<b>5400</b>	<b>7000</b>	<b>16000</b>	<b>0.44</b>	<b>1</b>
SBOO	105101562	5-Jan-10	I12	18	10	2	66	0.03	0
SBOO	105101563	5-Jan-10	I12	27	10	4	200	0.02	0
SBOO	105101564	5-Jan-10	I14	2	6	4	48	0.08	0
SBOO	105101565	5-Jan-10	I14	18	30	36	360	0.10	0
SBOO	105101566	5-Jan-10	I14	27	8	4	120	0.03	0
SBOO	105101567	5-Jan-10	I16	2	<b>2400</b>	<b>4600</b>	<b>16000</b>	<b>0.29</b>	<b>1</b>
SBOO	105101568	5-Jan-10	I16	18	26	28	260	0.11	0
SBOO	105101569	5-Jan-10	I16	27	4	2	200	0.01	0
SBOO	209101792	23-Feb-10	I12	2	40	<b>740</b>	<b>16000</b>	0.05	<b>1</b>
SBOO	209101793	23-Feb-10	I12	18	2	6	58	0.10	0
SBOO	209101794	23-Feb-10	I12	27	18	320	<b>15000</b>	0.02	<b>1</b>
SBOO	209101795	23-Feb-10	I14	2	2	2	2	1.00	0
SBOO	209101796	23-Feb-10	I14	18	2	2	2	1.00	0
SBOO	209101797	23-Feb-10	I14	27	4	2	2	1.00	0
SBOO	209101798	23-Feb-10	I16	2	2	2	14	0.14	0
SBOO	209101799	23-Feb-10	I16	18	2	2	2	1.00	0
SBOO	209101800	23-Feb-10	I16	27	2	2	2	1.00	0
SBOO	310101773	15-Mar-10	I12	2	10	28	200	0.14	0
SBOO	310101774	15-Mar-10	I12	18	<b>4200</b>	<b>12000</b>	<b>16000</b>	<b>0.75</b>	<b>1</b>
SBOO	310101775	15-Mar-10	I12	27	2	34	120	0.28	0
SBOO	310101776	15-Mar-10	I14	2	2	2	2	1.00	0
SBOO	310101777	15-Mar-10	I14	18	2	2	34	0.06	0
SBOO	310101778	15-Mar-10	I14	27	2	4	66	0.06	0
SBOO	310101779	17-Mar-10	I16	2	2	2	2	1.00	0
SBOO	310101780	17-Mar-10	I16	18	<b>1100</b>	<b>4800</b>	<b>16000</b>	<b>0.30</b>	<b>1</b>
SBOO	310101781	17-Mar-10	I16	27	2	2	20	0.10	0
SBOO	407101159	12-May-10	I12	2	4	2	4	0.50	0
SBOO	407101160	12-May-10	I12	18	8	6	140	0.04	0
SBOO	407101161	12-May-10	I12	27	2	2	20	0.10	0
SBOO	407101162	12-May-10	I14	2	2	2	2	1.00	0
SBOO	407101163	12-May-10	I14	18	2	2	2	1.00	0
SBOO	407101164	12-May-10	I14	27	2	2	20	0.10	0
SBOO	407101165	12-May-10	I16	2	2	2	2	1.00	0
SBOO	407101166	12-May-10	I16	18	2	2	2	1.00	0
SBOO	407101167	12-May-10	I16	27	2	2	20	0.10	0
SBOO	602101437	2-Jun-10	I12	2	2	2	2	1.00	0
SBOO	602101438	2-Jun-10	I12	18	2	2	2	1.00	0
SBOO	602101439	2-Jun-10	I12	27	2	2	2	1.00	0

**Table 5.** *continued*

Project	Sample	Date	Station	Depth (	ENTERO	FECAL	TOTAL	F:T Ratio	Exceed y/n
SBOO	602101440	2-Jun-10	I14	2	2	2	2	1.00	0
SBOO	602101441	2-Jun-10	I14	18	2	2	2	1.00	0
SBOO	602101442	2-Jun-10	I14	27	2	2	2	1.00	0
SBOO	602101443	2-Jun-10	I16	2	2	2	2	1.00	0
SBOO	602101444	2-Jun-10	I16	18	<b>2800</b>	<b>11000</b>	<b>16000</b>	<b>0.69</b>	<b>1</b>
SBOO	602101445	2-Jun-10	I16	27	86	120	560	0.21	0
SBOO	714101117	14-Jul-10	I12	2	6	10	44	0.23	0
SBOO	714101118	14-Jul-10	I12	18	<b>8400</b>	<b>12000</b>	<b>16000</b>	<b>0.75</b>	<b>1</b>
SBOO	714101119	14-Jul-10	I12	27	<b>2000</b>	<b>8400</b>	<b>16000</b>	<b>0.53</b>	<b>1</b>
SBOO	714101120	14-Jul-10	I14	2	2	2	2	1.00	0
SBOO	714101121	14-Jul-10	I14	18	2	2	2	1.00	0
SBOO	714101122	14-Jul-10	I14	27	2	2	2	1.00	0
SBOO	714101123	14-Jul-10	I16	2	2	2	2	1.00	0
SBOO	714101124	14-Jul-10	I16	18	2	2	2	1.00	0
SBOO	714101125	14-Jul-10	I16	27	4	28	62	0.45	0
SBOO	804101522	4-Aug-10	I12	2	2	2	2	1.00	0
SBOO	804101523	4-Aug-10	I12	18	2	2	28	0.07	0
SBOO	804101524	4-Aug-10	I12	27	4	2	80	0.03	0
SBOO	804101525	4-Aug-10	I14	2	2	2	2	1.00	0
SBOO	804101526	4-Aug-10	I14	18	2	2	14	0.14	0
SBOO	804101527	4-Aug-10	I14	27	2	2	20	0.10	0
SBOO	804101528	4-Aug-10	I16	2	2	2	2	1.00	0
SBOO	804101529	4-Aug-10	I16	18	2	2	26	0.08	0
SBOO	804101530	4-Aug-10	I16	27	2	2	34	0.06	0
SBOO	908101804	8-Sep-10	I12	2	2	2	2	1.00	0
SBOO	908101805	8-Sep-10	I12	18	2	2	2	1.00	0
SBOO	908101806	8-Sep-10	I12	27	2	2	2	1.00	0
SBOO	908101807	8-Sep-10	I14	2	2	2	2	1.00	0
SBOO	908101808	8-Sep-10	I14	18	2	2	2	1.00	0
SBOO	908101809	8-Sep-10	I14	27	2	2	4	0.50	0
SBOO	908101810	8-Sep-10	I16	2	2	2	60	0.03	0
SBOO	908101811	8-Sep-10	I16	18	<b>1200</b>	<b>4800</b>	<b>11000</b>	<b>0.44</b>	<b>1</b>
SBOO	908101812	8-Sep-10	I16	27	2	18	20	0.90	0
SBOO	1014101209	14-Oct-10	I12	2	2	2	12	0.17	0
SBOO	1014101210	14-Oct-10	I12	18	2	36	84	0.43	0
SBOO	1014101211	14-Oct-10	I12	27	2	2	22	0.09	0
SBOO	1014101212	14-Oct-10	I14	2	2	2	4	0.50	0
SBOO	1014101213	14-Oct-10	I14	18	2	2	40	0.05	0
SBOO	1014101214	14-Oct-10	I14	27	2	2	20	0.10	0
SBOO	1014101215	14-Oct-10	I16	2	2	2	6	0.33	0
SBOO	1014101216	14-Oct-10	I16	18	<b>360</b>	<b>1200</b>	4400	<b>0.27</b>	<b>1</b>
SBOO	1014101217	14-Oct-10	I16	27	<b>200</b>	<b>1200</b>	4800	<b>0.25</b>	<b>1</b>
SBOO	1116101568	16-Nov-10	I12	2	4	32	92	0.35	0
SBOO	1116101569	16-Nov-10	I12	18	40	<b>1200</b>	<b>16000</b>	<b>0.08</b>	<b>1</b>
SBOO	1116101570	16-Nov-10	I12	27	2	14	70	0.20	0
SBOO	1116101571	16-Nov-10	I14	2	2	2	4	0.50	0



**Table 5.** *continued*

Project	Sample	Date	Station	Depth	( ENTERO	FECAL	TOTAL	F:T Ratio	Exceed y/n
SBOO	1116101572	16-Nov-10	I14	18	2	26	140	0.19	0
SBOO	1116101573	16-Nov-10	I14	27	4	38	220	0.17	0
SBOO	1116101574	16-Nov-10	I16	2	2	8	14	0.57	0
<b>SBOO</b>	<b>1116101575</b>	<b>16-Nov-10</b>	<b>I16</b>	<b>18</b>	<b>40</b>	<b>5000</b>	<b>16000</b>	<b>0.31</b>	<b>1</b>
SBOO	1116101576	16-Nov-10	I16	27	6	84	480	0.18	0
SBOO	1207101374	7-Dec-10	I12	2	2	2	20	0.10	0
SBOO	1207101375	7-Dec-10	I12	18	2	2	200	0.01	0
SBOO	1207101376	7-Dec-10	I12	27	2	2	2	1.00	0
SBOO	1207101377	7-Dec-10	I14	2	2	2	80	0.03	0
SBOO	1207101378	7-Dec-10	I14	18	2	2	20	0.10	0
SBOO	1207101379	7-Dec-10	I14	27	2	2	20	0.10	0
SBOO	1207101380	7-Dec-10	I16	2	2	2	2	1.00	0
SBOO	1207101381	7-Dec-10	I16	18	2	2	20	0.10	0
SBOO	1207101382	7-Dec-10	I16	27	2	2	20	0.10	0
SBOO	104111480	4-Jan-11	I12	2	36	120	1000	0.12	0
SBOO	104111481	4-Jan-11	I12	18	6	26	130	0.20	0
SBOO	104111482	4-Jan-11	I12	27	6	26	160	0.16	0
SBOO	104111483	4-Jan-11	I14	2	2	8	12	0.67	0
SBOO	104111484	4-Jan-11	I14	18	2	4	20	0.20	0
SBOO	104111485	4-Jan-11	I14	27	6	6	22	0.27	0
SBOO	104111486	4-Jan-11	I16	2	6	20	260	0.08	0
SBOO	104111487	4-Jan-11	I16	18	2	4	40	0.10	0
SBOO	104111488	4-Jan-11	I16	27	8	2	40	0.05	0
SBOO	201111760	1-Feb-11	I12	2	2	2	2	1.00	0
SBOO	201111761	1-Feb-11	I12	18	8	12	92	0.13	0
SBOO	201111762	1-Feb-11	I12	27	2	2	10	0.20	0
SBOO	201111763	1-Feb-11	I14	2	2	2	20	0.10	0
SBOO	201111764	1-Feb-11	I14	18	2	2	2	1.00	0
SBOO	201111765	1-Feb-11	I14	27	2	2	2	1.00	0
SBOO	201111766	1-Feb-11	I16	2	6	18	98	0.18	0
SBOO	201111767	1-Feb-11	I16	18	2	2	4	0.50	0
SBOO	201111768	1-Feb-11	I16	27	2	2	2	1.00	0
SBOO	302111176	2-Mar-11	I12	2	2	10	32	0.31	0
SBOO	302111177	2-Mar-11	I12	18	2	6	86	0.07	0
SBOO	302111178	2-Mar-11	I12	27	2	6	84	0.07	0
SBOO	302111179	2-Mar-11	I14	2	2	2	2	1.00	0
SBOO	302111180	2-Mar-11	I14	18	2	2	8	0.25	0
SBOO	302111181	2-Mar-11	I14	27	2	2	84	0.02	0
SBOO	302111182	2-Mar-11	I16	2	2	2	2	1.00	0
SBOO	302111183	2-Mar-11	I16	18	2	2	18	0.11	0
SBOO	302111184	2-Mar-11	I16	27	2	2	66	0.03	0
SBOO	406111350	6-Apr-11	I12	2	2	2	2	1.00	0
SBOO	406111351	6-Apr-11	I12	18	2	12	100	0.12	0
SBOO	406111352	6-Apr-11	I12	27	2	2	14	0.14	0
SBOO	406111353	6-Apr-11	I14	2	2	2	2	1.00	0
SBOO	406111354	6-Apr-11	I14	18	2	2	2	1.00	0

**Table 5.** *continued*

Project	Sample	Date	Station	Depth (	ENTERO	FECAL	TOTAL	F:T Ratio	Exceed y/n
SBOO	406111355	6-Apr-11	I14	27	2	2	2	1.00	0
SBOO	406111356	6-Apr-11	I16	2	2	2	2	1.00	0
SBOO	406111357	6-Apr-11	I16	18	2	2	20	0.10	0
SBOO	406111358	6-Apr-11	I16	27	2	2	2	1.00	0
SBOO	510111687	10-May-11	I12	2	2	2	6	0.33	0
<b>SBOO</b>	<b>510111688</b>	<b>10-May-11</b>	<b>I12</b>	<b>18</b>	<b>100</b>	<b>740</b>	<b>1600</b>	<b>0.46</b>	<b>1</b>
SBOO	510111689	10-May-11	I12	27	2	4	6	0.67	0
SBOO	510111690	10-May-11	I14	2	2	2	2	1.00	0
SBOO	510111691	10-May-11	I14	18	2	2	2	1.00	0
SBOO	510111692	10-May-11	I14	27	2	2	2	1.00	0
SBOO	510111693	10-May-11	I16	2	2	2	2	1.00	0
SBOO	510111694	10-May-11	I16	18	2	2	2	1.00	0
SBOO	510111695	10-May-11	I16	27	2	2	2	1.00	0
SBOO	608111969	8-Jun-11	I12	2	2	2	2	1.00	0
SBOO	608111970	8-Jun-11	I12	18	10	6	64	0.09	0
SBOO	608111971	8-Jun-11	I12	27	2	2	2	1.00	0
SBOO	608111972	8-Jun-11	I14	2	2	2	2	1.00	0
SBOO	608111973	8-Jun-11	I14	18	2	2	2	1.00	0
SBOO	608111974	8-Jun-11	I14	27	2	2	2	1.00	0
SBOO	608111975	8-Jun-11	I16	2	2	2	2	1.00	0
SBOO	608111976	8-Jun-11	I16	18	2	2	2	1.00	0
SBOO	608111977	8-Jun-11	I16	27	2	2	2	1.00	0
SBOO	706111237	6-Jul-11	I12	2	2	2	10	0.20	0
SBOO	706111238	6-Jul-11	I12	18	38	130	1000	0.13	0
SBOO	706111239	6-Jul-11	I12	27	2	2	14	0.14	0
SBOO	706111240	6-Jul-11	I14	2	2	2	4	0.50	0
SBOO	706111241	6-Jul-11	I14	18	36	160	800	0.20	0
SBOO	706111242	6-Jul-11	I14	27	2	8	38	0.21	0
SBOO	706111243	6-Jul-11	I16	2	2	2	2	1.00	0
SBOO	706111244	6-Jul-11	I16	18	6	44	220	0.20	0
SBOO	706111245	6-Jul-11	I16	27	2	2	40	0.05	0
SBOO	823111504	23-Aug-11	I12	2	2	2	2	1.00	0
SBOO	823111505	23-Aug-11	I12	18	38	200	880	0.23	0
SBOO	823111506	23-Aug-11	I12	27	2	2	2	1.00	0
SBOO	823111507	23-Aug-11	I14	2	2	2	2	1.00	0
SBOO	823111508	23-Aug-11	I14	18	2	2	2	1.00	0
SBOO	823111509	23-Aug-11	I14	27	2	2	2	1.00	0
SBOO	823111510	23-Aug-11	I16	2	2	2	2	1.00	0
SBOO	823111511	23-Aug-11	I16	18	2	2	2	1.00	0
SBOO	823111512	23-Aug-11	I16	27	2	2	2	1.00	0
SBOO	914111727	14-Sep-11	I12	2	2	2	2	1.00	0
SBOO	914111728	14-Sep-11	I12	18	2	2	2	1.00	0
SBOO	914111729	14-Sep-11	I12	27	2	2	2	1.00	0
SBOO	914111730	14-Sep-11	I14	2	2	2	2	1.00	0
SBOO	914111731	14-Sep-11	I14	18	2	2	12	0.17	0
SBOO	914111732	14-Sep-11	I14	27	2	2	4	0.50	0

**Table 5.** *continued*

Project	Sample	Date	Station	Depth (	ENTERO	FECAL	TOTAL	F:T Ratio	Exceed y/n
SBOO	914111733	14-Sep-11	l16	2	2	2	2	1.00	0
SBOO	914111734	14-Sep-11	l16	18	2	2	6	0.33	0
SBOO	914111735	14-Sep-11	l16	27	2	2	2	1.00	0
SBOO	1005111650	5-Oct-11	l12	2	2	2	2	1.00	0
SBOO	1005111651	5-Oct-11	l12	18	2	2	14	0.14	0
SBOO	1005111652	5-Oct-11	l12	27	2	2	2	1.00	0
SBOO	1005111653	5-Oct-11	l14	2	2	2	2	1.00	0
SBOO	1005111654	5-Oct-11	l14	18	2	2	2	1.00	0
SBOO	1005111655	5-Oct-11	l14	27	2	2	2	1.00	0
SBOO	1005111656	5-Oct-11	l16	2	2	2	2	1.00	0
SBOO	1005111657	5-Oct-11	l16	18	2	2	2	1.00	0
SBOO	1005111658	5-Oct-11	l16	27	2	2	20	0.10	0
SBOO	1108111346	8-Nov-11	l12	2	2	2	2	1.00	0
SBOO	1108111347	8-Nov-11	l12	18	12	60	240	0.25	0
SBOO	1108111348	8-Nov-11	l12	27	2	2	2	1.00	0
SBOO	1108111349	8-Nov-11	l14	2	2	2	2	1.00	0
SBOO	1108111350	8-Nov-11	l14	18	2	2	18	0.11	0
SBOO	1108111351	8-Nov-11	l14	27	2	2	2	1.00	0
SBOO	1108111352	8-Nov-11	l16	2	2	2	8	0.25	0
SBOO	1108111353	8-Nov-11	l16	18	14	56	300	0.19	0
SBOO	1108111354	8-Nov-11	l16	27	2	2	8	0.25	0
SBOO	1207111653	7-Dec-11	l12	2	12	2	96	0.02	0
SBOO	1207111654	7-Dec-11	l12	18	2	2	2	1.00	0
SBOO	1207111655	7-Dec-11	l12	27	2	2	8	0.25	0
SBOO	1207111656	7-Dec-11	l14	2	2	2	2	1.00	0
SBOO	1207111657	7-Dec-11	l14	18	2	2	2	1.00	0
SBOO	1207111658	7-Dec-11	l14	27	2	2	2	1.00	0
SBOO	1207111659	7-Dec-11	l16	2	2	2	2	1.00	0
SBOO	1207111660	7-Dec-11	l16	18	2	2	4	0.50	0
SBOO	1207111661	7-Dec-11	l16	27	2	2	2	1.00	0
SBOO	104121376	4-Jan-12	l12	2	2	2	2	1.00	0
SBOO	104121377	4-Jan-12	l12	18	2	2	2	1.00	0
SBOO	104121378	4-Jan-12	l12	27	2	2	12	0.17	0
SBOO	104121379	4-Jan-12	l14	2	2	2	2	1.00	0
SBOO	104121380	4-Jan-12	l14	18	2	2	2	1.00	0
SBOO	104121381	4-Jan-12	l14	27	2	2	20	0.10	0
SBOO	104121382	4-Jan-12	l16	2	2	2	2	1.00	0
SBOO	104121383	4-Jan-12	l16	18	2	2	2	1.00	0
SBOO	104121384	4-Jan-12	l16	27	2	2	2	1.00	0
SBOO	208121080	8-Feb-12	l12	2	<b>120</b>	200	1200	<b>0.17</b>	<b>1</b>
SBOO	208121081	8-Feb-12	l12	18	2	2	22	0.09	0
SBOO	208121082	8-Feb-12	l12	27	2	6	8	0.75	0
SBOO	208121083	8-Feb-12	l14	2	2	2	2	1.00	0
SBOO	208121084	8-Feb-12	l14	18	2	2	2	1.00	0
SBOO	208121085	8-Feb-12	l14	27	2	2	32	0.06	0
SBOO	208121086	8-Feb-12	l16	2	16	140	480	0.29	0

**Table 5.** *continued*

Project	Sample	Date	Station	Depth	( ENTERO	FECAL	TOTAL	F:T Ratio	Exceed y/n
SBOO	208121087	8-Feb-12	I16	18	28	120	280	0.43	0
SBOO	208121088	8-Feb-12	I16	27	2	2	8	0.25	0
SBOO	307121306	7-Mar-12	I12	2	2	2	2	1.00	0
SBOO	307121307	7-Mar-12	I12	18	2	2	2	1.00	0
SBOO	307121308	7-Mar-12	I12	27	2	2	8	0.25	0
SBOO	307121309	7-Mar-12	I14	2	2	2	2	1.00	0
SBOO	307121310	7-Mar-12	I14	18	2	2	2	1.00	0
SBOO	307121311	7-Mar-12	I14	27	2	2	8	0.25	0
SBOO	307121312	7-Mar-12	I16	2	2	2	2	1.00	0
SBOO	307121313	7-Mar-12	I16	18	2	2	2	1.00	0
SBOO	307121314	7-Mar-12	I16	27	2	2	16	0.13	0
SBOO	1204181473	18-Apr-12	I12	2	2	2	2	1.00	0
SBOO	1204181475	18-Apr-12	I12	18	2	2	12	0.17	0
SBOO	1204181477	18-Apr-12	I12	27	2	2	6	0.33	0
SBOO	1204181479	18-Apr-12	I14	2	2	2	2	1.00	0
SBOO	1204181481	18-Apr-12	I14	18	2	4	18	0.22	0
SBOO	1204181483	18-Apr-12	I14	27	2	8	48	0.17	0
SBOO	1204181485	18-Apr-12	I16	2	2	2	4	0.50	0
SBOO	1204181487	18-Apr-12	I16	18	2	2	14	0.14	0
SBOO	1204181489	18-Apr-12	I16	27	2	2	16	0.13	0
SBOO	1205031523	3-May-12	I12	2	2	2	2	1.00	0
SBOO	1205031524	3-May-12	I12	18	2	2	2	1.00	0
SBOO	1205031525	3-May-12	I12	27	2	2	2	1.00	0
SBOO	1205031526	3-May-12	I14	2	2	2	2	1.00	0
SBOO	1205031527	3-May-12	I14	18	2	10	42	0.24	0
SBOO	1205031528	3-May-12	I14	27	2	2	2	1.00	0
SBOO	1205031529	3-May-12	I16	2	2	4	2	2.00	0
SBOO	1205031530	3-May-12	I16	18	2	2	26	0.08	0
SBOO	1205031531	3-May-12	I16	27	2	2	2	1.00	0
SBOO	1206061066	6-Jun-12	I12	2	2	2	2	1.00	0
SBOO	1206061067	6-Jun-12	I12	18	2	2	4	0.50	0
SBOO	1206061068	6-Jun-12	I12	27	2	2	2	1.00	0
SBOO	1206061069	6-Jun-12	I14	2	2	2	2	1.00	0
SBOO	1206061070	6-Jun-12	I14	18	2	2	2	1.00	0
SBOO	1206061071	6-Jun-12	I14	27	2	2	2	1.00	0
SBOO	1206061072	6-Jun-12	I16	2	2	2	2	1.00	0
SBOO	1206061073	6-Jun-12	I16	18	20	100	380	0.26	0
SBOO	1206061074	6-Jun-12	I16	27	2	2	4	0.50	0
SBOO	1207111739	11-Jul-12	I12	2	2	2	4	0.50	0
SBOO	1207111740	11-Jul-12	I12	18	2	2	2	1.00	0
SBOO	1207111741	11-Jul-12	I12	27	2	2	2	1.00	0
SBOO	1207111742	11-Jul-12	I14	2	2	2	2	1.00	0
SBOO	1207111743	11-Jul-12	I14	18	2	2	2	1.00	0
SBOO	1207111744	11-Jul-12	I14	27	2	2	2	1.00	0
SBOO	1207111745	11-Jul-12	I16	2	2	2	2	1.00	0
SBOO	1207111746	11-Jul-12	I16	18	2	2	2	1.00	0

**Table 5.** *continued*

Project	Sample	Date	Station	Depth	( ENTERO	FECAL	TOTAL	F:T Ratio	Exceed y/n
SBOO	1207111747	11-Jul-12	I16	27	2	2	2	1.00	0
SBOO	1208134138	13-Aug-12	I12	2	2	2	2	1.00	0
SBOO	1208134139	13-Aug-12	I12	18	2	2	2	1.00	0
SBOO	1208134140	13-Aug-12	I12	27	2	2	20	0.10	0
SBOO	1208134141	13-Aug-12	I14	2	2	2	2	1.00	0
SBOO	1208134142	13-Aug-12	I14	18	2	2	2	1.00	0
SBOO	1208134143	13-Aug-12	I14	27	2	2	20	0.10	0
SBOO	1208134144	13-Aug-12	I16	2	2	2	2	1.00	0
SBOO	1208134145	13-Aug-12	I16	18	2	2	20	0.10	0
SBOO	1208134146	13-Aug-12	I16	27	2	2	20	0.10	0
SBOO	1209055362	5-Sep-12	I12	2	2	2	2	1.00	0
SBOO	1209055363	5-Sep-12	I12	18	4	2	40	0.05	0
SBOO	1209055364	5-Sep-12	I12	27	2	2	2	1.00	0
SBOO	1209055365	5-Sep-12	I14	2	2	2	2	1.00	0
SBOO	1209055366	5-Sep-12	I14	18	2	2	2	1.00	0
SBOO	1209055367	5-Sep-12	I14	27	2	2	6	0.33	0
SBOO	1209055368	5-Sep-12	I16	2	2	2	2	1.00	0
SBOO	1209055369	5-Sep-12	I16	18	2	4	14	0.29	0
SBOO	1209055370	5-Sep-12	I16	27	2	4	6	0.67	0
SBOO	1210056753	5-Oct-12	I12	2	2	2	2	1.00	0
SBOO	1210056754	5-Oct-12	I12	18	2	2	2	1.00	0
SBOO	1210056755	5-Oct-12	I12	27	2	2	2	1.00	0
SBOO	1210056756	5-Oct-12	I14	2	2	2	2	1.00	0
SBOO	1210056757	5-Oct-12	I14	18	2	2	2	1.00	0
SBOO	1210056758	5-Oct-12	I14	27	2	2	2	1.00	0
SBOO	1210056759	5-Oct-12	I16	2	2	2	2	1.00	0
SBOO	1210056760	5-Oct-12	I16	18	2	2	8	0.25	0
SBOO	1210056761	5-Oct-12	I16	27	2	2	2	1.00	0
SBOO	1211077556	7-Nov-12	I12	2	2	2	2	1.00	0
SBOO	1211077557	7-Nov-12	I12	18	2	26	180	0.14	0
SBOO	1211077558	7-Nov-12	I12	27	2	2	2	1.00	0
SBOO	1211077559	7-Nov-12	I14	2	2	2	2	1.00	0
SBOO	1211077560	7-Nov-12	I14	18	2	18	160	0.11	0
SBOO	1211077561	7-Nov-12	I14	27	2	2	2	1.00	0
SBOO	1211077562	7-Nov-12	I16	2	2	2	2	1.00	0
SBOO	1211077563	7-Nov-12	I16	18	2	10	100	0.10	0
SBOO	1211077564	7-Nov-12	I16	27	2	2	4	0.50	0
SBOO	1212059017	4-Dec-12	I12	2	2	2	2	1.00	0
SBOO	1212059018	4-Dec-12	I12	18	2	8	30	0.27	0
SBOO	1212059019	4-Dec-12	I12	27	2	4	32	0.13	0
SBOO	1212059020	4-Dec-12	I14	2	2	2	2	1.00	0
SBOO	1212059021	4-Dec-12	I14	18	2	10	72	0.14	0
SBOO	1212059022	4-Dec-12	I14	27	2	2	40	0.05	0
SBOO	1212059023	4-Dec-12	I16	2	2	2	2	1.00	0
SBOO	1212059024	4-Dec-12	I16	18	2	8	80	0.10	0
SBOO	1212059025	4-Dec-12	I16	27	2	4	36	0.11	0



# **ENCLOSURE 4**

## **SBWRP and IWTP Flow Data**

**Enclosure 4 SBWRP and IWTP flow data**

Calendar year 2012 data is included here. Prior years' data has been previously submitted to the Regional Water Quality Control Board, San Diego Region and is available online at <http://www.sandiego.gov/mwwd/environment/plantmonitoring.shtml#sbay>.

SBWRP Annual Monitoring Report  
2012 Flow Report

WASTEWATER MONTHLY AVERAGE FLOWS

(Million Gallons / Day)

Mon	Influent	Outfall	Secondary Effluent	South Metro Interceptor Return	Recycled Production	Distributed Recycled	Dilution Water Added Recycled	Recycled Plant Internal use
01	7.92	4.52	2.37	1.29	5.20	1.96	.00	1.02
02	7.95	5.11	3.00	1.13	4.68	1.72	.00	.84
03	8.26	5.15	3.09	1.13	4.77	1.89	.00	.82
04	8.25	4.25	2.95	1.30	4.85	2.65	.00	.93
05	8.25	2.68	2.05	1.22	5.78	4.29	.00	.85
06	8.01	1.42	.74	1.28	6.82	5.22	.00	.92
07	8.03	1.00	.60	1.48	6.83	5.51	.00	.93
08	8.16	1.22	.06	1.42	7.55	5.50	.00	.89
09	8.00	1.64	.00	1.38	7.50	4.96	.00	.91
10	7.86	2.54	.10	1.35	7.19	3.91	.00	.83
11	7.80	3.78	1.25	1.33	5.89	2.62	.00	.74
12	7.86	5.81	2.06	1.38	5.01	.60	.00	.66
avg	8.04	3.26	1.52	1.31	6.01	3.40	.00	.86

(Million Gallons / Month)

Mon	Influent	Outfall	Secondary Effluent	South Metro Interceptor Return	Recycled Production	Distributed Recycled	Dilution Water Added Recycled	Recycled Plant Internal use
01	246.37	142.30	73.57	39.89	161.13	60.89	.00	31.52
02	232.34	148.23	86.94	32.77	135.64	49.86	.00	24.44
03	255.96	159.77	95.88	35.07	147.95	58.57	.00	25.50
04	247.63	127.44	88.53	38.85	145.35	79.57	.00	27.92
05	255.73	83.23	63.59	37.78	179.08	133.13	.00	26.28
06	240.34	42.53	22.10	38.46	204.51	156.46	.00	27.61
07	248.99	30.92	18.69	45.83	211.67	170.66	.00	28.86
08	253.09	37.84	2.00	44.08	234.10	170.64	.00	27.70
09	239.93	49.24	.00	41.36	225.02	148.67	.00	27.23
10	243.73	78.89	2.97	41.98	223.03	121.36	.01	25.81
11	234.04	113.33	37.37	39.75	176.66	78.50	.02	22.27
12	243.51	180.13	63.96	42.78	155.36	18.60	.00	20.56
avg	245.14	99.49	46.30	39.88	183.29	103.91	.00	26.31
sum	2941.66	1193.85	555.60	478.60	2199.50	1246.91	.03	315.70



**South Bay Effluent to Ocean Outfall Flows (mgd) 2012**

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1	6.66	4.03	6.76	3.81	6.11	1.75	0.92	0.20	0.17	2.47	1.04	6.30	
2	5.46	3.94	7.15	4.37	5.90	1.52	2.10	1.81	1.42	1.77	1.04	6.24	
3	7.21	3.84	6.83	4.86	2.82	1.42	2.51	0.43	1.83	1.79	2.21	5.63	
4	5.68	6.54	7.04	4.00	2.38	1.40	2.54	0.15	2.06	1.55	4.96	6.52	
5	6.31	5.17	7.09	3.92	1.91	1.56	2.87	0.10	1.90	1.39	2.63	4.72	
6	4.29	3.75	7.10	3.93	4.37	1.63	1.96	0.09	1.74	1.36	2.31	5.55	
7	2.88	6.85	6.78	3.89	5.53	1.52	2.05	0.09	1.62	2.72	3.25	4.75	
8	6.19	4.25	7.00	3.48	4.97	0.63	2.51	0.11	1.43	1.71	1.36	6.74	
9	5.98	3.24	4.17	4.94	2.91	0.77	1.74	1.67	1.68	1.61	5.55	6.13	
10	3.67	2.98	2.80	3.95	2.96	1.06	0.98	0.85	1.24	1.69	6.58	6.73	
11	3.34	2.45	2.80	3.49	2.98	1.41	0.17	0.10	0.63	1.63	5.19	3.96	
12	3.81	5.85	3.70	2.58	2.93	1.48	0.17	3.61	1.87	1.84	5.76	2.87	
13	1.21	7.12	3.94	2.85	2.64	2.50	1.28	1.43	2.10	4.92	5.58	2.73	
14	1.42	3.13	2.88	3.45	2.49	1.39	1.31	1.34	1.97	6.21	5.08	6.42	
15	1.60	5.05	2.37	6.81	2.19	1.65	0.95	0.45	2.67	2.96	6.40	6.37	
16	1.58	7.07	1.99	6.09	1.99	1.58	0.17	0.12	4.00	1.84	3.23	6.00	
17	1.88	6.86	1.74	2.38	2.02	1.34	0.52	0.12	2.32	1.29	2.13	6.56	
18	1.99	6.92	1.89	2.40	2.00	1.21	1.15	0.95	1.63	1.64	5.42	6.55	
19	6.08	6.70	4.18	3.46	1.95	1.76	0.61	4.77	1.71	1.10	2.94	6.57	
20	2.63	6.67	7.01	2.99	1.88	1.87	0.11	1.67	0.54	2.29	3.21	6.25	
21	5.27	6.37	5.04	3.05	1.86	1.21	0.11	1.31	0.14	5.91	2.75	6.48	
22	6.11	7.21	6.88	4.13	1.84	0.90	0.15	2.10	0.14	2.53	3.82	6.34	
23	4.39	3.65	5.34	3.44	1.82	1.01	0.12	1.21	3.17	6.68	2.54	6.56	
24	6.83	4.87	6.78	6.54	1.76	2.00	2.69	1.32	1.47	2.55	3.77	6.10	
25	5.64	6.64	7.19	3.37	1.60	1.82	0.11	1.27	2.76	1.27	6.08	5.85	
26	5.08	3.30	7.18	6.05	1.42	1.52	0.10	1.29	0.26	1.43	3.96	5.53	
27	6.92	2.63	7.19	4.46	1.31	1.36	0.11	2.98	1.14	2.54	3.45	6.25	
28	4.93	4.69	4.89	6.93	1.80	1.37	0.12	1.71	1.16	5.88	2.24	6.62	
29	5.62	6.46	6.01	7.20	1.76	0.99	0.14	1.83	0.46	2.34	3.33	6.53	
30	6.82		4.19	4.62	1.76	0.90	0.10	1.85	4.01	2.97	5.52	5.89	Annual
31	4.82		3.86		3.37		0.55	0.91		1.01		4.39	Summary
Average	4.52	5.11	5.15	4.25	2.68	1.42	1.00	1.22	1.64	2.54	3.78	5.81	3.26
Minimum	1.21	2.45	1.74	2.38	1.31	0.63	0.10	0.09	0.14	1.01	1.04	2.73	0.09
Maximum	7.21	7.21	7.19	7.20	6.11	2.50	2.87	4.77	4.01	6.68	6.58	6.74	7.21
Total	142.30	148.23	159.77	127.44	83.23	42.53	30.92	37.84	49.24	78.89	113.33	180.13	1,194



# **ENCLOSURE 5**

## **Background and Attribution of Discharges to the South Bay Ocean Outfall**

## Background and attribution of discharges to the SBOO

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The SBOO is co-owned by the City of San Diego and the U.S. Section International Boundary and Water Commission (IBWC).

Flows from the City's SBWRP to the SBOO were exclusively highly treated disinfected tertiary water; water suitable for recycled uses. Throughout the lifespan of the SBOO, the discharge from the IBWC operated International Wastewater Treatment Plant (IWTP) has been at primary levels until January 2011. SBWRP discharges were approximately 12% of the total volume<sup>1</sup> on annual basis. Significantly, during much of the dry season, SBWRP flows were well below 2 MGD average and many days see no discharge at all.

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The IBWC operated International Wastewater Treatment (IWTP) discharges an average of 24 MGD of secondary treated wastewater, with maximum flows exceeding 30 MGD (peak in 2012 was 38.5 MGD).

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### Important events in the timeline of the SBOO:

July 1995 – December 1998	SBWO pre-discharge ocean monitoring establishes data for evaluation of baseline conditions
No discharge	
January 1999 – December 2010	IWTP discharging primary treated effluent
May 2002- November 2005	SBWRP online; discharging effluent treated to advanced tertiary levels and disinfected
December 2005- June 2006	SBWRP discharging effluent treated to advanced levels and disinfected (~98% tertiary with some secondary)
June 2006- present	SBWRP discharging mixture of tertiary and secondary effluent. Depends on recycled water demand but a significant portion is tertiary/disinfected effluent to SBOO
January 2011 to present	IWTP discharging secondary treated effluent

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The IWTP began discharging primary treatment effluent through the SBOO in January 1999 and continued until January 2011 when it began secondary treatment process. Contemporaneous with the startup of discharge in January 1999, the IWTP begins adding chlorine to the effluent and continues its use to April. IBWC staff reports that chlorine was used from November to April each year thereafter.

The SBWRP began operating in May 2002 with a plant influent of 4-5 MGD. All flow was treated to an advanced tertiary level and disinfected (UV system) prior to discharge to the SBOO.

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<sup>1</sup> estimating IWTP at 24 MGD average daily flow.

Beginning in December 2005, the operation was slightly altered and a small portion (~2%) of secondary effluent was discharged to the SBOO along with the advanced tertiary effluent. All flows were treated and discharged to the SBOO prior to June 2006 while a recycled water customer base was established. In June 2006, the influent flow increased to current levels of 8-9 MGD average daily flow. Recycled water demand significantly reduces flows to the SBOO and tends to correlate with dry season/rainfall. The proportion of tertiary to secondary effluent discharged to the SBOO depends on recycled water demand but a significant portion is tertiary/disinfected treated water.

Over the last 3 years, the SBWRP discharged an average daily effluent flow of 3.41 MGD. The SBWRP is a primarily a reclamation plant producing water for reuse. Discharges to the ocean tend to be nearly zero during significant portions of the year as shown in the [Annual Reports](#)<sup>2</sup> for the SBWRP. The plant effluent continues to consist of a significant portion of tertiary disinfected effluent along with the secondary effluent.

The IWTP secondary treatment processes started in January 2011. The February 9, 2011 California Regional Water Quality Control Board, San Diego Region, Executive Officer's Report, the IWTP continued to have by-passes of the treatment stream resulting in the discharge of untreated wastewater to the SBOO. We do not have any information on whether that continues and to what extent.

**Table**

<b>Year</b>	<b>Effluent to SBOO Daily Average (MGD)</b>	<b>Effluent to SBOO Annual Total (MG)</b>	<b>IWTP to SBOO Daily Average Flows (MGD)<sup>3</sup></b>	<b>IWTP to SBOO Total Annual Flows (MG)</b>
2002	4.39	1,045		
2003	4.12	1,505		
2004	4.24	1,553		
2005	3.95	1,440		
2006	4.94	1,807		
2007	4.03	1,467		
2008	3.20	1,167		
2009	2.63	957		
2010	3.43	1,248	23.94	8738
2011	3.54	1,288		
2012	3.26	1,194		
<b>Average</b>	<b>3.79</b>	<b>1,334</b>	<b>23.94</b>	<b>8,738</b>

<sup>2</sup> Available at <http://www.sandiego.gov/mwwd/environment/plantmonitoring.shtml#sbay>

<sup>3</sup> In the absence of flow data for the IWTP, we use 24 MGD average daily effluent as estimated flows to the SBOO.



# **ENCLOSURE 6**

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